MEMORANDUM OF UNDERSTANDING

Between

U.S. Coast Guard District 5 (USCG)

and

U.S. Environmental Protection Agency Region III (EPA)

and

U.S. Department of Commerce/
National Oceanic and Atmospheric Administration (DOC/NOAA)

and

U.S. Department of the Interior (DOI)

and

State of Delaware Department of Natural Resources
and Environmental Control (DE DNREC)

and

State of Maryland Department of the Environment (MDE)

and

Commonwealth of Virginia Secretary of Natural
Resources (VASNR)

PURPOSE

This Memorandum of Understanding (MOU) complies with Section 4202 (a) of the Oil Pollution Act of 1990 (OPA 90), which states in part that the Area Contingency Plan shall describe the procedures to be followed for obtaining an expedited decision regarding the use of dispersants in responding to oil discharges.[1] This MOU also provides procedures for obtaining an expedited decision regarding the use of surface collecting agents and biological additives (i.e., "mitigating devices" in accordance with Section 4202) as identified and discussed in Subpart J of the National Contingency Plan (NCP). Dispersants, surface collecting agents,

[1] Oil means oil of any kind or in any form, including but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredge spoil, but does not include petroleum, including crude oil or any fraction thereof, which is specifically listed or designated as a hazardous substance under subparagraph (A) through (F) of section 101(14) of the CERCLA (42 U.S.C. 9601) and which is subject to the provisions of that Act. Referenced OPA 1990, NCP 1990.

and biological additives will be referred to as "chemical countermeasures" for the purposes of this MOU.

This MOU provides preauthorization for the use of chemical countermeasures by the Federal On-Scene Coordinator (FOSC). This preauthorization applies only in the Federal Region III portion of designated zones in the Captain of the Port Hampton Roads (COTP HR) geographic area of responsibility and in the Federal Region III portion of the Captain of the Port Philadelphia (COTP PHI) geographic area of responsibility. Preauthorization is subject to the conditions of this MOU, which include: the general conditions set forth in the protocols section of this MOU, the Zone specific conditions set forth in Annex I to this MOU, and the conditions for trial use set forth in Annex III to this MOU.

AUTHORITY

Subpart J of the NCP provides that the FOSC, with the concurrence of the EPA representative to the Regional Response Team and the States with jurisdiction over the navigable waters threatened by the oil discharge, and in consultation with the U.S. Department of Commerce (DOC) and U.S. Department of the Interior (DOI) natural resource trustees, may authorize the use of chemical countermeasures on oil discharges; provided, however, that such chemical countermeasures are listed on the NCP Product Schedule. The U.S. Environmental Protection Agency (EPA) has been delegated authority to maintain a schedule of chemical countermeasures that may be authorized for oil discharges in accordance with procedures set forth in Section 300.900 of the NCP.

Commander, Fifth Coast Guard District, has pre-designated the USCG COTP HR as the FOSC for oil discharges in the COTP HR zone and the USCG COTP PHI as the FOSC for oil discharges in the COTP PHI zone (as defined in 33 CFR Part 3 and subject to joint response boundary agreements with EPA), and has delegated to each COTP the authority and responsibility for compliance with the Federal Water Pollution Control Act (FWPCA).

The Governor of the State of Delaware has designated the Secretary of the Department of Natural Resources and Environmental Control (DE DNREC) the authority and responsibility for providing approval for the use of chemical countermeasures for control of oil spills in or affecting Delaware waters.

The Governor of the State of Maryland has designated the Secretary of the Department of the Environment (MDE) the authority and responsibility for providing approval for the use of chemical countermeasures for control of oil spills in or affecting Maryland waters.

The Governor of the Commonwealth of Virginia has designated the

Secretary of Natural Resources (VASNR) the authority and responsibility for providing approval for the use of chemical countermeasures for control of oil spills in or affecting Virginia waters.

This MOU constitutes preconsultation and preconcurrence by all signatories for the approval for use of chemical countermeasures within the preapproval areas subject to conditions of this MOU and its annexes.

The use of response measures addressed by this MOU are subject to compliance with the consultation requirements of Section 7 of the Endangered Species Act, as amended. Annex V lists the specific products for which formal pre-incident consultation has already been completed. Consultation for products not listed in Annex V would be accomplished on an incident specific basis prior to their use.

The Dispersant Employment Evaluation Plan (DEEP) of the Region III Regional Contingency Plan (RCP) states that "concurrence is required from the affected state(s), DOI, DOC and EPA." It further states that "where hazards to human life exist, the regulations in Subpart J of the NCP apply and the FOSC may authorize dispersant use without regional concurrence network approval." Similarly, these regulations also permit the FOSC to use surface collecting agents and biological additives to prevent or substantially reduce a hazard to human life.

SCOPE

The USCG, EPA, DOI, DOC, DE DNREC, MDE and VASNR agree that the primary method of controlling discharged oil shall be the physical removal of the oil from the environment. These agencies recognize that in certain instances timely, effective physical containment, collection and removal of the oil may not be possible, and the utilization of chemical countermeasures, alone or in conjunction with mechanical removal methods, may be considered as a means to minimize substantial threat to public health or welfare, or minimize serious environmental damage. This MOU establishes criteria under which chemical countermeasures listed on the NCP Product Schedule may be used in waters of the COTP HR and COTP PHI zones. No biological agents will be used as a primary response measure.

The conditions of this MOU are applicable to all aspects of countermeasure use within waters under the jurisdiction of the COTP HR and COTP PHI zones. (See Figure 1). Four distinct Zones and their associated zone-specific conditions, which determine the nature of chemical countermeasure use in each Zone, are identified in Annex I. Zone specific conditions apply only to spills of 50 barrels or less, except in Zone 1, where specific conditions apply

to spills of any size.

PROTOCOLS

This MOU has been prepared based upon guidelines provided in Subpart J and Annex XI (DEEP) to the Region III RCP. Consistent with those documents, the FOSC shall:

a. Satisfy general conditions in this protocols section; and
b. Satisfy zone specific conditions in Annex I, as part of any decision to use dispersants, surface collecting agents and biological additives in responding to oil discharges; or
c. Satisfy the conditions for trial use in Annex III.

The FOSC shall arrive at his decision to use chemical countermeasures through the information gathering scheme and decision making process as detailed in Annex II of this document. In Zone 1, approved chemical countermeasures may be used by the FOSC without further concurrence or consultation.

