Safe Seas 2006
Operations Overview
Full Scale Exercise
&
Field Deployment

06 August – 11 August

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Operations Timeline, 09 August

	VIP & MEDIA		Shore Based Ops			Surface Operations					Air Operations				
	CGC Aspen	P/B Steelhead	SCAT TEAMS	GRS Crissy Field	Marine Mammal Ops	OSRV Pacific Responder	R/V Shearwater	R/V Mussel Point	ALCO 85	NRT-6	C-130 Hercules	Partenavia	Lake Amphibian	Charter Aircraft	HH-65 Dolphin
7:00				Equipment Staging		Underway 0600									
7:30			Safety MTG: CMD Post		Safety MTG: CMP Post	Underway	Underway	Underway	Underway						
8:00	Arrive Pier 30/32	Arrive Hyde St				Underway	Transit	Transit	Transit	Deploy NRT		Install geo-referenced NIKON camera			
8:30	Underway	Underway	Transit to Assigned Beaches		Transit to Assigned Beaches	Transit		Drift Card #1 Release?							
9:00	Transit	Transit					Drift Card #2 Release				Show Time		Wildlife surveillance		Aerial Observation Training
9:30						Skimming Ops	Oceanographic Ops		AUV ops #1						
10:00			Shoreline 1 assessment and e-Data Transmission	Transit	Wildlife Collection Field Protocols					Data Collection		transit to Half Moon Bay			
10:30									AUV Recover & Disp. Setup		Depart KNUQ	p/u 2 observers			
10:45	Operations Viewing	Operations Viewing													
11:00												transit			
11:15						Dye release/Drift Card #3 Release	Observations		Dispersant 'B' vessel		Dispersant Application Operation	Establish coms w/ Pac Responder		Dispersant Application Operation	
11:30															
11:45						Dispersant A vessel		Oceanographic Operations							
12:00							SMART Monitoring								Aerial Observation Training and Aspen Overflight (placeholder)
12:15						Command and Control			AUV ops #2		Land KNUQ	Aerial dye photography	Wildlife Surveillance and Overlfight Mapping		
12:30	Return Transit and Lunch	Return Transit		Transit to Sausalito											
12:45															
13:00				Deploy Strategy						Data Processing					
13:15															
13:30		Arrive Hyde St	Shoreline 2 assessment and e-Data Transmissions to CP		Wildlife Lab Protocols										
13:45	Arrive Pier 32														
14:00	Secure	Secure				Transit			Transit						
14:30				Recovery											
15:00								Collect Drifters							
15:30				Transit	Transit to CP	Transit			Secure vessel and transit to CP			Assist w/ UCSB drifter p/u			
16:00			Transit to command Post				Transit			Data Delivered to CP		transit to Half Moon Bay			
16:30					Debrief & Secure			Return Transit	Data Delivered to CP	Secure		transit to Sacto			
17:00			Present data and secure	Secure		Transit	Secure		Secure						
17:30						Transit		Secure							
18:00						Secure									
18:30	NATIONAL MARINE SANCTUARY FOUNDATION RECEPTION, Presidio														
19:00															
19:30															
20:00															

