Briefing for EPA Personnel Participating in Brooks McCall and Ocean Veritas Cruises:

General Responsibilities

Your primary responsibility aboard the vessel is oversight of the Responsible Party's compliance with EPA directives (please find the relevant directives attached). You may be asked to assist NOAA with sample preparation, chain of custody, and data management activities.

To fulfill your oversight responsibility, please provide the following two reporting items to Brandi Todd EPA R6 daily:

1. **List of observations and concerns regarding the Responsible Party's activities aboard the vessel.**
2. **Photographs of Responsible Party's operations accompanied by a brief description, date, and location.**

Safety

EPA cruise participants are required to have 40hr. HAZWOPER training. In the event that you are not current in this training, please alert Brandi Todd.

Hazards encountered aboard the vessel will include standard vessel operations hazards and possible exposure to volatile organic carbons. A safety briefing onboard will cover the standard vessel operations hazards.

An Industrial Hygienist (IH) will be available aboard your vessel. The IH will be responsible for the implementation of the air monitoring program onboard and will advise you in the event that respiratory protection is needed. Should you have concerns about the onboard air monitoring program or its implementation, please consult the IH and alert Brandi Todd of your concerns.

Please bring the following safety supplies with you:

Steel toes	Safety goggles
Hard hat	Respirator
Safety vest	Organic vapor cartridges (10-20)

Contact

Email and Satellite phone will be available forms of communication.
Your shoreside contact is Brandi Todd.
She may be reached at 972-974-2971 and Todd.Brandi@epa.gov

6042311

Dispersant Monitoring and Assessment Directive

I. Plume Monitoring and Assessment Plan for Subsurface Dispersant Application

BP shall implement the approved Dispersed Plume Characterization Plan for Subsurface Dispersant Application. Part 1 of the plan is a "Proof of Concept" to determine if subsurface dispersant operation is chemically dispersing the oil plume. Once the "Proof of Concept" test is complete, the results will be reviewed by the RRT for a decision to proceed or not proceed with Part 2 of the plan. Part 2 of the plan involves robust sampling to detect and delineate the dispersed plume Part 3, entitled "Subsurface Injection of Dispersant", outlines the operational procedures. Additional guidance will be provided by the RRT coordination group on specific implementation of this directive and that guidance will be considered an addendum to this directive.

At least 24 hours prior to the testing, use and/or application of any subsurface dispersants, BP shall provide a *Dispersant Application Plan* that identifies the dispersants to be used, describes the methods and equipment used to inject the dispersant, plume model to assure representative sampling, proposed method of visual observation, process for determining the effectiveness of subsurface injection, the specific injection rate (i.e., gallons/minute), the total amount to be used for the duration of the test, the total length of time that dispersant is injected, and the plan for sampling and monitoring, as approved by the Unified Command Environmental Unit. Dispersants must be on the approved product schedule and suitable for this use.

All data shall be provided to the United States Coast Guard (USCG) Federal On-Scene Coordinator, and the Environmental Protection Agency (EPA) Regional Response Team (RRT) representative within 24 hours of the information being received. This data includes real time monitoring, laboratory analysis, documented observations, photographs, video, and any other information related to subsurface dispersant application.

BP shall conduct Part 1 monitoring and collect the data outlined below to determine dispersed plume concentration and transport. BP shall conduct Part 2 monitoring and collect the data outlined below, which will be sustained and more comprehensive, to address plume fate and effects on aquatic life from the dispersed plume and chemical dispersants based on the results of Part 1 and iterative hydrodynamic modeling output. * ROTIFER ONLY

Timing: BP shall commence Part 1 monitoring when subsurface application of dispersant is initiated. BP shall ensure that the R/V Brooks McCall or equivalent on location is outfitted, and manned before subsurface application commences.

RDC for SC

Part 1

BP shall design and implement a Part 1 monitoring plan to determine the factors needed to calculate dispersion effectiveness, namely, % oil, % water, % dispersant. This phase of

DROPLET AJJ MEL

sampling should determine the factors to predict buoyancy; namely bubble sizes, density (or specific gravity) along the thermal gradient of the water column, and kinematic viscosity. RDC for SC

Part 2

IF PART 1 IS SUCCESSFUL AND CONTINUOUS SUBSEA INJECTION PROCEEDS

BP shall design and implement a Part 2 monitoring plan to collect and report, on a daily basis, the data and information described below. BP shall submit this plan to the FOSC and EPA RRT Co Chair for approval and shall begin implementation upon notice from the Coast Guard and EPA. BP shall continue implementation of this plan until further notification from the Coast Guard and EPA. [1] AJJ MEL RDC for SC

BP's monitoring plan shall include a more thorough oil analysis, to enable EPA to determine whether the dispersed plume is toxic to aquatic life. This plan shall be designed and implemented to determine whether the dispersed oil will hang in the water column and eventually come in contact with the benthos as it approaches land. BP has the option of conducting this particular monitoring and analysis as part of Part 1 if so desired.

