

# Physical Sciences – Mark Johnson and Jerry Galt

Overview: Generally good science.

Most common issue is need to further focus and add specifics.

Would be helpful to state the BOEM questions/issues that are being addressed by the proposed project.

Q1: Are there national protocols or guidelines for “project initiation” such as funded literature review, identification of data sets and definition of problem.

### **NAAQS Exemption Level Study [GOM21]**

A useful study that will update the (EPA) dispersion model for offshore sources of airborne contaminants.

### **Year 2014 Gulfwide Emissions Inventory Study [GOM29]**

Supports above work by identifying different sources

### **Enhancing the Capability of a New Meteorological Model for Air Quality and Other BOEM Applications in the Gulf of Mexico [GOM49]**

Complements above air quality issues to improve modeling. Effort reflects generic problem for BOEM to address compliance issues and advance beyond outdated EPA models. In this case it is an oversimplified model of atmospheric dispersion onto shore.

**Coral Reef Ocean Acidification Sentinel Site in the Flower Garden Banks  
National Marine Sanctuary [GOM47]**

Good stuff but leverage the ship cost.

## **Managing Dredging Environmental Impacts by Optimizing the Use of Sand Resources [GOM65]**

Good start on difficult problem of creating a realistic cost analysis function for project selection that should reflect borrow sites, target sites, dredge scheduling and other issues.

## **Literature Review: Environmental Risks, Fate and Effects of Chemicals Associated with Wind Turbines on the Atlantic OCS [Atlantic29]**

Seems quite late to conduct a literature review, but better late than never.

## **Cook Inlet Circulation Model Calculations [HQ33]**

We are not sure whether this is a model inter-comparison project or the proposal is to use an existing, already selected model. If an inter-comparison, clarify the criteria to test the models. For example, are the models producing the rip lines in Cook Inlet, identifying convergence and divergence locations, including wetting/drying, tides, instabilities and frontogenesis, ice motion?

## **Propagation Characteristics of High Frequency Sounds Used for High Resolution Geophysical Surveys [HQ49]**

Good stuff. Develop new models for determining the acoustic spread from known sources.

## **Understanding the Role of Offshore Structures in Managing Potential *Watersipora subtorquata* Invasions [Pacific 25]**

Not sure of the scale of this problem, but it may become an issue. It is probably worth developing an archive of distribution of *Watersipora*.

## **Predicting the Consequences of Wave Energy Absorption from Marine Renewable Energy Facilities on Nearshore Ecosystems [Pacific 27]**

Include more physics such as measuring the wave energy through the water column in front of and behind the energy extraction area. Topic is also important to recruitment on new substrates. The current study could be the start of a much larger project.

## **Expansion of West Coast Oceanographic Modeling Capability [Pacific 33]**

Essential to expand the domain. Probably useful to ensure that GNOME will incorporate HF radar data (smoothed or otherwise).

## **Arctic Air Quality Impact Assessment Modeling [Alaska39]**

Coordinate with similar developments in the Gulf of Mexico

## **Enhanced Verification and Interpretation of Arctic Ice Formation, Distribution, and Density [Alaska47]**

This is critically important to O&G development. Freeze-up date estimates need to be formalized with robust statistics. Can partnering with NSIDC via formal MOU improve information flow?

**Physical and Chemical Analyses of Crude and Refined Oils:  
Laboratory and Mesoscale Oil Weathering [Alaska 53]**

Reasonable.

## **Chukchi Acoustic, Oceanography and Zooplankton Study: Hanna Shoal (Extension of CHAOZ) [ Alaska 41]**

This is part of a larger, integrated program. Looks good. Also part of Biology.



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