

# Enhanced Oil Recovery Commission



## Enhanced Oil Recovery Commission

January 16, 2014 7:30 AM  
Hyatt Place Denver Airport, 16250 East 40<sup>th</sup> Avenue  
Denver (Aurora), CO

### Commission Members Present:

Bruce Williams, Chairman  
Aaron Otteman  
Governor Mead (Represented by Rob Hurless)  
Jimmy Goolsby  
Tom Fitzsimmons  
Eric Easton – Senior Assistant Attorney General

### Commission Members Excused:

Tom Drean  
Senator Eli Bebout  
John MacPherson

### Enhanced Oil Recovery Institute Staff Present:

David Mohrbacher, Director  
Glen Murrell, Deputy Director  
Pepper McClenahan, Business Manager  
Allen Tanner, Computer Support Specialist  
William Freeman, Accounting Associate, Sr.

## I. Call to Order

Chairman Williams called the meeting to order at 7:34 a.m. A quorum was established.

## II. Approval of Minutes

- **Motion:** Commissioner Otteman moved to approve the September 11, 2013 minutes. The motion was seconded by Commissioner Drean. **Motion passed unanimously.**
- **Motion:** Commissioner Goolsby moved to approve the October 4, 2013 Special Meeting minutes. The motion was seconded by Commissioner Otteman. **Motion passed unanimously.**
- Minutes for the previous executive session were not available.
- **Action Item:** Add the Executive Session Minutes from the September 11, 2013 meeting to the April Enhanced Oil Recovery Commission (EORC) meeting agenda.
- Commissioner Goolsby commended staff on the excellent job preparing minutes.

### **III. Commission Open Discussion**

- Chairman Williams discussed the diverse array of presentations given to the Technical Advisory Board (TAB) on 1/15/2014 along with the possibility of starting a set of forums for the presenters to receive feedback on their research. Director Mohrbacher and Allen Tanner noted Vladimir Alvarado felt good about the discussion and feedback. Commissioner Goolsby proposed the idea of letting the presenters stay to hear the feedback. Chairman Williams commented the discussion time was previously used for frank discussion and open comments.
- Director Mohrbacher commented that previously some the Enhanced Oil Recovery Institute (EORI) staff challenged the summary of TAB meeting comments and the opportunity was made available for them to participate in the critique session for the meeting on January 15<sup>th</sup>. All EORI staff members were invited to participate in the final critique, but were forced to leave early due to EORI's plan for "carpooling". Only one vehicle was provided for carpooling, and one or more staff had to return to Laramie early to care for children. More than one vehicle will be provided for "carpooling" to future TAB meetings.
- Director Mohrbacher stated he did not want to lose the openness of critiques as it provides value to the Institute. Deputy Director Murrell commented the critiques had a different tone at this meeting. Chairman Williams encouraged EORI to have more forums and an open interplay at meetings and on campus.

### **IV. Director's Overview**

- Director Mohrbacher gave an update on the progress and challenges facing EORI. The overview included recent staff development training for soft skills including communication and conflict resolution. Director Mohrbacher stated the trainer's comment following the training was that EORI is not a cohesive group. Efforts are underway to develop more cohesion within the institute's staff. The group is working to develop a team contract during the next training in February.
- Staff participation and recognition was discussed with Director Mohrbacher noting that every effort is being made to recognize and encourage staff.
- Annual performance reviews will be completed this year for the first time in EORI history which is very positive. The process to evaluate research scientists will mimic the process used to evaluate administrative staff.
- All senior research scientists are encouraged to present their work at a national or international conference. EORI's outreach program pays for associated travel costs.
- Salaries were evaluated for all research scientists. Four of the five senior research scientists are the top paid at the university.
- Less experienced staff benefit from being offered many opportunities to lead. The EORI Business Plan, which was discussed later in the meeting, outlined two approaches for completing work at EORI; practitioners who work independently on projects lasting more than one year using a small technical team, and those who are working in a collaborative project approach. The Director and Deputy Director have been coaching staff who have

five or less years of experience how to organize and implement work, and to give them independence.

