UNCONVENTIONAL RESOURCES TECHNOLOGY ADVISORY COMMITTEE (URTAC)

DECEMBER 4, 2013
TWENTY-FOURTH MEETING

MEETING MINUTES

A Federal Advisory Committee to the U.S. Secretary of Energy

I hereby certify that this transcript constitutes an accurate record of the Unconventional Resources Technology Advisory Committee meeting held on December 4, 2013.

Elena Melchert
Acting Designated Federal Officer

12-16-13
Date

UNCONVENTIONAL RESOURCES TECHNOLOGY ADVISORY COMMITTEE
24TH MEETING; DECEMBER 4, 2013; WEB MEETING

ATTENDEES:

Committee Members
Jessica Cavens, Chair
James Dwyer, Vice Chair
Nancy Brown
Wayne Camp
Chris Hall
Bob Hardage
John Harju
Robert Kleinberg
Fletcher Lewis
John Martin
Greg Mason
Shahab Mohaghegh
Gary Nilson
Ken Oglesby
Don Sparks

U.S. Department of Energy
Elena Melchert,
Acting Designated Federal Officer
Olayinka Ogunsola, Committee Manager
Gary Covatch, Project Manager,
National Energy Technology Laboratory
Michelle Rathbun, Meeting Recorder, IBM

DISCUSSION:

Committee Business

- The meeting was opened by the Committee Chair, Jessica Cavens, at 10:24 a.m. EST.
- Acting Designated Federal Officer, Elena Melchert, took roll call and announced that a quorum was present.

Subcommittee Reports (Attachment 3)

- Mr. Nilson presented the Policy Subcommittee report.
- Dr. Martin presented the R&D Subcommittee report.
- Mr. Hall presented the Tech Transfer Subcommittee report.
- Dr. Kleinberg presented the Environment Subcommittee report.
- The full committee voted that the Editing Committee can work with the drafts.

Committee Business

- The committee discussed establishing a subcommittee to review onshore total program and report back to the committee. Mr. Hall will write a statement for the committee to review and vote at next meeting.
- The Editing Subcommittee was formed, consisting of: Jessica Cavens, James Dwyer, and Greg Mason. Editing Subcommittee will meet on December 11.
- The next full committee meeting will be on December 18 to vote on the Editing Subcommittee Report.
- There were no public comments.
- The meeting was adjourned at 2:54 p.m.

ATTACHMENTS:

Number	Description
Attachment 1	Delegation of Acting Designated Federal Officer
Attachment 2	Meeting Agenda
Attachment 3	Initial Committee Reports for 2014 Draft

Attachment 1

Department of Energy
Washington, DC 20585

MEMORANDUM FOR FILE

TO: UNCONVENTIONAL RESOURCES TECHNOLOGY ADVISORY COMMITTEE

FROM: GUIDO DEHORATIIS
DESIGNATED FEDERAL OFFICER
UNCONVENTIONAL RESOURCES TECHNOLOGY ADVISORY COMMITTEE

SUBJECT: **Acting Designated Federal Officer**

I hereby designate Elena Melchert, Division Director, Oil and Gas Safety and Environmental Sustainability, to serve as the Acting Designated Federal Officer for all remaining meetings of the Unconventional Resources Technology Advisory Committee.

Attachment 2

Department of Energy
Washington, DC 20585

24th Meeting of the Unconventional Resources Technology Advisory Committee
Wednesday, December 4, 2013
1000 Independence Avenue, SW
Washington, DC 20585

Online Member Access: https://usdoe.webex.com/usdoe/mc
Meeting Number: 997 676 387 Meeting Password: password
Call-in toll-free number: 1-888-426-6840 Participant code: 1837498

