

**CHENEGA 2001 OIL SPILL RESPONSE EXERCISE
AFTER ACTION REPORT**



**U.S. Coast Guard
Marine Safety Office Valdez, Alaska**

July 2001

1. Situation.

a. **Background.** Chevron Corporation, in conjunction with the SERVS¹ organization, conducted a major oil spill field response exercise near Chenega Bay in southwest Prince William Sound, Alaska from 04-08 June 2001. This exercise was intended to test site-specific response strategies for a spill on the scale of the T/V Exxon Valdez grounding. Commanding Officer, Coast Guard Marine Safety Office Valdez is designated as Federal On-Scene Coordinator (FOSC) for oil spills in Prince William Sound. This after action report describes the Coast Guard's activities during the exercise².

b. **Exercise Concept.** The Prince William Sound Tanker Oil Discharge Prevention & Contingency Plan, generally called the C-Plan, is prepared by the shipping companies involved in the Trans-Alaska Pipeline System under the requirements of State and Federal law. Each year, one of the shippers sponsors a major field exercise to test aspects

of the plan. As a condition of renewal of the C-Plan, the State of Alaska established a requirement in 1999 that site-specific spill response strategies be developed for at least

24 areas in Prince William Sound³. The

2001 field exercise, sponsored by Chevron, was designed to test strategies for the southwest portion of the Sound. A working group composed of Federal, State,

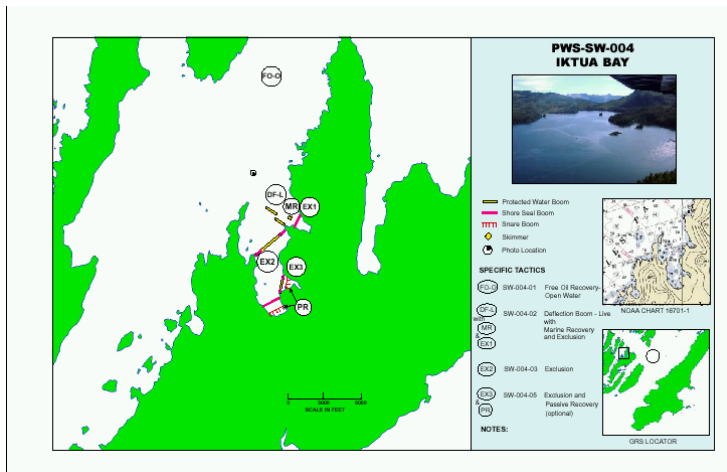


Figure 1: GRS for Iktua Bay

¹ The Ship Escort and Response Vessel System (SERVS) is a subsidiary of Alyeska Pipeline Service Company based in Valdez. SERVS provides tug escorts to crude oil tankers leaving the Valdez Marine Terminal, and operates the largest inventory of pollution response equipment on the West Coast.

² For clarity in message traffic and orders, the Coast Guard designated this exercise as Chenega 2001. The industrial organizations referred to the event as the Chevron Geographic Response Strategies exercise.

³ Under State of Alaska regulations, shippers receive credit only for mechanical recovery of oil.

local, native, and industry representatives nominated sites for protection based on the resources at risk. An operations tactics team then developed draft geographic response strategies (GRS) for the sites, specifying the location, quantity and type of boom and skimmers to be employed. An example of one of the draft strategies is shown in Figure 1. A total of six GRS were developed for the southwest portion of the Sound. All were tested by SERVS during Chenega 2001. In addition, boom deployments were conducted around Green Island and the Armin F. Koerning salmon hatchery. The sites at which field operations were conducted are shown in Figure 2. It can be seen that these sites are scattered over a 40 x 40 nm area.

c. Characteristics of the area of operations:

- (1) Geography. The area of operations is centered on the village of Chenega Bay on Evans Island in southwest Prince William Sound,

60°03.32'N 148°05.32'W. Chenega Bay is located approximately 43

nautical miles ESE of Seward, 74 NM WSW of Cordova, 80 NM SW of Valdez, and 88 NM SE of Anchorage. Chenega Bay, population 69, is the only populated place in this part of Prince William Sound. The equipment deployment sites for this exercise were Iktua Bay, 60°07.62'N 148°00.67'W; Pleiades Islands, 60°13.92'N 148°00.77'W; Chenega Cove, 60°16.64'N 148°05.01'W; Horseshoe Bay, 60°01.35'N 147°56.50'W; Montgomery Bay, 59°59.78'N 147°59.59'W; Green Island, 60°18.26'N 147°23.45'W; and Armin F. Koernig Hatchery, 60°03.10' N 148°04.70'W.

