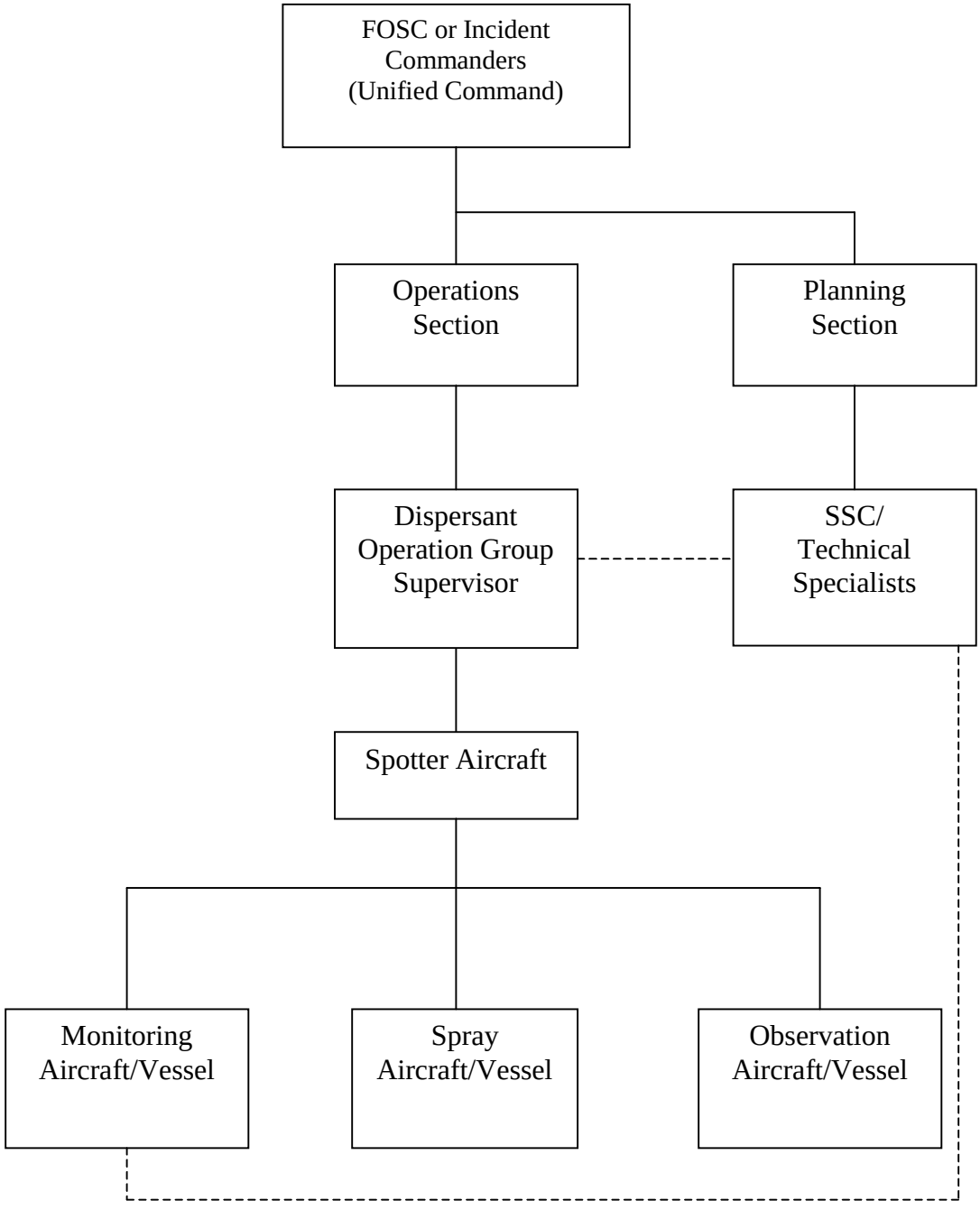
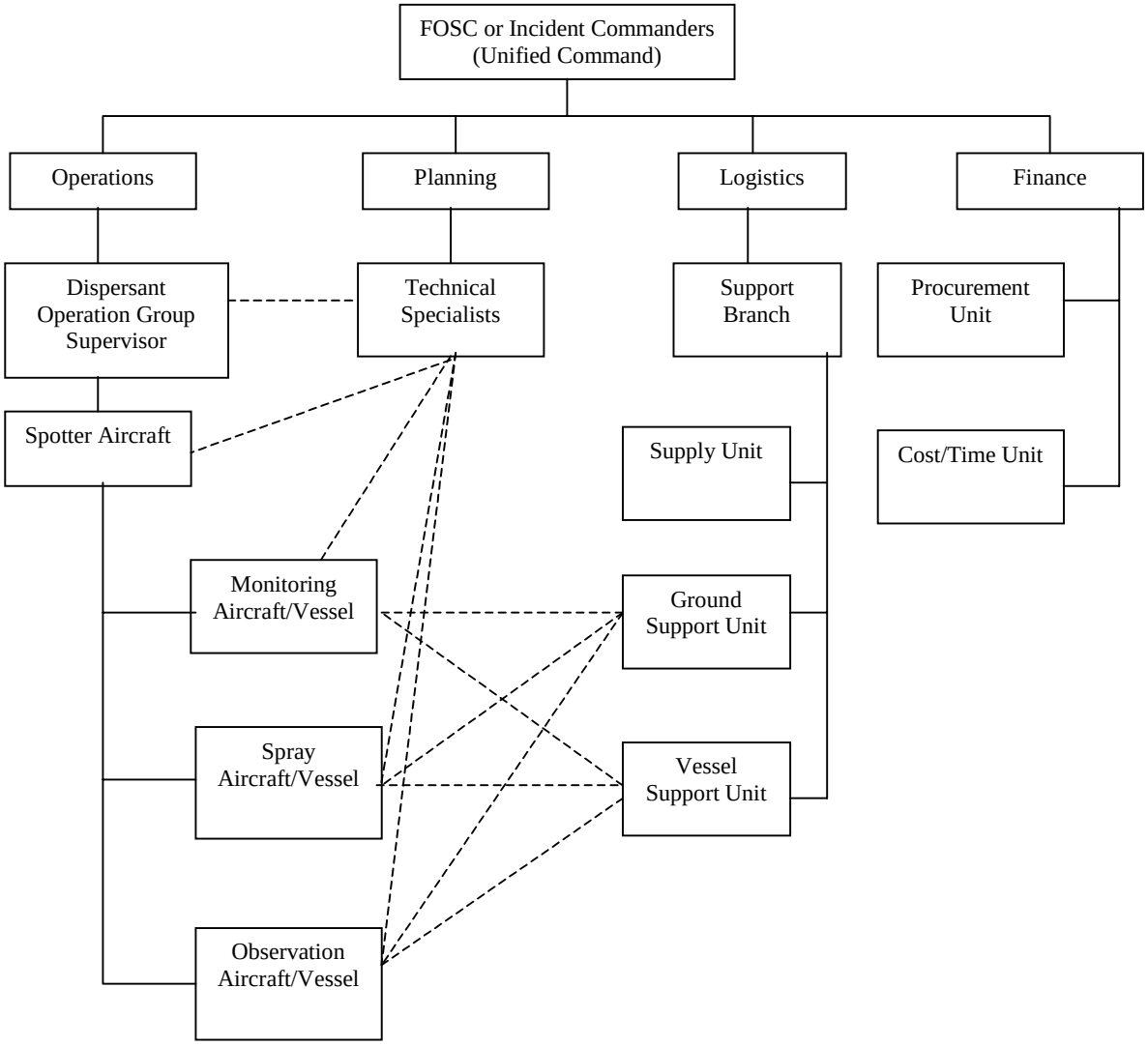
APPENDIX VIII TABLE OF CONTENTS

ICS ORGANIZATION CHART FOR DISPERSANT USE



ICS DISPERSANT USE ORGANIZATIONAL RELATIONSHIPS



NOTES:

1. **The dotted lines above depict the cross-functional relationships between Operations, Planning, and Logistics to successfully implement dispersant activities.**

2. **Flexibility is paramount during dispersant operations. The IC/UC may choose to place the Monitoring and Observation Aircraft/Vessel(s) under the guide of the Planning Section. Normally monitors and observers pass their information directly to the Technical Specialists located under Planning (e.g. similar to SCAT Teams, field observers, etc.). Either scheme will work as long as there exists a strong working/reporting relationship between Operations and Planning. Their placement within functional schematic diagram is totally at the IC/UC discretion.**

DISPERSANT USE DECISION / IMPLEMENTATION

ELEMENT CHECKLIST

Note: Need all **"YES"** answers before dispersant use is acceptable.

YES	NO	DECISION ELEMENT
		1. Is the spill/oil dispersible?

Oil is generally dispersible if:
- API Gravity is more than 17
- Pour Point is less than 10 F (5.5 C) below ambient temperature
- Viscosity is less than 10,000 centistokes

Note: Some modern dispersants may be formulated to be effective on a wider range of oil properties. The choices of dispersants listed on the NCP's National Product Schedule are limited. To answer this question you should look at which dispersant would the most effective given the type of oil.

YES	NO

2. Have environmental tradeoffs of dispersant use indicated that use should be considered ?

Note: This is one of the more difficult questions. Dispersant toxicity assessment information found in Appendix V of the RRT pre-approval agreement may assist in this decision.

YES	NO

3. Is the chosen dispersant likely to be effective?

Consider:

* effectivenss of dispersant application to the oil;
* dispersant-to-oil application ratio;
* oil slick thickness;
* distribution of oil slick on the water;
* droplet size distribution in aerial spray;
* oil viscosity;
* energy input;
* suspended particles in water (sedimentation);
* weathering of oil;
* emulsification of oil;
* oil composition;
* dispersant composition;
* water salinity; and
* temperature.
* dispersant type compatible with application means

Note: A preliminary effectiveness test such as the standard flask swirling method is highly recommended.

DISPERSANT USE DECISION / IMPLEMENTATION

ELEMENT CHECKLIST (cont.)

Note: Need all **"YES"** answers before dispersant use is acceptable.

YES	NO	DECISION ELEMENT
		4. Can dispersant application be conducted safely and effectively given the physical environment?

Environmental parameters:

* winds less than or equal to 25 knots
* visibility greater than or equal to 3 miles
* ceiling greater than or equal to 1000 feet
* operations during daylight hours only

YES	NO	
		5. Are sufficient equipment and personnel available to conduct aerial dispersant application operations within the window of opportunity?

Note: Refer to elements and position descriptions under the Dispersant Operations Group Supervisor in the Operations Section…Other tools are available to assess this such as the NOAA Dispersant Mission Planner

YES	NO	
		6. Has a Site Safety Plan for dispersant operations been completed?

YES	NO	
		7. Is the spill/oil to be dispersed within a Pre-Approved Zone?

Refer to Section II within the RRT Dispersant Pre-Approval Agreement

If the spill/oil is NOT in a Pre-Approved Zone, has approval been granted?

Submit "RRT Documentation/Application Form for Dispersant Use" to the Incident Specific RRT members with request for approval.

Dispersant use in non-approved areas must be requested by the OSC and approved by EPA and the affected state(s) after consultation with DOC and DOI.

DISPERSANT USE DECISION / IMPLEMENTATION

ELEMENT CHECKLIST (cont.)

Note: Need all **"YES"** answers before dispersant use is acceptable.

YES	NO	DECISION ELEMENT
		8. Are the necessary equipment and trained personnel available to conduct the recommended monitoring operations?