PART 1 – Proof of Concept – Data Collection Requirement

- Towed Fluorometer at 1 meter
- LISST Particle Analysis at various intervals from surface to 550 meters
- Dissolved Oxygen at various intervals from surface to 550 meters
- CTD – Conductivity, Temperature, and Depth at various intervals from surface to 550 meters
- Water sampling from surface to 550 meters for PAH analysis
- Aerial Visual Observation - WEATHER PERMITTING AJJ MEL RDC for SC

PART 2 – Characterization Plan – Data Collection Requirement

- Cast Fluorometer – surface to sea floor
- LISST Particle Analysis at various intervals from surface to sea floor
- Dissolved Oxygen at various intervals from surface to sea floor
- CTD – Conductivity, Temperature, and Depth at various intervals from surface to sea floor
- Water sampling from surface to 550 meters for PAH analysis
- Aerial Visual Observation
- Rototox toxicity testing
- UV-Fluorescence testing to meet objectives in Appendix A

PART 3 – Subsurface Injection of Dispersant – Parameter Requirements

- Type of dispersant to be used

[1] See Appendix A for further background

- Rate of dispersant injection
- Process for monitoring pumping rate
- Procedures for FOSC to start and stop injection

Evaluation Criteria to Determine Operational Shut-Down of Subsurface Sea Dispersant Application:

The Federal On-Scene Coordinator will immediately convene the Regional Response Team (RRT) when either of the following conditions is reported:

1. If there is a significant reduction in DO from background to below 2 mg/L; or

2. If EPA's interpretation of the toxicity test reveals excessive exertion of a toxic response. To determine a measurable toxic response, BP must first perform a rangefinder test since the collection of the sample will be directly from the toxic plume, and any sample from the plume will likely kill 100% of the test population. Therefore, the rangefinder must first be conducted to determine an order of magnitude dilution that gives a measurable response. Then, a more refined dilution procedure must be done to get the final LC50 answer. This result will be compared to a NOAA plume model that would predict when or where exertion of that toxic response would take place. EPA and NOAA will interpret the results of the toxicity tests to inform determination of a shutdown decision.

ONLY APPLIES TO PART 2
MEL
RDC for SC

The RRT will evaluate the conditions above, in addition to all relevant factors including shoreline, surface water, and other human health and ecological impacts, to determine whether subsurface dispersant application should be shut down.

Limitations to Address

BP shall include in its monitoring plan provisions to address and minimize the impact of the following challenges:

1. Timely transport of samples to labs where necessary, which may be subject to weather and/or operational delays.
2. Sampling in the deep sea environment may pose challenges due to equipment limitations and malfunctions.

Quality Assurance and Sampling Plan Requirements

BP's plan shall include sample collection methodology, handling, chain of custody and decontamination procedures to ensure the highest quality data will be collected. Discrete samples shall be tested at an approved lab(s). ~~Triplicate~~ samples shall be tested. All samples (or as practicably possible) shall be archived for potential future analysis. Where technically possible, all samples shall be at least 100 ml.

TRIPLICATE NOT POSSIBLE
DUPLICATES ONLY
MEL
RDC for SC

BP shall include the following components and criteria in its Sampling Plan:

1. An Introduction, to include project objective and project staff
2. A brief site description and background
3. A description of the Sampling Approach and Procedures, to encompass:
    a. A brief overview of sampling activities, data quality objectives, and health and safety implementation strategies (frequently, this references another specific document, but must be included).
    b. The actual sampling and/or monitoring approach, to ensure repeatability and consistent procedures. Describe sampling, monitoring, sampling and field QC procedures, spoil or waste disposal procedures resulting from this effort, as well as specimen/data handling issues.
    c. Sample management – how the sample will be procured, handled, and delivered
    d. Sample instructions- preservation, containers, and hold times

4. The analytical approach – what lab tests will be run, any special instructions, how the data will be verified, and how data will be reported.
5. Quality Assurance- custody procedures, field records including logs, chain of custody, qualitative data handling including photographs.

II. Special Monitoring of Applied Response Technologies ("SMART") Protocol for Surface Application of Dispersants

BP shall immediately implement the Special Monitoring of Applied Response Technologies ("SMART") Protocol (attached as Appendix B) at the Tier III level for surface application of dispersants. Results from Tier III monitoring must be shared with the Area Command Environmental Unit. If Tier III is not deemed to be sufficient, further direction will be provided.

Mary E Landry Date: 5/9/10

Mary E. Landry
Rear Admiral, USCG
Federal On-Scene Coordinator

Samuel Coleman Date: 5/9/10

Samuel Coleman, P.E.
Director
Superfund Division
U.S. EPA Region 6
Dallas, TX 75202

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NOT APPLICABLE TO SUBSEA DISPERSION MEL

RDC for SC

Mary E Landry Date: 5/10/2010

Mary E. Landry
Rear Admiral, USCG
Federal On-Scene Coordinator

Date: _____

Samuel Coleman, P.E.
Director
Superfund Division
U.S. EPA Region 6
Dallas, TX 75202