- (2) History and Population. Chenega Bay is an Alutiiq Native village. The name was first reported by Ivan Petroff in the 1880 census. At that time, the village was located on the southern tip of Chenega Island. A post office was established in 1946. The village was destroyed and over half of

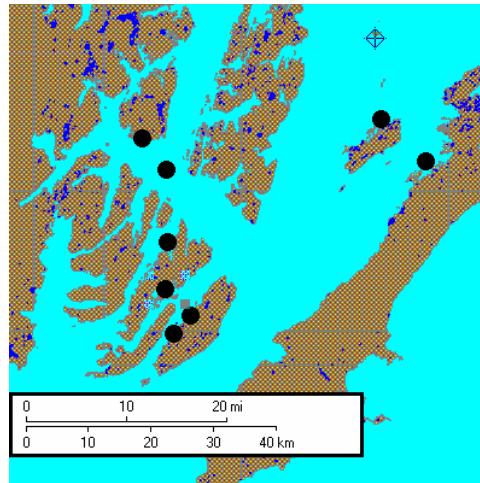


Figure 2: Equipment Deployment Sites

all residents perished as a result of tsunamis in the Sound after the 1964 earthquake. Sites of major historical and cultural significance remain on Chenega Island and throughout the area. The village was reestablished twenty years later on Evans Island, at the site of the former Crab Bay herring saltery. In the summer of 1984, 21 homes, an office building, community hall, school, 2 teacher's houses, a church and community store were constructed. Chenega Bay is a Native community practicing a subsistence and commercial fishing lifestyle. Commercial fishing, a small oyster farming operation and subsistence activities occur in Chenega. The Armin F. Koerning State fish hatchery lies to the southwest of the village. Residents of Chenega are shareholders in the Chenega Corporation and the Chugach Alaska regional Native corporation, which together own much of the land in the area. There was significant mining in southwest Prince William Sound prior to the Depression. Latouche Island was the site of a major copper mining operation from 1897 until 1930, shipping almost 6 million tons of ore until it was abandoned. Land surrounding these abandoned mines was patented and remains in private hands, but occupation is limited to a few isolated cabins.

- (3) Topography. The terrain in southwest Prince William Sound consists of rugged mountainous islands oriented generally northeast-southwest along Knight Island Passage and Montague Entrance. Most of these islands have peaks exceeding 2,000 feet elevation. Flat ground is limited mainly to the heads of sheltered coves. The mainland to the west of the islands rises to 6,100 feet and is covered by the Ellsworth Glacier. These conditions limit VHF or UHF radio communication via line of sight around the islands and northward to Valdez. However, three dimensional terrain modeling indicated that there was adequate line of sight southward from many locations to military and commercial satellites⁴.

⁴ MSO Valdez performed the terrain modeling using the Terrabase package, developed jointly by the U.S. Naval Academy and the Army Corps of Engineers. This software combines digital elevation data with maps or satellite images to create a 3-D model of an area. Lines of sight and cross-sections can be plotted on the model.

