

MUMBAI HIGH NORTH ACCIDENT

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Summary

- HSE asked to assist Government of India's Inquiry into the Mumbai High North disaster in 2005
- 22 people died, 362 rescued
- The Inquiry's report still awaited, but emerging findings emphasise the potentially disastrous consequences of pipeline riser failure offshore. They also highlight significant failures within a myriad of risk control systems

Mumbai High North complex



- The Mumbai High North complex consists of four bridge-linked platforms, approx 100 kms offshore.
- NA is a small wellhead platform, circa 1976 (first offshore well in India).
- MHF is residential (1978)
- MHN is a processing platform (1981)
- MHW is a relatively recent additional process platform.
- Next slide: (L->R) NA – MHF – MHN - MHW

Mumbai High North Complex



Mumbai High North complex

- **The complex imports well fluids from 11 wellhead NUIs, and exports oil to beach as well as gas for gas lift operations.**
- **Platform/field operated by Oil & Natural Gas Corporation (ONGC), the nationalised oil company**
- **At the time of the accident, a jack-up Noble Charlie Yester (NCY) was working on NA.**
- **Weather = monsoon**

The accident

- The fire occurred on 27 July 2005 - a multi-purpose support vessel (MSV), Samundra Suraksha, 100m long, hit one of the MHN platform risers.
- Vessel owned by ONGC but operated and maintained by another nationalised company, the Shipping Company of India (SCI).
- Vessel working elsewhere in the field, supporting saturation diving operations. Cook cut off the tips of two fingers, and transfer sought to MHN complex for medical treatment.
- Monsoon meant that no helicopters were available, so the vessel came alongside MHN to affect a man-riding basket transfer.

The accident (continued)

- Leeward crane on MHN was not working, so vessel came onto the windward side (wind 35 knots, swell 5 metres, sea current 3 knots).
- Problems with azimuth thrusters – came alongside under manual (joy stick) control in emergency mode, stern first. The casualty was transferred off the deck by crane
- The vessel experienced a strong heave, and the helideck struck the risers (export gas lift).
- The resulting leak ignited very quickly afterwards. The resulting fire engulfed virtually all of MHN and MHF, with NA and the Noble rig severely affected by heat radiation.

The fire



The fire



The fire



The MSV



All that was left.....



Escape and rescue

- 22 people died. 362 were rescued over next fifteen hours.
- The fire significantly affected rescue, with only two out of the eight complex lifeboats able to be launched, and only one out of ten life rafts. Similarly, only half of the NCY's rescue craft could be launched.
- Rescue exacerbated by the monsoon conditions. Mumbai, so no helicopters could take off from land.
- Six divers in saturation chamber on vessel rescued 36 hours later. Samudra Suraksha sunk four days afterwards.

And all because the cook.....

**For want of a nail the shoe was lost.
For want of a shoe the horse was lost.
For want of a horse the rider was lost.
For want of a rider the battle was lost.
For want of a battle the kingdom was lost.
And all for the want of a horseshoe nail.**

Lessons learned?

- Important caveats!
 - my personal views
 - recognition that MHN operated under a very different H&S regulation regime (i.e. no independent regulator)
 - inevitable cultural differences

Key safety management issues

- Robustness of risk assessment process
 - MH - v – Occupational risks
 - Include consequence and adequacy of controls
 - Clear/appropriate responsibilities for process
 - Communications upwards
- Safety Culture

Safety management - continued

- Asset stewardship
 - Control of importation of risk by others
 - Document control
 - Sharing of information across assets
- Self- learning
 - Culture of root cause analysis
 - Sharing lessons
- Importance of external scrutiny (audits and regulators)

Riser Issues

- The positioning of risers in relation to the platform structure and loading zones
- The vulnerability to damage (even risers inside the jacket structure may be at risk)
- The appropriateness of fendering/riser guards in relation to the design of attending vessels
- The inventory which is likely to be discharged if the riser fails below its ESDV
- Risk management process

Vessel Issues

- Role of OIM/Master w.r.t Safety Zone and vessels approaching the installation
- Collision Risk Management Principles
 - Installation vulnerability
 - Vessel suitability
 - Crew competence
 - Marine knowledge of Installation
 - Communication
 - Installation data cards, pre-entry checks, UKOOA guidelines
 - Quality of discussions, radios etc
- Hyperbaric evacuation issues?

Conclusion

- Incident reinforces the need for
 - Thorough risk assessment of the potential causes and consequences of riser damage
 - Development, implementation and maintenance of associated risk management measures
 - Adoption of collision avoidance and protection measures which at least meet current good practice as described in UKOOA
 - Management arrangements to ensure that the risk management measures are effective and observed in practise.