

Methane Hydrate Advisory Committee (MHAC) Meeting

December 1-2, 2020

Virtual Meeting via WebEx

MEETING SUMMARY

Attached are the meeting agenda and the list of attendees.

Welcome and Introductions

The meeting was called to order on December 1, 2020 at 2:00 pm EST by Gabby Intihar, the Committee Manager. Mrs. Intihar welcomed and thanked the Committee members. She commenced the meeting with introductions from each Committee member, along with DOE staff, presenters, and other attendees.

Mrs. Intihar introduced Mr. Shawn Bennett, Deputy Assistant Secretary (DAS) for Oil and Natural Gas and Designated Federal Officer (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 Natural 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 stated that the Department's primary objectives are to conduct field work to establish the resource potential of methane hydrates via a sustained, long-term reservoir response experiment on the Alaska North Slope and the coring expedition in the Gulf of Mexico. These projects will provide valuable information to DOE to determine the scale and feasibility of methane hydrate as a future energy resource. In addition to these two major field projects, the program continues its international partnership to continue to address best practices for hydrate extraction.

DFO Bennett highlighted the work DOE accomplished with Japan Oil, Gas and Metals National Corporation (JOGMEC) in the Prudhoe Bay Unit regarding the Stratigraphic Test Well drilled in 2018. It was also noted that a third-party operator was selected for the long-term reservoir response experiment on the Alaska North Slope.

DFO Bennett introduced the agenda for the day and then turned over the meeting to Gabby Intihar for 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; and that minutes will be published in a few 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 then confirmed that a quorum of committee members was present. She noted that there were changes to the agenda and Tim Collett would present on day two of the committee meeting, following Dan McConnell's presentation. Due to unexpected technical difficulties with the online system, the Alaska North Slope project update was postponed and the Gulf of Mexico project updates were presented first.

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

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

Dr. Flemings discussed the progress from the UT-GOM2 coring evaluation from the FY2017 expedition. He presented on the project's next phase of the GOM2-2 expedition. It was noted that the project will help to develop a systems understanding of the hydrate reservoir, as well as obtain their key goal to characterize gas hydrates. He discussed the steps needed to prepare for the drilling expedition, which is tentatively planned for the first quarter of 2022. Dr. Flemings presented a '2 well' and a '4 well' science program. Dr. Flemings believes that both programs meet the DOE's science objectives and that the 4 well program provides appreciably more science, but at an increased cost.

Dr. Flemings' presentations can be found on the Committee website at <https://www.energy.gov/sites/prod/files/2020/12/f81/Gulf%20of%20Mexico%20Project%20Update.pdf>

Alaska North Slope Project Update – Ray Boswell, NETL

Dr. Ray Boswell presented a review of the gas hydrates R&D in the Alaska North Slope. Dr. Boswell began with the Alaska North Slope project status and provided a brief overview of the project structure. Dr. Boswell provided a review of Phase 1, which was the drilling and testing of the Stratigraphic Test Well. He noted Phase 1's completion and that the test well fit the criteria that determined it to be a success, which the STW confirmed the occurrence of gas hydrates in two zones that are suitable for future testing in Phase 2.

He also stated that phase 2 of the Alaska North Slope project is to drill, core, and instrument a geoscience data/monitoring well and also two production test wells, which are expected to spud (start initial drilling) at a time to be determined. The team continues to work with the Prudhoe Bay Unit Working Interest Owners and the State of Alaska to define project structure for Phase 2. The next phase is to contract the new operator, modify the operations plans before

beginning the drilling of the wells. It was also mentioned that there is reconfirmed interest for the site to be a “standalone/third party” framework. JOGMEC has begun to finalize agreements with the preferred operator.

The objective of the long-term reservoir response experiment is to characterize the system and then to observe it during controlled depressurization. The findings from Phase 2 will create a better understanding of the full characteristics of gas hydrate systems as well as the response of the reservoirs to potential gas production activities.

Dr. Boswell’s presentation can be found on the Committee website at <https://www.energy.gov/sites/prod/files/2020/12/f81/Alaska%20Project%20Update.pdf>

Committee Discussion: Gas Hydrates Science Report Recommendations to the Secretary – Carolyn Koh, Methane Hydrates Advisory Committee

Dr. Carolyn Koh led the remainder of the Day 1 meeting with a Committee based discussion on the seven MHAC executive summary strategic findings and recommendations on the remaining fundamental science questions to accurately quantify the volume of technically and economically recoverable gas hydrate resource. The Committee discussed how to best phrase the recommendations within the MHAC Science Report, while Dr. Koh updated the recommendations in real time. The Committee was tasked with reviewing the Report and providing edits to the slide deck in order to review and finalize the next day’s meeting during the continued Committee discussion session.