The recommended monitoring protocol in the RRT Region IV is the Special Monitoring for Advanced Response Technologies or SMART. The Gulf Strike Team or Atlantic Strike Team is available to support and provide monitoring assistance.

It may not be appropriate to base Go/No Go or continue/discontinue decisions solely on results from the SMART monitoring team since dispersant effectiveness is often delayed or not totally and easily conclusive.

Monitoring is recommended but not strictly required…should not be a showstopper for operation.

YES	NO	
		9. Has the overflight to assure that endangered species are not in the application area been conducted?

The provisions of the Section 7 consultation in regard to the RRT Pre-Approval Agreement requires an overflight of the application area to ensure endangered species are not threatened or endangered by the operation.

YES	NO	
		10. Has a Dispersant Operations Plan been completed?

Attached within this plan is a Dispersant Operations Plan template. The completion of this template should provide the OSC and Unified Command with a suitable and complete plan to support and implement the dispersant effort.

DISPERSANT APPLICATION PLATFORM CAPABILITY DECISION MATRIX****

Platform	Payload (Gallons)	Approximate Min/Max Dosage (Gallons per Acre)	Coverage/ Sortie * 5 gal/acre Dosage (Acres)	Coverage/ Sortie * 10 gal/acre Dosage (Acres)	Coverage/ Sortie * Max gal/acre Dosage (Acres)	Maximum Operational Time (Hours)	Transit Speed (Knots)	Operational Speed (Knots)	Operational Niche/ Limitation Consider-ations
Bell 212 with Bucket	300	0.8/21.5	60	30	14	1.7	40-90	40-90	***(1)
C130 with ADDS	5000	1.4/16.4	1000	500	305	12	200-300	140-150	***(2)
C130 with MASS	2000	2.6/19.4	400	200	103	12	300	140-200	***(3)
DC-4	2170	0.8/10.3	434	217	211	4.5	175	156-175	***(4)
DC-6B	3000	4.3/19.8	600	300	152	5.5	130-225	130-225	***(5)
Thrush	510	-/-	102	51	-	4.5	125	90	***(6)
Air Tractor 801	800	-/-	160	80	-	2.5	200	150	***(7)
Large Vessel (>100ft)	3000	2.2/35.8	600	300	84	100	15	3-10	***(8)
Small Vessel (20-40 feet)	600	1.1/71.7	120	60	8	20	25	3-10	***(9)
Fire Monitor	Vessel Dependent	5/20	Vessel Dependent	Vessel Dependent	Vessel Dependent	Vessel Dependent	Vessel Dependent	2-15	***(10)

Notes: * Assumes Full Payload

** Small platforms may be the best choice for larger spills to treat the leading edge and thicker portions of the slick until a larger and more effective platform can arrive on scene.

*** For notes (1) through (10) see next page.

**** To assist in determining a proper platform for dispersant deployment, the following "Dispersant Application Operations Feasibility Form" may be useful.

DISPERSANT APPLICATION PLATFORM CAPABILITY DECISION

MATRIX NOTES

NOTES:

(1) For relatively small spills and where transit distance is short. Platform has relatively short operational duration and spray capacity.

(2) Most capable platform for large spills. Has high endurance and spray capacity. If a Coast Guard C-130 Hercules is used to support ADDS-Pack deployment, in accordance with existing MOAs, a modification (removal of rails in cargo bay) to the aircraft setup will be necessary which would take 6 to 8 hours to complete. This delay should be accounted for when considering aircraft availability.

(3) Good platform for endurance. Spray capacity is less than half of Adds-Pack. For medium to large spills.

(4) Use for medium to large spills. Moderate endurance. Spray capacity is similar.

(5) Use for medium to large spills. Moderate endurance. Spray capacity is similar.

(6) Crop-duster type aircraft good for small to medium spills. Can be turned around quickly for repeated treatments of larger slicks. Spray nozzels should be calibrated specifically for dispersant operations to obtain correct droplet size and spray pattern.

(7) Crop-duster type aircraft good for small to medium spills. Can be turned around quickly for repeated treatments of larger slicks. Spray nozzels should be calibrated specifically for dispersant operations to obtain correct droplet size and spray pattern.

(8) High endurance and spray capacity, but has slow operational speed.

(9) Small to medium slicks or surgical treatment of the slick's leading edge. Slow speed and low spray capacity.

(10) May be good for surgical treatment of the slick's leading edge and thickest portions of the slick. Calibration and delivery rate may be difficult to control.

DISPERSANT APPLICATION OPERATIONAL FEASIBILITY FORM

1. Key Operational Factors

a. *Weather*

	OK	Not OK
Wind	OK	Not OK
Visibility	OK	Not OK
Clearance	OK	Not OK

b. *Window of Opportunity* ____ hrs
c. *Daylight Hours Remaining* ____ hrs
d. *Enter Smallest Window* ____ hrs

e. Platform Data

Type:

Transit Speed		Knots
Application Speed		Knots
Swath		Feet
Coverage Rate		Acres/s
Coverage Rate		SqFt/s
System Pump Rate		gpm
Dispersant Payload		gals
Dispersant Actual Load		gals
Ideal Oil/Dispersant Ratio		
Oil Treatable/Ideal Ratio		bbls
% Oil Treatable w/Ideal Ratio		%
# Dispersant Loads/Oil Volume		
Max Acres/Dispersant Load		Acres
Bbls Treated Based on Speed		bbls
Actual Oil/Dispersant Ratio		
Dispersant gallons/Acre		
Time to Deplete Stockpile		hrs

f. Spotter Data

Type Platform:		
Transit Speed:		Knots

2. Spill Stats

Spilled Oil		bbls
% Spilled Oil Evaporated/Dispersed		%
Total Treatable oil		bbls
Slick Area		Acres
Average Slick Thickness		mm
Distance: Staging to Treatment Area		NM

3. Resource Locations and Distances

	Location	Distance to Staging Area	Transportation Unit
Staging Area			
Dispersant			
In Product Schedule?	Yes / No		
Amount	Gals		
Platform Location			
Dispersant Location			
Application System Location			
Spotter Location			

4. Time To Get Systems Ready (hrs)

	Stockpile	Platform	Application	Spotter
Personnel Recall				
Loading/Transport to Staging Area				
Totals				
Loading of Stockpile				
Loading of Application System				
Enter Total Time for Ready System				
Enter Slowest Transport Speed (kn)				
Time to Arrive at Treatment Area				
Time for Positioning				
Total Time to Application				
Amount of Window Time Left				
Time Remaining After Stockpile Use				
Return, Reload, Back O/S Time				
Amount of Window Time Left				

DISPERSANT OPERATION PLAN CHECKLIST

(Completed by Dispersant Operations Group Supervisor)

GENERAL

- **Incident Name:** _____
- **Vessel or Facility Name:** _____
- **Date/Time Spill Occurred:** _____
- **Location of the Spill:** _____**LAT**_____**LONG**_____
- **Amount/Type of Oil Spilled:** _____/_____
- **Dispersant Type:** _____

WEATHER ON SCENE

- **Wind Speed and Direction:** _____
- **Visibility & Precipitation:** _____
- **Sea State:** _____
- **Ceiling:** _____

DISPERSANT USE PRE-BRIEF - PLATFORM ASSIGNMENTS:

	TITLE	PLATFORM/PERSONNEL NAMES	TACTICAL CALL SIGN	ETD TO SITE	ETA TO SITE
	Spotter(s)				
	Sprayer(s)				
	Observer(s)				
	Monitor(s)				

PLATFORM ASSIGNMENTS / IDENTIFICATION OF OPERATIONAL AREA BOUNDARIES :

	TITLE	AIRCRAFT DESIGNATOR	LAT	LONG	ALTITUDE
	ENTRY:				
	EXIT:				
	SPILL SITE:				

LOCATION OF OPERATIONAL AREA: _____
(Attach Map, GPS Coordinates, etc.)

DISPERSANT OPERATION PLAN CHECKLIST

(Completed by Dispersant Operations Group Supervisor)

AIRCRAFT SEPARATION ALTITUDES:

	AIRCRAFT/CALL SIGN	SPRAY ALTITUDE	OPERATIONS ALTITUDE
Spotter	_____	_____N/A_____	_____
Sprayer	_____	_____	_____
Observer	_____	_____N/A_____	_____
Sprayer	_____	_____	_____

DISPERSANT INFORMATION:

Dispersant Name: _____

Source of Dispersant: _____

Application Rate per Sortie: _____**gal/acre** **Number of Sorties Planned:** _____

Total Amount of Dispersant to be Used per Sortie: _____

Sprayer Platform:	_____	_____	_____
Swath Width:	_____**(ft)**	_____**(ft)**	_____**(ft)**

COMMUNICATIONS (complete only as needed; primary/secondary):

Air to Air:	**VHF**_____	**UHF**_____	**Other**_____
Air to Vessel:	**VHF**_____	**UHF**_____	**Other**_____
Air to Ground:	**VHF**_____	**UHF**_____	**Other**_____
Ground to Vessel:	**VHF**_____	**UHF**_____	**Other**_____
Vessel to Vessel:	**VHF**_____	**UHF**_____	**Other**_____

POST DISPERSANT USE INFORMATION (Fill Out For Each Sortie)

	SORTIE 1	2	3
Total Amount of Dispersant Used:	_____	_____	_____
Time Dispersant Application Began:	_____	_____	_____
Time Dispersant Application Ended:	_____	_____	_____
Number of Passes Per Sortie:	_____	_____	_____

DISPERSANT OPERATION PLAN CHECKLIST

(Completed or used by all personnel within Dispersant Group if applicable)

OBSERVATIONS:

What happened when the dispersant contacted the spill? (Describe any apparent change in visible concentration, color, etc.)

Did the oil reappear after the application? (Refer to Observer's Log)

DEBRIEF (To be facilitated by the Dispersant Operations Group Supervisor with input from dispersant group elements):

Did the dispersant operation follow the approved Dispersant Operations Plan?

What problems were encountered?

What recommendations would you make?

OTHER:

DISPERSANT GROUP PERSONNEL SHOULD PROVIDE FEEDBACK TO THE DISPERSANT OPERATION GROUP SUPERVISOR

DISPERSANT EFFECTIVENESS MONITORING AERIAL CHECKLIST

(Completed by Dispersant Op Monitoring Team)

GENERAL:

Incident Name: _____

Vessel or Facility Name: _____

Date/Time Spill Occurred: _____

Location of the Spill: _____**LAT**_____**LONG**_____

Amount/Type of Oil Spilled: _____/_____

Dispersant Type: _____

OBSERVATIONS:

What immediately happened when the dispersant contacted the spill? _____
_____

After 2 Hours: _____
After 6 Hours: _____
After 24 Hours (if applicable): _____

Submerged cloud observed? Yes/No

Number of Passes/Sortie: (1)_____ **(2)**_____ **(3)**_____ **Total**_____

Did any oil resurface? Yes/No

Effects On Floating Oil, Biota, Sea Color, Wave Pattern, or Other Physical Features:
_____
_____

Extent of Application/Acres of Oil Sprayed: _____

Approximate Percent of Overspray: _____**%**

PHOTOGRAPHY:

Color photos taken? Yes/No **Written notes made for photos? Yes/No**

If videotape of the operation is taken, obtain a copy.

If AIREYE and/or HIRR/IR is used, obtain a copy of the film, tape, or digital imagery.