The USCG, EPA, DOI, DOC, DE DNREC, MDE, and VASNR agree that the use of chemical countermeasures are subject to the following general conditions:

1. The designated representatives of all affected trustees and potentially affected trustees must be notified in advance of the proposed use of chemical countermeasures. Notification can be made by fax, phone or e-mail to a single contact point in each of the agencies. While response to these notifications is welcome, no confirmation of receipt of the notification or response to the notification is required from any of the agencies notified prior to commencing chemical countermeasures application in the pre-authorization zones. The FOSC shall provide the following information, to the extent available, plus any other available relevant information:

   a. Date, time, and location of the incident;
   b. Type and amount of oil discharged;
   c. Area affected;
   d. Projected area of impact of the oil if not treated;
   e. Reasons why chemical countermeasures have been selected; including resources at risk and a net environmental cost benefit analysis which addresses to the maximum extent possible, under the circumstances, trade-offs for use and non-use of chemical countermeasures in accordance with Annex II.
   f. Type of chemical countermeasure to be used;

g. Application method, rate, and amount;
h. On-scene weather observations;
i. Forecast weather conditions for the next 24 to 72 hours;
j. Human health issues and/or impacts of exposure and effects of the oil and/or countermeasure.

2. The use of chemical countermeasures may be considered by the FOSC only when such use is expected to prevent or minimize a substantial threat to public health or welfare, to prevent serious environmental harm or on small (50 barrels or less) spills of opportunity in Zones A, 2, and 3, and spills of any size in Zone 1, where the threat to sensitive natural resources is minimal and the conditions are less suitable to physical-mechanical removal. This will be done to further our knowledge and experience of oil/countermeasure behavior.

3. Any deployment of chemical countermeasures must be in accordance with a Unified Command approved countermeasure implementation plan submitted by the requesting party. A chemical countermeasures implementation plan , submitted by the party proposing to use a chemical countermeasure, briefly describes the chemical countermeasure proposed for use, quantity, application rate, application equipment and personnel, size of the area to be treated, health and safety precautions and monitoring arrangements.

4. A protocol for monitoring the environmental effects and the effectiveness of countermeasures must be prepared and approved prior to the application of any chemical countermeasure. Approved monitoring plans shall be attached to this document (See Annex IV, Dispersant Monitoring Protocol). Adherence to the monitoring protocol included in this MOU fully satisfies this requirement for dispersants. Other monitoring protocols shall be developed and required for other chemical countermeasures. The appropriate monitoring protocol shall be conducted and funded by the responsible party, the USCG in event of a mystery spill, or their designee. Monitoring plans will be updated as new information arises regarding the chemical products, ecological resources of the States, and monitoring technology. The responsible party must provide this written Preliminary Report on the effect and effectiveness of chemical countermeasures to the FOSC within 48 hours of application of any chemical countermeasure. (In the event of a trial application, refer to Annex III, Trial Use Policy.)

5. The U.S. Coast Guard and the States/Commonwealth shall cooperate to jointly develop a training program for state/commonwealth and federal observers who shall be responsible for assessing application effectiveness and documenting compliance with the countermeasures

implementation plan.

6. In the event that qualified State/Commonwealth or Federal observers discover and present documentation to the FOSC that the chemical countermeasures are not being used according to the countermeasure implementation plan, that monitoring is not occurring in accordance with the monitoring plan, or that the Trustees observe unanticipated harmful environmental effects, the FOSC will present such evidence to the unified command for the purpose of re-evaluating the decision to use the countermeasures. The FOSC may determine that further application of chemical countermeasures shall be suspended, should such a determination be warranted by the conditions.

7. The FOSC shall require the responsible party to submit a status report within 45 days after the initial application. The Status Report shall include preliminary data on the environmental effects and effectiveness of the chemical countermeasures used. A final written report on these effects and effectiveness shall be submitted not later than six months following the date of the countermeasure use.

AMENDMENTS

This Memorandum of Understanding may be amended in whole or in part as mutually agreeable to all parties thereto, including the annexes, by the Area Committees. Amendments are subject to the approval of the Regional Response Team (RRT) representatives from the EPA and the states/commonwealth, and the natural resource trustees.

CANCELLATION

This Memorandum of Understanding may be canceled in whole or in part by any of the participating agencies. Cancellation will take place 30 days following delivery of written notification to each of the agencies participating in this Memorandum of Understanding.

SIGNATURES

Dennis P Carney — 1/28/97

Mr. Dennis Carney
Chief, Removal Branch
U.S. Environmental Protection Agency, Region III
RRT III Co-Chair

Anthony Regalbuto — 27 JANUARY 1997

Captain Anthony Regalbuto
Chief, Marine Safety Division
Fifth Coast Guard District
RRT III Co-Chair

John E Veentjer — 1/30/97

Captain John E. Veentjer
Captain of the Port
USCG MSO Philadelphia
Fifth Coast Guard District

[signature] — 1/3./97

Captain Dennis A. Sande
Captain of the Port
USCG MSO Hampton Roads
Fifth Coast Guard District

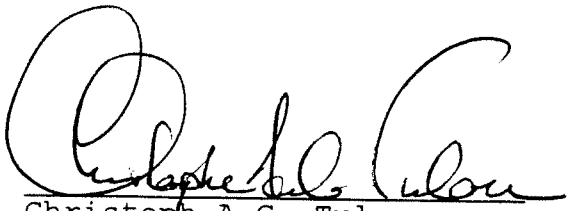
Don Henne — 1/30/97

Don Henne
Representative for RRT III
U.S. Department of the Interior

Gerald E Wheaton — 1/30/97

Commander Gerald Wheaton
Representative RRT III
U.S. Department of Commerce

SIGNATURES
(continued)



1.23.97

Christophe A.G. Tulou
Secretary
Department of Natural Resources & Environmental Control
State of Delaware

Date

SIGNATURES
(continued)

Jane Nishida

Jane T. Nishida
Secretary
Department of the Environment
State of Maryland

1-23-97
Date

SIGNATURES
(continued)

_____ _____

Becky Norton Dunlop
Secretary of Natural Resources
Commonwealth of Virginia

Date

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ITEMS FOR FUTURE CONSIDERATION BY COMMITTEE MEMBERS

1. Development of Annex V - Products with Completed Section 7 Consultation

ANNEX I

Preauthorization Zones and Zone-Specific Conditions

Chemical countermeasures listed in the NCP Product Schedule may be used in spill response within the following areas, provided all of the general conditions listed in the protocols are satisfied, as well as all special conditions set forth below. (See map at end of Annex I for Zone locations)

PREAPPROVED ZONES

Zone A. BIG STONE BEACH ANCHORAGE in the Delaware Bay. The four corner points of which are: 38°53'57" N., 75°08'00" W., thence northwesterly to 39°01'22" N., 75°13'25" W., thence southwesterly to 39°00'49" N., 75°14'57" W., thence southeasterly to 38°53'22" N., 75°09'26" W., thence northeasterly to the point of beginning. (33 CFR 110.157)

Limited preauthorization

The effects of the circular Delaware Bay current patterns in the Big Stone Beach Anchorage toward the channel side of the 15 meter contour are conducive to chemical agent use on spills of 50 barrels or less. The use of chemical countermeasures on spills of 50 barrels or less, or 50 barrel or less portions of larger spills, is approved, provided the former is a spill of opportunity and the latter is for trial use only. Trial use applications must satisfy the conditions of Annex III.

