

## Incidents/accidents classification and reporting in Statoil

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### Abstract

Based on requirements in the new petroleum regulations from Norwegian Petroleum Directorate (NPD) and the realisation of a need to improve and rationalise the routines for reporting and follow up of incidents, Statoil Exploration & Production Norway (Statoil E&P Norway) has formulated a new strategy and process for handling of incidents/accidents.

The following past experiences serve as basis for the changes made to incident reporting in Statoil E&P Norway:

- Too much resources were spent on a comprehensive handling and analysis of a vast amount of incidents with less importance for the safety level, taking the focus away from the more severe and important issues at hand.
- The assessment of “Risk Factor”, i.e. the combination of recurrence frequency and consequence, was difficult to use. The high degree of subjectivity involved in the determination of the “Risk Factor” (in particular the estimation of the recurrence frequency) resulted in poor data quality and lack of consistency in the data material.

The new system for categorisation and handling of undesirable incidents was established in January 2002.

The intention was to get a higher degree of focus on serious incidents (injuries, damages, loss and near misses), with a thorough handling and follow-up. This is reflected throughout the handling of the serious incidents, all the way from immediate notification of the incident, through investigation and follow-up of corrective and preventive actions.

Simultaneously, it was also an objective to rationalise/simplify the handling of less serious incidents. These incidents are, however, subjected to analyses twice a year in order to utilize the learning opportunity that they also provide.

A year after the introduction of this new system for categorisation and follow-up of undesirable incidents, Statoil’s experiences are predominantly good:

- The intention to get a higher degree of focus on serious incidents (injuries, damages, loss and near misses), has been met.
- The data quality for the more serious incidents (5% of the total number of incidents registered) has improved.
- The improved handling of incidents has contributed to more reliable and accurate HSE indicators at a corporate level.
- More user friendly codes in place for incident registration (based on MTO methodology).
- The revised matrix gives distinct criteria with respect to which investigation level to be initiated for a specific incident.

All activities related to handling of undesirable incidents have been summarised and illustrated on a two-sided plastic form, incorporating both the categorisation matrix and the activity flowchart (see Figs. 1 and 4).

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*Keywords:* Incidents; Accidents; Statoil

### 1. Background

Based on requirements in the new petroleum regulations from Norwegian Petroleum Directorate (NPD) and the realisation of a need to improve and rationalise the routines for reporting and follow up of incidents, Statoil Exploration &

Production Norway (Statoil E&P Norway) has formulated a new strategy and process for handling of injuries, damages, loss and near misses.

Statoil E&P Norway has achieved a high rate of incident reporting, which in itself is a good thing. However, the high reporting rate/frequency made it difficult to have the right focus and to identify the most important problems highlighted in the reported data. Too much resources were spent on a comprehensive handling and analysis of a vast amount of incidents with less importance for the safety level, taking

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the focus away from the more severe and important issues at hand.

As a result, the high rate of incident reporting became more of an obstacle than an asset when it comes to making useful analyses in order to identify problems and areas of concern. Instead of putting the information in the reported incidents to good use through transfer of experience, learning processes and best practice procedures, the reported incidents were too often used for statistical purposes only.

The Risk Factor assessment was complex and difficult to relate to. The high degree of subjectivity involved in the determination of the “Risk Factor” (in particular the estimation of the recurrence frequency) resulted in poor data quality and lack of consistency in the data material. Also, the Risk Factor instigated irrelevant discussions, and took the attention away from the main objectives of the reporting and classification system; the identification of effective actions in order to prevent similar situations of hazard or accident to occur in the future.

## 2. Improvement measures

Based on the seriousness of an incident, the handling is now counteracted through a differentiated treatment and follow-up of incidents, regarding (Fig. 1):

- notification: report internally and/or to the Authorities;
- investigation level: choose level according to the matrix for categorisation of incidents;

- perform investigation if serious;
- corrective and preventive actions;
- reporting (internal and external);
- analysis: periodical (year, half-year).

The more serious incidents are given a complete follow-up, whereas less serious incidents are dealt with in a simplified manner. In doing this, emphasis is put on the more serious incidents, while lesser incidents are dealt with ‘on the spot’, and subjected to periodic analyses. Of the total number of incidents recorded in Statoil for year 2002 (24.400 in all), close to 95% were classified as less serious.

Simultaneously, the system for classification of incidents was revised. Prior to 2002, incident reporting in Statoil E&P Norway was based on assessments of consequence and recurrence frequency of the reported incident. These were then combined to give the incident its ‘Risk-Factor’, which would then in turn determine the further handling and follow-up of the incident.