Monitoring Team Leader reports data to the Scientific Support Coordinator after each sortie.

THE ABOVE INFORMATION SHOULD BE FILLED OUT FOR EACH SORTIE
MONITORING TEAM LEADER ALSO COMPLETES DEBRIEF SECTION OF THE PREVIOUS FORM
DISPERSANT GROUP PERSONNEL SHOULD PROVIDE FEEDBACK TO DISPERSANT OPERATION GROUP SUPERVISOR

DISPERSANT EFFECTIVENESS MONITORING WATERBORNE CHECKLIST

(Completed by Dispersant Op Monitoring Team)

GENERAL:

- ☐ **Incident Name:** _____
- ☐ **Vessel or Facility Name:** _____
- ☐ **Date/Time Spill Occurred:** _____
- ☐ **Location of the Spill:** _____**LAT**_____**LONG**_____
- ☐ **Amount/Type of Oil Spilled:** _____**/**_____
- ☐ **Dispersant Type:** _____

FLOUROMETRY / SAMPLING :

☐ **Monitoring Platform Identified? Name:** _____ **Location:** _____
ETD: _____ **ETA:** _____ **(To Spill Site)**

Consider: draft, water depth, weather, freeboard, range, speed, transit time, and completion of each sortie.

- ☐ **Take Background Flourescence Readings**
- ☐ **Record Transect Readings After the Dispersants are Applied**
- ☐ **Was an oil/dispersant /water sample collected? Yes** _____ **No** _____
- ☐ **If Yes, Label and Record the Following:**

- Geographic Location
- Depth
- Location Relative to Spilled Oil
- Time
- Notes: (Why sample was taken? Was it typical or unusual?)

☐ **Report Information to Monitoring Team Leader**

DEBRIEF:

Did the dispersant operation follow the approved plan? _____
_____

What problems were encountered? _____
_____

What recommendations would you make? _____
_____

DISPERSANT GROUP PERSONNEL SHOULD PROVIDE FEEDBACK TO DISPERSANT OPERATION GROUP SUPERVISOR

DISPERSANT APPLICATION LOGISTICS AND SUPPORT CHECKLIST

(Completed by Dispersant Operations Group Supervisor)

Personnel: (Note: A person can hold more than one functional position especially within the Unified Command Post and depending on the platform resources deployed)

- ◯ Incident Commander
- ◯ Operations Section Chief
- ◯ Dispersant Operations Group Supervisor
- ◯ Spotter
- ◯ Sprayer
- ◯ Effectiveness Monitor
- ◯ Operations Observer
- ◯ Planning Section Chief
- ◯ Technical Specialists (SSC)
- ◯ Logistics Section Chief
- ◯ Support Branch Chief
- ◯ Supply Unit Leader
- ◯ Ground Support Unit Leader
- ◯ Vessel/Air Support Unit Leader
- ◯ Finance Section Chief
- ◯ Procurement Unit Leader
- ◯ Cost/Time Unit Leader

Equipment: (Note: Number of aircraft and vessels needed are dependent on size/complexity of the operation…vessels or aircraft can serve more than one function)

- ◯ Spotter Aircraft
- ◯ Spray Aircraft or Vessel (various)

Spray Aircraft Types:

- Helicopter (various)
- C-130 Hercules
- DC-4
- DC-6B

- DC-3, Fokker F-27, or Canadair CL-215
- Agriculture Spray Planes: Piper Pawnee, Cessna Agtruck, Ayres Thrush, Turbo Thrush
- Air Tractor 801

◯ Camera (film and digital)

◯ Video Camera

◯ Infrared Camera

◯ Binoculars

◯ GPS Equipment

Materials:

◯ Proper Quantity of Desired Dispersant (for initial and subsequent applications)

◯ Functional Position Job Aids and Checklists

- Dispersant Operation Group Supervisor
- Spotter
- Sprayer
- Monitor
- Observer
- Common ICS Responsibilities

◯ Checklists, Log, and Reporting Forms (Sprayer, Observer, etc.)

◯ Dispersant Operation Plan

- Dispersant Operation Plan Checklist
- Dispersant Effectiveness Monitoring Aerial Checklist
- Dispersant Effectiveness Monitoring Waterborne Checklist
- RRT Documentation/Application Form for Dispersant Use (if considering non-approved area)

◯ Basemaps / Charts of the Area

◯ Site Safety Plan Items:

- Monitoring Equipment (e.g. O2/Combustible Gas Meter, WBGT/Heat Stress, H2S Monitor, etc.)
- Personal Flotation Device
- Emergency Locator Beacon
- Survival Equipment
- NOMEX Coveralls (if available)
- Cold Water Flotation Suit (if applicable)
- Level D and Level C PPE Equipment (where applicable)
- Communications Equipment

◯ Administrative Supplies (e.g. pencils/pens, note pads, etc.)

DISPERSANT / APPLICATION FORM FROM REGION IV RRT
DISPERSANT PRE-APPROVAL POLICY (Submit to RRT)

(Use to document information in pre-approved zones and request use in non-pre-approved zones)

Name of the Spill Incident: _____

Responsible Party (if known): _____

FOSC / POC (name & Phone #): _____

Date and Time of the Spill Incident: _____

I. OIL TYPE:

1. **Spilled oil/substance name (if known):** _____
2. **Viscosity:** _____
3. **API Gravity:** _____
4. **Pour Point:** _____
5. **Percent Evaporation in: 24 Hours -** _____
   48 Hours - _____
6. **Did oil emulsify within the operational period?** _____

**** Any information from visual overflights of the slick, including estimations of slick thickness, should be included here. All additional available information pertaining to physical characterizaton of spilled oil should be included here.**

II. ENVIRONMENTAL CONDITIONS:

1. **Wind Speed:** _____
2. **Wind Direction:** _____
3. **Visibility:** _____
4. **Ceiling:** _____

III. DESCRIPTION OF SPILL INCIDENT AND SPILL SITE:

Note all relevant details concerning the spill incident and spill site here. Be sure to note whether the spill was a one-time or continuous release, the amount of cargo remaining aboard the vessel, the stability of the vessel, and sensitive environmental conditions in the vicinity of the vessel. An estimated amount of oil on the water should be made, if possible, by using available information on the area of the slick and the estimated slick thickness (as indicated by the color of the slick). Also included should be a description of the location of the spill site, including the nearest major port.

_____
_____
_____
_____
_____

DISPERSANT / APPLICATION FORM FROM REGION IV RRT
DISPERSANT PRE-APPROVAL POLICY (Submit to RRT)

IV. DESCRIPTION OF AREA OVER WHICH DISPERSANTS WERE APPLIED:

1. **Distance from Shoreline:** _____
2. **Depth of Water:** _____
3. **Jurisdiction (i.e. federal or state):** _____
4. **Special Management Zone Area (as defined in LOAs):** _____
5. **Safety Zone Established in Operational Area:** _____

V. AVAILABILITY OF PERSONNEL AND EQUIPMENT:

1. **Availability of Application and Spotter Aircraft/Vessel:** _____

   Source: _____

   Point of Contact: _____

   Type: _____

   Travel Time to Spill: _____
2. **Type of Aircraft/Vessel Used:** _____
3. **Aircraft/Vessel's Dispersant Load Capability:** _____
4. **Availability of Qualified Personnel:** _____

   Source: _____

   Point of Contact: _____

   Travel Time to Spill: _____
5. **Time Required for Delivery to the Aircraft Staging Area:** _____

VI INFORMATION ON DISPERSANT PRODUCT:

1. **Name of Dispersant:** _____
2. **Manufacturer:** _____
3. **Amount Available:** _____
4. **Source:** _____

**** A Material Safety Data Sheet of the Product Should Be Attached Here.**

DISPERSANT / APPLICATION FORM FROM REGION IV RRT
DISPERSANT PRE-APPROVAL POLICY (Submit to RRT)

VII. IMPLEMENTATION OF RECOMMENDED MONITORING PROTOCOLS:

1. Was the Gulf Strike Team's SMART monitoring protocol deployed? _____

**** A full report documenting the activities and results of any monitoring activities should be attached here.**

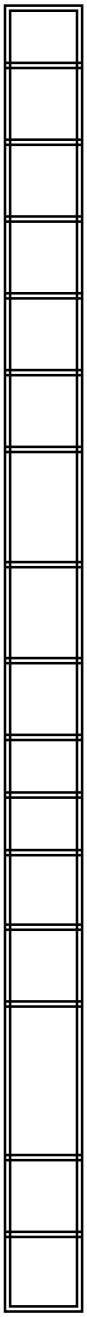
INCIDENT COMMAND FUNCTIONAL CHECKLISTS

FOR DISPERSANT USE

DISPERSANT OPERATION GROUP SUPERVISOR

A. The Dispersant Operation Group Supervisor is in charge of a functional group under the Operations Section of the ICS organization. This position manages the planning and execution for the dispersant operation. This position relieves the burden on the Operations Section Chief and the Air Operations Branch, and in smaller cases may alleviate the need for the Air Operations Branch. In the event of a large spill, air operations could easily be overwhelmed with vessel skimming and overflight support, which might delay the actual dispersant application.

B. The **Dispersant Operation Group Supervisor** is ground-based and reports to the Operations Section Chief in the ICS organization:



- Submits the dispersant application to the RRT
- Insures the overall safety of the dispersant operation
- Develops dispersant operations portion of the Incident Action Plan or IAP (Dispersant Operation Plan)
- Requests restricted airspace if needed for the dispersant operation
- Determines what aircraft and vessels will be operating on scene to carry out the dispersant operation
- Requests resources needed to implement the Dispersant Operation Plan
- Arranges logistical support including such things as obtaining or storing adequate supplies of dispersants, aircraft maintenance and fuel, airport arrangements, and additional aircrews, if needed
- Supervises the execution of the Dispersant Operation Plan, monitors progress, and makes additional application requests as needed
- Coordinates any aircraft support through the Air Operations Branch Director
- Conducts a safety briefing and debriefing of dispersant operations group personnel
- Obtains video/still photography of the dispersant operation
- Coordinates the disposal of residual dispersant from drums and/or tanks
- Coordinate closely with Scientific Support Coordinator (SSC) and other technical specialists to ensure input/recommendations are shared with the Unified Command
- Obtain samples and oil information (e.g. MSDS, API, Viscosity, etc.) as soon as possible for both spills and potential spills. Can use NOAA's Oil Information Data Sheet from ADIOS to collect information. Determine dispersability potential of the oil. May require lab analysis and testing. SSC can provide this service.
- Obtain dispersant capability as soon as potential need is identified. DRAT can assist.
- Obtain short and long term weather forecasts.

- Comply with the dispersant use planning protocols for the RRT region including completing of any checklist, consultations, and dissemination of required information to the RRT or others.
- Continue other countermeasures and operations as appropriate while waiting for dispersants or in conjunction with dispersant use.
- Treat thickest part of the slick as the priority.
- Consider using a tiered response plan (e.g. most available response means fist while waiting for more desirable response equipment). For example, start dispersant treatment with vessels and fire monitors or helicopters with a spray bucket until larger platforms, such as a C-130, arrive.
- Determine the relationship between the RP and the government's implementation of the Dispersant Operations Group Supervisor responsibility.
- Develop Safety Plan for Dispersant Operation.
- Establish applicable Safety Zones and Restricted Airspace to ensure safety of vessels, aircraft, and personnel during the operation.
- Use the NOAA dispersant mission planning software to develop a range of scenarios and a comparison table for planning purposes.
- Initiate recording and download capability for GPS or written documentation.
- GPS capability and maps should show application and no-application zones for open ocean.

