

BOEM ENVIRONMENTAL STUDIES PROGRAM: Ongoing Studies

Region: Alaska

Planning Area(s): All Alaska Planning Areas

Title: Loss of Well Control Occurrence and Size Estimators for the Alaska OCS (AK-11-12)

BOEM Information Need(s) to be Addressed: The Oil-Spill-Risk Analysis (OSRA) is a cornerstone to regional EISs, environmental assessments, and oil-spill-contingency planning. A fault-tree approach is used to extrapolate the historical non-Arctic spillage to Arctic conditions for Arctic NEPA analyses. The OSRA spill rate calculations, because of oil-spill issues, constitutes a significant portion of public comments submitted on lease sale or development EISs and exploration EAs in the Alaska OCS Region even prior to 2010 *Deepwater Horizon* spill in the Gulf of Mexico OCS. Well control incident data from Gulf of Mexico, the North Sea, and offshore Australia exploration and development well activities will be reviewed, statistically analyzed and formatted for use for future fault tree and NEPA analyses.

Total Cost: \$298,540

Period of Performance: FY 2012-2014

Conducting Organization: Bercha International

BOEM Contact: [Dr. Heather Crowley](#)

Description:

Background: The BOEM uses the historical blowout record on the Outer Continental Shelf (OCS) and the North Sea as an input to the fault tree model to develop oil spill occurrence rates for oil-and-gas-lease sales and any development projects in the Chukchi and Beaufort Sea OCS Planning Areas proposed under BOEM and industry planning. In recent years, the Alaska OCS Region has frequently been tasked to provide frequency estimates and analysis of loss of well control occurrence during lease sale, exploration and development in NEPA assessments. The largest spill from a single well control incident in the history of offshore oil industry, the *Deepwater Horizon* blowout in the Gulf of Mexico OCS, has further focused interest in consideration of very large spills from well control incidents in NEPA analyses.

Under the Bureau of Safety and Environmental Enforcement Regulations 30 CFR § 250.188 (3) industry must report all losses of well control. “Loss of well control” means: (i) Uncontrolled flow of formation or other fluids. The flow may be to an exposed formation (an underground blowout) or at the surface (a surface blowout); (ii) Flow through a diverter; or (iii) Uncontrolled flow resulting from a failure of surface equipment or procedures. *Offshore Blowouts: Causes and Control* (Holand, 1997) has the most comprehensive analysis of worldwide blowout data, but those data are in need of updating. The primary world database for this information has been compiled by and is held by SINTEF, with SINTEF and a few others with access providing statistical analyses based on the database.

Objectives:

- Update offshore loss of well control frequency information through 2011 for the Gulf of Mexico and Pacific OCS, the North Sea, Australian offshore regions and other areas with a comparable regulatory regime.
- Apply statistical procedures to develop loss of well control occurrence rates for different operational phases and product spilled (e.g., gas, crude and condensate, drilling mud).
- Estimate confidence intervals for occurrence rates.
- Provide statistical measures such as mean and median spill sizes including appropriate methods for statistical outliers such as the *Deepwater Horizon* blowout.

Methods: The investigators will collate and analyze available data on offshore well control incidents in the Gulf of Mexico and Pacific OCS, the North Sea, Australian offshore regions and other areas with a comparable regulatory regime. Existing very large oil spill examples (probability, size, and basis) from regional (Alaska) oil spill contingency plans and environmental assessments will also be reviewed. The investigators will calculate well control incident frequencies and perform appropriate statistical analyses, including trend analysis.

Current Status: Ongoing

Final Report Due: February 2014

Publications Completed: None

Affiliated WWW Sites: <http://www.boem.gov/akstudies/>

Revised Date: December 2012

ESPIS: Environmental Studies Program Information System

All *completed* ESP studies can be found

here: http://www.data.boem.gov/homepg/data_center/other/espis/espisfront.asp