Piper Alpha: The Disaster and Beyond

On July 6, 1988, 167 lives perished on the Piper Alpha Platform, located in the icy North Sea. The worst offshore oil accident in history, the Piper Alpha disaster quickly revolutionized the offshore oil industry. Eleven years later the offshore oil industry is dramatically different.

Outlined below is an overview of the accident, the official British government public inquiry, and the managerial changes that have occurred:

- What went wrong An overview of the events which led to the Piper Alpha disaster.
- The British Response The results of the official investigation by Lord Cullen, including the final recommendations of his investigation.
- The Offshore Industry Response An in-depth analysis at the current system of risk based management, the new permit to work system, new offshore technology, and the new Piper Bravo platform.
- Safety Management Piper Alpha serves as a reminder that safety management is about lives, not numbers.
- References

This page was co-developed as a project for Rice University's Technological Disaster and Catastrophes course by Daniel Conway, Vanessa Salazar, and Sid Byrd. This site is best viewed using Microsoft Internet Explorer.

Overview of the Piper Alpha Disaster

Piper Alpha had many effects, in human, regulatory, and monetary terms. This section provides a summary of the events that occurred, explanations of the reasons they were allowed to happen, and a short overview of the consequences of the disaster.

Back to Main Page

Background and Events of the Disaster: Technical Viewpoint

Piper Alpha was an oil platform in the North Sea that caught fire and burned down on July 6, 1988. It was the worst ever offshore petroleum accident, during which 167 people died and a billion dollar platform was almost totally destroyed.

The platform consisted of a drilling derrick at one end, a processing/refinery area in the center, and living accommodations for its crew on the far end. Since Piper Alpha was close to shore than some other platforms in the area, it had two gas risers (large pipes) from those platforms leading into the processing area. It processed the gas from the risers plus the oil products it drilled itself and then piped the final products to shore.

The disaster began with a routine maintenance procedure. A certain backup propane condensate pump in the processing area needed to have its pressure safety valve checked every18 months, and the time had come. The valve was removed, leaving a hole in the pump where it had been. Because the workers could not get all the equipment they needed by 6:00 PM, they asked for and received permission to leave the rest of the work until the next day.

Later in the evening during the next work shift, a little before 10:00 PM, the primary condensate pump failed. The people in the control room, who were in charge of operating the platform, decided to start the backup pump, not knowing that it was under maintenance. Gas products escaped from the hole left by the valve with such force that workers described it as being like the scream of a banshee. At about 10:00, it ignited and exploded.

The force of the explosion blew down the firewall separating different parts of the processing facility, and soon large quantities of stored oil were burning out of control. The automatic deluge system, which was designed to spray water on such a fire in order to contain it or put it out, was never activated because it had been turned off.

About twenty minutes after the initial explosion, at 10:20, the fire had spread and become hot enough to weaken and then burst the gas risers from the other platforms. These were steel pipes of a diameter from twenty-four to thirty-six inches, containing flammable gas products at two thousand pounds per square inch of pressure. When these risers burst, the resulting jet of fuel dramatically increased the size of the fire from a billowing fireball to a towering inferno. At the fire’s peak, the flames reached three hundred to four hundred feet in the air and could be felt from over a mile away and seen from eighty-five.

The crew began to congregate in the living accommodations area, the part of the platform that was the farthest from the blaze and seemed the least dangerous, awaiting helicopters to take them to safety. Unfortunately, the accommodations were not smoke-proofed, and the lack of training that caused people to repeatedly open and shut doors only worsened the problem.

Conditions got so bad in the accommodations area that some people realized that the only way to survive would be to escape the station immediately. They found that all routes to lifeboats were blocked by smoke and flames, and in the lack of any other instructions, they made the jump into the sea hoping to be rescued by boat. Sixty-two men were saved in this fashion; most of the other 167 who died suffocated on carbon monoxide and fumes in the accommodations area.

The gas risers that were fueling the fire were finally shut off about an hour after they had burst, but the fire continued as the oil on the platform and the gas that was already in the pipes burned. Three hours later the majority of the platform, including the accommodations, had melted off and sunk below the water. The ships in the area continued picking up survivors until morning, but the platform and most of its crew had been destroyed.