Whether a spill of opportunity or a trial use application, the FOSC shall immediately notify State and Federal trustees of the decision to deploy, and provide information specified in the Protocols sections of this MOU. In addition, the FOSC will prepare and provide a written report detailing the results (i.e., effectiveness) of the deployment within 60 days of termination of the response.

Zone 1. COTP HR AND COTP PHI SUBREGIONAL AREA, the offshore waters under the jurisdiction of COTP HR AND COTP PHI (as defined in 33 CFR §3.25 - 05 & 10) that lie 3nm and seaward of the Territorial Sea Baseline (as defined

in 33 CFR 2.05-10) along the coasts of Virginia, Maryland, and Delaware, (south of the demarcation of the jurisdiction of Region II) to the outermost extent of the Exclusive Economic Zone.

Advanced preauthorization

The water depth and surrounding topography of this area are suitable for the use of chemical agents. Preauthorization is granted with respect to spills of any size.

Zone 2. COASTAL WATERS WITHIN THE COTP HR AND COTP PHI SUBREGIONAL AREA - Greater than 0.5 miles from shore and water depth greater than 40 feet (12.2 meters) along the coasts of Virginia, Maryland, and Delaware (south of the demarcation of the jurisdiction of Region II). All bays and coves are excluded from this zone, with the exception of Zone A. Specifically, the demarcation of the Delaware and Chesapeake Bays is as follows:

Delaware Bay
A line between Cape May Point lighthouse on the southern shore of New Jersey and Cape Henlopen light on the northern shore of Delaware.

Chesapeake Bay
A line between Cape Charles lighthouse on the Eastern Shore of Virginia and Cape Henry light in Virginia Beach, Virginia.

Concurrence required for Operational Use

Chemical countermeasures may be used in waters that are at least 0.5 nautical miles from any shoreline and where the water depth is greater than 40 feet (12.2 meters).

Before authorizing operational use of chemical countermeasures in Zone 2, the FOSC must establish deliberative communication with the EPA DOC, DOI, and affected State/Commonwealth representatives for concurrence. The FOSC may establish a time frame, not less than four hours, in which non-concurrence must be communicated. This time frame will commence once

deliberative communications have been established with the designated representative. Trial use applications must satisfy the conditions of Annex III.

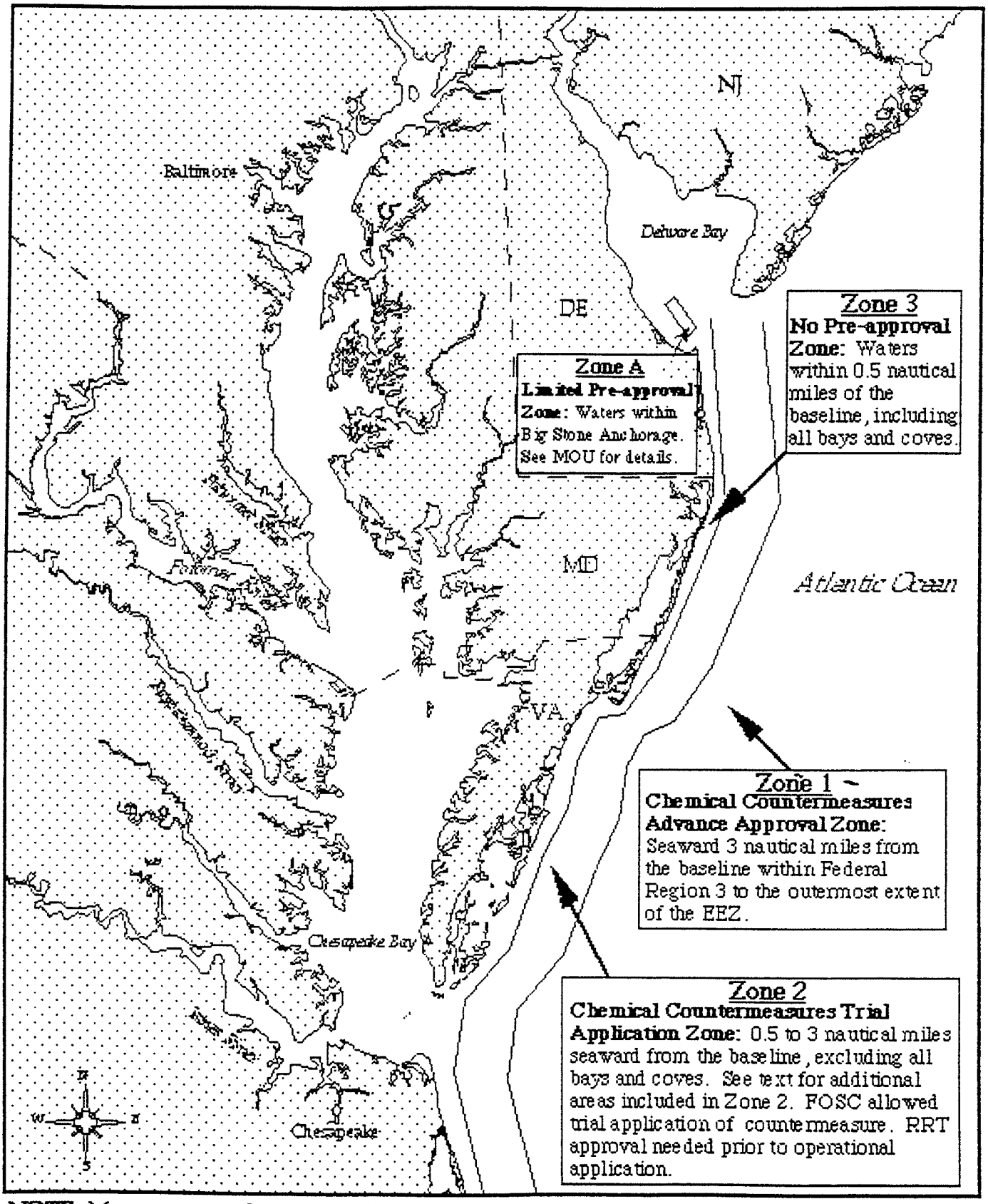
Zone 3. NEARSHORE WATERS WITHIN THE COTP HR AND COTP PHI SUBREGIONAL AREA - Less than 0.5 miles from shore or water depth less than 40 feet (12.2 meters), beyond the inland waters demarcation line along the coasts of Virginia, Maryland, and Delaware (south of the demarcation of the jurisdiction of Region II).

Concurrence Required for Operational Use

Dispersants are not a primary tool in this zone. Before authorizing operational use of chemical countermeasures in Zone 3, the FOSC must establish deliberative communication with the EPA DOC, DOI, and affected State/Commonwealth representatives for concurrence. The FOSC may establish a time frame, not less than four hours, in which non-concurrence must be communicated. This time frame will commence once deliberative communications have been established with the designated representative. Trial use applications must satisfy the conditions of Annex III.

For spill response in Sensitive Areas, defined as natural resources which could be irretrievably damaged by contact with discharged oil, and identified in the Hampton Roads and Philadelphia ACPs, application of dispersants may be appropriate. In such cases, the FOSC may establish a time frame, not less than four hours, in which non-concurrence must be communicated. This time frame will commence once communications have been established with the designated representatives.

