

# HIPO Lessons Learned Investigation Summary

**INCIDENT:** Oil Pipeline Tubing Failure

**TYPE OF INCIDENT:** HIPO

**BUSINESS UNIT:** GOM Deepwater – Atlantis PU

**LOCATION OF INCIDENT:** Atlantis – GC Block 787

**COUNTRY:** USA

**Tr@ction No:** 2008-IR-2673306

**DATE OF INCIDENT:** June 5, 2008 at ~ 0503 hours

**BRIEF ACCOUNT OF INCIDENT:**

The Atlantis Facility had an incident occur when the stainless steel tubing attached to the Oil Pipeline Pump case vent fractured and parted, resulting in the loss of containment of approximately 193 bbls of treated crude oil. Additionally, 2.6 gallons of oil were released to the Gulf of Mexico, creating an oil sheen approximately 1500 feet by 1200 feet. All of the oil, except the volume released to the GoM, was captured in secondary containment, or adhered to the equipment, decks and structure in the area of the pipeline pumps, and the deck above. The incident was contained when the operator manually shutdown and isolated pump. The tubing failed at a threaded fitting due to excessive vibration.

**WHAT WENT WRONG (CRITICAL FACTORS):**

- 1) A lack of IM related KPIs that enable leadership and front line to see the ‘weak signals’ (other vibration-related defects) from the plant and make sense of the patterns from what appear to be small and unrelated issues.
- 2) The decision to defer pipeline pump vibration repairs to 2009 did not consider the potential impact of failure of pump appurtenances.
- 3) Inadequate installation and support of the PAX pump tubing vent lines.
- 4) Engineering processes were not fully utilized in the implementation of facility modifications, including MOC and work package processes.

**SUMMARY OF IMMEDIATE CAUSES:**

**4.5 Unintentional Human Error**

Previous non-catastrophic failures were viewed as “reliability” issues, the wider impact was not recognized and incremental risk increased over time.

**1.2 Violation (by a Group)**

Tubing not installed per MOC; pressure rating of tubing valve was too low, use of threaded fitting not in accordance with piping specification and no MOC/Work pack issued to add new structural steel under PAX pumps.

**SUMMARY OF SYSTEM CAUSES:**

**16.1 Risk analysis or tolerance not effective**

Other failures were not catastrophic and unrecognized and multiple individuals made the

same incorrect judgment on the PAX pump potential failure consequences.

**16.8 Leadership or accountability.**

Leadership did not clearly question the HSSE impact of the decision.

**12.4 Conflicting directions/demands**

The budget underestimated requirements for first year operations.

**18.1 Technical Design not Correct**

The MOC called for field installation without specifying support for the tubing. It only indicated to support from existing supports. The valve was not directly attached to flange (inherently safer design to eliminate unnecessary fittings and piping).

**SUMMARY OF LOCAL ACTIONS:**

Develop and implement an Integrity Management KPI dash board to enable better understanding how minor failures could be indicators of a larger issue.

Specific actions, e.g. audit covering Process Safety/Integrity management to improve awareness of both.

Design the permanent tubing vent lines to comply with applicable standards and incorporate learning’s from the incident. Replace threaded pipe fitting with flanged or welded.

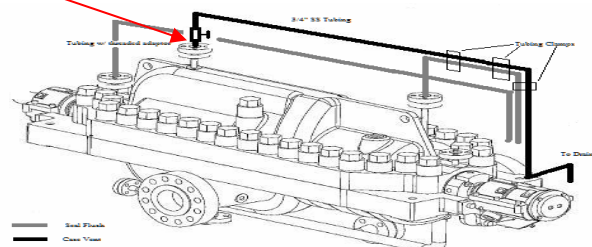
Review and improve the engineering workflow process for use with all brown field modifications, including adherence to MoC Process, rigorous hazard review of design, complete work packs, use of GoM engineering specialists, and checklists for completeness

**KEY REMINDERS:**

A key question to ask, especially with apparently minor and unconnected defects, is “What’s the worst thing that could happen?”

**PHOTOGRAPH:**

**Location where casing vent tubing fractured and parted**



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