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Alaskan Shoots Bullet into Pipeline Triggering Major Oil Spill

On Thursday, October 4, 2001, a bullet punctured a hole in the trans-Alaska oil pipeline in Livengood, Alaska, a small community 107 miles north of Fairbanks on Elliott Highway. The pipeline was punctured about halfway between Prudhoe Bay in the Arctic and the Prince William Sound port of Valdez.

The spill was discovered during a helicopter overflight, said Alyeska spokesman Tim Woolston. By mid-afternoon Friday, October 5, more than 277,000 gallons of oil had spilled. Despite efforts, crude was still pouring from the hole contaminating the scrub and spruce forest surrounding the pipeline. The Alyeska Pipeline Service Company (APSC), which runs the 1 million barrel a day pipeline, struggled with the problem. Though the north slope of the pipeline was shut down hours after the shooting, pressure remaining in the pipe was forcing the oil out at a rate of over 140 gallons a minute more than 24 hours later.

According to APSC, about 840,000 gallons were trapped in the leaking pipe section, giving Alyeska two possible choices. The oil could be drained using two nearby valves to relieve the pressure in the damaged sections, which would take several days, or the pipe could be clamped. Pipe clamping had been tested, but never used to control a real spill; however, APSC President David Wight felt confident in this method. "This is a scenario we've thought

About The Update

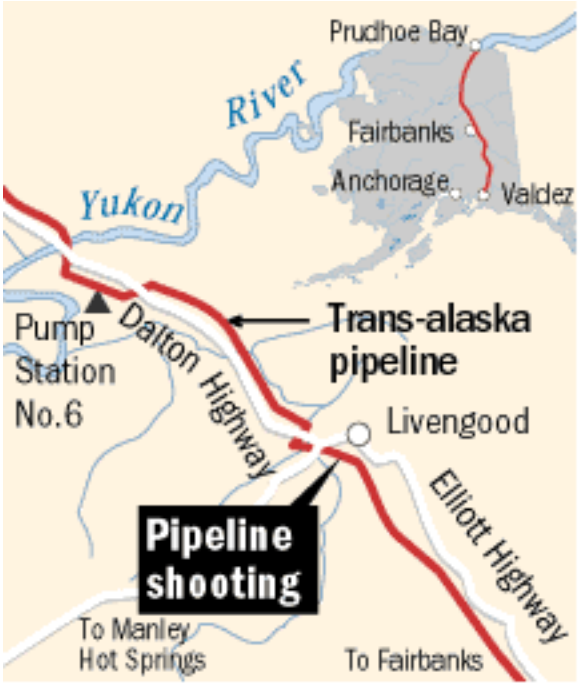
EPA's *Oil Spill Program Update* is produced quarterly; using information provided by EPA Regional staff, and in accordance with Regions' information needs. The goal of the Update is to provide straight-forward information to keep EPA Regional staff, other federal agencies and departments, industries and businesses, and the regulated community current with the latest developments. The Update is available on the Oil Program homepage at ***www.epa.gov/oilspill***.

Oil Spill Program

about. And we've got equipment that will work," Wight said. Eventually, APSC used both methods. Late Saturday, October 6, the hole was permanently plugged and welded with DOT-OPS & Joint Pipeline Office oversight and approval.

Approximately 150 personnel responded to the spill and worked with skimmers, pumps, and vacuum trucks to remove pooled oil. The leading edge of the spill migrated 300 to 400 yards to the west of the release point, soaking trees, brush, and tundra in a 5 to 6 acre area. More than 108,402 gallons of oil have been collected and re-injected into the pipeline or stored at Pump Station 7. Cold temperatures in the 30's and repair of the system substantially slowed the rate of crude oil flowing into the recovery area. Crews set up containment dikes to prevent the oil from reaching the Tolovana River, a tributary of the Yukon River, which lies only one mile away. Removal of contaminated soils began Sunday, October 7, with oiled soils being stockpiled in a staging area. No impacts to surface water or wildlife have been reported to date, but APSC will be collecting fish samples from nearby Shorty Creek. By October 11, crews were concentrating on clean-up of surrounding acres affected by the spill. Soil will be tested to confirm clean-up before backfilling. The EPA On-Scene Coordinator (OSC) from the Anchorage Alaska office of Region 10 scheduled an overflight of the spill site to obtain the potential magnitude of the oil discharge.