Region III Chemical Countermeasures Authorization Zones



NOTE: Map zones not drawn to scale

Figure 1

Memorandum of Understanding concerning Preauthorization of Chemical Countermeasures in federal Region III.

ANNEX II
CRITICAL DECISION MAKING DATA

		SOURCE
A.	Spill Data:	
1.	Circumstances (fire, grounding, collision, etc.)	FOSC/ER
2.	Time/Date of incident	FOSC/ER
3.	Location of spill	FOSC/ER
4.	Type of oil product	FOSC/ER
5.	Volume of product released	FOSC/ER
6.	Total potential of release	FOSC/ER
7.	Type of release (instantaneous, continuous intermittent, etc.)	FOSC/ER
B.	Weather and water conditions/forecasts:	FOSC/NOAA-SSC
1.	Air temperature, wind speed, direction	FOSC/NOAA-SSC
2.	Tide and current information	FOSC/NOAA-SSC
3.	Sea conditions	FOSC/NOAA-SSC
4.	Water temperature and salinity	FOSC/NOAA-SSC
5.	Water depth and depth of the mixed layer	FOSC/NOAA-SSC
C.	Oil trajectory information:	SSC
1.	24/48-hour surface oil trajectory forecast	SSC
a.	surface area of slick	
b.	expected area of landfall	
2.	24/48-hour dispersed oil trajectory forecast:	SSC
a.	oil movement in water column	
b.	surface oil movement and expected landfall	
c.	anticipated concentration of the chemical/oil mixture in the water column	
D.	Characteristics of selected chemical countermeasures application methodology and shoreline data	FOSC
1.	Name	FOSC
2.	Manufacturer	FOSC
3.	Amount available	FOSC
4.	Characteristics	FOSC
a.	toxicity, natural (living) resource or human	FOSC
b.	effectiveness	
c.	reactions	
d.	applicability to spill (efficacy test results)	FOSC
5.	Application	
a.	method(s)	
b.	estimated time required to execute response	FOSC
c.	optimum treatment window __/ __/ __ to __/ __/ __ (DTG)	FOSC
6.	Location of the area to be treated	FOSC
7.	Estimated time interval between chemical or biological agent application and contact with sensitive environment/resources	

ANNEX II (continued)

8. Estimated distance between application of chemical or biological agent and sensitive environment/resources

9. Human impact hazard assessment (risk), protective measures required (if any)

E. Habitats and resources at risk — SOURCE
(Consider chemically-treated spill versus untreated spill)

1. Shoreline habitat type in predicted area of impact — States

2. Resources at risk: — States
   a. endangered/threatened species (state and Federally designated)
   b. critical habitats for the above species
   c. marine animals (pupping, migration)
   d. waterfowl and other bird use (nesting, migration)
   e. shellfish (spawning, harvesting)
   f. finfish (spawning, release migration, harvest)
   g. commercial use (aquaculture, water intakes, etc.)
   h. public use area (parks, beaches, marinas, holidays, etc.)
   i. other resources of specific significance (cultural, historical, natural and artificial reefs etc.)
   j. other sensitive areas as defined in 7:1E-1.8

NOTE: (_____) indicates seasonal considerations

F. Critical Questions — States/trustees

1. Can the predicted threat to endangered/threatened species, marine mammals, and waterfowl be lessened?

2. Will the damage to habitats and resources resulting from chemical countermeasure (dispersion) be less than those resulting without chemical countermeasures?

3. Are adequate monitoring capabilities and protocols in place (proposed) for this treatment location?

4. If recreational, economic, and aesthetic considerations are a higher priority than natural resource considerations, what is the most effective means for their protection?

ANNEX II (continued)
CRITICAL DECISION MAKING DATA

G. Recommendations to the FOSC — States/trustees

1. Do not use requested chemical or biological countermeasure (dispersants).

2. Use chemical or biological countermeasures (dispersants) on a trial basis, but not as a full-scale control or cleanup technique (To evaluate chemical for future use on this or other spills)

3. Use chemical or biological countermeasures (dispersants) in limited or selected areas as follows

4. Use requested chemical or biological countermeasures (dispersant) to the maximum extent feasible

ANNEX III
TRIAL USE POLICY

Subject to the General Conditions in the PROTOCOLS Section of this MOU

The FOSC is authorized to allow application of chemical countermeasures listed in Annex V on a trial basis within the COTP HR and COTP PHI areas of jurisdiction and not otherwise prohibited.[1] Trial application will only take place on an area of the spill covered by 50 barrels or less to determine the product's effect on the specific oil under the current set of environmental and meteorological conditions.

The trial application may begin prior to the initial request of the RRT for operational use of the chemical countermeasure on a greater portion of the spill. The requirement for a monitoring protocol is waived for trial use applications. The initial trial application will be supervised by a trained observer (i.e. USCG Strike Team, NOAA Scientific Support Coordinator, etc.) and be reported only as a qualitative visual observation (pass/fail). Results of the trial will be reported to the RRT as soon as they are available. A trial use with positive results shall not mean that the chemical agent may automatically be extensively applied as there are many other factors to be weighed in the decision process.

This trial application is solely for the purpose of determining if the time and effort should be expended to seek further clarification of the issues. If the trial application fails to produce significant results the request for further use will not be made. It will be the responsibility of the Area Committees to designate restrictions to this policy.

Note: Trial use in Zone 3 is subject to concurrence steps outlined for operational use in Annex I.

[1]This Trial Use Policy does not apply to the use of chemical countermeasures in fresh water.

ANNEX IV

DISPERSANT MONITORING PROTOCOL
REGIONAL RESPONSE TEAM III
February 24, 1994
Revised May 18, 1995

REFERENCES: (A) EPA Sediment Sampling Procedure 2016
(B) EPA Benthic Sampling Procedure 2032
(C) Oil Spill Handling Transmittal Guide, USCG
(D) Petroleum Hydrocarbons, Total Recoverable, Method 418.1 (Spectrophotometric, Infrared)
(E) Oil and Grease Extraction Method for Sludge Samples, Method 9071, September 1988.

OBJECTIVES:

The Regional Response Team (RRT) has developed this protocol to monitor the deployment of chemical dispersant during oil spill response actions in marine and estuarine waters. The monitoring protocol is designed to assess movement of dispersed oil from the water surface into the water column and bottom sediments, and to provide data for analysis of potential biological effects.

Adoption of this protocol does not constitute a decision to use dispersant. Such decisions are the result of separate RRT agreements (pre-approval) or incident specific discussions.

This protocol eliminates the need to develop incident specific monitoring requirements during an ongoing spill and in addition to satisfying the stated objectives, is intended to expedite chemical dispersant response actions. This protocol is not intended to replace a Natural Resource Damage Assessment.

