



Oil and Hazardous Materials Response Reports

October 1997-September 1998

January 1999

National Oceanic and Atmospheric Administration
Office of Ocean Resources Conservation and Assessment
Hazardous Materials Response and Assessment Division
Seattle, Washington 98115

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INTRODUCTION

Between October 1, 1997 and September 30, 1998, NOAA's Hazardous Materials Response and Assessment Division Scientific Support Coordinators and scientific staff were notified of 112 spill incidents. These 112 incidents included potential spills, false alarms, and very minor spills for which reports were not prepared. Technical and operational assistance provided to the U.S. Coast Guard for spill incidents in the Nation's coastal zone included 78 oil spills, 28 chemical spills, 3 spills of unknown material, and 3 miscellaneous spills. In addition to the spills listed, NOAA assisted the U.S. Coast Guard with 39 simulation exercises.

This volume of reports follows the format established for the Oil Spill Case Histories Report prepared in 1992 by the Division with U.S. Coast Guard Research and Development Center support so that major spills meeting the criteria for inclusion may be incorporated easily into updated case histories reports.

Each report in this volume is organized as follows:

- A list of headers that summarizes the spill name; location; product; size; use of dispersants, bioremediation, and in-situ burning; other special interests; shoreline types affected; and keywords.
- A brief *incident summary* including weather conditions and description of the overall spill response.
- A description of the behavior of the spilled material including movement, evaporation, mousse formation, and dispersion.
- A discussion of countermeasures and mitigation.
- A description of other *special interest issues* such as communication problems, unusual hazards encountered, and large losses of organisms.
- A list of *references* that document the response operations.

Although the master list on the following pages includes all of the incidents for which the Division provided support, only those incidents where the pollutant actually entered the environment are reported on in this volume. These reports are abbreviated and are meant to serve only as a summary of the Division's response to requests from Federal On-Scene Coordinators for each of the events.

Additional details on any of the responses may be obtained from the appropriate Scientific Support Coordinator or U.S. Coast Guard office.

Spill Report Keys

Name of Spill:

NOAA SSC:

Date of Spill (mmddyy):

Location of Spill: text description

Latitude: degrees, minutes, N or S

Longitude: degrees, minutes, E or W

Spilled Material: specific product

Spilled Material Type:

Type 1 - Very Light Oils (jet fuels, gasoline)

Type 2 - Light Oils (diesel, No. 2 fuel oil, light crudes)

Type 3 - Medium Oils (most crude oils)

Type 4 - Heavy Oils (heavy crude oils, No. 6 fuel oil, bunker c)

Type 5 - Hazardous material

Amount (Barrels, gallons, or weight in pounds if hazardous material):

Source of Spill: tank vessel, non-tank vessel, barge, facility, pipeline, platform

Resources at Risk: See A

Dispersants: Yes or No

Bioremediation: Yes or No

In-situ Burning: Yes or No

Other Special Interest:

Destruction of marshes, mangroves, or tidal flats

Extraordinarily successful salvage operations

Massive habitat loss

Massive wildlife impact

Oil/ice interactions and adverse weather conditions

Unusual, experimental, or innovative cleanup techniques

Shoreline Types Impacted: See B

Keywords: See C

Incident Summary:

Date and time of incident
Location of incident
Weather at time of incident
Summary of events
Actions of responsible party and response organizations
Level of federal involvement
Duration of response

Behavior of Spilled Material:

Formation of slicks, sheen, or mousse
Movement on the water of spilled material
Movement in the air of spilled material
Areas impacted
Amount spilled; amount recovered
(land, sea, contaminated debris)
Amount not recovered
(sinking, evaporation, weathering, dissolution)

Countermeasures and Mitigation:

Control at incident site
Offloading and lightering operations; movement of vessel
Precautionary protection of sensitive areas
Open water recovery
Shoreline cleanup
Removal and disposal of spilled material or
contaminated debris

Other Special Interest Issues: See D

NOAA Activities:

Involvement in response (on-scene, by phone and fax)
Support provided
Participation in committees and special projects
Unusual responsibilities
Meetings attended/recommendations made
Duration of NOAA support

References:

Spill Report Keys

A Resources at Risk

Habitats

(See *shoreline types* key below), eelgrass beds, submerged aquatic vegetation (SAV), kelp, coral reefs, worm beds

Marine Mammals

Whales, dolphins, sea lions, seals, sea otters, manatees, walruses, polar bears, population concentration areas, haulouts, migration routes, seasonal use areas

Terrestrial Mammals

Mustelids, rodents, deer, bears, population concentration areas, intertidal feeding areas

Birds

Diving coastal birds, waterfowl, alcids, petrels, fulmars, shorebirds, wading birds, gulls, terns, raptors, rookeries, foraging areas, wintering areas, migration stopover areas, wintering concentration areas, nesting beaches, migratory routes, critical forage areas

Fish

Anadromous fish, beach spawners, kelp spawners, nursery areas, reef fish (includes fish using hard-bottom habitats), spawning streams, spawning beaches, estuarine fish, demersal fish

Mollusks

Oysters, mussels, clams, scallops, abalone, conch, whelk, squid, octopus, seed beds, leased beds, abundant beds, harvest areas, high concentration sites

Crustaceans

Shrimp, crabs, lobster, nursery areas, high concentration sites

Reptiles

Sea turtles, alligators, nesting beaches, concentration areas

Recreation

Beaches, marinas, boat ramps, diving areas, high-use recreational boating areas, high-use recreational fishing areas, State Parks

Management Areas

Marine Sanctuaries, National Parks, Refuges, Wildlife Preserves, Reserves

Resource Extraction

Subsistence, officially designated harvest sites, commercial fisheries, power plant water intakes, drinking water intakes, industrial water intakes, intertidal and subtidal mining leases, fish/shrimp/bivalve/plant aquaculture sites, log storage areas

Cultural

Archaeological sites, Native American Lands

B Shoreline Types Impacted

brackish marshes
coarse gravel beaches
coarse sand beaches
coastal structures
consolidated seawalls
consolidated shores
cypress swamps
developed upland
eroding bluffs
exposed bedrock bluffs
exposed bluffs
exposed fine sand beaches
exposed riprap
exposed rocky platforms
exposed rocky shores
exposed scarps
exposed seawalls
exposed tidal flats
exposed tidal flats (low biomass)
exposed tidal flats (moderate biomass)
exposed unconsolidated sediment bluffs
extensive intertidal marshes
extensive salt marshes
extensive wetlands
fine sand beaches
flats
freshwater flat
freshwater marshes
freshwater swamps
fringing salt marshes
fringing wetlands
hardwood swamps
levees
low banks
mangroves
marshes
mixed sand and shell beaches

mixed sediment beaches
piers
riprap
salt marsh
saltwater marshes
sand/gravel beaches
shell beaches
sheltered bedrock bluffs
sheltered fine-grained sand beaches
sheltered impermeable banks
sheltered mangroves
sheltered marshes
sheltered rocky shores
sheltered seawalls
sheltered tidal flats
shelving bedrock shores
spoil bank
supratidal marshes
swamp
tidal mudflat
unforested upland
unvegetated steep banks and cliffs
vegetated bluffs
vegetated low banks
vegetated riverbank
vertical rocky shores
wavecut platforms

C

Key words

Abandoned Barge Act
air-activated pumps
ARTES
bioremediation
Centers for Disease Control
Clean Bay Inc.
containment boom
Corexit 9527
DBRC
dispersant
endangered species
evaporation
exposed rocky shores
filter fences
Food and Drug Administration
ground truth
high-pressure, warm-water washing
hydro-blasting

in-situ burning
 International Bird Rescue and Research Center
 International Tanker Owners Pollution Federation (ITOPF)
 low-pressure washing
 NAVSUPSALV
 NOAA National Marine Fisheries Service Laboratory
 Pacific flyway
 potential spill
 propane cannons
 remote sensing
 reoiling
 RIDS (Response Information Data Sheets)
 salvage
 seafood harvesting ban
 shallow water recovery
 siphon dams
 skimmers
 SLAR (side-looking airborne radar)
 smothering
 sorbent boom
 sorbent pompoms
 starshell-type device
 tourism losses
 vacuum trucks
 volunteers
 weed cutters
 weir/pump skimmer

D Other Special Interest Issues

Effects to tourism, recreation areas, or personal property
 Closure of commercial or recreational fishing areas and public lands
 Closure of shipping lanes and vehicle traffic routes
 Wildlife impacts and rehabilitation
 Ecological destruction and habitat loss due to spilled material impacts
 Ecological destruction and habitat loss due to cleanup operations
 Effects to human health and safety
 Bioremediation, dispersant, in-situ burning operations
 Unusual, experimental, or innovative cleanup techniques
 Complex successful salvage operations
 Logistical or operational problems
 (including adverse weather conditions)
 Interaction with foreign or Native authorities
 Media interest
 Volunteer response and organization
 Studies conducted; ongoing research

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FY 98 Spills
October 1, 1997—September 30, 1998

Date of Incident	No.	Report Name/Hotline Number	Commodity Involved	USCG District	NOAA Involvement
08 Oct 97	1	T/V <i>Western Lion</i> /247 Galveston, TX	Nigerian crude	8	phone/fax
01 Oct 97	2	Honey Creek/248 Milwaukee, WI	#2fuel oil	9	phone/fax
14 Oct 97	3	F/V <i>Coastal Trader</i> * Strait of Juan de Fuca, WA	ammonia	13	phone/fax
18 Oct 97	4	Barge <i>PV 5996</i> /249 Bolivar Peninsula, TX	urea fertilizer	8	phone
18 Oct 97	5	T/B <i>Cape Cod</i> * Riker's Island, NY	#6 fuel oil	1	phone
21 Oct 97	6	F/V <i>Celia M</i> /250 Barataria Pass, LA	diesel lube and hydraulic oil	8	phone/fax
25 Oct 97	7	Mystery/251 offshore Texas	unknown	8	phone/fax
25 Oct 97	8	C/V <i>MSC Jasmine</i> * Wilmington, NC	chloroacetic acid	5	phone
27 Oct 97	9	Mystery/252 Santa Cruz, CA	non-petroleum oil	11	1 on-scene
29 Oct 97	10	F/V <i>Fortuna 21</i> /253* Pearl Harbor, HI	diesel	14	phone
02 Nov 97	11	F/V <i>Northern Voyager</i> /254 Gloucester, MA	diesel, lube oil	1	phone/fax
05 Nov 97	12	Freighter <i>Kure</i> /255 Somoa, CA	Bunker C	11	3 on-scene
05 Nov 97	13	M/V <i>Shogun</i> /256 Rota, Guam	#2		phone/fax
06 Nov 97	14	Barges <i>CC483 ,CC479</i> /257* Texas City, TX	ethylene glycol mono- alkyl ether ethanolamine	8	phone/fax
11 Nov 97	15	C/V <i>Teval</i> Ambrose Light Anchorage, NY	methyl bromide	1	phone
12 Nov 97	16	C/V <i>Ned Lloyd Delft</i> /258 Norfolk, VA	#6 fuel oil	5	1 on-scene

1998 Spill Report

Date of Incident	No.	Report Name/Hotline Number	Commodity Involved	USCG District	NOAA Involvement
12 Nov 97	17	High Rise Services/259 Wilmington, NC	waste oil	5	1 on-scene
14 Nov 97	18	Methyl bromide * containers/260 New York, NY	methyl bromide	1	phone
18 Nov 97	19	T/B <i>Hygrade</i> 22/261 Haddam, CT	unknown oil	1	phone
16 Nov 97	20	Mystery/262 Drakes Bay, CA	tarballs	11	1 on-scene
18 Nov 97	21	Timbalier Bay/263 Timbalier Bay, LA	Timbalier Bay crude	8	phone/fax
26 Nov 97	22	M/V <i>Kuroshima</i> /264 Dutch Harbor, AK	IFO 380	17	2 on-scene
05 Dec 97	23	ST Services facility/265* Savannah River, GA	diesel	7	phone/fax
17 Dec 97	24	Ship Shoal Block 126/266 Morgan City, LA	crude oil	8	1 on-scene
24 Dec 97	25	East Cameron Block/267 338 Pipeline Gulf of Mexico	crude oil	8	phone
24 Dec 97	26	Barge <i>Alaska</i> /268* Wrangell Harbor, AK	granular urea	17	phone
29 Dec 97	27	Tug <i>Captain Frank</i> /269 Wilmington, NC	#2 diesel	5	phone
* 29 Dec 97	28	M/V <i>Atlantic Bulker</i> /270* Narragansant Bay	IFO 180	1	phone
02 Jan 98	29	Lightering Spill/271 Galveston, TX	Queibo crude	8	phone
01 Jan 98	30	M/V <i>Anadyr</i> /272 Tacoma, WA	IFO 180	13	1 on-scene
07 Jan 98	31	M/V <i>Stone Fueler</i> /273 Belle Pass, LA	diesel	8	2 on-scene
14 Jan 98	32	Makah Fuel Farm Neah Bay, WA	gasoline	13	2 on-scene
15 Jan 98	33	T/B <i>Gregory</i> Norfolk, VA	gasoline	5	phone

Date of Incident	No.	Report Name/Hotline Number	Commodity Involved	USCG District	NOAA Involvement
16 Jan 98	34	Mystery Spill* Portland, OR	#2, lube oil	13	phone
22 Jan 98	35	Tarballs/274 Port Reyes, CA	tarballs	11	phone/fax
23 Jan 98	36	Pipeline System Puncture/275 offshore Texas	Texas sweet crude	8	2 on-scene
23 Jan 98	37	M/V <i>Red Seagull</i> offshore Texas	Arabian crude	8	3 on-scene
25 Jan 98	38	M/V <i>Adriatic Sea</i> /277* American Samoa	diesel		phone
29 Jan 98	39	Savannah River/278 Savannah, GA	unknown oil	7	phone
29 Jan 98	40	M/V <i>Ince Express</i> /279 Wake Island	copper concentrate	14	phone
03 Feb 98	41	M/V <i>Pacific Mako</i> /280* Port Everglades Inlet, FL	diesel	7	phone
04 Feb 98	42	RTC T/B 503/281* Portland, ME	home heating oil	1	phone
06 Feb 98	43	M/V <i>Wan Ling</i> * Honolulu, HI	diammonium phosphate,		phone
06 Feb 98	44	T/B <i>Genie Marie</i> * Salsbury, MD	gasoline	5	phone
15 Feb 98	45	M/V <i>Manzur</i> /282 Southwest Pass, LA	sodium cyanide acetone quicklime6	8	phone
17 Feb 98	46	Barge <i>D826</i> /283* Pascagoula Ship Channel Gulfport, MS	raffinate	8	phone
18 Feb 98	47	oil tank spill/284 Cromwell, CT	heating oil	1	phone
22 Feb 98	48	M/V <i>Hekabee</i> * Adak Island, AK	miscellaneous oil chemicals	17	phone
23 Feb 98	49	Caribbean Gulf facility Catano/285 Catano, PR	diesel		phone/fax
23 Feb 98	50	Holtrachem/286* Orrington, ME	mercuric chloride	1	phone

1998 Spill Report

Date of Incident	No.	Report Name/Hotline Number	Commodity Involved	USCG District	NOAA Involvement
26 Feb 98	51	Tug <i>Florida Seahorse</i> Houma, LA	diesel	8	phone
09 Mar 98	52	M/V <i>Katania</i> /288 Houston Ship Channel Houston, TX	sodium cyanide calcium oxide kerosene paper ³	8	phone
09 Mar 98	53	Crane Barge Wilmington, NC	diesel	5	phone
11 Mar 98	54	Barge <i>TMI-80</i> /289* Jacksonville, FL	caustic soda	7	phone
12 Mar 98	55	barge-ship collision/290* Baytown, TX	calcium chloride	8	phone
16 Mar 98	56	Yazoo River barge/291* St. Joseph Bay, FL	#6 fuel oil	8	phone
18 Mar 98	57	M/V <i>Hind</i> /292 Port Everglades Inlet,, FL	#6 fuel oil #2 diesel lube oil	7	phone
19 Mar 98	58	T/S <i>Stolt Topaz</i> * Savannah River	dieset, fuel oil	7	phone
26 Mar 98	59	M/V <i>Drake</i> Washington Coast	alumina	13	phone
01 Apr 98	60	M/V <i>James K. Ellis</i> /293 Ohio River MM 638 Rock Haven, KY	diesel	2/9	phone/fax
02 Apr 98	61	Mystery Slick* Galveston, TX	unknown oil	8	phone
06 Apr 98	62	Zinc Bromide offshore Louisiana	zinc bromide	8	phone
15 Apr 98	63	Barge <i>Hannah 5101</i> /296 Port Huron Marine Terminal Port Huron, MI	#6	2/9	phone/fax
16 Apr 98	64	F/V <i>Samaqu</i> ^o Chatham Strait, AK	diesel/ammonia	17	phone
17 Apr 98	65	Mystery Tarballs/297 East Hampton, NY	tarballs	1	phone/fax

Date of Incident	No.	Report Name/Hotline Number	Commodity Involved	USCG District	NOAA Involvement
20 Apr 98	66	F/V <i>Granny B</i> Pamlico Sound, NC	diesel	5	phone
27 Apr 98	67	Barge <i>Chesapeake Trader/298*</i> New Orleans, LA	flammable liquid, acid	8	phone/fax
02 May 98	68	Mystery Slick/299* offshore Galveston, TX	unknown oil	8	phone
15 May 98	69	Mystery Slick/300* Morgan City, LA	unknown	8	phone
20 May 98	70	Pelto Number 1/301* Whiskey Point, LA	unkwown oil	8	phone
20 May 98	71	Diesel Spill/302* Atchafalaya Channel Point Au Far Island, LA	diesel	8	phone
28 May 98	72	Barge <i>Ocean 211/303*</i> Pascagoula, MS	gaolinw, diesel, jet fuel	8	phone
28 May 98	73	T/B <i>Atlantic</i> Eagle Island, NC	unknown liquid	5	phone
29 May 98	74	Barge <i>Domar 6502/304</i> offshore Puerto Rico	#2 fuel oil		phone
30 May 98	75	Natural Gas Platform/305* Galveston Block 298 Galveston, TX	condensate	8	phone
31 May	76	Zinc Bromide Release/306 Freshwater City, LA	zinc bromide	8	phone
10 Jun 98	77	Barge <i>Coastal 2010/307</i> Marseilles, IL	#6fuel oil	2/9	1 on-scene
14 Jun 98	78	I-95 Gasoline Spill/308 Housatonic River, CT	gasoline	1	phone
13 Jun 98	79	Methyl Acrylate Tank/309 Houston, TX	methyl acrylate	8	phone
19 Jun 98	80	Mystery Spill Strait of Juan de Fuca, WA	unknown oil	13	phone
21 June 98	81	M/T <i>Kapitan Egorov/310</i> Guayanilla Harbor, PR	#6fuel oil, IFO	7	phone
23 June 98	82	F/V <i>Shearwater/311</i> Oregon Inlet, NC	menhaden	5	phone

1998 Spill Report

Date of Incident	No.	Report Name/Hotline Number	Commodity Involved	USCG District	NOAA Involvement
22 June 98	83	F/V <i>Juan Gabriel</i> /312 Chesapeake Bay, VA	diesel	5	phone
27 June 98	84	Tank Barge <i>CTCO-211</i> /313 Darrow, LA	Louisiana sweet crude	8	2 on-scene
01 Jul 98	85	Icicle Seafood/314 Homer, AK	ammonia	17	phone
06 Jul 98	86	F/V <i>Turner Ross</i> Wanchese, NC	diesel	5	phone
11 Jul 98	87	Train Derailment/315 Tomkins Cove, NY	sodium hydroxide	1	phone
14 Jul 98	88	Lake Union Diesel Spill/316 Seattle, WA	diesel	13	3 on-scene
17 Jul 98	89	Compressed Gas Cylinders Rodanthe, NC	compressed gas cylinders	5	phone
20 Jul 98	90	Central Filtration Plant* Chicago, IL	chlorine	2/9	phone
22 Jul 98	91	Tank Truck Spill/317 Crawford County, PA	gasoline	1	phone
26 Jul 98	92	Mystery Slick/318 offshore Louisiana	unknown oil	8	phone/fax
* 31 Jul 98	93	Railcar release/319* Cambridge, MA	hydrochloric acid	1	phone
02 Aug 98	94	M/V <i>Floreana</i> /320* Houston, TX	sodium hydroxide, sulfuric acid, methonal	8	phone
06 Aug 98	95	Unused Medical Waste Duck, NC	unused medical waste	5	phone
12 Aug 98	96	Barge <i>ST-10</i> * Yukon River, AK	diesel/stove oil	17	phone
31 Aug 98	97	Tug <i>Creole River</i> * Mississippi Sound, MS	oil	8	phone
01 Sep 98	98	M/V <i>Cape Douglas</i> /322 Kodiak, AK	diesel	17	1 on-scene
03 Sep 98	99	Mystery Slick/323 Breton Sound, LA	oil	8	2 on-scene

Date of Incident	No.	Report Name/Hotline Number	Commodity Involved	USCG District	NOAA Involvement
04 Sep 98	101	T/B <i>Maria Teresa</i> /324 Frying Pan Shoals, NC	streptomyces	5	phone
05 Sep 98	101	<i>Barge Ocea State</i> /325 Manhattan Island, NY	gasoline #2 fuel oil	1	1 on-scene
08 Sep 98	102	M/V <i>Author</i> /326 Ponce, PR	diesel heavy oil	7	1 on-scene
11 Sep 98	103	Jack-up Rig Thibadeaux/327 Timbalier Bay, LA	misc	8	phone/fax
15 Sep 98	104	Barge <i>MRT 15</i> /328* Pittsburgh, PA	diesel	1	phone
15 Sep 98	105	T/V <i>Mare Princess</i> /329* Boston, MA	#6	1	phone/fax
17 Sep 98	106	Drill Rig Allision/330 Main Pass Block 155 offshore Louisiana	medium crude	8	phone
22 Sep 98	107	Rig Mallard/331 Port Sulphur, LA	South Louisiana crude	8	phone/fax
24 Sep 98	108	T/V <i>Command</i> /332 San Francisco Bay San Francisco, CA	IBF 380	11	1 on-scene
25 Sep 98	109	Chignik Lake Alaska Peninsula	diesel	17	phone
28 Sep 98	110	Post Hurricane George Responses/333 San Juan, PR	fuel oil IFO 380	7	1 on-scene
* 28 Sep 98	111	Mystery Slick/334 San Francisco, CA	unknown oil	11	phone
28 Sep 98	112	USS <i>Fife</i> * Fort Bragg, CA	F-76	11	phone

FY98 Drills and Scenarios
October 1, 1997—September 30, 1998

Drill Description	Area	Type	Date Requested	Date Sent
Real-time Drill	Hampton Roads, Virginia	Verbal	10/30/97	10/30/97
Drill	San Francisco Harbor, California	TAT	11/3/97	11/14/97
Drill	Barber's Point, California	TAT	11/3/97	11/17/97
Drill	Apra Harbor,	TAT	11/14/97	4/13/98
Drill	East River New York	TAT	11/20/97	12/3/97
What if	Upper Calcasieu	TAT	11/19/97	11/26/97
Planning	Mobile Bay, Alabama	TAT stat	11/24/97	12/11/97
Drill	New York Harbor, New York	TAT	12/2/97	12/2/97
Real-time drill	Upper Cook Inlet, Alaska	Verbal	12/2/97	12/2/97
Drill	Lower New York Harbor	TAT	12/2/97	12/23/97
Drill	San Diego Harbor, California	TAT	1/5/98	3/3/98
Drill	St. Lucia	TAT	1/6/98	2/10/98
Tesoro planning	Upper Cook Inlet, Alaska	TAT	1/9/98	2/19/98
Planning	Northeast Kodiak Island, Alaska	TAT	2/2/98	2/11/98
Search and Rescue	Miami, Florida	TAT	2/9/98	3/4/98
Planning	Prince of Wales Island, Alaska	TAT	2/11/98	2/19/98
Planning	Delaware Bay, Delaware	TAT	2/19/98	2/28/98
Drill	Mayport, Florida	TAT	2/27/98	2/6/98
Planning	New London, Connecticut	TAT	3/2/98	4/1/98
Planning	Hell's Gate	TAT	3/5/98	4/6/98
Drill	Glacier Bay	TAT	3/23/98	3/31/98
Drill	Montague Island	TAT	3/29/98	
Planning	Anacortes, Washington	TAT	4/13/98	5/29/97
Drill	Louisiana coast	TAT	4/10/98	5/14/98
Planning	Upper Cook Inle, Alaska	TAT	5/8/98	5/15/98
Planning	Midway Island	Wx search	5/6/98	nothing done
Planning	Oahu, Hawaii sites	TAT	5/1/98	
Planning	Florida	Wx search	5/18/98	5/20/98
Drill	Kaneohe Bay	TAT	6/12/98	6/16/98
Drill	Long Island Sound, New York	OSSM movies	6/23/98	8/11/98
Drill	Lower Cook Inlet, Alaska	TAT	6/29/98	7/1/98
Drill	Newport, Rhode Island	TAT	7/2/98	7/6/98
Drill	Longview, Washington	TAT	7/13/98	7/21/98
Drill	New York Harbor, New York	TAT	7/13/98	7/16/98
Drill	Apalachicola, Florida	TAT	7/22/98	7/22/98
Drill	Niagra River, New York	TAT	7/21/98	8/11/98
Real-time Drill	Pier 34 Drill	TAT	7/23/98	7/23/98
	Seattle, Washington			
5 sites	Long Island Sound, New York	TAT	8/13/98	
Drill	Savannah, Georgia	TAT	8/14/98	
Planning	Blk. Point Long Island, New York	TAT	8/26/98	9/1/98
Drill	Michigan	TAT	8/31/98	9/16/98
Planning	Taiya Point	TAT	9/2/98	9/17/98
Drill	Willamette River, Oregon	TAT	9/22/98	9/22/98

U.S. Coast Guard District 1

<i>C/V Teval</i>	1
<i>T/B Hygrade 22</i>	3
Oil Tank Spill	5
Mystery Tarballs	7
Train Derailment	11
I-95 Gasoline Spil	13
<i>T/B Ocean State</i>	15
Tank Truck Rollover	17

Name of Spill:	<i>C/V Teval</i>
NOAA SSC:	Ed Levine
USCG District:	1
Date of Spill:	11/14/97
Location of Spill:	Ambrose Light Anchorage
Latitude:	73°49.5' W
Longitude:	40°27.5' N
Spilled Material:	methyl bromide
Spilled Material Type:	5
Amount:	unknown
Source of Spill:	23 cylinders
Resources at Risk:	none
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	none
Keywords:	none

Incident Summary:

On November 14, 1997, the United States Coast Guard (USCG) Activities (ACT) New York (NY) was notified by the container vessel (C/V) *Teval* of a potential hazardous material release. The vessel was inbound and gave advanced notice to ACT NY of the potential situation. Onboard were three intermodal containers each containing 23 cylinders of methyl bromide. A crew member walked past the methyl bromide containers and became ill, causing suspicion that the methyl bromide was leaking. The cargo was reportedly tested but the testing method was not known or determined. ACT NY held the vessel at the Ambrose Light Anchorage until the situation was clarified.

NOAA Activities

NOAA was notified of this incident on November 14, 1997, by ACT NY who asked the Scientific Support Coordinator (SSC) for chemical-specific information on the potential hazards and detection methods for methyl bromide. The SSC reported that the chemical is heavier than air as a gas and heavier than water as a liquid. The boiling point is 38°F. This meant that as the night temperatures decreased, the chemical could be a liquid and as the temperature increased during the day it could turn into a gas. The methods for detection identified were three different Dräger-Tubes that could measure methyl bromide at different concentration ranges and cross sensitivities. The SSC informed ACT NY that the two suits of protective clothing tested (PTFE Teflon and Saranex 23P) rated at less than 1-hour breakthrough time.

All suspicious containers onboard *C/V Teval* were tested and inspected by the responsible party's (RPs) chemical sampling team at the anchorage. The ship was allowed to continue her sail to the port of Elizabeth, New Jersey where she was off-loaded, re-checked, re-loaded, and sailed on to Charleston, South Carolina. No chemical contamination was found.

References:

NOAA. 1993. *The CAMEO™ 4.0 Manual*. Washington, D.C.: National Safety Council. 440 pp.

NOAA Hotline #260, 3 Reports

Name of Spill: T/B *Hygrade 22*
NOAA SSC: Ed Levine
USCG District: 1
Date of Spill: 11/18/97
Location of Spill: Haddam, Connecticut
Latitude: 72°31'39"W
Longitude: 41°29'45"N
Spilled Material: #2 fuel oil
Spilled Material Type: 2
Amount: 16,667 barrels (700,000 gallons)
Source of Spill: barge
Resources at Risk: **Birds:** bird migration stopover areas, bird wintering areas
Fish: various estuarine fish
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: river/creek, consolidated seawalls, fringing wetlands, piers/commercial operations, industrial water intakes
Keywords: none

Incident Summary

T/B *Hygrade 22* grounded in the Connecticut River near Haddam, Connecticut at 0300 local time, November 18, 1997. Captain of the Port (COTP) Long Island Sound (LIS) was notified and responded at 0330. The barge was carrying 700,000 gallons of #2 fuel oil. No oil was spilled.

The USCG Atlantic Strike Team (AST) responded to the scene and oversaw the lightering of the barge. Equipment was pre-staged at identified sensitive areas from the Area Contingency Plan and others identified by the Connecticut Department of Environmental Protection (CTDEP). High tide was at 1500 and the barge refloated at 1515.

There were no leaks and no oil was lost. After refloating, the barge continued on to her destination.

Behavior of Spilled Material:

Lighter refined products have a relatively high concentration of light aromatic compounds and tend to be more soluble and more toxic than heavier oils. So, even though these oils may not present an involved cleanup problem, they can result in an initial toxic shock to biota and persist as a biological threat problem in low-energy marine environments.

With winds from the west to southwest, bays and coves along the eastern side of the river are at risk of being impacted.

NOAA Activities

NOAA was notified of this incident at 0700 on November 18, 1997, by COTP LIS. The SSC provided trajectory and tidal excursion information and tide and current data. NOAA told the USCG that tidal currents in the area were predicted to be about 1 knot maximum in both the ebb and flood directions. With winds forecast from the southwest to west at 10 to 15

knots, causing most of the shoreline impacts from a spill to be along the eastern shoreline of the river.