Red Box = VIP Viewing Window

Operations Timeline, 10 August

	VIP & MEDIA		Shore Based Ops				Surface Operations					Air Operations				
	CGC Aspen	P/B Steelhead	SCAT TEAMS	GRS Crissy Field	Marine Mammal Ops	Sector SF Comms Trailer	OSRV Pacific Reponder	R/V Shearwater	R/V Mussel Point	ALCO 85	NRT-6	C-130 Hercules	Partenavia	Lake Amphibian	Charter Aircraft	HH-65 Dolphin
7:00								QREB Recovery								
7:30			Possible Day 2 SCAT													
8:00																
8:30														Sanctuary Overflight		
9:00				Field Ops Hotwash	Field Ops Hotwash	Field Ops Hotwash		Field Ops Hotwash	Field Ops Hotwash	Field Ops Hotwash	Field Ops Hotwash	Field Ops Hotwash	Field Ops Hotwash			Field Ops Hotwash
9:30																
10:00																
10:30																
11:00																
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12:30																
13:00																
13:30	Command Post Hot Wash	Command Post Hot Wash	Command Post Hot Wash	Command Post Hot Wash	Command Post Hot Wash	Command Post Hot Wash	Command Post Hot Wash	Command Post Hot Wash Possible	Command Post Hot Wash	Command Post Hot Wash	Command Post Hot Wash	Command Post Hot Wash	Command Post Hot Wash	Command Post Hot Wash Possible		Command Post Hot Wash
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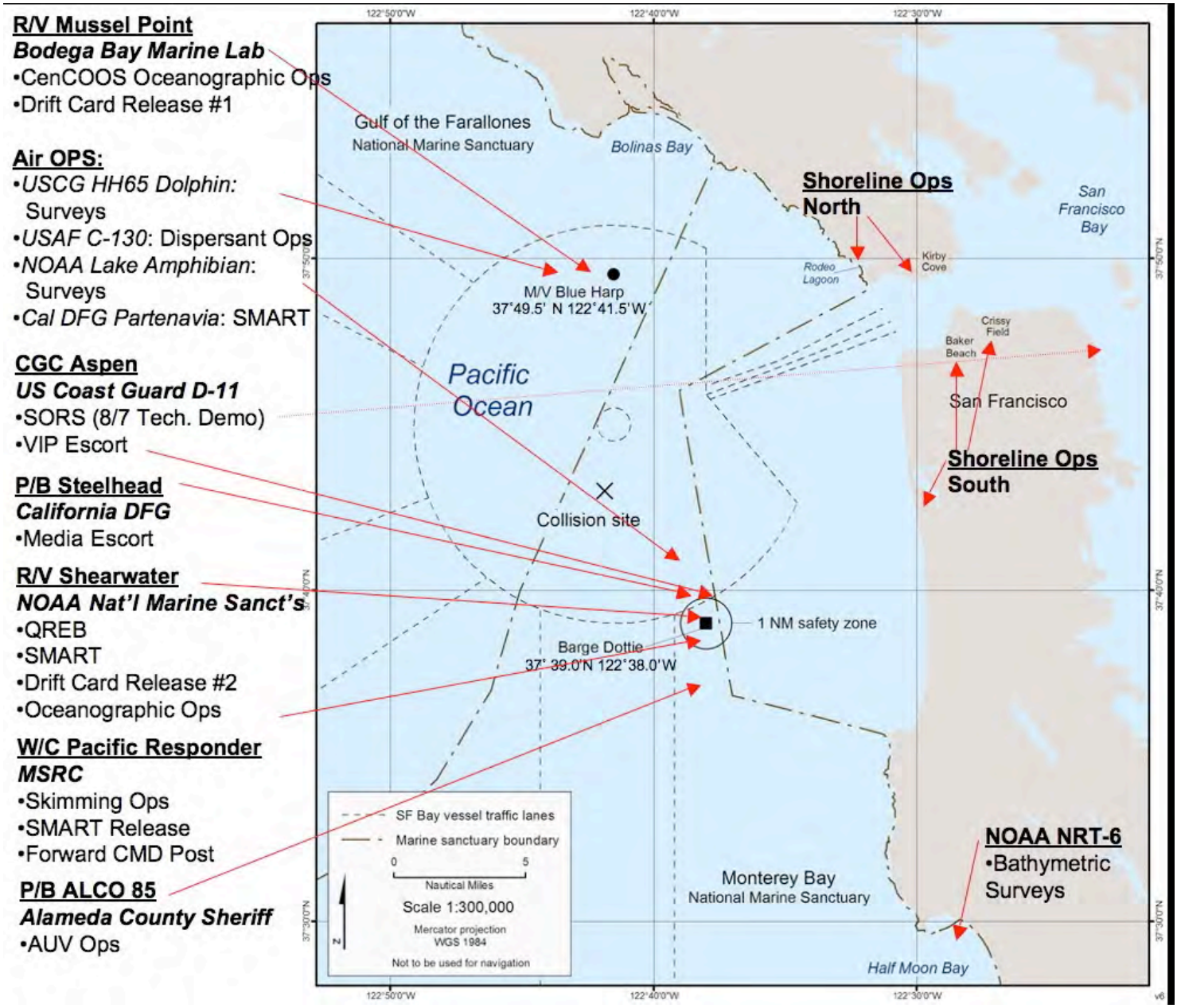
Operations Map



