New federal rule yields escort changes

Additional escorts, tighter wind restrictions and changes in escort configuration for single-hull laden tankers took effect Nov. 17, under shippers’ plans approved by the U.S. Coast Guard. The plans also hinted broadly that new tugs – possibly including tractor tugs, as recommended by RCAC – will eventually be used in the Valdez Narrows.

The changes are the result of a new federal rule and a two-year study of disabled tanker towing conducted jointly by RCAC, industry and regulatory agencies. The new federal rule requires that escorts be able to control a disabled tanker and keep it from grounding.

More conservative closure limits and additional escorts through the Narrows should provide a greater margin of safety, based on the findings of the Disabled Tanker Towing Study, which produced new information about escort capabilities in Prince William Sound.

RCAC President Stan Stephens said the changes are a significant step forward in spill prevention.

"There’s no question in my mind that these changes will make oil transportation a great deal safer," he said. "It’s no secret that we don’t always agree with industry and over the course of the Disabled Tanker Towing Study we’ve had our share of conflicts. All that aside, this has really worked. Industry and the Coast Guard should be congratulated. The public and Prince William Sound are well-served."

— Stan Stephens

Valdez Narrows

In the Valdez Narrows, all single-hull laden tankers travel at 5 knots and have two

Towing study key to changes

A major factor in the changes in tanker escorts was a two-year study of tanker towing in Prince William Sound initiated by RCAC. The Disabled Tanker Towing Study found that equipment and operating procedures that had been in use could not keep a disabled tanker from grounding in certain extreme situations. The study was conducted as a joint project of RCAC, industry groups and regulatory agencies.

The study revealed ways to improve the effectiveness of towing and assist capabilities through changes in equipment and operating procedures.

Those changes include slower tanker speed, more conservative wind restrictions, using more and different types of tugs – including tractor tugs – in different configurations, and adjusting tanker lanes in some areas to provide more maneuvering room.

The scenarios in which existing escorts could not save a disabled tanker were either
New directors seated

Two new faces have joined the RCAC Board of Directors and a familiar one has returned. Jim Cloud was appointed by the Alaska Chamber of Commerce to represent Prince William Sound tourism interests on the RCAC Board of Directors. Cloud is vice president at National Bank of Alaska, where he is responsible for equipment leasing and corporate finance programs. Cloud is also a public-at-large member of the Exxon Valdez Trustee Council Public Advisory Group. Originally from Montana, Cloud first came to Alaska in 1976.

Keith Gordaford was appointed to represent environmental interests through the Oil Spill Region Environmental Coalition. The coalition is composed of six environmental organizations.

Weaving moved to Cordova from Anchorage in 1987. A native of California, he has lived in Alaska since 1976.

Weaving and Gordaford were seated on the board at the quarterly meeting, Sept. 29, in Homer.

Keith Gordaford returned to the RCAC Board of Directors in July as the representative for Chugach Alaska, the Native regional corporation for the Prince William Sound area. He previously served on the RCAC Board from 1989 to 1992.

Gordaford is President and Chairman of the Board of Chugach Development Corp., a subsidiary of Chugach Alaska. He was born in Cordova and has lived in Anchorage since 1962.

Through his work with Chugach, Gordaford has extensive first-hand experience in oil spill prevention and response. In the mid 1970s he was an oil spill response manager in Valdez. In 1989 and 1990 he managed Chugach’s work in spill response and support.

Mussels monitored after oil spill

Mussel samples taken five days after the May 21 Eastern Lion oil spill showed levels of polycyclic aromatic hydrocarbons that were 50 times higher than samples taken from the same site two months before the oil spill. The mussels were collected from Saw Island, directly adjacent to Berth 5 where the oil spill occurred.

The results of the sampling were not a surprise, but it was the first time that data collected under the program have been used as a benchmark for before and after comparisons.

Volunteer Profile: Dr. A.J. Paul

RCAC relies heavily on the energy, expertise and resources of volunteers. Those volunteers share some core values, such as the importance of citizen involvement and concern for environmental protection. But their interests, politics and perspectives are wide-ranging and diverse...

A.J. Paul is a physician. As an old-timer on RCAC’s Scientific Advisory Committee (SAC), he understands first hand the value of taking whatever time it takes for volunteers to reach consensus. The slow pace of committee work can be frustrating to some, but not to Paul, a marine biologist from Seward.

“It can be a slow and painful process but consensus ultimately leads to good communications and a good product,” he says. “It is slow. But you’re dealing with volunteers and there’s no dictator to make things happen immediately. You get a good end product, but the process by its nature must be slow.”

A member of the SAC since its inception, Paul has a Ph.D. in fisheries oceanography from Hokkaido University, Japan. He earned his master’s degree at the University of Alaska Fairbanks, and has been associated with the university since 1970. Since 1975, Paul has been at the University of Alaska Institute of Marine Science, Seward Marine Center Laboratory, where he works on biological oceanography, especially plankton biology, and biogeochemistry of fish and invertebrates.

Paul was encouraged to serve on the SAC by Chris Gates, former port director in Seward and a past member and president of the RCAC Board of Directors.

