

## **Methane Hydrate Advisory Committee (MHAC) Meeting**

**October 18-19, 2018**

**Marriott George International Airport**

**Houston, TX**

### **MEETING SUMMARY**

Attached are the meeting agenda and the list of attendees.

#### **Welcome and Introductions**

The meeting was called to order on October 18, 2018 at 9:00 am EST by Gabby Intihar, the Committee Manager. Ms. Intihar welcomed and thanked the Committee members. She commenced the meeting by having each Committee Member and speaker introduce themselves and share with the group their expertise relating to gas hydrates.

Ms. Intihar introduced Mr. Shawn Bennett, Deputy Assistant Secretary for Oil and Natural Gas (DAS) and Designated Federal Official (DFO) for the Methane Hydrate Advisory Committee (MHAC), then turned over the meeting to DFO Shawn Bennett for his welcoming remarks.

#### **DFO Welcome, Shawn Bennett, DFO**

Shawn Bennett is the Deputy Assistant Secretary (DAS) for Oil and Gas within the U.S. Department of Energy (DOE) and Designated Federal Officer (DFO) for the Methane Hydrate Advisory Committee (MHAC). DFO Bennett thanked the Committee members for their continued commitment to the MHAC. He stated that the program goals remain unchanged and that DOE plans to continue with a research approach that is collaborative, interagency, and international.

DFO Bennett also highlighted the Methane Hydrate projects' accomplishments and emphasized their value to DOE. He stated that despite the recent accomplishments and progress on the two major field projects the challenges facing the Program remain significant.

DFO Bennett stated that the Department's primary objectives going forward are conducting field work to establish the resource potential of methane hydrates via a sustained, long-term production test on the Alaska North Slope and the coring expedition in the Gulf of Mexico. In addition to these two major field projects, the Program continues its participation in international partnerships in order to advance our understanding of methane hydrate in natural settings and techniques for its evaluation and production. The Department views its cooperation with foreign governments on international energy security as a high priority.

DFO Bennett stated that DOE recognizes that sustained, multi-year funding is critical to address the key challenges of the Program. He stated that neither the 2016 SEAB Report funding recommendations nor the MHAC funding recommendations have been compelling enough to convince DOE to make the recommended increased budget requests. He reiterated that there are simply too many competing priorities within the DOE for a finite amount of research funds.

DFO Bennett then turned over the meeting to Gabby Intihar to conduct committee business.

**Committee Business, Gabby Intihar, Committee Manager**

Gabby Intihar conducted committee business and made announcements. She reminded the group that all federal advisory committees are open to the public and deliberations must be done openly and transparently; minutes will be published 2-3 weeks on the Committee website. She further informed the committee that no public comments were received in advance of the meeting, nor has anyone requested to address the committee at the meeting. She confirmed that all of Committee members were present. Finally, she noted that there were changes to the agenda and Mr. Peter Flemings, University of Texas at Austin, will be the first presenter.

**Regulatory Reform Update, Shawn Bennett, DFO**

DFO Bennett mentioned the regulatory reform from December 7, 2017. DOE did not pursue any recommendations, and only one regulatory reform committee suggestion affected Fossil Energy, which was for expedited approval of LNG exports.

The Committee conversed on the DOE recommendations and recommended that DOE continue to work with the Department of Interior (DOI) Bureau of Ocean Energy Management (BOEM). DFO Bennett agreed to continue to work and collaborate with DOI's BOEM.

DFO Bennett then turned over the meeting to Gabby Intihar for the Budget Update.

**Budget Update – Gabby Intihar, Committee Manager**

Gabby Intihar presented the gas hydrate program FY 2018 and FY 2019 spend plans and stated that the stratigraphic test well will be fully-funded by DOE and drilling will commence in early December 2018. The FY 2019 spend plan is still being refined at this point in the fiscal year with the majority of the funding being planned to go to the Alaska North Slope project.

As discussed in the March 2018 meeting, the President's FY 2019 Budget request was \$3.5 million for gas hydrates. This funding is consistent with the President Donald J. Trump's Administration's FY 2018 Budget Blueprint released on March 16, 2017. The Blueprint focuses funding for Fossil Energy R&D on limited, early-stage research and development activities where a stronger federal role is required. The Blueprint emphasizes energy technologies best positioned to enable American energy independence and domestic job-growth in the near to mid-term.

However, the office is very pleased with the increased funding that the Program has received recently from Congress. The Program received a Congressional appropriation of \$19.8 million in both FY16 and FY17; and \$20.0 million in FY18 and FY19. The Congressional appropriation level will allow the Program to continue towards a long-term onshore production test in Alaska and limited funding to conduct lab- and field-based research focused on increasing public understanding of methane dynamics in gas hydrate-bearing areas and the resulting resource, hazard, and environmental implications.

