



1992 Report of the North Carolina Environmental Sciences Review Panel to the Secretary of the Interior

Charles H. “Pete” Peterson

University of North Carolina at Chapel Hill,
Institute of Marine Sciences, Morehead City

South Atlantic Offshore Drilling Forum
NC Coastal Federation
31 July 2015

North Carolina Environmental Sciences Review Panel (ESRP) 1992

- Mandated by the Oil Pollution Act of 1990
- Five panel members – 2 “marine scientists”; 1 physical oceanographer; 1 ecologist; 1 social scientist
- Chosen by Secretary of the Interior, NC Governor, and National Academy of Sciences
- Members:
 - John Costlow of Duke University – elected Chair
 - John Teal of Woods Hole Oceanographic Institution
 - Kenneth Brink of Woods Hole Oceanographic Institution
 - Charles Peterson of University of North Carolina at Chapel Hill
 - Michael Orbach of East Carolina University

NC ESRP Charge

- “Assessing the adequacy of available physical oceanographic, ecological, and socioeconomic information to enable the Secretary of the Interior to fulfill his responsibilities under OCSLA (Outer Continental Shelf Lands Act)”
- “Identifying any additional information deemed essential to enable the Secretary to carry out these responsibilities”

Criteria on which to Judge Adequacy

- Following NRC (1989) Report – adequacy judged on two criteria
 - Completeness of information
 - Rigor of information
- Required information escalates with successive stages of oil & gas resource exploitation process:
 - Leasing
 - Exploration/Delineation
 - Development/Production
 - Post Production

Special Importance of Leasing Phase Decisions

- Perception that once a lease is sold, all subsequent phases of exploitation will necessarily follow
- Little evidence in the history of the program to contradict this perception
- No example found of where DOI rejected a Development and Production Plan, although modifications are made
- Consequently, environmental evaluations made before leasing must anticipate impacts of subsequent phases

Deficiencies identified in physical oceanographic information

- Surface oil transport model fails to accommodate short-term fluctuations in Gulf Stream dynamics
- Information on flow over the shelf north of Cape Hatteras is inadequate to model transport and fate
- Information about how oil may concentrate in the Gulf Stream front is fragmentary
- Information is inadequate to predict how oil would disperse from a possible bottom rupture, with 3-D circulation inadequately known, as shown in DWH
- Surf-zone, inlet, and estuarine transport dynamics are incompletely characterized

Deficiencies identified in ecological information

- How physical/biological couplings drive intense use of “The Point” by top carnivores, incl. marine mammals
- The role of Gulf Stream *Sargassum* as habitat for important fishes and hatchling and juvenile sea turtles
- Potential impacts of development on the unusual and rare benthic community off Cape Hatteras, including deep-water *Lobelia* corals
- Impacts of oil on overwintering striped bass off shallows of the Outer Banks
- Processes of oil transport, deposition, and impacts on large offshore sand shoals associated with 3 NC capes

Deficiencies identified in socioeconomic

- Little or no attempt to establish connections among socioeconomic variables
- Little or no effort to relate social science variables to physical and natural science conditions off NC
- No analyses of effects of OCS-related activities on specific fish stocks, specific recreational and commercial fishermen, and dependent communities and industries along the NC coast and beyond
- General assumption in DOI decision documents of no significant impact of OCS activities despite documented large changes in socioeconomic systems in CA, LA, AK so costs and benefits contrasts unreliable

Recommended studies in physical oceanography

- Improvements in OSRA (Oil Spill Risk Assessment) model with better current data and Gulf Stream meanders and cold dome eddies
- Development of OSRA submodels for barrier islands, inlets, surf zone, and estuaries (underway in 1992)
- Major field studies of current fields on the northern NC shelf (underway in 1992) and of the shelf south of Cape Hatteras
- Not included in the 1992 Review Panel Report but evident in light of the Gulf DWH blowout – 3-D flows

Recommended studies in ecology

- Coupled oceanographic - biological processes on NC shelf and slope explaining concentrated top carnivore use of the “Point” (ongoing by Read at Duke)
- Dynamics and functional of floating *Sargassum* community as it relates to habitat for sea turtles and juvenile and adult fishes (begun by L. Settle of NOAA, S. Powers of DISL)
- Surveys of benthic communities to identify areas of special interest and value like deep-water corals, cold seeps, and reef habitats (begun at the Point) and understand their recovery dynamics (S. Ross and L. Cahoon of UNC-W progress)
- Monitoring of base-line PAHs in indicator organisms, including *Sargassum* associates ,Wilson’s storm petrel

Recommended socioeconomic studies

- Base case characterization analyses for Manteo Block area (now all likely targets for oil & gas exploration), including structure of relevant industries, relationships among private & public sector entities potentially affected
- Human community studies involving socio-cultural and economic variables needed to assess contextual roles and effects of OCS oil & gas activities
- Pre-OCS activity perceptions of environmental conditions - values associated with likely target areas
- Infrastructural impacts incl. on revenue sources, distribution of financial burdens, and socioeconomics
- Comprehensive longitudinal socioeconomic monitoring