SAFETEC

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Forutse Forebygge Forberede

Innsamling av HEP data til bruk i analyse av menneskelig pålitelighet

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The objective

- To establish a risk model that takes into account human reliability in execution of safety critical tasks in connection with operation and maintenance of a offshore production platform

The challenge

- Most available data on human reliability are collected in other industries, typically the nuclear industry

- This implies that most available data sources and related HRA methods will not be considered as sufficiently relevant for this specific context

The solution

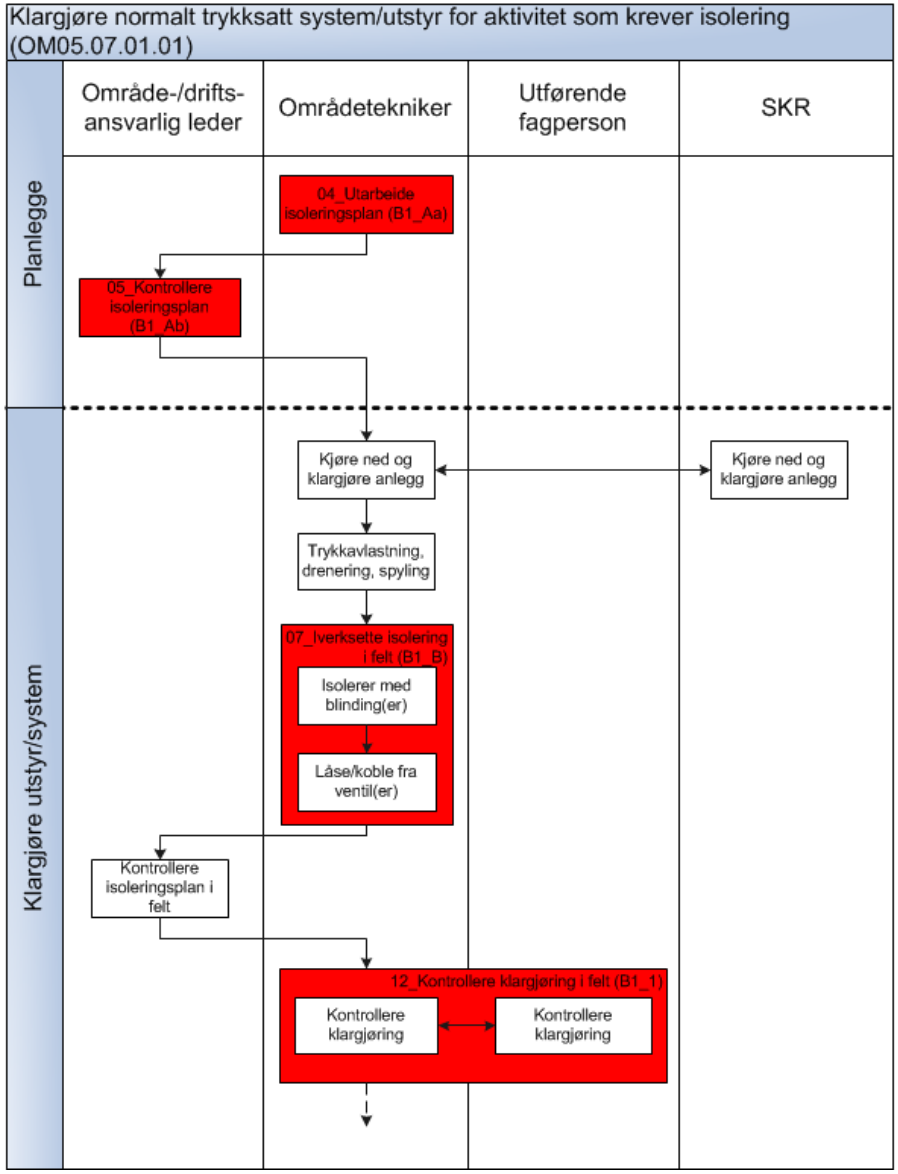
- Establishing context specific human error probability (HEP) based on an expert judgment process