U.S. Coast Guard Cutter *Aspen*

Objectives

E.i.--Deploy USCG SORS and MSRC *Pacific Responder* skimming assets

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv.-- Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

Figure 2. USCGC Aspen inbound under the GG Bridge

Overview

SORS

CGC *Aspen* will conduct a Spilled Oil Response System (SORS) demonstration on Monday, June 7th as part of the Safe Seas 2006 technology demonstration. Limited media and drill participants will be the primary audience.

Figure 3. A CG Buoy Tender deploys SORS

VIP Escort

On 09 August, CG *Aspen* will host up to 40 VIPs for an operational tour of field events. The timing of many of the field activities will be coincident with the arrival of *Aspen* and her guests.

California Dept. of Fish and Game P/B *Steelhead*

Objective(s)

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv. Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

Figure 4 P/B *Steelhead* will host media personnel while escorting the CGC *Aspen*.

Overview

Media Escort

The California Department of Fish and Game Patrol Boat *Steelhead* will host up to 20 media personnel in order to enable viewing and reporting of field operations.

Interagency Shoreline Assessment Teams

Objective(s)

D.iv.--Plan and conduct Shoreline Cleanup Assessments that incorporate response, marine debris, and initial natural resource injury assessment.

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv. Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

E.vi.--Deploy response software and technologies to collect operationally relevant information on water surface, water column, and shoreline oiling conditions.

Figure 5 Shoreline Assessment will occur at these locations.

F.iv.--Conduct fieldwork to collect ephemeral data including SCAT, water samples, wildlife, shellfish, and economic information.

Overview

Shoreline Cleanup and Assessment

Activities will involve four teams and will cover four or five beaches in the potentially impacted area (see above map). Pre-deployed non-toxic, biodegradable wooden drift cards will simulate a portion of the oil from the collision of the (simulated) *Blue Harp* and *Dottie*. For these surveys, NOAA HAZMAT and California OSPR will collaboratively test and implement their new electronic data collection field tools. Field data captured via this method will be transmitted back to the command post using remote internet connection via the cellular network or via satellite data transmission. The resulting maps showing oil distribution will be displayed in the command post.

Marine Debris data collection and training

The NOAA Marine Debris program is sponsoring a component of the drill that will encourage Shoreline Assessment Teams to consider how to record and report the presence of oiled marine debris. Accordingly, a percentage of the drift cards released to simulate oil will be marked to simulate the presence of oiled marine debris. These specially marked cards will be interspersed with the "oil" drift cards and will prompt assessment teams to collect spatial data specific to marine debris.

Interagency Wildlife Rescue

Objective(s)

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv. Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

E.v.--Field test inter-agency wildlife care activities including "Marine Mammal Oil Spill Response Guidelines" and avian flu protocols.

F.iv.--Conduct fieldwork to collect ephemeral data including SCAT, water samples, wildlife, shellfish, and economic information.

Overview

Marine Mammal Stranding Training

Personnel from the National Marine Fisheries Service will accompany Recovery & Transportation teams in order to test newly developed Oiled Marine Mammal Protocols and to learn surveillance and capture methods in order to integrate data and collected animals into the response and post-response process.

Zoonotic Disease Response Technique Training

Consideration will be given to oiled bird and marine mammal protocols in light of new Avian Influenza and Emerging Infectious Disease concerns due to their ability to transmit from animals to humans. This will be in the form of awareness training.

FMSA Beach Watch Volunteers

Objective(s)

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv. Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

F.iv.--Conduct fieldwork to collect ephemeral data including SCAT, water samples, wildlife, shellfish, and economic information.

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Figure 6 Farallones Marine Sanctuary Association's Beach Watch volunteer group will survey beaches in accordance with National Marine Sanctuary Guidance.