- (4) Hydrography. The submerged topography is a continuation of that above water. Steep sided islands and rocky pinnacles rise vertically from a bottom that varies from 70 to 300 fathoms in depth. These islands are geologically young and still being uplifted by tectonic forces. Coupled with high rainfall and ice, these circumstances give rise to very high erosion rates and narrow, rocky beaches. The 1964 earthquake caused an uplift of approximately 32 feet and brought previously submerged rocks close to the surface. Rocks were uplifted in Iktua Bay and elsewhere that may not be visible at high tide. Smooth sheets from recent NOAA surveys show additional detail. Anchorages may be limited due to lack of good holding bottom. Coast Guard Auxiliarists have reported good holding ground for small boats in Horseshoe Bay. The State Ferry pier at Chenega was also available for use. Reliable tide height information is available for this area. High and low tides in the Latouche Passage area occur almost simultaneously with those in Cordova. Tidal current data are published, but are based on a distant reference station (Sergius Narrows) and are not considered very reliable.
- (5) Climate and Weather. Average June high temperature at Port San Juan, near the site of the Armin F. Keorning fish hatchery, is 58 F. Average low temperature is 43 F. Average monthly rainfall is 6.0 inches, with 14 days of rain in the month.
- (6) Transportation. Chenega Bay is served by the State Ferry system on a whistlestop basis. There is no scheduled air service to Chenega. The village has a 3000 x 75 gravel airstrip designated as C05, for charter flights and medevac. NOAA aerial photographs show historic footpaths across parts of Evans Island and Green Island. However, small boats provide the most reliable point-to-point transportation and limit the probability of encountering bears.
- (7) Telecommunications. Telecommunications is limited to a satellite link to Chenega Bay village providing approximately 50 voice-grade lines. There is no cellphone service. The nearest Coast Guard radio site is on Naked

Island. An Alaska Department of Environmental Conservation repeater on Reynolds Peak, Latouche Island provides limited coverage in the eastern part of the area of operations on non-marine frequencies.

2. Mission.

a. During this exercise, the FOSC oversaw the responsible party's efforts and coordinated the employment of Federal resources in support of the spill response.

b. The area of operations for CHENEGA 2001 is a remote, largely uninhabited section of Prince William Sound with very limited infrastructure. Communications and sustainment pose special challenges in this environment.

c. The principal Coast Guard mission during this exercise was to demonstrate the ability to deploy assets to the response area and maintain effective command and control.

3. Execution.

a. **Coast Guard Concept of Operations.** Because of the remoteness of the area and the lack of infrastructure, Coast Guard MSO Valdez chose to deploy a self-sustaining, mobile task force of Marine Safety Office personnel, Auxiliary vessels, and a cutter to the Chenega area during CHENEGA 2001. An overflight was also requested from the Civil Air Patrol. Access to vessels was viewed as essential because of the lack of a road network in the area. In previous exercises, MSO Valdez has provided observers aboard industrial spill response vessels. This option was considered and rejected in favor of the greater mobility and opportunity for truly independent oversight provided by Coast Guard vessels. Since much of this area is beyond Coast Guard VHF-FM radio coverage, MSO Valdez borrowed three satellite telephones from Seventeenth Coast Guard District, Telecommunications Branch. MSO Valdez also requested use of military tactical satellite equipment from 206th Combat Communications Squadron, Alaska Air National Guard, and made arrangements to test HF-SSB communications from cutter ROANOKE ISLAND. All parties carried portable VHF-FM equipment for local communications, and the team

also had a VHF-AM ground-to-air portable⁵. The intent was to test an approach that might be useful on Day 2 and forward of a large spill or marine disaster, as well as testing some equipment options suitable for a deployable “Away Team”. The MSO Valdez concept was approved and promulgated as an OPORD by Commander, Seventeenth Coast Guard District. A District OPORD was required because the concept required the coordination of assets not normally under MSO Valdez OPCON.

b. **Day One: 05 June 2001.**

- i. Coast Guard cutter ROANOKE ISLAND (WPB-1346), was northbound in the Gulf of Alaska en route Chenege. MSO personnel and members of the 206th Combat Communications Squadron assembled in the Coast Guard office at the Valdez Emergency Operations Center⁶ (VEOC) for an exercise pre-brief, then began assembling radio and computer equipment. A remote connection to the Coast Guard data network was established using a portable Standard Workstation III and a remote access token, allowing message traffic and key Coast Guard databases to be accessed from within the VEOC. Prior to the exercise, MSO Valdez funded the installation of 150 feet of low-loss 7/8" cable underneath the building to support UHF satellite communications. The cable was installed under the direction of Electronic Support Detachment Valdez. At the start of the exercise, the AN/PSC-5 transceiver was connected to the cable inside the VEOC and a portable 9dB antenna was erected outside, pointing south. A status display was built using laminated nautical charts and movable labels corresponding to vessels and points of interest. This display was updated throughout the exercise.