Agenda

9:45 am	*Registration* Member Login; Speaker Login
10:00 am	Call to Order, Welcome, Meeting Objectives Jessica Cavens, Committee Chair Opening Remarks, Confirmation of Quorum Elena Melchert, Designated Federal Officer
10:15 am	Subcommittee Reports • Policy Subcommittee, Gary Nilson, Subcommittee Chair • R&D Subcommittee, John Martin, Subcommittee Chair • Tech Transfer Subcommittee, Chris Hall, Subcommittee Chair • Environment Subcommittee, Briana Mordick, Subcommittee Chair
11:15 am	Break
11:45 am	Full Committee Discussion
1:00 pm	Establishment of Editing Subcommittee and Chair
1:30 pm	Public Comments, if any Next Steps
3:00 pm	Adjourn

Approved:

Elena Melchert
Acting Designated Federal Officer

11-7-13
Date

November 13, 2013

POLICY

- Successful execution of this research and development (R&D) program will materially contribute to U.S. supply of oil and gas both today and beyond the 10 year R&D horizon. It is the consensus of this Committee that the resource potential impacted by this technology program is significant and of major importance to the Nation. There is a critical need for a sustainable and consistent approach to the technology challenges facing unconventional resource development.

- The Committee believes the Plan and the procedures followed in its development to be professional and inclusive, with a significant infusion of industry knowledge.

- These Independents are faced with unique and ever more difficult technical challenges in developing new unconventional resources, yet they often lack the means to undertake R&D programs. Therefore, the Federal government has a responsibility to provide leadership and to help fund and disseminate the results of R&D programs for public benefit.

- The Committee strongly recommends that the program reach out broadly to all oil and gas producing regions of the United States.

- The DOE needs to be actively involved in Federal, state and regional decision-making processes that may result in regulations that impact development of oil and gas resources, to ensure that larger national energy needs are taken into account.

- Oil and gas will continue to provide a significant amount of energy to the United States during the next 20 years, even with significant efforts to increase alternative and renewable resources. Therefore, every effort must be taken to ensure that petroleum resources are developed to the maximum extent possible. A national goal of recovering an additional 30% of the existing reserves is achievable and warranted.

- The Federal Government oil and gas Research and Development (R&D) and Technology Transfer (TT) programs are extremely important for maximizing domestic production for many reasons: (1) Federal programs serve to develop and transfer technologies that are not proprietary and thus are available to all producers, both large and small; and (2) as a major landowner and tax recipient, the government should actively manage its minerals and revenue streams.

Participating in R&D and ensuring the effectiveness of TT mechanisms is an important undertaking to fulfill this responsibility and to be an effective steward.

Section 999 of the Energy Policy Act of 2005 has been a mechanism for providing long-term cooperative research with the steady funding required to make progress toward the development of a safe and efficient gas shale industry. We find this program has been remarkably successful in meeting its objectives. We believe this approach to be much more efficient than intermittent funding which depends on annual appropriations.

The Section 999 program has functioned as envisioned:

- The program provided a stable funding source with which the Department of Energy could invest in helping to seed and transfer technology enabling new development and operating concepts while being more ESH sustainable and robust.
- Mid and long term programs and projects can be planned and executed without threats of annual shutdowns or cutbacks while funding sources were uncertain.
- The funding is less vulnerable to the vagaries of annual appropriations debates and the changes in direction imposed by political agendas.
- Program management by RPSEA has successfully advanced the goals of the program
- Completed Section 999 projects continue to contribute to the growth of the gas shale development.
- We agree with the SEAB Shale Gas Production Subcommittee 90-day report finding supporting the Section 999 research program. Section 999 is in fact long-term and is not designed to respond to short-term issues

Recommendation

The Committee recommends the following:

- DOE should include research directed towards these other main resource areas: 1) both gas and liquid petroleum resources and 2) unconventional reservoirs other than shale, such as low-permeability (“tight”) sandstone and carbonates, 3) methane hydrate, and 4) other potential oil and gas resources.
- Ultimate amendment of Section 999 to change the “sunset” to extend the program.

- The Department of Energy should request additional funding as authorized under Section 999.
- A renewed program should incorporate management schemes similar to those in the present program.