“We are at ground zero here in Seward. Any future spills will come our way because of the prevailing current. Chris asked me to help make sure it didn’t happen again and urged me to get on SAC. I think RCAC is one of the best things that ever happened. We’ve so much better to have citizens in an oversight capacity. They care much more than government employees ever can.”

Paul sees a vital need for RCAC to have people on the committees with institutional memory. Volunteers turn over and Paul figures he serves as a “walking encyclopedia” of what’s happened in SAC. “As long as they want me I’ll be there for a long time.”

Paul’s personal mission on the SAC has been the Long Term Environmental Monitoring Program (LTEMP). Dr. Steven Picou has conducted research on the impacts of technological disasters on small communities. After the Exxon Valdez oil spill, Picou did a study relating stress levels to actual and potential loss of renewable natural resources in communities economically dependent on those resources. Cordova, Valdez and Petersburg were used in the study, with Petersburg as the control community untouched by the spill.

The committee is recommending a $107,000 site source contract with Dr. Picou to develop strategies for reducing spill-related mental health problems in Cordova. If successful, the strategies would be adapted for use in other vulnerable communities.

The RCAC Board of Directors, meeting Sept. 29 in Homer, indicated they approved the contract in December pending assurances that the project will result in a product of practical value to other communities.

Leland takes up deputy duties

Marilyn Leland has returned from a temporary post in Washington, D.C. to take up full-time duties as deputy director of RCAC. Leland was hired by RCAC in early 1992 to handle special projects. In April 1992 she was sent to Washington under an exchange program to work in the Coast Guard’s OPA 90 office. Leland was appointed deputy director in absentia in September 1992.

She returned to Alaska in September. A former executive director of Cordova District Fishermen United, Leland was a charter member of the RCAC Board of Directors.

Project seeks to target mental health

A demonstration project using Cordova as a model for mitigating the mental health impacts of a major oil spill has received conceptual approval from the RCAC Board of Directors.

As proposed by the RCAC’s Scientific Advisory Committee (SAC), the project would build on research already completed by Dr. Steven Picou, professor and chairman of the Sociology and Anthropology Department at the University of South Alabama. Since 1982, Picou has conducted research on the impacts of technological disasters on small communities. After the Exxon Valdez oil spill, Picou did a study relating stress levels to actual and potential loss of renewable natural resources in
Oil spill prevention
Planning begins for new weather stations in Sound

Federal officials from the National Data Buoy Center were in Valdez in October to begin mapping plans for new weather reporting equipment in Prince William Sound. The National Data Buoy Center is an agency of the National Oceanic and Atmospheric Administration (NOAA), NOAA received a $600,000 appropriation to pay for several new weather stations and relocation of some existing equipment. The appropriation was approved by Congress in August and signed by President Clinton in October.

The new equipment is expected to be installed in spring 1995. The weather stations, essentially monitoring equipment, will make vessel traffic safer by providing the U.S. Coast Guard and mariners with better and more timely information about conditions in Prince William Sound. Currently, there are no weather stations between Potato Point, in the Valdez Narrows, and Middleton Island, about 100 miles away in the Gulf of Alaska. Weather conditions can vary significantly between Port Valdez and the open waters of the Gulf of Alaska, and those conditions can change quickly. Yet without equipment to provide real-time weather information, tankers frequently sail “blind,” in the sense that they have no way of knowing the conditions between Potato Point and Middleton Island.

Plans include two weather buoys, one at Hinchinbrooke Entrance near Seal Rocks and one in the center of Prince William Sound. Each buoy will have equipment to measure wind speed and direction, barometric pressure, wave height and period, and air and water temperature. Equipment will also be installed near Bligh Reef to measure wind speed and direction, barometric pressure and air temperature. In addition, existing monitoring equipment will be upgraded at Potato Point.

Data collected by the monitoring equipment will be relayed by satellite to Virginia, where it will be verified monitored and sent back to Valdez and Anchorage by teleype. The buoy will sample every 8 minutes every half hour and transmit after each sampling. Data will arrive in Valdez about 10 minutes after it is collected.

The appropriation caps two years of efforts by RCAC to fill piping holes in weather information in the Sound. RCAC was joined by industry groups, communities, interest groups and regulatory officials in calling for the federal funding. RCAC President Stan Stephens said the unified voice was effective. “We succeeded because we worked together toward a common goal. It has been a clear demonstration that citizens, industry, and regulators can form effective partnerships,” Stephens said. He also praised Alaska Sen. Ted Stevens for helping to shepherd the measure through Congress.

Changes increase margin of safety in tanker transits

Continued from Page 1
escorts, one of which is a tug tethered to the stern to act as an auxiliary rudder. Larger tankers (150,000 DWT and up) must have a third tug escort when winds exceed 20 knots. In winds of more than 30 knots, the Narrows are closed to larger tankers.

Smaller tankers (less than 150,000 DWT) must have a third tug escort when winds in the Narrows are greater than 30 knots. At 40 knots, the Narrows are closed to all tankers.

RCAC had recommended to the Coast Guard and shipper that 7600 hp tractor tugs be tethered to laden tankers through the Narrows. Tractor tugs are more maneuverable, and at higher speeds more effective, than conventional tugs at controlling a disabled tanker.