Alaskan Pipeline.



RON ENGSTROM / Anchorage Daily News

Alaska State Troopers, who responded to the spill with the FBI, charged Daniel Lewis, 37, with two felony counts and two misdemeanor counts, including intentionally damaging an oil pipeline, reckless endangerment, possession of a firearm while intoxicated, and driving while intoxicated. Police say Lewis and his brother were spotted near the pipe by an APSC helicopter crew at 2:30 PM on Thursday, October 4, 2001. When helicopter landed, Lewis fled, but his brother Randolph Lewis, stayed on-scene and identified him as the shooter. Randolph Lewis stated that his brother shot the pipeline after an argument between them. By 6:35 PM, Daniel Lewis was apprehended, but denied any involvement in the shooting saying that he was asleep at his residence that afternoon. Police say he had shot the pipeline at least four times with a .338 caliber rifle before firing the shot that punctured the pipe. He remained in custody in Fairbanks under $1.5 million bail.

The pipeline is on above-ground supports to allow for movement due to weather and seismic disturbances. That makes it difficult to protect 800 miles of pipeline that runs through Alaska's wilderness and is owned by six different oil companies, primarily Exxon Mobil, BP and Phillips Petroleum. Authorities have expressed frustration that someone could so easily do that much damage to the state's most valuable industrial asset. Though APSC has increased security along the pipeline since the September 11, 2001 terrorist attacks, they will again review their security measures.

This is not the first time vandals and saboteurs have targeted the pipe. In 1977, a dynamite explosion buckled, but did not break, the pipeline. In 1978, plastic explosives were set off on the pipeline at Steel Creek near Fairbanks, Alaska, spilling 16,000 barrels of oil. Authorities never made an arrest. In 1999, in an attempt to drive up oil prices and profit on oil futures, a Vancouver man was charged with attempting to blow up the pipeline. This was the largest spill along the pipeline in 23

years and the second largest in its history. State regulations prohibit the use of firearms within five miles of the pipeline and hunting rifles would not penetrate the line unless it was in close range, but hunting is still prohibited near the line. Though this shooting was the first time a gunshot penetrated the half-inch steel on the pipeline, bullets from intentional or stray shootings have scarred the pipe in dozens of places since its opening in 1977. For additional information, contact Carl Lautenberger, U.S. EPA Region 10, at (907) 271-4306.

Freshwater Spills Symposium 2002

Cleveland, Ohio has been selected as the site of the fourth biennial Freshwater Spills Symposium (FSS), which will take place over two-and-a-half days, from March 19 to 21, 2002. The FSS is a forum for local, state, federal, and industry spill responders to focus on planning, prevention, and response to oil spills in freshwater environments. Others who may also be interested in attending the symposium include industry and government regulators; natural resource trustees and mangers; facility owners, response planners, and managers; environmentalists, naturalists, and conservationists.

FSS2002's plenary session will include presentations from guest speakers on spill response planning and planning and preparing for small spills. Additional session topics include:

- oil spill prevention measures,
- planning and preparedness,
- natural resource restoration,
- case studies,
- cleanup techniques and response technologies,
- tanks and standards,
- environmental impacts in freshwater areas
- biological control methods,
- rehabilitation of oiled wildlife in inland areas, and
- sensitivity mapping and GIS

For the first time, the symposium will sponsor an oil spill-related poster contest for students. Local high school students will enter their posters to be judged by members of the FSS Design Team for a chance to win cash prizes. The winning posters will be on display at the symposium.

A special room rate has been reserved for attendees at the symposium location, the Sheraton Cleveland City Centre Hotel. For more information regarding FSS2002, visit the website at www.freshwaterspills.net/fss2002 or contact Sheila Calovich, U.S. EPA Region 5 at (312) 353-1505. You may also email questions about the ymposium to oilinfo@epa.gov or FSS2002@dyncorp.com.

EKG Operating Spill

EKG Operating employee Paul Tucker found an oil and saltwater spill, but did not report it to the National Response Center (NRC), the State of Oklahoma, or the EPA. The event occurred the morning of October 5, 2001. Mr. Tucker discovered the spill leaking from a rupture in the oil production flowline running from the oil well to the storage facility located about 10 miles northwest of Aola, in Pontotoc County, Oklahoma. The well was shut off immediately. Three days after the spill, a contractor constructed an earthen dike to prevent further migration; however, it was not wide enough and the waste entered into a small stream that flows into a creek and meets the South Canadian River. Two days later, clean-up crews inserted two absorbent booms into the stream, but placed them upstream of much of the product. Mr. Tucker added an unspecified amount of "Petro-Green,"a surface washing agent listed on the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Product Schedule.