Back to Overview

Events: Human Viewpoint

For a worker on the Piper Alpha platform the night of July 6, 1988, the events that occurred would have been absolutely terrifying and would have required great personal strength and courage to survive, The panic and confusion that occurred were amplified by the facts that many of the workers at any given time were contracted for and were therefore new to the platform and that a full evacuation drill had not been carried out in over three years,

In fact, safety training was deficient all around. Workers in the control room were alerted by a series of blaring gas alarms, and the rest first either heard the explosion or saw smoke. People began to run through the station in confusion, which turned to panic as the fire and explosions spread. There were no clear orders announced over the speaker system at any point. When they realized that there was a real danger on the station, some workers tried to reach the lifeboats, but by that time all paths to them had been cut off. Likewise, a group tried to reach the controls that would allow them to manually start the fire suppression system, whose automatic start feature had been disabled, but they failed and none of them were ever seen again.

Very soon, most people began heading to the accommodation area. There they were mostly protected from the heat and flame for a while, but not the choking smoke. Men began to lie on the ground with wet rags over their mouths and faces. Some of them realized that they might die.

At one point, an important manager got on a table and began to speak, but no one could hear or paid him any attention. It was too late for direction then.

Some people realized that the only way to safety was to jump into the sea. Men ran to the railing, only to see a daunting drop of over a hundred and fifty feet to the surface of the water, lit by the patches of flaming oil floating around the platform. Those who jumped had to alternate between staying underwater and freezing in the frigid North Sea and keeping their heads in the air to cook. Those who stayed behind died of carbon monoxide poisoning.

Stories from survivors illustrate how horrible the situation was. One man had just come to the platform that day and had no idea where he was or how to get around. All he could see was that he was on a walkway high up in a cloud of smoke. He made the decision that it would be better to die from jumping and hitting the deck than from burning alive. He jumped, fell into the ocean, and was rescued.

Another man was heard to call out a repeated request for anyone who worked for the same company he did. When asked why he would do such a thing in such a situation, he replied, "I didn’t want to die alone."

In the end, 62 men were picked up from the water, many with severe burns and injuries. 167 more died. Those who lived will have to do so with their memories of fear and loss for the rest of their lives.

Back to Overview

Causes and Shortcomings

There were several safety shortcomings that allowed the disaster to occur, each one of which let the losses increase more than needed and caused safety regulations to change dramatically on their examination in the following years. They were:

• **Permit-to-Work System -** This was a system of paperwork designed to promote communication between all parties affected by any maintenance procedure done on the platform. Workers had to fill out a form, which would then be submitted to a manager who would approve, cross reference, and track it until the work was completed. The system on Piper Alpha had become too relaxed. Employees relied on too many informal communications, such as merely leaving the form on a manger's desk instead of personally giving to him, and communication between shift changes was lacking. If the system had been implemented properly, the initial gas leak never would have occurred.

• **Firewalls -** The firewalls on Piper could have stopped the spread of a mere fire. They were not built to withstand explosion. The initial blast blew these down, and the subsequent fire spread unimpeded, when it might have been contained has the firewalls withstood explosion also. Newer stations have blast walls that would prevent a repeat of the initial phases of the Piper disaster.

• **Deluge System -** This was a system designed to automatically activate in case of a fire and spray water on it to suppress it.

Unfortunately, the platform manager had ordered that the automatic start feature be turned off. Since there was no control for just that purpose, it was probably done at the circuit breaker. The reason for his decision was to protect divers in the water near the intake for the system. Since divers were in the water up to half the time during the summer months, this meant that the automatic deluge was off for half the time also, including when the disaster happened. Disabling the system was a fairly common practice among similarly designed platforms, but they had better luck than Piper did.

• **Safety Training -** This was an extremely major problem. The workers on the platform were not adequately trained in emergency procedures, and management was not trained to make up the gap and provide good leadership during a crisis situation. Evacuation drills were not done nearly as frequently as the official schedule of once a week, and a full drill had not happened in over three years. Also, there was inadequate training in inter-platform communication. When the other platforms realized that there was a problem on Piper, they simply assumed that Piper would take care of it. They did not shut off the flow of gas that they were pumping onto it for over an hour, effectively tripling or more the available fuel supply. The problems with safety training were not a lack of decent training guidelines; the existing guidelines were just ignored.