⁵ This radio was borrowed from the Civil Air Patrol. Neither MSO Valdez nor cutter ROANOKE ISLAND have equipment capable of communicating with non-Coast Guard aircraft. As part of the preparation for this exercise, the Civil Air Patrol experimented with using a Coast Guard-supplied handheld VHF-FM marine radio while airborne. This did not give reliable results from inside the aircraft’s cabin.⁵ The VEOC is a purpose-built incident command post operated by SERVS. The interior is arranged according to the standard sections of the Incident Command System. The Coast Guard and the State of Alaska have dedicated offices in the VEOC for use in emergencies.

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- ii. SERVS and Chevron did not establish a Unified Command at Valdez during the exercise. Because the spill response equipment deployments had been pre-planned rather than developing from an unfolding scenario, SERVS did not believe there was a need to create a Unified Command. Instead, industry activities in the field were controlled by an operations chief aboard SERVS barge 500-2 north of Evans Island. Rather than establishing a Unified Command, SERVS organized a program of seminars on environmental protection and cultural resource issues for the benefit of State and Federal agency representatives. This program was supplemented by a narrated boat tour of the response sites using a sightseeing vessel. There thus was no direct connection between SERVS activities in Valdez and their operations in the field. The exercise therefore did not reflect the type of command structure that would be required during a real spill response.
- iii. The Coast Guard maintained an integrated operational structure during the exercise⁷. Information exchanged at frequent intervals between Coast Guard players in Valdez and afloat in the vicinity of Chenega was used to generate SITREPs and other reports that were passed to Coast Guard District staff in Juneau, Air National Guard staff at Elmendorf Air Force Base, and Coast Guard Air Station Kodiak.
- iv. Shortly before noon, Coast Guard Auxiliary vessels 453243 and 256611⁸ got underway from Whittier. During the early afternoon, three MSO personnel and two Air National Guard members departed via Coast Guard helicopter for Chenega Bay. Due to a shift change at Aviation Support Facility Cordova, an HH-65 rather than an HH-60 was used for the first trip,

⁷ Chevron Corporation originally intended to deploy mobile VHF repeaters and a large commercial satellite ground station in the field during the exercise. Chevron, SERVS, Alaska Department of Environmental Conservation, and the Coast Guard discussed possible sharing of some communications channels, frequency assignments, locations of equipment, and other issues over a period of months. Chevron was not able to make suitable arrangements for the repeaters and decided to conduct a limited test of the satellite earth station in Valdez. Commercial satellites used in the U.S. oil industry orbit well to the south of Alaska and require very low antenna angles of elevation at high latitudes. This can be achieved on the North Slope because of the flat terrain there, but the mountains around Valdez obstructed the line of sight to the satellite and made the system unusable.

⁸ Vessel 256611 is a Coast Guard vessel crewed entirely by members of the Coast Guard Auxiliary. It is a 25 foot Safeboat purchased especially to provide a SAR capability in the Whittier area. An Auxiliary-operated Coast Guard station has been commissioned in Whittier to operate the boat.

and could not accommodate all of the passengers and equipment. Three of the five shore team members and flew on the first flight, arriving in Chenega Bay about 16:00. ROANOKE ISLAND arrived on scene at 14:13. The remaining team members arrived around 18:00. Upon arrival, the team met up with a village representative who directed them to a houseboat at the small boat marina for billeting. The team established communications with Valdez using the Globalstar satellite phone and the AN/PSC-5 tactical equipment. Valdez was not reachable on VHF-FM and ROANOKE ISLAND could not consistently maintain HF-SSB contact with Communications Station Kodiak while in the Bay. However, one or other element of the task force always had long-range communications.

- v. The residents of Chenega Bay were very accommodating to the large numbers of spill response personnel in the area. The village is a vibrant one



Figure 3: ROANOKE ISLAND off Chenega Bay

with basic services in place and some new infrastructure under construction. However, billeting at Chenega Bay did not meet the team's needs.