Overview

Pre-SCAT Surveys

Beach Watch is a long-term shoreline monitoring project that was founded in 1993. This year-round assessment program is conducted by dedicated volunteers who regularly survey an assigned beach within the Gulf of the Farallones and Monterey Bay National Marine Sanctuaries. Volunteers collect data on live and dead species of birds and marine mammals. They also report violations, detect oil pollution, and collect oil samples.

Beach Watch surveys will involve seven teams of 2-3 surveyors that will survey eight beaches in the potentially impacted area, covering a geographical area from Marin County to San Mateo County. These beaches were selected because of their distance from the spill, timing of the spill, high rates of beached birds and/or high rates of tarballs.

MSRC conducts Geographic Response Area Deployment

Objective(s)

E.ii.--Deploy a sensitive area protection strategy.

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv.--Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

Figure 7. An example of a response strategy

Overview

Crissy Field Boom Deployment

An oil spill response strategy will be deployed at a pre-designated Geographic Response Area (GRA) at Crissy Field in accordance with the San Francisco Bay Area Contingency Plan. The Marine Spill Response Corporation (MSRC) and the California Office of Spill Prevention Response (OSPR) will work collaboratively to fulfill the requirements of the Preparedness for Response Exercise Program (PREP) deploying in excess of 1000 feet of oil containment boom by three small boats.

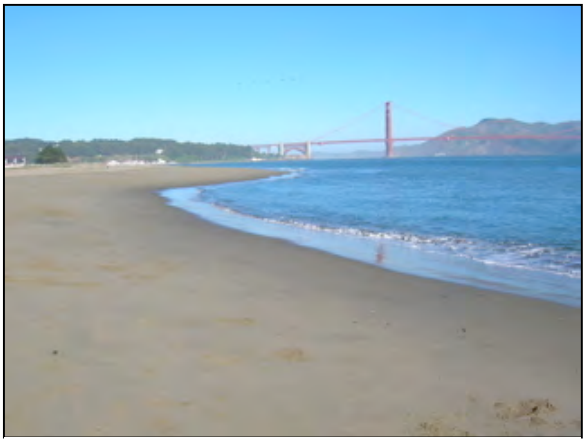

Figure 8. Crissy Field near the Presidio in San Francisco

Access for the deployment will be from the water using small boats supplied by MSRC. This will be the last operation viewed by the CGC *Aspen* during the transit back to Pier 30/32.

Marine Spill Response Corp. OSRV *Pacific Responder*

Objective(s)

Figure 9 Marine Spill Response Corporation 225ft Oil Spill Response Vessel, *Pacific Responder* will serve as the forward command post.

E.i.--Deploy USCG SORS and MSRC *Pacific Responder* skimming assets

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv.--Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

E.viii--Deploy dispersant application assets and follow-on Special Monitoring of Applied Response Technologies (SMART) in order to test the California Dispersant Plan.

Overview

Skimming

The Marine Spill Response Corporation (MSRC) will employ the Oil Spill Response Vessel (OSRV) *Pacific Responder* in order to practice and demonstrate its ability to conduct open water oil skimming in the vicinity of the (simulated) Barge *Dottie*. The simulated product will be an Intermediate Fuel Oil #180, a medium weight refined product. A 26ft Munson small boat will be deployed to provide enhanced skimming capability and assist with the SMART exercise (below).

Forward Command Post

Pacific Responder will also be used as the on scene forward Command Post. In this capacity, her ability to communicate with both air and surface assets will be used to coordinate operations and safety. A NOAA National Weather Service Incident Meteorologist, a US Coast Guard operations manager, and a NOAA exercise controller will be aboard *Pacific Responder* to orchestrate field operations.

Figure 10 Simulating dispersed oil, dye will be tracked and monitored during the SMART exercise.

SMART Exercise

A fluoroscein dye and drifter transport experiment will simulate dispersing oil as a response tactic. The plume will be highly visible to on scene observers, and will be part of the drill play including deployment of the USCG Strike Team Special Monitoring of Alternative Response Technologies (SMART) team and Louisiana State University Chemical Response Team, off of the NOAA R/V Shearwater.