• **Auditing -** Occidental Petroleum had regular safety audits of its facilities. These audits were performed, but they were not performed well. Few if any problems were ever turned up, even though there were serious issues with corrosion of deluge system pipes and heads and many other issues. When a major problem was found, it was sometimes just ignored. For example, about a year before the gas risers burst and burned the station down, an independent audit whose purpose was to identify major fire risks correctly identified the hazard and stated that if they every burst, nothing could save the station. He recommended installing specific safety systems just to protect them. In the board meeting that reviewed his report, the gas risers were never mentioned.

• **Risk Assessment -** Those risers were clearly the primary risk on the platform, but nothing was done to protect them. It was recommended that a specific deluge system be installed just for them, along with an automatic valve that would seal them off at sea level in the event of an alarming pressure loss, etc., but none of these measures was implemented. Most modern platforms do have such features where they are appropriate.

Back to Overview

Outcomes

Overall, 162 people died. A billion dollar platform was lost, along with up to ten percent of Britain's oil production capability. The insurance payment from Lloyd's of London, which covered the value of the platform, lost production, and the 700 thousand dollars paid to every victim, among other things, totaled a record 2.8 billion dollars, almost twice the second highest payment for a single event besides a natural disaster such as a strong hurricane. The oil industry was badly shaken, and a public inquiry was launched that recommended many new safety procedure. Government agencies were created to implement these changes in Great Britain.

Back to Overview

Immediate Action on Offshore Safety

On the night of July 6, 1988, the Piper Alpha oil platform disaster took 167 lives which could have been saved. Better safety procedures and training were desperately needed to maintain the integrity of the British offshore oil industry. The devastating effects of the Piper Alpha disaster warranted dramatic reforms that would sweep the British offshore oil industry and revolutionize British offshore oil platform safety. The central positive effects of the Piper Alpha incident were:

The Public Inquiry
Lord Cullen's Recommendations

Back to main page

The Public Inquiry

As a consequence of the catastrophic events that occurred on the night of July 6th aboard the Piper Alpha platform, the British government assigned Hon. Lord William Douglas Cullen, a renowned Scottish judge, to oversee a public inquiry investigating the disaster and to write a report addressing his findings.

Q: What is a public inquiry?

A: A public inquiry is an open government investigation that allows public observation and includes expert testimonies and published conclusions.

Q: What were the objectives of the Piper Alpha public inquiry?

A: The Piper Alpha public inquiry had to answer two main questions:

Part 1 - What were the causes and circumstances of the disaster on the Piper Alpha platform on July 6, 1988?

Part 2 - What should be recommended with a view to the preservation of life and the avoidance of similar accidents in the future?

Q: How long did the Piper Alpha public

inquiry last?

A: The process spanned about 13 months. Part 1 took 10 months; part 2 took 3 months.

Q: When was the public inquiry published?

A: Lord Cullen published the Piper Alpha report in November of 1990.

Back to previous page

Lord Cullen's Recommendations

Lord Cullen executed his responsibilities to the British government by summoning 63 expert witnesses to lend their knowledge of offshore platform design, management, and safety to the Piper Alpha report. The witnesses represented the United Kingdom Offshore Operators Association Limited (UKOOA), the Health and Safety Executive (HSE), the Department of Energy (DEn), the trades unions, the Department of Transport, and the Norwegian Petroleum Directorate. Their testimonies provided the necessary expertise and evidence to formulate a formal set of recommendations for the improvement of offshore safety.

The three core changes that Lord Cullen proposed to revolutionize offshore safety:

- Formation of the **Health and Safety Executive**
- Conversion to **Goal-setting Regulations**

- Implementation of the **Safety Case**

Other important recommendations included a spectrum of **Subjects**.

Back to previous page

Health and Safety Executive

Because of constant confusion among platform operators in getting regulations approved by authorities, the HSE was created and mandated to take over offshore responsibilities previously carried out by the DEn, which did not have sufficient expertise to organize effective safety methods for offshore oil platforms.

Q: What does the Health and Safety Executive do?

A: As the operating branch of the Health and Safety Commission, the Health and Safety Executive (HSE) ensures that risks to people's health and safety from work activities are properly controlled.

Q: How is the Health and Safety Executive organized?

A: The Health and Safety Executive consists of 16 divisions:

- Chemical Hazardous Installations Division
- Directorate of Science and Technology
- Electrical Equipment Certification Service
- Field Operations Directorate

- Health and Safety Laboratory
- Health Directorate
- HSE Information Services
- HSE Language Services
- Local Authority Unit and HELA
- Mines Inspectorate
- Nuclear Safety Directorate
- Offshore Safety Division
- Operations Unit
- Policy Unit
- HM Railway Inspectorate
- Safety Policy Directorate

Q: What special measures did the HSE take to ensure improvement in offshore safety?

