

## ES-konsult performs safety analyses

*ES-konsult is implementing, reviewing and coordinating both probabilistic and deterministic safety analyses. The methods are universal and are therefore not restricted to a specific industry even though the emphasis is on the nuclear industry.*

ES-konsult has extensive experience in working with risk and safety analyses in industries with high safety demands, such as the nuclear industry, chemical processes and transportation industries to name some.

Main areas of work for ES-konsult are the nuclear industry, and within that it is applied both deterministic and probabilistic safety analyses. Deterministic analysis is carried out to examine how well the safety systems handle different incidents, that is to say how safe the plant is. For example, we have performed analyses of more or less probable incidents in the plant, such as fires, floods, pipe breaks and earth quakes.

Probabilistic safety analyses are used to estimate the probability of occurrence of certain incident and/or accidents. This is done by estimating the probabilities for failure in components and systems. The objective is to carry out as complete analysis as possible, i.e., to take into account a complete set of possible events in the analysis. Then, by combination the possible failure mode of different systems and components, the probability of occurrence of a certain chain of events can be estimated.

The result of the analysis, deterministic as well as probabilistic analysis, then forms the basis for operating the utility in a safe manner, i.e., managing the risks by identification of these and then taking required measures to reduce the risks. Risk and safety analyses are very useful tools when operating a technically complex business.

### Examples of performed work:

- SKB, Safety Analysis of re-building of the repository for short-lived radioactive waste, SFR
- NPSAG, Common Cause Failure Analysis
- Novovoronezh NPP, Russia, Review of the Emergency Operating Procedures, EOPs
- South Ukraine NPP, Ukraine, Supporting in development of Periodic Safety Review, PSR
- Analysis of external steam pipe breaks at Ringhals 2 NPP
- Analysis of dynamic loads at Forsmark NPP
- Ringhals 4, updating of the Ringhals 4 NPP Probabilistic Safety Assessment, PSA, in connection to the power uprate project FREJ

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