- Commissioner Fitzsimmons commented that it is important to talk about the entire compensation package for EORI staff; including time off, employee benefits such as a paid UW courses, and the lifestyle opportunities offered in Laramie. The total compensation package offered by EORI is different than that offered by industry.
- Director Mohrbacher discussed the inclusion of retired, industry staff as consultants to EORI including Steve Fryberger and a recently identified resource of Ron Wackowski who has completed extensive work at Rangely on CO<sub>2</sub> and has taught at the Chevron school.
- Lab commissioning is proceeding. The Gas Chromatography (GC) equipment has been commissioned and work is progressing with commissioning of the Pressure, Volume, Temperature (PVT) equipment and core flood equipment. The School of Energy Resources (SER) has requested monthly updates on the progress of commissioning. A project plan for commissioning was developed during late 2013 and was approved during January 2014.
- Current industry developments: Denbury is delaying investments of new projects to provide a stock dividend. Riley Ridge CO<sub>2</sub> recovery, as well as CO<sub>2</sub> flooding at Hartzog Draw, has been delayed. Denbury has changed their business model and it will impact development of CO<sub>2</sub> Enhanced Oil Recovery (EOR) in the Rocky Mountain area.
- Project highlights included the completion of the evaluation of Tensleep Residual Oil Zone (ROZ), Minnelusa field evaluations are ongoing, and the Tensleep consortium is to initiate new work during 2014. Updates were given on project managers for current projects as well as an update on work being completed in the business office.
- An overview of the business plan was given with discussion of internal and external focuses for EORI.
- An update on the collaborative project with Sunshine Petroleum on the Osage Field Muddy was given stating that a combined 17 staff members from EORI and Sunshine are working on the project. EORI will assist with reinitiating waterflooding and is participating in screening of Alkaline Surfactant Polymer (ASP). The benefits and challenges of the collaborative approach in completing projects were highlighted.
- The new request for proposals (RFP) for faculty support was discussed stating the funding will be concentrated in the areas of chemical flooding, flood optimization, and evaluation of gas injection using methane and nitrogen.

## **V. Unfinished Business**

### **Review Outstanding Action Items**

- Chairman Williams stated all outstanding action items on the list are either completed or will be presented during the meeting.
- Director Mohrbacher thanked Business Manager Pepper McClenahan and her staff. The action item list is looking better than it ever has and the fact that all action items are completed is a reflection of Ms. McClenahan's management.

### **UW Economics Model Available to Public**

- Deputy Director Glen Murrell provided an update on the economic model, noting the model was released online in December just in time for Ben Cook's presentation in Midland Texas on the topic. There were a few downloads of the model over the holidays. Additional promotion of the product will be undertaken as part of outreach efforts. It was stated Ben Cook's future research will be applied to methane and less to CO<sub>2</sub>.

### **Update on Status of Prospects**

- Deputy Director Murrell also stated prospects are coming in regularly. Some do not fit with EORI's objectives. It was also stated Denbury and other large and small operators have expressed interest in working with EORI for lab testing. EORI is looking forward to finishing commissioning of the lab so new projects can begin. EORI is getting an increased number of requests for screening applications of chemical flooding.
- A screening evaluation for application chemical flooding can be completed quickly, usually in a matter of weeks and are completed for no charge.
- The other popular screening technology is gasification in terms of CO<sub>2</sub> supply for EOR. There are six different operators who have expressed an interest in building gasifiers within the state and supplying CO<sub>2</sub> for EOR. Those six operators fall into two groups; the first group wants to attach to existing infrastructure, and the second group views existing infrastructure as a barrier and wants to build a separate system for supply independent from the current infrastructure.
- Deputy Director Murrell revisited the idea of a joint industrial partnership for alternative gas methods. The original thought was to develop the program around nitrogen and methane, however, after the Technical Advisory Board meeting, the need to expand the scope to include enriched gas processes.

### **Update on Status of Projects**

- Deputy Director Murrell also reported on the status of current projects. The Sunshine project is moving forward. Follow on work is anticipated and is being developed as a new project.
- The outreach activities are coming together well, the calendar is assembled with one event planned every month except April and December. The Improved Oil Recovery (IOR) Unconventional conference is planned for September. In May, the Minnesula I and II

workshops are planned. Minnesula I will include one day of classroom instruction, two days in the field, and one day of instruction on Ben Cook's economic model. Minnesula II is planned for the last day in the same week. The first forums will take place at the end of the month with Trihydro presenting information on permitting in legacy fields. There are 41 people signed-up to participate online and 15 in person.