NOAA also reported that lighter refined products, such as diesel, typically have very high evaporation rates and do not tend to create persistent slicks. If spilled, the oil would spread quickly into thin films often forming patches of rainbow and silver sheens. These oils don't usually form a stable emulsion and, as a result, do not result in a heavy or sticky residual to clean up. ADIOS™ predicted a 44 percent evaporation and 45 percent natural dispersion within 72 hours should a release occur.

NOAA supported this incident for one day.

References:

Coastal Area Contingency Plan

NOAA Hotline #261, 6 Reports

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA. 1994. *Shio. Tide computer program (prototype)*. Seattle: Hazardous Materials Response and Assessment Division, NOAA.

Name of Spill: Oil Tank Spill
NOAA SSC: Ed Levine
Coast Guard District: 1
Date of Spill: 2/18/98
Location of Spill: Cromwell, Connecticut
Latitude: 41°35' N
Longitude: 72°39' W
Spilled Material: heating oil
Spilled Material Type: 2
Amount: 60 barrels (2500 gallons)
Source of Spill: tank truck
Resources at Risk: Terrestrial Mammals: beavers
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: freshwater marshes, fringing wetlands, vegetated low banks
Keywords: containment boom, hard boom, siphon dams, sorbent boom, vacuum trucks, weed cutters, weir/pump skimmer

Incident Summary:

A frozen valve cracked on a tanker truck being used as a storage tank for heating oil and spilled approximately 2500 gallons of product onto the ground and into a storm drain. The drain eventually emptied into a wetland about 1/4-mile inland from the Connecticut River. The USCG Marine Safety Office (MSO) LIS and CTDEP responded. The RP was unable to cover the costs of the response, so the USCG opened the Oil Spill Liability Trust Fund (OSLTF) and paid for the cleanup. The weather during the incident was overcast and raining.

Several USCG and DEP personnel remained on-scene monitoring the cleanup for the duration of the response, about 1 week.

Behavior of Spilled Material:

The oil was floating on the water. The water rose and fell with the input from rain and runoff kept the area continually wet. There was no significant concern about the water disappearing and allowing the oil to penetrate the soil.

Approximately 400 gallons of oil were recovered using skimmers.

Countermeasures and Mitigation:

The USCG hired a cleanup contractor who placed containment and sorbent boom in the creek and wetlands and brought in three vacuum trucks. An estimated 3 acres of wetlands were affected by the heating oil. The dyed light red oil was easy to see. Cleanup contractors on-scene erected a temporary underflow dam between two connected wetland areas. To impede the oil's progress downstream, hard and sorbent booms were set up in front of a culvert under the roadway. Two vacuum trucks skimmed from an area near the underflow dam. The skimmers successfully collected oil.

No wildlife was affected, but there was a beaver dam with resident beavers 1/2 mile downstream.

All the vegetation was in a senescent state (not actively growing). The vegetation was inspected and appeared to have been saturated by several days of rain. The stems were not oil-soaked and it was agreed that there were no compelling reasons to cut vegetation.

NOAA Activities:

NOAA was notified of this incident on February 18, 1998, by MSO LIS who asked the SSC to report on-scene to assess the site and recommend cleanup strategies. The SSC, in concurrence with CT DEP personnel, recommended a deluge flush outside the ring of oiling to herd the oil towards the vacuum skimmer heads. The water was still flowing downstream and oil was beginning to collect at the hard boom. The SSC recommended that another vacuum truck start skimming at that location to ensure oil does not escape farther downstream. Small teams went through the wetland and placed sorbent pads in the remaining small pools of heating oil.

NOAA supported this response for 4 hours.

References:

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

HOAA Hotline #284, 2 Reports

Name of Spill: Mystery Tarballs
NOAA SSC: Ed Levine
USCG District: 1
Date of Spill: 4/19/98
Location of Spill: East Hampton, New York
Spilled Material: tarballs
Spilled Material Type: 4
Amount: undetermined
Source of Spill: unknown
Resources at Risk: **Birds:** waterfowl, shorebirds, wading birds, gulls, terns, nesting beaches
Fish: flounder
Marine Mammals: dolphins, seals
Management Areas: New York State Coastal Management Program, Amagansett National Wildlife Refuge, Hither Hills State Park
Recreation: beaches, high-use recreational areas, state parks
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: media interest
Shoreline Types Impacted: medium- to coarse-grain sand beaches, sheltered marshes
Keywords: none

Incident Summary:

On April 17, 1998, the USCG responded to reports of 1/4 mile of tarballs on the beach near East Hampton, New York. By April 20, 14 miles of beach from East Hampton to Montauk, New York were impacted. The tarballs varied in size from 1/2 inch to 2 inches in diameter. Impact width was from 2 to 5 feet along the high-tide line. USCG Air Station overflights observed no oil on the water. An RP was not identified, so the USCG hired a contractor to cleanup the 14 miles of beaches. There were no wildlife impact reported.

The weather at the time of the incident was clear, winds from the west-northwest at 10 knots, air temperature 65°F, water temperature about 53°F, seas 4 feet, and visibility about 5 nautical miles.

Behavior of Spilled Material:

The product of concern is tarballs. There is very little water soluble component to tarballs, thus, no acute toxicity is expected to aquatic animals. Tarballs pose risks to animals trying to ingest them, or by adhering to animals and people following physical contact. The tarballs will most likely accumulate along the high-tide swash of the beach. If enough sediment adheres to the tarballs, and they are washed off the beach, they may accumulate in the nearshore subtidal zone.

Countermeasures and Mitigation:

USCG, state, and local officials provided monitoring personnel and a crew of 50 manually removed tarballs. There were 57 cubic yards of solid waste (land, sea, and oiled debris) recovered and sent to an incinerator for disposal.

Other Special Interest Issues:

Media interest was low due to the off-season (pre-Memorial Day). The beaches were not formally closed because of the light impacts. Samples of the tarballs were sent to the USCG Oil Identification Laboratory (COIL) for chemical analysis.

NOAA Activities:

NOAA was notified of this incident on April 20, 1998, and was requested to provide resources at risk information and a hindcast to help determine the location of the source material. The SSC sent the following information to the USCG in answer to their request:

Shoreline Resources at Risk:

The shoreline is composed of medium- to coarse-grained sand beaches. The tarballs will likely collect at the high-tide line in the high-tide swash. Sand particles may adhere to the tarballs and may cause them to sink if they get washed off the beach by waves. They could also become soft if warmed in the sun and even “melt” into the sand on a hot day. The tarballs are not expected to cause any direct impacts to the beaches.

The spill is also in or adjacent to a designated Significant Coastal Fish and Wildlife Habitat. This habitat is part of New York State's Coastal Management Program, administered by the New York Department of State.

Biological Resources at Risk

Fish: Fish in the area are at very little risk from this type of spill. Bottom fish such as flounder, which could ingest sunken tarballs, are the only fish potentially at risk.

Shellfish: There are no significant shellfish resources in the intertidal zone. The clams and scallops that may be present in the nearshore subtidal waters are not at risk from this spill. If there are crabs in the coastal waters they could ingest some of the tarballs if they sink.

Birds: There are numerous species of waterfowl, shorebirds, gulls, and terns present along this shoreline. Of particular concern would be the shorebirds that may come in contact with the tarballs while foraging for food. The waterfowl and wading birds are at low risk, since they forage mainly in the water. There may be nesting least terns (state endangered) at Georgia Pond. The tarballs may adhere to the birds that step on them, or come in contact with floating tarballs.

The NY DEC was monitoring piping plover (state endangered and federally threatened) nesting areas. Piping plovers and least terns are present along the beach from East Hampton to Montauk. This is the beginning of the nesting season for the terns. Keeping cleanup workers out of the dune or back beach area is the best way to minimize impacts to these birds. There is also a maritime dunes protected community from East Hampton to Napeague Beach.

Marine Mammals: There are no significant concentrations of marine mammals in this area, and tarballs are not likely to impact any marine mammals (dolphins and seals) that may be present. However, be aware that there were sightings of a mother and calf Right Whale (the most endangered species of whales—only 290 individuals left) off Long Island last week. Impacts to terrestrial mammals, if any are present, would be

limited to adhering to the animal. The tarballs would most likely adhere to their feet and legs.

Human-Use Resources at Risk: The beaches in this area are used for recreational purposes. Amagansett National Wildlife Refuge is just east of East Hampton, and Hither Hills State Park is just west of Montauk. These are likely concentration areas for wildlife and people. The tarballs are likely to adhere to people's feet and could be spread by foot to areas far removed from the beach.

While the hindcasts were helpful in locating the possible areas of release, the source of the tarballs may never be identified unless additional information/observations are reported.

NOAA's involvement was by phone, fax, and e-mail for 4 days.

References:

NOAA Hotline #297, 5 Reports

Research Planning Institute. 1985. *Sensitivity of coastal environments and wildlife to spilled oil: Long Island. An atlas of coastal resources.* Seattle: Ocean Assessments Division, NOAA. 41 maps.

Name of Spill:	Train Derailment
NOAA SSC:	Ed Levine
Date of Spill:	7/11/98
USCG District:	1
Location of Spill:	Tomkins Cove, New York
Latitude:	41°13' N
Longitude:	73°58' W
Spilled Material:	sodium hydroxide
Spilled Material Type:	5
Amount:	400 - 500 gallons
Source of Spill:	railroad tank cars
Resources at Risk:	none
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	vegetated riverbank, riprap
Keywords:	none

Incident Summary:

A train with three cars of sodium hydroxide derailed near Tomkins Cove in Rockland County, New York, along the banks of the Hudson River. The cars were listed as empty, but probably held 400 to 500 gallons of liquid. Two tankers were on land, the other rolled into the Hudson River. One of the cars on land leaked, but the liquid flowed away from the river and formed a 40- to 50-foot diameter pool. Vegetation in contact with the liquid died. The car in the river didn't leak. Representatives from the local firedepartment, NY DEP, and USCG were on-scene.

Sodium hydroxide is heavier than water, will sink, and is readily soluble in water. The concentrated liquid is corrosive to skin and eyes upon contact, so, protective clothing was recommended for responder's safety. ConRail was the RP and responded with activities to restore the area to normalcy.

No sodium hydroxide was released into the Hudson River. The USCG provided an on-scene vessel to secure a safety zone around the wreck site while the railcars were removed. A fourth chemical car (labeled "chlorine") was found, but it was empty.

NOAA Activities:

NOAA was notified of this incident on July 11, 1998, by the USCG. The SSC reported that there was the possibility of a localized fishkill and danger to water fowl in the immediate area. There were also two industrial water intakes: one conventional power plant 1/2 mile north of the site and the Indian Point nuclear power plant about 1 mile northeast. The SSC recommended that the NY Department of Environmental Conservation (DEC), Hudson River Fisheries Unit, and the Riverkeeper be contacted.

References

NOAA. 1993. *The CAMEO™ 4.0 Manual*. Washington, D.C.: National Safety Council. 440 pp.

NOAA Hotline #315, 4 Reports

Name of Spill: I-95 Gasoline Spill
NOAA SSC: Ed Levine
USCD: 1
Date of Spill : 06/14/98
Location of Spill: Housatonic River, Connecticut
Latitude: 41°15' N
Longitude: 73°05.5' W
Spilled Material: gasoline
Spilled Material Type: 1
Amount: 215 barrels. (9,000 gallons)
Source of Spill: tanker truck
Resources at Risk: **Fish:** anadromous fish
Mollusks: mussels, clams, leased beds, abundant beds, harvest areas, high concentration sites
Recreation: marinas, boat ramps
Resource Extraction: officially designated harvest sites, commercial fisheries
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: coastal structures, consolidated seawalls, consolidated shores, freshwater flat, freshwater marshes, marshes, mixed sediment beaches, piers, riprap, vegetated low banks, vegetated riverbank
Keywords: vacuum trucks

Incident Summary:

At 1730 on June 14, 1998, a fuel truck traveling north on I-95 carrying 9,000 gallons of gasoline overturned on a bridge spanning the Housatonic River, Connecticut at mile 3.9. No injuries were reported, but nearly all the gasoline spilled into the river. USCG MSO LIS was the Federal On-Scene Coordinator (FOSC) and set up a command post on-scene. The Milford, Stratford, and Bridgeport fire and police departments assisted. Vacuum trucks removed several hundred gallons of gasoline that remained in the overturned truck. The Connecticut State Police conducted alcohol and drug tests on the driver. Weather was not conducive to evaporation (nighttime, overcast, with no wind) and a significant explosive and inhalation danger remained. North- and south-bound lanes of I-95 remained closed through 0400 June 15, 1998. The river current pushed the product downstream and eventually most of it dispersed. American Environmental Technologies was identified as the RP. An overflight of the effected area was scheduled for first light.

On the evening of the release, the initial response efforts were to contain the gasoline by booming. However, air monitoring showed that the lower explosion level (LEL) rapidly rose to dangerous levels. The local fire departments opened the booms and sprayed aqueous film forming foam (AFFF) onto the area to reduce flammable vapors. The gasoline was allowed to flow downstream and not concentrate. The LEL eventually decreased to below the level of concern. Boom was placed in protective configurations to keep the gasoline from impacting the shoreline and marinas in the area. The I-95, Route 1, and Amtrac bridges were open to through traffic in the early hours of June 15, 1998. The morning's overflight saw rainbow sheen that evaporated as the day progressed. By June 16, there were only small amounts of silver sheen seen in the area.

NOAA Activities:

NOAA was notified of this incident on June 14, 1998, by MSO LIS who requested information about the trajectory, evaporation rate, and expected behavior of the gasoline

The SSC told MSO LIS that there would be 90 percent evaporation in the first 20 hours and warned about possible explosive conditions.

NOAA supported this incident for about an hour by fax and phone.

References:

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

Name of Spill:	T/B <i>Ocean State</i>
NOAA SSC:	Ed Levine
USCG District:	1
Date of Spill:	9/5/98
Location of Spill:	East River, New York
Latitude:	40°43.8' N
Longitude:	73°58.2' W
Spilled Material::	gasoline, #2 fuel oil
Spilled Material Type:	1, 2
Amount:	< 100 barrels
Source of Spill:	barge
Resources at Risk:	none
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	mostly manmade shorelines
Keywords:	none

Incident Summary:

At 0330 Eastern Daylight Time (EDT) on Saturday, September 5, 1998, the tank barge *Ocean State* ran hard aground on the shore of the East River at 36th Street on Manhattan Island, north of the Williamsburg Bridge and south of Newtown Creek. The barge was loaded with 80,000 barrels of gasoline and 90,000 barrels of #2 fuel oil. The vessel operator reported both products were leaking. At about 0730 EDT, the barge refloated and was held in place by two tugs near Buoy 18 off 20th street until moved to a dock in Brooklyn. The barge continued to leak product until a water bottom was fully established.

Weather was expected to have highs in the low 80s and lows in the high 60s. Winds were light, 5 knots from the northwest. The forecast was for winds to be 10 to 15 knots from the northwest during the day, but were expected to be from the west at 10 to 15 knots becoming southwest at 10 to 15 knots by Sunday, September 6. Waves were predicted to be 1 foot or less through Sunday for the East River and Upper New York Harbor. There was a possibility of showers Sunday night, leaving visibility unrestricted through Sunday. Highs for Sunday were expected to be in the high 80s. A weak cold front was expected in the region Sunday night. With the frontal passage, the southwest winds were expected to change and become north winds by Monday morning.

Behavior of Spilled Material:

Lighter refined products, such as gasoline, jet fuel, and diesel typically have very high evaporation rates and do not tend to create persistent slicks. When spilled, the oil spreads quickly into thin films often forming patches of rainbow and silver sheens. If the sheens reach the shoreline in a few hours, a slight staining, or soot-like bathtub ring (in the case of diesel) may occur. These oils don't usually form a stable emulsion and, as a result, do not cause heavy or sticky residual to cleanup.

Lighter refined products do have a relatively high concentration of light aromatic compounds and tend to be more soluble and toxic than heavier oils. So, even though these oils may not present an involved cleanup problem they can result in an initial toxic shock to biota and persist as a biological threat problem in low-energy marine environments.

An exact accounting of the oil lost by the barge was never provided. It was estimated that less than 100 barrels were spilled.

Countermeasures and Mitigation:

A diver's survey revealed gashes, estimated to be 6 inches by 3 feet, in the forepeak and #1, #2, and #3 port tanks.

While lightering September 6, there was a "burp" of #2 oil. It was estimated to be under 100 gallons. During an overflight, a pocket of oil was discovered at Pier 17 (South Street Seaport) and some streamers of sheen in the Buttermilk Channel near Governors Island were seen. A cleanup contractor was dispatched with equipment to Pier 17 to attempt oil recovery.

NOAA Activities:

NOAA was notified of this incident on September 5, 1998, by ACTNY. The SSC was requested to report to the command post. Support was provided on trajectory modeling, overflights, safety and health, media reports, sensitive areas, and response options.

It was expected that the tidal currents would dominate the initial movement of the oil. The spill occurred at the beginning of a flood that had a predicted maximum of 3.8 knots at 0630 EDT. The flood would continue till 0930 EDT. During the flood, the oil was expected to move north up the East River, through the Hell's Gate area, and into the Riker's Island area of the East River. The Harlem River floods north to south and was not expected to move the oil into the Harlem River on the flood.

On the ebb, oil from the Hell's Gate area could get pulled into the Harlem River. The extent of the impacts in the Harlem River will depend upon how much gasoline and diesel were lost and how quickly the forecasted northwest winds develop. Oil from the southern portion of the East River will move out into Upper New York Harbor on the ebb and could get through the Narrows and into Lower New York Harbor by mid afternoon when the ebb ends. The amount of oil and the extent of beach impacts will depend upon the type and quantity of oil lost.

Because the amount of oil lost was less than 100 barrels that spread a smaller distance than predicted. It remained below Roosevelt Island and Governors Island.

NOAA supported this incident for one day.

References:

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA Hotline #325, 12 Reports

USCG ACT NY Area Plan

Name of Spill:	Tank Truck Rollover
NOAA SSC:	Stephen Lehmann
USCG District:	5
Date of Spill:	07/22/98
Location of Spill:	Crawford County, Pennsylvania
Spilled Material:	gasoline
Spilled Material Type:	1
Amount:	98 barrels, 4100 gallons
Source of Spill:	tank truck
Resources at Risk:	drinking water intakes, spawning streams
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	freshwater stream, grasslands, upland marsh
Keywords:	low-pressure washing

Incident Summary:

A truck carrying 8500 gallons of gasoline rolled over and spilled 4100 gallons into a small freshwater stream in Crawford County, Pennsylvania. The stream runs through a forested marsh and into a trout stream. The Pennsylvania Department of Environmental Protection (DEP) was proposing in-situ burning, filtration, low-pressure flushing, and marsh cutting.

NOAA Activities:

NOAA was notified of this incident directly by the Pennsylvania DEP who needed information about each response planned technique. NOAA told DEP that cutting was inappropriate and possibly damaging. In-situ burning would have to be approved by the local fire officials, which was very unlikely given the near drought conditions. NOAA suggested that the stream should be aerated to increase evaporation, that low-pressure flooding would be effective, and that some sort of carbon filtration could be useful.

The DEP and the RP built a 4- by 8-foot box and filled it with activated carbon. The stream (flowing at 2 to 3 gallons per minute) was allowed to flow through the filter. This filtration unit was replaced days later with a commercial carbon stripper. Trash pumps were used to recycle the water, and thereby increase aeration. Approximately 10,000 gallons of water were brought into the area as a low-pressure flood.

The DEP estimates that the stream was impacted for about 300 to 400 yards and believes the impacts were reduced by the countermeasures.

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Name of Spill:	Honey Creek
NOAA SSC:	Stephen Lehmann
USCG District:	2
Date of Spill:	10/01/97
Location of Spill:	Milwaukee, Wisconsin
Spilled Material:	#2 fuel oil
Spilled Material Type:	2
Amount:	3000 gallons
Source of Spill:	tank truck
Resources at Risk:	none
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	N
Shoreline Types Impacted:	none
Keywords:	none

Incident Summary:

On October 1, 1997, a tank truck carrying 7500 gallons of #2 fuel oil overturned and caught fire at Honey Creek in the Milwaukee, Wisconsin area. The Wisconsin Department of Natural Resources (DNR) responded and estimated about 3000 gallons had spilled into the creek. Honey Creek is shallow (< 0.5 meters) and about 10 feet wide. The DNR conducted the response as On-Scene Coordinator (OSC)

Behavior of Spilled Material:

The oil continued to contaminate sediments and organic materials along the banks of the 1/2-mile spill area. Some sheening was persisting when the sediments or organic materials were agitated. DNR originally recommended sediment removal along the banks.

NOAA Activities:

NOAA was notified of this incident on October 1, 1997, by Wisconsin DNR, whose biologists were concerned about the continuing contamination on sediments and organic materials along the banks of the 1/2-mile spill area.

NOAA told them that contamination is likely a "bathtub ring" effect from the spill and that continued sheening is to be expected. Gross removal of the sediment may increase erosion by removing the vegetation. If the sheening is relatively light and only present following agitation, the net increase in impacts is not expected to be significant. Before totally removing sediment, the oiled dead materials (fallen leaves, twigs, etc.) should be removed and a survey done to determine if any areas of concentration exist. If areas of concentration are discovered, spot removal using hand tools might be considered. However, it is highly unlikely that these pockets will pose any threat to the creek if left alone.

References:

NOAA Hotline #248, 1 Report

Name of Spill:	M/V <i>James K. Ellis</i>
NOAA SSC:	Todd Bridgeman
USCG District:	2
Date of Spill:	04/01/98
Location of Spill:	Rock Haven, Kentucky
Spilled Material:	diesel
Spilled Material Type:	2
Amount:	potential 15,500
Source of Spill:	tug
Resources at Risk:	Fish: paddlefish, bigmouth buffalo, black buffalo, smallmouth buffalo, and catfish. Recreationally important fish include largemouth bass, smallmouth bass, sunfish, white bass, striped bass, channel catfish and blue catfish. A federally listed (endangered) fish species
	Mollusks: mussel beds
	Birds: migratory waterfowl
	Terrestrial Mammals river otter, raccoon, muskrat and other semi-aquatic fur-bearing mammals
	Resource Extraction: industrial water intakes
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	river was closed
Shoreline Types Impacted:	riprap, vegetated banks
Keywords:	potential

Incident Summary:

On April 1, 1998, the tug *James K. Ellis* sank along the left descending bank of the Ohio River at mile marker (MM) 638. The vessel hit a rock bottom and opened a 2- to 3-foot hole in the #2 fuel tank and possibly the #3 fuel tank. The vessel carried 15,500 gallons of diesel fuel. On-scene weather was partly cloudy, temperatures in the mid 50s. The river current was 2.0 knots.

Behavior of Spilled Material:

The oil involved was a relatively light product. With the turbulence of the river, there may be a significant fraction in the water column, especially since the product was being released from a sunken vessel. In the shallower areas near the river banks, this may result in impacts to aquatic organisms. In the main channel of the river, the water volume should dilute the oil to relatively low levels. A 6-mile sheen was reported (MM 638 to 644) but was breaking up. A surface sheen will develop, which may impact animals on the water surface. This product is not likely to leave a significant residue on the shoreline.

This oil will not coat any of the shorelines. If the oil gets stranded on point bars during a falling river, then it may penetrate into the sediments. It will remain in any point bars until the next time the river floods the bar. On riprap shorelines, the oil will stain the rock and may pool in the interstitial spaces of the riprap. However, the wave action from river traffic should flush this oil out fairly rapidly. On vegetated banks the vegetation may be stained, but with the high energy from waves and currents, it should be cleaned naturally in a relatively short time.

NOAA Activities:

NOAA was notified of this incident on April 1, 1998. The remaining diesel fuel was pumped off the vessel April 2, 1998. A slop barge was en route to strip any residual product from the tanks. The river has been partially reopened to traffic. The salvage plan calls for shoring up the damaged tanks, stabilizing, and dewatering the vessel. If this fails, salvors will employ an "A" frame to raise and stabilize the vessel. The tug was raised without incident.

References:

NOAA Hotline #293, 3 Reports

Name of Spill: Barge *Hannah 5101*
NOAA SSC: Stephen Lehmann
USCG District: 2/9
Date of Spill: 04/15/98
Location of Spill: Port Huron, Michigan
Spilled Material: #6 fuel oil
Spilled Material Type: 4
Amount: potential 44,000 barrels
Source of Spill: tank barge
Resources at Risk: **Birds:** shorebirds, wading birds, diving birds (cormorants, grebes, etc.), waterfowl, gulls, terns, and raptors. the federally threatened bald eagle, peregrine falcon (which may also be listed federally), common tern, osprey, and king rail (all listed as threatened by Michigan).
Fish: trout, various salmon, pike, sunfish, crappie, perch, largemouth bass, smallmouth bass, walleye, white bass, channel catfish, and sauger, lake sturgeon (state threatened).
Terrestrial Mammals: northern raccoon, muskrat.
Resource Extraction: water intakes
Management Areas: flocal parks, Walpole Island, the St. Clair Flats State Wildlife Area
Human-use resources boat ramps, marinas, recreational beaches
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: N
Shoreline Types Impacted: riprap, solid manmade structures, sheltered bluffs, sand beach, wetlands
Keywords: potential

Incident Summary:

On April 15, 1998, USCG MSO Detroit received a report that the barge *Hannah 5101*, moored at the Port Huron Marine Terminal on the St. Clair River, has three cracks in her exterior hull. She was carrying 44,000 barrels of #6 fuel oil. No oil leaked.

Behavior of Spilled Material:

The St. Clair River was running high during this incident and estimates from the Corps of Engineers and U.S. Coast Pilot 6 were that the currents between the potential spill site and St. Clair River are approximately 2 knots. Lake St. Clair is 20 to 25 miles downstream. It was estimated that with a northeast wind any spilled oil could reach the delta area of Lake St. Clair in 7 to 10 hours. Once in the lake

, the winds will dominate the movement of the oil. If the oil reaches the lake when winds are from the east, the shoreline impacts will be along the western side of the lake. If the oil should be spilled later and reach the lake under the influence of a westerly wind, the eastern shoreline will be threatened. The winds are expected to be from the east at 10 to 20 knots April 16, becoming light and variable in the afternoon hours. The temperatures are expected to range from highs in the mid 50s to lows in the mid 40s. By April 17, the winds

are expected to be from the northwest at 15 to 25 knots with partly cloudy skies. There is a slight chance of showers and thunderstorms.

NOAA Activities:

NOAA was notified of this incident on April 15, 1998, by MSO Detroit who reported that the Barge *Hannah 5101*, carrying about 44,000 barrels of floating #6 oil had been damaged. There was no oil in the water.

NOAA informed MSO that #6 fuel is a heavy oil and would be expected to coat shorelines and resources occurring at or on the water surface. Also, depending on the characteristics of the specific oil involved, and the weather/wave conditions, it is possible that some of the oil could fail to float, impacting benthic and water-column resources.

The SSC provided support to USCG MSO by phone and fax.

References:

NOAA Hotline 296, 4 Reports

Name of Spill: Barge *Coastal 2010*
NOAA SSC: Stephen Lehmann
USCG District: 2
Date of Spill: 06/10/98
Location of Spill: Marseilles Locks, Illinois River
Spilled Material: #6 fuel oil
Spilled Material Type: 2
Amount: 20,000 gallons
Source of Spill: barge
Resources at Risk: Fish: greater redhorse, river redhorse (state threatened)
Habitats: unvegetated or lightly vegetated shorelines, exposed banks
Recreation: boat ramps
Management Areas: state parks
DispersantsL: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: N
Shoreline Types Impacted: none
Keywords: potential

Incident Summary:

At approximately 1245 Central Daylight Time (CDT) on June 10, 1998, the barge, *Coastal 2010*, grounded in the Illinois River about a mile downriver of the Marseilles Locks. The barge, carrying 18,000 barrels of #6 fuel oil, was aground on a sandy bottom. No release was reported and the potential for release was considered low because of the soft, muddy sediments.

MSO Chicago was contacted and dispatched an inspection team.

The winds are expected to be light during the early evening hours, then become southeast at about 10 knots late June 10. The next winds were forecast to be from the southeast 10 to 20 knots. There was an 80 percent chance of thundershowers in the area and an expected rainfall of 1/4 to 1/2 inch. The temperatures were expected to range from highs in the 80s to lows in the mid 60s.

The NOAA Coastal Pilot estimated currents in the Calumet Sag Channel part of the river to be between 0.2 and 0.4 miles per hour (mph) with maximums of about 1.3 mph during high-flow periods. The barge is grounded farther downstream at Marseilles and currents can be expected to be stronger there than at Calumet. If oil is lost, shoreline impacts can be expected between the barge and Starved Rock Lock 13 miles below Marseilles Lock.

Behavior of Spilled Material:

Heavy refined products, such as #6 fuel oil, tend to weather very slowly. This type of oil may not spread into a very thin film and often may simply break up into smaller patches and then tarballs. Because this type of oil may not form a sheen, the resulting tarball field may be difficult to observe using visual and remote sensing techniques. This, combined with the persistence of the tarballs, makes these types of spills quite likely to result in long-range and, occasionally, unexpected beach impacts.

There may be some scavenging of the slick from suspended sediment in the rivers. This may result in tarballs along the bottom of the river that could move downstream past Starved Rock Lock.

NOAA Activities:

NOAA was advised of this spill on June 10, 1998, by MSO Chicago. The SSC informed MSO of the expected behavior of the oil if a spill occurred, the weather, and resources at risk.

The barge *Coastal 2010* was refloated at 1700 CDT. USCG reported no immediate evidence of pollution. An inspection will be conducted.

The SSC supported this incident by phone and fax.

References:

NOAA Hotline #307, 6 Reports

Name of Spill: Tank Truck Rollover
NOAA SSC: Stephen Lehmann
USCG District: 9
Date of Spill: 07/22/98
Location of Spill: Crawford County, Pennsylvania
Spilled Material: gasoline
Spilled Material Type: 1
Amount: 100 gallons
Source of Spill: tank truck
Resources at Risk: drinking water intakes, spawning streams
Dispersants: Y
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: freshwater stream, grasslands, upland marsh
Keywords: low-pressure washing

Incident Summary:

A truck carrying 8500 gallons of gasoline rolled over and spilled 4100 gallons into a small freshwater stream in Crawford County, Pennsylvania. The stream runs through a forested marsh and into a trout stream. The Pennsylvania DEP was proposing in-situ burning, filtration, low-pressure flushing, and marsh cutting.