The village has no regular hotels or guesthouses. A cabin is available near the marina and some houseboats and other buildings can be used if needed. MSO Valdez arranged billeting in the village through the Chevron Corporation exercise planner. The quarters where the Coast Guard team was billeted was temporarily without heat or running water due to mechanical problems, and food service was not available. Fortunately the team had planned for any

contingency up to and including sleeping outdoors, and had brought sufficient food and personal supplies to subsist.

c. **Day Two: 06 June 2001.**

- i. On the morning of 06 June, the Coast Guard shore team boarded ROANOKE ISLAND and departed Chenega Bay to rendezvous with the Auxiliary vessels in Latouche Passage. On meeting, two members of the



Figure 4: Satellite antenna in use

shore team boarded the Auxiliary vessels while three remained aboard the cutter. Auxiliary 453243 is a 45 foot personally-owned cabin cruiser suitable for extended voyages. It can berth up to 8 personnel. Its cruising speed is in the vicinity of 15 knots. Auxiliary vessel 256611 is a 25 foot Coast Guard-owned boat designed for near shore search and rescue. It operates as a planning craft at speeds up to approximately 30 knots. It has very good handling capabilities and provides protection from the weather for its crew, but it has limited endurance. When moving as a group, the speed of the task force was limited by the maximum speed of 453243. However, the two smaller vessels and the cutter's boat could each be dispatched to investigate different shoreline areas, allowing multiple objectives to be accomplished simultaneously.

- ii. A Civil Air Patrol overflight was scheduled for the morning of 6 June. CAP involvement was funded by MSO Valdez through a Military Interdepartmental Purchase Request to the US Air Force. This MIPR was established in April 2001. Because MSO Valdez has not routinely used the Civil Air Patrol in the past, it was decided that the objectives set for the CAP in this exercise would be limited. In particular, it was decided not to use the CAP for critical logistics such as personnel transportation, but to experiment

with the use of the CAP for reconnaissance. The intent was that the CAP aircraft would fly to the vicinity of the task force, make contact, and then overfly each spill response site in turn, providing a general impression of the deployment. The task force would then use that information to help decide on the optimal path to sail between the sites. Flying conditions were generally good in the Chenega area on 6 June. Unfortunately, the CAP flight was unable to get off the ground at Valdez due to low cloud there.

iii. The Auxiliary vessels separated from the cutter at mid-morning to investigate spill response operations in and around Iktua Bay on the north end of Evans Island. Iktua Bay contains a large number of rocky pinnacles and demands careful navigation. MSO personnel aboard the Auxiliary vessels observed and photographed the boom deployment, which was generally satisfactory and in accordance with the plan.

iv. Attempts to hail MSO Valdez on HF-SSB from ROANOKE ISLAND



Figure 5: Auxiliary 453243 underway with MSO personnel

were unsuccessful. While MSO Valdez maintains a constant watch on 2182 kHz, it does not appear to be a good frequency for medium-range communications

during daylight. ROANOKE ISLAND was able to maintain contact with Communications Station Kodiak on frequencies around 5.6 MHz.

v. While the Auxiliary vessels were operating in the vicinity of Iktua Bay, the three shore team personnel aboard ROANOKE ISLAND used the cutter's boat to take the AN-PSC-5 satellite equipment ashore on a small island (Bishop Rock). This island was chosen specifically because it appeared to

have a clear view to the south, in the general direction of the satellite. Contact was established with Valdez and the team's situation was relayed. Contacts with Valdez were used throughout the exercise to share weather forecasts, vessel locations, flight schedules, and information available on the SERVS spill response activities. Both the 3dB and 9dB antennas were tested. The 3dB antenna is a single piece folding unit and is very compact. However it was found to be top-heavy and unstable on the island's rocky terrain. It would be better suited to operation on concrete or grassland. The 9dB antenna consists of a tripod and a beam made up of three spring-loaded folding parts. The 9dB antenna is more physically stable and was the only one used for the remainder of the exercise. The shore team left Bishop Rock when the rising tide began to submerge the beach.

- vi. On the afternoon of 6 June, ROANOKE ISLAND sailed northwest in the direction of Old Chenega to inspect the boom deployment there. Seas were generally calm and winds were light.