BACKGROUND:

The RRT has developed the following monitoring protocol to enable rapid response to oil spills. Eliminating the need to develop incident specific monitoring requirements and providing the On-Scene Coordinators (OSC) with the information necessary to plan for dispersant use should expedite responses.

OSCs must always be prepared to respond to an oil spill with all available equipment, personnel and technology to reduce the impact from spills. The Oil Pollution Act of 1990 provides for the formation of Area Committees that shall, under the direction of the OSC, enhance State and local oil contingency planning by developing appropriate procedures for use of dispersants. Dispersant technology has been recognized as a potential method of reducing the impact to the shoreline environment from accidental oil spills. In order to effectively utilize this

technology, a protocol must be in place before a spill to identify the requirements for monitoring the dispersant application.

This dispersant monitoring protocol will:

1. Provide scientific background information regarding the spill, dispersant utilization and effects. This will provide natural resource trustees with information crucial to their impact trade-off decisions. The data gained will assist with subsequent damage assessment responsibilities.

2. Provide the OSC with the requirements of a monitoring program so that advance planning and coordination may occur. The data will also assist officials with support regarding post incident challenges.

3. Establish an education program for future learning regarding dispersant application. This will assist in reviewing dispersants as a permanent response tool.

The RRT established the requirement to monitor all dispersant applications. The requirement is not to delay the effective application of the product, but will enhance the scientific and educational values for the future. This protocol is presently established to gain knowledge in dispersant usage and will require review and updating as better information and data are gathered. As most oils must be dispersed within approximately 48 hours after a spill begins, rapid response is a necessity. Rapid response can not be insured unless a monitoring protocol is in place which accurately assesses movement of dispersed oil and potential biological effects. This monitoring protocol does not establish limits by which dispersants are applied or not applied, but identifies a sampling protocol to monitor movement of dispersed oil and obtain general information on biological effects.

The monitoring protocol established here will be impacted by incident specific variables. Spill size, spill dimensions, weather, direction of trajectory and depth of water all provide variables to the planned monitoring. Incident specific directions will be required from the OSC, in consultation with state and federal agencies, regarding monitoring. The plan should be initiated promptly whenever the OSC authorizes the use of dispersants on an oil spill. Implementation of the plan shall not interfere with the spill cleanup. Should unforeseen circumstances make it impossible to implement this monitoring plan in whole or in part during or subsequent to authorized dispersant application, the OSC shall advise the incident specific RRT as soon as possible.

Equipment required for monitoring:

The following equipment will be necessary to conduct the monitoring protocol. The equipment listed will only provide one monitoring platform. In the instance of larger spills where extensive monitoring is required, the OSC may need to consider additional platforms. It is not envisioned in this program that each and every dispersant application pass is individually monitored. For planning purposes, it takes 1.5 hours to perform the six-point sampling protocol. Collection of sediment grab samples and benthic invertebrate samples will take additional time but are not time sensitive.

a. Aircraft for air surveillance of the dispersant application and for initial guidance and direction of vessels conducting the monitoring program. No specific type of aircraft must be used.

   Rotary or fixed wing aircraft are suitable for the job. The aircraft used must be able to communicate with vessels in the area. Portable radios are often sufficient to meet this requirement.

b. A boat large enough to conduct required sampling. Large vessels with on board scientific equipment may be employed, but are not required. Immediate analysis of the water samples is not a requirement. Boats approximately 23 ft. in length, radar and electronic navigation system equipped, provide sufficient capacity. Any work from boats should take into account the existing and predicted weather conditions and location when determining a suitable platform. Oftentimes offshore spills have several large vessels attending much smaller vessels conducting actual work. Vessels are likely to require aircraft to lead them to the dispersant application site.

c. A fluorometer with the appropriate filter and capability to take samples at 1, 3 and 10 meters depth. The supply line should be fitted with a valve at the unit so that immediate water samples can be drawn with positive fluorescent readings.

d. Water sample bottles, one liter, Teflon lined screw caps and amber in color. A minimum of 120 bottles should be readily available.

e. Ice chest with ice for keeping samples cool during transit to laboratory.

f. 35mm camera with film.

g. Video camera with one cassette.

h. Radios for various monitoring platforms. One radio per platform should be sufficient.

i. Drift buoy for estimating the dispersed oil plume movement. This buoy should be equipped to allow tracking by the monitoring vessel with a radar reflector. The six point monitoring protocol requires sampling in relative positions to the deployed buoy. Should long term sampling of the same plume be desired, a radio beacon buoy will be required.

j. Supply of Hydrochloric acid (HCL) for sample preservation.

k. Safety equipment should be carefully reviewed. Spilled oil may contain benzene. However, by the time the dispersant program and this monitoring program are in place, exposure should not be a problem. Consultation with appropriate safety personnel should be done. All sampling should be done wearing Personal Floatation Device (PFD) work vests, Neoprene or latex gloves, steel-toed shoes and eye protection. Monitors using aircraft and vessels should conform to established safety procedures of the craft. Due to the cooler climates and cold water in the northeast corridor, mustang suits or dry suits may be appropriate. In the case of products which contain higher amounts of benzene, initial air monitoring may be required.

l. A 20-liter sample container for the collection of clean seawater at location Number 1.

m. A multiparameter in-situ physicochemical monitoring instrument with a flow cell attachment with capability to measure temperature, salinity, conductivity and pH at 1-, 3- and 10-meter depths.

This monitoring program is designed to require a minimum of scientific personnel offshore and to conduct the analysis in a shoreside laboratory. Personnel going offshore should be able to navigate accurately, utilize the fluorometer correctly and take proper water and sediment samples. Scientific personnel will be required in the Nearshore and Inland Zones when conducting benthic invertebrate sampling. Other sampling may be desired for scientific purposes, but is not part of the required monitoring program.

ESTABLISHMENT OF DISPERSANT MONITORING ZONES:

The monitoring program is divided into three geographic zones including Offshore, Nearshore and Inland. The Offshore Zone includes all waters 3 nautical miles and greater from the shoreline. This is essentially all waters beyond the state water dividing line. The Nearshore Zone includes all waters from 3 miles to the shoreline (essentially the same as is presently considered state waters). The Inland Zone includes all waters within the headlands, including bays, estuaries, rivers and harbors.

DISPERSANT MONITORING TECHNIQUES

Visual observation (either aerial or by vessel) of the dispersant application shall be conducted during dispersant use. This observation will determine if the application is on target, determine whether initial dispersing is occurring, and identify any shortfalls. Visual observation should follow immediately after application, and whenever possible, should be made from an aircraft, because vessels used for this purpose would have to provide a considerable height to allow appropriate observation. Timing of the aircraft is important to insure sufficient airtime is available for both the observation and direction of boats for the monitoring program. Use of both still and video cameras is necessary to document the application and its results. Video film should be immediately taken to the OSC and other officials for review. The OSC may use the film as a basis for further decisions regarding dispersant application. The OSC shall assign one of his staff and a federal representative in offshore areas and a state representative in Nearshore and Inland areas at a minimum for observation. Each individual should be trained or possess experience in aerial observation of spilled oil. Very limited space will be available in aircraft, and documentation using the video will allow others in the command center to observe the application.

