Insurance audit

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Purpose of the visit

- To gain an understanding of the risk reduction and mitigation features;
- To understand significant changes since the last (full) risk survey (February 2017);
- To gain an understanding of any major projects;
- To review the status of previous risk improvement recommendations;
- To identify opportunities for risk improvements;
- To improve everyone's understanding of the risks;
- To provide the Insurance Market with an up-to date factual summary of the facilities;
- To develop updated estimated maximum loss (EML) values for the facilities

Positive observation – Management systems / procedures

- Good housekeeping and general process condition on units visited
- Good maintenance practices and culture of continuous improvement – achieving high availability despite challenging service
- Use of Power BI for ‘live’ tracking of data / KPIs in various areas e.g. Maintenance, PSM,
- ESD bypass control practices – good system and records
- Alarm management – established and developing process in place, suggest future developments to include improvements to alarm flood management
- Conservative approach to RBI methodology – allowing some deferral flexibility
- Increasing use of OWAP in RBI integrity management processes
- PPSR check sheets made unit specific to manage unique risks
- GHG roadmap strengthening

Positive observation – Physical Assets

- Good levels of protection around EML location
- Reliability improvements e.g. chloride treaters & replacement columns on Refinery
- Control system upgrades with modern systems capable of achieving the higher SIL levels required. Also relocation of personnel to location away from the process areas and installation of inert gas suppression system in new rack room
- Generally good levels of flexibility and redundancy
- Substation cleanliness and fire-stopping
- Some good practices such as clearly identifying the location of field ESD buttons by painting the columns
- Process units layout generally quite open and well-spaced
- Electrical system upgrade program
- Process units layout generally quite open and well-spaced

Concerns

- Temp MOC max duration: currently 90 days. Typically longer periods, (e.g. 180 days) applied to allow more flexibility to complete changes.
- Varying levels of fire & gas detection & protection:
- Hot work controls – no fixed time for Fire watch after spark producing works per NFPA guidance
- Inspection interval extended to 9 years for some equipment (ammonia system) on Phenosolvan – considered a long time for a hazardous system
- Use of level glasses even in Propylene service – risk of failure if knocked
- FW mains replacement – long duration with target completion by 2026
- Fire Pre-plans – confirm that pre-plans are in place, check sample and list of plans developed
- Combustible materials in the Substation (wooden racks and files)
- Vulnerability due to single source failure points
- Coal feedstock quality issues – potential for longer term reliability issues
- Valve cables hanging into walkway, no personnel protection from hot surfaces fire detection buzzer in control room silenced, fire detection under control room floor

Recommendation in progress

- 2017.02 Piping Inspection
- 2017.03 Control Room Rack Room Equipment
- 2017.05 Pump Seal Upgrades on Risk Priority Basis
- 2017.07 Motor Operated Valves
- 2012.05 ASME Fabricated Pumps
- 2010.01 Long-Bolted Valves
- 2008.1 Fire Detection in Unoccupied Buildings

New recommendations

- 2022.01 Fire Detection and Protection on Critical Compressors
- 2022.02 Process Safety KPIs Improvement
- 2022.03 SIS Proof Testing Methodology
- 2022.04 MOC System Improvements
- 2022.05 Investigation of PSV Test Failures
- 2022.06 Fire Pre-Plans
- 2022.07 Control of Safety Critical Manual Isolation Valves

Questions

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