The Coast Guard’s Marine Safety Office (MSO) in Valdez is responsible for determining whether the shipper’s plans comply with the new federal rule. MSO Valdez will not require shipper use specific types of equipment, i.e., tractor tugs, if other combinations of equipment and operational procedures meet the rule’s performance requirement.

Valdez Arm

In Valdez Arm, tankers will travel with a tethered rudder tug when weather and sea conditions make it safe to do so. When tethering isn’t safe, an emergency escort hawser will be deployed from the stern of the tanker to facilitate quick hook up and towing, if needed.

In addition, at all times tankers will slow to 8 knots in the vicinity of Buoy 9, a narrow area of the arm. As vessel traffic permits, the Coast Guard will manage traffic so that tankers can move in the separation zone where winds are strong from the southeast.

Hinchinbrooke Entrance

Closure limits have also been tightened in Hinchinbrooke Entrance. Hinchinbrooke is now closed to outbound laden tankers when winds exceed 45 knots or seas exceed 15 feet. The prior wind limit was 60 knots.

Tug escorts

The shippers are now matching tug escorts to the tankers, so that larger tankers are escorted by larger tugs. Before, whichever tugs were available were assigned to tankers regardless of size. The major shipper have also committed to providing new tugs for Prince William Sound in the future, and tractor tugs would be an obvious option. More powerful 6s might allow tankers to move in higher wind conditions than the tugs now in service.

The changes do not address all areas included in the Disabled Tanker Towing Study. For example, there still are no wind restrictions in central Prince William Sound. RCAC has recommended the central Sound be closed to laden tankers when winds exceed 40 knots or seas are more than 11 feet.

Human factors’ issues identified

Nine issues have been pinpointed for further study in efforts to tackle the human factors that frequently cause maritime accidents in Alaska. The nine issues were identified through surveys with 40 members of the Alaska maritime community, under a research project conducted for the Cook Inlet and Prince William Sound Regional Citizens’ Advisory Council.

Since 80 percent of transportation accidents are caused by human error, efforts to prevent oil spills must address human factors. The purpose of this project was to narrow down, for further study, specific human factors issues of most significance in Alaska.

The results of this study are expected to be used by a State of Alaska panel, the Hazardous Substance Spill Technology Review Council, in more comprehensive research into human factors issues.

The initial study for the two citizens’ councils was conducted by Thomas F. Sanquist, Battelle Seattle Research Center, and Martha R. Grabowski, Rensselaer Polytechnic Institute. They divided the nine issues into two broad categories: those that relate to individual human operators, and those that are a function of an organization or system.

The individual human issues are: personnel skills, resources and certification; fatigue, automation and technology; and training. The organization or system issues are: changes in the maritime industry; individual and organizational behavior; policies and regulations; oil spill response; and facilities and inshore marine transport.

The Hazardous Substance Spill Technology Review Council is expected to award contracts for human factors research in December.

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<th>Individual human issues</th>
<th>Organization or system issues</th>
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<td>Individual and organizational behavior</td>
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<td>Automation and technology</td>
<td>Policies and regulations</td>
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<td>Training</td>
<td>Oil spill response</td>
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<td>Facilities &amp; inland marine transport</td>
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**Tanker escorts**

**Why tractor tugs?**

RCAC believes tractor tugs tethered to a laden tanker through the Valdez Narrows would provide the greatest margin of safety for keeping a disabled tanker from grounding.

There are several differences between tractor tugs and conventional tugs. The propulsion and steering systems are all on the conventional tug, but located forward on the tractor tug. The tractor tug also has a large skeg under the centerline of the hull aft. There are two types of propulsion on tractor tugs: cycloidal and rotatable thrusters with screw propellers. RCAC is recommending a 7600 hp cycloidal propeller tractor tug.

Tractor tugs are more effective than conventional tugs at controlling a tanker at higher speeds. At 6 knots, a tractor tug generates steering forces approximately 50 percent greater, and retarding forces about 45 percent greater than a conventional open-propeller tug of equal brake horsepower (BHP).

Conventional tugs apply maximum force on a centerline forward and aft, but a tractor tug can apply force in any direction ("Thrust Vector Comparisons," lower right.) Conventional tugs apply only direct force, while tractor tugs can also exert force on the tanker indirectly. In the indirect mode, a tractor tug positions its hull perpendicular to the tow line and uses the waterflow to exert force, much like a water skier veering off to the side or a downhill skier turning and coming to a quick stop.

Tractor tugs are not necessarily the tug of choice for all situations. For example, at very low speeds – 4 knots or less – conventional tugs actually provide more force.

**Rescue Scenarios**

The Disabled Tanker Towing Study compared the ability of tractor tugs and conventional tugs to control the drift of a tanker disabled in the Valdez Narrows with propulsion loss and a hardover rudder failure. Several factors affect the ability of the tug to control a disabled tanker before it enters the "red" or danger zone: wind speed, tanker speed, tanker size, tug configuration, time delay (30 or 60 seconds) to recognize the problem, and time delay (30 or 60 seconds) to call for assistance.

