

Resilience to Severe Accident and Emergency Preparedness Assessment

Capability Overview

DBD has developed RESilience Evaluation Process (RESEP) that identifies and assesses the effectiveness of the engineered safety systems, resources, and command and control arrangements required to mitigate the consequences arising from a severe accident.

The process was developed to assess the accident response capability of high hazard/high consequence plants, and formed part of the UK response to the European Nuclear Regulators following the events at Fukushima.

The outcome of the process assessment either confirms that adequate arrangements are in place and/or suggests improvements to enhance the ability of individual plants, processes, and Sites as a whole, to withstand low probability/high consequence accident scenarios.

Typical examples could include: a prolonged full Site Black Out (SBO), a significant seismic event, flood, or a malicious act.

RESEP can be applied to new/future operations and or existing sites/facilities to identify additional safeguards which may have arisen as a result of changes in the risk perception, changing legislation, regulation, etc.

Although developed for the nuclear industry it is easily transferable to non nuclear high hazard processes.

Examples of Outcomes

To date this process has delivered the following:

- ✚ Improvements to the reliability of safety systems for example the backup power generation or cooling water supply required to maintain critical safety functions
- ✚ Improvements to communications systems required to maintain effective command and control
- ✚ Improvements in the prioritisation of consequence mitigation response actions
- ✚ Improvements in the understanding of high hazard process monitoring and measurement parameters
- ✚ Improvements in the understanding of the expectations required from external agency emergency support

Specific process outputs include:

- ✚ Defining plant/process Critical Safety Functions.
- ✚ Production of bespoke plant/process consequence mitigation response “timelines” to clearly identify the optimum deployment of backup systems to avoid the consequence of ‘cliff edge’ scenarios.
- ✚ Production of Severe Accident Management Strategies (SAMS) and associated Option Diagrams for use in Emergency Control Centres to support event response decision making.



Client Benefits

- ⊗ A robust, auditable and documented review process supported by the UK Nuclear Regulator
- ⊗ A fit-for-purpose emergency arrangements visual tool to aid informed decision making during a severe accident.
- ⊗ An emergency plan with both operational and Safety Case requirements fully integrated.
- ⊗ Provision of Emergency Preparedness Intelligent Customer capability.
- ⊗ The ability to proactively manage a severe accident.