NOAA Activities:

NOAA was notified of this incident directly by the Pennsylvania DEP who needed information about each response planned technique. NOAA told DEP that cutting was inappropriate and possibly damaging. In-situ burning would have to be approved by the local fire officials, which was very unlikely given the near drought conditions. NOAA suggested that the stream should be aerated to increase evaporation, that low-pressure flooding would be effective, and that some sort of carbon filtration could be useful.

The DEP and the RP built a 4- by 8-foot box and filled it with activated carbon. The stream (flowing at 2 to 3 gallons per minute) was allowed to flow through the filter. This filtration unit was replaced days later with a commercial carbon stripper. Trash pumps were used to recycle the water, and thereby increase aeration. Approximately 10,000 gallons of water were brought into the area as a low-pressure flood.

The DEP estimates that the stream was impacted for about 300 to 400 yards and believes the impacts were reduced by the countermeasures.

References:

NOAA Hotline #317, 1 Report

U.S. Coast Guard District 5

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Name of Spill:	<i>C/V Ned Lloyd Delft</i>
NOAA SSC:	Gary Ott
USCG District	5
Date of Spill:	11/12/97
Location of Spill:	Port of Hampton Road, Virginia
Latitude:	36°57' N
Longitude:	076°10' W
Spilled Material:	#6 fuel oil
Spilled Material Type:	4
Amount:	minor
Source of Spill:	non-tank vessel
Resources at Risk:	habitat
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	fringing salt marsh, tidal mudflat
Keywords:	none

Incident Summary:

On the morning of November 12, 1997, the *C/V Ned Lloyd Delft* transiting from Portsmouth Marine Terminal to Lynnhaven Anchorage in Chesapeake Bay reported leaking #6 fuel oil. At 0915 Eastern Standard Time (EST), the vessel anchored at the Lynnhaven Anchorage. It was not known how much product was lost or if the vessel was still leaking.

The initial investigation suggested that the #6 fuel oil leaked from a crack between a fuel tank and the bunker tanks on the *Ned Lloyd Delft*. The release occurred when the bunker tanks were being emptied.

Behavior of Spilled Material:

The USCG's midday overflight showed a patch of oil near the Portsmouth Marine Terminal, some oil around the *Ned Lloyd Delft*, and small streaks of sheen going out of the Port of Hampton Roads. The USCG reported that the patch of oil had been almost completely removed during recovery operations.

The ebb tide began at about 0920 EST and the winds were primarily from the northwest. If the vessel leaked oil as it moved from Portsmouth through Hampton Roads, it is possible for some oil to contact the eastern shoreline. Much of the oil was expected to move out of Chesapeake Bay and past Cape Henry as the vessel moved through Hampton Roads to the Lynnhaven Road Anchorage. The winds were forecast from the northeast, increasing the likelihood that the spill may threaten the Cape Henry area.

NOAA Activities:

NOAA was notified of this incident on November 12, 1997, by MSO Hampton Roads who requested trajectory and weather support.

Over time, wind and waves will tear the initial slick apart forming patches (e.g., tarballs) that may scatter over a wide area. The resulting tarball field may not have any associated sheen. This makes tracking the slick using visual observations and remote-sensing techniques extremely difficult.

Spills of #6 fuel oil tend to weather slowly. The oil may not spread into thin films and often simply breaks up into smaller patches. During the first 24 hours, 15 percent of the oil is expected to evaporate or disperse into the water column. Emulsification is not expected to occur. It should be noted that #6 fuel oil may result in persistent floating pollutant problems.

NOAA forecast that northeast winds would increase the threat to Lynnhaven Inlet and Cape Henry. If the vessel continued to leak after 0300, November 13, 1997, oil in the Cape Henry area will again move farther into the bay with the flood tide and the forecast strong northeast winds would increase the likelihood of oil moving into the Lynnhaven Inlet.

NOAA supported this response by phone and fax for several hours.

References:

NOAA Hotline #258, 5 Reports

NOAA. 1992. *Shoreline Countermeasures Manual For Regional Response Team III*. Seattle: Hazardous Materials Response and Assessment Division. 103 pp.

NOAA. 1993. *ADIOS (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

Virginia Institute of Marine Science. 1980. *Sensitivity of Coastal Environments and Wildlife to Spilled Oil, State of Virginia*. Boulder Colorado: Hazardous Materials Response Project, NOAA. 104 maps.

Name of Spill: High Rise Services
NOAA SSC: Gary Ott
USCG District: 5
Date of Spill: 11/12/97
Location of Spill: Wilmington, North Carolina
Latitude: 34°16.2' N
Longitude: 078°00' W
Spilled Material: waste oil
Spilled Material Type: 2
Amount: 71 barrels
Source of Spill: facility
Resources at Risk: Fish: short-nosed sturgeon
Reptiles: alligators
Habitat: over-wintering waterfowl cypress swamp
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: cleanup of a cypress swamp
Shoreline Types Impacted: fringing salt marsh, tidal mudflat, cypress swamp
Keywords:

Incident Summary:

Material—described as 90 percent #6 oil and 10 percent used motor oil collected from recycling centers—was released the evening of November 12, 1997, from High Rise Services northwest of Wilmington, North Carolina. The initial report was that the waste oil was being pumped into a tank truck when the truck overflowed. Later reports were that the waste oil tank was being decanted directly into the swamp area. The operator did not return in time to prevent the release of an estimated 3000 gallons of waste oil into the swamp during this decanting process.

Behavior of Spilled Material:

The waste oil flowed through a cypress swamp, contaminating an area estimated at 500 by 1000 feet, before entering the Cape Fear River. The oil released was estimated to have a range from 3000 to 5000 gallons. The actual amount of waste oil spilled was not confirmed. The evening of November 15, 2600 gallons of waste oil was recovered. A 6- to 8-mile stretch of vegetation on the Cape Fear River north of Wilmington was impacted with a coating of waste oil.

Countermeasures and Mitigation:

Contractors and the local fire department used streams of water to increase the flushing of oil from the Cypress swamp that lies between the High Rise Services facility and the Cape Fear River. On November 14, flushing the swamp area was productive as it mobilized considerable amounts of oil out of the area; however, by November 16, much less oil remained in the contaminated cypress swamp area and flushing efforts by the local volunteer fire department were no longer successful.

Other Special Interest Issues:

A cypress swamp in this area was impacted. A priority issue was to determine how best to clean it. The impacted area is a State-designated primary nursery. In addition, NOAA

reported that the area was the habitat of short-nosed sturgeon, alligators, and over-wintering waterfowl.

NOAA Activities:

NOAA was notified of this incident on November 12, 1997, by MSO Wilmington who requested assistance on-scene. A morning overflight of the area on November 15 was attended by NOAA, the Executive Officer of MSO Wilmington, and the North Carolina State Wildlife Biologist. The USCG's pollution report of November 15 included a summary of all the team's overflight observations. Sheen from the waste oil was observed on the Cape Fear River and extended 3 miles above and 3 miles below the source of the release at High Rise Services.

On the afternoon of November 15, the NOAA SSC participated in a survey of the cypress swamp and surrounding environments near High Rise Services, the source of the release. A collection of a light black oil and oiled debris at High Rise Services and downstream at the Nevasso River Bridge were observed.

The SSC recommended the following guidelines for removal activities in three areas:

1. Remove oil and oiled debris from the Cape Fear River.
2. Use high-volume, low-pressure water to mobilize waste oil contaminating the cypress swamp at the High Rise Services facility.
3. Remove contaminated sediments at the High Rise Services facility where skimming and booming operations were focused.

On November 17, a sample of the spilled waste oil was sent to Louisiana State University (LSU) for analysis. The analysis suggested that the oil could be compared to a refined petroleum product similar to home heating oil or a heavier refined product mixed with residual oil. The sample was screened for polychlorinated biphenyls (PCBs); none were found within the detection limits.

The SSC reported that over time, wind and waves will tear the initial slick apart forming patches (e.g., tarballs) that may scatter over a wide area. The resulting tarball field may not have any associated sheen. This makes tracking the slick using visual observations and remote-sensing techniques extremely difficult.

Spills of #6 fuel oil tend to weather slowly. The oil may not spread into thin films and often simply breaks up into smaller patches. During the first 24 hours, 15 percent of the oil is expected to evaporate or disperse into the water column. Emulsification is not expected to occur. It should be noted that #6 fuel oil may result in persistent floating pollutant problems.

NOAA conducted an on-site assessment at the contaminated cypress swamp at High Rise Services with representatives of North Carolina Marine Fisheries, North Carolina Department of Environmental Quality (DEQ), and MSO Wilmington. The survey team observed a relatively light oil coating on vegetation, debris, and sediment in the swamp area. Layers or pools of black oil that could have been mobilized by high-volume, low-pressure flushing activities were not observed.

MSO Wilmington and NOAA prepared written guidelines for future actions and monitoring. The focus of these guidelines was:

- ❑ further oil removal activities were to be suspended in the cypress swamp,
- ❑ foot traffic into the swamp would be minimized, and
- ❑ additional surveys will be conducted and oil removal recommendations (if any) will be made in the spring.

References:

Louisiana State University, Institute for Environmental Studies, Chemistry Report IES/RCAT97-38, dated 19 November 1997.

NOAA Hotline #259, 12 Reports

NOAA. 1993. *ADIOS (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

Virginia Institute of Marine Science. 1980. *Sensitivity of Coastal Environments and Wildlife to Spilled Oil, State of North Carolina*. Boulder Colorado: Hazardous Materials Response Project, NOAA. 113 maps.

Name of Spill:	Tug <i>Captain Frank</i>
NOAA SSC:	Gary Ott
USCG District	5
Date of Spill:	12/29/97
Location of Spill:	Wilmington, North Carolina
Latitude:	33°58.9' N
Longitude:	77°52.1' W
Spilled Material:	#2 fuel oil
Spilled Material Type:	2
Amount:	3000 gallons
Source of Spill:	non-tank vessel
Resources at Risk:	habitat
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	fringing salt marsh, tidal mudflat, sand beaches
Keywords:	none

Incident Summary:

At 0630 on December 29, 1997, the tug *Captain Frank*, sank in the Atlantic Ocean approximately 2 miles off Kure Beach near Wilmington, North Carolina. When the tug sank, 3000 gallons of diesel was lost from a damaged tank. There was a reported potential for 21,000 gallons of diesel from other fuel tanks onboard.

Behavior of Spilled Material:

USCG overflights on December 30 located the sunken *Captain Frank* by the vessel's mast that was above the water. A sheen was observed around the sunken tug, but it quickly dissipated.

Countermeasures and Mitigation:

On December 31 divers plugged the *Captain Frank's* fuel vents; a USCG overflight observed a relatively small oil sheen around the vessel.

Donjon Marine salvaged the *Captain Frank* and removed it from the area on January 15, 1998.

NOAA Activities:

NOAA was notified of this incident on December 29, 1997, by MSO Wilmington who asked for weather information and a trajectory for diesel fuel in case of a catastrophic release.

NOAA reported that the on-scene winds were 25 knots, gusting from the southwest. The strong winds and choppy seas at the time of the release would break up the surface slick and cause much of the product to either evaporate rapidly or disperse into the water column. Any product remaining on the surface should move downwind, along the shoreline, feathering out, and breaking up 1 or 2 miles downwind of the tug.

If there was a catastrophic release of 21,000 gallons, the slick would again be expected to move downwind remaining a visible slick up to 4 miles from the tug. The far, downwind end of the slick will feather out and break up over another 1 to 2 miles. If the winds

subside to 10 to 15 knots, most of the product should evaporate and disperse within 1 or 2 days. Under the current weather system of offshore winds, no coastal impact is expected.

NOAA also advised that the lighter refined products do have a relatively high concentration of light aromatic compounds and tend to be more soluble and toxic than heavier oils and could result in a localized initial toxic shock to biota in the water column around the tug, and possibly in the surf zone if the wind changes direction significantly causing the product to beach.

The SSC kept the MSO apprised of the weather and any changes in the trajectory throughout the spill response.

References:

NOAA Hotline #269, 34 Reports

NOAA. 1992. *Shoreline Countermeasures Manual For Regional Response Team III*. Seattle: Hazardous Materials Response and Assessment Division. 103 pp.

NOAA. 1993. *ADIOS (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

Virginia Institute of Marine Science. 1980. *Sensitivity of Coastal Environments and Wildlife to Spilled Oil, State of North Carolina*. Boulder Colorado: Hazardous Materials Response Project, NOAA. 113 maps.

Name of Spill:	T/B <i>Gregory</i>
NOAA SSC:	Gary Ott
USCG District	5
Date of Spill:	01/15/98
Location of Spill:	Norfolk, Virginia
Latitude:	38°58.5' N
Longitude:	076°20' W
Spilled Material:	gasoline
Spilled Material Type:	1
Amount:	potential
Source of Potential Spill:	tank barge
Resources at Risk:	habitat
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	used for in-progress workshop
Shoreline Types Impacted:	none
Keywords:	potential

Incident Summary:

At 0700 hours on January 15, 1998, the tug *Neil McAllistar* struck the tank barge *Gregory* near Sewalls Point in the Port of Hampton Roads. The *Gregory* contained 31,000 gallons of gasoline. There was some damage to the *Gregory*, however; there was no release of gasoline.

Other Special Interest:

USCG MSO Hampton Roads notified NOAA of this incident on January 15, 1998, and requested a trajectory for the release of gasoline from one tank of the barge, 4000 gallons, for an informal workshop in the Port of Hampton Roads. The workshop's purpose was to discuss what actions would have to be taken by the members of the Port community if this incident had resulted in a release of gasoline.

NOAA Activities:

NOAA was notified of this incident on January 15, 1998, by MSO Hampton Roads. The SSC prepared detailed trajectory maps and budget for the dispersion of gasoline for an incident of this type for the workshop. The NOAA trajectory noted that winds and tidal currents at the time of the incident would suggest a tidal excursion for the spilled gasoline of about 2.5 to 3 nautical miles.

References:

NOAA. 1992. The CAMEO 4.0 Manual. Washington, D.C.: National Safety Council. 440 pp.

NOAA. 1992. Shoreline Countermeasures Manual For Regional Response Team III. Seattle: Hazardous Materials Response and Assessment Division. pp.

NOAA. 1992. The ALOHA 5.1 Manual for the Apple Macintosh and IBM Compatibles. Washington, D.C.: National Safety Council

NOAA. 1993. ADIOS (Automated Data Inquiry for Oil Spills) User's Manual. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

USCG District 5

Virginia Institute of Marine Science. 1980. Sensitivity of Coastal Environments and Wildlife to Spilled Oil, State of Virginia. Boulder Colorado: Hazardous Materials Response Project, NOAA. 104 maps.

Name of Spill:	T/B <i>Genie Marie</i>
NOAA SSC:	Gary Ott
USCG District	5
Date of Spill:	03/06/98
Location of Spill:	Salsbury, Maryland
Spilled Material:	gasoline
Spilled Material Type:	1
Amount:	potential
Source of Spill:	tank barge
Resources at Risk:	habitat
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	fringing salt marsh, tidal mudflat
Keywords:	potential

Incident Summary:

In the early morning of March 6, 1998, USCG ACT Baltimore was notified that the tug *Barbary Coast* lost her rudder and pushed the T/B *Genie Marie* aground in the Wicomico River near lighted Buoy 28. The barge had 20,000 barrels of gasoline onboard.

Countermeasures and Mitigation:

By 1100 hours the tug *Barbary Coast* and its tow had been refloated and were underway to Salisbury, Maryland with an assist tug. No damage to the *Genie Marie* or release of gasoline into the environment was reported.

NOAA Activities:

NOAA was notified of this incident on March 6, 1998, by USCG ACT Baltimore and participated in the telephone recall and standby response to this potentially major incident.

References:

Virginia Institute of Marine Science. 1980. *Sensitivity of coastal environments and wildlife to spilled oil, State of Maryland*. Boulder Colorado: Hazardous Materials Response Project, NOAA. 118 maps.

Name of Spill:	Crane Barge
NOAA SSC:	Gary Ott
USCG District	5
Date of Spill:	03/09/98
Location of Spill:	Wilmington, North Carolina
Latitude:	33°59' N
Longitude:	077°52.1' W
Spilled Material:	diesel
Spilled Material Type:	1
Barrels:	sheen
Source of Spill:	crane barge
Resources at Risk:	habitat
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	fringing salt marsh, tidal mudflat
Keywords:	sorbent boom

Incident Summary:

On the morning of March 9, 1998, MSO Wilmington saw a crane barge listing heavily at Point Peter, Wilmington, North Carolina. A rainbow sheen was seen coming from the crane barge. By noon the barge had sunk completely and a heavy rainbow sheen was bubbling up from it.

Countermeasures and Mitigation:

MSO Wilmington hired Southeast Response and Remediation who deployed sorbent boom around the sunken vessel. By March 10, only a minimal sheen was seen coming from the crane's machinery. Sorbent boom remained in place until the crane barge was salvaged.

NOAA Activities:

NOAA was notified by MSO Wilmington on March 9, 1998, and was asked to remain on standby until the amount of oil that was released from the sinking barge could be determined. Trajectory or weather support was not required from NOAA for this incident.

References:

Research Planning Institute. 1996. *Sensitivity of coastal environments and wildlife to spilled oil: North Carolina. A Coastal Atlas. Volume 2.* Seattle: Hazardous Materials Response and Assessment Division, Coastal Services Center, Strategic Environmental Assessments Division, NOAA. 131 maps.

Name of Spill:	F/V <i>Granny B</i>
NOAA SSC:	Gary Ott
USCG District	5
Date of Spill:	04/20/98
Location of Spill:	Pamlico Sound, North Carolina
Latitude:	35°13.45' N
Longitude:	076°12.69' W
Spilled Material:	diesel
Spilled Material Type:	1
Amount:	minor
Source of Spill:	fishing vessel
Resources at Risk:	habitat
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	fringing salt marsh, tidal mudflat
Keywords:	sorbent boom

Incident Summary:

On April 20, 1998, the F/V *Granny B* sank in 10 feet of water in Pamlico Sound North Carolina following a collision with the pleasure craft *Adom II*. The terry *Ocracoke* crew reported a light sheen coming from the sunken vessel. The *Granny B* was reported to have approximately 700 gallons of diesel onboard when she sank.

Behavior of Spilled Material:

On April 20, 1998, the USCG response team reported a very light and rapidly dissipating sheen 20 feet wide, flowing some distance from the wreck.

Countermeasures and Mitigation:

By the afternoon of April 21, a commercial diver from Towboat/US had plugged the fuel vents. On April 25, the owner attempted to refloat the vessel and was able to move it into shoal water to begin to remove the remaining fuel. By April 28, the owner reported all fuel tanks and rigging had been removed. A USCG overflight on May 6, 1998, confirmed that the owner had completed the removal of the *Granny B* from lower middle ground light buoy and that no wreckage or pollution was noted.

NOAA Activities:

NOAA was notified of this incident on April 20, 1998, by MSO Wilmington who wanted information about what diesel fuel from a sunken fishing vessel could do to the environment. NOAA advised that diesel fuel is often observed bubbling up from a sunken fishing vessel for several days and that sheen from the sunken fishing vessel will dissipate rapidly. The importance of safety concerns for response personnel during the response effort was highlighted because the weather was reported to be deteriorating.

References:

Research Planning Institute. 1996. *Sensitivity of coastal environments and wildlife to spilled oil: North Carolina. A Coastal Atlas. Volume 2.* Seattle: Hazardous Materials Response and Assessment Division, Coastal Services Center, Strategic Environmental Assessments Division, NOAA. 131 maps.

Name of Spill: T/B *Atlantic*
NOAA SSC: Gary Ott
USCG District: 5
Date of Spill: 05/28/98
Location of Incident: Eagle Island, North Carolina
Latitude: 34°16.2' N
Longitude: 078°00' W
Spilled Material: unknown liquid material
Spilled Material Type: 1
Amount: N/A
Source of Material: tank barge
Resources at Risk: habitat
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: fringing salt marsh, tidal mudflat
Keywords: none

Incident Summary:

USCG MSO Wilmington conducted a detailed boarding of the uninspected towing vessel (UTC) *Porpoise* and the barge *Atlantic* on May 28, 1998, to determine compliance with pollution prevention regulations. The *Porpoise* had brought the *Atlantic* into the Port of Wilmington and both vessels were moored at the Eagle Island terminal.

Initial reports from the crew of the *Porpoise* and her owners suggested that the *Atlantic* was only carrying "clean ballast." However, MSO Wilmington investigators were given reports that the tank barge was carrying liquid waste material, or possibly vegetable oils, or possible tank washings consisting of various edible oil residues and caustic-based solvents.

On June 5, 1998, the owner of the *Atlantic* arranged for a marine chemist to evaluate the condition of the barge and to take samples of the liquid carried in the tanks. Those samples were to be sent to a laboratory for analysis. The marine chemist's atmospheric monitoring revealed that at least three of the cargo tanks were oxygen deficient (<15% oxygen). During the sampling, MSO personnel observed liquid material that was very different from ballast water in several barge wing tanks (#1 port, #1 and #5 starboard).

MSO Wilmington also sampled a number of the cargo tanks of the vessel including an 1800 gallon integral diesel fuel tank located in the aft rake of the barge. Those samples were forwarded to the USCG Marine Safety Laboratory (Case Number 98-213) to classify the materials in the barge for regulatory purposes.

NOAA Activities:

NOAA was notified of this incident on June 22, 1998, by MSO Wilmington who asked the SSC to help MSO personnel understand the chemical analysis reports provided by the vessel's owners. During the following few weeks, NOAA chemists discussed with MSO Wilmington staff the details of the laboratory reports that were faxed to NOAA for review. One of the USCG reports noted that "Despite a number of blundered attempts to have the material sampled and profiled in a laboratory as required by COTP Order, neither Intra Development Corporation (IDC) or Caribbean Workships were not able to successfully provide any of the standard cargo information for the liquid material that was being carried in the cargo tanks of the *Atlantic*."

Despite “several fragmented and incomplete series of laboratory results provided by IDC and Caribbean Workships suggested that the cargo was probably not considered a hazardous waste as defined by 40 CFR, part 261.” The vessels involved were eventually able to locate a contractor that would remove the material from the vessel and a Marine Chemist's Certificate was issued certifying the barge as “gas-free.”

References:

Inter Development Corporation letter of June 22, 1998, with lab report form Microbac Laboratories, Inc.

MSO Wilmington Boarding Officer Statements 28 May through 7 July 1998.

Name of Spill:	F/V <i>Juan Gabriel</i>
NOAA SSC:	Gary Ott
USCG District	5
Date of Spill:	06/22/98
Location of Spill:	York Spit Channel, Virginia
Latitude:	37°03.3' N
Longitude:	076°05.6' W
Spilled Material:	diesel
Spilled Material Type:	1
Amount:	minor
Source of Spill:	fishing vessel
Resources at Risk:	habitat
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types impacted:	fringing salt marsh, tidal mudflat
Keywords:	salvage

Incident Summary:

About 2300 hours on June 22, 1998, the F/V *Juan Gabriel* and the F/V *Gulf Island* collided in the area of York Spit channel near the Hampton Roads Bridge/Tunnel. The F/V *Juan Gabriel*, potentially carrying 11,000 gallons of diesel fuel, was sunk and her crew rescued by the *Gulf Island*. During the rescue, there were reports of the smell of oil in the area. On the morning of June 23, heavy fog with visibility less than 1/2 mile made it impossible to see oil on the water surface.

Behavior of Spilled Material:

At the time of the collision, the winds were from the east-southeast at 8 knots; at the same time, a strong ebb was occurring. NOAA predicted that if the release of diesel fuel from the *Juan Gabriel* was small and continuous, the oil would be expected to move southeast. On the morning of June 23, the winds were from the east-southeast and in the same direction as the flood tide. Under these conditions, the diesel oil from the *Juan Gabriel* would be expected to move just slightly southeast of the collision site. Based on the wind forecast and the predicted tides, any remaining oil was predicted to be in the main channel out to Cape Henry by the late afternoon of June 23. NOAA predicted that if the *Juan Gabriel* had actually released her entire cargo of 11,000 gallons of diesel fuel there would be a potential that the Lynnhaven Inlet at Cape Henry would be threatened by the morning of June 24. NOAA predicted that the diesel fuel that contacted the shoreline would show a slight staining, or bathtub ring. NOAA predicted that, under the current low winds and warm water conditions, 60 to 70 percent of the fuel oil would evaporate over the first 24 hours after the release. NOAA also noted that 10 to 15 percent of the fuel oil could become dispersed into the water column.

Countermeasures and Mitigation:

On the morning of June 23 the actual position of the *Juan Gabriel* was unknown, but there was the potential for the *Juan Gabriel* to be in the channel leading to the Hampton Roads Bridge/Tunnel. Due to the heavy fog and the possibility that the *Juan Gabriel* was in the channel, the channel was closed and commercial traffic into Hampton Roads was stopped. Within a few hours the *Juan Gabriel* was located just outside the channel. The *Juan Gabriel* was marked and the channel was reopened.

The actual salvage and removal of the *Juan Gabriel* were difficult and not completed until late July 1998. During the salvage effort the vessel was moved to a position some 3 nautical miles from where it originally sank to a position 37°02'15" N and 076°08'40" W. This salvage location was 3 nautical miles north of Thimble Shoal Channel and was marked with all-around flashing yellow light and an orange marker buoy. Diesel fuel was removed from the vessel during the salvage effort; however, some diesel fuel sheen was observed around the sunken vessel. The F/V *Juan Gabriel* was removed one piece at a time.

NOAA Activities:

NOAA was notified of this incident on June 23, 1998, by MSO Hampton Roads who asked the SSC to provide a trajectory for oil that might have been released by the F/V *Juan Gabriel*. NOAA provided the trajectory and weather forecasts until the situation stabilized. By the end of June, it was understood that the salvage of the *Juan Gabriel* would proceed at a steady, but slow, pace that would not require NOAA's assistance.

References:

NOAA Hotline #312, 4 reports

Virginia Institute of Marine Science. 1980. Sensitivity of coastal environments and wildlife to spilled oil, State of Virginia. Boulder Colorado: Hazardous Materials Response Project, NOAA. 104 maps.

Name of Spill:	F/V <i>Shearwater</i>
NOAA SSC:	Gary Ott
USCG District	5
Date of Spill:	06/23/98
Location of Spill:	Oregon Inlet, North Carolina
Latitude:	35°39.1' N
Longitude:	075°28.0' W
Spilled Material:	menhaden
Spilled Material Type:	N/A
Source:	fishing vessel
Resources at Risk:	habitat
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	surf zone, sandy beach
Keywords:	none

Incident Summary:

MSO Hampton Roads reported that a fishing vessel went aground on June 22, 1998. southeast of Oregon Inlet 60 to 70 yards off the beach. Industrial Marine Services (IMS) successfully removed most of the vessel's fuel by June 20, but several hundred gallons of fuel remained to maintain operation of the generator systems. The vessel was carrying 600 tons of menhaden. Initial attempts on June 21 to remove the *Shearwater* from the shallow waters using tugs resulted in a parted towing bridle and was not successful. By Monday, June 22, the salvor began discussions with the U.S. Fish and Wildlife Service, (USFWS) the National Parks Service (NPS), the State of North Carolina, and Dare County regarding the option of pumping the spoiling menhaden cargo over the side to lighten the vessel.

Countermeasures and Mitigation:

The owners decided to dispatch another fishing vessel from the fleet into which *Shearwater's* spoiling cargo could be transferred. On June 22, the *Gulf Island* was en route to North Carolina when she collided with another fishing vessel near the Hampton Roads Bridge/Tunnel. Following delays resulting from this incident, the *Gulf Island* arrived on scene and began to remove the *Shearwater's* cargo. On the first attempt, two feet of liquid was offloaded, however; the pumps were unable to pick up cargo. On June 24, a second attempt was made to pump off the menhaden. This second attempt was unsuccessful because the menhaden in the fish holds had compacted and were no longer a slurry.

At high tide on the evening of June 24, using several tugs, the salvors successfully refloated the *Shearwater*. The salvor reported that all tanks, holds, and voids were sounded and that no damage was noted. *Shearwater* was towed to Reedville, Virginia where her cargo was removed at the fish processing plant.

NOAA Activities:

NOAA was notified of this incident on June 23, 1998, by MSO Hampton Roads who asked to provide recommendations to the OSC on the environmental effect of pumping the cargo of menhaden into the ocean from the F/V *Shearwater*. The SSC's trajectory for the menhaden cargo noted that the rotting fish would move within the water column in a northerly trajectory along the North Carolina shoreline. The SSC also noted that under these conditions some of the menhaden might also move into the surf zone and come

ashore. NOAA predicted that the extra biological demand for the rotting menhaden could create a low oxygen zone and a small but transitory fish kill could be anticipated until the motion of the water in the area dispersed the low oxygen zone. NOAA noted that the anticipated odor from the rotting fish on the beach would dissipate in a few days.

NOAA advised that the conditions on the F/V *Shearwater* and her cargo could create favorable conditions for the generation of hydrogen sulfide, possible at high quantities. NOAA recommended that appropriate precautions for hydrogen sulfide be taken to protect response personnel. These safety recommendations were provided by MSO Hampton Roads to the salvors on June 23, 1998.

NOAA coordinated with the National Marine Fisheries Service (NMFS), Beaufort, North Carolina on the status of the salvage effort and discussed the potential political impact on the North Carolina communities and the menhaden fishing industry if the menhaden cargo was pumped over the side. NMFS background was provided as information to MSO Hampton Roads. NOAA also provided status information to several environmental stakeholders during the incident.

References:

NOAA Hotline #311, 5 reports

Research Planning. 1996. *Sensitivity of coastal environments and wildlife to spilled oil: North Carolina. A coastal atlas. Volume 2.* Seattle, Hazardous Materials Response and Assessment Division, NOAA. 131 maps.

USCG, Marine Safety Office, Hampton Roads, Pollution Reports (POLREPS), FPN05-8019, 7 reports.