While underway, the cutter maintained a generally constant heading with no perceptible rolling. As an experiment, the military and commercial satellite equipment were tested on the cutter's fantail. Both worked as designed. The Globalstar telephone provided good voice communications with Valdez. The 9dB antenna used with the AN/PSC-5 is not stabilized, but is tolerant to moderate changes of

azimuth, $\pm 5^\circ$. The quality of the link varied, but was always sufficient for

voice communication and periodically good enough to transfer digital photographs and other data. The personnel aboard the Auxiliary vessels had an Iridium phone. This unit could not be unblocked in the field. At the start of



Figure 6: Auxiliary 256611 tied up to the cutter

the exercise this was believed to be due to lack of a PIN number, but even with the PIN unit could not be made to work. Multiple attempts to use the phone without the proper PIN put the unit into a permanently blocked state, just as repeated attempts to log onto a computer network will cause an account to lock. During tests with this phone prior to exercise, it gave poorer sound quality than the Globalstar and required more precise antenna pointing. The Iridium system also requires that all calls to and from the phone be dialed as international calls, which is not intuitive and is forbidden on many FTS 2001 telephones in Government offices.

- vii. On arrival near Old Chenega, a brief stop was made to visit the boom deployment around the village. The purpose of this deployment was mainly to protect the village itself, which is a memorial to the villagers who died there in 1964 and is off limits to the public. A significant portion of Prince William Sound's history is associated with this village. The protection strategy consisted of near shore and shore seal boom, and appeared to be well designed and implemented. The guidance of local residents was found to be essential in placing the boom at this site.
- viii. In late afternoon, Auxiliary vessel 256611 departed the area to return to Whittier as previously scheduled⁹. MSO Valdez assumed radio guard for the vessel on its northbound trip, and it moored safely at its pier shortly after 21:00. The original intent was to use the village of Chenega Bay as a base of operations. It was felt that tying up all three Coast Guard vessels at Chenega Bay would reduce crew fatigue in rough sea conditions, provide access to shore power and facilities, and allow the MSO Valdez team to be billeted ashore, reducing the burden on the vessels. However, given the calm seas on 6 June, the Commanding Officer of ROANOKE ISLAND and the coxswain of Auxiliary 453243 decided to anchor overnight in Thumb Bay, 60° 12.2' N 147° 47.7' W. Based on the previous night's experience, the shore team accepted ROANOKE ISLAND's invitation to remain aboard the vessels and

⁹ ROANOKE ISLAND provided fuel to 256611 for its return trip. The fuel transfer was somewhat makeshift because 256611 does not carry suitable containers and other items.

cancelled their reservation for a second night's accommodation in Chenega Bay. The Auxiliary vessel moored to the port side of the cutter.

d. Day Three: 07 June 2001.

- i. The Civil Air Patrol made a second overflight attempt on the morning of 7 June. The CAP flight launched successfully from Valdez. However, weather conditions south of Valdez forced the pilot to turn back. On 7 June, low ceiling in the southern part of Prince William Sound prevented the CAP flight from reaching the area of operations. Most CAP



Figure 7: Boom deployed near Old Chenega

aircraft cannot fly beyond gliding distance from land. This means that CAP aircraft cannot fly across Prince William Sound. Instead they must fly routes along the edges of the Sound. To reach Chenega Bay, the pilot intended to fly a Valdez-Cordova-Hinchinbrook-Montague-Chenega Bay path. This circuitous route increases the flight time and the likelihood of weather limitations. VFR conditions must exist over practically the entire region in order for a CAP flight to reach Chenega from Valdez.

- ii. The task force delayed its departure from Thumb Bay so that crew members from the ROANOKE ISLAND could assist Auxiliary 453243 with essential generator repairs. The possible need for emergency repair support to the Auxiliary vessels had been foreseen in the OPOD¹⁰. While loss of the generator might not have been catastrophic, the ability to perform repairs in a remote area allowed both vessels to continue normal operations without impairment.

¹⁰ This was included in the OPOD based on the drafter's experience during a very large marine event in Baltimore, where over 80 Coast Guard and Coast Guard Auxiliary vessels patrolled a safety zone. On that occasion, access to a field machine shop was critical to keeping the patrol force 100% operational.