- Deputy Director Glen Murrell also noted that future topics for EORI outreach forums include evaluation and application of low salinity waterflooding and Steve Fryberger will be giving a presentation on Minnelusa flood development in the Powder River Basin.
- Commissioner Fitzsimmons commented screening for injection of low BTU gas in the Powder River Basin would be timely. The infrastructure is in place, and the wells are in place, but there is no market for the methane. It would be worthwhile to look at the existing infrastructure and facilities, in conjunction with the pipeline authority and other agencies, to get an idea about the feasibility of using low BTU gas for injection into deeper reservoirs.
- Commissioner Otteman agreed with Commissioner Fitzsimmons but noted a complication with the water handling in terms of the regulatory burden. Commissioner Otteman suggested this may be an opportunity for Ben Cook to look at the economies of bringing wells back online that don't have the de-watering issue. Commissioner Williams, Deputy Director Murrell, and Director Mohrbacher agreed. Chairman Williams noted the other part would be to take gas and inject into marginally economic wells. Commissioner Fitzsimmons noted further study would be needed. Chairman Williams commented it would be beneficial to spend time researching this topic. Commissioner Fitzsimmons reiterated the need to collaborate with the Pipeline Authority and other State agencies. Commissioner Hurless recommended that tax barriers, if any, should be identified early in the process to work out any issues. He proposed a manufacturing tax as a possible resolution.
- Director Mohrbacher noted that several new initiatives have been discussed which will require an evaluation of staffing levels. He recommended discussing projects and prospects to reprioritize the direction of EORI and to complete existing projects to free up resources.
- Director Mohrbacher reviewed existing commitments on EORI projects. Lab commissioning began last spring and a Gantt Chart that presents the schedule for completion is now available. The project plan was approved last week. Specific staff issues will be discussed in Executive Session. The focus for regular session is on staffing needs.
- There have been changes in the responsibilities in the lab. The lab manager resigned in June. Since October, Associate Director Murrell has supervised the lab commissioning project and Director Mohrbacher has supervised lab staff on other tasks. Instruments critical to project work will be commissioned first; core displacement capabilities for instance. EORI's goal is to get the lab to full capacity as soon as possible while selectively completing commission in specific areas to allow priority projects to proceed. Lab commissioning is progressing.

- Director Mohrbacher estimated he will be spending one-third of his time for the next month and a half completing performance evaluations and helping staff set personal performance goals for 2014.
- Deputy Director Murrell is managing the Minnelusa Consortium. Director Mohrbacher will be stepping out of management of the Consortium after the next meeting scheduled in two weeks. The consortium is working in three reservoirs with drilling prospects in all three. Director Mohrbacher will still be involved in West-Gibbs to get the ASP pilot test underway and assist with the economic analysis.
- Deputy Director Murrell gave an update on Little Mitchell stating that Shuiquan Li has been working on a 3-D analysis and is now at the scenario-building stage. He also stated Osborne Heirs have plans to drill one or two more wells to expand the existing waterflood. The operator is also interested in moving forward to the pilot stage and full-field chemical flood stage. The Little Mitchell Creek project will require lab resources which will be managed by Curtis Chopping and it will be built into the lab schedule for forecasting staff resources.
- Director Mohrbacher stated the first phase of the Sunshine project is finished, a new scope is being defined and there will be an update on 4/09/2014. There will be a need to define the scope after a discussion with the operator.
- Chairman Williams questioned the Frannie and ROZ projects and ask if completion was anticipated in the next 4-5 months. Director Mohrbacher affirmed the ROZ work is scheduled to be completed within six months (end of June). The Frannie project work is scheduled to extend into late 2014.

