

Case studies in the oil and gas industry



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Piper Alpha was a North Sea oil production platform operated by Occidental Petroleum (Caledonia) Ltd. The platform began production in 1976, first as an oil platform and then later converted to gas production. An explosion and resulting fire destroyed it on July 6, 1988, killing 167 men, with only 59 survivors. The death toll includes 2 crewmen of a rescue vessel. Total insured loss was about ? 1.

7 billion (US\$ 3.4 billion). At the time of the disaster the platform accounted for approximately ten percent of North Sea oil and gas production, and was the worst offshore oil disaster in terms of lives lost and industry impact. The Kirk of St Nicholas in Union Street, Aberdeen has dedicated a chapel in memory of those who perished and there is a memorial sculpture in the Rose Garden of Hazlehead Park in Aberdeen.

Thirty bodies were not recovered. Gulf Oil Spill The Deepwater Horizon oil spill (also referred to as the BP oil spill, the Gulf of Mexico oil spill, the BP oil disaster or the Macondo blowout) is an oil spill in the Gulf of Mexico. It is the largest marine oil spill in the history of the petroleum industry. The spill stemmed from a sea-floor oil gusher that resulted from the April 20, 2010 Deepwater Horizon drilling rig explosion. The explosion killed 11 platform workers and injured 17 others. On July 15, the leak was stopped by capping the gushing wellhead after releasing about 4.

9 million barrels (780? 103 m³) of crude oil. It was estimated that 53,000 barrels per day (8,400 m³/d) were escaping from the well just before it was capped. It is believed that the daily flow rate diminished over time, starting at about 62,000 barrels per day (9,900 m³/d) and decreasing as the

reservoir of hydrocarbons feeding the gusher was gradually depleted. The spill has caused extensive damage to marine and wildlife habitats as well as the Gulf's fishing and tourism industries.

Skimmer ships, floating containment booms, anchored barriers, and sand-filled barricades along shorelines were used in an attempt to protect hundreds of miles of beaches, wetlands and estuaries from the spreading oil. Scientists have also reported immense underwater plumes of dissolved oil not visible at the surface. The U. S. Government has named BP as the responsible party, and officials have committed to holding the company accountable for all cleanup costs and other damage. Alexander L.

KiellandThe Alexander L. Kielland was a Norwegian semi-submersible drilling rig that capsized whilst working in the Ekofisk oil field in March 1980 killing 123 people. The capsized was the worst disaster in Norwegian waters since World War II. The rig, located approximately 320 km east from Dundee, Scotland, was owned by the Stavanger Drilling Company of Norway and was on hire to the U.

S. company Phillips Petroleum at the time of the disaster. The rig was named after the Norwegian writer Alexander Lange Kielland. The rig was built as a mobile drilling unit at a French shipyard, and delivered to Stavanger Drilling in July 1976. The floating drill rig was not however used for drilling purposes but served as a semi-submersible 'flotel' providing living quarters for offshore workers.

By 1978 additional accommodation blocks had been added to the platform, so that up to 386 persons could be accommodated. In 1980 the platform was <https://assignbuster.com/case-studies-in-the-oil-and-gas-industry/>

working in the Norwegian north sea providing offshore accommodation for the Edda 2/7C production platform. In driving rain and mist, early in the evening of 27 March 1980 more than 200 men were off duty in the accommodation on the Alexander L. Kielland.

The wind was gusting to 40 knots with waves up to 12m high. The rig had just been winched away from the Edda production platform. Minutes before 18. 30 those on board felt a ‘ sharp crack’ followed by ‘ some kind of trembling’. Suddenly the rig heeled over 30° and then stabilised. Five of the six anchor cables had broken, the one remaining cable preventing the rig from capsizing.

The list continued to increase and at 18. 53 the remaining anchor cable snapped and the rig turned upside down. 130 men were in the mess hall and the cinema. The rig had seven 50-man lifeboats and twenty 20-man rafts. Four lifeboats were launched, but only one managed to release from the lowering cables.

(A safety device did not allow release until the strain was removed from the cables.) A fifth lifeboat came adrift and surfaced upside down; its occupants righted it and gathered 19 men from the water. Two of Kielland’s rafts were detached, three men being rescued from them. Two 12-man rafts were thrown from Edda and rescued 13 survivors. Seven men were taken from the sea by supply boats and seven swam to Edda. No-one was rescued by the standby vessel which took an hour to reach the scene.