Grant Ellis of the Oklahoma Corporation Commission discovered the spill on October 10, 2001 and notified the NRC and EPA. EPA mobilized the Superfund Technical Assessment and Response Team (START). It was hard for the inspectors to determine the exact volume of the spill due to weather, but it was estimated that approximately 2 barrels of crude oil and 200 barrels of saltwater were spilled. They also noted that there were about fifty dead fish of six different species along the pathway

Tributary of South Canadian River

of the spill. There was no recovery effort observed by the inspectors.

Although this spill was not that large, it is notable because there was no notification by the Responsible Party (RP), poor clean-up response by the RP, a sizable fish kill, and the use of Petro-Green in violation of the NCP. A fine was recommended and the case will be referred to Region 6 Oil Pollution Act Enforcement for spill and SPCC violations. For more information, contact the Federal On-Scene Coordinator, Richard Franklin at (214) 665-2785.

Puget Sound Diesel Leak

A spill of 4,000-5,000-gallons of diesel fuel occurred near Puget Sound on October 5, 2001. A Burlington Northern Santa Fe freight train hit some debris on the tracks, puncturing of two locomotive fuel tanks. The train continued traveling north another 10 miles before the leaks were discovered by the crew of a southbound train.

The spill was mostly contained on land, but fuel did leak into Puget Sound according to Gus Melonas, a railroad spokesman. Most of the fuel that reached the Sound stayed on the surface of the water and dissipated. An absorbent boom was deployed to contain the spill.

Emergency crews from local fire departments plugged the leak in the first locomotive tank and used plastic to build a containment pool around the second locomotive, according to Paul O'Brien, the OSC from the Washington State Department of Ecology. Absorbent pads were also used in the spill response, and the fuel that soaked into the soil was removed.

Transformer Spill in Vienna, Virginia

A transformer installed in 1989 ruptured at a Dominion Virginia Power Substation in Vienna, Virginia on late in the summer of 2001. The spill released 10,500 gallons of non-PCB transformer oil onto the Washington & Old Dominion bicycle trail. A small amount of oil left a sheen on nearby Piney Branch Creek, according to the Assistant Fire Marshall. The spill also cut-off power to 6,100 local Virginia Power customers for 23 minutes.

Virginia Power and the Fairfax County Fire Department immediately responded to the incident and were able to build a dam to contain the oil. The USCG also responded and served as the first federal official on-scene until the EPA Region 3 OSC arrived later in the day. State agencies chose not to respond to the event. The EPA OSC remained through the following day to ensure appropriate response measures were being taken.

The cause of the rupture is unknown, but believed to be a mechanical failure. EPA monitored the site for long-term damage, no further updates were released. For more information, contact Nelson Mix, U.S. EPA Headquarters, (703) 603-8775

Clearwater River Diesel Spill

The new year started in Region 10 with an oil spill on the Clearwater River in Idaho. Early on the morning of January 6, 2002, a petroleum tank transporting red-dyed diesel was involved in a traffic accident on Idaho State Highway 12, just northwest of the town of Kooskia. The accident resulted in a release of approximately 10,000 gallons of diesel into the Middle Fork of the Clearwater River. Later that day, the EPA On-Scene Coordinator and START-2 personnel responded and established a unified command with the

Idaho State Patrol and the responsible party, Hi-Noon Petroleum, Inc. Public safety was a concern; therefore, notification was sent to the four downstream municipal water systems to prepare for potential oil impact. The systems were closed for two days. Hi-Noon Petroleum, Inc. provided 10,000 gallons of bottled water to local residents.

Approximately 600 gallons of standing product was recovered from a ditch north of the river. The remainder of the product had already reached the river or soaked into soils. A recovery trench was constructed between the site and the river, from which a vacuum truck reclaimed approximately 5,000 gallons of fuel/water mixture. Furthermore, 1,300 yards of contaminated soil was excavated and removed by truck for disposal. An initial helicopter overflight confirmed that most contamination was within the first few miles downstream. Beyond this distance, no major pockets of recoverable product were discernable. The Idaho Department of Fish and Game and the Nez Perce Tribe observed no fish or wildlife mortality in fish and wildlife impact surveys. For more information, contact Federal On-Scene Coordinator, Greg Weigel, U.S. EPA, Region 10, (208) 378-5773.