Dr. Koh’s presentation can be found on the Committee website at <https://www.energy.gov/sites/prod/files/2020/12/f81/MHAC%20Executive%20Summary%20a nd%20Planning%20Team%20Summary%20Overview.pdf>

Quantifying Gas Hydrate Deposits – Dan McConnell, Fugro

Mr. McConnell presented quantifying gas hydrate deposits and the implications for petroleum systems and secondary target and seal assessment in large biogenic gas plays. He noted the importance of gas hydrates in exploring and evaluating conventional biogenic gas plays. It was suggested that biogenic gas accumulations can be closely linked to gas hydrates in deep-water settings. Mr. McConnell asked the Committee and led a discussion on what can gas hydrate deposits tell us about deeper gas targets and seals. Additionally he highlighted were a number of international locations that have had large commercial biogas discoveries that likely also have significant gas hydrate resources.

Mr. McConnell’s presentation can be found on the Committee website at <https://www.energy.gov/sites/prod/files/2020/12/f81/McConnell MHAC%20Dec%202020.pdf>

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 summary of the gas hydrates scientific and industry drilling and international gas hydrate R&D projects in deep-water marine, permafrost and Academic Ocean drilling throughout the world to date. He also presented an update on the R&D conducted by a number of countries. The discussion included details on the recent expeditions, which included project descriptions, scientific objectives and the most significant accomplishments from their work.

Dr. Collett discussed work carried out in the Lower 48 United States that is being conducted by the Bureau of Ocean Energy Management (BOEM), which has looked at in-place gas hydrate resources. He went into depth on a module that is looking at biogenic gas generation and gas migration. Also highlighted were four ongoing gas hydrate production testing field sites in China, Japan and India.

Dr. Collett's presentation can be found on the Committee website at <https://www.energy.gov/sites/prod/files/2020/12/f81/International%20Activities%20Update.pdf>

Continue Committee Discussion: Gas Hydrates Science Report Recommendations to the Secretary – Carolyn Koh, Methane Hydrates Advisory Committee

Dr. Carolyn Koh continued with the Committee discussion on the seven MHAC executive summary strategic recommendations for maintaining U.S. leadership in methane hydrates research. The Committee discussed how to best phrase the recommendations within the MHAC Science Report, while Dr. Koh updated the recommendations in real time. The Committee accepted the changes to the recommendations and the Planning Committee Team agreed to prepare a final draft for the full Committee to review and approve by the following week for transmitting to the Secretary.

Next Steps

The Committee plans to review, provide comments, and finalize the recommendations in the Gas Hydrates Science Report to the Secretary of Energy. The Committee will wait for a response from the Secretary to the Science Report before planning the next meeting, preferably in-person after the COVID-19 restrictions have been lifted.

The meeting adjourned on December 2, 2020 at 4:30 pm EST.

I hereby certify that, to the best of my knowledge, the foregoing minutes are accurate and complete.

Carolyn Koh, PhD
Chair
Methane Hydrate Advisory Committee

Shawn Bennett
DFO
Methane Hydrate Advisory Committee

Gabby Intihar
Committee Manager
Methane Hydrate Advisory Committee

Methane Hydrate Advisory Committee Meeting

December 1, 2020 2:00pm – 6:00pm (EST)

December 2, 2020 1:00pm – 6:00pm (EST)

Public Access

WebEx: [Join meeting](#)

(<https://doe.webex.com/doe/j.php?MTID=m91258c1161d177971c02fb7ffa9bdc4c>)

Join by phone

+1-415-527-5035 US Toll

+1-929-251-9612 USA Toll 2

Meeting number (access code): 199 136 9930

DAY 1 AGENDA

December 1, 2020 2:00 pm – 6:00 pm (EST)