Of the 212 people aboard 123 were killed, making it the worst disaster in Norwegian offshore history since WWII. Most of the workers were from

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Rogaland. Ocean Ranger Ocean Ranger was a semi-submersible mobile offshore drilling unit that sank in Canadian waters on 15 February 1982. It was drilling an exploration well in the Grand Banks area, 267 kilometres (166 mi) east of St.

John's, Newfoundland, for Mobil Oil of Canada, Ltd. (MOCAN) with 84 crew members on board when it sank. There were no survivors of the accident. On 26 November 1981, Ocean Ranger commenced drilling well J-34, its third well in the Hibernia Oil Field.

Ocean Ranger was still working on this well in February 1982 when the incident occurred. Two other semi-submersible rigs were also drilling nearby: the Sedco 706, 8.5 miles (13.7 km) NNE, and the Zapata Umland, 19.2 miles (30.9 km) N of Ocean Ranger.

On 14 February 1982, the rigs received reports of an approaching storm linked to a major Atlantic cyclone from NORDCO Ltd, the company responsible for issuing offshore weather forecasts. The usual method of preparing for bad weather involved hanging-off the drillpipe at the sub-sea wellhead and disconnecting the riser from the sub-sea blowout preventer. Due to surface difficulties and the speed at which the storm developed, the crew of Ocean Ranger were forced to shear the drillpipe after hanging-off, after which they disconnected the riser in the early evening. At about 1900 hours local time, the nearby Sedco 706 experienced a large, powerful wave which damaged some items on deck and caused the loss of a life raft. Soon after, radio transmissions were heard from Ocean Ranger, describing a broken portlight (a porthole window) and water in the ballast control room,

with discussions on how best to repair the damage. Ocean Ranger reported experiencing storm seas of 55 feet (17 m), with the odd wave up to 65 feet (20 m), thus leaving the unprotected portlight at 28 feet (8.

5 m) above mean sea level vulnerable to wave damage. Some time after 2100 hours, radio conversations originating on Ocean Ranger were heard on the Sedco 706 and Zapata Uglund, noting that valves on Ocean Ranger's ballast control panel appeared to be opening and closing of their own accord. The radio conversations also discussed the 100-knot (190 km/h) winds and waves up to 65 feet (20 m) high. Through the remainder of the evening, routine radio traffic passed between Ocean Ranger, its neighbouring rigs and their individual support boats. Nothing out of the ordinary was noted.

At 0052 hours local time, on 15 February, a Mayday call was sent out from Ocean Ranger, noting a severe list to the port side of the rig and requesting immediate assistance. This was the first communication from Ocean Ranger identifying a major problem. The standby vessel, the M/V Seaforth Highlander, was requested to come in close as countermeasures against the 10–15 degree list were proving ineffective. The onshore MOCAN supervisor was notified of the situation, and the Canadian Coast Guard and Mobil-operated helicopters were alerted just after 0100 hours local time. The M/V Boltentor and the M/V Nordertor, the standby boats of the Sedco 706 and the Zapata Uglund respectively, were also dispatched to Ocean Ranger to provide assistance.

At 0130 hours local time, Ocean Ranger transmitted its last message: “ There will be no further radio communications from Ocean Ranger. We are

going to lifeboat stations. ” Shortly thereafter, in the middle of the night and in the midst of atrocious winter weather, the crew abandoned the rig. The rig remained afloat for another 90 minutes, sinking between 0307 and 0313 hours local time.

Whilst the rig was provided with an Emergency Procedures Manual which detailed evacuation procedures, it is unclear how effectively the rig evacuation was carried out. There is evidence that at least one lifeboat was successfully launched with up to 36 crew inside, and witnesses on the M/V Seaforth Highlander reported seeing at least 20 crew members in the water at the same time, indicating that at least 56 crew successfully evacuated the rig. [citation needed] The United States Coast Guard report speculated that ‘ these men either chose to enter the water directly or were thrown into the water as a result of unsuccessful lifesaving equipment launching’. Rescue attempts by the standby vessels were hampered by the adverse weather conditions and the conclusion that the standby boats were neither equipped nor configured to rescue casualties from a cold sea. As a result of the severe weather, the first helicopter did not arrive on scene until 0230 hours local time, by which time most if not all of Ocean Ranger’s crew had succumbed to hypothermia and drowned. Over the next week, 22 bodies were recovered from the North Atlantic.

Autopsies indicated that those men had died as a result of drowning while in a hypothermic state.