Field expedient tube testing may supplement or augment the immediate visual observation to determine the dispersibility of the oil. Using the test protocol established in Attachment 2, OSCs may approve use. The tube test will use a sample of the spilled oil and the dispersant to be applied.

This procedure establishes a 6-point sample collection protocol. The 6-point program will be utilized right after dispersant application and continue as deemed necessary by the OSC. Attachment 1 shows the layout to be used in collecting samples using the 6- point collection pattern. At each monitor point data will be gathered at 1-meter, 3-meter and at 10-meter depths. Additionally, a 20 liter clean water sample will be taken at

position Number 1 for analysis purposes. Information to be gathered includes a position, fluorometer and physicochemical readings and water samples at maximum meter deflection. Water samples are collected for further scientific analysis. All sampling equipment must be properly calibrated using the manufacturers instructions. Water samples should be collected in 1-liter bottles and kept cool using the ice chest until analysis is completed. Flexibility in implementing this protocol will be required due to the restricted ability and safety of on-scene personnel. In certain areas freezing of the water may occur and protection of the sample jars may be necessary.

A fluorometer will be utilized to observe and measure emulsified and dissolved oil in the water column. It will provide a baseline using surrounding water as the normal background. Fluorometers and ancillary equipment should be designed and calibrated for working with oils.

A multiparameter in-situ physicochemical monitoring instrument with flow cell attachment will be used to measure temperature, salinity, conductivity, and pH at 1-, 3- and 10-meter depths using the 6-point collection pattern.

Sediment grab samples, when required, will be taken and placed in 1- liter clean sample jars. The samples will be kept cool until analysis can take place. Reference A outlines the procedures for sediment sampling.

Benthic invertebrate sampling, when required, will be conducted with personnel suitably qualified and will use sample containers that are clean and oil free. All means necessary to eliminate contamination by substances other than spilled oil must be taken. Reference B outlines the procedures for benthic sampling.

NOTE: Caution should be utilized in gathering sediment and benthic invertebrate samples to avoid cross contamination with oil in the water. Sediment or benthic invertebrate samples will normally be taken after floating and dispersed oil passes the collection point. Oil from the spill impacting sediments and invertebrates will remain for extended periods and rapid collection is not necessary. It is expected that this sampling will be conducted within weeks of the actual dispersant application.

REQUIRED MONITORING:

OFFSHORE:

(1) Visual monitoring initially and after every load of dispersant taken offshore.

(2) Video tape of the initial results of application.

(3) Fluorometer readings and water sampling using the 6-point protocol. Continued monitoring or the extent of monitoring will be determined by the spill size and the amount of dispersant to be applied. Quantitative monitoring offshore is less than nearshore or inland due to the greater water depth, larger mixing zone and generally fewer sensitive resources in the area of impact.

(4) Multiparameter in-situ physicochemical sampling using the 6 point protocol. Continued monitoring or the extent of monitoring will be determined by the spill size and the amount of dispersant to be applied.

NEARSHORE:

(1) Visual monitoring initially and after every application.

(2) Video tape and stills for the initial results of application.

(3) Fluorometer readings and water sampling using the 6-point protocol. Continued monitoring or the extent of monitoring will be determined by the spill size, amount of dispersant to be applied, location of the spill and trajectory of the spill. The OSC should develop these in consultation with federal and state representatives. Continued monitoring at 6-hour intervals would allow sufficient information gathering to perform the required analysis. Due to the possibility of encountering shallow water impacting the 3- and 10-meter water samples, the program should continue by taking water column samples at maximum water depth.

(4) Sediment grab samples should be taken in non oiled and oiled or potentially oiled water areas for comparative analysis. The only samples required are those to give a representative indication of sediment impact from the dispersed oil. Beach sampling of oiled beaches is not part of this program. When fluorometer readings are high in near bottom waters, sediment sampling is not necessary due to known impact.

(5) Benthic invertebrate sampling should occur in non-oiled and oiled or potentially oiled water areas for comparative analysis. The only samples required are those that provide a representative indication of benthic invertebrate contamination from the dispersed oil.

(6) Multiparameter in-situ physicochemical sampling using the

6-point protocol. Continued monitoring at 6-hour intervals would allow sufficient information gathering to perform the required analysis. Due to the possibility of encountering shallow water impacting the 3- and 10- meter samples, readings should be taken at the maximum water depth.

INLAND:

(1) Visual monitoring continually during application and until the expected trajectory reaches the shoreline.

(2) Video tape and stills of the oil being dispersed and result of the initial dispersal.

(3) Fluorometer readings and water sampling using the 6-point protocol. Continued monitoring or the extent of monitoring will be determined by the spill size, amount of dispersant to be applied, resources at risk, location of the spill and trajectory of the spill. The OSC should develop these in consultation with federal, state and local representatives specifically for the area to be governed. Continue monitoring at 4-hour intervals or until the dispersed oil reaches the shore. Due to the possibility of encountering shallow water impacting the 3- and 10-meter water samples, the program should continue by taking samples at maximum water depth. Fluorometer measurements shall be repeated at the original 6-point sampling locations 6 and 12 hours after the initial sampling to verify that concentrations of dispersed oil have declined in these areas to biologically safe levels.

Adjustment of sampling intervals is permissible based on safety considerations. Sampling should be repeated for at least three separate areas.

(4) Sediment grab samples should be taken in non-oiled and oiled or potentially oiled water areas for comparative analysis. The only samples required are those to give a representative indication of sediment impact from the dispersed oil. Beach sampling of oiled beaches is not part of this program.

(5) Benthic invertebrate sampling should occur in non-oiled and oiled or potentially oiled water areas for comparative analysis. The only samples required are those that provide a representative indication of benthic

invertebrate contamination from the dispersed oil.

(6) Multiparameter in-situ physicochemical sampling using the 6 point protocol. Continued monitoring or the extent of monitoring will be based on the spill size, amount of dispersant to be applied, resources at risk, location of the spill and trajectory of the spill. The OSC should develop these in consultation with federal, state and local representatives specifically for the area to be governed. Continue monitoring at 4-hour intervals or until the dispersed oil reaches the shore. Due to the possibility of encountering shallow water impacting the 3- and 10- meter samples, readings should be taken at the maximum water depth.

SAMPLE CUSTODY

All samples collected will be handled in accordance with USCG, Marine Safety Laboratories, Oil Spill Sample Handling and Transmittal Guide, Second Edition, 15 November 1988, Reference C. This will allow for proper handling, storage, chain-of-custody and marking of sample containers.

LABORATORY ANALYSIS

Laboratory analysis procedures for water samples should follow EPA Method 418.1(Spectrophotometric, Infrared), PETROLEUM HYDROCARBONS TOTAL RECOVERABLE, Storet No. 45501, Reference D. Laboratory analysis procedures for sediment and benthic invertebrate samples should follow EPA Method 9071, OIL AND GREASE EXTRACTION METHOD FOR SLUDGE SAMPLES, Reference E. These procedures should be utilized unless otherwise stipulated or requested by the OSC.