- iii. The vessels first headed for the Pleiades Islands, where the protection strategy called for the use of a novel type of towed open-water boom known as a Current Buster¹¹. This is claimed to be capable of capturing oil at speeds up to 4 knots. Equipment deployment was behind schedule, and the task force left the area before it was complete. This was essential in order to meet helicopter flight schedules later in the day.
- iv. While heading south in Latouche Passage, Auxiliary 453243 separated from ROANOKE ISLAND and investigated the boom deployment in Horseshoe Bay. This deployment was conventional and no particular problems were observed.
- v. On arrival in Chenega Bay, the shore team departed from the vessels and assembled on the ferry pier. Cutter ROANOKE ISLAND remained in the area to conduct tours for a school group, and Auxiliary 453243 tied up on the marina to offer vessel safety checks to local boats. Contact was established with Valdez and flight arrangements confirmed. The Village of Chenega office made arrangements with a local truck at short notice to transport the team to the airstrip. Two helicopter trips (one HH-65 and one HH-60) were required to bring the team back to Valdez. Because weather conditions at Chenega Bay were changing rapidly and there was some doubt that the second helicopter flight would actually be able reach the area, the remaining members of the team set up communications equipment at the airstrip and remained in constant contact with Valdez¹². There is no shelter at the airstrip and there was heavy rain during the late afternoon, so the team used a tent to protect themselves and the equipment. All team members and vessels returned safely to their home bases.

¹¹ Trademark of NOFI A/S, Tromsø, Norway.

¹² On 5 June and the late afternoon of 7 June, the team was able to contact both Valdez and Elmendorf on the satellite circuit simultaneously. Elmendorf could not be reached earlier in the day. This was most likely due to loading a new segment of crypto key material too early at Elmendorf. A key segment change was scheduled to occur at 00:00 UTC 08 June, which is 14:00 ADT 07 June. It is probable that the operator became confused and changed the key segment at the start of operations on 07 June.

4. Lessons Learned.

- i. **Spill response techniques.** The SERVS equipment deployment went very largely according to plan. Altogether, SERVS deployed 45,000 feet of boom during this exercise, a very impressive achievement. The geographic response strategies should be considered to have been validated based on the field results.
- ii. **Unified Command.** No Unified Command was established and the supporting parts of the Incident Command System were not employed. The response management organization used by SERVS and Chevron would not have been sufficient for a spill scenario unfolding in real time and with uncertain information. The exercise did not address source control, traffic or ship salvage issues, all of which would compete for command attention in a real spill. Future large-scale exercises in Prince William Sound should return to a scenario-based format using the Incident Command System as the common framework for all participants in Valdez and in the field.
- iii. **Coast Guard Command & Control.** The Coast Guard was the only agency that maintained a fully integrated operational structure during the exercise, with information flowing regularly between the task force, Valdez, Elmendorf, Juneau and Kodiak. The Coast Guard had a more detailed and more frequently updated picture of the field operations than any other group in Valdez, including the spill response organization.
- iv. **Mobility.** The mobile task force concept worked very well. When the exercise was originally being planned, MSO Valdez requested a buoy tender with VOSS¹³ oil skimming capability. Buoy tenders routinely participate in oil spill exercises. When a buoy tender could not be found, MSO Valdez requested a 110' patrol boat for command and control purposes, as it was decided that the mobility and safety offered by the WPB far outweighed its lack of skimming capability. The results of the exercise bear this out. The task force's ability to move freely through the area of operations was invaluable. In particular, it was discovered that there were important

¹³ Vessel of Opportunity Skimming System.

synergies between vessel operations, communications, and the Coast Guard's marine safety mission. The mobility afforded by the vessels allowed the force to choose optimum approaches to the spill response sites and optimum locations for radio communication. The Coast Guard element in Valdez, being on shore, had full access to telephones, Coast Guard databases and networks, and traffic information, and was available to arrange logistical support. Information shared between all of the components of the force contributed to a common picture and common goals agreed between the vessels in the field and Valdez. Finally, the exercise provided exposure to environmental response operations for the crew of a vessel that does not normally do such work.