NOAA R/V *Shearwater*

Objective(s)

D.i.--The Situation Unit will develop products that comprise a Common Operational Picture for environmental conditions using real time and near real time environmental observations

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv. Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

Figure 11. NOAA R/V Shearwater will conduct science in support of Emergency Response.

E.vi.--Deploy response software and technologies to collect operationally relevant information on water surface, water column, and shoreline oiling conditions.

E.vii.--Deploy observation technologies for water surface, water column, shoreline, and the seafloor to collect operationally relevant data in real time and near real time.

E.viii-- Deploy dispersant application assets and follow-on Special Monitoring of Applied Response Technologies (SMART) in order to test the California Dispersant Plan.

Figure 12. QREB Deployment.

Overview

QREB: Quick Response Environmental Buoy

The QREB Buoy will be used to obtain real-time oceanographic environmental data to be used for safe navigation that will be made available to modelers and decision makers in the command post. The buoy will be deployed on Tuesday, 08 August at the location of the simulated Barge *Dottie*.

SMART: Special Monitoring of Applied Response Technologies

SMART monitoring and training will be conducted from the NOAA R/V *Shearwater*. This will occur in conjunction with the application of simulated dispersant from the Air Force C-130. SMART monitoring will compare existing protocols with those being developed through the efforts of Cal OSPR, the US Coast Guard Pacific Strike Team, and NOAA HAZMAT.

Figure 13. SMART Monitoring.

Oceanographic Operations

R/V *Shearwater* will collect oceanographic observations using a Conductivity Temperature Depth (CTD) instrument. CTD data will be made available to the Environmental Unit in the Command Post to aid in dispersant application decision making.

Weather

R/V *Shearwater* will collect meteorological observations using an RM Young Meteorological package. Observations will be forwarded to the Incident Meteorologist in order to increase forecast accuracy.

Drift Cards

Approximately 1000 non-toxic, biodegradable **yellow** wooden drift cards will be released to simulate oil released from the (simulated) Barge *Dottie.* Drift cards will be used to initiate numerical oil trajectory models as well as be used for aerial observation training.

Figure 14. Oceanographic operations aboard R/V *Shearwater*

Bodega Marine Laboratory R/V *Mussel Point*

Objective(s)

D.i.--The Situation Unit will develop products that comprise a Common Operational Picture for environmental conditions using real time and near real time environmental observations

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

Figure 15. The Bodega Marine Lab R/V *Mussel Point.*

E.iv. Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

E.vi.--Deploy response software and technologies to collect operationally relevant information on water surface, water column, and shoreline oiling conditions.

E.vii.--Deploy observation technologies for water surface, water column, shoreline, and the seafloor to collect operationally relevant data in real time and near real time.

Overview

Drift Cards

Approximately 1000 non-toxic, biodegradable **orange** wooden drift cards will be released to simulate oil released from the (simulated) M/V *Blue Harp.* Drift cards will be used to initiate numerical oil trajectory models as well as be used for aerial observation training.

