



Emergency Preparedness & Resilience Architecture (Incorporating Severe Accident Management Strategies)

Application to the Oil & Gas Industry

Scope of Capability

DBD has developed a process that identifies and assesses the safety systems, resources, command and control arrangements for “high hazard operations” when applied by our experts. The result of this assessment identifies potential methods to enhance the ability of individual plants, projects and sites as a whole to withstand low probability/high consequence scenarios.

This process was developed in response to the tragic events in Japan and its effects on the Fukushima reactor site in 2011. While this process was initially developed as a tool to robustly and consistently apply the ENSREG Stress Test Specifications, it has since been developed by DBD to be a holistic “Severe Accident Management Hierarchy” (SAMH) process. This refined process allows the technical base line for “normal” emergency preparedness and “Severe Accident Management Strategies” to be clearly defined to ensure a facility can meet new Resilience Standards as developed by the DBD team.

The process can be applied to existing facilities and arrangements or to new build and modification design projects. It has been deployed on a complex nuclear chemical site with multiple facilities, processes and working patterns. It clearly details the Resilience Architecture for ensuring essential Critical Safety Function(s) for the key radiological facilities are protected and how off-site/public consequences are mitigated during high consequence events. The process also ensures that the functionality of emergency designated buildings and security arrangements are maintained during such events.

DBD Deliverables

- ✚ Leading and managing the development of emergency preparedness including “hard engineering” and “command and control decision making” from design through inactive and active commissioning, to handover to operations
- ✚ Managing implementation of the Resilience Evaluation Process (RESEP) including defining facility/project specific Critical Safety Functions
- ✚ Production of bespoke facility/project response “timelines” and Resilience Options Diagram (ROD), clearly identify the optimum deployment of “backup” systems including options and “consequence” of deploying each “backup”/option
- ✚ Production of an Emergency Preparedness Engineering Schedule
- ✚ Production of Severe Accident Management Strategy Option Diagrams (SAMSOD) for use in Emergency Control Centres to support event response decision making
- ✚ Provision of advice to design, commissioning, operations, maintenance and emergency preparedness personnel

The Results/Client Benefits

- ✚ Robust, auditable, documented review process supported by the UK Nuclear Regulator

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- ✚ Fit-for-purpose emergency arrangements based on sound engineering judgement and industry best-practice that is understood by the design, commissioning, operation, maintenance and emergency teams
- ✚ Visual tool to aid informed judgements during an emergency
- ✚ An emergency plan with both operational and Safety Case requirements fully integrated
- ✚ An emergency plan that has been robustly challenged and rationalised during design, inactive and active commissioning
- ✚ The provision of an experienced Emergency Arrangements Manager with detailed knowledge of operating “high hazard facilities” in a highly regulated environment
- ✚ Provision of Emergency Preparedness Intelligent Customer capability

Application to the Oil & Gas Industry

Compared to traditional safety management techniques, resilience engineering is a relatively new concept (across all industries) and DBD are front runners for its application on large complex sites such as those found in the nuclear industry.

DBD believe the industries are well linked with regard to the management of risk and the requirements for ‘emergency preparedness’; therefore, resilience engineering is a strong candidate for application to the oil and gas industry.

DBD can offer:

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