Statoil E&P Norway decided to renounce the use of recurrence frequency and to focus solely on actual and possible consequences of the recorded incidents. The degree of severity of an incident, including its potential damage, loss or injury, will determine the further handling and follow-up. The assessment of the potential damage is subjective and is based on the possible outcome of the incident, given slightly altered circumstances. This refers to all the possible consequences of the incident.

For an incident with more than one possible consequence, the consequence having the highest degree of severity will

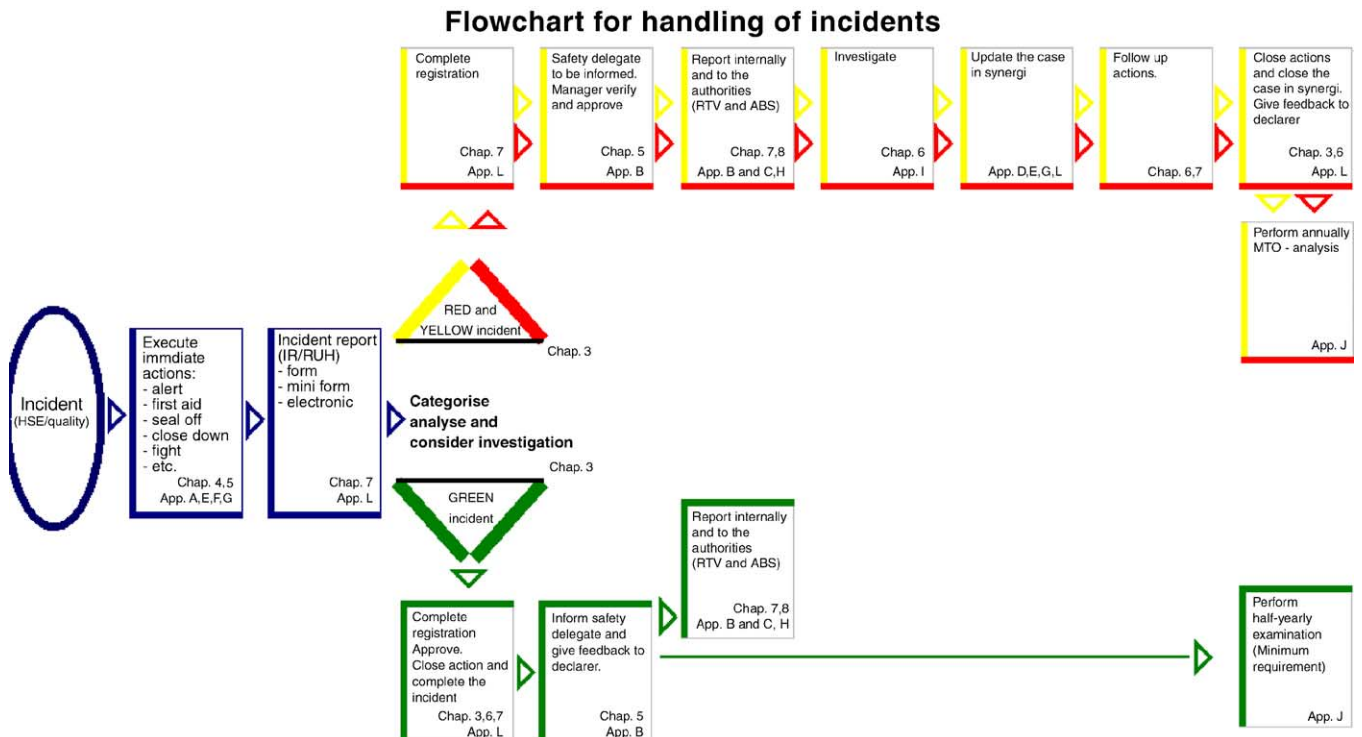


Fig. 1. Flowchart for handling incidents in Statoil E&P Norway (all footnotes in figure refers to Statoil's internal procedures).