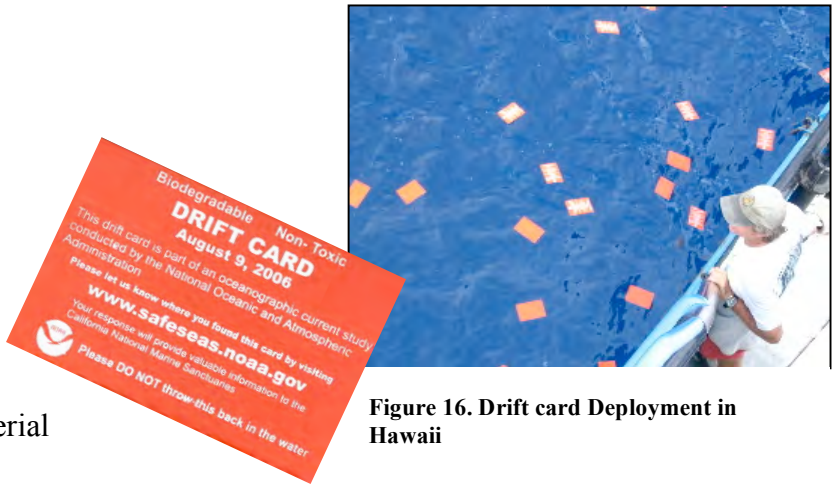

Figure 16. Drift card Deployment in Hawaii

Oceanographic Operations

R/V *Mussel Point* will conduct oceanographic operations in support of the Integrated Ocean Observation System (IOOS). These operations will be used to validate and verify shore-based HF RADAR (CODAR) current observations. Surface current satellite drifters will be deployed to verify surface current measurements. A satellite float communicates the location to the Internet in real time as the apparatus follows surface currents. (Care should be taken by all participating vessels to avoid running over the small white ball which is the only part of the drifter that shows on the surface.) A minimum of 10 satellite drifters will be deployed near or north of the collision site.

Figure 16. In Situ CTD Fluorometer Oceanographic Instrument.

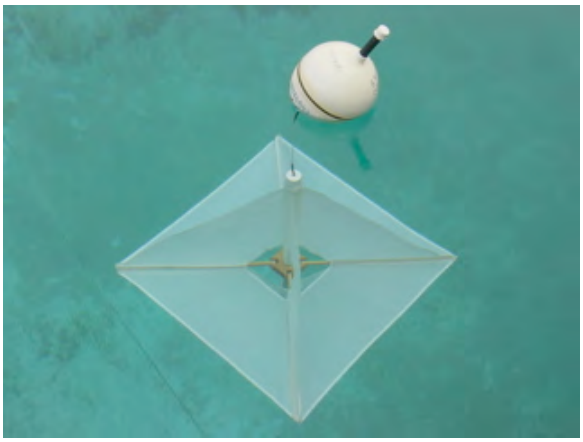

Figure 17. GPS Floats with attached drogues help measure ocean currents.

Alameda County Sheriff Dept. P/B *Susan M* (ALCO 85)

Objective(s)

C.i.--Demonstrate the ability of the Damage & Salvage Control Teams provided by the RP to plan source control, conduct an initial assessment of the damage, and develop a Salvage Plan.

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv.--Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

Figure 18. The Alameda County Sheriff's Dept P/B ALCO 85

E.vii.--Deploy observation technologies for water surface, water column, shoreline, and the seafloor to collect operationally relevant data in real time and near real time.

Overview

AUV: Autonomous Underwater Vehicle

Using an autonomous underwater vehicle, ocean bottom imagery will be obtained in the vicinity of actual submerged objects in the area of the scenario's sunken barge *Dottie.* This imagery will be processed and relayed back to the command post for display and to be used in salvage related decision-making and planning.

NOAA Navigation Response Team (NRT)

Objectives

D.-- Demonstrate the ability to conduct initial environmental assessments and forecasts, and develop the appropriate plans including: shoreline protection; wildlife protection; cultural resource protection; dispersant use; and harbor of refuge.

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv. Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

E.vii.--Deploy observation technologies for water surface, water column, shoreline, and the seafloor to collect operationally relevant data in real time and near real time.

Figure 19. Half Moon Bay and Pillar Point, CA

Figure 20 Navigation Response Team Survey Launch at work after Hurricane Katrina

Overview

Half Moon Bay Hydrographic Harbor of Refuge Survey

NOAA Navigation Response Team 6 will deploy at Half Moon Bay to acquire bathymetric data using an advanced multi-beam SONAR that will be processed and sent to the command post to assist decision makers during the Harbor of Refuge discussions.

NOAA Lake Amphibian

Objectives

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv. Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

Figure 21. The NOAA Lake Amphibian provides an excellent platform for Wildlife Surveys and Oil Mapping Overflights.

E.vii.--Deploy observation technologies for water surface, water column, shoreline, and the seafloor to collect operationally relevant data in real time and near real time.

F.iv.-- Conduct fieldwork to collect ephemeral data including SCAT, water samples, wildlife, shellfish, and economic information.

Overview

Wildlife Surveys

In advance of the C-130 led aerial dispersant application, NOAA's trained wildlife observers will conduct a wildlife survey in order to ensure the absence of wildlife that might be affected during the exercise. The results of this survey will be fed into the operations cycle.