#### **Discussion on Outreach Manager**

- Director Mohrbacher stated goals were being developed for Deputy Director Murrell. He also stated there is a need to split the duties of Deputy Director Murrell, separating the outreach manager function. Director Mohrbacher stated that the outreach manager primarily works with the outreach coordinator to develop and implement programs. Director Mohrbacher thinks EORI could first look internally for candidates. Another possibility is to look for candidates outside of EORI. He also stated EORI is fully staffed for the first time and there may not be sufficient budget to hire another person.
- Deputy Director Murrell identified EORI employee Nick Jones as having the suitable communication skills which are a key requirement in the outreach manager position. Mr. Jones has run similar projects, has functioned as a project manager, he communicates well both internally and externally, and he has the organizational talents to put these programs together. Deputy Director Murrell stated there are some other talented EORI employees including Haifeng Jiang who has shown both technical and communication talent and could be developed in his skills with commercial partners. Curtis Chopping was also identified.
- Commissioner Hurless suggested a conversation with Mark Northam and Mary Burns in an effort to coordinate efforts with outreach and outreach efforts of the School of Energy Resources (SER). It was proposed a collaborative discussion with SER may help with the budget issues. Commissioner Hurless also stated that at a minimum there should be a

coordination of calendars. A suggestion was made to reach out to SER and noted coordination could help build synergies between the two organizations.

- Commissioner Otteman inquired if Mr. Jones was moved into the outreach manager position, would that reduce his time 100% to complete technical work. Director Mohrbacher stated the position would be added to existing duties. Deputy Director Murrell stated the outreach manager duties would be about a .2 or .25 FTE. The outreach manager spends time making contact with key people. The position also requires the ability to talk about the technical aspects of industry.
- Director Mohrbacher stated the outreach manager needs a combination of skills in order to be successful working with operators; first among them are communication skills, organization and planning, knowledge of business and economics, and technical ability. Director Mohrbacher stated Mr. Jones was his recommendation and he was asking for concurrence from the Commission.
- Chairman Williams stated he has observed three direction changes on the outreach manager position during his time on the EORC. He stated the tendency has been to use that position to enhance the role and compensation of existing staff in some cases. It was felt that proper planning needed to take place at this time to avoid the issue of having to make adjustments on a continual basis. Director Mohrbacher stated there is plan which has been implemented and the EORI organizational chart has not changed in two years. The outreach program has grown with the additions of conferences plus workshops and forums. The technical staffing has increased significantly but the number of administrative staff has stayed the same. Chairman Williams stated he felt things were working, and perhaps until staff looks for something else, EORI may need to stay with Deputy Director Murrell. He also noted planning seems ad-hoc.
- Commissioner Fitzsimmons asked how technical the candidates need to be to fulfill the positions. Director Mohrbacher prioritized the skills as follows: communication skills first, organizational skills second and technical skills third. Commissioner Fitzsimmons asked how heavy the technical skills were to the position. Director Mohrbacher responded with an estimate of 40% weighted. Commissioner Fitzsimmons stated he wants to be sure all candidates are considered. It was proposed there may be other candidates.
- Deputy Director Murrell stated the technical ability needs to be broad, but not deep. Chairman Williams stated in his judgment the outreach function has changed with technology transfer, networking, and conferences in addition to the gas injection project. He stated that if Director Mohrbacher wanted to move on hiring a new outreach manager to free up Deputy Director Murrell a motion would be entertained.
- There was further discussion on the duties of the outreach manager versus the outreach coordinator. The ability to make deals was listed as criteria for the manager, coaching would be provided to multiple staff members.
- Discussion focused on knowledge that as many as 3 or 4 EORI staff members may be looking for a new positions outside of EORI. The group discussed opportunities to fill jobs internally vs externally. Would changes to responsibilities internally increase the potential to retain existing staff. The question was posed if the position of outreach manager was

what some EORI staff members were considering. Director Mohrbacher indicated that was the case.

- Concerns were raised about staff retention and job satisfaction of EORI employees. Commissioner Fitzsimmons stated the topic needed further discussion and reiterated the need for a plan.

