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Piper Alpha



Presented by Steve Rae
November 15th 2016**Accident or Predictable Surprise?**
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Poll Question

What is your age?

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Poll Question



Where in the world do you work?

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Poll Question



Which category does your employer fall under?

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Poll Question



What is your current level engagement?

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Accident or Predictable Surprise



So lets look at some definitions of these terms in dictionary.com

Accident

- An undesirable or unfortunate happening that occurs unintentionally, usually resulting in harm, injury, loss or casualty:

Predictable

- Something that is able to be foretold or declared in advance:
- Something to be expected, on the basis of previous or known behavior:

Surprise

- An unexpected or astonishing event, fact or thing:
- Something that occurs with an element of shock:

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Early years offshore experience 1983 - 1988



Forties Alpha 1975

Brent Alpha 1976

North Alwyn 1986

Beatrice Alpha 1979

UK Continental Shelf

Norwegian Continental Shelf

Brae Alpha 1982

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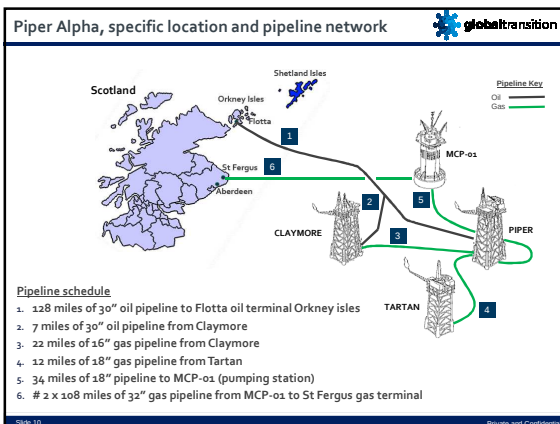
On a global perspective where was Piper Alpha located





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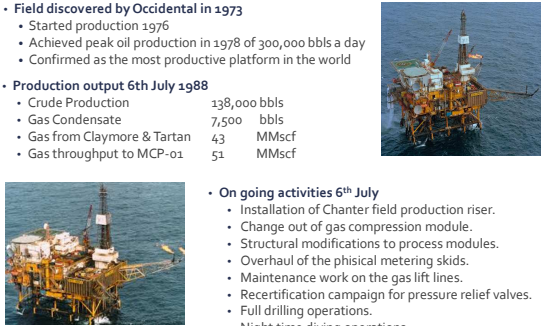
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Piper Alpha, one of first platforms installed in the UKCS 

- Field discovered by Occidental in 1973
 - Started production 1976
 - Achieved peak oil production in 1978 of 300,000 bbls a day
 - Confirmed as the most productive platform in the world
- Production output 6th July 1988

• Crude Production	138,000 bbls
• Gas Condensate	7,500 bbls
• Gas from Claymore & Tartan	43 MMscf
• Gas throughput to MCP-01	51 MMscf
- On going activities 6th July
 - Installation of Chanter field production riser.
 - Change out of gas compression module.
 - Structural modifications to process modules.
 - Overhaul of the physical metering skids.
 - Maintenance work on the gas lift lines.
 - Recertification campaign for pressure relief valves.
 - Full drilling operations.
 - Night time diving operations.



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Tharos "the worlds largest floating fire engine" 

- Tharos its primary purpose & capability

Occidental built the Tharos with the primary purpose of protecting the Piper, which at the time was the most productive installation in the world producing \$ 5 million of crude oil a day.

- Designed by American oil well trouble-shooter Red Adair .
- Brought into service in 1980.
- Main purpose to deal with blow-out & well fires.
- Computerized dynamic positioning system.
- Helicopter landing pad, servicing & storage hanger.
- Complete with hydraulically extendable walk way.
- Fire-fighting capacity 40,000 gallons a minute.
- Capable of reaching a distance of over 300 feet.
- Crane lifting capacity of 200 hundreds tons.



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Piper Alpha, 10:00 pm 6th July initial explosion 

- **10:00 pm initial explosion** occurred in C module, ignition of leaking gas from blind flange fitted while pressure relief valve being re-certified.
- **Immediate consequences:**
 - Control room partially destroyed, Electrical power systems and alarm systems lost.
 - Several oil lines ruptured by projectiles, multiple oil fires visible.
 - Platform engulfed with smoke blowing across helideck and lifeboats.
 - Fire water deluge system rendered inoperable.
 - Firewall between modules B & C badly damaged.
- **10:10 pm situation on board:**
 - Last mayday message transmitted.
 - Radio room abandoned due to smoke ingress.
 - Lifeboats on north and east sides, inaccessible.
 - PA system inoperable.
 - Telecommunications to / from Piper lost.



