

Peer Review Plan

Date: 12/07/2015

BSEE Funding Source or Author's Division: Oil Spill Response Research Branch
Oil Spill Preparedness Division
45600 Woodland Road
MS VAE-OSPD
Sterling, VA 20166

Title: Quantitative Measurement of In Situ Burn Efficiency Rate

Subject and Purpose: It is estimated that *In Situ* Burning (ISB) removed between 220,500 barrels and 310,400 barrels of oil from the surface of the water during Deep Water Horizon in 2010. These volumes were estimated using field-based calculations by taking the product of the estimated burn area (ft²), burn duration (min) and burn rate (in/min). This method is based on an assumption of a uniform area of burn based on the fractional fullness of oil in the boom. Furthermore, it is also dependent upon the type of oil, level of emulsification and weathering, and an estimation of the thickness. The manual calculations are labor intensive and time consuming, and the resulting volumes still only represent a volumetric estimation. In a lab setting, burn efficiency can be calculated more accurately by calculating the difference between the initial mass of oil and the mass of the residue divided by the initial mass of the oil. Measurements of initial and residual masses of oil in the actual spill environment are not feasible. Accurate volumetric calculations are needed to quantify actual quantities of oil removed from the water using this response technique in order to account for the overall amount spilled and as a metric of success of the response technique. The proposed method to volumetrically quantify burned oil utilizes acoustics to measure the thickness of the oil slick and real-time burning area detection techniques using enhanced optics and infrared imaging, thus yielding a more precise burn efficiency.

Impact of Dissemination: This information product is considered by the BSEE to be Influential Scientific Information.

Timing of Review: November 2016 – June 2017

Manner of Review, Selection of Reviewers, and Nomination Process: Review will be facilitated by an independent third party. The review will be conducted by individual e-mail/letters/memoranda/documents. Reviewers will be selected pursuant to the requirements in BSEE's Peer Review Process Manual.

Expected Number of Reviewers: A structured process to select three (3) peer reviewers who are independent (i.e., not involved with the report reviewed), objective, unbiased, and have significant expertise in the subject matter will be employed.

Requisite Expertise:

The panel of reviewers shall have expertise in acoustic measurement, photogrammetric measurement techniques, and knowledge of *in situ* burning in open water conditions. The panel of peer reviewers shall achieve an optimum level of expertise across the spectrum of issues, balance and independence while minimizing any potential conflicts of interest.

Opportunity for Public Comment: No, the opportunity for public comment is not formally incorporated into the BSEE peer review plan for the peer review of this document.

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