A: In addition to its already extensive system of 15 specialized divisions, the HSE created a new Offshore Safety Division (OSD) in April of 1991.

Q: What does the Offshore Safety Division do?

A: This division of the HSE ensures that risks to workers in the petroleum and diving industries are minimal. Oil platforms are frequently inspected, operations are carefully audited, and accidents and worker complaints are investigated to meet this objective.

Back to previous page

Goal-setting Regulations

Lord Cullen specified that goal-setting regulations, which require certain objectives to be met using appropriate methods, be implemented on offshore oil platforms to replace former regulations, which imposed detailed measures that had to be taken invariably. Non-mandatory guidance notes would accompany goal-setting regulations to facilitate meeting goals effectively. Goal-setting regulations, though they may seem like a subtle change in procedure, actually alter safety methods considerably. They allow more flexible, platform-customized procedures to be used as opposed to the cut-and-dried, tedious procedures mandated by former regulations.

Lord Cullen saw immediate need for conversion to goal-setting regulations in the following areas:

- **Construction** – structure and layout of the installation and its accommodation
- **Plant and equipment** – plant and equipment of installation, especially those dealing with hydrocarbons
- **Fire and explosion protection** – active and passive fire and explosion protection
- **Evacuation, escape, and rescue** – emergency procedures, life-saving appliances, evacuation, escape,

and rescue

Back to previous page

The Safety Case

Q: What is a safety case?

A: A safety case is a written document in which a company must demonstrate that an effective safety management system (SMS) is in place on a particular offshore installation.

Q: What is a Safety Management System (SMS)?

A: An integral part of the safety case, the SMS is a group of platform personnel that sets safety objectives, a system to achieve those objectives, performance standards to be met, and a system by which those standards should be enforced.

Q: Who proposed the safety case?

A: The UKOOA proposed the safety case as an offshore version of the onshore formal safety assessment, or Regulation 7 of the Control of Industrial Major Accident Hazards Regulations.

Q: What criteria must a safety case meet?

A: Safety cases must show that the SMS of the offshore installation is competent to ensure that the design and operation of the installation are safe, that possibly major risks to workers have been minimized, and that both a Temporary Safe Refuge (TSR) and a full evacuation, escape, and rescue plan are in place in case of an emergency.

Q: What quantitative information supplements safety cases?

A: Quantitative risk assessment (QRA) allows structured, objective, numerical data to be applied to the measurement of risk in order to make clear comparisons between the effectiveness of safety methods. QRA focuses on demonstrating how probable a harmful event is and how severe a particular consequence would be as a result of using a certain safety measure. Data provided by QRA must be applied with caution because they only serve to supplement safety case, which is, in essence, a qualitative evaluation.

Q: What are the advantages of the safety case?

A: The safety case contributes to safety in the offshore oil industry largely because it takes into account various types of offshore installations and tailors safety measures to their different designs and modes of operation. Fixed and floating, shallow-water and deep-water, gas-producing, oil-producing, gas- and oil-producing, unmanned, small-staffed, and large-staffed platforms all require very different regulations to be optimally safe, and the safety case encourages the innovation and invention necessary to the development of new and improved safety techniques that satisfy optimum safety requirements. By focusing on the platform operator's responsibility to manage a safe workplace, the safety case enables major hazards to be identified and minimized early. The operator is so familiar with his/her platform that he/she can pinpoint areas that need modification and activate these modifications before the safety case is completed.

Back to previous page

The Offshore Oil Industry Response

The offshore oil industy in the North Sea is dramatically different post-Piper Alpha. Not only did Occidental, the owner of Piper Alpha, change its policies, other companies performed complete overhauls on their platform policies.

Outlined below are the areas the Piper Alpha disaster impacted the greatest:

- Risk-based Analysis Why the offshore industry switched to risk-based analysis and the benifits this type of safety analysis system.
- The New Permit to Work System Since a large portion of the Piper Alpha disaster is blamed on the faulty permit to work system, this page highlights the changes that have taken place throughout the industry.
- New Safety Technology As a result of the explosion on Piper Alpha, safety research has led to the invention of new products designed to protect workers.
- Piper Bravo Piper Alpha's replacement--bigger and better.