In-Situ Burning Finds Increased Understanding

In-situ oil spill burning is beginning to be looked at in a new way. No longer is it thought to be as polluting as it once was, and its advantages of being fast working and efficient are causing in-situ burning to be considered as a viable clean-up option more often.

In-situ burning involves the ignition of an oil slick on the water from a vessel-deployed device that is soaked in a volatile compound, set afire, and directed to drift into the slick. A helicopter may also be used to drop burning fuel directly on to the slick. The resulting fire is quick burning and intense. It leaves behind oil residue, and produces a black smoke plume.

Although it can be effective in some situations, in-situ burning is rarely used on marine spills because of widespread concern over atmospheric emissions and uncertainty about its impacts on human and environmental health. However, burning of inland spills is frequently used in a number of states. All burns produce significant amounts of particulate matter, dependent on the type of oil being burned. Burning oil delivers polycyclic aromatic hydrocarbons, volatile organic compounds, carbon dioxide, and carbon monoxide into the air in addtion to other compounds at lower levels.

It's the thick plume that has cloaked in-situ burning in controversy over its safety. However, an international group of scientists recently revealed that concentrations of most substances released during burns of crude oil are below human health limits, even when measured as close as 500 meters from the burn site. The remaining soot is mostly composed of carbon, with the residue being unburned oil, which is sticky and can be difficult to recover. Interestingly, less pollutants would be released to the atmosphere by conducting in-situ burning than would be if the oil were burned by consumers as fuel.

In-situ burning rapidly reduces the volume of spilled oil. With decreased volume and a shortened response-time involved, oil has less of a opportunity to spread and harm aquatic and shoreline ecosystems. Further, in-situ burns decrease or eliminate the need to collect, store, transport, and dispose of large volumes of recovered material. Favorable conditions for using in-situ burning include: wind speeds of less than 23 mph, waves under 3 feet high, a slick thickness of at least 2 to 3 mm, under 30 percent evaporative loss, and an emulsification of less than 25 percent water. Burning must take place at least three miles from a population at risk. Before in-situ burning can be employed, a Regional Response Team must approve it, per the guidelines of the National Contingency Plan. Air monitoring equipment is also required to ensure that

In-situ Burn Test

air quality standards are not exceeded.

The international researchers hope that greater understanding of the effects of in-situ burning result in its increased acceptability as an alternative countermeasure. In a number of ways, responders are growing in recognition of its environmental benefits and economic savings.

When Oil Meets the Shore

When an oil spill occurs on open water, a number of factors influence the path of the oil, including wave action, current, and wind. However, when that same spill finds its way to a shoreline, new challenges arise. The physical properties of the oil and the shoreline will dictate how the spill affects the coast. The effects of the spill, in turn, dictate the method of cleanup that should be used.

The degree to which the oil penetrates the shore is, in part, a function of the type of oil spilled. Lighter oils tend to evaporate and degrade more quickly than heavier oils, but often penetrate soils more easily. While heavier oils tend to remain on the surface, the oil that does penetrate the beach is more difficult to remove, and may stick to the rocks in the form of tar balls or asphalt.

Shoreline geology also influences the impacts of a spill. The larger the size of the beach particles, the easier it is for oil to ooze into the spaces between them. Once oils penetrate a beach, they adhere to the particles in different ways, depending on whether they are heavy or light. Oils that tightly adhere to the particles are more difficult to remove than those that loosely adhere. Oils that remain on the surface of a beach with cobbles and pebbles, may be more easily degraded by the waves and sunlight that is able to reach them.

Freshwater inland spills usually affect shorelines with standing or slow-moving water, where oil remains long enough to be easily absorbed. Conversly, when oil is spilled in a marine or riverine environment, intense waves and current keeping most of the oil from settling. If oil reaches a shoreline that is near to or supports a sensitive biological community, it may take longer for that community to recover from the effects of the spill. However, a sparsely inhabited shoreline may experience fewer long-term effects.

The decision of whether to rely on natural processes, such as evaporation and biodegradation, or to use physical methods, such as absorbents or pressure washing, should be closely linked with the situation. Authorized chemical cleaners can also be used to clean up oiled shorelines. By weighing oil properties against shoreline characteristics, cleanup can be planned and conducted with great success.