5-10-10

Appendix A –Background for Part 2 Methodology for Informational Purposes

The fact that many organic compounds fluoresce at specific excitation and emission wavelengths is the basis for identifying many of the components of crude oil in seawater. When subject to excitation at 245-280 nm, polycyclic aromatic hydrocarbons (PAH) fluoresce over wavelengths of 310 to > 400 nm, depending on the number of aromatic rings in the structure. Only one group has examined the 2D UV Fluorescence Spectroscopy (UVFS) spectra of oil treated with chemical dispersants, the Ken Lee group at Fisheries and Oceans Canada (DFO). They found that a fixed excitation wavelength of 280 nm works best for fluorescence of PAHs in crude oil, and two different emission wavelengths, one at 340 nm for 1-and 2-ring PAHs and the other at 445 nm for 3-ring and higher PAHS, provide an excellent fingerprint for differentiating chemically dispersed oil from non-dispersed oil. As oil gets dispersed due to the action of a chemical dispersant, the peak height at 445 nm becomes highly pronounced relative to the peak height at 340 nm. Thus, computing the ratio of peak height at 340 to the peak height at 445 gives a direct measurement of the degree of dispersion that has taken place as a result of applying a dispersant to an oil.

The effect of oil dispersion on UVFS spectra can be expressed in terms of an emission ratio, so that dispersion can be tracked without having to measure oil concentration. The spectral changes associated with the application of dispersant can also be calibrated to quantify increasing oil or oil plus dispersant. The fact that UVFS and UVA data are comparable at an emission intensity of 445 nm or over the whole spectrum of intensities (from 300 - 500 nm) indicates that the fate of higher molecular weight (> 3-ring) PAH fractions - the more "dispersible" fraction of an oil slick - will provide a good idea of the fate of the oil as a whole during the dispersion process. Given that higher molecular weight PAHs may be associated with many of the persistent (or chronic) toxic effects of crude oils on marine organisms, the ability of UVFS to track "dispersible" fractions would make it a particularly useful tool in studies of the long-term toxic effects of dispersed oil.

Dispersant Monitoring and Assessment Directive – Addendum

This is an addendum (Addendum 2) to the Dispersant Monitoring and Assessment Directive issued on May 10, 2010, and Addendum 1 issued on May 14, 2010 by the U.S. Coast Guard (USCG) and the Environmental Protection Agency (EPA) to BP. The requirements in this Addendum 2 apply to Parts 1 and 2 of the May 10, 2010 Directive and are in addition to the requirements of that Directive. BP shall commence Parts 1 and 2 requirements before subsurface application of dispersant is initiated and continues the Parts 1 and 2 requirements, Addendum 1, and this Addendum 2 until cancelled or modified by the USCG and EPA.

Alternative Dispersant additional Requirements:

1. Sampling of dispersant/oil and oil-only waters must be continued per the Directive, and in addition, baseline data of waters without direct application of dispersant or oil shall also be collected by BP. Monitoring of subsurface dispersant application by BP shall be performed from a vessel capable of performing all requirements of the May 10, 2010, Dispersant Monitoring and Assessment Directive and Addendum 1 on each day that dispersant is applied. As used in this Addendum 2, a "day" shall mean a calendar day.
2. Within 24 hours of the issuance of this Addendum 2, BP shall identify to the FOSC and the EPA RRT Co-chair for EPA's and the FOSC's approval, one or more approved dispersant products from the National Contingency Plan Product Schedule that are available in sufficient quantities, are as effective at dispersing the oil plume, and have a toxicity value less than or equal to 23.00 ppm LC50 toxicity value for Menidia or 18.00 ppm LC50 for Mysidopsis, as indicated on the NCP Product Schedule (http://www.epa.gov/oem/content/ncp/tox_tables.htm). The less toxic dispersant product(s) shall be used by BP for surface application and subsurface application as directed by the FOSC. Within 72 hours after submitting the list of alternatives, and after receiving EPA approval, BP shall immediately use only the approved alternative dispersant. Should BP not be able to identify alternative dispersant products, BP shall provide the FOSC and EPA RRT CO-Chair a detailed description of the products investigated, the reason the products did not meet the standards described above. Availability shall be based on new existing stockpiles of dispersants, the estimated time to begin and aerial and subsurface application, time for manufacturing, shipping, and warehousing.
3. The effectiveness of the dispersant in subsurface application shall be determined as specified in Directive 1 Part 1, and Part 2. Dispersant application can be applied subsurface if, and only if, daily monitoring is performed.
4. BP shall provide 48 hours advanced notice of departure and trip duration timelines of the monitoring vessel to the FOSC and the EPA RRT Co-chair.
5. Monitoring data on the use of the less toxic dispersant product(s) shall be reported by BP to the FOSC and the EPA RRT Co-chair on a daily basis. This reporting shall include a sample tracking table. Daily data reports shall thereafter be provided by BP to the FOSC and the EPA RRT Co-chair as soon as practicable on the day following use of the less toxic dispersant product(s) by BP, but in no event later than 24 hours after use.

Mary E Landry, RADM FOSC Date: 5/19/2010 2135

Mary E. Landry
Rear Admiral, USCG
Federal On-Scene Coordinator

Sam Coleman Date: 5/19/2010 9:35pm

Samuel Coleman, P.E.
Director, Superfund Division
U.S. EPA Region 6
Dallas, TX 75202