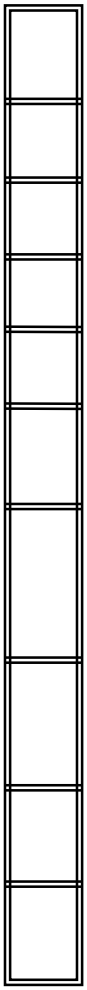
SPOTTER AIRCRAFT OR "SPOTTER"

A. The Spotter Aircraft Position or "Spotter" is physically located in an aircraft. The Spotter is a person who "spots" or controls, guides, or lines up the sprayer aircraft or vessels over the spill target. Because a dispersant application can be made by both vessels and aircraft, the Spotter would maintain tactical control over both types of delivery systems. The Spotter is in charge of the dispersant operation on scene. Because dispersant operations can be executed in multiple geographic areas due to the spreading and breakup of the slick, multiple spotter aircraft may be needed (one for each spray a/c).

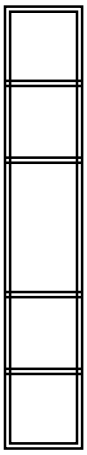
B. The forward air controller (FAC) is a person within the operation who "controls" access into the "controlled" airspace of a dispersant operation. Controlled airspace would be airspace designated in a Notice to Airmen (NOTAM). The controller is normally the spotter aircraft when one spray aircraft or vessel is used but can be the observer or monitor aircraft if more than one spray platform is involved. In addition, an aircraft's communications capabilities may play a role in the decision as to who should serve as the FAC if all aircraft are not equipped with compatible communications gear. This FAC duty is mainly used to "check" aircraft into the ongoing dispersant operation. The spotter aircraft, if not the FAC, will assign the responsibility and notify the command post.

C. Spotter Aircraft Recorder is needed to record spray start/stop times, keep all pertinent log entries, photos, and video.

D. The specific duties of the **Spotter Aircraft or "Spotter"** are as follows:



- Controls the operational area (ground to air) to ensure safety of entry, access, departure, and to prevent hazards resultant from spray exposure and collisions
- Establishes and maintains communications with dispersant sprayer, observation, monitor aircraft or vessels, and support bases
- Conducts early reconnaissance to determine dispersant target
- Supervises on scene airborne or waterborne dispersant activities
- Directs the line-up of the spray aircraft or vessel and when to turn the dispersant pumps on and off.
- Guides sprayer aircraft or vessels by giving course corrections, ensuring spray aircraft or vessels apply dispersants on the targeted areas
- Coordinates dispersant effectiveness monitoring. This includes aerial surveillance and possibly water monitoring. If a monitoring aircraft is available, the Spotter will use that resource for monitoring. If the monitoring aircraft is not available, the Spotter will assume the monitoring responsibility
- Coordinates the use of restricted airspace by serving as the Forward Aircraft Controller (FAC) (assumes only one spray aircraft). Aircraft assigned as the FAC should be the most capable communications platform. Manages outside air traffic entering or departing the operations area
- May coordinate the use of restricted airspace. Manages outside air traffic entering or departing operations area (assumes only one spray aircraft)
- Set communications protocol and limit communications traffic to avoid confusion between the Dispersant Operations Group resources and others

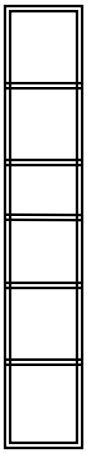


- Coordinates and is lead for any necessary emergency or rescue evolution
- Determine how the control of the "spray on" and "spray off" will be managed and coordinated for the operation.
- Spotter and Observation Aircrews should be knowledgeable with oil observation, dispersant observations, operations, directing spray aircraft, and monitoring protocols. Need to pre-identify training and knowledgeable personnel.
- Spotter Aircraft needs time in the air to observe prior to dispersant deployment.
- Speed of Spotter Aircraft must be compatible with Spray Aircraft.

SPRAY AIRCRAFT, SPRAY VESSEL, OR "SPRAYER"

A. The Spray Aircraft or Vessel or "Sprayer" is the delivery system of the dispersants to the oil slick. The dispersant application can be both waterborne or airborne depending on the size of the spill and/or dispersant operation complexity. In both cases the "sprayer" reports to and receives tasking from the spotter aircraft. Because dispersant operations can be executed in multiple geographic areas due to the spreading and breakup of the slick, multiple "sprayer" aircraft or vessels may be needed.

B. The specific duties of the **"Sprayer"** are as follows:



- Verifies calibration of spray application
- Loads dispersant
- Establishes and maintains communications with the Spotter Aircraft
- Applies dispersants as directed by the Spotter Aircraft
- Documents the details of the dispersant application, including the exact location using a Global Positioning System (GPS) recorder and spray log if possible
- Properly disposes of residual dispersant

SPRAYER LOG SHEET

(Completed by Sprayer)

GENERAL

Incident Name: _____

Application Platform Name: _____

Date/Time OF Sortie: _____

Location of the Spill: _____**LAT**_____ **LONG**_____

Amount/Type of Oil Spilled: _____**/**_____

Dispersant Type: _____

DISPERSANT USE INFORMATION

SORTIE NUMBER: _____

Application Rate: _____**gal/acre**

Total Amount of Dispersant to be Used: _____

Sprayer Platform: _____

Swath Width: _____**(ft)**

Total Amount of Dispersant Used: _____

Time Dispersant Application Began: _____

Time Dispersant Application Ended: _____

Number of Passes: _____

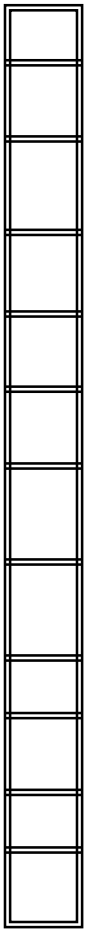
MONITORING AIRCRAFT / MONITORING VESSEL / "MONITOR"

A. The monitor aircraft or vessel or the "monitor" is primarily responsible for monitoring the effectiveness of the dispersant operation through aerial observation in aircraft and through the use of fluorometers on board vessels to sample the dispersed oil.

B. Effectiveness monitoring is concerned primarily with determining whether the dispersant was properly applied and how the dispersant is affecting the oil. This information is of interest to the OSC and any potential RPs to ensure the process is being effective before pursuing the venture further. The goal is to find a dispersant combination (type and application rate) that disperses the maximum amount of oil and minimizes environmental impact. An objective is to insure that the dispersant is responsibly applied to the target (correct rate, minimal overspray). Once applied, if the dispersant appears to be working, the questions shifts to the merits of a second or subsequent application. While being fiscally responsible, the focus should be on the environmental benefits versus consequences of additional dispersant being added to the water. With lower toxicity of the dispersants available, it is almost always prudent to reapply dispersants if they are judged to be properly dispersing the oil.

C. Effectiveness monitoring results are passed (as prearranged) either through the Dispersant Operation Group Supervisor or directly to the Scientific Support Coordinator and the Federal On Scene Coordinator.

D. The specific duties of the **Monitoring Aircraft/Vessel and Monitor** are as follows:

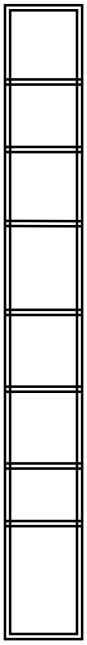


- Monitors dispersant effectiveness through fluorometry
- Ensures fluorometry data is made available to the Federal On Scene Coordinator (FOSC) through the Scientific Support Coordinator (SSC)
- Personnel are normally deployed as a fluorometry monitoring team on a monitor vessel(s) or observation vessel(s) to measure dispersed oil in the water column
- Documents monitoring activities as required in the Dispersant Operation Plan
- Obtain photos, digital imagery, video, and infrared imagery as appropriate to document operation
- Identify remote sensing and tracking requirements and the applicable support needed.
- Early launch is desirable for SMART monitoring teams, aircraft, and other operational components. Use DRAT to help coordinate logistics.
- Use tracking buoys. Plan ahead for availability. Buoys will assist tracking the slick at night and will also help with trajectory work.
- Identify choices for remote sensing.
- Unified Command should use SMART for monitoring operations.
- Monitoring must be integrated into overall operation.
- Monitors must have compatible communications with other operational elements.

OBSERVATION AIRCRAFT / VESSEL / "OBSERVERS"

A. The observation aircraft or vessels (the"observers") are platforms and persons specifically assigned to observe the dispersant operation. Their observer status should be authorized by the Unified command on the basis of their position as a stakeholder in the outcome of the operation. Observers might include corporate officials, agency representatives, political officials, scientists, trustees, interest group representatives, and so forth.

B. The specific duties of the **Observation Aircraft / Vessel / "Observers"** are as follows:



- Establishes and maintains communications with the Spotter Aircraft
- Coordinates observation of the dispersant application with the Spotter Aircraft
- May serve as the Forward Aircraft Controller (FAC) if directed by the Spotter. Aircraft assigned must be the most capable communications platform.
- If assigned as FAC, coordinates the use of restricted airspace. Manages outside air traffic entering or departing the operations area
- Use attached Observer Aid
- Use attached checklists and logs
- Before operation begins, Observation Aircraft should mark slick boundary using GPS.
- Spotter and Observation Aircrews should be knowledgeable with oil observation, dispersant observations, operations, directing spray aircraft, and monitoring protocols. Need to pre-identify training and knowledgeable personnel.

DISPERSANT OBSERVER JOB AID

Reporting Observations:

- The Observer does not make operational decisions, i.e. how much dispersant to apply, when or where to apply it, etc. These decisions are made at the Command level. The Observer will make observations based on those decisions.

- Different Observers at the same site may reach different conclusions about how much of the slick had been dispersed. This is why standard reporting criteria and adherence to a common set of guidelines is important.

Oil On The Water:

- Oil surface slicks and plumes can appear different for many reasons including: oil or product characteristics, time of day (different sun angles), weather, sea state, rate at which oil disperses, etc.

- Low contrast conditions (i.e. overcast, twilight, haze, etc.) make observations difficult.

- For best viewing, the sun should be behind you and with the aircraft at an altitude of about 200-300 feet flying at a 30 degree angle to the slick.

Dispersant Applications:

- During dispersants application, it may not be possible to determine the actual area of thickest oil concentrations, resulting in variable oil to dispersant application rates. This could lead to variations in the effectiveness of application. These conditions should be reported by the observer.

- Initial application may have a herding effect on the oil. This would make the slick appear to be shrinking, however, it is the dispersant “pushing” the oil together. Due to this effect, in some cases, the oil slick may even “visibly disappear” from the sea surface for a short time.

- After dispersant application, there may be color changes on the emulsified slick due to reduction in water content and viscosity, and shape of slick, due to the demulsification action of the dispersant, which enhances dispersion.

- Many trials have indicated that dispersants appear to modify the spreading rates of oils and within a few hours treated slicks cover much larger areas than control slicks.

Effective/Ineffective Applications:

- Dispersed oil plume formation may not be instantaneous after dispersant application. In some cases, such as when the oil is emulsified, it can take several hours. A dispersed oil plume may not form at all.

- The appearance of the dispersed plume can range from brown to white (cloudy) to no visible plume.

- Sometimes other things such as suspended solids may appear like dispersed oil.