The experts

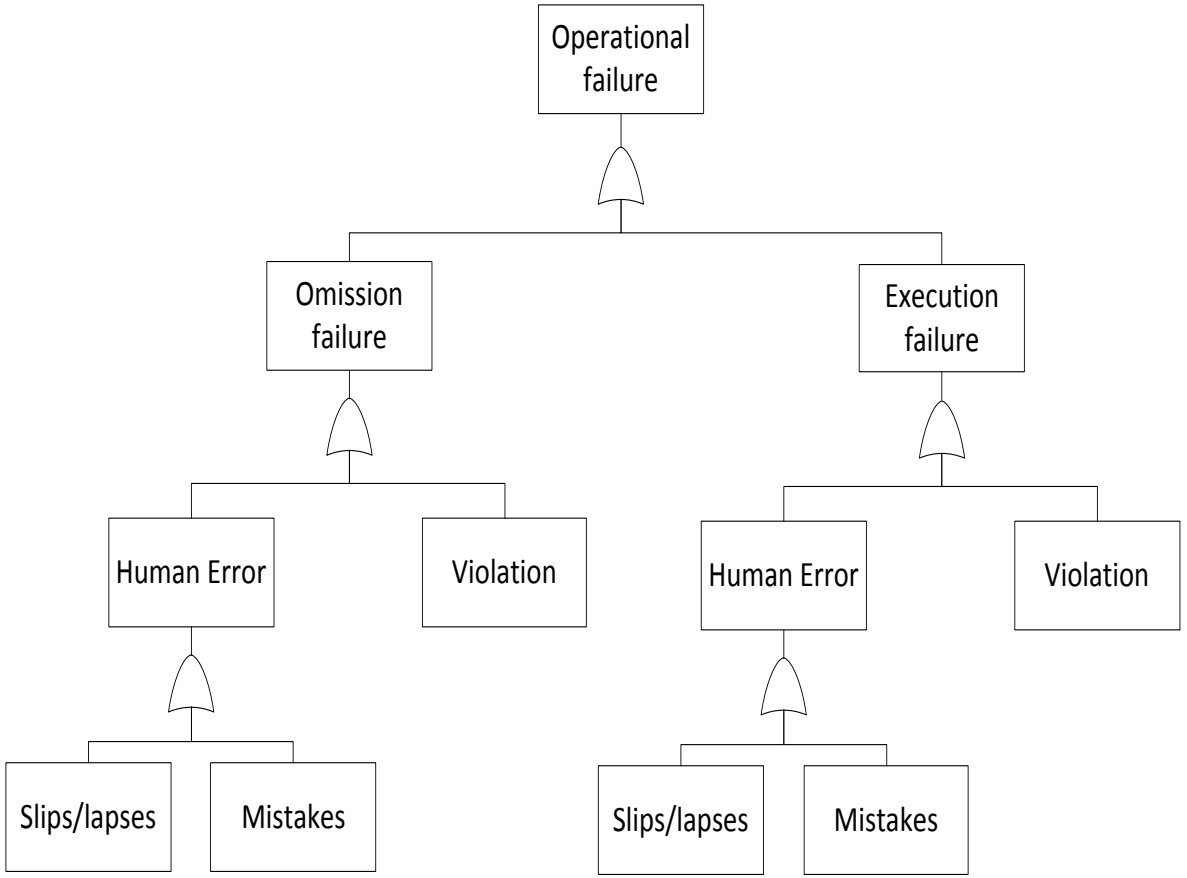
- Ten experts from various disciplines were invited to attend a two-days workshop

- Selection criteria:
  - Knowledge of human and/or organisational and/or technical factors that may contribute to human errors and violations
  - Knowledge of the work operations to be considered, i.e. work on hydrocarbon systems
  - Knowledge of risk analysis methodology
  - Practical experience from the work operations to be considered