The MHAC recommendations are proving valuable, as indicated in the FY 2019 Senate Marks language from May 2018. Even though the Department is not requesting larger budgets, Congress is recognizing MHAC recommendations when making appropriations.

A robust discussion ensued on the Gas Hydrate research program priorities. The discussion included several questions by the Committee members regarding Departmental budget priorities, gas hydrate funding levels, and maintaining U.S. leadership in gas hydrate R&D giving the appropriated budgets.

Gabby Intihar's presentations can be found on the Committee website at

<https://www.energy.gov/fe/downloads/presentations-october-18-19-2018-advisory-committee-meeting>

#### **Gulf of Mexico Project Update – Peter Flemings, University of Texas at Austin**

*Point of Order, before the presentation began Mr. Daniel McConnell stepped out to avoid any perception that Frugo was given an unfair advantage for the UT competitive bidding process.*

Dr. Peter Flemings presented an overview of the Gulf of Mexico (GOM) exploration and characterization project (UT-GOM2) and results to date with DOE. He thanked the six universities involved with the project, as well as the DOE, the U.S. Geological Survey, and the DOI's Bureau of Ocean Energy Management.

The UT-GOM2 project's objective is to take pressure-cores at identified known sites and explore high-value new sites. Dr. Flemings discussed the progress from the UT-GOM2 May 2017 pressure core expedition that has been made and the challenges the project has faced. Dr. Flemings did mention that NETL obtained the first pressurized core from UT-Austin and it was successfully transported to NETL's Morgantown, WV location.

Dr. Flemings presented on the project's next phases and what they expect to do for the GOM2-2 expedition since the original plans will be changing as a result of the Jodies Resolution drillship (JR) not meeting Coast Guard regulations for a drilling vessel in the Outer Continental Shelf (OCS). Dr. Flemings provided a summary of the recent Ohio State GOM-2 Workshop. He discussed the steps needed to prepare for the drilling expedition, which is tentatively planned for the first quarter of CY 2021. This will include logging and pressure coring at multiple sites in the GOM. Dr. Flemings led a discussion on the various expedition plans, including costs, benefits, and taking into account the funding that is provided by Congress. The Committee considered different scenarios to take based on the number of days needed for the expedition, and proposed carrying out an expedition that will capture all of the necessary data and still meet DOE's science objectives. The proposal provided various project scenarios with varying costs, therefore, Dr. Flemings welcomed feedback from the Committee.

After highlighting various challenges ahead as well as fiscal realities, the Committee stated that the research of the GOM2-2 project is of strategic national interest, and not just for the interest of the research itself and stressed the importance of the research being done in the Gulf of Mexico.

Dr. Flemings' presentations can be found on the Committee website at

<https://www.energy.gov/fe/downloads/presentations-october-18-19-2018-advisory-committee-meeting>



**Alaska Project Update – Ray Boswell, NETL**

Dr. Ray Boswell presented a review of the gas hydrates R&D in Alaska. Dr. Boswell began with a brief overview of Alaska North Slope testing and a historical summary of prior field programs, which were conducted in partnership with industry and academia including Mt. Elbert (2007) and Ignik Sikumi (2011-2012). Dr. Boswell provided a review of the sites within the greater Prudhoe Bay area.

Dr. Boswell provided a summary of the project design, which included planning for a potential three-well scientific field program that included a stratigraphic test well, a geo-data well, and a production test well and the intervention plan. He presented the criteria that would help determine the stratigraphic test well a success. Also discussed was the reservoir modeling comparison collaborative effort between NETL and JOGMEC. Dr. Boswell also highlighted the project structure and the need for a “3rd Party and “Standalone” operations for the production test well.

Dr. Boswell’s presentation can be found on the Committee website at

<https://www.energy.gov/fe/downloads/presentations-october-18-19-2018-advisory-committee-meeting>

**International R&D Activities – Timothy S. Collett, U.S. Geological Survey**

Dr. Timothy Collett presented the status of international gas hydrate projects. Dr. Collett provided a timeline of research and an overview of international gas hydrates scientific and industry drilling activities being conducted internationally.

Dr. Collett provided a description of the differences between resource and reserves. This led to the discussion on gas hydrates from resource to reserves development scenarios, which include gas hydrates resources, production technology, motivation, and gas hydrate reserves. He presented a summary of research and development (R&D) conducted by Japan, China India, and Republic of Korea, including recent expeditions, outcomes, and the most significant accomplishments from their work.

