

## Deluge Inspection, Repair & Maintenance

### Restore reliable deluge flow with life of field compliance

#### Overview

A number of offshore production platforms had multiple deluge nozzle blockages when testing fire water systems. To remain compliant the wet testing cycle was repeated more frequently, less than three months instead of annual. This increased disruption to operations, but critically was accelerating the corrosion of plant, structures & equipment.

#### Challenge

The safety regulatory body had notified the operator to demonstrate compliance and act on the issues in a timely manner. The remedial solution proposed had to keep the deluge systems live and available for immediate use.

#### Solution

Paradigm provided a number of technologies to significantly improve the deluge flow paths in a cost effective and efficient manner.

- Internal cleaning of the nozzles and small bore deluge pipe.
- Larger bore pipework & header branches were cleaned & flushed remotely to remove corrosion product and debris.
- Marine fouling in the firewater ring-main and adjacent feeder systems were flushed and cleaned with an environmentally friendly biocide solution.
- Replacement and repairs were undertaken only when beyond economic repair. This still meant that less than 10% like for like replacement was required with the majority of systems having good remnant life.

#### Result

Rapid internal and external inspection of the deluge systems provided key information to where problems were most acute. The work was executed by a small team of multi-skilled operatives that could undertake all worksopes quickly and safely. All systems were restored to full functionality without the requirement for any plant shutdown. A structured plan to inspect and maintain integrity of the systems is in place to ensure that all deluge are available and on demand for the plant life cycle.

#### Value to client

The Paradigm service ensured minimal disruption, time efficient and cost effective use of resources. The cycle of three monthly wet testing was returned to a minimum annual, thus greatly reducing the impact of corrosion. The integrity management approach continues to ensure reliability remains at 100%. This approach will allow the asset to move to three yearly testing and further reduce maintenance costs.



#### Main Features / Benefits

- Multi skilled team required no crew change out for different disciplines. Multiple job scopes in same visit.
- Paradigm ATEX certified mechanical brushing systems gave low risk, effective cleaning.
- Latest high pressure water jetting technology. Low operational footprint, reduced cost.
- Composite wrap repair technology to provide rapid & effective leak repair.
- Rope access techniques used. Significant reduced cost and disruption from installing scaffold.
- Additional scopes of work, drain cleaning, dropped object surveys, production header cleaning, at no additional cost.



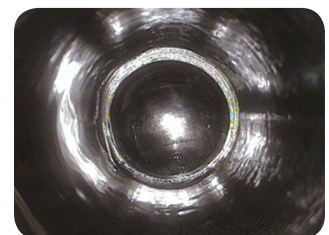
Corrosion removed from deluge nozzle



Corrosion Product in deluge pipe



Before Cleaning



After Cleaning