### **Update EORI Spending**

- Pepper McClenahan reported on the previous year's spending. Noting that EORI can still spend from the FY2013 budget. There were unspent funds from FY2013 primarily in the category of field demonstration as a result of understaffing. The commission and support budget will be spent out. Currently 98% of the funds are spent. Commissioner Hurless questioned if the commission support salary budget was overspent. It was stated overtime was granted to the accounting associate and IT. This was not planned but the overall budget would not be overspent even with the overage in the salary category. Technical and outreach spending is currently 34% spent for FY14. Commission and support budget is 28% spent for FY14.
- Commissioner Fitzsimmons asked if EORI could track its liability for accrued overtime, vacation, and sick time within the budget. There was discussion covering State and University policies that prohibit banking money for such obligations from biennium to biennium. Also, if a person is hired within the University, the department hiring that person assumes the obligation of vacation time that the employee has previously accrued. It was noted that carried over vacation time should not be criteria in the hiring process.
- Discussion turned to the recent JAC meeting where the Governor recommended the EORI budget as proposed, with the exception for the 4% increase in salaries. The salary increase will be handled outside of individual agency budgets. The budget will now move to the legislature for approval. It was noted that a positive relationship has been created and sustained between EORI, and the Governor and Legislature.
- Pepper McClenahan next reported on the continuing improvement process undertaken by the administrative function of EORI. Risk management initiatives have been undertaken to safeguard assets, noting data integrity in financial systems has improved drastically. The administrative function will continue to build standard operating procedures so less time will be spent on data entry. It was also reported university officials were brought in to clarify University policies to all EORI staff. In addition there has been an effort to align business processes by implementing work plans. Some additional milestones have been reached including being fully staffed and the completion of university training by administrative staff.
- It was also noted EORI made a direct appeal to the University for appointment of Chana Conley to the commission coordinator position after a failed search during 2012. The appointment was approved. Ms. Conley was hired through a temporary staffing agency using a program of temporary to permanent worker with no fee to EORI, the University of Wyoming (UW), or the employee.



- The new accounting system will go live at the beginning of the new biennium. There was also discussion related to the University audit conducted on payroll processes. EORI was found to be in compliance with UW policies and procedures with two small findings. Two time cards for an intern were not signed by the person supervising the intern's work. EORI had not been following the requirement to destroy timesheets after non-exempt benefitted staff signed their time cards. The later processes had been corrected prior to receiving the University's audit results.

#### **Break from 9:50 to 10:05 AM**

- Director Mohrbacher and the Commissioners recognized Chairman Williams' service on the Commission. Chairman Williams' term will end in March. He was presented with a gift in acknowledgement and gratitude for his service.
- Pepper McClenahan also reminded the commission to fill out the W-9 form which is a required document for the University to reimbursement Commissioners for expenses.

### **VI. New Business**

#### **Review of the EROI Business Plan**

- Review of the business plan commenced with discussion focused on the business plan itself, the project instructions, and project management. Commissioners asked if the business plan was complete, and if anything else was needed. Director Mohrbacher indicated the document would be revised and improved as needed. He recommended finalizing the document as soon as is practical. Commissioner Fitzsimmons agreed it should be used as a management tool, and encouraged the ability to make changes by having some flexibility with the document. He recommended that the commission not approve the document. The EORI Business Plan will be maintained by the Director and his staff. The Director can update the EORC regarding future revisions. Commissioner Fitzsimmons also stated this would set the precedent of the commission not having to approve future changes. Other commissioners agreed.

#### **Request for Re-allocation of Funds**

- Discussion took place related to the reallocation of funds needed to buy a Schlumberger pump for the lab. The original pump was purchased under the premise that cost savings would be realized by selecting a less expensive pump. However, after installation, it was discovered the pump was not as robust as the more expensive Schlumberger pump. The pump is needed to characterize phase behavior. The cost of the Schlumberger pump is approximately \$100,000, and the pump is required to effectively utilize the PVT apparatus. The question was posed if the \$100,000 includes everything as the quote did not look current. It was affirmed the \$100,000 would include everything including shipping, import duties, insurance, etc.
- **Motion:** Chairman Williams entertained a motion to reallocate unspent labor funds to buy the Schlumberger pump. Commissioner Otteman moved to approve the transfer, Commissioner Fitzsimmons seconded the motion. **Motion passed unanimously.**
- The question was asked if there was a list of equipment where shortcuts were taken that may need to be purchased in the future. Director Mohrbacher stated Curtis Chopping keeps a list which has been reviewed. There are some smaller items including pressure

transducers, as well as gas generators, which are devices to produce pure grade gases. A request was made for funding the traducers and gas generators.

