

July 2005

Piper Alpha Oil Platform Destroyed



PSID Members see:
 Phase of Operation—Maintenance during Operation

Here's What Happened

Seventeen years ago (July 6, 1988), leaking natural gas condensate on the Piper Alpha oil platform in the North Sea exploded. The explosion disabled the communications center and was followed by a fireball and a large oil pool fire. The fire ruptured a major gas line that was transporting gas from another oil platform to Piper Alpha. That massive gas release caused a larger explosion and fire that engulfed the entire platform. Within an hour, other gas lines ruptured and the fire was completely out of control.

165 workers and 2 rescuers were killed. The platform was totally destroyed.

*Guidelines for Investigating Chemical Process Incidents, 1992, CCPS of AIChE

How Did This Happen?

The Piper Alpha platform drilled for oil and processed natural gas from other platforms. A maintenance crew was working on a pump in the gas processing unit. As part of their work, they removed a relief valve from the pump's discharge line — but did **NOT** install a regular blind flange to cover the opening. They did not complete the repair work that shift, so they told the shift supervisor that the pump should not be used. Unfortunately, this message was not given to the operators on the next shift.

When the primary pump failed, the operators started the pump that had been taken out of service. Gas condensate immediately escaped from the opening where the relief valve should have been. An explosion and fire occurred damaging fire walls and the control room. The heat from this fire ruptured gas transportation pipelines from other platforms — which added to the fire and ensuing damage.

The fire water pumps had been placed in the “manual” position since divers were in the sea earlier during the day and no one activated the system during the emergency. Emergency evacuation routes from the crew's living quarters were blocked by smoke and fires.

What You Can Do

- Communicate effectively at shift turnover. Inform the oncoming shift what equipment is out of service and why. A log book can be a very effective tool for this task!
- Do not short cut maintenance or safety procedures. Complete all permits, make sure that the oncoming shift knows about them and understands their importance.
- Know the hazards your unit imposes on other units and the hazards they impose on yours. Know what to shut down when there is a problem.
- Restore automatic fire protection systems to service as soon as they are available. Take special precautions when they are out of service for repair or testing and return them to service as soon as possible!
- Know emergency evacuation routes for all types of emergencies and hazard locations.

Incomplete Maintenance Activity + Poor Shift Turnover = Disaster

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