Time	Discussion Item	Speaker
1:30 pm – 2:00 pm	Virtual Registration	All
2:00pm – 2:20 pm	DFO Welcome and Introductions	Shawn Bennett, DAS for Oil and Natural Gas, Designated Federal Officer (DFO)
2:20 pm – 2:30 pm	Committee Business	Gabby Intihar, Senior Program Manager Gas Hydrate R&D Program
2:30 pm – 3:15 pm	Alaska Project Update	Ray Boswell, RIC/SEA Analyst, National Energy Technology Laboratory
3:15 pm – 4:00 pm	Gulf of Mexico Project Update	Peter Flemings, University of Texas at Austin
4:00 pm – 4:10 pm	Break	All
4:10 pm – 5:00 pm	International R&D Activities	Tim Collett U.S. Geological Survey
5:00 pm – 6:00 pm	Committee Discussion: Gas Hydrates Scientific Document Recommendations to the Secretary	Carolyn Koh, Chair Methane Hydrates Advisory Committee
6:00 pm	Adjourn	

DAY 2 AGENDA
December 2, 2020 1:00 pm – 6:00 pm (EST)

Time	Discussion Item	Speaker
12:45 pm – 1:00 pm	Virtual Registration	All
1:00 pm – 1:30 pm	Quantifying Gas Hydrate Deposits and Implications for Petroleum Systems and Secondary Target and Seal Assessment in Large Biogenic Gas Plays	Dan McConnell, Methane Hydrates Advisory Committee Member
1:30 pm – 3:30 pm	Committee Discussion (Continued)	Carolyn Koh, Chair Methane Hydrates Advisory Committee
3:30 pm – 3:45 pm	Break	All
3:45 pm – 5:45 pm	Committee Discussion (Continued) Summary and Next Steps	Carolyn Koh, Chair Miriam Kastner, Vice-Chair Methane Hydrates Advisory Committee
5:45 pm – 6:00 pm	Public Comments, if any	Shawn Bennett, DAS for Oil and Natural Gas, Designated Federal Officer (DFO)
6:00 pm	Adjourn	

APPROVED: Shawn Bennett
Designated Federal Official

Date

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December 1-2, 2020
Virtual Meeting (WebEx)

Table 1: List of Attendees

Attendee	Role	Dec 1	Dec 2
Dr. Carolyn Koh Colorado School of Mines Chemical Engineering Department	Committee Member	X	X
Dr. Miriam Kastner Scripps Institute of Oceanography University of California, San Diego	Committee Member	X	X
Dr. Mark D. Myers Myenergies	Committee Member	X	X
Dr. Thomas Blasingame Texas A&M University Department of Petroleum Engineering	Committee Member	X	X
Dr. Mun-Hong (Robin) Hui Chevron	Committee Member	X	X
Dr. Dilhan Ilk DeGolyer and MacNaughton	Committee Member	X	X
Dr. Joel E. Johnson University of New Hampshire Department of Earth Sciences	Committee Member	X	X
Mr. Daniel R. McConnell Fugro	Committee Member	X	X
Dr. George J. Moridis Lawrence Berkeley National Lab University of California	Committee Member	X	X

Attendee	Role	Dec 1	Dec 2
Dr. Craig Shipp Consultant	Committee Member	X	X
Dr. John Thurmond Hess Corp.	Committee Member	X	X
Shawn Bennett Deputy Assistant Secretary for Oil and Gas U.S. Department of Energy	DFO	X	X
Ryan Peay Office of Oil and Natural Gas U.S. Department of Energy	DOE Staff	X	X
Tim Reinhardt 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 KeyLogic Systems	DOE Support	X	X
Joseph Stoffa National Energy Technology Laboratory	DOE Staff	X	
Ray Boswell National Energy Technology Laboratory	DOE Staff	X	X
Yongkoo Seol National Energy Technology Laboratory	DOE Staff	X	
Rick Baker National Energy Technology Laboratory	DOE Staff	X	X
Peter Flemings University of Texas - Austin	Presenter	X	
Tim Collett, Research Geologist, U.S. Geological Survey	Presenter	X	X
Luciane Cunha National Energy Technology Laboratory	Observer	X	X
Eugene Myshakin National Energy Technology Laboratory	Observer	X	

Attendee	Role	Dec 1	Dec 2
Luciane Cunha National Energy Technology Laboratory	Observer	X	X
Eugene Myshakin National Energy Technology Laboratory	Observer	X	
Stephen Palmer Bureau of Ocean Energy Management	Observer	X	X
Warren Wood Naval Research Lab Stennis Space Center	Observer	X	X
Jesse Houghton University of Texas - Austin	Observer	X	
Carla Thomas University of Texas - Austin	Observer	X	
Colleen Newman	Observer	X	X
Ishida Shigeaki	Public	X	X
Satoru Toyomoto	Public	X	
Matt Frye BOEM	Observer		X