

Hazard Identification using SWIFT (Structured What-IF Technique/checklisT) at a COMAH Lower Tier Site: BAE Systems, Barrow-in-Furness

BAE Systems Marine Limited operate the SMITE Facility at their Barrow-in-Furness, Cumbria site. Under the COMAH Regulations 2015 this is classified as a Lower-Tier establishment and therefore a demonstration that all hazards and hazardous scenarios have been identified and assessed is required by the Competent Authority (HSE + Environment Agency). In order to provide this evidence for the overall Facility Safety Report, BAE Systems contracted Wilde Analysis to chair and record a series of SWIFT (Structured What-IF Technique/checklisT) workshops covering the systems that comprise the Test Facility. The process drawings for the relevant systems provided by SMITE were analysed and the information from the study was recorded into logsheets. The key findings from the workshops were documented within reports that were used to aid the Facility Safety Report.

We selected Wilde Analysis to assist with Hazard Identification to support our Safety Report from a shortlist of 3 highly regarded companies in this field. The team who initially visited listened to our requirements and I was immediately assured that Wilde understood exactly what we wanted and could deliver what we needed; no more and no less. I was impressed that the initial visit included the proposed Chair and not just the Business Development Team!

Wilde provided a 2-day bespoke SWIFT training package at our request; the practical element of the training was based on our own systems and this helped the less experienced members of our team to focus upon understanding the SWIFT methodology without having to think about the technical content of a generic Process System. The training was delivered by Philip Nalpanis (the SWIFT Chair) and again this helped to bridge the gap between training and the actual workshops.



The forward end construction of the fifth Astute class submarine, Anson, lining up alongside her sisters, Artful and Audacious (Courtesy: BAE Systems – Copyright © 2019 BAE Systems. All rights reserved)

Communication with Wilde prior to, during and after each workshop was excellent; the reports and spreadsheets were delivered in time to meet our very tight delivery schedule and were of an excellent quality. Very little editorial correction was needed, and any minor amendments were made via open dialogue between Philip and me.

The SWIFT HAZID led by Philip produced some extremely insightful recommendations which will enable SMITE to develop improvement projects with the necessary justification for investment, which is often the most difficult part of initiating improvement on the basis of safety alone.

The entire Wilde team have been great to work with – from Graham and Simon in the Business Team to Philip and Fahad at the SWIFT delivery end – all have been thoroughly professional and shown great integrity in delivering exactly what was agreed up-front. Wilde Analysis has been a genuine pleasure to work with and I would have no hesitation in working together again on some of our other projects.

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Business Benefit

From the SWIFT workshops various potential issues were identified from the systems. Some of these issues are to be addressed prior to the next operational test campaign as they may have posed a safety / environmental risks. Other opportunities to improve operational performance were raised and suitable recommendations were made to address them. Several interim reports and a final project report were produced to highlight the key findings from the workshops. These reports were used to provide the necessary information required in the Facility Safety Report in order to satisfy the requirements of the Competent Authority.

Background

BAE Systems operates a facility in Barrow-in-Furness, Cumbria that is responsible for the development and production of submarines. This is one of few shipyards worldwide that has the capacity and expertise to design and build nuclear submarines. The SMITE facility builds submarine machinery packages and tests them to within their operational limits on a campaign basis, prior to integration within the new submarine hull.

Challenge

The objectives of the study were:

- To identify, system by system, scenarios that could result in safety or environmental consequences;
- To identify the safeguards that could prevent the scenarios or mitigate the consequences;

- To make recommendations that could further reduce the likelihood of the scenarios occurring or mitigate their consequences;
- To risk-rank the scenarios in order to identify high risk scenarios and prioritise recommendations.

HAZOP studies are a well-established method for analysing process systems however, they are not always the most suitable procedure; detailed P&IDs are required and the level of depth they go into can be time consuming and in some cases unnecessary. It was suggested to conduct a SWIFT, a newer approach that analyses systems on a higher level than a HAZOP. This is useful when an analysis does not need a substantial amount of depth. As PFDs can be sufficient for SWIFT, time and resources can be saved by avoiding the necessity for detailed process drawings such as P&IDs.

Solution

The workshops were conducted using SWIFT methodology. This provided a thorough, systematic and efficient means of achieving the objectives, ensuring all scenarios that could result in safety or environmental consequences were identified and analysed, whilst maintaining an overview of the systems that can be lost in more detailed methodologies such as HAZOP. The workshops consisted of no more than 8 participants, comprising various subject matter experts, representatives from maintenance/operations, a Chair and a Scribe.

Prior to commencing the workshops, training was provided on the SWIFT procedure itself to ensure all participants understood the methodology and were empowered to provide meaningful contributions.