$5 Billion in *Exxon Valdez* Damages Ruled Excessive

On November 7, 2001, the 9th U.S. Circuit Court of Appeals in San Francisco stuck down an award of $5 billion in damages to be paid by Exxon for the 1989 oil spill by the tanker *Valdez*. The plaintiffs were commercial fishermen affected by the spill, with Exxon, which has since merged with Mobil to form Exxon Mobil Corporation, as the defendant.

The tanker ran aground in Alaska's Prince William Sound, in the largest and most-publicized oil spill in U.S. history. In 1994, the jury of the U.S. District Court in Anchorage filed with the plaintiffs who claimed financial harm from the spill, and argued for between $5 billion and $15 billion in punitive damages. In the same decision, $287 million was awarded to the plaintiffs for spill-related economic losses.

The $5 billion amount in punitive damages settled upon, noted the court in November's decision, was 17 times greater than the amount of compensatory damages. The Court of Appeals also noted that in a separate 1991 case, the U.S. Supreme Court restricted punitive damages awards to four times the actual harm inflicted on plaintiffs,

Valdez Cleanup Workers

and that the ratio was "close to the line" of being constitutionally acceptable and not.

Lead plaintiff attorney for this case, David Oesting, stated that, "...every other technical legal argument by Exxon against the damages was rejected...and the only issue is quantification of the amount." Each of the three judges rendering the decision asserted that some damages were justified, but that $5 billion was simply too much. The $287 million in compensatory damages granted in 1994 was left unmodified by the appeals court.

The recent Court of Appeals decision, made over seven years after the original ruling, met with resentment by many Alaskans adversely affected by the spill. Many still see the oil in the shoreline ecosystem. One corporate owner of land bordering Prince William Sound relayed that people would not recover until the lawsuit was settled.

The U.S. District Court in Anchorage is directed to reduce the amount of the punitive damage award by applying factors set by the Supreme Court, including the relative reprehensibility of conduct, penalty imposed for similar misconduct, and the ratio of the damage award to the actual harm inflicted.

Exxon Cleanup Crew Illnesses

Out of the 15,000 workers who cleaned up the worst oil disaster in U.S. history, the 1989 *Exxon Valdez* oil spill, there is an increasing number who are experiencing health problems. The health issues are similar and include respiratory problems, headaches, skin rashes, enlarged livers, and kidney problems. More severe cases include cancer, emphysema, pancreatitis and spleen problems. The large number of upper-respiratory complaints is a potential warning flag of chemical exposure.

Exxon says the cleanup operation was "remarkably safe" and involved crude oil, which is naturally occurring with a very low toxicity after a few days of weathering. But, the *Valdez* cleanup also involved strong solvents, in addition to the crude oil. Some believe that polyaromatic hydrocarbons (PAHs) could have entered the lungs of workers or been absorbed through the skin.

The National Institute for Occupational Health and Safety (NIOSH) agreed with Exxon's assessment that a virus was likely responsible for the respiratory problems, that affected not only cleanup workers, but also office personnel and even lawyers. It was concluded there was no risk, as long as there was meticulous adherence to standards developed by Exxon, NIOSH, and teh Occupational Safety and Health Administration (OSHA). There are claims that this was not always the case. Most health officials remain unconvinced that the cleanup left anyone sick.

ERT Website

The Environmental Response Team, in response to the need to provide high-quality video programs on treatment technologies, hazardous waste sites, site investigations, and other ERT activities, has launched a web site. It is at www.ertvideo.org You can view video samples and order full-length videosfrom their on-line catalog. The site has videos on phytoremediation, oil spill clean-up options, tire fires, methamphetamine labs, revegetation with native plants, information on specific hazardous waste sites, and more. The related links, www.ertsupport.com and www.ert.org, were both formed to support staff and help them with decision-making processes. They provide web support and training in different programs and automation of specific tasks to assist OSCs, Remedial Project Managers (RPMs), Task Leaders, and field personnel with on-site tasks. The site's goal is to resolve problems, provide support, and take requests for improvements. These sites can be used as tools to build web sites about hazardous waste sites and provide site activity information, site photos, profiles, and documents. Questions and comments on these sites can be made via email at ert-support@epa.gov or by calling (800) 999-6990.

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