- The visibility of the dispersed plume will vary according to water clarity. In some case, remaining surface oil and sheen may mask oil dispersing under the slick and thus interfere with

observations of the dispersed oil plume.

- Dispersed oil plumes often are highly irregular in shape and non-uniform in concentration. This may lead to errors estimating dispersant efficiency.

- If a visible cloud in the water column is observed, the dispersant is working.

- If a visible cloud in the water column is not observed, it will be difficult to determine if the dispersant is working or not.

- If there are differences in the appearance of the treated slick versus an untreated slick, the dispersant may be working.

- Boat wakes through oil may appear as a successful dispersion of oil, however, this may be just the vessel wake breaking a path through the oil (physically parting the oil) not dispersing it.

DISPERSANT OBSERVATION EQUIPMENT AND PREFLIGHT SAFETY BRIEF CHECKLIST

Observation Aids: (Responsibility of Observer Team)

- ◯ Basemaps / Charts of the Area
- ◯ Clipboard and Notebook
- ◯ Pens / Pencils
- ◯ Checklists and Reporting Forms
- ◯ Observation Job Aids (Oil on Water & Dispersant Observation)
- ◯ Camera and Extra Film
- ◯ Voice Recorder to Assist in Taking Notes
- ◯ Video Camera
- ◯ Binoculars

Safety Equipment: (Responsibility of pilot or aircrew)

- ◯ Personal Floation Device
- ◯ Emergency Locator Beacon
- ◯ Survival Equipment
- ◯ NOMEX Coveralls (if available)
- ◯ Cold Water Flotation Suit * (if water temperature requires)
- ◯ Intercom

Safety Brief - Preflight Safety Brief with Pilot: (Responsibility of pilot or aircrew)

- ◯ Safety Features of Aircraft (i.e. fire extinguishers, communications devices, emergency locator beacon, flotation release, raft, first aid kit, etc.)
- ◯ Walk Around Aircraft
- ◯ Emergency Exit Procedures
- ◯ Purpose of Mission
- ◯ Area Orientation / Copy of Previous Overflight
- ◯ Route / Flight Plan

◯ Duration of Flight

◯ Preferred Altitude

◯ Landing Site

◯ Number of People on Mission

◯ Estimated Weight of People and Gear

◯ Gear Deployment (if needed, i.e. dye marker, current drogue, etc.)

◯ Frequency to Communicate Back to the Command Post

Spill Information: (Provided by Dispersant Operations Group Supervisor)

◯ Incident Name: _____

◯ Source Name: _____

◯ Date / Time Spill Occurred: _____

◯ Location of Spill: _____

◯ Latitude: _____ Longitude: _____

◯ Type of Oil Spilled: _____

◯ Amount of Oil Spilled: _____

Weather On Scene: (Provided by Scientific Support Coordinator)

◯ Wind Speed and Direction: _____

◯ Visibility: _____

◯ Ceiling: _____

◯ Precipitation: _____

◯ Sea State: _____

OPERATION PRE-BRIEF: AIRCRAFT ASSIGNMENTS
(Provided by Dispersant Operations Group Supervisor)

	Title	Aircraft/Personnel	Tactical Call Sign	ETD	ETA
◯	Spotter (s)	_____	_____	____	____
		_____	_____	____	____
◯	Sprayer (s)	_____	_____	____	____
		_____	_____	____	____
◯	Observer (s)	_____	_____	____	____
		_____	_____	____	____

Title	Aircraft/Personnel	Tactical Call Sign	ETD	ETA
◯ Monitor (s)	_____	_____	____	____
	_____	_____	____	____
◯ Supervisor (s)	_____	_____	____	____
	_____	_____	____	____

SAFETY CHECK: (Responsibility of pilot or aircrew)

◯ Check all safety equipment and pre-flight safety brief with Pilot

ENTRY / EXIT POINTS: (Responsibility of Dispersant Operations Group Supervisor)

	Airport	Tactical Call Sign
◯ Entry:	_____	_____
◯ Exit:	_____	_____

COMMUNICATIONS: (complete only as needed; primary/secondary)

(Responsibility of Dispersant Operations Group Supervisor)

◯ Observer to Spotter: (air to air) VHF _____ UHF _____ Other _____

◯ Observer to Monitor: (air to vessel) VHF _____ UHF _____ Other _____

◯ Observer to Supervisor: (air to ground) VHF _____ UHF _____ Other _____

◯ Supervisor to Monitor: (ground to vessel) VHF _____ UHF _____ Other _____

◯ Monitor to Monitor: (vessel to vessel) VHF _____ UHF _____ Other _____

DISPERSANT OBSERVATION FINAL REPORTING FORM

(Completed by Dispersant Operations Group Supervisor)

- ◯ Names of Observers (Agency): _____
- ◯ Platform: _____
- ◯ Date of Application: _____
- ◯ Location (Long./Lat.) / Distance from Shore: _____
  _____
- ◯ Time of Commencement of Application: _____
- ◯ Time of Completion of Application: _____
- ◯ Weather Conditions (air temperature, wind speed, direction): _____
  _____
- ◯ Water Temperature, Depth, and Sea State: _____
- ◯ Visibility: _____
- ◯ Altitude (observation and application platforms): _____
- ◯ Type of Application Method (aerial / vessel): _____
- ◯ Type of Oil: _____
- ◯ Oil Properties (specific gravity, viscosity, pour point, etc.): _____
- ◯ Name of Dispersant: _____
- ◯ Surface Area of Slick: _____
- ◯ Operational Constraints Imposed by Agencies: _____
- ◯ Percent Slick Treated: _____
- ◯ Estimated Efficiency: _____
- ◯ Visual Appearance of Application: _____
- ◯ Submerged Cloud Observed? _____
- ◯ Recoalescence (reappearance of oil): _____
- ◯ Effectiveness of Application in Achieving Goal (reduce shoreline impact, etc.): _____
  _____
- ◯ Presence of Wildlife (any impacts, i.e. fishkill, etc.): _____
- ◯ Photographic Documentation: _____
- ◯ Lessons Learned: _____

COMMON ICS RESPONSIBILITIES FOR EACH POSITION

A. Common Incident Command System responsibilities should be performed to ensure proper communications and information flow within the Unified Command. This checklist should be added to each functional checklist mentioned earlier.

B. The **Common ICS Responsibilities** are as follows:

- Obtain briefings from supervisors
- Participate in planning meetings as required
- Review assignments with subordinates.
- Maintain communications with subordinates
- Ensure safe operations
- Make or approve expedient changes to the Incident Action Plan (IAP) during the operational period if necessary
- Determine the need and request additional resources
- Maintain Activity Log and submit to the Documentation Unit Leader, Situation Unit Leader, or the Planning Section

SITE SAFETY PLAN TEMPLATE FOR DISPERSANT OPERATIONS

A. SITE DESCRIPTION

Location

General area_____
Lat._____ Long. _____

Hazards

Oil: _____
Dispersants: _____
General safety hazards: _____

Weather related hazards (mark appropriate)

___sea state, ___heat stress, ___hypothermia, ___frostbite, ___severe storms, ___fog, other:_____

B. RESPONSE ORGANIZATION

Function and Name	**Phone Number**
OSC:	
Site Safety and Health Officer:	
Scientific Support Coordinator:	
Contractor Supervisor:	
Responsible Party:	
State Representative	
Other Fed/State/Local reps:	

C. RESPONSE OBJECTIVES.

__ Dispersant application __ Dispersant observation ___ Dispersant monitoring __ Other
_____

Detailed objectives shall be developed daily. Dispersant workplan shall be attached to this site safety plan.

D. SITE CONTROL.

1. Reporting: Personnel involved with dispersant application, observation, and monitoring shall report to the safety officer and the Unified Command.

2. Site Safety Plan: Personnel involved with dispersant application, observation, and monitoring shall subscribe to this or other site safety plans approved by the safety and health officer.

3. Training: No person shall take part in the dispersant operation without adequate training in safety and health, based on work assignment and relevant hazardous conditions.

4. Site boundary: Site boundaries and exclusion zones for dispersant operation shall be marked on a map, (attached) and be modified as necessary.

5. Exclusion zone: Exclusion zone will be established by the Unified Command as needed to keep away vessels not involved with dispersant operations.

E. HAZARD EVALUATION

Crude oils

Composition: Crude oils are composed of indefinite number of hydrocarbon compounds. Most crude oils contain benzene, up to 1 percent by volume. Crude oils also contain toluene, xylene, naphthalenes, & PolyAromatic Hydrocarbons (PAHs) in concentrations that vary widely depending on the source of the oil, weathering, and aging.

Hazard Description: Crude oil may cause dermatitis by skin contact; nausea by inhalation; and eye irritation. Benzene is a hematological toxin (it affects the blood and blood forming organs), and is a carcinogen. The most significant hazard from benzene, toluene, and xylene is in poorly ventilated areas (such as pits or under docks), or around freshly spilled oil. Benzo(a)pyrene is a skin contact hazard and potentially may cause skin cancer with chronic skin contact. As oil weathers and ages, benzo(a)pyrene becomes more concentrated because it evaporates much slower than other chemicals in the mixture.

Basic Precaution: Stay away from, or upwind of, fresh oil spills; wear chemical resistant clothing as necessary to protect against skin or eye contact; periodically change protective clothing that has oil on it; immediately change clothing that is showing evidence of oil penetrating to your skin; and wash skin with soap and water if contact with oil occurs. Flush eyes with water if oil gets in them. If ingested do not induce vomiting, contact a physician. Use respiratory protection when volatile organic compounds and specifically benzene concentrations exceed OSHA PEL.

Exposure limits of interest:

benzene	1 ppm (OSHA)
toluene	100 ppm (OSHA)
xylene	100 ppm (OSHA)
naphthalene	10 ppm (ACGIH)
hexane	50 ppm (OSHA)
coal tar/coal tar pitch volatiles	0.2 mg/m3 (OSHA/ACGIH)

Dispersants Application

Dispersants act like detergents. They reduce the surface tension of the oil and break it into tiny droplets. The oil droplets are then mixed in the water column and disperse . To be effective, dispersants keep the droplets apart, and prevent coagulation. Early dispersants (late 60') contained fairly strong and toxic solvents that were used for clean up of oil tanks or mechanical equipment. They were quite toxic, both to marine organisms and to human. The dispersants currently in use are much less toxic. They contain a surfactant mixed with a solvent, and possibly other chemicals that serve as stabilizers. The solvents currently in use are water, alcohol, glycol, or ethylene glycol.

When applied, dispersants are sprayed on the oil slick, most likely by aircraft. Flying altitude during application is expected to be 50 to 100 feet above the water. The droplets should be large enough to settle rapidly on the slick. Smaller droplets may remain suspended for a longer period of time, and be carried downwind over some distance.

Health Hazards

Inhalation of droplets is the most likely route of exposure to dispersant. The toxicity of the solvents now in use is relatively low, and the concentration , if safe operating procedures are used, is not expected to be above the level of

concern. Overexposure to the solvent in dispersants, which are the compound of most concern, may cause nausea, dizziness, headache and skin and eye irritation. These are the symptoms to watch out for. See attachment 3 for MSDS for Corexit 9527

All persons coming in contact with the dispersants should read and understand the material safety data sheet (MSDS) of the dispersant to be used. The hazards of contact, symptoms, and preventive measures should be understood and followed.