Two other overflight surveys are planned as well. The exact missions of these flights will be played real-time as directed by the command post. A wild life disturbance study is also planned for the second day of the drill in the vicinity of Half Moon Bay. The information from this study will provide researchers with valuable information regarding the effects of emergency response aircraft on sea bird colonies.

USCG HH-65 Dolphin

Objectives

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv. Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

E.vii.--Deploy observation technologies for water surface, water column, shoreline, and the seafloor to collect operationally relevant data in real time and near real time.

Figure 22. A USCGC HH-65 Dolphin will be the first Aircraft on Scene at Safe Seas 2006.

F.iv.--Conduct fieldwork to collect ephemeral data including SCAT, water samples, wildlife, shellfish, and economic information.

Overview

Aerial Observation Training

NOAA HAZMAT personnel will provide oil spill observation training to US Coast Guard Aviators using deployed drift cards and real environmental conditions present during the exercise.

Aerial Observations

The observations observed in the training will be properly recorded and mapped in order to provide over-flight information to command post personnel and to help initiate oil spill trajectory models.

Objectives

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv. Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

E.viii-- Deploy dispersant application assets and follow-on Special Monitoring of Applied Response Technologies (SMART) in order to test the California Dispersant Plan.

Figure 23. Cal. Dept of Fish and Game Partenavia will fly as the Task Force Command plane and provide safety coordination from the highest altitude of the evolution.

Figure 24. Pacific Crest Aviation's Cessna 337 provides spray spotting for fire fighting and dispersant application.

Figure 25. The U.S. Air Force Reserve's 910th Air Wing will provide a Spray equipped C-130 to simulate dispersant application from an altitude of 100 feet.

Dispersant Application

The U.S. Air Force Reserve 910th Air Wing will deploy from Youngstown, Ohio, in order to simulate the application of oil dispersants that were approved by the Regional Response Team during the Command Post portion of the exercise in July.

This evolution will also involve the participation of the California Department of Fish and Game Partenavia aircraft as well as an Pacific Crest Aviation's fire response Air Attack aircraft which is used to help guide firefighting operations thought the West. The C-130 and Air Attack aircraft will fly in opposing racetrack formation applying water over the drift card/fluorocine dye "slick". As the Figure below illustrates, the C-130 will do eight passes at 100 feet altitude applying approximately 1000 gallons of water. The Partenavia aircraft will serve as a safety plane, and will include an expert tactical commander to assist in this capacity.