FUNDING

The responsible party(ies) should fund dispersant application and monitoring. This monitoring program is provided to OSCs and Area Committees for their use in reviewing the adequacy of facility or vessel response plans. Potential responsible parties also may use this protocol to determine their needs should dispersant application be determined feasible. These plans should identify funding sources for application and monitoring. In the absence of a responsible party, the OSC needs to be prepared to take necessary action, and may plan on using this protocol.

REPORTS

Reports are required during the dispersant application and monitoring program. The OSC's command center should be the focal point for reporting. Close coordination is necessary to insure all

activities and constituents are kept abreast of activities and the decisions required. The OSC's representative on scene at the application site should provide immediate verbal feedback regarding the application and results. The observer should maintain a logbook and document each action taken by the dispersant contractor and the monitoring platform. The OSC observer aboard the monitoring platform should provide operations normal reports hourly and provide updates regarding monitor in status. The OSC Command Center should maintain all reports regarding the monitoring program and its results. A copy of all data should be forwarded to the OSC, with copies to other agencies, within 24 hours. Problems or difficulties should be immediately reported to the command center. Long-term monitoring programs should develop a reporting procedure suitable for the specific incident.

A written report is required regarding dispersant application within 45 days of the application. Copies of the draft report should be provided to the OSC prior to issuance of the final report. Using all the information gathered during the program, the report should review the information and develop specific recommendations regarding dispersant application, its impact and a cost benefit analysis. Responsible parties should be prepared to compile the report for submission to the OSC, with copies to other agencies and the National Response Team. All technical data and analytical information should be included with the report.

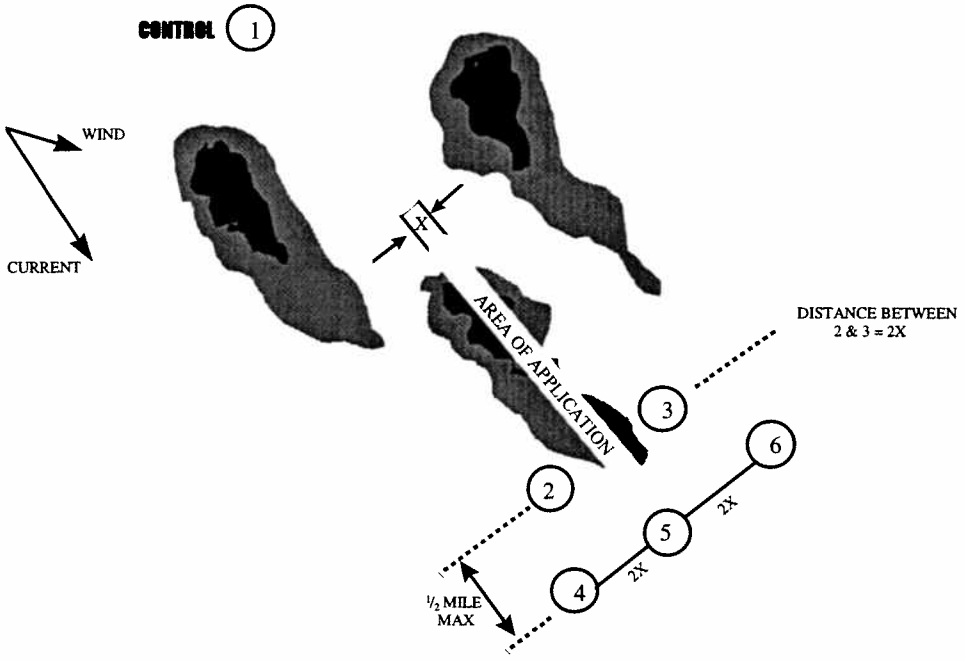
PROGRAM REVIEW

This plan should be reviewed based on exercises and actual field applications of dispersants. Suggested revisions should be prepared by or submitted to the Region III Regional Response Team, Spill Response Countermeasures Workgroup for future incorporation into the plan.

Attachments 1 - SIX-POINT DISPERSANT WATER MONITORING PROTOCOL
2 - FIELD DISPERSANT EFFECTIVENESS TEST

Attachment 1

SIX-POINT DISPERSANT MONITORING
PROTOCOL



NOTES:

Sampling begins when the dispersant is applied.
Direction of plume travel may differ from spilled oil travel.
Sampling positions remain fixed relative to marker bouy.
At each location, collect samples at 1, 3, and 10 meters depth.

Information recorded for each sample:

1. position
2. Fluorometer readings
3. temperature
4. salinity
5. conductivity
6. pH

Attachment 2

A Field Dispersant Effectiveness Test

Anibal Diaz
Mason & Hanger-Silas Mason Co., Inc.
P.O. Box 117
Leonardo, New Jersey 07737

I. Materials and Apparatus

The following equipment is the minimum necessary to conduct the FDET (see Figure 5).

Item	Quantity	Size
Bottle	1	1 liter
Test tube	1	0.5 inch diameter
Q-ring	1	0.5 inch diameter
Rubber stopper	1	No. 00
Flashlight	1	dual "D" cell
Opaque	1	3 inch diameter
Seawater	1	1 liter
Dispersant	1	10 milliliter
Oil	1	10 milliliter

Natural or synthetic seawater may be used.

Synthetic seawater may be prepared by mixing the following salts into a liter of tap water.

Salt	Grams
Sodium Chloride	17.671
Magnesium Chloride	8.002
Sodium Sulfate	2.950
Calcium Chloride	0.831
Potassium Chloride	0.500
Sodium Bicarbonate	0.145

II. Method

The test procedure consists of four preparatory steps and the eight major steps illustrated in Figure 1.

The preparatory steps are as follows:

1. Fill two tubes with seawater to a height of 5 cm. The height selected will serve as a reference point for the fraction of dispersed oil in the entire volume of the mixture.

2. Fill one dropper with the oil to be tested.

3. Fill another dropper with the dispersant

4. Prepare an opaque shield with a 0.5-inch opening to direct the flashlight illumination through the test tube during the measurement of dispersion.

The procedure is as follows:

1. Add ten drops of oil to the test tube.

2. Add one drop of the dispersant on top of the oil, stopper the test tube and begin shaking it immediately.

3. Shake it abruptly at 120 cycles per minute for 4 inches per stroke and a minute shake time.

   NOTE: Hold the tube upright in the palm of your hand with the thumb over the stopper and shake it up and down in an abrupt motion that ensures thorough mixing as evident from audible sloshing.

4. Let it settle for 10 minutes.

5. Set the tube on top of the shielded flashlight and move the O-ring to just above the point at which light no longer penetrates the fluid.

   NOTE: This observation requires looking on at an angle to the tube from above the O-ring.

6. Measure the height of this interface from the bottom of the tube to the bottom of the O-ring and record that number as the Interface Height (L) at 10 minutes.