Finding: **ENSURE THAT OTHER PETROLEUM RESOURCES ARE INCLUDED**

The focus on unconventional gas resources has resulted in significant advances in the production of this resource. While there are challenges that remain to be addressed, there are other unconventional resources that would greatly benefit from the research, development and technology transfer of the DOE R&D programs.

Under the current program, only a limited number of projects address oil reservoirs. Focusing on R&D projects in these areas would help reduce dependence on imported foreign crude oil.

Some examples are:

- The Monterey unconventional shale formation in California: The DOE Section 999 program has not focused on any West Coast resource during this program; yet one of the largest reservoirs is located in California.
- Identifying bypassed oil in older fields; developing improved recovery methods.

An increase in recovery efficiency in existing reservoirs by just 10 percent would greatly add to the oil reserves base at minimal cost.

Recommendation:

DOE should:

- Refocus the R&D component of the Section 999 program to include other unconventional resources such as tight oil, and oil shale.
- Enhance the Section 999 funding beyond unconventional resources to include projects on increasing reservoir recovery in existing reservoirs.

Finding:

It is the professional opinion of this Committee that 10 year 2005 EPAC Section 999 On-shore program has been very productive and well worth the investment. A thorough

analysis of the entire program should be conducted by the Committee and submitted to the Secretary of Energy so that the information contained in the report could be used in R&D designing future programs.

Recommendation:

The On-Shore URTAC should be tasked to conduct a review of the entire 10 year 2005 EPAC Section 999 On-shore program. This review should involve at least two scheduled on-site meetings so that an adequate in-depth analysis can be conducted. The report should be submitted by the Committee to the Secretary of Energy.

Finding:

Given that the current administration has claimed credit for the creation of numerous jobs and that the creation of 1 million new jobs in the oil and gas industry plus another 1 million associated jobs in manufacturing1 could be created within the next ten years by more favorable policies in the energy sector, including the extension of research such as is currently being conducted via the Sec. 999 unconventional energy research programs.

Recommendation:

It is recommended that the Section. 999 be extended to further develop means of developing low cost, clean burning natural gas and oil, that would further increase the benefits of our natural gas revolution and help reduce imports of oil from other external sources, plus create millions of new jobs. By embracing such a policy, the current administration could truthfully claim credit for being proactive to help the economy and jobs situation in the United States.

[1] EnergyFromShale.org

Research and Development

Finding: DETERMINE METRICS AND PROGRAM VALUE

As noted in previous reports, the Subtitle J research program has significant value that has encouraged exploitation of unconventional fossil fuel resources. In order to make a tangible assessment, quantitative metrics need to be developed and applied. The use of incremental production, or royalties from production on Federal lands, as sole measures of program success, is inadequate. We find that metrics like these are unduly narrow in light of the mandate from DOE for Subtitle J activities to improve the environmental sustainability and safety of exploration and production operations. These metrics do not adequately capture the value of many long term research projects and the educational value of the program.

In the enabling legislation, the program's goals were laid out quite simple in section 999B: "The Secretary shall carry out the activities under section 999A, to maximize the value of natural gas and other petroleum resources of the United States, by increasing the supply of such resources, through reducing the cost and increasing the efficiency of exploration for and production of such resources, while improving safety and minimizing environmental impacts." In 2007, The General Accounting Office issued GAO-08-190R DOE's Oil and Natural Gas R&D that identified a series of targets for the USDOE research program which included very similar targets, including support for independent producers, less dependence on foreign oil, increased government revenues from royalties and taxes, gas research projects that help to replenish the talent pool of energy professionals, and reducing the environmental impact of oil and natural gas activities. Any serious attempt to capture the value of the program must be considerate of the broad mandate in the legislation, subsequent assessments and planning approaches.