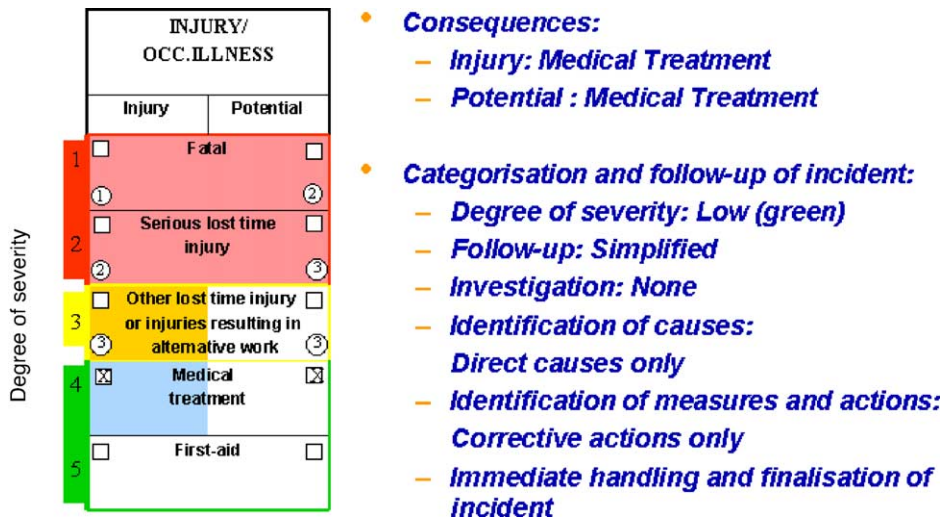


Fig. 2. Registration of incidents—example 1.

determine further handling. Examples of incident registration are given in Figs. 2 and 3.

The recurrence of incidents is still an issue, though, but this is now handled through a more extensive use of periodic analyses of recorded data, including the less serious events. All data are now analysed twice a year, in order to identify any trends, causes, and types of equipment, etc. which require special attention.

MTO principles have been incorporated as a requirement in Statoil, and are reflected throughout the handling of an incident:

- Code structure for cause registration has been modified accordingly.

- All investigations at level 1 and 2 (ref. below) shall be based on the MTO methodology.

The categorisation matrix (Fig. 4) also incorporates Statoil’s requirements for investigation of undesirable incidents. Investigations in Statoil E&P are pursued at three *commissioning levels*, as summarises in the following Table 1:

1. investigations commissioned by the corporate executive committee or the management of the relevant business area;
2. investigations commissioned by the business unit;
3. investigations commissioned by the local line manager at plants, installations, vessels, bases, departments, etc.

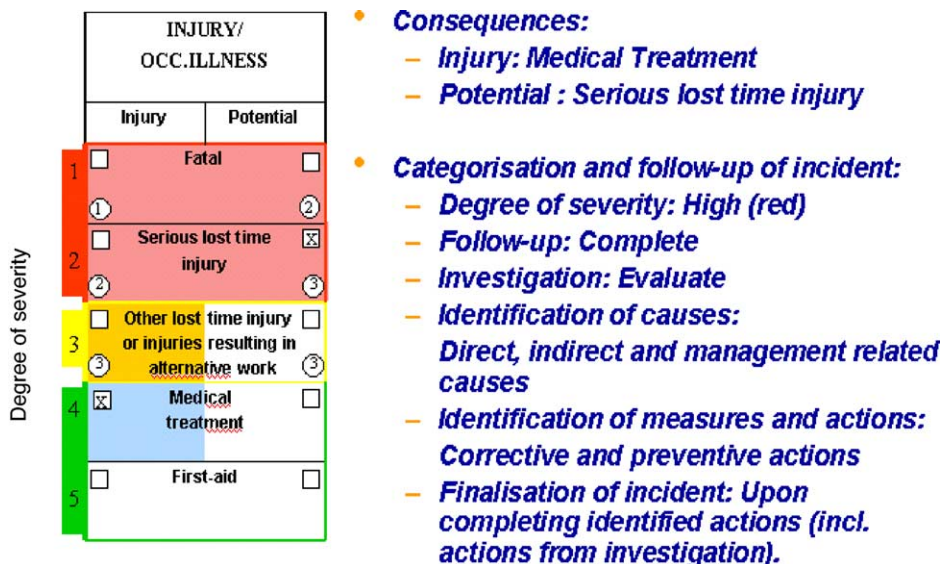


Fig. 3. Registration of incidents—example 3.