In each of the scenarios pictured below, a laden 265,000-dwt tanker is traveling at 6 knots through the Narrows in 30 knot winds. The goal was to take control of the drifting tanker before it enters the red zone, which in this case is 300 yards off the optimum track line.

In the computer simulations, the tanker drifted more than 300 yards off the optimum track line before it was brought under control, the rescue was considered a failure. The tractor tug successfully kept the tanker out of the red zone in two of the scenarios depicted here. In all three scenarios, the tractor tug was able to control the tanker in half the distance of the conventional tug.

Major shippers proposed to solve the problem by using conventional tugs and slowing tankers to 5 knots through the Narrows. According to computer simulations, at 5 knots the conventional tug performs almost as well as the tractor tug and both are able to keep the tanker out of the red zone.

Even at 5 knots, RCAC believes the tractor tugs provide a significantly greater margin of safety because there are times when weather conditions will require a tanker to speed up, overcoming the 5-knot limit. Another problem is that the 5-knot solution assumes peak human performance all the time; RCAC believes that is unrealistic.

### Rescue Scenarios Valdez Narrows

All scenarios: 265,000 DWT tanker traveling at 6 knots in 30 knot winds

Scenario #1 - 60 sec., 60 sec., 35 degree rudder
Scenario #2 - 30 sec., 60 sec., 35 degree rudder
Scenario #3 - 60 sec., 60 sec., 20 degree rudder

X - Tractor Tug
O - Conventional Tug

Optimum track line:

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<tr>
<th>100 yrs.</th>
<th>200 yrs. - RED ZONE</th>
<th>300 yrs.</th>
<th>400 yrs.</th>
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**Conventional and Tractor Tugs**

**Thrust Vector Comparisons of Conventional vs. Tractor Tugs**
RCAC recommends slow
of safety improvements

In addition to recommending use of tethered tractor tugs through the Valdez Narrows, RCAC recommended:

• Use of an ocean-going salvage tug, 22,000 hp or larger, in the approach to Seal Rocks.
• Continuous escort of tankers through Prince William Sound be maintained.
• Closure conditions in central Prince William Sound of 40 knots of wind or 11 foot seas.
• Closure conditions for outbound laden tankers at Hinchinbrook Entrance be revised to 40 knots of wind or 11 foot seas.
• Exploited use of federal funds appropriated for weather reporting stations in Prince William Sound, including a weather buoy that reports the wind speed and wave height in Hinchinbrook Entrance and Seal Rocks area.
• A licensed engineer be stationed in the steering flat for the duration of the transit through the Valdez Narrows to take immediate action, if necessary, in the case of a steering failure. This individual must be in communication with the bridge and the engineer on watch.
• Tanker pilots, tanker masters, and escort masters be brieﬁed on the capabilities of the braking maneuver, a rudder tug, and a European style tethers.
• Removal of the dog leg in the traﬃc lanes east-northeast of Smith Island.
• The Vessel Traﬃc System manage traﬃc so as to allow outbound laden tankers to have maximum sea room at Hinchinbrook Entrance.

Shippers’ proposals endorsed

RCAC endorsed several recommendations made by the Prince William Sound Tanker Association:

• Extend the one-way zone in Port Valdez to the 146 - 35 W meridian to prevent close quarters meeting situations at the northern entrance to the Narrows.
• Retract the piloting station two miles south of the present location and establish a precautionary zone. This will allow the pilot to be on the bridge during the turn at Bligh Reef and during the transit of the potential ice area.

Coast Guard ﬁnalizes rule for tanker escorts in Sound

Escort vessels that accompany laden oil tankers through Prince William Sound will be held to speciﬁc performance standards, under a new federal rule effective November 17. The ﬁnal rule on escort vessels for Prince William Sound and Puget Sound requires two escort vessels accompany each laden single-hull tanker, but a double escort has been standard practice in the Sound since 1989.

The rule stems from the Oil Pollution Act of 1990, which mandated speciﬁc escort rules for Prince William Sound and Puget Sound. Escort requirements for other areas will be addressed under a separate rulemaking.

Under the performance standards for Prince William Sound and Puget Sound, the escort vessels must be able to:

• tow the tanker at 4 knots in calm conditions and hold it steady against a 45-knot head wind;
• hold the tanker on a steady course against a 30-degree locked rudder at a speed of 6 knots, in the same distance it could turn itself with a hard-over rudder; and
• turn the tanker 90 degrees, assuming a free-swinging rudder and a speed of 6 knots, within the same distance the tanker could turn itself with a hard-over rudder.

The escort vessel must meet a requirement that escorts be able to stop the tanker in the same distance it could crash-stop itself from a speed of 6 knots, using its own propulsion system. The “crash-stop” requirement was superceded because of concerns about whether it could be done safely for diesel-powered tankers. Compared to those tankers powered by steam, the diesel-powered tankers have superior reversing power and thus would have required attaching additional towing tugs to equal its own propulsion capability. The Coast Guard is reviewing the issue and will decide it separately. Public comment will be taken on the crash-stop issue through January.