The work operations



The operational failures



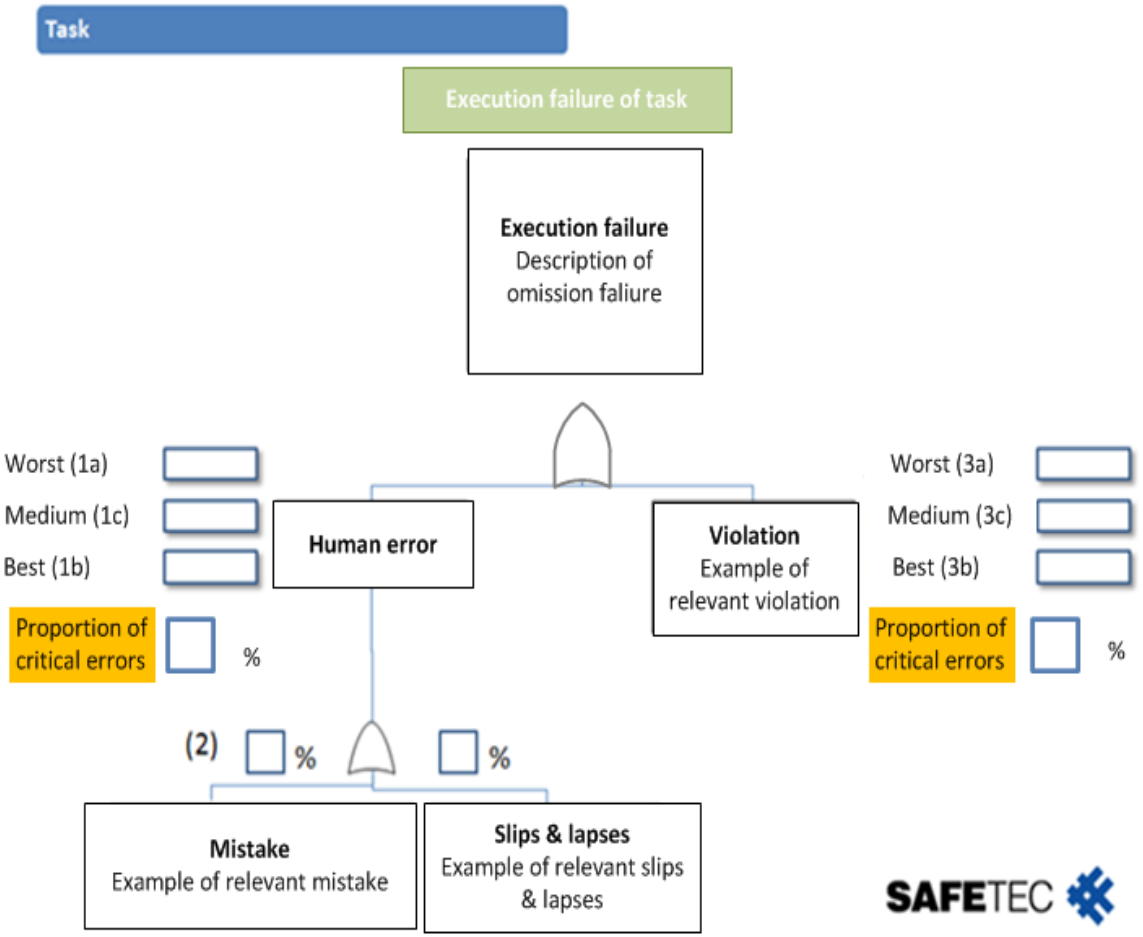
The method, Part I
Preparation

1. Distribute booklet with background information and response sheets
2. Introduce the key concepts that are used in connection with the estimation (taxonomy)
3. Go through the tasks to be assessed
4. Invite the experts to make suggestions of examples of different types of errors relevant for the various tasks
5. Go through the concepts used in the response sheet
6. Perform an exercise in using response sheets

The method, Part II
Assessment

1. Plenary presentation of the work task to be assessed
2. First individual assessments of V&HEP data of the current work task (response sheet 1)
3. Plenary presentation of selected estimations from the first individual assessment, followed by brief discussions of possible disagreements
4. Second individual assessment of V&HEP data, based on the plenary talk (response sheet 2)

The respons sheet



The results

- Two set of HEP data for each defined operational failure, including an individual distribution
- Tested for interrater reliability

The applicability

- First step towards gaining more knowledge of human error probabilities in the petroleum industry
- Input to quantitative risk analysis, in terms of taking into account operational issues
- Increased knowledge of safety critical work operations and how these influence process risk

The weaknesses

- An extremely challenging exercise to assess human error probabilities
- The selected expert might not hold the required knowledge/experience, or the experts might not be representative
- Group think?
- Other uncontrollable factors

The future

- More studies to verify and/or challenge the results from this study
  - Other work operations
  - Other methods?
- Comparision with other establised HRA methods
- Generalisation of HEP data for the petroleum industry