Dr. Collett’s presentation can be found on the Committee website at

<https://www.energy.gov/fe/downloads/presentations-october-18-19-2018-advisory-committee-meeting>

**Committee Discussion on Gas Hydrate R&D Program – Carolyn Koh, Methane Hydrates Advisory Committee**

Dr. Carolyn Koh, Committee Chair, led the Committee through a short discussion, food for thought, on the gas hydrates R&D program, which included fundamental science research areas, maintaining the U.S. technical leadership and education & public outreach.

A Committee member stated that the U.S. is the technical leader in gas hydrate research. The U.S. should continue to provide support in order to continue to address gas hydrate basic research questions, conduct early stage research and long-term production field tests in Alaska and Gulf of Mexico. These questions are not currently being addressed by industry, whose technology developments are focused on resources likely to be produced in the immediate future.

A Committee member brought up the need for outreach opportunities for the hydrates R&D program. A recommendation was suggested for a distinguished lecturer to travel around the U.S. to communicate the hydrates research work at various universities and events.

Dr. Koh's presentation can be found on the Committee website at <https://www.energy.gov/fe/downloads/presentations-october-18-19-2018-advisory-committee-meeting>

#### **Atlantic Margin Resources – Ray Boswell, NETL**

Dr. Ray Boswell provided a summary of gas hydrate investigations along the US Atlantic Seaboard, including a summary of the Bureau of Ocean Energy Management's gas hydrate resource assessment. He also mentioned the recent work DOE-NETL in partnership with the USGS to assess methane seepage and to collect high-resolution data in areas with the greatest potential for gas hydrate occurrence. The status of planned leasing and data acquisition on the Atlantic margin was also provided.

Dr. Boswell's presentation can be found on the Committee website at <https://www.energy.gov/fe/downloads/presentations-october-18-19-2018-advisory-committee-meeting>

#### **Committee Discussion Continue: Drafting and Review of Committee Recommendations for the Secretary**

Dr. Carolyn Koh, Committee Chair, led the discussion on the recommendations for revising the letter to the Secretary from April 2017. The discussion was focused on the key recommendations the Committee wanted to highlight on the program's priorities and budget with regards to the gas hydrate research program.

The MHAC has determined that long-term large scale production tests are the next step in the gas hydrate research program and a priority to the Committee. The MHAC recommended key activities whereby the long-term large scale production test is one step in a long-term program. Also, noted was that DOE methane hydrate research is answering fundamental, long-term questions that are required to assess the technical and economic viability of gas hydrate production.

The Committee discussed estimates of funding required over the next five years to achieve these key goals. The Committee decided to request a meeting with the Secretary to discuss the importance of the gas hydrate resource as a potential domestic energy source and the Committee's strategy to realize this U.S. natural gas resource and ensure continued U.S. technical leadership in gas hydrates.

A Committee member brought up again the need for a distinguished lecturer to travel around the U.S. to communicate the hydrates research work at various universities and other events. The DFO stated that DOE will be taking this into consideration.

At the conclusion of the Committee discussion, Dr. Koh had a draft letter of Committee recommendations, which she will finalize and transmit to the Secretary on behalf of the MHAC.

**Next Steps**

Dr. Carolyn Koh will finalize the draft recommendations letter and transmit to Secretary Perry on behalf of the Committee.

The Committee suggested a February or March 2019 as a possible date for the next in-person committee meeting to discuss and develop a gas hydrates R&D roadmap. DFO Shawn Bennett concurred that such a time would be acceptable to DOE. Topics of discussion could possibly include the National Energy Technology Laboratory (NETL) Research Innovation Center intramural R&D activities.

The meeting adjourned on October 19, 2018 at 11:30 am CST.



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Carolyn Koh, Chair



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Shawn Bennett, DFO



August 24, 2018

**Methane Hydrate Advisory Committee Meeting**  
**October 18, 2018 9:00 am – 5:00 pm (CST)**  
**October 19, 2018 8:30 am – 12:00 pm (CST)**

**Public Access**

Houston Airport Marriott at  
George Bush Intercontinental  
18700 John F. Kennedy Blvd.  
Houston, TX, 77032

