

**Use of Utility Systems for Process Duties****What happened?**

An incident occurred recently on a Floating Production Storage and Offtake vessel operating in Australian waters, which involved the ingress of hydrocarbon gas into the facility's potable water system.

Prior to the incident, the facility had experienced a process shutdown in the early hours of the morning. Two night shift operators were tasked with restarting the facility.

Start-up operations required a restart of the facility's gas lift compressors. After several failed attempts to restart a compressor, it was discovered that the liquid level in the suction scrubber was low. In order to obtain the start permissive, it was necessary to fill the suction scrubber with water to the correct level. This was carried out via a connection to the facility's potable water system (a utility system).

During the filling operation, hydrocarbon gas was flowed back into the facility's potable water system, as a result of a pressure gradient that existed between the compressor and the potable water system. Several hours later gas was detected in the facility's accommodation space. Non-essential crew members were evacuated from the facility.

**What went wrong?**

A new field technician who had no previous offshore experience was tasked to carry out the scrubber filling job with verbal instruction via radio communication with a night shift senior production specialist in the facility's control room.

The field technician obtained what he believed were appropriate fittings from the surrounding deck area, connected one end of the hose to an unlabelled potable water supply adjacent to the compressor, and connected the other end to the compressor scrubber.

The senior technician in the control room could see the pressure displayed for the compressor at 700 kPa, and assumed that the water pressure would be higher than that as he did not have a pressure display for the potable water system.

The field technician then opened the valves of the potable water system and scrubber and felt a flow through the fittings. After about 1 minute, when the level in the scrubber hadn't changed he was instructed to close off the valves and bleed some pressure from the compressor.

The field technician then cracked open the valve at the potable water end of the fittings and immediately noticed a gas release, with very little water. This was the first indication of gas backflow into the potable water system.

**Key Lessons:**

- The practice of connecting a utility system to a process system must be treated as non-routine and should be considered only as a last resort with a "break tank" scheme to ensure no back flow to the utility system, or some other means to ensure there is an appropriate pressure gradient between the connected systems.
- The task was not considered to require a permit to work (PTW) as management considered this similar to draining process liquids. There was no job planning and risk

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assessment prior to the task being carried out. Such tasks should have been carried out using the permit-to-work system with risks assessed and barriers in place.

- No written procedure or instruction was available for such an activity.
- There was inadequate supervision during the night shift, considering that the field technician was new to the job and the facility.
- Competency assessment of technicians was not robust enough when allocating personnel to perform safety critical tasks, such as control room operations and process operations.
- A similar incident had occurred before on the same facility where condensate had entered into the potable water system. Management had not implemented effective controls to prevent a re-occurrence.

**Contact**

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