The final rule also requires pre-escort conferences between the tanker master, the pilot and the masters of the escort vessels regarding the escort operation. Pre-escort conferences must include discussion of, local conditions, types of equipment available on the tanker and escort vessels, positioning of the vessels, possible pre-tethering of the escort vessels and methods to be used for emergency towline connection.

Tanker towing study brings changes, increases safety

Continued from Page 1
“worst-case” or a few notches down from “worst case.” In that they assumed a combination of factors. The actual risk of those scenarios—the likelihood of them happening—is known and assessed and that risk was not part of the study. However, worst case is normally considered very unlikely. For example, many of the scenarios assumed a hard-over rudder at 35 degrees, but rudders are rarely turned more than 20 degrees.

Part 2 of the study—Part 1 was released last year—ran computer simulations to determine the effectiveness of towing and assist to a tanker disabled under a variety of scenarios, locations and conditions.

The following factors were used: tanker size, wind speed, tanker speed, distance from hazard, time, and they create to real the failure, time to deploy the tug, failure rudder angle (35 or 20 degrees) and assist vessel (type, number, and conﬁguration). The study looked at disabled tanker issues in ﬁve locations: the Valdez Narrows, Valdez Arm, center of Prince William Sound, Hinchinbrook Entrance and Gulf of Alaska. The study was important because it provided information bearing directly on a new federal escort rule effective November 17. Under the new federal rule, single-hull laden tankers in Prince William Sound and Puget Sound must be accompanied by two escort vessels capable of controlling the tanker in the event of steering Prince William Sound disas-

The escort response vessel Heritage Service accompanies an outbound laden tanker.

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Response and planning

Arco conducts first drill of nearshore response

Arco Transportation Inc. was showered with across the brand praise for its willingness to take risks by testing several new concepts in a major drill. The three-day drill, Sept. 19-22, was the first to test nearshore response and the first to test just one specific segment of a response.

Other firsts were Arco’s departure from the Incident Command System, in favor of a military style management system called command, control and communications. Arco also used a joint information center to gather and disseminate information and tried out a new community response plan. “Nearshore response” is containment and recovery of oil that has escaped initial containment and threatens sensitive coastal areas. A plan for nearshore response is required as part of shipper’s oil spill contingency plans for Prince William Sound. The concept of nearshore response was developed by the Exxon Valdez oil spill and uses local fishing vessels and their crews to deploy boom and contain the oil.

The purpose of drills is to train people and identify where changes or more work is needed. Although a formal evaluation of the drill has not been completed, RCAC and local observers agree about a few key points:

- The physical demonstration of the Nearshore Response Plan’s response strategies and techniques was carried out.

- The fishing vessels and crews performed very well as did the Responders, the main barge for nearshore response.

- The Joint Information Center worked very well as a central, integrated source of factual information about the response effort.

- Hatchery protection and the Duck Flats exclusion boom still took much too long – 12.5 and 15 hours respectively – for effective protection of the two sensitive areas.

- While the concept of drilling a portion of the contingency plan was well advanced, isolating one element created problems. The drill assumed that the initial response had already occurred, but drill participants did not have specific starting points from which to move forward.

- The management structure of command, control and communications might work well if everybody followed it, but since ICS is used by the federal government and Alaskans, Arco should not insist on using a different system.

- Decentralized decision-making, with more latitude and authority within each command section and on-water, was effective. Distributing unified command personnel from regulatory agencies through-out the command sections also contributed to more efficient and effective operations.

- Arco did not take advantage of Alyeska’s SERVS resources and communications between Arco and Alyeska personnel was poor.

- Even though this was only a limited response, VHF radio channels were almost always full during the drill. This type of communications problem occurs at nearly every major drill.

- All participants took off drill debriefing seriously and came up with meaningful, honest, constructive criticisms during the initial debriefing.

- Arco had a positive attitude throughout the exercise, which helped it overcome problems and regain control of its response management.

- Arco was very receptive to independent verification through the entire exercise.

In-situ burning experiment conducted at Prudhoe Bay

by Lisa Tomnitz, Project Assistant Oil Spill Prevention & Response Committee

The largest experiment to date in burning of emulsified oil was conducted Sept. 11-11, at Prudhoe Bay. The test burn was conducted by Alaska Clean Seas, a non-profit oil spill cooperative, to study the burning characteristics of emulsified oil, which is oil that has aged and absorbed water.

Prince William Sound Regional Citizens’ Advisory Council (RCAC) was one of several private and government organizations that participated in and supported the experiment.

Alaska Clean Seas was pleased with the results. “In general we feel that we successfully met all of the goals of the project and have provided a valuable contribution to the understanding of in-situ burning as a response option equal to mechanical containment and recovery,” General Manager Glen Doughty said.

The primary goal of the 1994 Emulsion Burn Experiment was to demonstrate burning of high-weathered emulsions on gravel bars as a response tool. The experiment entailed three burns, two of emulsified oil and one of fresh Alaska North Slope Crude. The burns were conducted in a lined 90-foot square pit at the Fire Training Grounds at Prudhoe Bay. The burn area was confined to a 36-foot diameter area contained by 3-M fire boom. Approximately 80 barrels of emulsified oil or fresh oil was added to fresh water in the pit. For the first burn, Alaska Clean Seas used 50 percent salt water in oil emulsion and for the third burn they used 60 percent salt water in emulsion.