Name of Spill:	F/V <i>Turner Ross</i>
NOAA SSC:	Gary Ott
USCG District	5
Date of Spill:	07/06/98
Location of Spill:	Wanchese, North Carolina
Latitude:	35°27.42' N
Longitude:	075°53.21' W
Spilled Material	diesel
Spilled Material Type:	1
Barrels:	2
Source of Spill:	fishing vessel
Resources at Risk:	habitat
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	none
Keywords:	none

Incident Summary:

On July 6, 1998, USCG Group Cape Hatteras received a report of a sinking vessel. The USCG Response Team found the F/V *Turner Ross* sank in approximately 10 feet of water in Pamlico Sound near Wanchese, North Carolina. The owner of the vessel reported that there may have been 150 gallons of diesel fuel onboard and hired a commercial salvor and diver from Foster Survey and Claims. By the end of the day, the diver had plugged the fuel vents. There was a report that there was little sheening from the sunken vessel. During the next few days, the winds remained from the north and northeast at over 10 knots with 2- to 3-foot seas. During this time, salvage operations were not attempted and little sheen was observed coming from the vessel.

Countermeasures and Mitigation:

The owner reported that divers had recovered all loose debris from the vessel on July 11 and 12. The divers reported that the after fiberglass fuel tank had disconnected from the fuel supply pipe for the engine and that the tank was also missing its fuel cap.

On July 30, the owner's insurance company informed the MSO that the owner's vessel was not covered because the owner had dropped the policy in February 1998. When informed that the insurance company would no longer continue their support of salvage operations the salvor dropped the case.

The July 31 USCG Pollution Report noted that the *Turner Ross* was on the bottom of Pamlico Sound with approximately six feet of clearance from the surface. The vessel was sanded in with no fuel onboard and no report of sheening had been received for 2 weeks.

NOAA Activities:

NOAA was notified of this incident by MSO Hampton Roads on July 6, 1998, who asked the SSC to provide trajectory information on a potential for any spilled diesel fuel. NOAA's trajectory report suggested that any diesel fuel released would move downwind to the south and in the steady 15 knot winds and 3-foot seas would be expected to quickly dissipate. No further assistance from NOAA was required. The USCG monitored salvage operations.

References:

Research Planning Institute. 1996. *Sensitivity of coastal environments and wildlife to spilled oil: North Carolina. A Coastal Atlas. Volume 2.* Seattle: Hazardous Materials Response and Assessment Division, NOAA. 131 maps.

Name of Spill:	Compressed Gas Cylinders
NOAA SSC:	Gary Ott
USCG District	5
Date of Spill:	07/17/98
Location of Spill:	Rodanthe, North Carolina
Latitude:	35°35' N
Longitude:	075°27.5' W
Spilled Material:	unknown gas
Spilled Material Type:	N/A
Amount:	N/A
Source of Spill:	compressed gas cylinders
Resources at Risk:	habitat
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	none
Keywords:	potential

Incident Summary:

On July 17, 1998, the Safety Officer for the NPS requested help to remove two intact compressed gas cylinders that had washed ashore in Rodanthe, North Carolina. Both cylinders were rusted, their contents unknown, and there were no distinguishable markings.

Countermeasures and Mitigation:

LCM Corporation, a hazardous materials contractor, was contracted by the USCG to test and remove the compressed gas cylinders. On July 18, LCM tested the cylinders. The results were negative for combustible gas, corrosiveness, and hydrocarbons. LCM overpacked the cylinders for disposal and removed them from the site.

NOAA Activities:

NOAA was notified of this incident on July 18, 1998, by MSO Hampton Roads who asked the SSC to participate with the AST in discussions regarding appropriate testing procedures for unknown compressed gas cylinders. The routine procedures recommended by LCM were considered appropriate and were conducted by LCM on July 19.

References:

NOAA. 1992. The CAMEO 4.0 Manual. Washington, D.C.: National Safety Council. 440 pp.

Research Planning Institute. 1996. *Sensitivity of coastal environments and wildlife to spilled oil: North Carolina. A Coastal Atlas. Volume 2.* Seattle: Hazardous Materials Response and Assessment Division, NOAA. 131 maps.

Name of Spill:	Unused Medical Waste
NOAA SSC:	Gary Ott
USCG District	5
Date of Spill:	08/06/98
Location of Spill:	Duck, North Carolina
Latitude:	35°39' N
Longitude:	075°28' W
Spilled Material:	unused medical waste
Spilled Material Type:	N/A
Amount:	N/A
Source of Spill:	vessel
Resources at Risk:	habitat
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	sandy beach
Keywords:	none

Incident Summary:

On August 6, 1998, USCG MSO Hampton Roads received reports of unused, expired plastic medical materials washing ashore on the beaches of North Carolina. The plastic materials included syringes, pill cases, I/V bags, and trauma dressings. Almost all the materials had had their markings removed.

Behavior of the Spilled Material:

Plastic materials were reported as far north as Duck, North Carolina and as far south as Rodanthe, North Carolina. The major portion of the material came ashore in a 15-mile stretch on Pea Island, south of Oregon Inlet. Some of the material began to come ashore on August 3, 1998, but most of the material came ashore on August 4, and more came ashore on August 5.

Countermeasures and Mitigation:

The plastic materials were removed from the beaches by a hazardous materials contractor with the assistance of the US Navy.

NOAA Activities:

NOAA was notified of the incident on August 6, 1998, by MSO Hampton Roads. The MSO asked if these materials were released at a latitude of 35°50', would the trajectory of these plastic materials allow them to arrive on these North Carolina beaches on or near July 29? The USS *Roosevelt* was reported to be moving up the coast and was in the approximate location then.

NOAA researched the winds from Diamond Shoals Light between August 1 and August 5 and provided the plotted winds to MSO Hampton Roads. The winds were from the north-northeast and east-northeast at 10 to 15 knots. The SSC's report noted that currents in the area are typically weak and to the south. These facts suggested that the waste materials came from a location to the north or northeast.

The SSC also reported that if the materials had come ashore at nearly the same time it suggested that they had not been in the water for a long time. On the other hand, if the waste materials had been in the water for some time it could be expected that the waste would sort out according to windage values. For example, the syringes would come ashore as a set, and the I/V bags as a set, and then the pill cases as a set.

References:

Research Planning Institute. 1996. *Sensitivity of coastal environments and wildlife to spilled oil: North Carolina. A Coastal Atlas. Volume 2.* Seattle: Hazardous Materials Response and Assessment Division, NOAA. 131 maps.

Name of Spill:	T/B <i>Maria Teresa</i>
NOAA SSC:	Gary Ott
USCG District	5
Date of Spill:	09/04/98
Location of Spill:	Frying Pan Shoals, North Carolina
Latitude:	33°41' N
Longitude:	077°53' W
Spilled Material:	streptomyces
Spilled Material Type:	N/A
Barrels:	N/A
Source of Spill:	tank barge
Resources at Risk:	habitat
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	none
Keywords:	potential

Incident Summary:

Early on the morning of September 4, 1998, the tug *Lady Jill* lost her tow, the T/B *Maria Teresa*. The *Maria Teresa's* cargo was 307,000 gallons of liquid streptomyces. At 0400 hours, September 4 the vessel was about 9 miles south of the Cape Fear River. The *Maria Teresa* was drifting at 35° towards Frying Pan Shoals at 6 knots.

At 0600 hours the *Maria Teresa* was approximately 11 miles offshore. The 0600 report suggested that the vessel may have been aground at this location. As the severe weather continued, the early morning report suggested that the tug was unable to approach the *Maria Teresa* due to shoal water. Salvage efforts and methods were discussed. No proposals were developed during the early hours of the incident.

Weather on-scene was such that salvage efforts were not able to be started until September 5. Depending on weather, MSO Wilmington made a scheduled overflight of the barge to ensure accuracy of the reported location and to evaluate the status of the barge.

Countermeasures and Mitigation:

In the early morning of September 5, 1998, the tug *Lady Jill* secured a tow line onto the *Maria Teresa*. By 1500 on September 5, USCG inspectors, marine surveyors, and the vessel's owner were onboard the *Maria Teresa* at the pier in Wilmington, North Carolina. They reported that there was no damage to the vessel and no loss of product.

NOAA Activities:

NOAA was notified of this incident on September 4, 1998, by MSO Wilmington who requested information on the dangers of the cargo streptomyces and an evaluation of the environmental impacts of dumping the product if the barge ran aground.

NOAA reported that the liquid streptomyces is a viscous brown slurry used in cattle feed stock. A literature survey suggested that the material was an unregulated cargo with few toxic chemical properties.

Based on the nature of the organic feedstock material, the primary risk would be an increased biological oxygen demand (BOD) and, possibly, smothering if there were to be an instantaneous release of the entire cargo. However, if the material were released into the offshore open ocean environment in 15- to 17-foot seas and heavy rain and wind, the product would dissipate quickly. The product, streptomycetes, under the severe weather would probably not cause a severe increase in BOD in the open-ocean system. As a comparison, NOAA noted that the high levels of organics contained in the freshwater surge coming down the Cape Fear River during the current heavy rains would exceed the amount of organics contained in this barge by several significant factors.

Another issue considered during the NOAA research was a possible bloom of noxious bacteria or algae following a large release of the cargo. The North Carolina region has had problems in the past from harmful microorganisms and this could have become an issue if this cargo were released. Estuarine and inland bays and rivers are the most common areas where the addition of nutrients could cause an increase in noxious microorganisms.

Shorelines were not considered at risk from the liquid streptomycetes under the extreme weather reported. Birds, mammals, and reptiles were not expected to be at risk. Since the product is water soluble and heavier than water, there would be little or no impact to animals on the water surface or into the intertidal zone.

References:

HQ USCG letter, March 6, 1989, Subject: Classification of Liquid Streptomycetes Soluble (32% or less).

Material Safety Data Sheet, dated 08/17/95, Material Liquid Streptomycetes Soluble, Manufacturer, Abbott Laboratories.

NOAA Hotline #324, 4 Reports.

Research Planning. 1996. *Sensitivity of coastal environments and wildlife to spilled oil: North Carolina. A coastal atlas. Volume 2.* Seattle: Hazardous Materials Response and Assessment Division, NOAA. 131 maps.

U.S. Coast Guard District 7

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Name of Spill: San Juan Harbor Mystery Spill
NOAA SSC: Bradford Benggio
USCG District: 7
Date of Spill: 01/15/98
Location of Spill: Isla Grande, Puerto Rico
Latitude: 18°27' N
Longitude: 66°07' W
Spilled Material: heavy fuel oil
Spilled Material Type: unknown
Amount: 71 barrels (3000 gallons)
Source of Spill: unknown/under investigation
Resources at Risk: **Birds:** brown pelican, Caspian tern, cattle egret, clapper rail, common black-headed gull, forester's tern, great blue heron, great egret, green backed heron, yellow-crowned night heron, yellow-shouldered blackbird, little blue heron, osprey, herring gull, laughing gull, ring-billed gull, royal tern, sandwich tern, shorebirds, snowy egret, sora rail, tricolored heron
Fish: various estuarine fish
Reptiles: green turtle, hawksbill turtle, leatherback turtle
Marine Mammals: West Indian manatee
Dispersants: Y
Bioremediation: Y
In-situ Burning: Y
Other Special Interest: saltwater spraying used on impacted mangroves
Shoreline Types Impacted: gravel and mixed-sand beaches, piers, riprap, sheltered mangroves, sheltered seawalls, commercial operations
Keywords: skimmers

Incident Summary:

At 0725 on January 15, 1998, a harbor master reported a slick in San Juan Harbor. Initially the amount of oil was estimated to be 500 gallons of heavy fuel oil, type unknown; the source of the spill was also unknown. The USCG investigated and determined that the slick was 1/4 to 1/3 mile long and the amount of oil in the water was about 3000 gallons. The slick was fragmented and contained large patches of oil 15 to 20 feet in diameter, but it was not sheening significantly. Throughout the morning, the slick moved little, but was drifting to the southwest, being pushed by northeasterly winds.

Shoreline impacts occurred along the southwestern side of the bay as trajectory analysis predicted. Oil also impacted shorelines to the north at piers 1 and 3 and near the USCG Base at La Puntilla.

Shoreline assessment and cleanup were conducted. Skimmers worked in pockets of oil at La Puntilla. Some mangroves and rocky shoreline were oiled in the Cataño area to the south.

A few egrets were oiled and treated. A U.S. Fish and Wildlife Service (USFWS) representative was on-scene to coordinate efforts to locate and recover any impacted wildlife. The USFWS representative conducted searches of the area for manatee, but none were found.

Other Special Interest:

The impacted mangroves was sprayed with saltwater in consultation with local PRDNR representatives.

NOAA Activities:

Cleanup was completed on January 17, 1998.

References:

Coastal Area Contingency Plan

NOAA. 1994. *Shio. Tide computer program (prototype)*. Seattle: Hazardous Materials Response and Assessment Division, NOAA.

Name of Spill: Savannah River Spill
NOAA SSC: Bradford Benggio
USCG District: 7
Date of Spill: 01/29/98
Location of Spill: Savannah, Georgia
Spilled Material: oily sediment
Spilled Material Type: unknown
Amount: potential 10,000 to 20,000 gallons
Source of Spill: facility
Resources at Risk: **Birds:** foraging areas, migration stopover areas, migratory routes, nesting beaches, rookeries
Fish: nursery areas
Management Areas: national parks, fish/shrimp/bivalve/plant aquaculture sites
Mollusks: oysters
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: high water level from recent rains and increased runoff
Shoreline Types Impacted: brackish marshes, consolidated seawalls, exposed riprap, extensive salt marshes, piers, vegetated riverbank,
Keywords: boom, excavation/construction, oily sediment, skimmers

Incident Summary:

MSO Savannah contacted the NOAA SSC at about 1800, January 29, 1998, to discuss a situation to which they were responding. During some excavation behind a bulkhead along the Savannah River, oil-saturated sediment was found. The bulkhead was at the Georgia Ports Authority, Ocean Terminal Facility near the Talmadge Bridge that spans the river from Georgia to South Carolina. The area of saturated oily sediment was estimated to be 200 feet x 100 feet x 20 feet deep. The USCG estimated that there were 10,000 to 20,000 gallons of oily liquid behind the bulkhead with perhaps 2,000 to 4,000 gallons being pure oil.

The bulkhead seemed to be unstable and there was concern that it could fail and allow the sediment to enter the river. The RP sampled the area to determine if the oil was contaminated with PCBs or other metals of concern.

There had been an abnormally high amount of rain and runoff had increased, potentially adding to the problem. The river was currently running about 2.5 times normal with expected ebbs to be 3 to 3.5 knots and floods diminished to about a knot. It was likely that if the oily sediment entered the river, it would be carried down river at a good rate on ebb tides. However, the sediment could collect in areas or pockets of low-flow near shore and in depressions on the bottom.

Resources at risk in this area include mostly birds, but they were not too abundant then.

The area along the bulkhead was boomed, but the boom would not be effective if a release occurred during a strong ebb current.

The site was reportedly already a listed Superfund or Resource Conservation and Recovery Act of 1976 (RCRA) site.

Overnight, the river crested the bulkhead and retaining wall. Contractors were able to boom and skim the product effectively. U.S. Environmental Protection Agency (EPA) was expected to arrive on-scene and take over the response as a long-term remediation project.

NOAA Activities:

NOAA was notified of this incident on January 29, 1998, by MSO Savannah. The MSO asked the SSC to provide information on resources at risk, trajectory, weather, and any other pertinent information regarding the situation at the Georgia Ports Authority's Ocean Terminal Facility. The SSC told MSO about wildlife, management areas, recreational areas, and other pertinent information. NOAA's response was by phone.

References:

Coastal Area Contingency Plan

NOAA Hotline #292, 4 Reports

NOAA Nautical Charts

NOAA. 1994. *Shio. Tide computer program (prototype)*. Seattle: Hazardous Materials Response and Assessment Division, NOAA.

Research Planning Institute. 1985. *Sensitivity of coastal environments and wildlife to spilled oil: Georgia. An atlas of coastal resources*. Seattle: Ocean Assessments Division, NOAA. 29 maps.

Name of Spill: Caribbean Gulf Facility Catano
NOAA SSC: Richard Wingrove
Date of Spill: 02/23/98
Location of Spill: Catano, Puerto Rico
Latitude: 18°26.00' N
Longitude: 066°06.5' W
Spilled Material: jet fuel
Spilled Material Type: 1
Amount: unknown
Source of Spill: facility
Resources at Risk: **Birds:** brown pelican, yellow-shouldered blackbird, shorebirds, wading birds
Reptiles: green turtle, hawksbill turtle, leatherback turtle
Marine Mammals: West Indian manatee
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: use of sample wells to determine extent of terrestrial spill plume
Shoreline Types Impacted: riprap, sheltered mangroves, sheltered mud flats
Keywords: boom, vacuum truck, sorbent pads

Incident Summary:

On February 23, 1998, a security guard at the Caribbean Gulf Refinery facility reported oil in the water. Initially the amount was thought to be 2000 barrels of diesel fuel. The source, as determined by USCG personnel, was a below-ground pipeline. Boom was placed across a nearby canal where oil was seeping, containing most of the oil. The T/S *Dion*, unloading just before the incident, was also boomed.

A USCG helicopter overflight on February 23 determined that all the product was contained in the booms. Sorbent pads and two vacuum trucks were used in the canal to recover discharged oil. Samples of the spilled oil spilled from the pipeline and the T/S *Dion* were collected. Visual inspection indicated noticeable differences between the two. Two trenches were dug to act as collection points significantly increasing the efficiency of the trucks.

On February 24 the source of the spill was determined to be a jet fuel line owned by Caribbean Gulf Refinery Corporation. The discharge point was approximately 200 yards from the mouth of the canal. Between 6000 and 8000 gallons of oily water were recovered. Excavation around the pipe revealed a corroded section, which was isolated.

By February 25 the pipe was repaired after enough contaminated soil had been removed. The product remaining in the pipe was recovered using a vacuum truck. After the pipe was cleaned, a new section was welded in. There were 10,000 gallons of oily water recovered. There were no indications of effects to wildlife in the area.

Other Special Interest:

The USCG requested that the RP dig a series of test wells to determine the extent of impact. The USCG and the PREQB will continue to monitor this incident.

NOAA Activities:

NOAA learned of this incident after reading POLREP 1. The Assistant SSC (ASSC) called MSO San Juan to inquire if they needed any assistance. They requested a resources at risk report and weather forecasts for the duration of the spill. NOAA provided the resources at risk report, weather forecasts, and the solvent properties of diesel. The NYSSC was contacted to discuss the use of sampling wells. The ASSC provided daily consultation with the OSC on issues relating to pipe repair and soil sampling.

References:

Coastal Area Contingency Plan

NOAA Hotline #285, 9 Reports

Research Planning Institute. 1984. *Sensitivity of coastal environments and wildlife to spilled oil: Puerto Rico. A coastal atlas*. San Juan: Puerto Rico Department of Natural Resources. 35 maps.

USCG POLREPS

Name of Spill: M/V *Hind*
NOAA SSC: Bradford Benggio
USCG District: 7
Date of Spill: 03/18/98
Location of Spill: Fort Lauderdale, Florida
Latitude: 26°6.4' N
Longitude: 80°6.0' W
Spilled Material: #6 fuel oil, diesel, lube oil
Spilled Material Type: 2, 4
Amount: potential 36,600 gallons
Source of Spill: NA
Resources at Risk: **Birds:** brown pelican, terns
Marine Mammals: West Indian manatee
Reptiles: sea turtles
Fish: fish havens, reef fish
Crustaceans: crabs, lobster
Recreation: beaches, diving areas, state parks
Habitats: coral reefs, submerged aquatic vegetation (SAV)

Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: ship groundings are common in this are
Shoreline Types Impacted: exposed fine- and medium-sand beaches, piers, riprap
Keywords: potential

Incident Summary:

The container ship M/V *Hind* grounded 3/4 of a mile north of Port Everglades Inlet. Oil onboard included 24,000 gallons of #6 fuel oil, 12,000 gallons of #2 diesel, and 600 gallons of lube oil. The USCG reported a crack in the ship's aft-peak bulkhead letting water leak into the engine room.

Navy Supervisor of Ship Salvage (SUPSALV) calculated that refloating during high tide should be possible. Several attempts to pull the vessel free were made before it was successfully refloated on March 22.

NOAA Activities:

NOAA was notified of this incident on March 18, 1998, and provided weather forecasts, and information on resources at risk and trajectory. NOAA also evaluated any potential hazardous cargo problems onboard the vessel.

References:

Coastal Area Contingency Plan

NOAA Hotline #292, 11 Reports

NOAA Nautical Charts

NOAA. 1994. *Shio. Tide computer program (prototype)*. Seattle: Hazardous Materials Response and Assessment Division, NOAA.

USCG District 7

Research Planning Institute. *The sensitivity of coastal environments and wildlife to spilled oil in South Florida*. Seattle: Ocean Assessments Division, NOAA. 31 maps.

USCG POLREPS

Name of Incident: M/T *Kapitan Egorov*
NOAA SSC: Bradford L. Benggio
Date of Incident: 06/21/98
Location of Incident: Guayanilla Harbor, Puerto Rico
Latitude: 17°57.7' N
Longitude: 066°45.96' W
Spilled Material: #6 fuel oil and IFO
Spilled Material Type: 4
Source of Spill: grounded tank ship.
Resources at Risk: Habitat: extensive exposed and sheltered mangroves, coral reefs
Birds: brown pelican, terns, brown booby, magnificent frigate bird, wading birds, shorebirds, gulls, grebes, coots, gallinules, osprey, peregrine falcon, brown boobies, white-tailed tropic birds, and roseate terns.
Fish: reef fish
Mollusks: queen conch
Crustaceans: spiny lobster
Marine Mammals: dolphins, manatee
Reptiles: hawksbill, green, and leatherback turtles
Recreation: small-scale fisheries
Management Areas: power plant water intake
Dispersants: No, but planned for as a contingency if there is a large release.
Bioremediation: No, but potential use was evaluated.
In-Situ Burning: No. evaluated, but deemed unfeasible.
Other Special Interest: The grounding occurred nearshore on hard bottom with scattered coral. Area access was very limited.
Shoreline Type Impacted: none
Keywords: bioremediation, boom, dispersant, ground-truth, in-situ burning, potential spill, salvage, snare

Incident Summary:

At approximately 6:30 PM on June 21, 1998, the M/T *Kapitan Egorov* ran hard aground in Puerto Rico at Guayanilla Harbor near Buoy #1. The 206-meter vessel was carrying 298,000 gallons of #6 fuel oil.

Initial trajectory analysis indicated that if a significant amount of product was lost, the reef front to the northwest of the grounding site and the Punta Verraco area would be threatened. On the flood tide, oil would be carried into the western arm of Bahia De Guayanilla and threaten the mangrove area in the back reaches of the bay. Beyond the immediate vicinity of the grounding, the dominant strong easterly winds and forecast persistent trades would tend to move spilled oil west along the coast where it could cause scattered or patchy shoreline impacts along the entire southeast coast of Puerto Rico.

Given the forecast winds, it was expected that less than ten percent of the oil would evaporate or disperse into the water column during the first 24 hours. Emulsification was not expected to occur.

NOAA Activities:

NOAA was notified of this incident on June 21, 1998, by MSO San Juan who requested the SSC on-scene. NOAA provided an evaluation of the potential use of wetting agents to pre-treat mangroves if there is a spill. This action was not advised primarily because this technique has not been shown to be effective, none of the potential products had been tested for toxicity to the biological

communities associated with the mangrove proproots, and no pre-treating agents were currently listed on the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) product schedule.

The USCG obtained samples of each oil onboard, #6, IFO, and diesel. The #6 and IFO fuel samples were sent to LSU for dispersant effectiveness evaluations and held for full characterization in the event of a spill.

Dispersant evaluations were performed with Corexit 9527 and Corexit 9500, which are formulated specifically for heavier oils like #6 and IFO. Indications were that the 9500 formulation was more effective. The Corexit 9580 shoreline cleaning agent was also evaluated and considered a possible method for cleaning mangroves if there is a spill.

Contingency shoreline assessments were conducted with representatives from NOAA, USCG, Puerto Rico Department of Natural and Environmental Resources (DNER) and the RP. The objectives were:

- determine the most sensitive sections of the shoreline and ground truth information in the Area Contingency Plan,
- identify areas of natural or desired collection,
- evaluate staging or deployment areas for boom and/or response equipment, and
- evaluate realistic and potential response and cleanup options.

This survey was judged necessary by the Planning Section because of the remote access to the area and the limited detailed information in the Area Contingency Plan.

Following is the Planning Section's survey plan submitted to the Unified Command:

The Unified Command, in order to provide adequate incident-specific contingency planning, met to decide potential response and cleanup by the Shoreline Cleanup Assessment Team (SCAT) of the area that would be at immediate risk if there is a spill of oil from the *Kapitan Egorov* grounding site. Although the area contingency plan provides some general response information for the area, detailed information needed to plan an effective response had to be obtained. The area of immediate concern was remote with very limited access, so planning response options must be developed with that limitation in mind.

The RP provided a four-passenger helicopter for this survey. The flight departed from Isla Granada Airport with members of the Unified Command survey party onboard. The Unified Command was made up of representatives from NOAA, USFWS, PRDNER, and the RP.

The party conducted an aerial survey of the area from Cayo Maria Langa to Pta. Ventana. NOAA provided base maps of the survey area for all members of the team. The objective was to use these maps to:

- annotate information that will be helpful for identifying the most critical or sensitive segments of shoreline,
- identify areas of natural or desired oil collection,
- evaluate areas for effective boom and skimmer placement,
- evaluate equipment staging and deployment areas,

- identify areas of access,
- evaluate realistic potential shoreline cleanup options, and
- identify any biological resources currently present in the area (i.e., nesting sea birds, sea turtle crawls, bird roosts, etc.)

The results of the survey were documented and provided to the Unified Command.

Overflight Survey Results

An overflight over the Guayanilla area was conducted on June 23 to survey and assess the area for potential response and cleanup actions should a release of oil occur during the salvage operations for the *Kapitan Egorov*.

Response Options and Recommendations:

Response options were very limited due to the remoteness of the area, difficult access to western shorelines from both land and sea, and choppy seas in shallow waters. Much of the shoreline in the western half of the bay, Puerto de Guayanilla, (at greatest risk of oiling because of easterly winds) is composed of extensive mangroves. There are also several pockets and stretches of sand beaches. Offshore, there are extensive areas of seagrass beds and shallow- to exposed-coral and rubble reefs. Wildlife activity in the area consisted mainly of bird nesting on the small island at Arrecife Unitas.

Spill trajectory forecasts predict that shoreline impacts would begin to occur within the first two hours following a release from the present grounding location. To maximize the effectiveness of oil containment and recovery if there is a release, it is recommended that lightering operations be conducted only during daylight hours so that the oil can be tracked and equipment can be more effectively deployed. If night operations are planned, and if the command believes there is significant risk of a spill, during lightering and salvage operation pre-deployment of protection booming strategies should be considered.

During lightering, a boom should be placed around the barge at all times. It is also recommended that shallow boom and snare be deployed around the bird cay at Arrecife Unitas. If sea conditions prevent the deployment of this equipment, a boat with equipment should be standing by ready to deploy if there is a release. This site is within 1 mile west of the ship, and there would not be time to effectively deploy boom from shore-based staging areas after a release.

It is recommended that a detailed oil containment and recovery plan be prepared to prevent oil from entering the western part of Bahia de Guayanilla, the area with the most extensive mangroves. Equipment and sufficient, experienced staff should be pre-staged at key shoreline access points during lightering and refloating operations. Based on several background studies, maximum currents in Guayanilla Bay are 0.7 knots. Therefore, boom deployment should be effective precluding prohibitive sea conditions. Sufficient quantities of sorbent material (preferably snare on a rope) should be mobilized to the site ready for deployment in front of the mangroves should oil reach fringing mangroves. There are 6 or 7 nautical miles of mangrove-lined shoreline in the western bay.

Also, it is recommended that remote sensing capability be available to track oil if there is a spill during any night operations.

If a large release occurs, use of dispersants may be considered especially once the slick is west of Pta. Ventanna. The waters in that area are deep (up to 120 feet within 1 mile offshore), and there are no known reefs. These are the conditions under which dispersants have been pre-approved. Dispersant effectiveness evaluations will be conducted at LSU with oil samples from the vessel.

Trustees to be notified in the event of a spill or potential release include PRDNER, NOAA, DOI and the State Historical Protection Office. Also, since there are two water intakes in the area, both Puerto Rico EPA, and Caribbean Oil Refining Company should be notified.

Shoreline Cleanup Recommendations:

Because there was no access to the mangrove shorelines at risk, chemical shoreline cleaning agents and flushing were not recommended. It is possible that areas with heavy pockets of oil may be cleaned with sorbents or vacuums from boats.

Because this was a heavy #6 oil (API ~14), the oil would sink and affect coral and seagrasses only after stranding on the shoreline and mixing with sand and shell material. If oil does come ashore along sand beaches, efforts should be made to collect the oil quickly before it can be washed back offshore or buried.

End Results

The lightering vessel Barge *Texas* was alongside the *Kapitan Egorov* by 1100 on June 24. Navy SUPSALV arrived on-scene and began evaluating salvage plans with the RP. At 1340, boom was deployed around the vessel and lightering of the vessel began at 1530. Lightering continued until approximately midnight. Ballast water was then discharged. The vessel was refloated around 0800 on June 25, but had a list to port due to a leak in the #3 tank. Divers surveyed the damage and determined it was not too severe. The vessel was allowed to transit to the CORCO facility dock on June 26, to offload cargo and fuel. No spill occurred during the incident.

Once the vessel was refloated, DNER divers conducted surveys of the bottom at the grounding site to assess damages to the reef. According to information provided by United States Geological Survey (USGS) in San Juan, the bottom at the grounding site was carbonate sand that is course to gravel size. Its origin is coralline algae. There are also some small coral heads, but too small to map at the 1:40,000 map scale USGS has.

NOAA Activities:

NOAA provided on-scene support from June 21 through 26 for this response. The SSC coordinated scientific and technical input used for the response from NOAA Hazardous Materials Response and Assessment division (HAZMAT) and other NOAA resources as well as from state agencies, other federal agencies, local academia, salvors and the Incident Command System (ICS) in general.

The SSC served as the lead for technical specialist within the ICS with the assistance of a resources at risk specialist provided by NOAA.

NOAA provided support from the HAZMAT Modeling and Simulations Studies Branch (MASS) for potential oil trajectories. These trajectory analyses were updated as on-scene weather dictated.