- v. **Hazardous Materials.** A portable gasoline generator and extra cases of lithium batteries were taken to the field to power the AN/PSC-5 and its associated computer. These caused problems with helicopter transport, as both items are Class 9 (miscellaneous) hazardous materials. Both could have been certified for flight given sufficient lead time. The generator was shipped to and from the field by industry-owned vessel. These items and camping fuel are likely to complicate air transport in future exercises and responses. Neither the generator nor the extra batteries were needed, as the transceiver's power consumption was low. Shore power was available in Chenega for recharging handheld equipment. The 206th Combat Communications Squadron experimented with a portable solar array during the exercise.
- vi. **HF Communications.** 2182 kHz HF-SSB is not a good frequency for medium-range communications during daylight. Contact could not be established with Valdez on HF-SSB. MSO Valdez intends to conduct additional tests of HF-SSB communications between Valdez and points in Prince William Sound on frequencies in the 5-15 MHz range. Some Coast Guard Auxiliary radio facilities have HF-SSB capability and may be useful for this test program.
- vii. **Satellite telephones.** Both Globalstar and Iridium satellite phones were tested in Valdez prior to deployment. Globalstar phones worked flawlessly in

the field and convinced a previously skeptical command of their usefulness. MSO Valdez is considering purchasing one or more of these units. The Iridium phone could not be made to work in the field because of awkward security features. While the concept behind this is a good one, it is very inconvenient. Satellite phones are by definition used only in very remote areas where service technicians are not available to help unblock the unit. The risk of telephone theft should be balanced against the need for simple, reliable operation. Based on the combination of user-unfriendly features and the requirements for international dialing, MSO Valdez has eliminated the Iridium system from further consideration.

- viii. **Military satcom.** Military satcom equipment was found to be generally practical and functional, though not as compact as the satellite telephones. It was especially useful for maintaining a permanent watch on an open channel between Valdez and the field, which would have been prohibitively expensive on a commercial satellite phone. Field assembly, pointing toward the satellite, and loading of key material required approximately 10-15 minutes and was successful in every location attempted. The quality of the link was sufficient for voice communications everywhere, but data transfer was only successful when a strong signal was available for an extended period. The satellite used for this exercise is generally referred to as 172 East and is an older generation platform. It is available on an essentially unrestricted basis to the Air National Guard and North American Air Defense Command. Had the newer DAMA (demand-assigned multiple access) satellites been used, it is likely that faster data transfer would have been achieved. Both text and pictures were transmitted from the field. The PSC-5 transceiver is also capable of being used in local line of sight mode on any frequency in the 100-450 MHz range, including marine VHF-FM and aviation VHF-AM channels. Satcom requires cryptographic key and is authorized for traffic classified up to Secret. A person with a Secret clearance must be present whenever the transceiver is loaded with key and online, regardless of the content of the communications. Line of sight use can be encrypted, frequency hopping, or clear. MSO Valdez

believes that this or similar equipment may be useful for establishing a fixed forward command post quickly during an emergency. The 206th Combat Communications Squadron provided communication support during the Exxon Valdez incident and MSO Valdez intends to continue exploring opportunities for cooperation with them.

- ix. **Billeting and messing.** Field teams deploying to remote areas should be fully prepared to subsist on their own resources for 24-48 hours, as there is no guarantee that satisfactory support will be available locally. The Coast Guard shore team brought a large amount of camping equipment and supplies with them and used almost all of it. Shelter, food and hot drinks were found to be essential to the maintenance of morale and operational effectiveness, both of which remained high throughout the exercise.
- x. **Mobile Computing.** During this exercise, the Coast Guard set up a portable Standard Workstation III at the VEOC and connected to the Coast Guard Data Network using a remote access token. The dial-up process using the token was cumbersome and confusing to new users. Once connected, the computer worked very well and gave personnel in the VEOC full access to Coast Guard information systems. The ability to send message traffic up to FOUO, to access e-mail, and to reach sites inside the Coast Guard intranet was very useful. During slow periods, Coast Guard watchstanders could continue their normal work using the Workstation.
- xi. **Civil Air Patrol.** Planned use of the Civil Air Patrol for overflights was not successful. Because CAP pilots can generally operate under VFR conditions and within gliding distance from land, they cannot fly directly across Prince William Sound and VFR conditions must exist all along their flight path. This is not often the case in coastal Alaska. Based on the results of this exercise, MSO Valdez will use the CAP principally for non-time sensitive missions, where a delay of 48-72 hours is acceptable. Coast Guard and commercial aviation will continue to be needed for time-critical missions.
- xii. **Planning.** Development of a detailed OPORD for this event was time consuming but essential. Clear assignment of missions, proper description of

the area of operations, important contacts, and well-defined logistics and C3I prevented chaos and loss of effectiveness. The OPORD developed here will be used to help design an OPLAN for a Spill of National Significance.