Each burn lasted less than an hour. All three burns showed high oil removal efficiencies of above 95 percent, meaning that less than five percent of the oil remained after burning. The first burn of 50 percent was interesting in that the fire continued to nearly extinguish itself and then flare up again. Scientists observing the burn said this was characteristic they had witnessed before with emulsion burns but had not concluded was occurring with this particular burn. The burn of 60 percent salt water in emulsion did not demonstrate this behavior and burned with a steady fire.

The burns left residue ranging from 227 pounds to 467 pounds (1.6 percent to 3.3 percent of the original oil by weight), which sank almost immediately after the fires burned out. The scientists had not observed such results in smaller pit tests conducted earlier in the summer. Alaska Clean Seas plans to further analyze the burn residue.

Scientists are continuing to study the air quality data collected from the smoke plume. The Alaska Regional Response Team has set a human health standard of exposure to smoke particulates from an in-situ burn at 150 micrograms/cubic meter averaged over one hour which is considered to be a conservative limit. In-situ burning must be authorized by the Regional Response Team, which includes representatives of the U.S. Coast Guard and the U.S. Environmental Protection Agency.

Alaska Clean Seas plans to develop a public education video about in-situ burning. The video is expected to be ready for distribution in January, 1995. A technical air quality report on the experiment is expected to be completed by April, 1995. All reports and the public education tools will be provided to the RCAC as a sponsor of the burn.

State officials buried in new oil spill contingency plans

The Alaska Department of Environmental Conservation (ADEC) is reviewing an estimated 7,000 pages of documents submitted by Alyeska and tanker operators to answer questions and fill in gaps from the original 12,000 pages submitted earlier this year. The massive documents are updated contingency plans for addressing spills from tankers in Prince William Sound and the Valdez Marine Terminal.

The contingency plans must describe in detail how the responsible party will respond in the event of an oil spill. Each plan lays out the equipment, personnel and procedures that would be used in a spill response. Anyone identified as a potential spiller cannot operate without an approved contingency plan. The plans are revised and reviewed every three years.

The planners – Alyeska and shippers of North Slope Crude – have responded to comments and requests for additional information from RCAC and regulatory agencies.

ADEC is reviewing these new submittals (the estimated 7,000 pages), but more questions may arise before the plans are actually approved. ADEC’s goal had been to approve the plans by November 15, but staff shortages and the sheer quantity of documents made that goal unlikely to be realized.

Among RCAC’s core responsibilities, under both its contract with Alyeska and the Oil Pollution Act of 1990, is to work with industry and agencies on development of, and revisions to contingency plans, and to review the plans once they’ve been submitted to the state for approval. By doing so, RCAC seeks to ensure that planning and response actions take place as required under law and as needed to protect the waters and livelihoods of citizens in the region impacted by the Exxon Valdez oil spill.

RCAC reviewed 23 contingency plans in all – Alyeska’s plan for the Valdez Marine Terminal, the Princes William Sound Tanker Spill Prevention and Response Plan and 21 individual tanker plans. In its reviews, RCAC raised numerous questions and identified sections of the plans in which information was missing, incomplete or inadequate.

A major issue that has emerged for all the Prince William Sound plans is firefighting and the state requirement that planners use the best available technology for fire response.

Other issues raised are identification of equipment to be mobilized and deployed; identification of response resources in state waters outside Hinchinbrook Entrance; identification of response equipment outside the Prince William Sound region; how exemptions and credits are applied, and the use of best available technology for re- sponse equipment.
Ballast water monitoring program underway at terminal

Under the program, samples are taken of ballast water discharged to Alesyska’s ballast water treatment facility from tankers calling at the terminal. The samples are analyzed by an independent commercial laboratory on contract to RCAC.

The purpose of the analysis is to detect any incoming materials that might not be treatable by the ballast water treatment plant, materials inappropriate for discharge at the plant, or higher than expected levels of materials approved for discharge. All data are being forwarded to the ADEC and Alesyska.

The federal permit requires that the ballast water contains unauthorized, and potentially toxic, substances.

Under the permit Alesyska is also required to perform the following tests on the ballast water discharge:

- toxicity testing, including sublethal and acute survival tests, on organisms specified in the permit;
- biological monitoring to evaluate the effect of the discharge on the marine infauna in Port Valdez;
- sediment monitoring to determine the fate and concentrations of petroleum hydrocarbons in the sediments of Port Valdez and sediment toxicity testing with organisms specified in the permit (regulators ceased sediment toxicity testing in 1994);
- tissue hydrocarbon monitoring to determine if hydrocarbon levels in tissues of organisms specified in the permit are changing over time.

The results for monitoring fish are much less. Under the federal permit, Alesyska must retain and preserve samples of ballast water from tankers whose ballast water contains substances other than crude oil. Samples are analyzed at Alesyska’s own initiative or at the request of ADEC or the U.S. Environmental Protection Agency. In some cases, Alesyska monitors more than its permit requires.