NOAA provided on-scene weather forecasts for the area with the assistance of the National Weather Service. Predicted tides were also provided.

NOAA HAZMAT's health and safety officer provided health and safety information related to personal protection equipment (PPE) requirements and exposure concerns to the oil types for this incident.

NOAA provided information for local resources at risk and coordinated with other local trustees and stakeholders to ensure all resource concerns were identified. NOAA's resources at risk expert led resource evaluations on-scene to help establish protection recommendations and priorities.

Additionally, shoreline pre-SCAT assessments were conducted to identify areas of turtle nesting, other response or shoreline cleanup issues, and protection priorities. These surveys were conducted jointly with representatives from USFW, DNER, the RP, and the EQB.

NOAA provided information management, distribution, and documentation assistance during the response on-scene.

References:

CRRT Dispersant Use Plan and Letters of Agreement for Puerto Rico, Dispersant Application, Corexit 9527, 9500, and 9580 technical data bulletins.

The Coastal Area Contingency Plan for Puerto Rico and U.S. Virgin Islands.

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA Hotline #310, 22 Reports

NOAA Nautical charts

NOAA. 1994. *Shio. Tide computer program (prototype)*. Seattle: Hazardous Materials Response and Assessment Division, NOAA.

Research Planning Institute. 1984. *Sensitivity of coastal environments and wildlife to spilled oil: Puerto Rico. A coastal atlas*. San Juan: Puerto Rico Department of Natural Resources. 35 maps.

Torgrimson, Gary M. 1984. *The on-scene spill model: a user's guide*. NOAA Technical Memorandum NOAA OMA-12. Seattle: Office of Oceanography and Marine Assessment. 87 pp.

USCG POLREPS for the *Kapitan Egorov* Incident

Name of Spill: M/V *Author*
NOAA SSC: Todd A. Bridgeman
USCG District: 7
Date of Spill: 09/08/98
Location of Spill: Ponce, Puerto Rico
Latitude: 17°56.3' N
Longitude: 66°37.6' W
Spilled Material: IFO
Spilled Material Type: 3
Amount: none
Source of Spill: cargo vessel
Resources at Risk: **Birds:** nesting beaches, diving birds, diving coastal birds
Crustacean: nursery areas
Fish: nursery areas, reef fish
Marine Mammals: mammal population concentration areas, manatees
Habitats: mangroves coral reefs
Reptiles: sea turtles
Recreation: recreational diving areas, high-use recreational boating areas
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: Approval was given to use shipboard applied dispersants.
Shoreline Types Impacted: none
Keywords: Corexit 9500

Incident Summary:

On September 8, 1998, the container ship M/V *Author* was hard aground on the south coast of Puerto Rico near Ponce. Onboard were 414 metric tons of diesel and 1979 metric tons of heavy fuel oil. No product was released when the grounding occurred. The vessel grounded approximately 1.5 miles off shore of very sensitive mangrove islands and shoreline. Winds were east at 10 knots, seas 2 to 3 feet.

NOAA Activities:

NOAA was notified of this incident on September 8, 1998, by MSO San Juan who requested the SSC report on-scene. During this incident, NOAA provided a wide range of support to the MSO including the development of a dispersant plan.

The development of this plan required:

- locating the equipment and identifying training needed,
- securing the proper dispersant (Corexit 9500),
- helping contractor personnel construct a shipboard / fire application system,
- training contractor personnel in the proper use of the application system,
- calculating flow rates to achieve proper dispersant-to-oil ratio,

- ❑ getting the approval of the Caribbean Regional Response Team (CRRT) to use the dispersants, and
- ❑ supervising the dispersant group during salvage operations.

In addition, NOAA provided overflight assessments of the grounding area including identifying and mapping sensitive resources, helping develop booming strategies for those resources, characterizing product, collecting samples, and analyzing and customizing weather forecasts.

The SSC remained on-scene until the vessel was successfully refloated without a loss of product on September 13, 1998.

References:

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA Hotline #326, 25 Reports

Research Planning Institute. 1984. *Sensitivity of coastal environments and wildlife to spilled oil: Puerto Rico. A coastal atlas*. San Juan: Puerto Rico Department of Natural Resources. 35 maps.

Name of Incident:	Post Hurricane Georges Response
NOAA SSC:	Bradford L. Benggio
USCG District:	7
Date of Incident:	09/21/1998
Location of Incident:	Puerto Rico
Spilled Material:	various
Spilled Material Type:	various
Source of Potential Spill:	damaged storage tank, crashed aircraft, multiple sunken and grounded vessels
Resources at Risk:	Habitat: freshwater wetland composed of a mixture of grasses made up of <i>Paspalum</i> sp. and <i>Typha</i> (cattails). Also present was <i>Panicum maximum</i> , an upland grass, shallow-water lagoon with mangroves, coral reefs, mangroves, Marine Mammals: manatee Birds various bird species Crustaceans: shellfish Fish: finfish
Dispersants:	N
Bioremediation:	No, but discussed
In-Situ Burning:	No, but discussed
Other Special Interest(s):	11 separate incident locations were being addressed as part of the hurricane Georges aftermath pollution response by the USCG
Shoreline Type(s)	freshwater wetland, mangroves at risk, sand beaches, bullheads, and riprap
Keywords:	bioremediation, potential spill, salvage

Incident Summary:

Hurricane Georges came ashore on the eastern shore of Puerto Rico at 1700, September 21, 1998, as a category III storm and exited the western edge of the island approximately 8 hours later. Winds were reported as 110 mph with gusts to up 130 mph. Storm surge was thought to be 4 to 7 feet at the highest. The hurricane caused severe damage to many island structures, including the USCG's MSO buildings in San Juan.

Following the passage of the storm, the USCG was faced with responding to at least 11 separate incidents around the island related to marine pollution caused by the hurricane.

This report is a summary of each incident we responded to.

1. **Caribbean Petroleum Facility (Catano).** During the hurricane, a fuel storage tank was damaged. A valve connected to this tank was also damaged and released 5000 to 10,000 gallons of heavy #6 oil. This fuel flowed into a wetland marsh area, killing about 4 acres of wetland vegetation. The area was aggressively cleaned with heavy equipment by way of a road built into the wetland and cleanup workers who cut and raked oiled vegetation. The marsh was impacted further from these cleanup activities. NOAA HAZMAT, in coordination with the PRDNER, USCG, and USFWS conducted a monitoring study to document the cleanup impacts and observe recovery of the area. Further steps, including seeding and fertilization of the area, may become necessary if the vegetation does not regrow.
2. **DC-3 aircraft crash.** The DC-3, loaded with hurricane relief supplies for the Dominican Republic, crashed into the shallow Pinones Lagoon on September 24. The only access to the plane was by small boats or rafts. The lagoon is a sensitive resource area surrounded by mangroves and managed by PRDNER. Large fish kills were observed in the lagoon, but

appeared to be the result of low oxygen levels in the water caused by the storm. The RP boomed the aircraft, pumped out the aviation fuel, and planned to disassemble the aircraft to remove it.

3. **M/V Rio Neveri**. The 394-foot vessel grounded in 12 feet of water during the storm in San Juan Harbor. Before the storm, the vessel was in drydock and after the storm was high aground in very soft mud and represented a low threat for an oil spill even though there were 250 tons of IFO 180 fuel onboard as well as 30 tons of lube oil. Salvage was expected to take some time since the ship was so high aground in shallow water. It was thought that sediment jetting or excavation may be necessary to free the ship.
4. **Navy Vessel YFU-83**. The 150-foot vessel is an older, poorly maintained ship being used for fuel storage. The ship was anchored offshore during the storm in Ensenada Honda on the east coast of Puerto Rico, near Roosevelt Roads Navy Base where it sank in about 25 feet of water. The vessel had 2000 gallons of diesel and 200 gallons of lube oil onboard. No pollution was reported from the vessel and the Navy was actively conducting response actions in coordination with the USCG.
5. **M/V El Porton**. This 82-foot U.S. Customs vessel was being used to transport freight. Following the hurricane, the vessel was found grounded on the beach near Punta Puerca on the east coast near Roosevelt Roads Navy Base. There were 5000 gallons of diesel onboard. Customs took responsibility for the salvage, removed all the fuel, and refloated the ship without incident.
6. **Salinas Area**. Up to 20 small recreational boats sank in this area. USCG representatives investigated each vessel to address any pollution concerns.
7. **Isleta Marina**. A boat house collapsed during the hurricane causing several small boats to capsize. USCG addressed pollution concerns for each vessel.
8. **Fajardo Marinas**. The USCG responded to several reports of small boat sinkings and groundings in this area, including a sunken 90-foot vessel at the Sea Lover's Marina. While no pollution was observed or reported, there was a potential for a spill from vessel tanks that could threaten sensitive mangrove and turtle nesting shoreline. The sunken vessels were also a navigational hazard.
9. **Ponce Yacht Club**. The USCG investigated reports of multiple boat capsizings, sinkings, and groundings in this area on Puerto Rico's south coast.
10. **Guanica Bay**. During an overflight of this area attended by representatives of NOAA, USCG, and USFWS, approximately seven vessels were observed sunk or grounded. USCG representatives scheduled an inspection of the area.
11. **Multiple Small Boat Reports**. Many reports of small boat sinkings were received by the USCG from all over Puerto Rico. Each case was scheduled to be inspected.

NOAA Activities:

NOAA provided on-scene support for this response from September 28 through October 3, 1998. The SSC worked closely with USCG, PRDNER, PR Environmental Quality Board (EQB), EPA, and USFWS to coordinate scientific and technical input used for the response.

The SSC served as the lead for technical specialist within the Incident Command System (ICS) with the assistance of an information management specialist provided by NOAA.

HAZMAT's MASS provided weather forecasts during the response.

The SSC worked closely with NOAA HAZMAT resources at risk support to evaluate marsh cleanup options for the Caribbean Petroleum Refinery spill and to develop sound cleanup recommendations for the USCG and EPA. NOAA will lead a scientific monitoring study of the impacted wetland to observe vegetation recovery and assess the need for further cleanup actions.

NOAA HAZMAT's Safety Officer worked with the USCG's Safety Officer on-scene to develop safety plans for the various incidents being addressed.

NOAA provided information for local resources at risk and coordinated with other local trustees and stakeholders to ensure all resource concerns were identified. Together with the USCG and USFWS, the SSC conducted an overflight of the south coast of Puerto Rico to evaluate response priorities and verify several reports of vessel sinkings.

NOAA provided information management, distribution, and documentation assistance during the response on-scene and provided an executive summary of the response for Admiral Loy, Commandant, USCG.

References:

The Coastal Area Contingency Plan for Puerto Rico and U.S. Virgin Islands,

NOAA. 1993. *Shoreline Countermeasures Manual: Tropical Coastal Environments*. Seattle: Office of Ocean Resources Conservation and Assessment, NOAA. 102 pp.

NOAA. 1994. Results of shoreline cleaning agent testing during the *Morris J. Berman* Spill, Puerto Rico. HAZMAT Report 94-7. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 10 pp + appendix.

NOAA. 1994. *Shio. Tide computer program (prototype)*. Seattle: Hazardous Materials Response and Assessment Division, NOAA.

NOAA Hotline #333, 25 Reports

NOAA Nautical charts

USCG POLREPS for the Post Hurricane Georges Response,

U.S. Coast Guard District 8

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Name of Spill: T/V *Western Lion*
NOAA SSC: Tim Steele
USCG District: 8
Date of Spill: 10/08/97
Location of Spill: Galveston, Texas
Latitude: 28°35.0' N
Longitude: 94°09.6' W
Spilled Material: Nigerian crude oil
Spilled Material Type: 3
Amount: 1,700,000 barrels
Source of Spill: tank vessel
Resources at Risk: none
Dispersants: N
Bioremediation: N
In-situ Burning: N, but considered
Other Special Interest: none
Shoreline Types Impacted: none
Keywords: potential

Incident Summary:

At 2122, October 8, 1997, the T/V *Western Lion* reported a sheen in the water approximately 60 miles offshore Galveston Texas. The *Western Lion* was carrying 1,700,000 barrels of Nigerian crude.

Evidently the vessel had suffered a stress crack in at least one tank and was leaking "saucer-sized globs" of oil as she moved with the swells.

Countermeasures and Mitigation:

One lightering "lift" was done on October 10, 1997, and the leak stopped. Weather deterioration prohibited additional lightering and diver inspections. The lightering of the *Western Lion* was not completed until October 18, when the vessel was moved to Freeport Texas for inspections and temporary repairs. The response was concluded at that time.

NOAA Activities:

NOAA was notified of this incident on October 8, 1997, by MSU Galveston who requested assistance. The SSC provided weather forecasts as well as oil budget and trajectory information. NOAA also helped plan for dispersant and in-situ burning options should a catastrophic spill occur.

References:

NOAA Hotline #247, 18 Reports

Name of Spill: Barge PV 5996
NOAA SSC: Todd A. Bridgeman
USCG District: 8
Date of Spill: 10/18/97
Location of Spill: Bolivar Peninsula, Texas
Latitude: 29°25.69' N
Longitude: 94°43.00' W
Spilled Material: urea fertilizer
Spilled Material Type: 5
Amount: none
Source of Spill: barge
Resources at Risk: none
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: Product was originally identified as ammonium nitrate and potentially explosive.
Shoreline Types Impacted: none
Keywords: potential

Incident Summary

At 0030, October 18, 1997, the hopper barge *PV 5996* began taking on water and had to be grounded along the bank of the Intracoastal Waterway (ICWW). The barge was carrying an unknown amount of ammonium nitrate (fertilizer) of unknown concentration. The amount of damage done to the barge and the amount of product spilled were also unknown. On October 29, 1997, the product was identified as urea fertilizer, not ammonium nitrate. An unknown quantity of the product was scooped from the barge and the barge refloated.

Resources at Risk:

NOAA reported to the MSU that if there is little or no current flow, or a sensitive "backwater," such as a marsh exists in the area of the grounding, the ions introduced into the water column by the product, in a worst-case discharge, will lower the pH and the nitrates introduced could trigger an algae bloom. A lowering of the pH can cause immediate localized fish kills. An algae bloom can decrease the level of dissolved oxygen that could also result in a fish kill. However, if there is adequate current flow then the ammonium nitrate should be sufficiently diluted and the effects reduced. Some vegetation near the grounded barge may show "fertilizer burn" as a result of this release.

NOAA Activities:

NOAA was notified of this incident on October 18, 1997, by MSU Galveston. MSU told the SSC that the hopper barge *PV 5996* was grounded along the bank of the ICWW near Bolivar Peninsula, Texas. MSU Galveston requested information on product reactivity and toxicity. After consulting LSU and NOAA HAZMAT chemists, the SSC told MSU to treat the product as a potential explosive or fire hazard until the exact concentration is known. The SSC also told MSU that the product should not be confined or exposed to high heat and should be kept away from any possible ignition source. Vapors produced could be an irritant to response workers.

References:

NOAA. 1993. *The CAMEO™ 4.0 Manual*. Washington, D.C.: National Safety Council. 440 pp.

NOAA Hotline #249, 3 Reports

Research Planning Institute. 1995. *Sensitivity of coastal environments and wildlife to spilled oil: Upper Coast of Texas*. Seattle: Hazardous Material and Response and Assessment Division, NOAA. 63 Maps.

Name of Spill:	F/V <i>Celia M</i>
NOAA SSC:	Tim Steele
USCG District:	8
Date of Spill:	10/21/97
Location of Spill:	Barataria Pass, Louisiana
Latitude:	29°11.1' N
Longitude:	89°53.12' W
Spilled Material:	diesel
Spilled Material Type:	2
Amount:	unknown
Source of Spill:	sunken fishing vessel
Resources at Risk:	none
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	disposal of spoiled fish catch
Shoreline Types Impacted:	none
Keywords:	none

Incident Summary:

At 1815, October 21, 1997, the fishing vessel *Celia M* sank about 4.5 miles east-southeast of Barataria Pass, Louisiana in 40 to 45 feet of water. The vessel was described as a 165-foot "pogy boat." She was carrying 2000 to 8000 gallons of diesel fuel, 300 gallons of lube oil, 300 gallons of hydraulic oil, and a 250-ton catch.

The USCG reported that 14 people onboard were rescued before the vessel sank. A 1-mile long "red" diesel slick was reported tending south from the vessel. On October 23, 1997, divers completed plugging all vents, stopping the flow of diesel.

NOAA Activities:

NOAA was notified of this incident on October 27, 1997, by MSO Morgan City who was concerned about what to do with the deteriorating 250 tons of fish during salvage. MSO Morgan City specifically requested assistance analyzing the effects of disposal of the fish at sea. In developing recommendations, the SSC conferred with NOAA's Biological Assessment Team (BAT), NMFS, and the Environmental Improvement Agency. The Louisiana Department of Environmental Quality (DEQ) was also consulted.

The SSC told MSO Morgan City that:

- No permit is necessary to dispose of the catch offshore. However, EPA would like to know how much was disposed of and where. EPA suggested that no dumping take place in harbors, bays, estuaries, or channels and that any dumping take place more than 4 miles offshore and while underway making more than 5 knots.
- BOD should not be more than a localized issue. There are currents and winds in this open-water location that will help disperse the product. Additional dispersion, by dumping in deeper, offshore locations while underway, could help mitigate any potential negative effects.
- Hydrogen sulfide is a by-product of anaerobic decomposition and should be considered a possibility in this situation. The longer the product is confined in

anaerobic conditions and 70° water, the greater the possibility of producing hydrogen sulfide.

- ❑ The contractor's site safety plan should address this potential safety issue. Downwind discharge and the availability of respirators are just two possible worker protection precautions.
- ❑ The discharge of the fish into the waters around the salvage operation will reduce visibility and attract predators. A slick from the product can also be expected. This issue should be considered when deciding whether to dump offshore or take the product ashore.

The NOAA SST provided weather forecasts as well as fish disposal and trajectory information.

References:

NOAA Hotline #250, 13 Reports

Torgrimson, Gary M. 1984. *The on-scene spill model: a user's guide*. NOAA Technical Memorandum NOAA OMA-12. Seattle: Office of Oceanography and Marine Assessment. 87 pp.

Name of Spill: M/V *Kure*
NOAA SSC: Scott S. Stolz
USCG District: 8
Date of Spill: 11/05/97
Location of Spill: Louisiana Pacific Dock, in Humboldt Bay, California.
Latitude: 40°49'N
Longitude: 124°10' 50"W
Spilled Material: IFO 180
Spilled Material Type: 4
Amount: 108 barrels (4,537 gallons)
Source of Spill: non-tank vessel
Resources at Risk: Habitats: eelgrass beds, submerged aquatic vegetation
Marine Mammals: sea lions, seals, haulouts
Birds: diving coastal birds, waterfowl, alcids, petrels, fulmars, shorebirds, wading birds, gulls, terns, raptors, foraging areas, wintering areas, migration stopover areas, wintering concentration areas
Fish: anadromous fish, nursery areas, estuarine fish
Mollusks: oysters, leased beds, harvest areas
Crustaceans: crabs
Recreation: beaches, marinas, boat ramps, high-use recreational boating areas, high-use recreational fishing areas, state parks
Management Areas: national parks, refuges, wildlife preserves, reserves
Resource Extraction: commercial fisheries, water intakes, bivalve aquaculture sites
Cultural: archaeological sites, Native American lands
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: coarse-sand beaches, exposed fine-sand beaches, exposed riprap, exposed tidal flats, extensive intertidal marshes, extensive salt marshes, extensive wetlands, flats, fringing salt marshes, fringing wetlands, marshes, mixed sediment beaches, piers, riprap, salt marsh, saltwater marshes, sand and gravel beaches, sheltered fine-grained sand beaches, sheltered impermeable banks, sheltered marshes, sheltered rocky shores, sheltered seawalls, sheltered tidal flats, tidal mudflat
Keywords: International Bird Rescue and Research Center

Incident Summary:

At about 0420 on November 5, 1997, the M/V *Kure*, a 639-foot Panamanian-flagged cargo carrier transporting wood chips allided with pilings while shifting at berth at the Louisiana Pacific Dock. The allision punched a 12-inch hole about 10 feet above the waterline and in the time required to plug the hole, discharged approximately 4,537 gallons of IFO 180 into Humboldt Bay. At the time of the incident, there were cloudy skies and winds reported light and variable.

Personnel from MSO San Francisco, the USCG Pacific Strike Team, and CDF&G OSPR responded on-scene that day. The vessel's owners assumed responsibility and hired SMQI Services Inc. as the spill management team to represent them. A variety of cleanup contractors were hired for

shoreline cleanup and on-water collection. The vessel itself was repaired, inspected, and departed two days later as soon as the waterway was reopened. WHEN WAS IT CLOSED?

S large wildlife collection and rehabilitation operation went into effect. Volunteers and personnel from the USFWS, CDF&G's Oiled Wildlife Care Network, California state parks, US Forest Service, International Bird Rescue and Research Center, Point Reyes Bird Observatory, and the Humboldt State University collected oiled wildlife, injured and dead birds, and supervised the cleaning facilities.

Most of the response was completed by November 18. Some final sign-off and follow-up cleaning remained and some bird rehabilitation and release were still scheduled.

Behavior of Spilled Material:

The spill occurred near the maximum ebb current. It moved along the west shore toward the entrance of the bay and caught in natural collection points along the way. With subsequent tides, the oil was transported into Arcata Bay and to a lesser extent, into South Bay. A large patch of sheen and tarballs was also found outside the bay. The oil mixed with large volumes of floating eelgrass, and during the extreme high and low tides, stranded in marsh vegetation and on tidal flats. Most of the unstranded oil was found floating in tidal convergence lines inside the bay during different parts of the tidal cycle. Later, during the response, wave reflections from the bay entrance caused by high seas and winds outside the bay created high surf and waves inside the bay. Some of the oil was formed into mousse on waters near the entrance and some was buried on a sand beach inside the bay.

Countermeasures and Mitigation:

A majority of the shoreline cleaning consisted of manually removing oiled mats and wrack of eelgrass and debris that had stranded during the extreme high and low tides on the sheltered tidal flats and in the marsh vegetation of Arcata Bay and Indian Island. Other cleanup actions included manual removal of beached tarballs, oiled mats of eelgrass, and debris from other shoreline types, warm- or hot-water washing of oiled riprap, and selective manual removal of some buried oil found on two sand beaches.

Bird hazing devices consisting of wooden stakes with mylar tape attached were deployed in selected areas where oiled eelgrass wrack stranded in the marsh edge and oiled marsh vegetation created concerns about bird exposure.

A test was conducted to determine the most beneficial treatment techniques for cleanup of the oiled marsh areas. A small test burn, an application of natural sorbent material, and some vegetation cutting were conducted in a small area of oiled marsh on the western side of Arcata Bay. The test team decided not to use any of the techniques in a large scale. It was decided to allow natural weathering of oil to continue and to continue using passive hazing devices and conduct active hazing by a small boat crew to keep birds out of the areas of concern.

Other Special Interest Issues:

During the response, plans were made and approval was granted for a test demonstration of CytoSol Biosolvent, a vegetable oil-based surface washing agent. After examination of the small area of contaminated shoreline selected for the product application, the product vendor recommended against going forward with the test demonstration because the site was not heavily oiled enough to require this treatment.

The spill caused a closure of the local oyster aquaculture industry. This closure remained in effect as the California Department of Health Services, the RP's representatives, and Beak Consultants Inc., worked toward agreement on criteria for reopening.

Due to cultural resources in the area, the California Office of Historical Preservation contacted the Yurok Tribe Heritage Preservation Office to work in an advisory capacity. A Heritage Preservation Team was assembled to help prevent impacts to cultural resources. There are 67 archeological sites, 100 traditional cultural properties, and 19 historical sites located around the perimeter of Humboldt Bay. There is also a historic district and numerous historic structures and buildings located on and near the Eureka City waterfront and 60 historic shipwreck sites located in the bay and along the coast line.

NOAA Activities:

NOAA was notified on November 5, 1997, by MSO San Francisco. NOAA provided weather forecasts, oil movement trajectories and resources at risk information. On-scene support included overflight observations and oil mapping, assistance in shoreline assessment team management, and assistance in criteria development and participation in the final sign-off process. In addition, NOAA provided information management and display assistance for USCG activities, and assistance and advice in issues concerning oiled marsh vegetation. The SST was on-scene through November 15, 1997.

References:

NOAA Hotline 255, 57 reports

Name of Spill: Timbalier Bay
NOAA SSC: Todd A. Bridgeman
USCG District: 8
Date of Spill: 11/20/97
Location of Spill: Timbalier Bay, Louisiana
Spilled Material: Timbalier Bay crude
Spilled Material Type: 4
Amount: 20 barrels (840 gallons)
Source of Spill: tank battery
Resources at Risk: **Fish:** spotted seatrout, red drum, southern flounder, bay anchovy, striped mullet, spot, black drum, Atlantic croaker, southern kingfish, sheepshead, sea catfish, Gulf menhaden, Gulf kingfish, sand seatrout, and gaff topsail catfish.
Shellfish: - shrimp (white and brown) and blue crab
Mollusks: oysters
Birds: waterfowl, pelicans, cormorants, grebes, common loon, horned grebe, double-crested cormorant, brown pelican, white pelican, and pied-billed grebe, endangered piping plovers, gulls, and terns
Marine Mammals: dolphins
Shoreline Types Impacted: sand beaches
Dispersants:: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: sand beaches, marshes, tidal flats, and mangroves
Keywords:

Incident Summary:

On November 18, 1997, 15 to 20 barrels of Timbalier crude was spilled from a tank battery just north of East Timbalier Island. On November 21, the MSO reported that there had been no impacts to Timbalier Island throughout the night and that overflights and beach surveys throughout the day failed to detect any product, either on the beach or in the surrounding waters.

As of November 24, no product or beach impacts had been detected. It is possible that less product than originally thought was spilled. Evaporation and dispersion could have aided the product's natural removal and the passage of a front and associated wind shift from the north could have moved the oil offshore.

Behavior of the Spilled Material:

Timbalier Bay crude is a light to medium crude oil (API 32.5), and therefore may contain relatively moderate amounts of water soluble and acutely toxic components. Some impacts to water column and bottom organisms may be likely. In addition, shorelines and resources on the water surface could be contaminated by the oil, becoming either coated or stained.

The product was caught up in the ebb current and sucked out through Little Pass and into the Gulf of Mexico. On-scene responders reported that the weather and currents were driving the oil to the west and that impact with Timbalier Island's south side was likely.

Resources at Risk

Adult fish will be able to avoid the lethal concentrations of oil, but the larval and juvenile fish may not be able to. The fish currently breeding in the area are red drum, bay anchovy, and striped mullet. These species would be the most sensitive. There is also a red drum concentration area in Little Pass Timbalier.

There are juvenile shrimp present, which would be very sensitive to the oil. The adult shrimp and crab should be able to avoid the oil, so not many impacts would be expected on these animals. Oysters are also found scattered throughout the area; however, there is a high concentration of oysters on the north side of Timbalier Island. The oysters may be contaminated by the water-soluble and dispersed fractions of the oil. While the concentrations may not be enough to kill the oysters, except in confined waters with very poor circulation, the oyster will become tainted and may suffer some sublethal impacts, such as reduced reproductive capabilities.

Seagrass beds are present on the north side of Timbalier and East Timbalier Islands. Numerous species of juvenile shellfish and fish are associated with these beds. Also, waterfowl may concentrate around these beds for feeding. Intertidal beds are the most at risk from oil impacts, otherwise the associated biology is of greater concern than the seagrasses. Cleanup activities in areas with seagrass beds should minimize disturbance of the bottom sediments.

This area is an important migratory and overwintering area for waterfowl. There may be large concentrations of waterfowl in the bays that may be at risk. Diving birds including common loon, horned grebe, double-crested cormorant, brown pelican, white pelican, and pied-billed grebe are also present. Shorebirds (including endangered piping plovers on the west end of Timbalier Island) are present throughout the beach areas and wading birds are present throughout the marshes.

Waterfowl and diving birds (pelicans, cormorants, grebes) are usually at greatest risk during oil spills, because they spend nearly all their time on the water surface. Waterfowl can also become oiled through contact with oiled marsh vegetation. Wading birds primarily become oiled on the legs while wading for prey. They may also become oiled on the upper body and feathers by coming in contact with oiled vegetation. Shorebirds usually avoid oil, but may be impacted by loss of feeding areas or intertidal prey, particularly during migration periods. Gulls and terns may be at risk because they are often attracted to and will prey on sick or injured prey. This behavior may result in oiling of feathers and the ingestion of oil.

Oiling of birds makes them less buoyant, water repellent, and insulated and may result in death by drowning or hypothermia. Preening of oiled feathers may also result in ingestion of oil resulting in irritation, sickness, or death. Bird oiling, particularly waterfowl and wading birds, may continue even after the floating oil slicks have been removed, depending on the extent of oiled vegetation.

Dolphins may be found throughout the area, but it is not likely that they will be impacted by this spill.

The predominant shorelines on the south side of the islands are sand beaches. The north side of the island and most of the islands inside Terrebonne and Timbalier bays are composed of marshes and sparse mangroves. There are some tidal flats at the east end of Timbalier Island and at the west end of East Timbalier Island. Most of East Timbalier is overwashed, so the oil would pass right over East Timbalier on a high tide with southerly

winds. The oil might penetrate several centimeters into the sand beaches. Depending on the storm activity, the oil may be rapidly buried on the sand beaches. Immediately following storms, sand is deposited on the beach and may bury any oil there. The oil may strand on the tidal flats at low tide, but will get lifted off on the next high tide. However with the shallow waters and the type of oil, it is possible that there would be toxic levels of hydrocarbons in the water column. This might kill some of the animals living in or on the tidal flats. The oil stranding on the flat may have the same effect. The marshes and mangroves are the most sensitive environments. These areas are host to numerous species of animals, adult and juvenile. The mangroves are growing at the northern limit of their range and are already heavily stressed. Even small amounts of oil may kill these trees. If the oil is removed rapidly from the marsh, either by natural methods or by cleanup operations, the vegetation may survive with minimal impacts. Foot traffic in the marsh during cleanup should be minimized to reduce impacts to the marsh. Any destructive cleanup techniques (cutting or burning) may result in more damage than the oil alone.

NOAA Activities:

NOAA was notified of this incident on November 20, 1997, by MSO Morgan City. NOAA provided resources at risk information and fate and effect analysis. NOAA supported this response for 4 days.