**DAY 1 AGENDA**  
**October 18, 2018 8:30 am – 5:00 pm (CST)**

Time	Discussion Item	Speaker
8:30 am – 9:00 am	Registration	All
9:00 am – 9:20 am	DFO Welcome and Introductions	Shawn Bennett, DAS for Oil and Natural Gas, Designated Federal Officer (DFO)
9:20 am – 9:30 am	Committee Business	Gabby Intihar, Program Manager Methane Hydrate Program
9:30 am – 9:45 am	Regulatory Reform Update	Shawn Bennett, DAS for Oil and Natural Gas, Designated Federal Officer (DFO)
9:45 am – 10:00 am	Budget Update	Jared Ciferno, Technology Manager, National Energy Technology Laboratory
10:00 am – 10:15 am	Break	All
10:15 am – 11:00 am	DOE National Labs and NETL Research Innovation Center (RIC) Hydrates Activities Update	Jared Ciferno, Technology Manager, National Energy Technology Laboratory
11:00 am – 12:00 pm	Gulf of Mexico Project Update	Peter Flemings, University of Texas at Austin
12:00 pm – 1:00 pm	Lunch	All
1:00 pm – 2:15 pm	Alaska Project Update	Ray Boswell, RIC/SEA Analyst, National Energy Technology Laboratory


August 24, 2018

2:15 pm – 3:00 pm	Atlantic Margin Resources	Ray Boswell, RIC/SEA Analyst, National Energy Technology Laboratory
3:00 pm – 3:15 pm	Break	All
3:15 pm – 5:00 pm	International R&D Activities	Tim Collett U.S. Geological Survey
5:00 pm	Adjourn	

**DAY 2 AGENDA**  
**October 19, 2018 8:30 am – 12:00 pm (CST)**

Time	Discussion Item	Speaker
8:15 am – 8:30 am	Registration	All
8:30 am – 9:00 am	Interagency Team Recommendations: Gas Hydrate in the Natural Environment	Ray Boswell, RIC/SEA Analyst, National Energy Technology Laboratory
9:00 am – 10:15 am	Committee Discussion on Gas Hydrates R&D Program – Defining the fundamental science research areas related to environmental impacts to be pursued	Carolyn Koh, Chair Miriam Kastner, Vice-Chair Methane Hydrates Advisory Committee
10:15 am – 10:30 am	Break	All
10:30 am – 11:45 am	Committee Discussion on Gas Hydrates R&D Program Priorities and Budgets Summary and Next Steps	Carolyn Koh, Chair Miriam Kastner, Vice-Chair Methane Hydrates Advisory Committee
11:45 am – 12:00 pm	Public Comments, if any	Shawn Bennett, DAS for Oil and Natural Gas, Designated Federal Officer (DFO)
12:00 pm	Adjourn	

  
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APPROVED: Shawn Bennett  
Designated Federal Official

  
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Date



***Methane Hydrate Advisory Committee (MHAC) Meeting***  
**October 18-19, 2018**  
**Houston, TX**

**Table 1: List of Attendees**

Attendee	Role	Oct 18	Oct 19
Dr. Thomas Blasingame Texas A&M University Department of Petroleum Engineering	Committee Member	X	X
Mr. Christopher Carstens Carbo Culture Inc	Committee Member	X	X
Dr. Matthew J. Hornbach Southern Methodist University	Committee Member	X	X
Dr. Joel E. Johnson University of New Hampshire Department of Earth Sciences	Committee Member	X	X
Dr. Robert D. Kaminsky ExxonMobil Upstream Research Co.	Committee Member	X	X
Dr. Miriam Kastner Scripps Institute of Oceanography University of California, San Diego	Committee Member	X	X
Dr. Robert L. Kleinberg Schlumberger Fellow - Retired	Committee Member	X	X
Dr. Carolyn Koh Colorado School of Mines Chemical Engineering Department	Committee Member	X	X
Dr. Michael Max Hydrate Energy International, Inc	Committee Member	X	X
Mr. Daniel R. McConnell Fugro	Committee Member	X	X

Attendee	Role	Oct 18	Oct 19
Dr. George J. Moridis Lawrence Berkeley National Lab University of California	Committee Member	X	X
Dr. Mark D. Myers Myenergies	Committee Member	X	X
Dr. Craig Shipp Geohazards Assessment and Pore Pressure Prediction Team Shell International Exploration and Production Inc	Committee Member	X	X
Dr. Evan A. Solomon University of Washington	Committee Member	X	X
Dr. John Thurmond Equinor	Committee Member	X	X
Shawn Bennett Deputy Assistant Secretary for Oil and Gas U.S. Department of Energy	DFO	X	X
Tim Reinhardt Supply and Delivery Director, Office of Oil and Natural Gas U.S. Department of Energy	DOE Staff	X	X
Gabby Intihar Committee Manager U.S. Department of Energy	DOE Staff	X	X
Bianca Tedesco ADS	DOE Support	X	X
Ray Boswell National Energy Technology Laboratory Pittsburgh, PA	DOE Staff	X	X
Tim Collett, Research Geologist, U.S. Geological Survey	Presenter	X	X
Peter Flemings, University of Texas at Austin	Presenter	X	