Back to the main page

Risk-based Analysis

Prior to the accident a sector-wide set of regulations and laws were applied to all platforms and were enforced by governmental inspection. This policy did not allow for customization of safety regulations to a particular type of platform. Because of the numerous types of offshore platforms this type of system was found to be inadequate for the North Sea production area. After the Piper Alpha disaster, and as a result of Lord Cullen's official public inquiry, the British government adopted the policy of risk-based analysis. Risk-based analysis requires that all offshore operators identify all hazards on every platform and demonstrate that every operation can be conducted safely.

According to the current standards, the operator must produce a formal safety case to be approved by the regulatory body, the Offshore Safety Division of the Health and Safety Commission. These safety cases can take up to five years to produce since so much safety analysis is involved. In the formal safety case, the operator must have procedures in place to control risks to personnel. It must also demonstrate that the current safety management is adequate. In addition to the formal safety case, a temporary refuge, typically the accommodation unit, must exist and provide at least two hours of protection for the workers.[1] This increase in safety has, however, sparked complaints from workers who claim that safety has become excessive and prevents them from effectively doing their job.[2]

Back to Offshore Industry Response

---

[1] “Safety management changing in U.K. North Sea,” Oil and Gas Journal 49.35 (1991): 68-70.

[2] Baldwin, Jessica, “Offshore rig’s safety apathy gone: 1988 blast catalyst for host of rules,” Houston Chronicle 29 Nov. 1992: A11.

The New Permit to Work System

Much of the Piper Alpha disaster has been blamed on the failure of Piper Alpha's platform's permit to work system. The permit to work system is utilized by offshore installations, and other industries, as a way of coordinating and controlling all work, alerting others of areas closed for work (isolations), and providing written instructions and authorizations. This is especially important on larger installations, since up to 200 jobs may be ongoing at one time.[1] When work is necessary, a permit is written out and approved before any work can begin. On Piper Alpha a breakdown of communication occurred, leading to a pump, still under work, being started without anyone realizing the necessary safety valve was missing.

During Lord Cullen's investigation, several companies, including Shell U.K. Exploration and Production, decided to revise their permit to work systems. They decided that experts from outside the industry should examine the current system and make recommendations. Consultants from the naval nuclear industry were used because of the many similarities between the two industries: strict legislation, potentially hazardous situations, may employees, intricate technology, and rigid timescales.[2] As a result of the naval nuclear consultants' recommendations, a new permit to work system was implemented that provided workers and supervisors more communication about ongoing work. The new system created called for:

- Tiered authorization of permits
- Central coordination of permits
- Clear visibility of the status of work
- Computer based permit information and tracking system
- Enhanced control of isolation
- Formal training and audits

The new system changed the organization to a tiered authorization system; whereas, prior to Piper Alpha, one single person, the Operator

Installation Manager (OIM), was in charge of all permits. The OIM, especially on larger platforms, became absorbed in trivia and often had little time to devote to the system as a whole and less time to examine high-risk work. The new system resolved this problem by creating an entirely new position, the Platform Coordinator, who was responsible for overseeing all permits. All permits pass through the Platform Coordinator, and the department heads can sign non-risk permits. High-risk permits, however, must be signed and approved by the OIM, allowing the OIM to focus only on high-risk work. This allows permits to be given the fullest possible consideration at the appropriate level in the organization.[3]

Recognizing the importance of a central location to display all permits, the new system called for a platform coordination facility to be created. This area contains a permit rack of all current permits, a permit location board to display all areas undergoing work, and an isolation diagram to display all isolated areas.[4] In addition to these features, the facility also contains a computerized permit tracking and information system. This system would provide management information, shift and crew hand over reports, permit information 24 hours a day, and information incase of emergencies.[5] This new computer database of all permits reduces the administrative burden on supervisors, thereby allowing them more time to focus on safety.

This communication center will also contain the necessary permit to work forms. There are two types, one is for cold work, or work where there is no danger of ignition, and the second is for hot work, where a source of ignition is present (Category 1) or there is a risk of ignition present (Category 2). Because there are different risks for these types of work, it is very important that the forms reflect the hazards involved in the work. In addition to detailed permit to work forms being developed, numerous safety checklists were created for routine work, some installations having up to 50 checklists.