Alyesa Pipeline Service Company is proceeding with engineering work on a system to control tanker loading vapors at the Valdez Marine Terminal, although important elements of the federal requirements for such systems won’t be known until spring 1995. The U.S. Environmental Protection Agency (EPA) is reviewing comments on the proposed federal requirements and is scheduled to release the final requirements in May.

Under 1990 amendments to the Clean Air Act, marine terminals must reduce air pollutants released when crude oil is loaded into tankers. Draft requirements issued by the EPA last April call for emissions to be cut 98 percent at the Valdez Marine Terminal, and for the controls to be in place by April 1997. However, these requirements could vary somewhat depending on which part of the Clean Air Act Amendments a facility is regulated under.

Some new regulations came into the picture in September, when the EPA reopened the comment period because of questions regarding a separate but related rule for refinery emissions. EPA is considering changes that could result in a different compliance schedule and lower reduction standards for marine loading terminals, including the Valdez terminal.

There is no longer any debate about whether vapor controls will be installed at the terminal or even what type of system will be used. In July, Alesyska announced it would use some of the vapors to balance displaced crude removed from the tank farm. Ultimately, all of the vapors captured will be incinerated or combusted to generate electricity.

Questions do remain, however, about how many berths will be covered and when vapor controls will be installed.

Alesyska wants to install controls at only two of the three berths that will still be in use at the terminal in 1997. Alesyska maintains that the $26 million it would cost to install controls on the third berth isn’t warranted because that berth will be used only partially for routine loading between 1997 and 2001. After 2001, Alesyska proposes to be able to use the uncontrolled berth for up to 40 days per year as a maintenance and emergency backup.

Alyesa also recommended a compliance deadline of April 1998, citing in part Alaska’s short construction seasons. In comments to the EPA on Alesyska’s proposal, RCAC agreed that the April 1997 deadline would be very difficult and supported a later compliance date. RCAC opposes Alesyska’s plan to leave a third berth without a vapor control system because Alesyska could still meet EPA’s vapor reduction standard, even with the third berth uncontrolled.

Alesyska implements improvements in oil spill

by Jim McHale, Business Unit Leader, Ship Escort/Response Vessel System (SERVS)

After examining the Eastern Lion oil spill response effort, Alyesa Pipeline Service Company has acquired new equipment and instituted new tactical procedures to improve oil spill prevention and response in Prince William Sound.

There’s no question the company gained insight from the Eastern Lion response, which began May 21, on how to better implement response strategies. A real event made Alesyska, and SERVS in particular, aware of how tactical adjustments could make our response more flexible and effective.

Rapid response at Solomon Gulch Harbor will be enhanced by the installation of oil booms for sealing the opening of bays for securing boom and the anchoring systems for the hatchery’s pens that will be completed this month. SERVS has purchased additional boom that is being stored at the Valdez Container Dock for rapid deployment at the tidal flats. Shallow-draft work boats to improve boom towing and landing at the hatchery and tidal flats have arrived and are stationed on the Responder, our nearshore response barge. This ensures water deployment of the work boats, which can be launched to distant locations, making response faster and more efficient.

Several enhancements at the terminal’s loading berths have also been developed. Adapter plates that attach to the mouth of a skimming vessel have been installed at Berths 4 and 5. This allows the vessel to recover oil without breaching the primary containment area, thereby preventing oil escape.

Gates installed at Berths 3 and 4 create boom-pens for skimmers to access the primary containment area. Skimmers enter the gate, which closes behind, and then enter the primary boom area without allowing oil to escape.

Tactics for skimmer utilization have been revised and a new tactical guide has been drafted. Two goals for the new procedures are to enhance skimming capability by using small skimming devices and to prevent boom entainment.

Concerns regarding a landing craft used by divers that caused the Eastern Lion’s boom to move too close to the tanker have been reviewed and addressed. New procedures call for the divers to access the area from a smaller vessel or directly from the tanker or berth dock.

To prevent Oilent of a berthing’s pilings, new procedures are being developed and tested, such as the positioning of a boom between the pilings and the back fence-boom.

Alesyska has also tested use of a Trans-Rec skimmer barge during two exercises completed since the Eastern Lion response. The exercises demonstrated the effectiveness of the skimmers and the planned vapor control system unless Alesyska could use two vessels in close proximity to a laden tanker. SERVS will take the findings of the exercises into account as operational decisions are made during a response effort.

Other improvements at the berths include replacement of back-fence boom with RBO Boom 1500, which extends further below the waterline and is more stable, and more training for terminal oil spill crews on skimmers and other response equipment at the berths.

More than 20 terminal workers have been cross-trained by SERVS to conduct tanker berthing. These workers will provide back-up for the oil spill crew at the terminal.

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RCAC advised to improve relations with industry

The RCAC has been recertified as the federally-mandated advisory group for Prince William Sound, but the U.S. Coast Guard has put RCAC on notice that it needs to work harder to improve relations with the oil industry and regulatory agencies.

As part of the annual certification process, the Coast Guard sought comments from industry, agencies, RCAC’s member organizations and the public.