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Piper Alpha, 10:20 pm 6th July, Tartan riser explodes 

- **10:15 pm, 5 minutes prior to Tartan riser exploding:**
 - Some crew members on Piper already made way to sea level, rescue taking place.
 - Claymore OIM receives confirmation from Tharos of explosion and fire on Piper.
 - Claymore OIM instructs staff to continue pumping oil & gas into the pipeline network.
 - Tartan OIM gives instruction to stop gas export to Piper.
 - Onshore response centers now mobilizing.
- **10:20 pm Tartan gas line on Piper explodes:**
 - Fire fueled by 18MMscf of gas within pipeline.
 - Situation beyond recovery.
 - Only means of escape is direct entry to sea.
 - Rescue only possible by attending vessels.
 - Estimated 22 survivors recovered from sea.



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Piper Alpha, 10:50 pm 6th July, riser to MCP-01 explodes 

- **10:50 pm, main gas export line to MCP-01 ruptures:**
 - Pipe line gas inventory venting on Piper.
 - Estimated 39 survivors had been recovered at this time.
 - Fast rescue craft was lost in explosion with all but one of the men on board.
 - Tharos was partially engulfed by this explosion.
- **11:00 pm Claymore shutdown gas export to Piper.**
 - MCP-01 and Claymore start depressurization of pipelines.
- **11:20 pm vessels requested to pull back due to risk of H₂S.**
- **00:30 am**
 - Last of the casualties were transferred to Tharos.
 - Tharos stopped fire fighting operations.
 - Most of Piper had by now slipped into sea.
- **01:20 am**
 - specialist doctors arrive to tend to the badly injured.



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Piper Alpha, 10:00 pm 7th July "the morning after" 

- 60% of the platform had been lost beneath the sea.
- Still a number of persons (30) unaccounted for, presumed dead.
- Death toll assumed to be 167.
- Air search continued into the afternoon of the 7th
- Sea search, by vessels, continued till 10:45 on the 7th
- Survivors confirmed as 62 from platform.
- Sadly one survivor died later as a result of his burns.
- 1 of the crew from the Fast Rescue Craft survived also.



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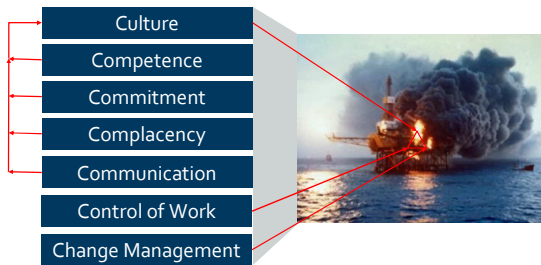
Causal effects, supported by independent research 

- Culture (impacted by organizational, team, site & individual beliefs and values)
- Competence (lack of knowledge, skill and, or, ability to complete task)
- Commitment (absence of intellectual and, or, emotional buy-in)
- Complacency (lack of task focus and, or, conscious engagement)
- Communication (inadequate sharing of critical information at worksite)
- Control of Work (ineffective process discipline, and poor task assurance)
- Change Management (failure to recognize and or respond to change)

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Causal attributes 

Causal attributes, how they influence the culture & resulting initial explosion



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Poll Question


Do you agree there should be an industry led group to promote human factors?

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Poll Question


What do you see as SPE`s role in the Human Factors discussion?

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A true story, the outcome of which changed our industry


- This video includes some computer graphics which have been recreated to depict the events as they unfolded on the 6th July based on actual evidence given by survivors during the Cullen enquiry.
- There is also some live video footage taken from helicopters and vessels in attendance on that night.
- 167 workers died as a result of this event, in what was, and still remains, the world's worst offshore disaster.

Remembering Piper - the night that ch


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A true story, the outcome of which changed our industry



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Poll Question



▪In your mind was Piper Alpha...

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A predictable surprise! that could have, been prevented!



It's the obligation of us all to ensure that we never allow this to be repeated in our industry. Always be mindful of the 7 common, reoccurring, contributing factors.

Contributing Factors

Culture
Competence
Commitment
Complacency
Communication
Control of Work
Change Management

Safety Leaders
engage and reinforce



The Consequences



The Aftermath



Practice
STOP work authority



Our Legacy



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