The DOE and RPSEA do have a vested interest in capturing the value of the program since this will help guide future research efforts moving forward. Again, the 2007 GAO report describes the imperative: "While GAO and others have reported that the overall benefits of these projects have been difficult to quantify and link to DOE's efforts, considering key questions about the need for research, industry commitment to research, and the costs and benefits associated with the research can help define the role of the federal government and assist the Congress in its policy choices." We feel that the program has helped answer these questions: the research here has been relevant; industry is willing to commit to a cost-shared research program, and the federal government has a significant role in this type of research.

***Recommendation: The DOE should*:**

- Use the enabling legislation, annual plans and the 2007 GAO report as a guide to evaluate the benefits of the program towards advancing domestic oil and gas production.

- Identify a suite if metrics that can help identify the degree of market penetration by the program including how many technologies have been commercialized, how many reports have been published, cited, etc.; and

- Conduct some industry surveying to identify how successful stakeholders feel the program has been at meeting the goals set forth in Section 999.

Finding: FUTURE DOE R&D FUNDING

It is the committee's view that the USDOE needs to continue funding research since much work remains to be done. The oil and gas industry is cyclical in nature, fluctuating from periods of increasing production and healthy company fundamentals to those with production declines and increasing finding and development costs. To help reduce the latter, research based on sound science is necessary to help identify new reserves, produce these at a reasonable cost and with reduced environmental impacts. Other concerns moving forward include the ability to migrate new technology to scale up, building enough equipment and training enough workers.

In past RPEA program plans, there was an emphasis on demonstration of technology in the later cycles of the program. Rather, USDOE put more emphasis on environmental issues. Though we realize the importance of this redirection, the lack of supported demonstration projects in the last years of the program did hurt scale up and commercialization.

Recommendation: The DOE should:

- Develop future research programs that target areas of great national importance such as enhanced oil and gas recovery, environmentally sound hydraulic fracturing fluid design, disposal and treatment, and novel water reuse technologies such as processing for irrigation.

- Consider the need for more demonstration programs to help the scale up of technologies developed through USDOE research.

Finding: PROGRAM STRENGTHS AND WEAKNESSES

There are numerous state and federal research programs and each take a slightly different approach to meeting their goals and objectives. The section 999 research program was unique in the organization, the degree of public private cooperation and the funding mechanism. To help improve future research programs, some consideration of the positive and negative attributes of this approach is important.

This committee feels that the program's positive attributes include the multi-year funding continuity, consistent budget funding levels, and the support for industry cooperation with national labs, academia, and governments. The most glaring negative attribute was the incredibly slow contracting process even though the point of the program organization was to free the contractor from USDOE's bureaucracy, an outcome achieved with the Stripper Well Consortium.

Recommendation: The DOE should:

- Work with RPSEA to identify the most successful attributes of the program that can be replicated in future USDOE programs.

Finding: ROLE OF THE ADVISORY COMMITTEES IN FUTURE R&D PROGRAMS

The section 999 research program created two very strong advisory committees to help provide independent guidance to the program planning process. Though the funding cycle for new R&D projects has ended, work continues on the legacy 99 projects and the related non-999 projects. It is this committee's belief that there remains a role for an independent voice in future activies including technology transfer and helping develop new programs.

Recommendation: The DOE should:

- Seek a role for external R&D committees such as this one moving forward.

TECH TRANSFER

DOE URTAC: TECH TRANSFER SUB-GROUP INPUT FOR 2014 ANNUAL REPORT:

Technology Transfer (TT) is one of the most important parts of the Section 999 program, because without it the results of the research and development would never be disseminated to the widest possible audience. In fact, the need for TT continues beyond the end of the program sunset in September 2014.

FINDING: With the upcoming sunset of the Section 999 program less than one year from now (in September 2014), it is unlikely that the most recent research projects will be given the same exposure to the public and interested stake-holders as those generated earlier in the program.

RECOMMENDATION: A concerted effort should be made to disseminate the information generated by all research done to date, with special emphasis given to include and emphasize the most recent research project findings and conclusions so as to avoid losing the beneficial effectiveness of the research thus engendered. This effort should continue beyond the sunset date of the program.