References:

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA Hotline #263, 2 Reports

Research Planning Institute. 1982. *Sensitivity of coastal environments and wildlife to spilled oil: Louisiana: An atlas of coastal resources*. Seattle: Office of Oceanography and Marine Assessment, NOAA. 103 maps.

Name of Spill:	Ship Shoal Block 126
NOAA SSC:	Todd A. Bridgeman
USCG District:	8
Date of Spill:	12/17/97
Location of Spill:	2 miles offshore Louisiana
Latitude:	28°49.0' N
Longitude:	91°16.0' W
Spilled Material:	crude oil
Spilled Material Type:	3
Amount:	170 barrels (7140 gallons)
Source of Spill:	platform
Resources at Risk:	none
Dispersants:	Y
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	none
Keywords:	Corexit 9527

Incident Summary:

On December 17, 1997, the USCG MSO Morgan City was notified of a 170-barrel spill of crude oil in the Gulf of Mexico. The spill occurred when a valve malfunctioned on an unmanned platform located on Ship Shoal lease block 126. The product was identified as a condensate having an API of 40.0 and characteristics similar to a South Louisiana crude oil.

Countermeasures and Mitigation:

The RP informed MSO that they wanted to use aerial dispersants as the primary response technique. The platform and slick were located well within EPA's Region 6 preapproval area so permission was granted to initiate dispersant operations. After completion of the Region 6 Dispersant Preapproval Checklist, the USCG GST Special Response Operations Monitoring Program (SROMP) was launched from Mobile, Alabama

Flying over the slick, responders identified two windowed slicks of medium brown "mousse" with a leading edge of 4 to 5 miles. At 1350, December 17, 1997, 1800 gallons of Corexit 9527 was sprayed on the slick at a rate of 250 grams per minute for seven minutes. Responders reported that they treated 75 to 80 percent of the concentrated oil with an effectiveness of 60 to 80 percent. Observers noted a milky-white subsurface plume of dispersed oil after the application.

At 0300 December 18, 1997, an infrared (IR) overflight and a first-light overflight had to be canceled due to heavy fog. By midmorning the fog dissipated and two overflights were launched. One was a short-range flight to inspect the area where the dispersants had been applied and the other was to conduct long-range reconnaissance to ensure that no slicks had been missed. The overflight of the dispersant area did locate a few patches of sheen and some mousse as well as what appeared to be subsurface plumes of dispersed oil. It is believed that these plumes were still visible the next day due to unusually calm overnight conditions in this area of the gulf. Once spotted, a subsurface plume was "buzzed" by the helicopter thus causing agitation, which was very effective in breaking up the plume. Skimming vessels were dispatched to the area to agitate the water as well. The USCG GST was on-scene with SROMP equipment to monitor the operation. Neither overflight found any large concentrations of oil and it is believed that the high evaporative nature of the

product, combined with the successful dispersant application, worked well to remediate the spill.

NOAA Activities:

NOAA was notified of this incident on December 17, 1997, by MSO Morgan City who asked the SSC to assess the efficacy of using dispersants. The SSC informed the MSO that dispersant efficacy may be reduced due to weathering of the product (RP unsure of exact time of valve failure) but otherwise concurred with the decision to use dispersants. The SSC was then requested on-scene at the MSO to assist with the operations.

References:

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA Hotline #266, 3 Reports

Research Planning, Inc. 1989. *Sensitivity of coastal environmental and wildlife to spilled oil: Louisiana: An atlas of coastal resources*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 103 maps.

Name of Spill:	East Cameron Block 338 Pipeline
NOAA SSC:	Todd A. Bridgeman
USCG District:	8
Date of Spill:	12/24/97
Location of Spill:	90 miles offshore Louisiana
Latitude:	28°07' N
Longitude:	49°39' W
Spilled Material:	crude oil
Spilled Material Type:	4
Amount:	15 barrels (630 gallons)
Source of Spill:	pipeline
Resources at Risk:	none
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	none
Keywords:	potential

Incident Summary:

On December 24, 1997, a break in a pipeline connecting two rigs occurred (possibly from a ship's anchor). The rupture occurred on the East Cameron 338 Lease Block, approximately 90 miles offshore Louisiana. The pipeline was 8 inches in diameter and 9 to 10 miles long. A reported 10 to 15 barrels was spilled (API 46.0). The weather was bright sun and high winds. On-scene observers reported emulsified oil and an extensive sheen moving to the east.

Countermeasures and Mitigation:

Port Arthur MSO personnel conducting an overflight of the area to inspect the entire length of the pipeline reported sheen locations. They also conducted a longer-range search to ensure that no slicks or sheens had been missed. No major accumulations of oil were discovered in the surrounding areas or along the 10-mile length of pipeline. It is believed that the high API (46.0) of the oil and favorable weather aided in the products natural removal.

NOAA Activities:

NOAA was notified of this incident on December 24, 1997, by the HAZMAT duty officer; the SSC called the Port Arthur MSO. NOAA provided initial trajectory, fate and effect, and weather information for this potential spill.

References:

NOAA. 1993. ADIOS™ (*Automated Data Inquiry for Oil Spills*) User's Manual. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA #Hotline 267, 4 Reports

Research Planning, Inc.. 1989. *Sensitivity of coastal environmental and wildlife to spilled oil: Louisiana: An atlas of coastal resources*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 103 maps.

Name of Spill: Lightering Spill
NOAA SSC: Todd A. Bridgeman
USCG District: 8
Date of Spill: 01/02/98
Location of Spill: offshore Texas
Latitude: 28°37' N
Longitude: 94°15' W
Spilled Material: Queibo crude oil
Spilled Material Type: 3
Amount: 40 barrels (1680 gallons)
Source of Spill: tank ship
Resources at Risk: none
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: none
Keywords: boom, potential spill

Incident Summary:

At 1700, January 2, 1998, two vessels were conducting lightering operations off the Texas coast near Claypile Bank when a lightering hose ruptured spilling crude oil into the Gulf of Mexico. Initial reports indicated that 40 barrels of Queibo crude and Arabian Light crude with an unconfirmed API of 36.0 was released. On-scene weather was 2- to 3-foot seas and winds from the south-southeast at 5 to 10 knots. Some product was contained in boom. A USCG overflight went to investigate.

NOAA was notified of this incident on January 2, 1998, by MSU Galveston who asked for weather, resources at risk, and cleanup recommendations.

The SSC provided initial trajectory and a fate and effect assessment. The lightering zone is well off the coast; therefore, a spill would not be an immediate threat to coastal areas.

The majority of spilled product was contained in boom and the fraction that did not evaporate was cleaned up by the response vessel the following day.

References:

NOAA. 1993. ADIOS™ (*Automated Data Inquiry for Oil Spills*) User's Manual. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA Hotline #227, 3 Reports

Research Planning Institute. 1995. *Sensitivity of coastal environments and wildlife to spilled oil: Upper Coast of Texas*. Seattle: Hazardous Material and Response and Assessment Division, NOAA. 63 maps.

Torgrimson, Gary M. 1984. *The on-scene spill model: a user's guide*. NOAA Technical Memorandum NOAA OMA-12. Seattle: Office of Oceanography and Marine Assessment. 87 pp.

Name of Spill: M/V *Stone Fueler*
NOAA SSC: Todd A. Bridgeman
USCG District: 8
Date of Spill: 01/07/09
Location of Spill: Belle Pass, Louisiana
Latitude: 29°04.6' N
Longitude: 90°11.0' W
Spilled Material: diesel and crude
Spilled Material Type: 2
Amount: 3000 gallons diesel, 31,206 gallons crude
Source of Spill: tug and pipeline
Resources at Risk: **Fish:** Atlantic croaker, red drum, southern flounder, bay anchovy, striped mullet, spot, and black drum.
Mollusks: blue crab, oysters
Crustaceans: shrimp
Mammals: dolphins, river otters, mink, muskrats, nutria, and raccoon
Birds: overwintering waterfowl, resident wading birds, shorebirds, pelicans, lesser scaups. eagles, osprey, peregrine falcons, American kestrel, gulls, terns, osprey, peregrine falcons
Recreation: marina, boat ramp
Countermeasures and Mitigation: Y
Bioremediation: N
In-situ Burning: N
Other Special Interest: N
Shoreline Types Impacted: sand beaches, riprap, vegetated banks, mangroves, marshes, seagrass beds
Keywords: dispersants

Incident Summary:

The 65-foot M/V *Stone Fueler* sank and broke up sometime after midnight January 7, 1998. The vessel sank in 25 to 30 feet of water in Belle Pass, 1/2 mile off the coast of Louisiana in the Gulf of Mexico. The vessel was carrying approximately 3000 gallons of diesel fuel, all of which was lost. When the vessel sank, she ruptured a pipeline releasing South Louisiana crude oil.

Chevron Corporation, owners of the damaged pipeline, calculated that 743 barrels were spilled. Morning overflights showed minimal oiled shoreline. The east bank of Belle Pass was impacted from the mouth of the pass to about 1 mile north. Some light oiling had been reported on the Gulf Of Mexico facing beach, also on the east side of the pass, but SCAT surveys failed to find any surface or subsurface oil. Overflights of the area revealed two small streamer slicks of diesel fuel that were believed to have come from the vessel's ullage openings. Long-range searches failed to detect any slicks offshore or to the east of the incident site.

Authorization for the use of dispersants was requested and granted for any significant oil released during the salvage operations. The RRT placed restrictions on dispersant use: the dispersed plume could not move east, northeast, or onshore.

Shoreline assessment did not uncover any further shoreline oiling than originally reported. Cleanup contractors used 16,000 feet of absorbent boom and more than 200 bags of

absorbent pads. Benzene monitoring continued throughout the area. No high levels were detected.

After several days the it was determined that the tug was not still resting on the pipeline and the line was successfully plugged. Salvage operations continued until January 16 when the tug was successfully raised and removed from the area. At that time permanent repairs were made to the pipeline.

NOAA Activities:

NOAA was notified of this incident on January 7, 1998. NOAA provided on- and off-scene support in the form of products fate and effect analysis, trajectory modeling, resources at risk analysis, shoreline cleanup recommendations, SCAT surveys, dispersant plan development and approval, potential residual release calculations and trajectories, health and safety recommendations, and weather forecasts.

The pipe was sheared in two, not punctured or cracked as first suspected. There was a 40- to 50-foot section of pipe was replaced January 20.

NOAA continued to provide weather support to the pipeline repair operations until January 21, 1998.

References:

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA Hotline #273, 37 Reports

Research Planning Institute. 1982. *Sensitivity of coastal environments and wildlife to spilled oil: Louisiana: An atlas of coastal resources*. Seattle: Office of Oceanography and Marine Assessment, NOAA. 103 maps.

Name of Spill: High Island Pipeline System (Amoco)
NOAA SSC: Todd A. Bridgeman
USCG District: 8
Date of Spill: 01/22/98
Location of Spill: offshore Texas
Latitude: 28°32.1' N
Longitude: 94°24.1'W
Spilled Material: Texas sweet crude
Spilled Material Type: 3
Amount: 300 barrels (12,600 gallons)
Source of Spill: pipeline
Resources at Risk: none
Dispersants: Y
Bioremediation: N
In-situ Burning: N
Other Special Interest: Aerial dispersant operations and SROMP fluorometer monitoring.
Shoreline Types Impacted: none
Keywords: Corexit 9527

Incident Summary:

At 1914, January 22, 1998, an Amoco Pipeline recorded a pressure drop indicative of a pipeline rupture. The rupture occurred somewhere along a line running from mid-Galveston Island (on a course of 151 degrees true) out to a point approximately 90 miles offshore. Calculations by Amoco, based on the pressure drop, indicated a worst-case release of 2500 barrels of Texas sweet crude, having an API of 39.4. The amount was later adjusted to about 300 barrels lost.

Overnight side-looking airborne radar (SLAR) overflights flown in a USCG Falcon Jet found a slick approximately 50 miles offshore. The Region 6 Dispersant Preapproval Checklist was completed, USCG GST SROMP was notified, and the RP placed aerial dispersants on standby.

A morning overflight revealed a 1/2 to 1 mile by 4 to 5 mile slick of broken coverage (40% sheen). The slick contained one patch of heavy brown oil measuring 1/4 mile by 1/4 mile. Calculations by observers on the overflights estimated the amount of product in the water at about 300 barrels.

The pipeline was secured and reached hydrostatic equilibrium with no residual release.

After a malfunction with the pump aboard the DC-4 aircraft was successfully repaired, the dispersant aircraft was sortied. The weather cleared sufficiently for the smaller DC-3 aircraft to get airborne as well. Each aircraft applied dispersants to the slick; a total of 2000 gallons of Corexit 9527 was applied. Initial reports were that the application was successful. Mechanical cleanup (skimming) operations continued between dispersant applications.

The USCG GST was on-scene conducting monitoring operations (SROMP) of the dispersed plume. SROMP operations were being conducted in the dispersant application zone. The SSC interpreted the data when it reached the command center.

Dispersant operations were completed on January 23, 1998, when approximately 1000 gallons of Corexit 9527 was applied by a combination of DC-3 and DC-4 aircraft. Both airborne visual and on-water fluorometry monitoring evidenced a positive result. On

January 24, an additional 200 gallons of Corexit 9527 were applied. The USCG GST provided airborne and SROMP monitoring. SROMP is designed to provide the Federal On-Scene Coordinator (FOSC) with near real-time field data to support response decision making. The USCG reported that after the dispersant was applied the surface oil changed color and broke into small wind rows. The dispersed oil had an appearance similar to dye from a dye marker. GST personnel, sampling in the treatment area, observed a marked increase in background fluorometry readings indicating chemically enhanced oil dispersion.

An updated release estimate was less than 300 barrels. The amount of oil dispersed is unknown. Any residual condensate oils from the Amoco release exist only as thin sheens. Primary attention on-scene has shifted from the pipeline incident to a super tanker (*Red Seagull*) spill of crude oil located only 15 miles away. Any thin sheens of non-dispersed condensate is expected to continue to weather and may disperse naturally.

NOAA Activities:

NOAA was notified of this incident on January 22, 1998, by the USCG. The SSC provided on- and off-scene support in the form of product fate and effect analysis, trajectory modeling, dispersant plan development, dispersant application recommendations and resultant monitoring data synthesis and interpretation, resources at risk analysis, shoreline cleanup recommendations, potential residual release calculations and trajectories, health and safety recommendations, and weather forecasts.

References:

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA Hotline #275, 15 Reports

Research Planning Institute. 1995. *Sensitivity of coastal environments and wildlife to spilled oil: Upper Coast of Texas*. Seattle: Hazardous Material and Response and Assessment Division, NOAA. 63 maps.

Name of Spill: M/V *Red Seagull*
NOAA SSC: Todd A. Bridgeman
USCG District: 8
Date of Spill: 01/23/98
Location of Spill: Offshore Texas
Latitude: 28°43.3' N
Longitude: 94°37.9' W
Spilled Material: Arabian crude
Spilled Material Type: 3
Amount: 260 barrels (10,920 gallons)
Source of Spill: tank ship
Resources at Risk: none
Dispersants: Y
Bioremediation: N
In-situ Burning: N
Other Special Interest: shipboard dispersant operations, SROMP monitoring, fluorometry
Shoreline Types Impacted: none
Keywords: boom, Corexit 9500, dispersant, skimming

Incident Summary:

The M/V *Red Seagull* was maneuvering near the Amoco pipeline spill in the lightering zone off Galveston, Texas when the crew reported "bubbling and sheening" along a portion of the hull. The vessel was north of the Amoco pipeline rupture site and therefore responders determined that her hull had been breached. The vessel dropped anchor. The vessel was carrying 1.5 million barrels of Arabian light and medium crude oil. The USCG Falcon Jet Aireye surveyed the scene during the night. A dive survey was scheduled for first light to determine the extent of any damage.

The vessel subsequently reported 500 barrels of Arabian medium crude oil lost from the #5 center port tank. They transferred cargo to limit the loss.

After several attempts, divers were able to locate and temporarily plug a hole in the cargo tank. The hole appeared to be the result of a dry-docking plug coming loose. Dry-docking plugs are used to facilitate removal of the last few barrels of liquid so that a vessel's tanks may be cleaned and gas freed before entering a dry dock.

Ullage calculations aboard the vessel indicated a loss of 260 barrels of Arabian medium crude oil, having an API of 31.0. The tank, #5 center port, has a capacity of 156,000 barrels. Since the leak was first noticed the vessel was internally shifting cargo in an attempt to bring the tank into hydrostatic equilibrium, limiting the release. The SSC, USCG, and ABS conducted an overflight and landed on the vessel to assess the situation. A 20-foot swath of oil was observed floating along the port side of the vessel trailing aft. The closest 10 feet of this swath was black oil and the outer 10 feet was composed of gray and silver sheen trailing to rainbow, total coverage 100 percent. Aft of the vessel, the slick was composed mostly of silver and rainbow sheen with a few streamers of brown oil. The overflight observed a slick of light sheen 200 to 300 yards wide by 10 miles long. Booming and skimming operations were being conducted astern of the vessel.

The divers located several pockets of oil trapped underneath the hull. The vessel's trim and list were altered to help transfer cargo out of the tank to make repairs. This maneuver also flushed out some oil trapped beneath the vessel. Booms were in place and skimming

vessels were standing by to contain any discharge. Additionally RRT6 granted approval for the use of shipboard application of dispersants. A dispersant-equipped response vessel and the SROMP Safe Marine Transportation (SMART) monitoring team were standing by.

The hole was permanently plugged and no more product was released. A dispersant monitoring team consisting of personnel from the USCG D8 DRAT Team, RP, and a member of the NOAA SST were deployed to the scene. Once the repairs were made, the vessel executed a slow series of turns, while still at anchor, in an attempt to flush more trapped oil from below the hull; the operation worked. A skimming vessel was standing by and began collecting the spilled oil. Some patches of dark oil did escape the skimming vessel and were dispersed by the dispersant vessel. The vessel used a fire monitor and induction system to spray approximately 1.5 barrels of Corexit 9500 on the slicks at a rate of 2.5 grams per minute (gpm). The oil was successfully dispersed. The SROMP SMART team monitored the operation from a third vessel. Sunset halted the flushing, skimming, and dispersant operations prematurely, therefore responders did not know if all the oil had been removed from below the ship, so the USCG ordered the vessel to remain at anchor for the night.

Dispersants were applied to trapped oil released from under the M/V *Red Seagull* on the morning of January 27. Application was by way of a fire-fighting monitor adjusted to run at a nominal pressure of 30 per square inch with an initial application rate of 5 gpm (this rate was reduced to approximately half after excess foaming was observed). For the entire operation, less than two barrels of the dispersant Corexit 9500, were used. On-scene observers agreed that visually the operation was a success. Treated oil appeared to readily disperse. Shipboard observations estimated a total of 17 barrels were released by the flushing operation. The SROMP (SMART) monitoring team was deployed both days. By noon, all oil had been flushed from the vessel, ending the response phase of the incident.

NOAA Activities:

NOAA was notified of this incident on January 23, 1998, by the USCG who asked the SSC to report on-scene to help with dispersant operations and other support.

The SSC provided on-scene technical spill support and oversight for the FOSC to include:

- producing characterization, short- and long-term trajectories;
- supervising dispersant application team;
- collecting dispersant data, synthesis, and interpretation, satellite drifter buoy deployment;
- interpreting overflight assessments and mapping; and
- providing weather support.

Additionally, the NOAA SST stayed on-scene for a week to compile technical reports on the dispersant operations at both the *Red Seagull* and High-Island Pipeline spills.

References:

NOAA. 1993. ADIOS™ (*Automated Data Inquiry for Oil Spills*) User's Manual. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

USCG District 8

NOAA Hotline @276, 12 Reports

Research Planning Institute. 1995. *Sensitivity of coastal environments and wildlife to spilled oil: Upper Coast of Texas*. Seattle: Hazardous Material and Response and Assessment Division, NOAA. 63 maps.

Torgrimson, Gary M. 1984. *The on-scene spill model: a user's guide*. NOAA Technical Memorandum NOAA OMA-12. Seattle: Office of Oceanography and Marine Assessment. 87 pp.

Name of Spill: M/V *Manzur*
NOAA SSC: Todd A. Bridgeman
USCG District: 8
Date of Spill: 02/15/98
Location of Spill: Southwest Pass, Louisiana
Spilled Material:
Spilled Material Type:
Amount: none
Source of Spill: cargo ship
Resources at Risk: none
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: hazardous material
Shoreline Types Impacted: none
Keywords:

Incident Summary:

At 1520, February 15, 1998, The M/V *Manzur* reported to the USCG that a fire of unknown origin had broken out in their single cargo hold. The hold had been sealed and the CO² fire suppression system had been discharged into the hold; the vessel was making way under her own power toward Southwest Pass at the mouth of the Mississippi River. An offshore supply vessel was standing by to render assistance if necessary.

Hazardous cargo in the hold included approximately 123 metric tons of sodium cyanide, 11 metric tons of wet acid batteries, 14 metric tons of acetone, 592 sacks of quicklime, 6 drums of petroleum distillates, and 3 drums of octane.

The vessel anchored a safe distance away from other vessels on the west side of Southwest Pass. Responders did not know what cargo was involved in the fire or the extent of any damage. A USCG IR overflight was conducted the morning of February 16 and no significant hot spots were detected. An 1800 planning meeting was held at the MSO in New Orleans. In attendance were the USCG, NOAA SSC, and the RP's representatives. The vessel's Quality Inspector (QI) was able to land on the ship that afternoon, but due to inclement weather, was only able to spend 10 minutes aboard. During this time, he delivered a cellular phone and conducted a brief inspection of the ship and a quick interview with the crew. There were no signs of excessive heat around the hold and the chief mate reported that he cracked a hatch leading into the hold and no smoke escaped. All visual signs since 0800 indicated that the fire had been extinguished.

The vessel's hold was not equipped with a CO² extinguishing system as earlier reported. When (following heavy weather) the crew noticed smoke coming from the hold they sealed the hold to smother the blaze.

The hold remained sealed. On the evening of February 16, 1998, the crew lowered thermometers down the sounding tubes to check the temperature within the hold. The company's chemical engineer arrived in New Orleans that evening and a marine chemist was standing by. At the first opportunity the next day, the chemical engineer and marine chemist flew out to the vessel to determine as much as possible without opening the holds. After this inspection the Unified Command evaluated the feasibility of personnel, wearing the proper PPE, making an entry into the hold to conduct an extensive evaluation of the situation.

Cargo:

The vessel was carrying the following hazardous cargo (non-hazardous cargo is not listed).

Metric Tons	UN#	Product	CL	Hazard
'TWEEN DECK (upper deck)				
23.8	1689	sodium cyanide	6	poison
23.9	1689	sodium cyanide	6	poison
10.89	2794	wet acid batteries	8	corrosive
14.0	1090	acetone	3	flammable
	3082	NOS	9	miscellaneous
24.0	1689	sodium cyanide	6	poison
23.8	1689	sodium cyanide	6	poison
23.8	1689	sodium cyanide	6	poison
23.8	1689	sodium cyanide	6	poison
24.3	NA	petro l lube oil	NA	flammable
1,113 super sacks	unknown	Quicklime	unknown	poison
6 drums	1268	petroleum distillate	3	poison
3 drums	1262	octane	3	flammable
4 drums	1090	acetone	3	flammable
3 20-inch containers each 23.8 metric tons	1689	sodium cyanide	6.1	poison
1 20-inch container of 22.6 metric tons	1823	sodium hydroxide	8	poison
7 SKD	2291	sodium hydroxide	6.1	poison
14 pallets	1791	sodium hydroxide	8	poison

All the cargo was properly packaged. Sodium cyanide was in crystalline form, inside plastic/glass vials surrounded by foam, inside boxes, inside containers.

There were no signs of heat inside the hold throughout February 17. The extent of damage and the nature of the atmosphere within the hold were still unknown. The Unified Command worked throughout the day to gather the resources necessary to safely respond to the situation. A planning meeting was held and the objectives and action items were identified

The evening of February 17, the RP's sampling contractor, MSO IR Team, GST members, QI, and the chemical engineer traveled to the vessel and conducted a water level IR scan of the hull, an initial topside assessment, and as much air monitoring as could be safely done from the deck. Air sampling was delayed because locating, obtaining, and mobilizing the adequate amount of proper sampling gear to test for the multiple hazardous chemicals was difficult. Air monitoring was projected to be completed sometime around midnight. After this first round of air monitoring, the Unified Command reviewed the results and determined that response personnel could enter the space. Once personnel entered the

space, additional air monitoring and an initial site assessment, focusing on the sodium cyanide containers, were the priorities.

On February 22, atmospheric testing from deck-level revealed:

- 21 percent oxygen,
- no explosive atmosphere and,
- no signs of HCN gas.

After a more extensive visual and air-quality survey of the hold, it appeared that the fire/smoke was generated from damaged bags of quicklime. The situation was determined stable and the vessel was released to continue on her trip to Mobile, Alabama. The USCG MSO Mobile was briefed on the situation and met the vessel in Mobile to conduct additional assessments of the situation.

NOAA Activities:

NOAA was notified of this incident on February 15, 1998, by MSO New Orleans who requested initial product classifications, characterizations, and assessment of the hazards.

The SSC provided chemical characterization, hazard assessment, potential by-products evaluation, and technical advice to the FOOSC and MSO personnel. In addition, the SSC helped construct the emergency medical plan, the site safety plan, and in evaluating proper PPEI and weather forecasts for the incident.

References:

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA. 1993. *The CAMEO™ 4.0 Manual*. Washington, D.C.: National Safety Council. 440 pp.

NOAA Hotline #282, 9 Reports

Name of Spill:	Tug <i>Florida Seahorse</i>
NOAA SSC:	Todd A. Bridgeman
USCG District:	8
Date of Spill:	02/26/98
Location of Spill:	Houma, Louisiana
Latitude:	29°00.87' N
Longitude:	90°33.59' W
Spilled Material:	diesel, hazardous material
Spilled Material Type:	2, 5
Amount:	24 barrels (1000 gallons)
Source of Spill:	offshore supply tug
Resources at Risk:	none
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	none
Keywords:	none

Incident Summary:

At 1930, February 26, 1998, MSO Morgan City was told that the tug, *Florida Seahorse*, carrying 1000 gallons of diesel fuel, was sinking 3 miles south of the Houma, Louisiana navigational channel. When the tug's position was plotted, it was found to be buried 3 feet under mud and extremely close to the recorded position of a crude-oil pipeline.

The morning of February 25, 1998, when salvors went on-scene, they were unable to locate the vessel. The concern was that if the vessel might rupture the pipeline causing a catastrophic loss of oil. The incident was federalized. MSO Morgan City directed the salvage operations; NOAA provided weather support.

NOAA Activities:

NOAA was notified of this incident on February 26, 1998, by MSO Morgan City who asked the SSC to provide technical support.

NOAA provided the MSO with an ADIOS run and interpretation, diesel oil fact sheet, an initial weather/trajectory/fate summary and weather forecasts for the lengthy response. The SSC continued supporting the MSO until April 22 when the vessel was successfully raised without incident and removed from the scene.

References:

Coastal Sensitivity Atlas

NOAA. 1993. ADIOS™ (*Automated Data Inquiry for Oil Spills*) User's Manual. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA Hotline #287, 15 Reports

Name of Spill: M/V *Katania*
NOAA SSC: Todd A. Bridgeman
USCG District: 8
Date of Spill: 03/09/98
Location of Spill: Houston, Texas
Latitude: NA
Longitude: NA
Spilled Material: hazardous material
Spilled Material Type: 5
Amount: none
Source of Spill: cargo ship fire
Resources at Risk: none
Dispersants:: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: hazardous materials fire
Shoreline Types Impacted: none
Keywords: potential

Incident Summary:

The break-bulk carrier, *M/V Katania*, located at the Manchester dock in the Houston Ship Channel, reported a fire in cargo hold #1. The majority of cargo in the hold was paper products and wood dunnage but the hold also contained three 20-inch containers of sodium cyanide, 236 one-ton bags of calcium oxide, and several drums of kerosene. A Unified Command was established with Houston Fire Department acting as OSC. By midnight the fire had been brought under control without damage to any of the hazardous cargo.

For the first two days, the incident was in a "mop up" phase. The vessel's holds were opened and a container of sodium cyanide was removed. After submerging in water, the container was placed on the dock. Air and water monitoring revealed safe levels of cyanide and a pH in the hold of 12.1 due to the calcium oxide that was also stowed there. However, the chemical laboratory contracted to analyze the water samples apparently had some errors with their technique and rescinded the earlier results now stating that the water contained 770 ppm cyanide and perhaps as much as 990 ppm. The vessel still had "quite a bit" of contaminated water in the holds, as well as nonhazardous cargo, which was also contaminated.

The high pH of the water was beneficial because it was holding the cyanide ions in solution and preventing the formation of HCN. The USCG MSO Houston halted all operations at the vessel to reassess the situation. The USCG GST and NOAA SSC were requested on-scene.

The *Katania* remained at the New Manchester dock in the Houston Ship Channel. The last of the compromised sodium cyanide was shipped off site; however, the cargo hold still contained several thousand gallons of contaminated water and several hundred pieces of contaminated cargo.

Cyanide Assessment:

After the fire, air monitoring was completed on March 11 with a Compur 400 HNU Minotox meter and Drager tubes. The highest concentration detected was 25 ppm cyanide through the lining of the sodium cyanide container. A single water sample

was collected from water discharging from the sodium cyanide container. The results reported by the local laboratory indicated a pH of 12.1 and total cyanide results of 0.05 mg/L. The laboratory later indicated an error in the analysis and found the total cyanide (Method 335.2) to be 990.8 mg/l. An additional sample was collected from the cargo hold of the *Katania* containing approximately 770 ppm.

Decontamination Plan:

The vessel's hold contained an array of contaminated cargo: large rolls of heavy gauge wire, pipes, tires, wood crates containing various items, nuts, bolts, and sacks of calcium oxide (CaO), were believed to be contaminated. The extreme toxic nature of the contamination, a large chaotic cargo hold, and the various types of cargo presented unique decontamination problems; therefore, the decontamination plan was developed and extensively revised. On March 14, 1998, the final revision of the decontamination plan was approved. The plan called for freshwater washing of the cargo and a final rinse down with a 5- to 15-percent hypochlorite solution with a pH greater than 12, or a 10- to 20-percent hydrogen peroxide solution. These solutions will neutralize any remaining cyanide and potentially prevent any future exposures. The first piece of cargo off was tested for quality control purposes. Representative pieces of the different cargo types were tested as well. The testing consisted of a freshwater wash and subsequent testing of the wash water for total cyanide.