Protection

Adequate protection may be achieved by minimizing exposure. Vessels monitoring dispersant operations should be upwind and shall keep a safe distance away (300 yards) during aerial application. In general, using respirators should not be a routine practice for personnel involved in dispersant application and monitoring. However, under some conditions, when monitoring indicate that overexposure to oil or dispersant may occur, respirators may be used per recommendation of the site safety officer.

Personnel loading the dispersants on planes and vessels and otherwise handling large quantities of the product should exercise greater caution and protection. They should wear non-permeable clothing, boots, and gloves, use eye protection, and exercise safe loading transfer of the material. procedures. Since loading of dispersant-applying aircraft may be done many miles away, prudent safety management requires that this operations will be monitored by a safety supervisor at the loading site.

Monitoring

Monitoring may be conducted to evaluate the concentration of hazardous chemicals, and to justify the level of PPE. Refer to attachment 1

E. GENERAL SITE SAFETY AND HEALTH PROCEDURES.

The following controls shall be observed (check appropriate)

__ **PFD:** All personnel working in boats or near water (10 feet or less) shall wear Coast Guard approved personal flotation devices (PFDs).

__ **Buddy System:** Personnel must work within sight of a partner at all times.

__ **Fires**: All vessels shall carry fully charged and operational fire extinguishers.

__ **Heat Stress**: The site safety officer shall make heat stress determinations throughout the day. If it is determined that a heat stress hazard exists, an alert shall be passed to all teams. Cold water or lightly sweetened drinks shall be available on all vessels, and their drinking encouraged.

__ **Cold Stress**: Workers shall be provided with adequate warm clothing. The Site Safety Officer shall make cold stress determinations throughout the day when temperatures fall below 50 degrees F. For prolonged water temperatures below 59 degrees F, or a combined water and air temperature less than 100 degrees F, exposure suits shall be worn by personnel working/traveling in small boats or aircraft over water.

__ **UV Light Exposure**: Sunscreens of protection factor 15 (or greater), and UV tinted safety glasses shall be made available for response personnel as needed.

__ **Helicopter Operations**: See attachment 2

G. PERSONAL PROTECTIVE EQUIPMENT (PPE) See attachment 4 for level D and C ensembles.

H. DECONTAMINATION PROCEDURES

All contaminated items shall either be decontaminated or disposed off appropriately.

J. EMERGENCY PROCEDURES

1. Emergency Medical Procedures:

- Contact medical personnel for any event beyond your capacity to help.
- Do not attempt to move seriously injured personnel due to risk of further injury. Call for medical evacuation.
- The closest hospital for regular emergencies is:
  _____ Phone: _____
- Closest hospital for chemical exposure emergencies:
  _____ Phone: _____
- Contact ATSDR (404) 639-0615 (24 hr)

2. Emergency Fire Procedures:

- If you discover a fire onboard a vessel, immediately notify whomever is in charge. Begin fighting the fire with the nearest extinguisher. Be careful not to let yourself get in a position where you have no means of escape. Turn over the fire-fighting to someone better trained (if you're not) and help them by supplying extinguishers or other fire fighting equipment they may need. When there is a fire onboard a vessel, it is most important to let someone else know IMMEDIATELY.
- YOU MUST sound the appropriate fire signal if fire can not be put out quickly.
- Radio in for help, use distress signals.

K. COMMUNICATION

1. Hand Signals:

THUMBS UP: I'm OK / I agree.
THUMBS DOWN: don't agree.
HANDS ACROSS THROAT: out of air / trouble breathing
GRAB HAND/ARM: come with me
HANDS ON HEAD: I need assistance
Repeated short blasts from a hand held fog horn shall be used to indicate a fire emergency.

2. Radio Communication:

Working:
freq:_____, chnl:_____ (__VHF __UHF __CB _____OTHER)

Emergency:
freq:_____, chnl:_____ (__VHF __UHF __CB _____OTHER)

freq:_____, chnl:_____ (__VHF __UHF __CB _____OTHER)

3. Phone Communication:

On-Scene Coordinator:
(_____)_____(_voice _fax _cellular _pager _home)
(_____)_____(_voice _fax _cellular _pager _home)

Site Safety and Health Officer:
(_____)_____(_voice _fax _cellular _pager _home)
(_____)_____(_voice _fax _cellular _pager _home)

Agency for Toxic Substance and Disease Registry (ATSDR)
(404)639-0615 (24 hr) (voice) 0655 (fax)
Case officer: _____

ATSDR can provide emergency medical and toxicological information, assist in determining procedures for potential chemical overexposures, and can provide on scene assistance for certain chemical emergencies.

Police:
(_____)_____(_voice _fax _cellular _pager _home)

Fire:
(_____)_____(_voice _fax _cellular _pager _home)

Ambulance/EMT/Hospital:
(_____)_____(_voice _fax _cellular _pager _home)

(_____)_____(_voice _fax _cellular _pager _home)

OTHER NUMBERS:
(_____)_____(_voice _fax _cellular _pager _home)

(_____)_____(_voice _fax _cellular _pager _home)

(_____)_____(_voice _fax _cellular _pager _home)

(_____)_____(_voice _fax _cellular _pager _home)

Sign Up Sheet

Team Member (Print Name)	Contact Number (Phone, Pager)	Signature	Date

References:

(a) 29 CFR 1910.120 OSHA regulations for Hazardous Waste Sites

(b) 40 CFR 311 Worker Protection

(c) NIOSH/OSHA/USCG/EPA Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (NIOSH 85-115)

(d) Site Safety Program for Oil Spill Response

GENERIC SITE SAFETY PLAN FOR DISPERSANT OPERATIONS

ATTACHMENT #1

ENVIRONMENTAL MONITORING FOR CHEMICAL HAZARDS:

The following monitoring shall be conducted. Monitoring equipment shall be calibrated and maintained in accordance with the manufacturer's instructions (electronic equipment shall be calibrated before each day's use).

INSTRUMENT	**FREQUENCY**
__ Combustible gas	___continuous, ___hourly, ___ daily, Other:
__ Oxygen	___continuous, ___hourly, ___ daily, Other:
__ HNU	___continuous, ___hourly, ___ daily, Other:
__ OVA	___continuous, ___hourly, ___ daily, Other:
__ WBGT/heat stress	___continuous, ___hourly, ___ daily, Other:
__ Noise	___continuous, ___hourly, ___ daily, Other:
__ H_2S Monitor	___continuous, ___hourly, ___ daily, Other:
__ other chemical specific monitors (colorimetric/electronic):	
1.	___continuous, ___hourly, ___ daily, Other:
2.	___continuous, ___hourly, ___ daily, Other:

GENERIC SITE SAFETY PLAN FOR DISPERSANT OPERATIONS

ATTACHMENT #2

AIRCRAFT SAFETY

The acute hazard of aircraft related accident seems to be the major health and safety concern in dispersant observation. Care must be taken that the observation aircraft will not fly close to the aircraft applying the dispersant. All flight must be well coordinated, and safety distance must be kept at all times.

CHOICE OF PLATFORMS

Helicopters are often the aircraft of choice during spill response. Fixed wing aircraft may be used, however, as observation or application platforms. An important consideration for flying aboard any aircraft type is whether or not you are adequately prepared for emergency landings in the event of equipment problems. Multi-engined aircraft are always preferred and offer a much higher degree of safety, especially when operating over water. Floats on a helicopter may be comforting and provide some degree of safety but are often inadequate in rough or rolling seas. If single engine aircraft are used, operations should be adjusted to account for the possibility of a forced landing. One option is to operate only within a reasonable distance to shore and at an altitude that would allow for an emergency no power landing. Another option is to operate only in conjunction with vessels equipped with monitoring communications and able to effect a quick rescue response. In all cases appropriate safety and flotation equipment should be worn. Keep in mind that in time of emergency you will not have time to put on your flotation vest or grab the emergency locator. You better have it on you at all times while in flight.

HELICOPTER SAFETY

BEFORE YOU BOARD...

Notification: Notify the person in charge (OSC, XO, flight ops, SSC etc.) of the flight purpose, destination, and estimated time of return.

Safety brief: Make sure that you and the other passengers get a thorough safety briefing before you fly. It should include general information about the flight, safety features and how to use them, and emergency procedures. Don't forget to take a good look at the aircraft. Rusty rotor blades or improvised repairs may be an indication of poor maintenance. If you are not satisfied with what you see or hear, get another aircraft or pilot.

Safety gear: Prepare your personal safety gear (NOMEX suit, flotation vest, emergency locator, etc.) and make sure it works. Make sure you wear your safety gear (flotation vest, survival equipment) at all times while in flight. You will have no time to put it on in time of emergency.

Brief the pilot: The team leader should brief the pilot on mission details: Where you want to fly, preferred altitude, landing site, number of people, the purpose of the mission, route, estimated weight of people and gear, gear deployment if needed, and other pertinent details. If possible tell the pilot you would like to do your observations through an open window, plan your flight path so you minimize the time you will be looking up sun.

Equipment: Take appropriate map/charts with you to sketch the extent of the spill you observe; the ability to communicate with the pilot during the overflight is important to optimize the overflight observations. Take camera and/or video for documenting what you see. It is helpful if a second person can do the photography.

BOARDING

It is best to board the helicopter when the rotor is stationary. Often it is not possible. If there is a crew member to assist you, follow his/her instructions. If not, board as follows:

- From a safe distance (at least 100 feet) wait for the helicopter to land safely. Be patient. Sometimes the pilot will reposition the helicopter after the first landing.

- Secure any loose items that may be blown away by the rotor wind (downwash). This includes clothing, notebooks, maps, etc.

- Look the other way when the helicopter lands. The downwash from the rotor is equivalent to a 70-80 mph wind, and flying debris may injure your eyes. Wear eye protection when approaching the helicopter.

- You may receive a helmet or headphones from the helicopter crew. If not, wear hearing protection when approaching the helicopter, and during the flight. Most helicopters are very noisy.

- After the helicopter lands, signal to the pilot (which sits on the right hand side) your intention to board. Point to yourself, then to the helicopter, and give a thumbs-up signal. If the pilot approves, he will return the thumbs-up signal. If not, he will give you the thumbs-down, or simply wave you away.

- Approach the helicopter from the front, preferably at an angle from the right hand side (see diagram). This way you will be visible to the pilot. If this is not possible, come from the front and left. **NEVER EVER APPROACH THE HELICOPTER FROM THE BACK**. The tail rotor is low, spins very fast, and can't always be seen very well. People lost their lives not following this simple safety procedure. If you need to change sides, walk around the front.

- Pay attention to the terrain, and approach the helicopter from the downhill side. This will allow for more clearance between your head and the main rotor.

- If the pilot turned the power off, wait until the rotors stop moving. Just before they stop, the rotors lose momentum and the blades dip closer to the ground.

WHILE IN FLIGHT (Some safety tips):

- As you would do in a car, sit down and fasten your seat belt. If you sit on the floor and/or plan to "hang out" near the open door, wear the gunners belt and make sure it is securely fastened.

- Listen attentively to the briefing by the pilot or crew member on how to get out during an emergency landing. Make sure you know how to operate the emergency exits.

- Absolutely no smoking!

- Wear all the survival gear you plan to take with you. What's on you is what you will have should you need to get out in a hurry.

- If you deploy equipment during the flight, throw it down and under the belly of the helicopter. Relax and enjoy the flight!

COMMUNICATION (When communicating with the pilot or crew member):

- Keep non-essential communications to a minimum. You may be blocking an important call. When you speak be concise and to the point.
- Stop talking if your aircraft was called.
- Notify the crew if you hear or see something that they may not be aware of: Incoming call or another aircraft approaching.

