

# MHAC Meeting

## *Methane Hydrate R&D Roadmap Committee Review*

Houston, TX

4/24/2019

# Priorities (from Nov 2018 Letter to the Secretary)

- 1. Extended reservoir response experiment followed by a long-term, full-scale production test on the Alaska N. Slope (2018-2024).** Results will allow for design & implementation of a full-scale demonstration of reservoir deliverability by 2024.
- 2. Gulf of Mexico reservoir characterization through drilling & coring, and geophysical investigation (2020-2024).** Scientific drilling & coring are required to assess the extent, quality, and economic viability of U.S. offshore reservoirs in GoM.
- 3. Evaluation of hydrate reservoir quality in offshore U.S. waters, other than the Gulf of Mexico and the Alaska North Slope.** Scientific evaluation by drilling & coring. etc. to assess extent, quality, & economic viability of U.S. offshore reservoirs.
- 4. Maintain U.S. leadership in foundational methane hydrate R&D.** Focus on assessment of resource concentrations, recovery rates, reservoir behavior, wellbore completions, and hydrate investigations from petroleum system.
- 5. Leverage international partnerships.**

# Priorities (from Nov 2018 Letter to the Secretary)

*Table 1. Summary of MHAC Recommendations for the DOE Methane Hydrate Program.*

	Activity/Location	Estimated Cost in \$million						
		2018	2019	2020	2021	2022	2023	2024
1	North Slope of Alaska Production	14	16	20	20	20	30	30
2	Gulf of Mexico – Characterization	1	0	20	20	5	15	15
3	Other U.S. Margins Screening	0	0	5	5	20	20	20
4	Foundational R&D	5	4	5	5	5	5	5
5	International Collaborations & Outreach	0	0	3	5	5	5	5
	<b>Total</b>	<b>\$20M</b>	<b>\$20M</b>	<b>\$53M</b>	<b>\$55M</b>	<b>\$55M</b>	<b>\$75M</b>	<b>\$75M</b>

# (1) Long-term Production Test on ANS (2018-2035?)

*Leads: Mark Meyers, Bob Kaminsky*

- **Long-term production test for 2 years, or longer?**
  - Success based on rates & sustained production (depressurization)
  - Demonstrate long term problem free production (safety assessment)
  - Validate/tune/constrain simulation tools
  - Determine water production rates
  - Implement shut-in/restart FA strategies
  - Improve resource assessment methods
- **Afterwards, keep site to test new hydrate production technologies (in partnership with industry, state of Alaska)**
  - Learn how to get max. rates, e.g. via nitrogen injection
  - Produce over longer timescales? Consider other sites?
- **Other Q's to address?**

## (2) Reservoir Characterization Through Drilling & Coring in the GoM (2020-2035?) *Lead: George Moridis*

### To validate/tune simulation models

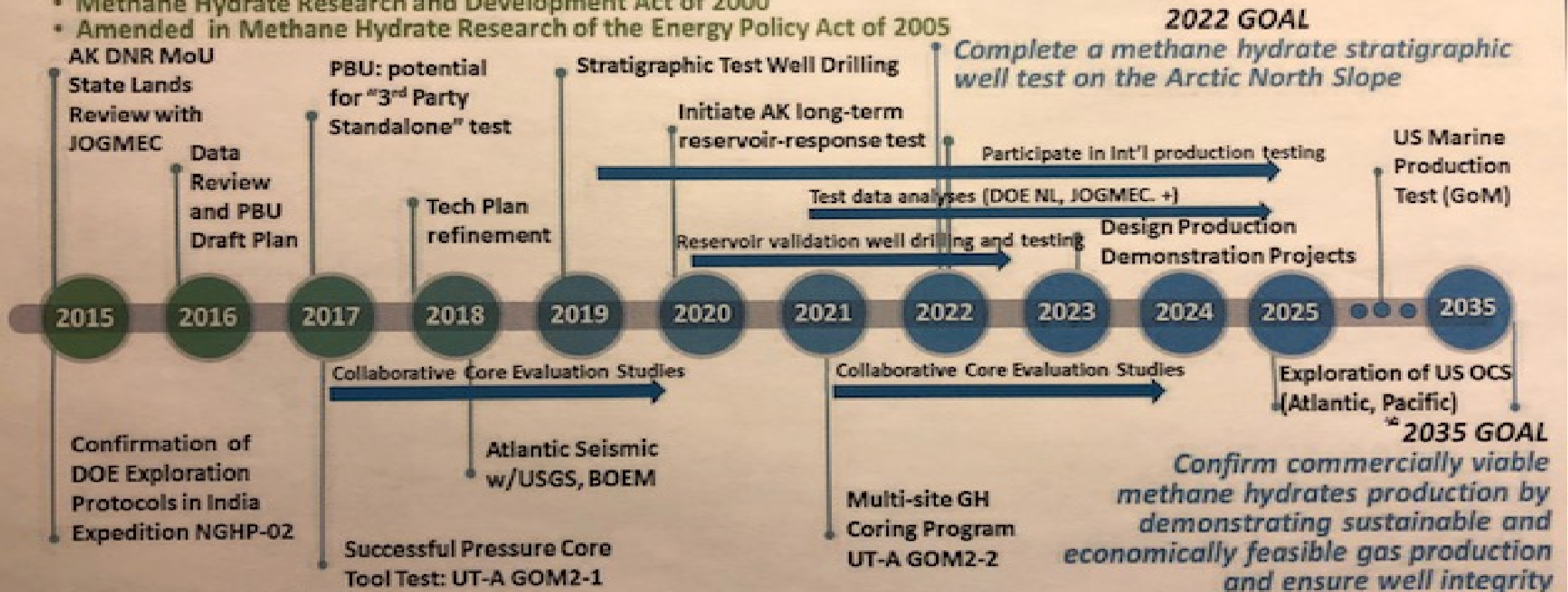
- **Geologic model: extent of reservoir?**
- **Require compositional tracking**
- **Understand relative permeability & capillary pressure**
- **Understand relation between geomechanical props. &  $S_H$**
- **Obtain reservoir samples (pristine pore fluids)?**
- **How can the coring activities in the GoM address the above, also reservoir heterogeneity, petroleum systems Q's (charging mechanisms, chemistry, salinity, geothermal gradients), controls of hydrate production**
- **Other Q's to address?**

# Methane Hydrate R&D Goals (from Gabby Intihar)

## GAS HYDRATES PROGRAM PATHWAY

### Key Drivers

- Methane Hydrate Research and Development Act of 2000
- Amended in Methane Hydrate Research of the Energy Policy Act of 2005



## **(3) Evaluation of Hydrate Reservoir Quality in Offshore U.S. Waters (e.g. Atlantic Margin)**

***Leads: Joel Johnson & Miriam Kastner***