Calcium Oxide (Lime):

The forward portion of the vessel contained approximately 50 tons of calcium oxide in intact and damaged bags creating a large chaotic mountain of the product. Operations there focused on removing the intact 1-ton bags and developing a procedure to remove the loose product. Early attempts at vacuuming the product caused a fire in the vacuum hose, possibly the result of static charge building up in the hose used and/or the caustic and exothermic nature of the calcium oxide. The morning of March 15, work refocused on removing the mountain of loose and bagged calcium oxide and the adjacent container holding drums of flammable liquid. Heavy rains were predicted for the afternoon and there was concern that an exothermic reaction triggered by the heavy rains could compromise the flammable liquids. Due to damage sustained during the initial fire, there was no way to close the hatches over the hold. A plan was developed to decontaminate the container holding the flammable liquids and, if possible, remove it from the hold or segregate it (in the hold) from the lime mountain. By 1615 the last container was removed from the vessel. A stainless steel noncollapsible hose arrived on-scene and greatly facilitated the vacuuming procedures. By early evening, enough lime had been removed that internal deck plating could be lowered into place, effectively protecting the remaining lime from the rain.

Cyanide Contaminated Cargo:

Work continued throughout the evening of March 15, developing the most effective and practical methodology to decontaminate the dirty cargo. The average total cyanide and average soluble cyanide in most of the hold water were 400 ppm. However, in the area where the cyanide container was originally stowed, the total cyanide was approximately 6000 ppm and the soluble cyanide, 2100 ppm. A three-tier wash system was developed to effectively clean the cargo sufficiently enough to limit the chances of any down-line exposures. The cargo underwent a water wash/sodium hypochlorite treatment / final water rinse process. The first wash removed

gross contamination, the sodium hypochlorite treatment destroyed any remaining cyanide, and the final rinse removed the sodium hypochlorite solution and helped preserve the cargo's value. Quality control was conducted by wipe sampling. This technique used sterile gauze pads saturated with a wipe solution of sodium hydroxide (to lift without destroying any cyanide molecules) and a standard 100 square-centimeter surface area. The first and last pieces of a "batch" of cargo were tested and a result of either wipe over 5 ppm total cyanide or (5 mg) would be grounds for re-decontamination. The various types of cargo were evaluated by wipe techniques and included large metal pipes, coiled bar stock, rebar, tires, and various small metal parts. NOAA, LSU, and contractor personnel obtained the initial set of samples and developed the sampling protocols. The results of those samples were 0.01 ppm (0.01 mg). A sampling plan, ensuring standardization of the wipe technique, was submitted by the cleanup contractor and reviewed by the USCG SST.

NOAA Activity:

The SSC, was contacted at 2100, March 9, 1998, by the District Command Center concerning a vessel fire in the Houston Ship Channel.

The SST arrived on-scene March 13, 1998, and recommended an additional water sampling to determine the status of the water within the hold. At 1100, SST personnel conducted a visual inspection of the ship's cargo holds from the deck to determine the most appropriate sampling locations. Water seen standing in the hold and among the remaining cargo was estimated at depths of 6 inches in the forward cargo hold opening to greater than 3 feet in the rear. The ship listed slightly port and aft due to the position of the cargo. There were four samples collected for total cyanide (Method 335.2), amenable, or soluble cyanide (Method 335.1) one sample collected in the shallow water near the original position of the sodium cyanide container, a sample mid ship, and two additional samples near the deepest easily accessible water aft ship. The laboratory results were available the next morning.

NOAA's other actions included:

- providing product hazards and potential hazards, chemical characterization, CAMEO reports,
- developing a sampling plan to assess the conditions within the hold,
- developing a decontamination plan for contaminated cargo,
- assisting with the disposal plan for the contaminated fire-fighting water in the hold,
- helping develop responder health and safety issues, and
- interpreting collected cargo hold contamination data and IAP review.

Decontamination of cargo began the night of March 14. By March 15, 1998, most of the clean cargo had been removed. The SSC was on-scene for the testing of the decontamination procedures and discussed or refined methodology and sampling quality control issues with the RP and other contract personnel.

After the acceptable results of the decontamination procedures and the progress made with the cargo offloading, the NOAA SST was released by the USCG.

References:

NOAA. 1993. *The CAMEO™ 4.0 Manual*. Washington, D.C.: National Safety Council. 440 pp.

NOAA Hotline #288, 5 Reports

Name of Spill: Zinc Bromide
NOAA SSC: Todd A. Bridgeman
USCG District: 8
Date of Spill: 04/06/98
Location of Spill: Gulf of Mexico
Spilled Material: zinc bromide
Spilled Material Type: 5
Amount: 1012 barrels (42,504 gallons)
Source of Spill: supply boat
Resources at Risk: none
Dispersants: none
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: none
Keywords:

Incident Summary:

An offshore supply vessel was transferring a solution of zinc bromide to a rig located approximately 60 miles off the coast of Louisiana when a valve was left open and approximately 1012 barrels of the solution (density 15 pounds per gallon) were pumped into the Gulf of Mexico.

NOAA Activities:

NOAA was notified of this incident on April 6, 1998, by MSO Morgan City who requested an assessment of environmental impacts and chemical characterization. The SSC informed the MSO that the solution would be acidic (pH 3-4) upon entering the water, but would be buffered by the seawater. Extensive aquatic toxicity data was not available, but indications were that there could be some localized toxicity where the product entered the water and where the product impacted the sea floor (water depth approximately 1000 feet). While there is a risk of mortality in the immediate area of discharge, the long-term impact of this release is not clearly understood.

The dissolved zinc component of the zinc bromide can be very toxic. Any zinc bromide that reaches the bottom will most likely cause total mortality of any organisms living in the area of direct impact. There could be additional mortality in peripheral areas as the substance spreads and dilutes. The zinc can contaminate biota that survive the direct exposure but the zinc contamination will not biomagnify up the food chain. The area of impact will start to be recolonized as soon as the zinc bromide has dispersed, but it may take months or even years for these spots to recover a normal biota (depending upon original habitation); however, there should be no chronic impacts from this release.

NOAA provided product characterization, environmental impact evaluation, and risk assessment to the USCG for this spill.

References:

NOAA. 1993. *The CAMEO™ 4.0 Manual*. Washington, D.C.: National Safety Council. 440 pp.

NOAA Hotline #295, 2 Reports

Name of Spill:	Methyl Acrylate Tank
NOAA SSC:	Todd A. Bridgeman
USCG District:	8
Date of Spill:	06/13/98
Location of Spill:	Houston Ship Channel, Texas
Spilled Material:	methyl acrylate
Spilled Material Type:	5
Amount:	1357 barrels (57,000 gallons)
Source of Spill:	facility
Resources at Risk:	none
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	N
Shoreline Types Impacted:	none
Keywords:	potential

Incident Summary:

At 2300 Saturday, June 13, 1998, at a facility just off the Houston Ship Channel, a tank containing as much as 57,000 gallons of methyl acrylate was undergoing an uncontrolled polymerization reaction. The tank's inhibitor pump had malfunctioned and triggered an exothermic reaction. The tank was kept cool by dousing it with water in an attempt to prevent an over-pressurization explosion. The tank measured 32 feet high by 42 inches around with the product reportedly at the 5.5-foot level within the tank. The exact nature and state of the product were not known. Tank temperatures were in the 180° to 220° F range. The two adjoining facilities were shut down and evacuated.

The RP reported that they began to have trouble with the tank at 0200 on Saturday, June 13, 1998. They calculated that the reaction would take 48 hours to exhaust itself, however, the reaction was stilling on the afternoon of June 16.

On Sunday, June 14, 1998, the EPA took over as FOSC from the USCG. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) fund was opened and NOAA remained available.

By Tuesday, June 16 it seemed the reaction was winding down based on the following information from the facility (Celanese, Ltd, Bayport Terminal).

1. Air monitoring showed no signs of vapors.
2. The product temperature was decreasing.
3. A visual inspection by Channel Industries Mutual Aid experts revealed no signs of tank structure damage.
4. After removing the cooling water spray for one hour, the base of the tank was evaluated by visual inspection, smell, and instrumentation; no vapor or heat generation was detected.
5. Total organic carbon and pH readings on the outfall were consistently below permitted levels.

The plan for the following days called for continuous air monitoring for methyl acrylate in the Bayport Terminal and surrounding communities for a minimum of one week and monitoring tank temperatures and cooling with water as long as necessary, monitoring for TOC and pH in cooling water outfall water until cooling was complete.

NOAA Activities:

NOAA was notified of this incident on June 13, 1998, by MSO Houston who requested information about the chemical methyl acrylate. The SSC reported that the major threat was from the possibility of explosion rather from the release of a toxic gas cloud. Multiple threats were identified including:

1. The polymerization reaction could clog up pressure relief valves on the tank and quickly lead to an over-pressurization explosion.
2. The stable conditions within the tank (being controlled through the water deluge) could suddenly change (due to contaminants in the tank or the inhibitor being used up) resulting in a runaway exothermic reaction..
3. The flammable vapors escaping through the pressure relief valves could encounter an ignition source and cause a flashback explosion.
4. Responders could encounter toxic vapors being discharged through the pressure relief valves.

NOAA provided hazard identification and assessment, product characterization, and chemical consultation to this incident.

NOAA was released on June 16, 1998. Further support was not expected for this incident, but the SSC was available should further support be necessary.

References:

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA Hotline #309, 2 Reports

NOAA and Texas Land Grant Office. 1996. *Oil spill planning and response atlas. Upper coast of Texas*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 63 maps

Name of Spill: Barge *CTCO-211*
NOAA SSC: Todd A. Bridgeman
USCG District: 8
Date of Spill: 06/27/98
Location of Spill: Darrow, Louisiana
Spilled Material: Louisiana crude
Spilled Material Type: 3
Amount: 1904 barrels (79,968 gallons)
Source of Spill: barge
Resources at Risk: **Birds:** Bald Eagle, bird critical forage areas, bird migration stopover areas, wading birds, waterfowl
Fish: bass, bluegill, catfish, fish nursery areas
Terrestrial Mammals: raccoon
Reptiles: alligators
Resource Extraction: drinking water intakes, industrial water intakes
Recreation: marinas
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: coarse-sand beaches, developed areas, river/creek, fringing wetlands, levees, low
Keywords: none

Incident Summary:

A spill of Louisiana crude occurred from the tank barge *CTCO-211* when she was holed in the #3 port tank in a collision with a raft of grain barges at 0245, June 17, 1998. The barge, owned by Cenac Towing Co., had a capacity of 11,000 barrels. It was estimated (by sounding) that approximately 1904 barrels of Louisiana Light (API 41) was discharged into the Mississippi River at MM 179. The barge was beached on the right descending bank.

For the next several days, salvors attempted to stabilize the barge, assess the extent of damage, and limit residual release. There was great concern that the *CTCO-211* may suddenly shift and damage the fully loaded barge that was grounded alongside her.

Oil from this release was seen as far down river as New Orleans. Extensive surveys were made to check for oil migrating to the marshes at the mouth of the river, but no oil was detected.

NOAA Activities:

NOAA was notified of this incident on June 27, 1998, by MSO New Orleans who requested the SSC on-scene. The SSC remained on-scene for 7 days, during which time NOAA provided trajectories, balance calculations, resources at risk, shoreline surveys, cleanup recommendations, shoreline pre-sign-off inspections, inspection of barges in the area and clearing them for transit if they were not a risk, field chemistry, sample collection and analyzing, information management, and weather forecasts.

References:

Coastal Sensitivity Atlas

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA #Hotline 313, 21 Reports

Name of Spill:	Mystery Slick
NOAA SSC:	Todd A. Bridgeman
USCG District:	8
Date of Spill:	07/26/98
Location of Spill:	offshore, Louisiana
Latitude:	29°04.2' N
Longitude:	90°35.5' W
Spilled Material:	unknown
Spilled Material Type:	unknown
Amount:	50 barrels (2100 gallons)
Source of Spill:	unknown
Resources at Risk:	none
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	exposed fine-sand beaches, exposed tidal flats, salt marsh
Keywords:	skimmers

Incident Summary:

On July 26, 1998, MSD Houma reported a slick of unknown origin approximately 3 miles south of Terrebonne Bay / Timbalier Island. The slick was reported to be 200 yards wide by 2 miles long. The slick was composed of rainbow sheen and dark, streaky brown oil. The heaviest oil appeared to cover an area of 10 yards by 3/4 mile. On-scene reports had the oil moving to the northeast. On-scene weather was reported to be light winds from the south-southwest and calm seas.

Cleanup contractors arrived on-scene the evening of July 26 and began skimming the oil. By late evening, there were an estimated 20 barrels of oil and some unrecoverable sheen left on the water.

NOAA Activities:

NOAA was notified of this incident on July 26, 1998, by MSD Houma, Louisiana. The SSC provided trajectories, resources at risk, balance estimates, and weather reports to the response.

References:

Coastal Sensitivity Atlas

NOAA. 1993. ADIOS™ (*Automated Data Inquiry for Oil Spills*) *User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA Hotline #318, 5 Reports

Name of Spill:	Mystery Slick
NOAA SSC:	Charlie Henry
USCG District:	8
Date of Spill:	09/03/98
Location of Spill:	Breton Sound, Louisiana
Latitude:	29°44.7'N
Longitude:	89°21.5'W
Spilled Material:	unknown
Spilled Material Type:	unknown
Amount:	unknown
Source of Spill:	unknown
Resources at Risk:	extensive salt marshes dominated by <i>Spartina sp.</i> fish, shellfish, and birds, extensive commercial oyster leases
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	N
Shoreline Types Impacted:	coastal salt marsh
Keywords:	none

Incident Summary:

On September 3, 1998, an overflight reported a 4-mile by 4-mile slick of unknown origin in Breton Sound, Louisiana. The slick was reported to be thick with emulsified oil in some places. The calm conditions combined with a good sun angle allowed the observation of numerous very thin sheens, but accounting for very little oil. Oil sheens were observed to include silver, rainbow, and dull rainbow. One streamer of "heavier oil" was observed north of Deadman Island in Eloi Bay. Cleanup workers were directed to the heavier oil. USCG observers with the cleanup contractor reported that this oil was too thin on the surface for effective recovery. Several islands in the upper Breton Sound were seen to sheen oil, but were determined to be too lightly oiled for mechanical cleanup.

N OAA Activities:

NOAA was notified of this incident on September 3, 1996, by MSO New Orleans who requested the SSC on-scene. The next morning MSO New Orleans and the SSC participated in an overflight. For light oils in coastal marshes, mechanical cleanup often causes more damage than allowing natural flushing and natural oil biodegradation. While the overflight was being conducted, a production facility north of Deadman Island reported that they had lost an undetermined amount of oil from a damaged 6-inch pipeline. The line was being shut in. Specifics as to the oil's type were still not confirmed. Visual observations suggested a light crude oil. NOAA provided technical support including identification of resources at risk, overflights, and shoreline cleanup recommendations.

References:

NOAA Hotline #323, 8 Reports

Name of Spill:	Jack-Up Rig R.E. Thibadeaux
NOAA SSC:	Charlie Henry
USCG District:	8
Date of Spill:	09/11/98
Location of Spill:	Timbalier Bay, Louisiana
Latitude:	30°16.55' N
Longitude:	88°25.87' W
Spilled Material:	crude oil
Spilled Material Type:	3
Amount:	unknown
Source of Spill:	potential pipeline or rig collision
Resources at Risk:	barrier island intertidal communities, extensive move along the coast toward the west. The outer shorelines of the Timbalier Barrier coastal marshes, fish, shellfish, and birds
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	N
Shoreline Types Impacted:	none
Keywords:	potential spill

Incident Summary:

The jack-up rig, R.E. Thibadeaux, was reportedly adrift in the Gulf of Mexico, south of Timbalier Bay, Louisiana dragging one of its "legs". The concern was that it could damage submerged pipelines in the area. Strong winds, rough seas, and torrential rain in the Gulf of Mexico as a result of Tropical Storm Francis restricted overflights and access to the rig.

NOAA Activities:

NOAA was notified of this incident on September 11, 1998, by MSO Morgan City and was asked to standby. The SSC provided oil trajectory and weather.

The SSC informed MSO that the combination of heavy winds from the southeast and a relatively strong down-coast coastal current would cause any crude product lost would move along the coast toward the west. The outer shorelines of the Timbalier Barrier Islands were at the greatest risk from a potential spill. Many crude blends emulsify quickly when spilled, particularly when subjected to strong wind mixing. Any spilled crude from the pipelines would rapidly emulsify and increase oil persistence and challenge cleanup efforts. The next morning as the storm subsided, MSO Morgan City reported that the jack-up rig was stationary (no longer adrift). It appeared that no collateral damage was caused by the drifting rig and no pollution was reported. In addition to this rig, R.E. Thibadeaux, two other jack-up rigs reported distress conditions as a result of heavy weather. No pollution events were reported.

Name of Spill: Drill Rig Allision
NOAA SSC: Todd A. Bridgeman
USCG District: 8
Date of Spill: 09/17/98
Location of Spill: Offshore Louisiana
Latitude: 29°-19.2' N
Longitude: 88°-53.2' W
Spilled Material: medium crude oil
Spilled Material Type: 3
Amount: 20 gallons
Source of Spill: platform
Resources at Risk: none
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: none
Keywords:

Incident Summary:

At 2145, September 17, 1998, a vessel allided with a drilling rig at Main Pass Block 155. The accident resulted in an approximate release of 108 barrels of medium crude oil API 31.6. At the time, on-scene weather was wind from the south at 30 to 35 mph and 6- to 8 foot-seas. This spill caused concern because initial trajectories provided by the RP indicated that the oil might move toward the Chandeleur Islands, part of the Breton National Wildlife Refuge.

After an extensive investigation by the USCG and RP, the amount of spilled product was downgraded from 108 barrels to 20 gallons. Overflights by the USCG failed to detect any oil in the spill area, confirming the downgraded spill amount.

NOAA Activities:

NOAA was notified of this incident on September 17, 1998, by USCG. The SSC provided the information on the weather, trajectories, and resources at risk for this incident.

References:

NOAA. 1993. *ADIOS™ (Automated Data Inquiry for Oil Spills) User's Manual*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 50 pp.

NOAA Hotline #330, 6 Reports

Name of Spill: Rig Mallard
NOAA SSC: Charlie Henry
USCG District: 8
Date of Spill: 09/22/98
Location of Spill: Lake Washington, Louisiana
Latitude: 29°21.6' N
Longitude: 89°47.5' W
Spilled Material: South Louisiana crude oil
Spilled Material Type: 2
Amount: unknown
Source of Spill: well blow-out
Resources at Risk: **Birds:** waterfowl (dabbling ducks, diving ducks, mergansers), diving birds (brown pelican, white pelican, grebes, loons, cormorants), wading birds (herons, egrets, ibis, wood stork, rails, bitterns), shorebirds (sandpipers, plovers, stilts, piping plover), and raptors (osprey).
Fish: red drum, spotted seatrout, sand seatrout, flounder, bay anchovy, spot, black drum, croaker, whiting, sheepshead, striped mullet, Gulf menhaden.
Shellfish: oysters, blue crabs, white shrimp, and brown shrimp.
Dispersants: N
Bioremediation: N
In-situ Burning: considered
Other Special Interest: none
Shoreline Types Impacted: extensive salt marshes interspersed with canals and shallow open-water environments
Keywords: booms, skimmers

Incident Summary:

At approximately 0530 CDT, September 22, the Rig Mallard located in Lake Washington, Louisiana, experienced a blowout. The spill site is in a highly remote area near the Louisiana coast. Initial reports had indicated that very little crude oil was released, but a gas plume 200 to 300 feet tall was seen. Air monitoring failed to detect any significant levels of H₂S. The well was shut-in by 1600 the same day after an unknown quantity of oil was released. The initial report was wrong; a significant amount of oil had been released into the environment. An added complication was the approach of Hurricane Georges.

Estimating the quantity of spilled oil from such an event is highly difficult. The RP provided the following estimations: 150 barrels of oil were released, 300 barrels of sand released, 160 barrels of water released, 100 barrels contained on rig encapsulated in sand. On September 23, the total area of sheening was reported as about 5000 acres of surface waters and marshes, with about half of that area in the Gulf of Mexico. Only about 10 to 20 percent of shoreline showed black or brown oil. The impact of the spill was complicated by the blowout that entrained sand mixed with oil into the water column and benthic zone. Based on visual observations of oil in the environment, the 150-barrel estimation may be low.

Areas of heavy oiling were clearly visible in the interior of many of the small marsh islets. Small ponds of 10 to 20 barrels were seen and in-situ burning was considered because dark

oil and heavy sheens were visibly migrating from these areas and access for cleanup was highly restricted. Overall, cleanup operations were hampered by shallow water and increasing winds. Interior marshes were only accessible by airboat. Prior to demobilization as the hurricane approached, the estimated 100 barrels of oil, combined with sand on the rig and adjacent barge (residue from the blow-out), were washed into Lake Washington to expedite movement of the jack-up rig to a safe location.

Hurricane Georges passed east of the Mississippi River 2 days later. The spill area was not hit hard by winds or storm surge. Residual oiling remained in the marsh and in submerged sediments. Stranded oil in the marshes was left to natural recovery, but the state ordered the RP to recover the oily sediment. The subsequent removal operation released large amounts of oil that was collected at the surface within containment booms and skimmed. The SST participated in overflights, provided technical support to include detailed resources at risk and base maps that characterize the degree of oiling within established operational zones.

References:

NOAA Hotline #331, 11 Reports

U.S. Coast Guard District 11

Mystery Spill/Monterey Bird Incident	133
M/V <i>Kure</i>	135
Mystery Tarballs, Drakes Bay	139
Mystery Marsh Spill	141
T/S <i>Command</i>	143

Name of Spill: Mystery Spill/Monterey Bird Incident
NOAA SSC: Scott Stolz
USCG District: 11
Date of Spill: 10/24/97
Location of Spill: Santa Cruz, California
Latitude: 36°56.1' N
Longitude: 121°54.3' W
Spilled Material: non-petroleum oil
Spilled Material Type: unknown
Amount: unknown
Source of Spill: unknown
Resources at Risk: **Birds:** diving coastal birds, waterfowl, petrels, fulmars, shorebirds, wading birds, gulls, terns, foraging areas, wintering areas, migration stopover areas, wintering concentration areas
Recreation: beaches, state parks
Management Areas: marine sanctuaries, refuges, wildlife preserves, reserves
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: exposed fine-sand, fine- and coarse-and beaches
Keywords: none

Incident Summary:

On October 24, 1997, the USCG received reports of an unknown substance washing ashore at Sunset Beach in Soquel Cove, Monterey Bay; they also began receiving reports of bird impacts. The beach was initially evacuated and the Santa Cruz HAZMAT Team investigated the substance. It was determined to be a non-toxic, non-petroleum oil, however a definitive identification was never made. Laboratory reports ranged from hydrogenated vegetable oil, emulsified sardine oil, to an animal, vegetable, or fish by-product.

An incident command was established on-scene that included USCG, California Department of Fish and Game (CDF&G), Office of Oil Spill Prevention and Response (OSPR), State Park Service, Santa Cruz County Sheriff and fire departments, and personnel from the Monterey Bay National Marine Sanctuary.

Beach impacts were minimal and required no cleanup. The response was primarily a wildlife collection and rehabilitation effort, involving the CDF&G Oiled Wildlife Care Network, and various volunteer organizations. The response was closed November 26 with the final release of the treated birds. The investigation into the source remains on-going.

NOAA Activities:

NOAA was notified of this incident on October 25, 1997, by MSO San Francisco who asked the SSC to go on-scene to conduct overflights for material mapping and observations. Flights were flown October 25 through 29. Personnel from the NOAA National Marine Sanctuaries were also involved, primarily in beach observations and wildlife collection and cleaning operations.

References:

NOAA Hotline #252, 2 Reports

Name of Spill: M/V *Kure*
NOAA SSC: Scott S. Stolz
Date of Spill: 11/05/97
Location of Spill: Humboldt Bay, California.
Latitude: 40°49' N
Longitude: 124°10' 50" W
Spilled Material: IFO 180
Spilled Material Type: 4
Amount: 108 barrels (4537 gallons)
Source of Spill: non-tank vessel
Resources at Risk: **Habitats:** eelgrass beds, submerged aquatic vegetation
Marine Mammals: sea lions, seals, haulouts
Birds: diving coastal birds, waterfowl, alcids, petrels, fulmars, shorebirds, wading birds, gulls, terns, raptors, foraging areas, wintering areas, migration stopover areas, wintering concentration areas
Fish: anadromous fish, nursery areas, estuarine fish
Mollusks: oysters, leased beds, harvest areas
Crustaceans: crabs
Recreation: beaches, marinas, boat ramps, high-use recreational boating areas, high-use recreational fishing areas, state parks
Management Areas: national parks, refuges, wildlife preserves, reserves
Resource Extraction: commercial fisheries, water intakes, bivalve aquaculture sites
Cultural: Archaeological sites, Native American Lands tested
Dispersants: tested
Bioremediation: N
In-situ Burning: tested
Other Special Interest: test demonstration of CytoSol Biosolvent, oyster aquaculture industry was closed, Yurok Tribe Heritage Preservation Office advised, Heritage Preservation Team helped prevent impacts to cultural resources
Shoreline Types Impacted: coarse-sand beaches, exposed fine-sand beaches, exposed riprap, exposed tidal flats, extensive intertidal marshes, extensive salt marshes, extensive wetlands, fine sand beaches, flats, fringing salt marshes, fringing wetlands, marshes, mixed sediment beaches, piers, riprap, salt marsh, saltwater marshes, sand/gravel beaches, sheltered fine-grained sand beaches, sheltered impermeable banks, sheltered marshes, sheltered rocky shores, sheltered seawalls, sheltered tidal flats, tidal mudflat
Keywords: boom, Clean Bay inc., containment boom, International Bird Rescue, warm- or hot-water washing

Incident Summary:

At about 0420 on November 5, 1997, the M/V *Kure*, a 639-foot Panamanian-flagged cargo carrier transporting wood chips, was shifting at the Louisiana Pacific Dock where she was berthed and allided with pilings. The allision punched a 12-inch hole about 10-feet above the waterline and, in the time required to plug the hole, approximately 4537 gallons of IFO 180 had discharged into Humboldt Bay. At the time of the incident, there were cloudy skies and winds reported light and variable.

A large number of personnel from MSO San Francisco, the USCG Pacific Strike Team and CDF&G OSPR, responded on-scene. The vessel's owners assumed responsibility and hired SMQI Services Inc. as the spill management team to represent them. A variety of cleanup contractors were hired for shoreline cleanup and on-water collection. The vessel was repaired, inspected, and departed 2 days later.

There was a large wildlife collection and rehabilitation operation. Volunteers and personnel from the USFWS, CDF&G's Oiled Wildlife Care Network, California state parks, U.S. Forest Service, International Bird Rescue and Research Center, Point Reyes Bird Observatory, and the Humboldt State University provided observations of oiled wildlife, collected injured and dead birds, and maintained cleaning facilities.

A majority of the response was completed by November 18. Follow-up cleaning, bird rehabilitation and releases, and the final sign-off remained.

Behavior of Spilled Material:

The spill occurred near the maximum ebb current and moved along the west shore toward the entrance of the bay and settled in natural collection points along the way. With subsequent tides, it was transported into Arcata Bay and, to a lesser extent, into South Bay. A large patch of sheen and tarballs was also found outside the bay. The oil mixed with large volumes of floating eelgrass and, during the extreme high and low tides, stranded in marsh vegetation and on tidal flats. Oil that did not become stranded was found floating in tidal convergence lines inside the bay, during different parts of the tidal cycle. Later during the response, wave reflections from the bay entrance caused by high seas and winds outside the bay created high surf conditions and waves inside the bay. Some of the oil was formed into mousse on the water near the entrance and some oil was buried on a sand beach inside the bay.

Countermeasures and Mitigation:

A majority of the shoreline cleaning consisted of manually removing oiled mats and wrack of eelgrass and debris that had stranded during the extremely high and low tides on the sheltered tidal flats and in the marsh vegetation of Arcata

Bay and Indian Island. Other cleanup actions included manual removal of beached tarballs, oiled mats of eelgrass and debris from other shoreline types, warm or hot-water washing of oiled riprap, and selective manual removal of some buried oil found on two sand beaches.

Bird hazing devices, wooden stakes with mylar tape attached, were placed in selected areas where oiled eelgrass wrack stranded on the marsh edge and oiled marsh vegetation created concerns about bird exposure.

A test was conducted to determine the most beneficial treatment techniques for cleanup of the oiled marsh areas. A small test burn, an application of natural sorbent material, and some vegetation cutting were conducted in a small area of oiled marsh on the western side of Arcata Bay. The test team decided not to use any of the techniques in a large scale, but to allow natural oil weathering and use of passive hazing devices to continue. Active hazing by a small boat crew to keep birds out of the areas of concern was conducted.

Other Special Interest Issues:

During the response, plans were made and approval granted for a test demonstration of CytoSol Biosolvent, a vegetable oil-based surface washing agent. After examining the small area of contaminated shoreline selected for the product application, the product vendor recommended against going forward with the test demonstration because the site was not heavily oiled enough to require this treatment.

The spill caused a closure of the local oyster aquaculture industry. This closure remained in effect for some time as the California Department of Health Services and the RP's representatives, Beak Consultants Inc., worked toward agreement on criteria for re-opening.

Due to cultural resources in the area, the California Office of Historical Preservation contacted the Yurok Tribe Heritage Preservation Office to work in an advisory capacity. A Heritage Preservation Team helped prevent impacts to cultural resources. There are 67 archeological sites, 100 traditional cultural properties, and 19 historical sites located around the perimeter of Humboldt Bay. There is also a historic district and numerous historic structures and buildings located on and near the Eureka City waterfront and 60 historic ship wreck sites located in the bay and along the coast line.

NOAA Activities:

NOAA was notified of this incident on November 5, 1997, by MSO San Francisco. NOAA provided weather forecasts, oil movement trajectories, and resources at risk information. The SSC on-scene support included overflight observations and oil mapping, assistance in shoreline assessment team management and in criteria development, and participation in the final sign-off process. In addition, NOAA provided information management and display assistance for CG activities, and assistance and advice in issues concerning oiled marsh vegetation. The Scientific Support Team (SST) was on-scene through November 15, 1997.