A critical area for a permit to work system is isolations. Isolations are used to isolate a boundary of a system to prevent accidental de-isolation. This is very important, because equipment being serviced should not be used until all work is completed. Typically, while the work is done the equipment will also be isolated from the control room by either disabling or locking any controls to the equipment. The completion of one task does should not allow premature de-isolation; more than one job may be occurring in the isolated area. All isolations have to be clearly displayed or marked at the platform information center as mentioned above. Isolations are included in the new permit to work system to provide supervisors assurance that the isolations are authorized and properly controlled.[6]

Since the permit to work system affects everyone from the supervisor down to the worker, it is of great importance that every worker be trained in the permit to work system. A new permit to work manual was created, explaining for each particular platform the types of work requiring a permit, who is authorized to sign a permit, what the authorizer's responsibilities are, and who can authorize a permit for particular tasks. It is also of great importance to perform regular audits to ensure that current rules and procedures continue to be effective.

Back to Offshore Industry Response

---

[1] Booth, Michael, "A new approach to permit to work systems offshore," Safety Science, 15.4-6 (1992): 311.

[2] Ibid 311.

[3] Ibid 312, 316.

[4] Ibid 317.

[5] Ibid 312-322.

[6] Ibid 318-323.

New Safety Technology

As a result of Piper Alpha several new types of safety technology were created. Much research is being done in the area of fire protection, including both active fire protection (i.e. water deluge, gas monitors, etc.) and passive protection (fireproofing). Researchers have experimented using high-pressure streams of water to protect workers from fire, heat, and smoke, as shown below:

[1]

Additional research is also being done in passive fire protection, since passive protection requires no activation and is therefore not subject to malfunction. The typical fire protection used on most platforms was Charteck, a spray on fireproofing product created in 1974. However, a newer product, Charcast is an interlocking panel system that can provide workers with up to two hours protection from fire and heat.[2]

Emergency dumping of oil inventories on platforms incase of fire has also been examined. It was found that oil could be dumped, with minimal environmental impact, to surge or storage tanks, sub-sea vessels, and existing or abandoned wells. Also, the oil could be burned or flared if the platform only had small amounts of oil; however this method would have less than desirable environmental impact. The study found that construction of a dumping system and/or storage tanks would cost anywhere from 5 million to 20 million for an existing platform, saving only 8.9 * 10^3 lives, an unrealistic expenditure for safety.[3] However the expected cost would be dramatically cheaper if incorporated into new platform designs, and may be a possibility for future platforms.

Back to Offshore Industry Response

---

[1] Gordon, David, Mad or Rad: An Oasis Amid Fires, http://abcnews.go.com/sections/science/MadRad/madrad981016.html.

[2] Castle, George, "Integrating Fire Protection into Structural Designs," Ocean Industry 26.10 (1992): 45-47.

[3] Al-Hassan, T., "Emergency Dumping of Large Oil Inventories," Proceedings of the Sixth International Offshore and Polar Engineering Conference, Los Angles, USA, 26-31 May 1996.

Piper Bravo

Just a few years later, the successor to Occidental, Elf Enterprise Caledonia, Ltd. decided to build a new platform to replace the platform lost by Piper Alpha. This platform began production in 1993 as a significantly different platform from its predecessor. The Piper Bravo platform, as shown below, is a much larger and narrower platform, providing greater room between the accommodation unit and the processing area.

[1]

This arrangement, atypical of most square platforms, provides greater safety to the workers in the accommodation unit. There is also a blast wall to protect the accommodation unit from an explosion in the processing area. The platform also has larger walkways, allowing equipment to be removed and repair work done onshore.

In addition to a blast wall to protect workers, there are two escape routes from every point. The temporary refuge is the accommodation unit and it provides the necessary two hours of protection for workers incase of emergency. In the event that it is necessary to leave the platform, new lifeboats have been installed to meet 200 percent capacity of workers. These new lifeboats are completely enclosed to protect workers from fire, smoke, and icy water and easily sustain the 60-100 feet drop from the platform to the surface below. The picture on the right shows the lifeboats on the Piper Alpha platform and the picture on the left shows how the lifeboats are deployed in the event of a disaster.

Back to Offshore Industry Response

---

[1] "Safety Central to Piper B platform design," Oil and Gas Journal 89.35 (1991): 75.