- Discussion ensued about the source of funding, proposing the reallocation from supplies and equipment. The issue of the burn rate of the gases was brought up, proposing an economic evaluation to determine if the gas generator would pay for itself. A need for a return on investment analysis was discussed. It was stated that there was some unease about reallocating the funds until the cash flow analysis and return on investment rates were known. General agreement was reached to wait on the reallocation until more information was available.
- **Action Item**  
Develop economic justifications for the gas generators, answer questions about commissioning and maintenance and burn rate of the gases, and provide that information to the Commission.

### **Faculty Research**

- Director Mohrbacher opened the discussion with funding of faculty stating EORI's objective is to continue to fund faculty research. EORI is aware of seven candidates who are seeking funding and Director Mohrbacher would like to provide funding for a total of four or five projects at approximately \$100K each. Proposals will be solicited on a competitive basis and evaluated. Currently, the total funding of \$522,000/year is split between six faculty members. A proposal was put forward to reward the draft related to funding stating projects funded must be completed and be germane to Wyoming.
- The discussion turned to the ability to stop funding if needed. Currently, there is no feasible way to stop funding if a project is not completed or moving along at a reasonable pace. The discussion then turned to the need to define work in more detail to allow for effective tracking of work progress. Funded work should be aligned with EORI's strategic objectives. It was reiterated that the projects need to provide value to the state of Wyoming and generate results within a reasonable length of time, five years or so. It was suggested that increased communication with faculty about projects might improve alignment.
- Deadlines were defined as follows: RFP to be issued by January 23, 2014; proposals provided by February 14, 2014; and awards to be announced by March 1, 2014. There is a need to schedule a Commission meeting to choose which proposals will be funded. Recommendations from Director Mohrbacher will be needed before the commission chooses which projects will receive funding.
- **Action Item**  
The commission would like the faculty making proposals to be on hand for the decisions and the proposals must be submitted by February 14, 2014.

### **Commissioner Terms of Office**

- Discussion ensued about the term for Commissioner Goolsby. The reflection in the records demonstrates Commissioner Goolsby took over a term in 2012, after which his next term of office began. The records were verified with the Governor's office.

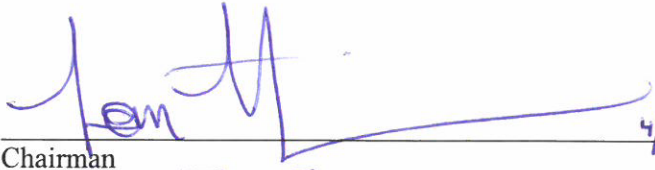
### **Nomination and Selection of Chairman and Vice Chairman**

- With the departure of Chairman Williams from the Commission in March, the Commission addressed the need to appoint a new Chairman. Commissioner Williams asked the present Vice Chairman Tom Fitzsimmons if he would be willing to serve as Chairman of the Commission.
- **Motion:** Commissioner Goolsby moved to nominate Tom Fitzsimmons as EORC Chairman beginning on March 1, 2014. There were no other nominations. All votes were in favor. **Motion passed unanimously.**
- Discussion was held related to the position of Vice Chair. Commissioner Otteman stated he was interested but was concerned about the ability to allocate the time necessary. In the absence of another Commissioner willing to accept the position, Commissioner Otteman indicated he would accept the opportunity. Commissioner Goolsby was asked if he was interested in serving as Vice Chairman. Commissioner Goolsby responded that he was also concerned about the time requirement but would be willing to serve if the position was not filled by another Commission member. Commissioner Goolsby stated he honestly was not looking to fulfill another position.
- Chairman Williams expressed his interest in having either Commissioner Otteman or Commissioner Goolsby serve in the Vice Chairman position. Commissioner Fitzsimmons suggested that Commissioners Goolsby and Otteman visit after the meeting and come back to the Commission at the next meeting.

### **Review EORI Calendar to Confirm Next Meeting**

- The special meeting of the Commission will be held on February 21, 2014 by conference call.
- The next regular meeting of the Commission will be held on April 9, 2014 in Casper, Wyoming

**\*\* Adjourned into Executive Session 11:55AM\*\***

  
Chairman 4/9/2014  
TOM FITZSIMMONS