References:

CD ROM Information Management Report M/V *Kure*

NOAA Hotline 2#55, 57 Reports

Name of Spill: Mystery Tarballs, Drakes Bay
NOAA SSC: Scott Stolz
USCG District: 11
Date of Spill: 11/16/97
Location of Spill: Point Reyes, California
Spilled Material: crude oil
Spilled Material Type: 3
Barrels: unknown
Source of Spill: unknown
Resources at Risk: **Birds:** diving coastal birds, waterfowl, shorebirds, wading birds, gulls, terns, migration stopover areas, wintering concentration areas, nesting beaches.
Recreation: state parks
Management Areas: marine sanctuaries, national parks, refuges, wildlife preserves, reserves
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: exposed fine-sand beaches, sand- and gravel-beaches, exposed rocky platforms, exposed rocky shores.
Keywords: International Bird Rescue and Research Center

Incident Summary:

On November 16, 1997, MSO San Francisco received reports of tarballs and oiled birds on Drakes Beach from the Point Reyes National Seashore. An MSO team was dispatched and found trace amounts of dime-sized tarballs along the beach. Personnel from the Point Reyes National Seashore and the Gulf of the Farallones National Marine Sanctuary began collecting oiled live and dead birds. The Oiled Wildlife Care Network and International Bird Rescue and Research Center in Berkeley, California began cleaning and rehabilitating oiled birds.

Occasional shoreline and bird impacts continued until early December. Shoreline impacts were minimal and quickly cleaned. Wildlife collection, cleaning, and rehabilitation operations continued until the response was closed December 22, 1997.

Overflights conducted during this response rarely found significant floating oil. Sample analyses identified the oil as a crude, but extensive investigations did not locate the source.

NOAA Activities:

NOAA was notified of this incident on November 17, 1997, by MSO San Francisco who asked the SSC to conduct overflights to locate and map the oil. Flights were conducted November 18, 21, and 22. NOAA provided trajectory "hindcasts" to determine the past movements of the oil to assist USCG investigations. NOAA also conducted oil analysis in an attempt to characterize the source of the oil. Personnel from the NOAA National Marine Sanctuaries were also involved, primarily in beach observations, wildlife collection, and cleaning operations.

References:

NOAA Hotline #262, 4 Reports

Name of Spill: Mystery Marsh Spill
NOAA SSC: Scott Stolz
USCG District: 11
Date of Spill: 03/26/98
Location of Spill: Long Beach, California
Spilled Material: hydrochloric acid
Spilled Material Type: 5
Amount: unknown
Source of Spill: unknown
Resources at Risk: Terrestrial Mammals: rodents, intertidal feeding areas
Birds: waterfowl, shorebirds, wading birds
Recreation: state parks
Management Areas: refuges, wildlife preserves
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: brackish marshes, salt marsh, supratidal marshes
Keywords: none

Incident Summary:

A release of hydrochloric acid (HCl) at unknown concentrations was reported in a wetland water-filled depression in the Bolsa Chica wetlands, near Long Beach, California. Laboratory results indicated high hydrogen (pH 2 - 3) and HCl present. The depth of the saline or sea water in the depression was reportedly 1 foot.

NOAA Activities:

NOAA was notified of this incident on March 26, 1998, by the CDF&G, OSPR biologist for the Long Beach area. The OSPR biologist asked for information regarding initial concentrations and/or amount of HCl released, and when it may have been released. Support was provided by phone, fax, and e-mail by the SSC.

References:

Louisiana State University Institute for Environmental Studies Report IES/RCAT98-03.
Baton Rouge: Louisiana State University Institute for Environmental Studies.

Name of Spill:	T/S <i>Command</i>
NOAA SSC:	Scott Stolz
USCG District:	11
Date of Spill:	09/24/98
Location of Spill:	San Francisco Bay, California
Latitude:	37°45'58.7" N
Longitude:	122°20'54.4" W.
Spilled Material:	IBF 380
Spilled Material Type:	4
Barrels:	10 barrels
Source of Spill:	tank vessel
Resources at Risk:	<p>Habitats: eelgrass beds, submerged aquatic vegetation</p> <p>Marine Mammals: sea lions, seals, haulouts</p> <p>Birds: diving coastal birds, waterfowl, alcids, fulmars, shorebirds, wading birds, gulls, terns, raptors</p> <p>Fish: estuarine fish, demersal fish</p> <p>Crustaceans: shrimp, crabs,</p> <p>Recreation: beaches, marinas, boat ramps, high-use recreational boating areas, high-use recreational fishing areas, State Parks</p> <p>Management Areas: national parks, refuges, wildlife preserves, reserves</p> <p>Resource Extraction: commercial fisheries, power water intakes, industrial water intakes,</p> <p>Cultural: Archaeological sites, Native American Lands</p>
plant	
Dispersants:	N
Bioremediation:	N
In-situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	none
Keywords:	none

Incident Summary:

On September 24, 1998, during bunkering operations in Anchorage #9, South San Francisco Bay, the tank ship *Command* discovered a fracture along her starboard fuel tank. Approximately 10 barrels of IBF 380 was released. On-scene winds were reported to be 8 knots from the west-southwest.

Behavior of Spilled Material:

The oil was expected to move to the north and reach Yerba Buena Island before the tide turns. With the light winds and the increasing winds from the west-southwest September 25, any remaining oil should move towards the Alameda, Oakland shoreline and possibly along the western side of Treasure Island late September 24 or the morning of September 25.

The leak was secured and the fuel transferred from the tank. An evening overflight showed no recoverable oil. The following morning, an overflight located no floating oil. Shoreline assessments were conducted on Alameda Bay Farm and Yerba Buena Islands; no impacts were noted. Hull cleaning and decontamination of the vessel was completed. The response concluded on September 25.

NOAA Activities:

NOAA was notified of this incident on September 24, 1998, by MSO San Francisco who requested trajectory, weather, and resources at risk information. The SSC also participated in an overflight the second day of the spill to verify there was no longer observable oil.

References:

NOAA Hotline #332, 7 Reports

U.S. Coast Guard District 17

<i>M/V Kuroshima</i>	145
Icicle Seafoods	151
<i>M/V Cape Douglas</i>	153
Chignik Lake	155

Name of Spill: M/V *Kuroshima*
NOAA SSC: John W. Whitney
USCG District: 17
Date of Spill: 11/26/97
Location of Spill: Unalaska Island, Alaska
Latitude: 53°55' N
Longitude: 166°25' W
Spilled Material: IFO 380
Spilled Material Type: 4
Amount: 47,000 gallons were released; 69,600 gallons were lightered to temporary storage
Source of Release: non-tank vessel
Resources at Risk: **Habitat:** salmon spawning in freshwater lake and feeder stream
Marine Mammals: sea otters, sea lions, and seals
Birds: gulls, eagles, murre, emperor geese, eiders, and other seabirds
Intertidal Community: sea urchins, mussels, chitons, limpets, etc.
Subsistence Use: Aleut native collection and consumption of invertebrates, some sea ducks, and edible plants
Recreation: Summer Bay Lake and beach are major summer recreation use areas
Cultural: archaeological site
Dispersants: Y
Bioremediation: N
In-situ Burning: Y
Other Special Interest: unusual cleanup technique
Shoreline Types Impacted: coarse-sand and gravel beaches, exposed bedrock cliffs, exposed rocky shores, freshwater marshes, sheltered sandy beaches, sheltered rocky shores
Keywords: power washing units, weed cutters, salvage, in-situ burning

Incident Summary:

The Japanese cargo vessel, M/V *Kuroshima*, had been anchored outside Summer Bay near Dutch Harbor, Alaska for over 3 weeks waiting to take on fishery's cargo when a powerful storm hit on November 26. Northerly winds built to 40 to 50 knots with gusts up to 90 knots and seas of 28 to 30 feet. After dragging both anchors, the captain decided to weigh anchor and move the ship. Residents reported seeing the vessel pitching severely in the water starting the morning of November 26: "...from the front beach in Unalaska, we could see her stern rise so sharply as to expose her props and rudder." (The Dutch Harbor Fisherman, December 18, 1997). The vessel broke anchor and ran aground near Second Priest Rock the afternoon of November 26. During the grounding, there were two fatalities. The ship ran aground on the beach in Summer Bay just west of the outlet of Summer Bay Lake, with the port side to the beach. The huge storm waves caused a surge that propagated up the stream channel, under the bridge, carrying oil all the way into the south end of the lake. A city of Unalaska employee obtained heavy equipment to build an earthen dike at the lake outlet to prevent more oil from entering the lake.

On March 1, 1998, salvors refloated the *Kuroshima*. It took three salvage companies three months to free the hard-aground vessel. After securing and cleaning the vessel, Crowley

Marine Company, the original contractor, used shore-based excavators, a series of beach-gear anchors, winches mounted on the *Kuroshima's* deck, and the line pull from Crowley's salvage vessel *American Salvor*, to turn the *Kuroshima* 90 degrees and pull it several meters out to sea, before the contract with the ship owner expired on February 15. Smit Americas won the second salvage contract and succeeded in freeing the *Kuroshima* using two barge-mounted excavators, the prop wash from several tugs to dig the vessel from the sand, and the *Kuroshima's* anchor winch and engines. Substantial work was subcontracted to Magone Marine of Dutch Harbor. No pollution occurred during the salvage operation.

Behavior of Spilled Material

The spilled material was an IFO-380 oil, which is roughly 25 percent diesel and 75 percent Bunker C. The lighter component evaporated rapidly as evidenced by a petroleum aroma during the first week. During the initial release, nearly all the oil was driven onshore and deposited as very thick, viscous, stable mats and patches of mousse. Chemical analysis by LSU revealed a very stable emulsion with a highly retarded weathering rate and pronounced wax component suggesting a strong similarity to oil classified as low-API gravity fuel oils (LAPIO).

The oil moved on the water for a week after the stream dike was breached, washing a considerable amount of previously beached heavy, thick mouse oil patches back into Summer Bay. A small additional leak from the vessel may have occurred during this period. Prevailing winds carried the oil offshore and to the north where it was blown ashore into Humpy and Morris coves and onto the intervening rocky headlands.

A small amount of the oil blown into Summer Bay Lake took on sand and sediment and sank to the bottom mostly along the northern portion and some in the southeast portions of the lake.

Thick stable mousse coated the perimeter of Summer Bay Lake, becoming matted into vegetation and then covered by frozen-over lake water. The heaviest oiling was at the southeast and northwest corners. Sunken oil patties observed under the bridge and on the bottom of the lake were confirmed after a spring diving survey. There were surface and buried oil layers 5 to 7 centimeters thick in sand at Summer Bay Beach.

Wild rye grass and sand surfaces on dunes were lightly oiled. A coat of oil up to several centimeters thick was seen on cut bank along a streamlet leading from lake to bay.

Morris and Humpy coves and rocky shorelines east of Summer Bay had mats, tarballs, and oiled debris wash up on their beaches

Very important archaeological resources and sites exist near the spill. An important unexcavated early man/pre-Aleut dwelling location is in a dune valley near Summer Bay, just upland of the grounding. Large globs of oil were reported to have blown into and contaminated this site. There are also archaeological sites in Humpy Cove. These sites were not contaminated by the spill. An archaeologist from Anchorage worked under the FOSC and participated in the SCAT surveys of all areas containing archaeological resources.

Summer Bay Lake and the stream flowing into it are important anadromous fish spawning and rearing habitats for limited numbers of sockeye, pinks, dolly varden, and silver salmon. Generally, the cleanup period from late November through May does not coincide with the active spawning period for these fish. As a result, impacts should be minimal, but that remains to be seen. July 1998 reports indicate that salmon returns and fishing have been outstanding.

Less than 150 oiled birds were collected. Of these, 18 were shipped live to Homer for rehabilitation, but only two survived. Oiled birds included eagles, gulls, murre, and other seabirds.

Countermeasures and Mitigation

Winter response progress is retarded by working in snow, ice, and high-winds. The cleanup of *Kuroshima* was interrupted on December 20 by cold weather and was not started again until April.

Cleanup at Summer Bay Lake involved manual removal with shovels, rakes, pitch forks, and clippers. There was minor mechanical cleanup and power washing in northeast and northwest corners of the lake. Divers picked up the sunken oil from the lake bottom with bags and hand implements.

Cleanup at Summer Bay beach was done by mechanical excavation and manual removal of surface and buried-oil layers with thermal treatment at formerly used defense sites (FUDS). The oiled logs were removed and burned.

At Morris and Humpy coves and other rocky shorelines the oiled mats and debris were sacked and then transported to Oregon for disposal. More than 500 supersacks were filled and removed.

The oiled archaeological site at Summer Bay was not cleaned by the response workers. An agreement between the RP and the Unalaska Native Corporation was struck to provide funds to further excavate this site. Information provided to cleanup workers regarding procedures for archaeological sites and any artifacts found during the cleanup was very effective.

The RP established a full incident command system and had over 100 cleanup personnel working on the spill. ERST/O'Brien's was hired to manage the spill and Beak Environmental was hired to handle scientific and technical response questions including leading the SCAT team. Federal and State responders were fully integrated into this command structure, and despite differing roles, everyone worked as a team.

A temporary tank farm was established onshore to lighten the remaining fuel in the vessel. Final lightering was not completed until two weeks after the incident because weather, wind, and tank clingage hampered lightering operations. There were 69,600 gallons of IFO-380 pumped off the ship into the temporary tank farm.

No observations or reports of oiled marine mammals occurred.

Other Special Interest Issues:

An unusual cleanup technique involved taking advantage of a thermal treatment unit located in Dutch Harbor by the U.S. Army Corps of Engineers (USCOE) that has a contract for treating petroleum-contaminated soil from FUDS. Approximately 2000 tons of oiled beach sand were treated in this FUDS facility before returning the "cleaned" sand to Summer Bay beach.

NOAA Activities:

NOAA was notified of this incident on Thanksgiving Day, November 27, 1997, by the USCG. The SSC accompanied the first contingent of responders aboard a USCG C-130 to

Dutch Harbor to respond to the *Kuroshima* oil spill. Within several days NOAA's support was augmented with an information manager and a member of BAT. From the onset to the winter stand-down on December 20, NOAA's support included:

- Mapping the impacted shoreline areas.
- Mapping floating oil and providing trajectories based on differing wind conditions.
- Providing weather forecasts.
- Establishing SCAT protocols and representation.
- Meeting with land owners/managers including the Native Corporation and the City of Unalaska.
- Providing chemical analysis of the fresh and beached oil.
- Assisting NOAA Damage Assessment personnel sample subsistence resources in the rocky area immediately east of Summer Bay for chemical analysis.
- Obtaining local knowledge regarding the use of the Summer Bay/Lake area for subsistence, fishing, hiking, skiing, bird watching, and other recreational purposes.

Preparations were made during the winter to restart the cleanup around the middle of April. The largest NOAA effort continued into the spring as a member of SCAT. Over the winter several meetings were held with the RP-SCAT leader to finish forms, procedures, personnel, and methods for the spring startup. As the federal representative on the SCAT, NOAA journeyed to Dutch Harbor during the first week in April to recommence the *Kuroshima* cleanup. For 10 days before the spring cleanup, the SCAT re-surveyed all the oiled shorelines and prepared work orders for all the oiled shoreline segments. The dominant cleanup technique involved manual labor with shovels, rakes, and clippers, although minor amounts of mechanical, power washing, and in-situ burning of oiled debris were also used. More than 500 super sacks of oiled rock and debris were collected and shipped by barge to an Oregon hazardous waste disposal site.

Because the oiled areas were primarily public-use beaches, the cleanup standards were quite high. The SCAT acknowledged that the weathered Bunker C was not toxic and posed little threat to the environment. Instead, the standard followed was cleaning to a level where human visual and physical interaction with the oil had a very low probability. This resulted in a very labor-intensive cleanup, and in some cases 10-man crews would complete only 30 feet of lake shoreline in a 10-hour working day.

NOAA also helped decide how to remove oiled sand from Summer Bay beach for thermal treatment and how to determine the optimum times for returning the clean sand to the beach to prevent major beach erosion. A small-scale test of "Sphag Sorb" indicated that it would still stick to the bunker C oil within the first few weeks after release. NOAA consulted with local plant experts, University of Alaska experts, and other plant ecology experts in Alaska regarding the Summer Bay Lake plant communities and their sensitivity to cleanup activity. Generally the plant community, dominated by wild rye grass, is fairly hardy and oiling of the dead shoots and stocks in the middle of winter would be fairly inconsequential. When the cleanup ended, abundant new growth and regeneration were already underway.

Final shoreline cleanup and SCAT sign off occurred the end of May; however, minor additional cleaning during the month of June was necessary because minor amounts of oil surfaced.

There were eight NOAA people on-scene for the *Kuroshima* response and at least that many supporting the cleanup from outside organizations. Other agencies on-scene with NOAA were the National Weather Service in Anchorage, the Auke Bay NMFS laboratory, and the Anchorage NMFS office.

References:

NOAA. 1994. *Shoreline Countermeasures Manual. Alaska*. Seattle: Hazardous Materials Response and Assessment Division, NOAA. 94 pp.

NOAA Hotline #264, 130 Reports

Name of Spill: Icicle Seafoods
NOAA SSC: John W. Whitney
USCG District: 17
Date of Spill: 07/01/98
Location of Spill: Homer, Alaska
Latitude: 59°37' N
Longitude: 151°27' W
Spilled Material: anhydrous ammonia
Spilled Material Type: 5
Amount: 42 thousand pounds
30 thousand pounds released in the fire
Source of Release: facility
Resources at Risk: 300 people near the plant
Other Special Interest: none
Keywords: none

Incident Summary:

On July 1, 1998, an explosion, fire, and ammonia release occurred at the Icicle Seafoods, an onshore fish processing plant on the southeast end of Homer Spit in Homer, Alaska. The Homer Fire Department responded to the incident and acted as the incident commander. Personnel from the plant and people from the Homer Spit and Halibut Cove areas were immediately evacuated by the fire department. The biggest concern was for the release of a potential 42 thousand (K) pounds of anhydrous ammonia and 200 pounds of chlorine in the plant. Because the spit is so narrow, the USCG established a 1-mile safety zone around the plant causing one large cruise vessel and several smaller vessels to exit the area.

On the morning of July 2, 1998, Homer Spit was re-opened and the USCG safety zone removed. During the incident, one person suffered first and second degree burns as a result of the initial explosion; no other injuries were reported.

Weather throughout the incident was light offshore winds.

Behavior of Spilled Material:

Hazardous materials released and burned on site:

- 30K anhydrous ammonia,
- 700 gallons sodium hypochloride,
- 200 gallons chlorine cleaner,
- 100 gallons iodine sanitize, and
- 20 to 50 35-pound propane cylinders.

Hazardous materials remaining on site:

- 12K pounds of anhydrous ammonia,
- 300 gallons from a propane tank, and
- 500 gallons from a gasoline tank

Countermeasures and Mitigation:

A mixed plume of smoke and ammonia was released from the site. No active fire suppression took place due to the hazards associated with ammonia and the existence of smaller quantities of other hazardous materials. Anhydrous ammonia was not detected

when trained personnel from the Unocal Chemical plant in Nikiski entered the plant the morning after the fire. The ammonia system was still intact. The ammonia valves at the main storage tank were shut off. An estimated 30K pounds of ammonia was released to the atmosphere.

NOAA Activities:

NOAA was notified of this incident on July 1, 1998, by MSO Anchorage who asked for response information. The USCG served in a supporting role to the Homer Fire Department, the incident commander. NOAA confirmed that the incident was being handled correctly. NOAA ran ALOHA air-plume models for an instantaneous release of 42K pounds of ammonia for several wind scenarios that showed a level of concern extended from 1- to 3-miles. After consulting with the National Weather Service, NOAA provided wind direction and speed information

References:

NOAA. 1992. *The ALOHA™ 5.1 Manual for the Apple Macintosh and IBM Compatibles*. Washington, D.C.: National Safety Council. 350 pp.

NOAA. 1993. *The CAMEO™ 4.0 Manual*. Washington, D.C.: National Safety Council. 440 pp.

NOAA Hotline 314, 2 Reports

Name of Spill: M/V *Cape Douglas*
NOAA SSC: John Whitney
USCG District: 17
Date of Spill: 09/01/98
Location of Spill: Womens Bay, Kodiak, Alaska
Latitude: 57°40' N
Longitude: 152°30' W
Spilled Material: diesel
Spilled Material Type: 2
Amount: 800 gallons
Source of Spill: non-tank vessel
Resources at Risk: salmon streams, anadromous fish, some shorebirds, and gulls
Dispersants: N
Bioremediation: N
In-situ Burning: N
Other Special Interest: none
Shoreline Types Impacted: dock structures, gravel beach, and marsh/ tide flats at the mouth of the salmon stream
Keywords: containment boom, skimmers, vacuum trucks

Incident Summary:

On September 1, 1998, Marine Safety Detachment (MSD) Kodiak reported a sheen approximately 1 mile long by 1/2 mile wide of light product with concentrations 1/2- to 3/4-inch thick near the Lash Dock in the northwest portion of Womens Bay in Kodiak, Alaska. Several fishing vessels, the tug *Point Oliktok* with a barge, and the landing craft *Cape Douglas* were in the area, but the source of the product was unknown.

Initially, containment boom was deployed from Frye Point to the Nyman Peninsula to protect sensitive salmon streams. Boom was deployed to form a collection point at Lash Dock and two vacuum trucks and a skimmer were brought on-scene. The recovery effort was effective. Some oil outside the boomed area was seen on an overflight the morning of September 2. Approximately 1 mile of shoreline has been impacted.

On September 2, the captain of the *Cape Douglas* claimed responsibility for the spill. According to the captain, approximately 1,000 gallons of diesel got into the fish hold of the vessel then automatically began discharging it.

Behavior of Spilled Material:

As usual, the diesel sheened out and dispersed rapidly, but some accumulated at the high-tide line into a material that was tan and had a mustard-like consistency. Other folks were calling it a "diesel mousse," which was rather odd as a diesel is not supposed to form a mousse. As a result, a sample was taken and along with a sample of fresh diesel sent to LSU for chemical analysis. The analysis showed that the diesel had not formed a mousse, but the mousse was associated with the organics within a biogenic froth. Diesels do not form stable emulsions; compositionally they do not contain the significant opponents required, such as heavier polars and asphaltenes.

NOAA Activities:

NOAA was notified of this incident on September 1, 1998, by Marine Safety Detachment (MSD) Kodiak who requested resources at risk information and on-scene participation with SCAT.

The SSC arrived on-scene on September 3, and immediately began gathering the information requested by MSD. The USFWS representative told the SSC that there were some birds feeding on the salmon carcasses, but that the effects of the oil on them appeared to be minimal. Further, he thought that the speed of the booming had been very effective leaving very little to cleanup. A USFWS representative from the Homer office was scheduled to be on-scene by afternoon.

Representatives from the Alaska Department of Environmental Conservation (ADEC) the Alaska Department of Fish and Game (ADFG), and NOAA began an assessment of the oil impacts. The ADEC representative had been in the field all day September 2 directing cleanup crews picking up oiled debris. Access to the beaches was by existing roads and vehicular trails on and around the affected shorelines. By the morning of September 3, three small areas remained with some minor oil concentrations that needed cleanup. These were:

1. Isolated spots of oiled vegetation in the marsh/tide flats associated with Sargent Creek.
2. Small accumulations of diesel mouse and oiled detached vegetation on the north side of the tombola (gravel beach) leading to Frye Point (Sometimes Island).
3. Mostly sheen with minor patchy oil accumulations around Lash dock, where the *Cape Douglas* was moored.

Cleanup recommendations for 1 and 2 were manual removal of oiled debris (mostly detached vegetation) with no ground disturbing activity. The Chadaux crews were on-scene so cleanup was initiated immediately. The cleanup activity was monitored. By noon, these areas were completely cleaned. Area 3 was mostly sheen, no cleanup was recommended, or possible, and the diesel was allowed to disperse naturally.

NOAA supported this response for 3 days.

References:

NOAA Hotline 322, 2 Reports

Name of Spill:	Chignik Lake
NOAA SSC:	John W. Whitney
Date of Spill:	09/24/98
Location of Spill:	Alaska Peninsula
Latitude:	56°20' N
Longitude:	158°45' W
Spilled Material:	diesel
Spilled Material Type:	2
Amount:	100-500 gallons
Source of Spill:	facility
Resources at Risk:	marine birds
Dispersants:	N
Bioremediation:	N
In-Situ Burning:	N
Other Special Interest:	none
Shoreline Types Impacted:	none
Shoreline Types Impacted:	none
Keywords:	none

Incident Summary:

During the night of September 23, 1998, there was a shoreside release of diesel into Chignik Lake on the Alaskan Peninsula. Chignik Lake is a freshwater lake that drains into Chignik Lagoon via the Chignik River. The USCG was notified of this incident on the afternoon of September 24. No one seemed to know for sure which tank was affected or how big it was or how much diesel was released. Gale force winds up to 45 knots hampered local assessment of the situation, so the USCG launched a helicopter from Kodiak to investigate the situation. Approaching darkness and gale force winds hampered the helicopter, making it unable to land, but it did survey Chignik Lake, Chignik river, and Chignik lagoon. A small area of sheen was located at the mouth of the lake and in the river but none in the lagoon. It was impossible to determine the source point of the diesel or how much had been released. The high winds were rapidly dispersing the remaining sheens, and the USCG decided to close the case. No wildlife appeared to be affected.

Behavior of Spilled Material:

The high winds caused rapid dispersion and evaporation of the diesel.

NOAA Activities:

NOAA learned of this incident on the afternoon of September 24, shortly after it had been reported to the USCG. The SSC immediately contacted the National Weather Service to ascertain the conditions at Chignik Lake. NWS reported that gale force winds, 40 to 45 knots from the southwest, had blown all night and were forecast for all day September 24 with winds decreasing to 25 knots in the evening and the next day. The USCG asked the SSC to notify the resource agencies of the incident.. Chignik Lagoon and bay are part of the Alaska Maritime NOAA Weather Radio (NWR). Informing them was a top priority because of the marine birds that customarily nest there. The NWR indicated that nearly all the marine birds had left the area for the winter.

NOAA's involvement with this incident was by phone and was lasted 1 day.

Acronyms

ACT	Activities (USCG)
ADEC	Alaska Department of Environmental Conservation
ADFG	Alaska Department of Fish and Game
ADIOS™	Automated Data Inquiry for Oil Spills
AFB	air force base
ALOHA™	Areal Locations of Hazardous Atmospheres
AOC	area of concern
ARRT	Alaska Regional Response Team
AST	Atlantic Strike Team (USCG)
ATSDR	Agency for Toxic Substances and Disease Registry
BAT	Biological Assessment Team (NOAA)
BTEX	benzene, toluene, ethylbenzine, xylene
BWM	Brown Water Marine
CAMEO™	Computer-Aided Management of Emergency Operations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COIL	Central Oil Identification Laboratory (USCG)
C/V	container vessel
ConEd	Consolidated Edison
COTP	Captain of the Port (USCG)
CRRT	Caribbean Regional Response Team
DCL 45	dielectric fluid
DCM	dangerous cargo manifest
DEC	Department of Environmental Conservation
DEP	Department of Environmental Protection
DEQ	Department of Environmental Quality
DBRC	Delaware Bay and River Coop
DHH	Department of Health and Hospitals (Louisiana)
DNER	Department of Natural and Environmental Resources (PR)
DOB	dodecylbenzene
DOC	Department of Commerce (USA)
EDC	1,2-dichloroethane
EDT	Eastern Daylight Time
EPA	Environmental Protection Agency
ERT	Environmental Response Team (EPA)
FLIR	forward-looking infrared radar
FOSC	Federal On-Scene Coordinator
frac	fractionating
F/V	fishing vessel

GLERL GC-MS GST	Great Lakes Environmental Research Laboratory gas chromatography-mass spectrometry Gulf Strike Team (USCG)
HAZMAT HHF hotsies	Hazardous Materials Response and Assessment Division (NOAA) home heating fuel high-pressure steam cleaning units
ICP ICS IDEM IDLH IFO IMS IR	Incident Command Post Incident Command System Indiana Department of Environmental Management immediately dangerous to life and health intermediate fuel oil Industrial Marine Service infrared
KPC	Ketchikan Pulp Corporation
LDWF LILCO LPG LSU	Louisiana Department of Wildlife and Fisheries Long Island Lighting Company liquid propane gas Louisiana State University (NOAA Contractor)
MASS mg MORAD mm MPC MSD MSDS MSO MSRC M/V	Modeling and Simulation Studies Branch (HAZMAT, NOAA) milligram Maritime Administration millimeter Marine Pollution Control Marine Safety Division (USCG) Material Safety Data Sheets Marine Safety Office (USCG) Marine Spill Response Corporation motor vessel
NAVSUPSALV NAVSUPSHIP NCDOT NCP NIT NJDEP NMFS NOAA NPDES NPS NRC NRDA NWS NY	Naval Superintendent of Shipsalvage Naval Superintendent of Shipbuilding North Carolina Department of Transportation National Contingency Plan Norfolk International Terminal New Jersey Department of Environmental Protection National Marine Fisheries Service National Oceanic and Atmospheric Administration National Pollutant Discharge Elimination System National Park Service National Response Corporation Natural Resource Damage Assessment National Weather Service New York

OSC	On-Scene Coordinator
OSHA	Occupational Safety and Health Administration
OPA	Oil Pollution Act
PCB	polychlorinated biphenyls
PPE	personal protection equipment
ppm	parts per million
PST	Pacific Strike Team (USCG)
RIDEM	Rhode Island Department of Environmental Management
RP	responsible party
RPI	Research Planning Inc. (NOAA Contractor)
RRT	Regional Response Team
R/V	research vessel
SCAT	Shoreline Cleanup Assessment Team
SLAR	side-looking airborne radar
SOSC	State On-Scene Coordinator
SSC	Scientific Support Coordinator (NOAA)
SST	Scientific Support Team (NOAA)
T/B	tank barge
TLm	medium tolerance level
TLV/TWA	threshold limit values time-weighted averages for airborne concentrations of substances
TPH	total petroleum hydrocarbons
T/V	tank vessel
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service