NEW PROCESS FOR HANDLING AND CATEGORISATION OF UNDESIRABLE INCIDENTS

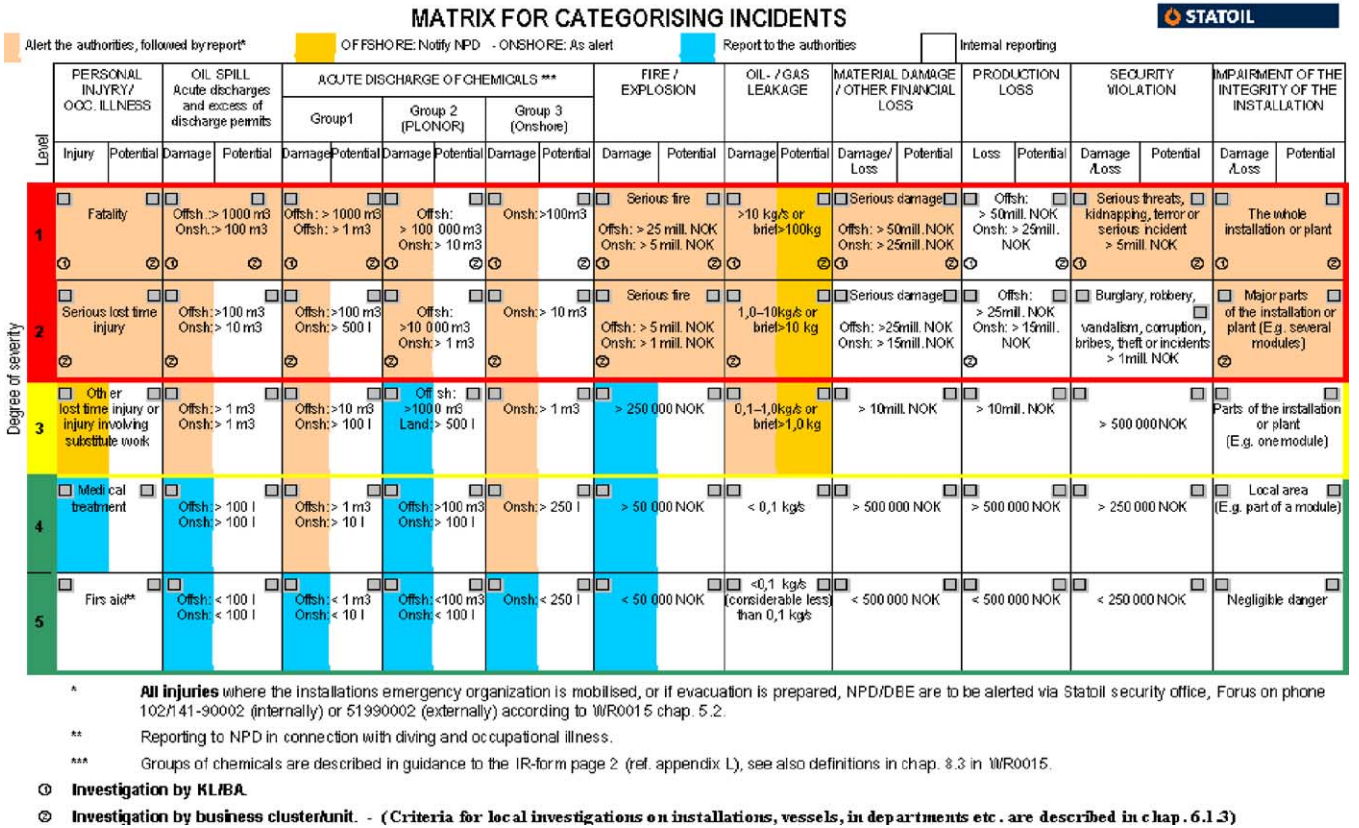


Fig. 4. Matrix for categorisation of incidents in Statoil E&P Norway.

Table 1  
Levels of investigation, related to the categorisation matrix

Degree of seriousness	Investigation criteria	Investigation criteria	
		Actual injury/damage/loss	Potential injury/damage/loss
1	Red	Investigation commissioning level 1	Investigation commissioning level 2
2	Red	Investigation commissioning level 2	Investigation commissioning level 3 <sup>a</sup>
3	Yellow	Investigation commissioning level 3 <sup>a</sup>	Investigation commissioning level 3 <sup>a</sup>
4	Green		
5	Green		

<sup>a</sup> Evaluate if investigation is to be performed. In addition, all gas leakages categorised at levels 3 and 4 are investigated.

**3. Conclusions**

The following changes have been made to incident reporting in Statoil E&P Norway:

- Simplified handling of less serious incidents.
- Removal of the recurrence frequency in the categorisation of incidents—the consequences of an incident alone (including its potential damage) determines the further handling and follow-up.
- MTO methodology has been incorporated as requirement in Statoil:
  - New codes for incident causes at all levels;

- MTO methodology basis for level 1 and 2 investigations.
- All data are analysed twice a year, in order to identify any trends, causes, and types of equipment etc. which require special attention.

A year after the introduction of these changes, Statoil's experiences with this new system for categorisation and follow-up of undesirable incidents, are predominantly good.

- The intention to get a higher degree of focus on serious incidents (injuries, damages, loss and near misses), has been met.

- The data quality for the more serious incidents (5% of the total number of incidents registered) has improved.
- The improved handling of incidents has contributed to more reliable and accurate HSE indicators at a corporate level.
- More user friendly codes in place for incident registration (based on MTO methodology).
- The revised matrix gives distinct criteria with respect to which investigation level to be initiated for a specific incident.

All activities related to handling of undesirable incidents have been summarised and illustrated on a two-sided plastic form, incorporating both the categorisation matrix and the activity flowchart (see [Figs. 1 and 4](#)).