In an Aug. 4 letter to RCAC, Rear Adm. J.C. Card said comments received “indicate the RCAC’s relationship with industry and government in the past has been tenuous, and the RCAC has only recently begun to seriously work toward establishing the partnership mandated by the Oil Pollution Act of 1990 (OPA 90), Section 5002. We expect you to continue in this vein and to make significant gains in alleviating both real and perceived communication barriers during the coming year. Your efforts in this area will have considerable impact on future recertification.”

The Coast Guard’s stem position was triggered by a critical letter from Roger Gale, Vice President of BP Oil Shipping Company. RCAC responded to each of Mr. Gale’s criticisms, many of which RCAC felt were the result of misunderstanding about RCAC’s responsibilities. On the other hand, RCAC has long recognized the need to develop more positive working relationships with individual shippers.

“Improving relations with the industry has been part of our long range plan for several years,” Board President Stan Stephens said. “In the past 12 to 18 months we’ve made tremendous progress in improving communications between RCAC and Alyeska. Now that we’ve ironed out some of the wrinkles in that relationship, we can turn our attention to the shippers.”

Stephens said that while some people might criticize the Coast Guard’s position, he doesn’t.

“First of all, you can’t hope to be an effective advisor if the people you’re advising won’t talk to you and listen. It’s very much in the citizens’ interests that these relationships be as positive and productive as possible,” he said.

“Second, the Coast Guard recognizes that any relationship takes two to make it work. We need to make the effort but so does industry and the agencies. It isn’t a one-sided responsibility.”

**Advisory Committees**

- **Prince William Sound Disables Tanker Towing Study, Part 2.** Author: Thomas F. Sanchez, Martha R. Grabowski, Sept. 23, 94. (Ref. #19.)

- **A Voice for Prince William Sound.** 10-minute video on RCAC.

**Contacts**

- **Alaska Maritime Human Factors Needs Assessment.** Author: Thomas F. Sanchez, Martha R. Grabowski, Sept. 23, 94. (Ref. #19.)

- **Saw Island Sampling.** supplemental report, Long Term Environmental Monitoring Program. Author: Kinetic Laboratories, Inc. July 6, 94. (Ref. #4.5.009D)

- **Alyeska Pipeline Holding Responsibilities.** review and analysis of Alyeska and the Prince William Sound Tanker Spill Prevention and Response Plan. Author: Howard Townsend. May 94. (Ref. #4.5.006E)

- **Third Survey Report March 6-26, 1994.** Long Term Environmental Monitoring Program. Author: Kinetic Laboratories, Inc. April 28, 94. (Ref. #4.5.009E)

- **Annual Monitoring Report - 1993.** Long Term Environmental Monitoring Program. Author: Kinetic Laboratories, Inc. Feb. 94. (Ref. #4.5.009D)

**Comments to ADEC on Prince William Sound Tanker Oil Discharge Prevention and Contingency Plans for Chemical Spill, Chesapeake Tracer and Potomac Tracer.** Aug. 10, 94. (Ref. #A/C #2.2.2530)

- **Comments to the Alaska Division of Government Coordination, request for additional information on the Alyeska Terminal Plan.** Aug. 10, 94. (Ref. #A/C #2.2.2531)

- **Comments to EPA on proposed federal standards for marine tank vessel loading and unloading operations.** July 15, 94. (Ref. #A/C #1.2.1558)

- **Comments to U.S. Coast Guard on proposed interim rule for financial responsibility for water pollution for vessels and the final regulatory impact analysis.** Sept. 28, 94. (Ref. #A/C #2.2.2535)

- **Comments to U.S. Department of Commerce (NOAA/DRCM) regarding proposed changes to Alaska Coastal Management Program.** Sept. 15, 94. (Ref. #A/C #2.2.2533)

- **Comments to ADEC on Prince William Sound Tanker Oil Discharge Prevention and Contingency Plans.** June 15, 94. (Ref. #A/C #2.2.2529)

**Alyeska Pipeline Spill Contingency Plan Protocols.** standardized guidelines for reviewing oil spill contingency plans. Authors: Michele Straube, Randy Bayliss and Theresa Svancara (Ref. #2.5.2046) * Charge: $50.

**Advice & Comments (1994)**

**Executive Committee**

- **Prince William Sound Regional Citizens’ Advisory Council (RCAC) is an independent, non-profit organization formed after the 1989 Exxon Valdez oil spill to minimize the environmental impacts associated with the terminal and tanker fleet.**

- **The RCAC has 18 member organizations, including communities impacted by the Exxon Valdez oil spill, a Native regional corporation and groups representing fishing, aquaculture, environmental, tourism and recreation interests in the impact area.**

- **RCAC is certified under the federal Oil Pollution Act of 1990 as the citizen advisory group for Prince William Sound, and operates under a contract with Alyeska. The contract, which is in effect as long as oil flows through the pipeline, guarantees RCAC’s independence, provides annual funding, and ensures RCAC the same access to terminal facilities as state and federal regulatory agencies.**

- **The mission of RCAC is citizens promoting environmentally safe operation of the Alyeska terminal and associated tankers.**

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