Revising COMAH safety reports

ABB supports The Oil and Pipeline Agency (OPA) to comply with Competent Authority (CA) requirements.

OPA owns several ‘top tier’ COMAH sites for the storage and transfer of petroleum products, primarily aviation fuel. To comply with the UK COMAH regulations there is a requirement to prepare a safety report for each site. The reports should detail the nature of major accident hazards and demonstrate the adequacy of measures to prevent and mitigate such events. In addition, the safety reports must be updated every 5 years to reflect changes on the site and to include additional information required by the CA, comprising the Health and Safety Executive (HSE), and Environment Agency (EA).

Previously OPA had used other consultancies to prepare safety reports for operational sites. ABB Consulting was invited along with several other companies to prepare a new safety report for a site being brought back into operation to provide additional storage capacity.

ABB was selected for this work based on a strong reputation for process safety and the potential to bring a fresh approach from knowledge gained in other sectors of the process industry.

Solution
The work involved preparation and revision of safety reports for several sites in compliance with the requirements of CA published guidance and criteria contained in the Safety Report Assessment Manual (SRAM). ABB formatted the report to accurately match the SRAM criteria, allowing any gaps in the demonstrations to be easily identified and speeding up the assessment process by the CA. ABB was responsible for producing the full report and despatching multiple copies to the CA. In practice this work involved working closely with operations and technical staff from the sites to ensure the accuracy of the information presented.

Safety reports require information covering the following essential aspects; description of the site and local environment, major accident hazards and risks, management system to control these risks, technical measures to prevent accidents and emergency measures to limit their consequences. An ABB team of specialists was assigned to this work including expertise in process safety, integrity management, safety management systems, emergency preparedness, and environmental impact assessments.
ABB identified the importance of effectively identifying major accident hazard scenarios and ensuring a thorough demonstration of the effectiveness of prevention and control measures. A hazard identification study was carried out on each site involving experienced operations and technical staff. All credible 'loss of containment' scenarios were identified, the ultimate consequences determined, and current prevention and mitigation measures assessed based on operational experience. The major accident hazard tables developed during these studies form the core demonstration within the safety report that risks have been reduced to ALARP.

Whilst each site has specific design and operational aspects that are unique, much of the information in the reports is similar across the network. In order to ensure consistency between reports ABB used standardised data sources. Examples included; Envirocheck report for historical information on the site and surrounding environment, HSE reports as source of aircraft crash rates, and CONCAWE data for pipeline leak frequencies. For the next round of safety report reviews ABB has advised OPA that much of the 'standard' information can be collated into a core report for the network, with differences at the sites captured within an installation report.

The nature of OPA fuel storage sites and the relatively high flash point for aviation fuel resulted in risks being dominated by the potential for losses to run off site resulting in environmental harm rather than fire or explosion hazards. ABB’s risk assessment approach was therefore based on guidance from the EA using their word models for severity and likelihood. A number of risk based recommendations were raised to improve secondary and tertiary containment systems on the sites. Following publication of the EA Containment Policy in 2008, ABB reformatted the Safety Reports to clearly demonstrate environmental aspects and carried out topographical surveys to determine the extent and effectiveness of tertiary containment systems.

The format developed by ABB for the safety report became the standard model for OPA sites, and ABB has subsequently been involved in updating several safety reports for other sites, incorporating the latest requirements from the CA. In addition to the preparation and updating of safety reports, ABB has carried out a number of associated risk assessments on OPA sites.

Overfilling of storage tanks during import is a key hazard and ABB undertook Safety Integrity Level (SIL) assessments on the overfill protection systems. Losses from tank run-down lines can be controlled by early detection and closure of tank outlet valves, and ABB carried out a Remotely Operated Shut-off Valve (ROSOV) assessment in compliance with HSE guidance.

OPA were required by the EA to rank the sites for environmental hazards, and ABB developed a risk ranking methodology based on the scale of operations, design of containment systems, and the nature of environmentally vulnerable locations around the sites.

Benefits
- Meeting the requirements of the CA allowing retention of OPA's licence to operate
- Updating reports to meet changing regulator requirements, for example the need for greater focus on environmental hazards required by the EA
- Consistent approach across all 'top tier' fuel storage sites by introducing a standardised report format
- Efficient identification of major accident hazard scenarios utilising the knowledge and experience of operations and technical staff
- Better budgetary planning based on the risk based improvement plan
- Safety reports providing data on hazards and risks to be used for further assessments such as ROSOV reviews, environmental risk ranking of facilities, SIL determination for high level protection systems

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