EMERGENCY PROCEDURES

Contrary to popular beliefs, helicopters are safe aircraft, and accidents are rare. Helicopters can land safely using one engine, and in the rare occasion of complete power loss, an experienced pilot will land the helicopter with minimum damage using auto rotation. Nevertheless, you need to be prepared for an emergency:

<u>In case of emergency landing:</u>

- Remove your glasses (they may shatter and injure your eyes) and objects from your mouth
- Disconnect the microphone cord.
- Assume the ditching position
- After landing, release the seat belt, open exit, wait for the rotor to stop spinning, and only then exit the aircraft.

<u>Water ditching:</u>

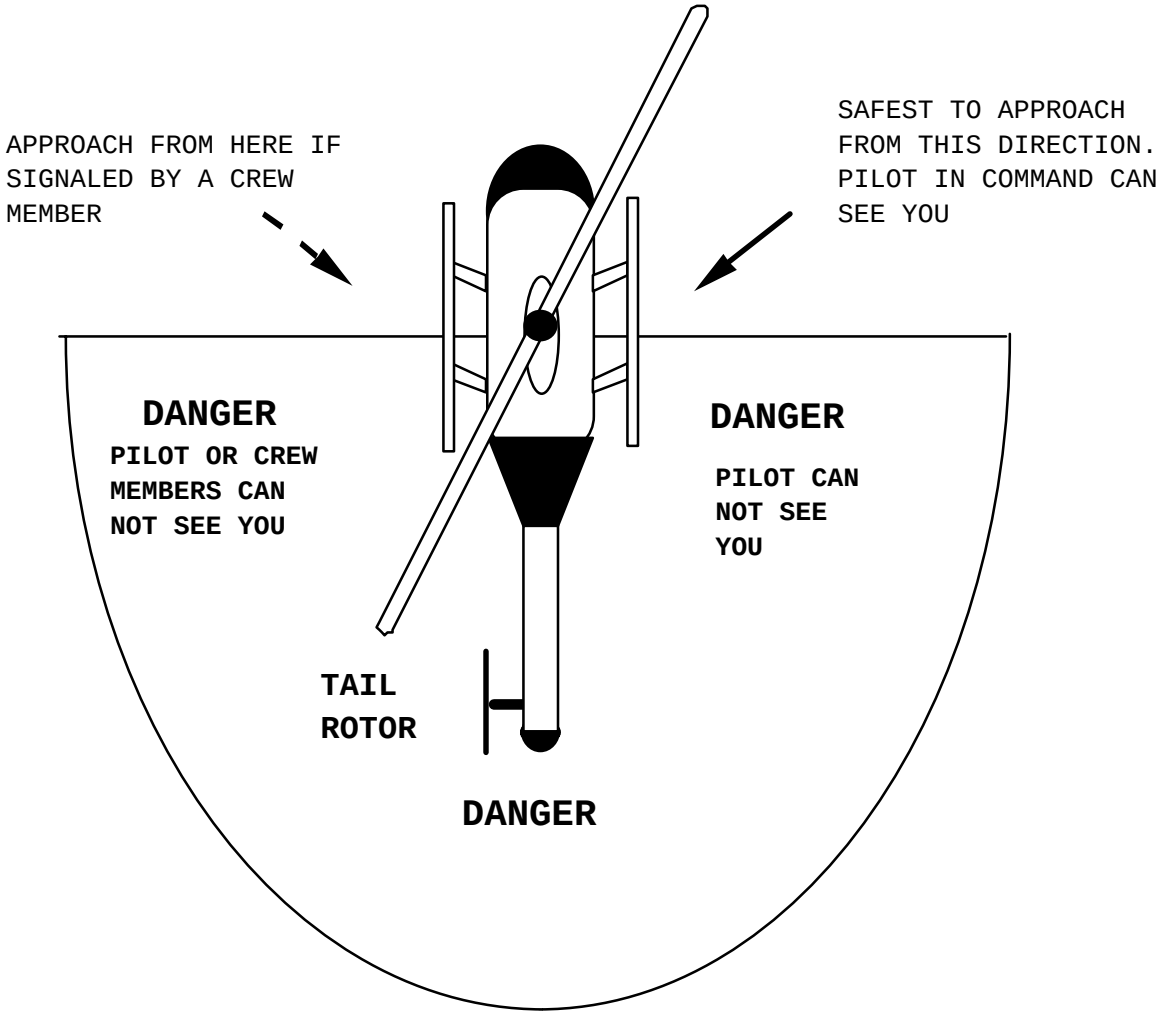
Helicopters are top-heavy and may invert when landing on water. This may complicate egress and cause disorientation. It is imperative that you locate a reference point to guide you out.
In case of water ditching you should:

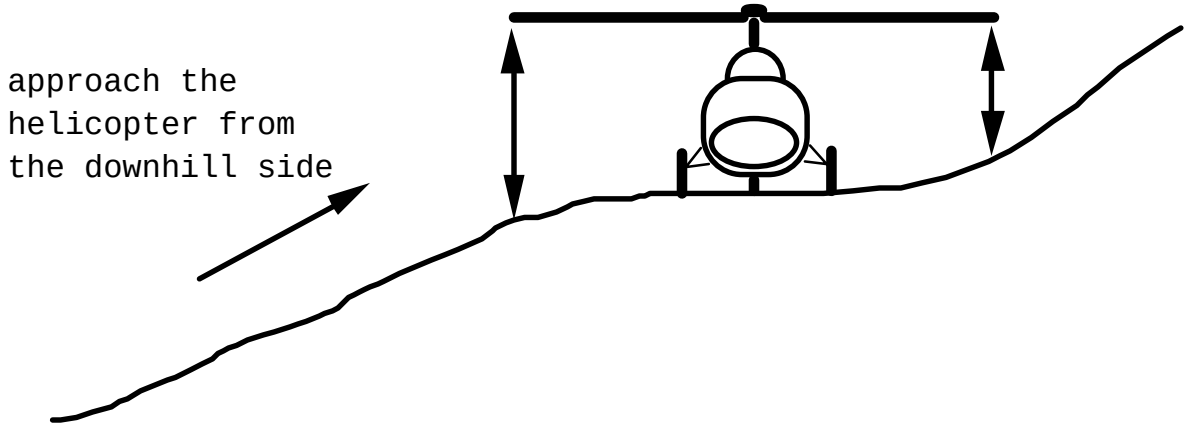
- Find a reference point and hold on to it.
- Hold your breath upon contact with water.
- Wait 5-8 seconds after the helicopter has submerged (or until rotor movement stops), then release your seat belt.
- Using the reference point, move to the exit, open it if needed, and exit.
- Inflate the flotation vest only after you are outside the helicopter. Inflating it inside will inhibit your movement.
- Stay near the aircraft.

- Do not use distress flares if oil or fuel are present.

Using common sense and following some basic safety procedures should help you fly safely in helicopters. If you notice safety violations, don't hesitate to report them, even if on your flight everything turned out OK in the end. Similar violations may cause an accident in the future.

SAFE APPROACH TO A HELICOPTER





GENERIC SITE SAFETY PLAN FOR DISPERSANT OPERATIONS

ATTACHMENT #3

TECHNICAL PRODUCT BULLETIN #D-6
EMERGENCY RESPONSE DIVISION
DATE LISTED: March 10, 1978

"COREXIT 9527"

I. NAME, BRAND, OR TRADEMARK

COREXIT 9527

1. Type of Product: Dispersant (Concentrate)

II. NAME, ADDRESS AND TELEPHONE NUMBER OF MANUFACTURER

Nalco/Exxon Energy Chemicals. LP
P.O. Box 87
Sugar Land, TX 77487-0087
Mr. David Acker, (713)263-7473
Ms. Marge Walsh, (713)263-7265

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Nalco/Exxon Energy Chemicals. LP
P.O. Box 87
Sugar Land, TX 77487-0087
Mr. David Acker, (713)263-7473
Ms. Marge Walsh, (713)263-7265

TO ALERT THE EMERGENCY RESPONSE TEAM CALL 1-800-231-6633 24 HRS/DAY ASK FOR COREXIT.

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION

1. Flammability:

COREXIT 9527 is not classified as flammable by either DOT or IMO regulations.

2. Ventilation:

Avoid prolonged breathing of vapors. Use with ventilation equal to unobstructed outdoors in moderate breeze.

3. Skin and eye contact; protective clothing; treatment in case of contact:

Avoid contact with skin or eyes. The use of gloves, goggles and protective clothing is recommended. In case of contact, flush exposed area with water. Wash thoroughly after using.

4. Storage temperature:

a. Maximum storage temperature: l70 F

b. Minimum storage temperature: -30 F
c. Optimum storage temperature range: 40 F to l00 F
d. Temperatures of phase separations and chemical changes:

COREXIT 9527 is not adversely affected by changes in storage temperature unless evaporation is allowed to occur.

V. SHELF LIFE

The shelf life of unopened drums of COREXIT 9527 is unlimited. Containers should always be capped when not in use to prevent contamination and evaporation of solvents.

VI. RECOMMENDED APPLICATION PROCEDURE

l. Application Method:

The usual application methods are by use of aircraft (COREXIT 9527 is applied undiluted during aerial spray), hand-held equipment (e.g., spray cans or "back-pack" sprayers) or workboats (fitted with spray booms mounted ahead of the bow wake as forward as possible.)

COREXIT 9527 should be applied to the floating oil, not to the water around it.

When applied from workboats, an eduction system using a portable fire pump, or a fixed fire-fighting system is best. This should operate at about 40-80 psi depending on the requirements of the eductor used, and deliver sea water at a rate adequate to maintain the spray pattern from the nozzles at the operating velocity of the vessel without blowing away before reaching the oil. Alternatively, the chemical can be fed to the sea water stream with a small metering pump. A treatment rate of about 5 gallons per acre is recommended. The concentration of chemical required must be calculated from the pump capacity, the boom swath width, the boat speed, and (possibly) the thickness of the slick or the amount of oil to be treated over a given area. Unless land areas are immediately threatened, neither agitation nor chemical concentration should necessarily be increased simply to cause rapid disappearance of the oil. Nozzles for spraybooms should produce droplets, not a fog or mist, in a uniform flat spray pattern. Atomizing nozzles are not recommended.

2. Concentration/Application Rate:

During boat application, using an eductor or metering pump for chemical addition, COREXIT 9527 will usually be added to the sea water stream to give a concentration of 3% to 10%, depending on the factors given in part 1 of this section.

For slicks formed by more viscous crude or petroleum products, a hydrocarbon based (kerosene or other aliphatic solvent) dispersant is required. In such a case, one part of COREXIT 9527 may be diluted with 5 or more parts of solvent.

The required dosage of COREXIT 9527 is usually 3 to 7 gallons per acre, regardless of the method of application. Undiluted dispersant is always used in aerial spraying.

3. Conditions for Use:

COREXIT 9527 is not recommended for use on spills on fresh water. It can be used most effectively on spills on salt water of about 1% salt (10,000 ppm salinity) or greater.

Water temperature does not affect the dispersant's action, but the effect of very low temperatures (in increasing the viscosity of the oil) could make dispersion more difficult.

Weathering of oil can have a negative affect on dispersibility, but the amount of time to reach that point can vary widely from a few days to more than a month depending on climatic conditions.