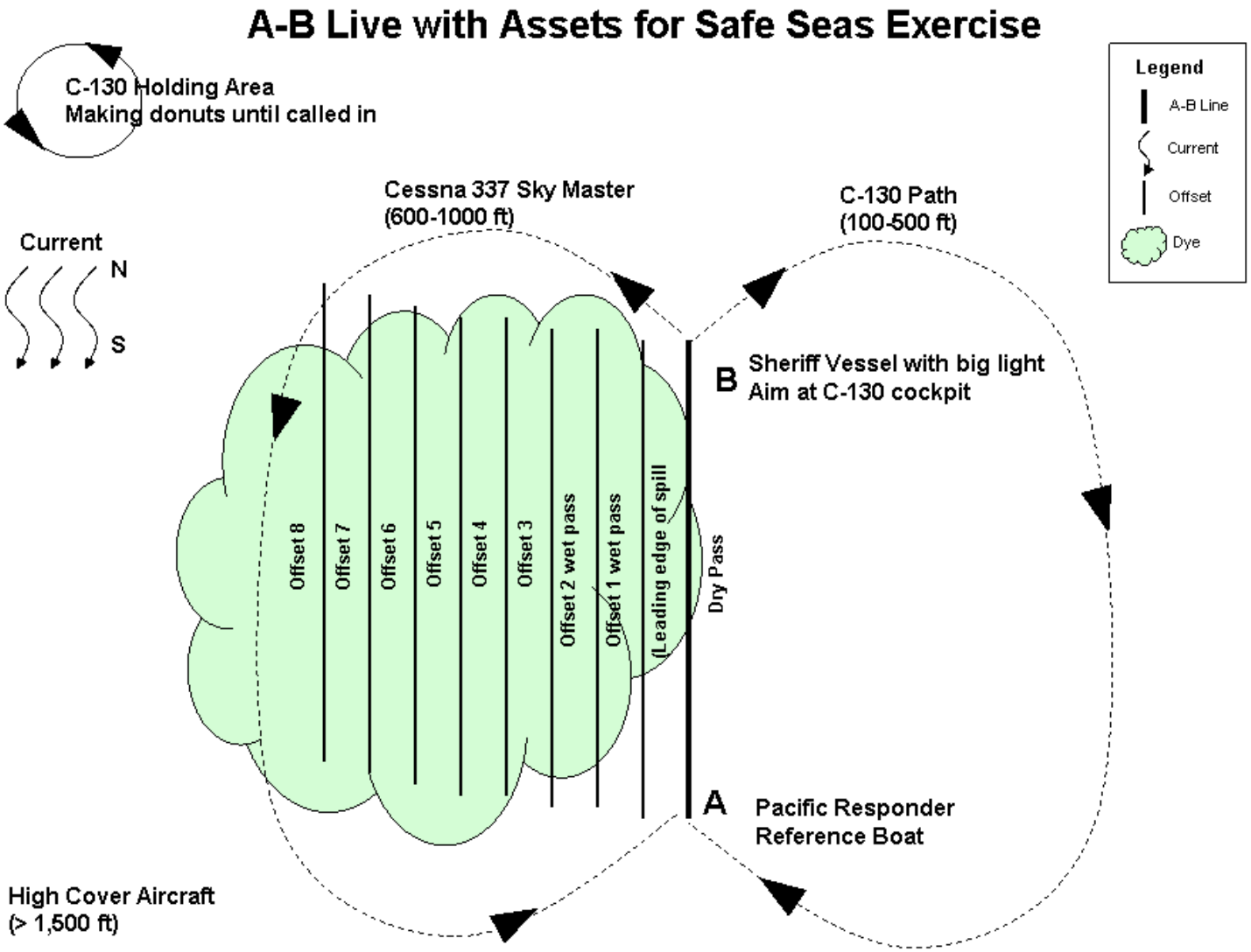

Figure 25A. This schematic illustrates how the orchestration of the Dispersant Task Force. Dye is released linearly with the current and the A vessel (Responder) B vessel (ALCO85) form an on water reference point for the C130 to line up on for its 8 successive spray runs.

California Dept of Fish and Game *Partenavia*

Objectives

E.iii.--Conduct all field operations in accordance with the Site Safety Plan.

E.iv. Conduct all field operations in accordance with restrictions relating to wildlife and cultural resources.

E.viii-- Deploy dispersant application assets and follow-on Special Monitoring of Applied Response Technologies (SMART) in order to test the California Dispersant Plan.

Figure 27. Partnavia will host the Dispersant Air Task Force Commander and conduct SMART monitoring overflight.

Overview

Dispersant Application Safety Plane

The California Department of Fish and Game Partenavia will be conducting two missions during the simulated dispersant application.

The Partenavia will be the Dispersant Air Task Force Command and Control. It will provide top cover and coordinate safety and air operations.

After a dispersant application, decision makers need to know whether or not it was effective and trustee agencies need to know the amount of oil forced into the water column for Natural Damage Assessment. Special Monitoring of Applied Response Technologies (SMART) is a systems of observation protocols intended to answer these questions.

SMART Monitoring

The Coastal Response Research Center (CRRC) is sponsoring an enhanced scientific research project during Safe Seas that focuses on Special Monitoring of Applied Response Technologies (SMART) monitoring. It will be led from scientists aboard the California Fish and Game Partenavia Aircraft who will provide aerial geo-referenced imagery and who will direct the NOAA Research Vessel Shearwater (see above mission description) to the location of the dispersed oil plume (dye in the case of this exercise). Scientists from Louisiana State University and the U.S. Coast Guard Pacific Strike Team who will be aboard Shearwater will use special fluorometers to measure amount and distribution of particles in the water column.