Safety Management

In many industries safety has become a game of money, numbers, and statistics. A company can now decide an appropriate expenditure per life saved, calculating safety decisions mathematically. While it is vital that a corporation consider the statistics of risks to workers along with the costs to protect them, the goal of safety management is to protect the lives each individual worker. Just because a company can financially handle the loss of a worker does not mean that it should not do everything possible to protect workers from injuries.

The Piper Alpha disaster was one of the worst cases of safety mismanagement. Safety is not simply about numbers; it is about lives. Because of Occidental's poor safety management, 167 men perished on the Piper Alpha platform. Those who survived were forced to risk death by jumping off of the platform into icy water over 60 feet below. Safety management failed not only the 167 men who lost their lives, but also the other survivors who are forced to live with the horrible memories. The Piper Alpha disaster should serve as an example to other companies and industries of the importance of good safety management.

Back to the main page

References

Information found on our website was gathered from the following references:

Al-Hassan, T., et. al. "Emergency Dumping of Large Oil Inventories." Proceedings of the Sixth International Offshore and Polar Engineering Conference, Los Angles, USA, May 26-31, 1996. Golden, Colorado: ISOPE, 1996. 558-561.

Baily, M. "U.K. Offshore Safety Regime Raises New Challenges." Oil and Gas Journal 94.34 (1996): 66-70.

Baldwin, Jessica. "Offshore Rig's Safety Apathy Gone / 1988 Blast Catalyst for Host of Rules." Houston Chronicle 21 November 1992, Business: 11.

BBC Online Disaster Series: Piper Alpha. http://www.bbc.co.uk/education/archive/disaster/piper.shtml.

Boniface, A. "Action on offshore safety." Chemical Engineer 29.486 (1990): 12-13.

Booth, M. and J. D. Butler. "A new Approach to Permit to Work Systems Offshore." Safety Science 15 (1992): 309-326.

Castle, George. "Integrating Fire Protection into Structural Designs." Ocean Industry 26.10 (1992): 45-47.

Crook, Jeff. "North Sea Oil Rigs will be Safer by Design." New Scientist 136.1850 (1992): 19.

Cullen, Hon. Lord. The Public Inquiry into the Piper Alpha Disaster. London: HMSO, 1990.

Dobbin, Ben. "Fiery Tragedy in North Sea/Rig: Workers had Two Choices: Certain Death or Likely Death." Houston Chronicle 9 July 1988, Sect. 1: 1.

Flin, R., et. al. "Risk Perception by Offshore Workers on UK Oil and Gas Platforms." Safety Science 22 (1996): 131-145.

Floormaster.com Safety: Piper Alpha. http://www.floormaster-plus.com/piper.htm.

Fraser, D. E. "Occupational Health Management of Police Officers Involved in the Piper Alpha Disaster." Journal of the Society of Occupational Medicine 41.1 (1991): 174-175.

Gale, William E., et. al. "A Methodology for Assessing and Managing Fire and Life Safety for Offshore Production Platforms." Proceedings of the Fifth International Offshore and Polar Engineering Conference, The Hague, The Netherlands, June 11-16, 1995. Golden, Colorado: ISOPE, 1995. 409-419.

Gordon, David George. "Mad or Rad: An Oasis Amid Fires." Special to ABCNEWS.com. 16 October 1998. http://abcnews.go.com/sections/science/MadRad/madrad981016.html.

Health and Safety Executive. http://www.open.gov.uk/hse.

Ince, Martin. “Disasters Waiting to Happen.” New Statesman & Society 1.6 (1988): 26-27. 1.6 (1988): 26-27.

“New Piper B Reflects Piper A Safety.” Oil and Gas Journal 91.8 (1993): 35-36.

Occupational Safety Observer June 1993. http://homepages.packet.net/evossler/pipera/piperalpha.txt.

Oliver, Ian. “Policing the North Sea.” The Police Chief 58.8 (1991): 64-66.

“Piper Alpha: The Lead up to the Disaster.” Marine Engineers Review. December 1998: 29-31.

“Safety management changing in U.K. North Sea.” Oil and Gas Journal 89.35 (1991): 68-70.

Taylor, B. G. S. “The U.K. Offshore Operators’ Response to the Piper Alpha Disaster.” Journal of Petroleum Technology 45.1 (1993): 66-71.

Time Magazine illustrations. http://homepages.packet.net/evossler/pipera/pipera.html.

UK Offshore Operators Association. http://www.ukooa.co.uk/.

Back to the Main Page