VII. TOXICITY AND EFFECTIVENESS

1. TOXICITY:

MATERIAL TESTE	SPECIES	LC50 (ppm)
COREXIT 9527	Fundulus heteroclitus	100 96-hr
	Artemia salina	50 48-hr
No. 2 Fuel Oil	Fundulus heteroclitus	4,280 96-hr
	Artemia salina	44,000 48-hr
COREXIT 9527 & No. 2 Fuel Oil (1:10)	Fundulus heteroclitus	36 96-hr
	Artemia salina	44 48-hr

2. EFFECTIVENESS

STANDARD EFFECTIVENESS TEST WITH NO. 6 FUEL OIL

VOLUME DISPERSANT	INITIAL (10 min) MEAN % DISPERSION	FINAL (2 hrs) MEAN % DISPERSION
10	71	63
25	69	60

Dosage causing 50% dispersion (from initial dispersion graph) is less than 10 ml.

VIII. MICROBIOLOGICAL ANALYSIS (Not Applicable)

IX. PHYSICAL PROPERTIES

1. Flash Point: 162 F

2. Pour Point: Less than -45 F

3. Viscosity: 60 cst at 60 F, 22 cst at 100 F, 9 cst at 150 F

4. Specific Gravity: 0.995 at 60 F, 0.975 at 100 F

5. pH: 8.2 (10% in deionized water)

6. Surface Active Agents: CONFIDENTIAL

7. Solvents: Water, Ethylene glycol monobutyl ether

8. Additives: Borate ester

9. Solubility: Not Applicable

X. ANALYSIS FOR HEAVY METALS AND CHLORINATED HYDROCARBONS

COMPOUND	CONCENTRATION (ppm)
Arsenic	<0.005
Cadmium	<0.01
Chromium	1.0
Copper	<0.2
Lead	<0.1
Mercury	<0.003
Nickel	<0.1
Zinc	0.1
Cyanide	<0.01
Chlorinated Hydrocarbons	<0.01

GENERIC SITE SAFETY PLAN FOR DISPERSANT OPERATIONS

ATTACHMENT #3 (Cont.)

TECHNICAL PRODUCT BULLETIN #D-69
EMERGENCY RESPONSE DIVISION
DATE LISTED: December 18, 1995

"COREXIT 9500"

I. NAME, BRAND, OR TRADEMARK

COREXIT 9500

1. Type of Product: Dispersant (Concentrate)

II. NAME, ADDRESS AND TELEPHONE NUMBER OF MANUFACTURER

Nalco/Exxon Energy Chemicals. LP
P.O. Box 87
Sugar Land, TX 77487-0087
Phone: (713)263-7256/7265 or (24hrs) 800-231-6633
Fax: (713)263-7955

III. NAME, ADDRESS, AND TELEPHONE NUMBER OF PRIMARY DISTRIBUTORS

Nalco/Exxon Energy Chemicals. LP
P.O. Box 87
Sugar Land, TX 77487-0087
Phone: (800) 333-3714

Nalco/Exxon Energy Chemicals L.P.
P.O. Box 220
Long Beach, CA 90801
Phone: (310) 639-1533

Nalco/Exxon Energy Chemicals. LP
15555 Poydras Street
New Orleans, LA 70112
Phone: (504) 561-4656

Nalco/Exxon Energy Chemicals L.P.
701 E. Tudor Street, # 290
Anchorage, AK 99503
Phone: (907) 563-9866

TO ALERT THE EMERGENCY RESPONSE TEAM CALL 1-800-231-6633 24 HRS/DAY ASK FOR COREXIT.

IV. SPECIAL HANDLING AND WORKER PRECAUTIONS FOR STORAGE AND FIELD APPLICATION

1. Flammability:

COREXIT 9500 is not classified as flammable by either DOT or IMO regulations.

2. Ventilation:

Avoid prolonged breathing of vapors. Use with ventilation equal to unobstructed outdoors in moderate breeze.

3. Skin and eye contact; protective clothing; treatment in case of contact:

Avoid contact with skin or eyes. The use of gloves, goggles and protective clothing is recommended. In case of contact, flush exposed area with water. Wash thoroughly after using. For open systems where contact is likely,

wear long sleeve shirt, chemical resistant gloves, and chemical protective goggles.

4. Storage temperature:

a. Maximum storage temperature: l70 F
b. Minimum storage temperature: -30 F
c. Optimum storage temperature range: 40 F to l00 F
d. Temperatures of phase separations and chemical changes: N/A

V. SHELF LIFE

The shelf life of unopened drums of COREXIT 9500 is unlimited. Containers should always be capped when not in use to prevent contamination and evaporation of solvents.

VI. RECOMMENDED APPLICATION PROCEDURE

l. Application Method:

COREXIT 9500 is a high performance, biodegradable oil spill dispersant concentrate that is effective on a wide range of oils including the heavier, more weathered oils and emulsified oils. COREXIT 9500 contains the same surfactants present in COREXIT 9527 and a new improved oleophilic solvent delivery system. The product can be used in all regions of the world regardless of climate.

Aerial Spraying. For aerial spraying, apply COREXIT 9500 undiluted. Various fixed-wing aircraft or helicopters can be used for spraying over a large area, from an altitude of 30 to 50 feet or even higher, depending on application equipment and aircraft.

The spray nozzles used are most critical since droplet size must be controlled. Avoid nozzles that produce too fine a spray (mist or fog). No nozzle may be necessary if the airplane travels at 120 mph (104 knots) or more, since the air shear at these speeds will be sufficient to break the chemical stream into droplets.

Boat Spraying. COREXIT 9500 may be applied by workboats equipped with spray booms mounted ahead of the bow wake as far forward as possible. The preferred and most effective method of application from a workboat is to use a low-volume, low-pressure pump so the chemical can be applied undiluted. Spray equipment designed to provide a diluted dispersant solution to the spray booms can also be used. As with most effective concentrates, dispersant concentrations in the 5 to 10% range are recommended to avoid significant fall-off in effectiveness. COREXIT 9500 should be applied as droplets, not fogged or atomized. Natural wave or boat wake action usually provides adequate mixing energy to disperse the oil. Water from a fire hose can also be used for agitation of the treated slick.

Recent tests have indicated that a slightly modified fire monitor may also be useful for applying dispersant concentrations such as COREXIT 9500. A screen cap is used on the nozzle of the monitor to obtain a more uniform spray pattern with the proper sized droplet. Due to the volume output and the greater reach of the fire monitor, significantly more area can be covered in a shorter period of time than using conventional spray booms.

System Calibration. Spray systems should be calibrated at temperatures anticipated to insure successful application and dosage control. Application at sub-freezing temperatures may require larger nozzle, supply lines, and orifices due to higher product viscosity. Refer to Exxon Chemical Company's Applications Guide for charts and aids in designing and calibrating application systems

2. Concentration/Application Rate:

A treatment rate of about 2 to 10 U.S. gallons per acre, or a dispersant to oil ratio of 1:50 to 1:10 is recommended. This rate varies depending on the type of oil, degree of weathering, temperature, and thickness of the slick.

3. Conditions for Use:

As with any dispersant, COREXIT 9500 should be applied as soon as possible to the floating oil to ensure the highest degree of success. Early treatment with COREXIT 9500, even at reduced treat rates, can also counter the "mousse" forming tendencies of the spilled oil.

COREXIT 9500 is useful on oil spills on fresh or salt waters, and at any water temperatures. The product is effective on most oils, weathered spills, and chocolate mousse. Although viscous oil may require higher dosage rates, any oil that will film or spread on the water surface usually can be dispersed.

VII. TOXICITY AND EFFECTIVENESS

1. TOXICITY:

MATERIAL TESTED	SPECIES	LC50 (ppm)
COREXIT 9500	Menidia beryllina	25.20 96-hr
	Mysidopsis bahia	32.23 48-hr
No. 2 Fuel Oil	Menidia beryllina	10.72 96-hr
	Mysidopsis bahia	16.12 48-hr
COREXIT 9500 &	Menidia beryllina	2.61 96-hr
No. 2 Fuel Oil (1:10)	Mysidopsis bahia	3.4 48-hr
Reference Toxicant	Menidia beryllina	7.07 96-hr
(SDS)	Mysidopsis bahia	9.82 48-hr

2. EFFECTIVENESS

Swirling flask dispersant effectiveness test with South Louisiana and Prudhoe Bay Crude Oils

Oil	Effectiveness %
Prudhoe Bay Crude	45.3%
South Louisiana Crude	54.7%
Average of Prudhoe Bay & South Louisiana Crudes	50.0%

VIII. PHYSICAL PROPERTIES

1. Flash Point: 176 F (SETA closed sup; ASTM D3278)
2. Pour Point: -70 F (ASTM D97)
3. Viscosity: 55 cst at 68 F
4. Specific Gravity: 0.949 at 60 F (ASTM D1963)
5. pH: 6.4
6. Chemical Name and Percentage by Weight of the Total Formulation: CONFIDENTIAL
7. Surface Active Agents: CONFIDENTIAL
8. Solvents: CONFIDENTIAL

9. Additives: None

10. Solubility: Soluble in fresh water, but dispersable in sea water.

IX. ANALYSIS FOR HEAVY METALS, CYANIDE, AND CHLORINATED HYDROCARBONS

COMPOUND	CONCENTRATION (ppm)
Arsenic	0.16
Cadmium	N/D
Chromium	0.03
Copper	0.10
Lead	N/D
Mercury	N/D
Nickel	N/D
Zinc	N/D
Cyanide	N/D
Chlorinated Hydrocarbons	N/D

N/D = Not Detected

GENERIC SITE SAFETY PLAN FOR DISPERSANT OPERATIONS

ATTACHMENT #4

PERSONAL PROTECTIVE EQUIPMENT

LEVEL C

OPERATION FOR WHICH THIS LEVEL C ENSEMBLE APPLIES:

Dispersant application, observation and monitoring

SPLASH SUIT

___ Tyvek
___ Saranex

INNER GLOVES

___ Nitrile

OUTER GLOVES

___ Silvershield
___ Solvex
___ Ansol
___ Fireball

OUTER SAFETY BOOTS

___ Neoprene
___ Outer booties

OTHER

___ Full Face Air Purifying Respirator Cartridges: _____

___ Hard Hat

___ EEBA

LEVEL D

OPERATION FOR WHICH THIS LEVEL D ENSEMBLE APPLIES: _____
_____

___ Cloth coveralls

OPTION: long sleeved coveralls (poison plant areas)
OPTION: short sleeved coveralls (heat stress alert)
OPTION: street clothing may be worn by personnel not exposed to splashing liquids or oily equipment.

___ rubber steel toe/shank safety boots with textured bottoms

OPTION: hip high rubber boots (e.g., designated snake areas)
OPTION: deck shoes with textured soles (e.g., boat ops)

___ rubber gloves (as needed)

OPTION: leather gloves (if no contact with oil)

___ PFD (all personnel on or near water)

___ quart bottle to carry fluids (during heat stress alerts)

___ hearing protection (in noisy areas)

___ insect repellent (in designated mosquito/tick areas)

___ hard hat (all personnel in designated areas)

___ safety glasses (as required by Site Safety Officer)

OPTION: with tinted lenses (as required for sunlight)

___ sunscreen (as needed for sunlight)

___ whistle (in designated areas)

NOTES:

1) "AS NEEDED" means to use for prevention of significant skin contact with oil.

2) "RUBBER" means chemical resistant material which prevent oil penetration to the skin or cloth garments underneath.