7. Place tube at eye level in front of a light and run the tip of two pens held parallel to each other between the tube and the light to verify the Interface Height.

8. Move the O-ring to the point where the two pen tips become a continuous shadow and measure that height.

   NOTE: Repeat the entire test whenever the two measurements for Interface Height differ more than 10%.

III. Calculation of Percent Dispersion

The height of the clear water space under the dispersed oil layer, L, provides the basis for calculating the percent dispersion, D, following the relationship.

$$D = \frac{5-L}{5} \times 100\%$$

where,

5 = initial water height in test tube
L = height from tip of tube to opaque layer

FDET (WA-134)

TEST PROCEDURE:

A. Pre-Tests

1. Obtain a liter of seawater whenever possible or mix the following salts into a liter of tap water:

Salt	Grams
Nacl	17.671
$MgCl_2 .6H_2O$	8.002
Na_2SO_4	2.950
$CaCl_2$	0.831
KCl	0.500
$NaHCO_3$	C.145

2. Obtain three 0.5 inch test tubes and fill each with test water to 5 cm from the bottom tip.

3. Put O-rings on each tube and obtain three No. 00 rubber stoppers.

4. Label each tube numerically with the applicable test number.

5. Obtain a flashlight and cover the light with an opaque shield having a 0.5 inch opening at the center.

6. Fill one eye dropper with oil and others with dispersant and mark each accordingly.

B. Test

1. Add ten drops of the oil under examination to one of the test tubes.

2. Add one drop of the dispersant on top of the oil and stopper the test tube.

3. Shake it abruptly at 120 cycles per minute for 4 inches per stroke and a minute shake time.

4. Let it settle for 5, 10 and 15 minutes

5. Set the tube on top of the shielded flashlight and move the 0-ring to just above the point at which light no longer penetrates the fluid.

6. Measure the height of this interface from the bottom of the tube to the bottom of the O-ring.

7. Record the number found under "Interface Height" for the given time.

8. Place tube at eye level in front of a light and run the tip of two pens held parallel to each other between the tube and the light to determine the true translucent level.[2]

9. Move the O-ring to the point where the two pen tips become a continuous shadow.

10. Repeat Step #6.

11. Record the number found under the title "Translucent Level."

12. Repeat steps 1-11 for the other two tests tubes.[3]

13. Read both the interface and the translucence for each tube at 5, 10 and 15 minutes.

C. Post Test

1. Relate the "Interface Height" to the "Effectiveness" by following the relationship established for known products by other tests.[5]

2. Replace the labware as necessary to ensure cleanliness.

Footnotes:

1) The oil for an a actual offshore test will have to be obtained by mechanical skimming of the surface waters close to the spill.

2) The translucent level may be determined by tracking the shadow of two pen tips through the test tube while exposing the sample to lateral illumination. Translucence is measured to the extent that two visibly distant pen tips appear upon lateral illumination.

3) Each test tube should be identified by the sample number with a suffix A, B or C as necessary for replicates.

4) A rise of the interface of 4.8 cm in 15 minutes indicates an effectiveness of approximately 20% while a translucent height of 1.0 cm in that time reveals an effectiveness of approximately 80%. These values were derived from the ILDET with Corexit 9527 and Magnotox, respectively.

5) Other tests include WA-111 "Lab Dispersant Testing" and WA-117 "Improved Laboratory Dispersant Effectiveness Test."

FIELD DISPERSANT EFFECTIVENESS TEST (WA-134)
PRELIMINARY TESTING
DATA SHEET

Test N._____
Operator:_____

Date _____

A) Pre Test

Dispersant _____
Volume _____ drops
Oil _____
Volume _____ drops

B) Test (cm) (min.) (analyst)

1.Interface Height _____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

2.Translucent Level _____ _____ _____

_____ _____ _____

_____ _____ _____

C) Post Test

Effectiveness_____%

_____%

_____%

_____%

ANNEX V

PRODUCTS WITH COMPLETED SECTION 7 CONSULTATION

The use of response measures addressed by this MOU are subject to compliance with the consultation requirements of Section 7 of the Endangered Species Act as amended. Annex V lists the specific products for which formal pre-incident consultation has already been completed. Required consultation for products not listed in Annex V must be accomplished prior to their use.

Product Name	**Date, Agency**	**Comments**
Corexit 9500 9527 9550	Pending, USFWS	Covers: Piping Plover Peregrine Falcon Bald Eagle

Annex VI

Biological Monitoring/Bioassay Protocol

A post-application biological monitoring plan is a desirable component of Area Contingency Plans, and should be implemented routinely following the use of dispersants. Negotiations are beginning with EPA's Emergency Response Team (ERT) to conduct the biological sampling within RRT Regions I, II and III in the event that dispersants are used. The U.S. Fish and Wildlife Service Region 5 has drafted a protocol for conducting bioassays in the event of dispersant application which will better guide dispersant application to minimize even further collateral impacts to fish and wildlife. The protocol is included as part of this Policy and is attached as follows.

REGION 5 BIOASSAY PROTOCOL

In the event of dispersant application in any of the three zones specified in the Policy, the following protocol will be instituted to indicate whether the application is or is not exhibiting potential harm to Departmental trust resources managed by the Service. Such determination can help the OSC make decisions about timing & location of additional dispersant use on the ongoing or future spills.

1. At 12 and 24 hours after dispersant application (or at the second, forth and every other sampling for dispersant effectiveness under the Dispersant Monitoring Protocol [DMP]), collect 20 liters of dispersant/oil/water mixture at surface minus one meter (S-1) and ship the samples on ice via the fastest UPS or Federal Express delivery to either ERT or a designated contract laboratory.[7]

2. Also, at and only at 12 and 24 hours after dispersant application (or at the second and fourth sampling for dispersant effectiveness under the Dispersant Monitoring Protocol [DMP]), collect 20 liters each of unaffected (control) water and undispersed oil/water mixture at surface minus one meter (S-1) and ship the samples on ice via the fastest UPS or Federal Express delivery to either ERT or a designated contract laboratory.

3. Using EPA accepted methods[8] conduct 96-hour static toxicity assays on the silverside (*Menidia sp.*) and *Mysidopsis bahia*. For each water sample and species, the bioassay will be run as 2:1 serial dilutions (two parts test to one part diluent [Instant Ocean]), with replication as specified in the method.

4. The lab will report mortality at 12, 24, and each 24 hours thereafter to the Service, RRC and FRC so that marked toxicity and increased potential for adverse affects may be expeditiously communicated to the OSC. The lab will make a final report of the toxicity series results to the RRC at the conclusion of the bioassay.

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[7] Woods Hole Oceanographic Institute and the Chesapeake Biological Laboratory are potential contract laboratories.

[8] Weber, Cornelius I. 1993, Methods for measuring the acute toxicity of effluents and receiving waters to freshwater and marine organisms (fourth edition). EPA/600/4-90/027P. Office of Research and Development, US Environmental Protection Agency, Cincinnati,OH