FINDING: The results of the research and development conducted needs to be preserved in a manner such that it remains readily available and visible to the oil and gas industry.

RECOMMENDATION: In addition to the technical information being put into the Knowledge Management Database system developed by the DOE (www.netl.doe.gov/KMD), it should also be packaged and disseminated in a useable format (both digital and hard copy as appropriate) to industry technology transfer groups (such as the Petroleum Technology Transfer Council (PTTC)), professional societies (Society of Petroleum Engineers (SPE), American Association of Petroleum Geologists (AAPG), Society of Exploration Geologists (SEG)), scientific libraries (such as El Sevier and the Library of Congress), and major petroleum educational institutions (such as Colorado School of Mines, Oklahoma University, University of Texas-Austin, Texas A&M, Texas Tech., Pennsylvania State University, Stanford University, Missouri School of Mines, University of Southern California).

FINDING: Technology Transfer is one element of R&D that should have a life beyond the sunset of the program. Only by ensuring that this is accomplished will the maximum benefits and return on the investment in the Section 999 program be fully realized. Furthermore, future R&D efforts (whether conducted by industry or government agencies) will depend upon existing technology transfer frameworks to disseminate information derived from their programs. This point has been stressed repeatedly by the On-Shore Advisory Committees during the past 9 years:

- All TT should be a part of an on-going program, as isolated TT efforts for individual R&D projects have proven to not be as effective as those done as part of an on-going coordinated effort.
- For any R&D program to be successful, its TT component must be implemented early, coordinated and used often.
- Partnerships with existing TT mechanisms (i.e.: especially recognized programs such as the Petroleum Technology Transfer Council (PTTC)) should be encouraged, thereby ensuring that they are in place to carry out the TT needs of this and future programs.

RECOMMENDATION: The DOE should plan on how it is going to transition from the TT that has been conducted as part of the Section 999 program, to being part of an on-going program. This could be funded as part of the core DOE Oil and Gas program. While this is not an effort that would be undertaken solely by the DOE, it is critical that they be a crystalizing element around which a national program is perpetuated. It is strongly recommended that the DOE utilize the expertise of the members of the Advisory Committee to provide valuable input on the design, implementation and operation of such an on-going program.

ENVIRONMENTAL AND SAFTEY FINDINGS AND RECOMMENDATIONS

***Finding*: FEDERAL RESEARCH ON ENVIRONMENTAL AND SAFETY ISSUES**

The Section 999 program has funded crucial research in the areas of environmental risks and impacts of oil and gas production, and technologies and practices to mitigate these impacts and risks. With the program established under the Energy Policy Act of 2005, Section 999, set to sunset in September 2014, the fate of future federal funding of these topics is uncertain.

Recommendation:

DOE should:

- Continue pursuing research as part of the DOE/DOI/EPA multi-agency program created in response to the March 2011 White House Blueprint for a Secure Energy Future "…to address the highest priority challenges associated with safely and prudently developing unconventional shale gas and tight oil resources."

***Finding*: INTEGRATING ENVIRONMENTAL AND COMMERCIAL RESEARCH**

New technologies and practices developed to improve oil and gas production can potentially have both positive and negative environmental and safety impacts. Research to address the commercial viability of a new technology may or may not include an assessment of such impacts. Should these technologies be developed commercially, their environmental and safety attributes should be assessed.

The 2014 Plan states that "…all projects in the Program will be evaluated for potential and ongoing environmental impacts as applicable, both positive and negative, to ensure that these impacts are fully understood during project selection and management"

Recommendation:

DOE should:

- Continue to solicit projects that integrate environmental and commercial assessments of new technology.

***Finding*: UNCONVENTIONAL RESOURCES**

Unconventional liquids-rich gas and unconventional oil projects may have additional unique environmental concerns associated with producing, storing and transporting hydrocarbon fluids (rather than gas).

Recommendation:

DOE should:

- Solicit projects that focus on environmental and safety impacts that may be unique to liquids-rich gas and unconventional oil projects.