Project: Bowtie Module

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Duration: 1 month (2 April 2020 - 1 may 2020)

Main goals:

- Implement the module in synergy with existing modules.
- Generated a bowtie chart from the data.
- Plug with Risk Management module.
- Make simple and basic functionalities to be improved later with advanced functionalities

Meting ressources (3/6/2020) :

Documents Type to provide :

- *PID*
- *Datasheet*
- *Procedure*
- *Risk management*

The bowtie method has several goals:

- Provide a structure to systematically analyse a hazard.
- Help make a decision whether the current level of control is sufficient
- Help identify where and how investing resources would have the greatest impact.
- Increase risk communication and awareness.

The steps supposed:

1 Step one - Identify hazards

Hazards can be operations/activities (operating rotating machinery, driving a car), substances (chemicals, hot fluids, etc.) or situations (a load suspended at height) we deal with in the normal processes of our business. As long as these hazards are under control, they will not cause harm, but they introduce the potential for harm.

2 Step two – identify top events

When control over a hazard is lost, it is usually possible to identify the moment when a normal situation changes to an abnormal situation. That point is called the top event in bowtie and is also the centre event of the diagram. The top event is not a catastrophe yet, but the company is now exposed to the potential harm of the hazard.

3 Step three – identify threats

There are often several factors that could cause the top event. These are called threats in the bowtie. Threats lead directly to the top event and should be able to cause the top event independently.

4 Step four – identify consequences

When a top event has occurred it can lead to certain consequences. Consequences are unwanted scenarios that could be caused by the top event. They should be realistic and specific. Consequences are mainly unwanted because they will lead to loss or damage.

5-6 Step five and six – identify preventive and recovery barriers

Risk management is about controlling risks. This is done by implementing barriers to prevent certain events form happening. A barrier (sometimes also called a control) can be any measure taken that acts against some undesirable force or intention, in order to maintain a desired state. Barriers can be hardware systems, design aspects, human behaviour and so on. Barriers are placed on both sides of the top event. Preventive barriers on the left side of the bowtie prevent the top event from happening. Recovery barriers on the right side of the bowtie can either prevent the top event from resulting in unwanted consequences or mitigate further consequences.

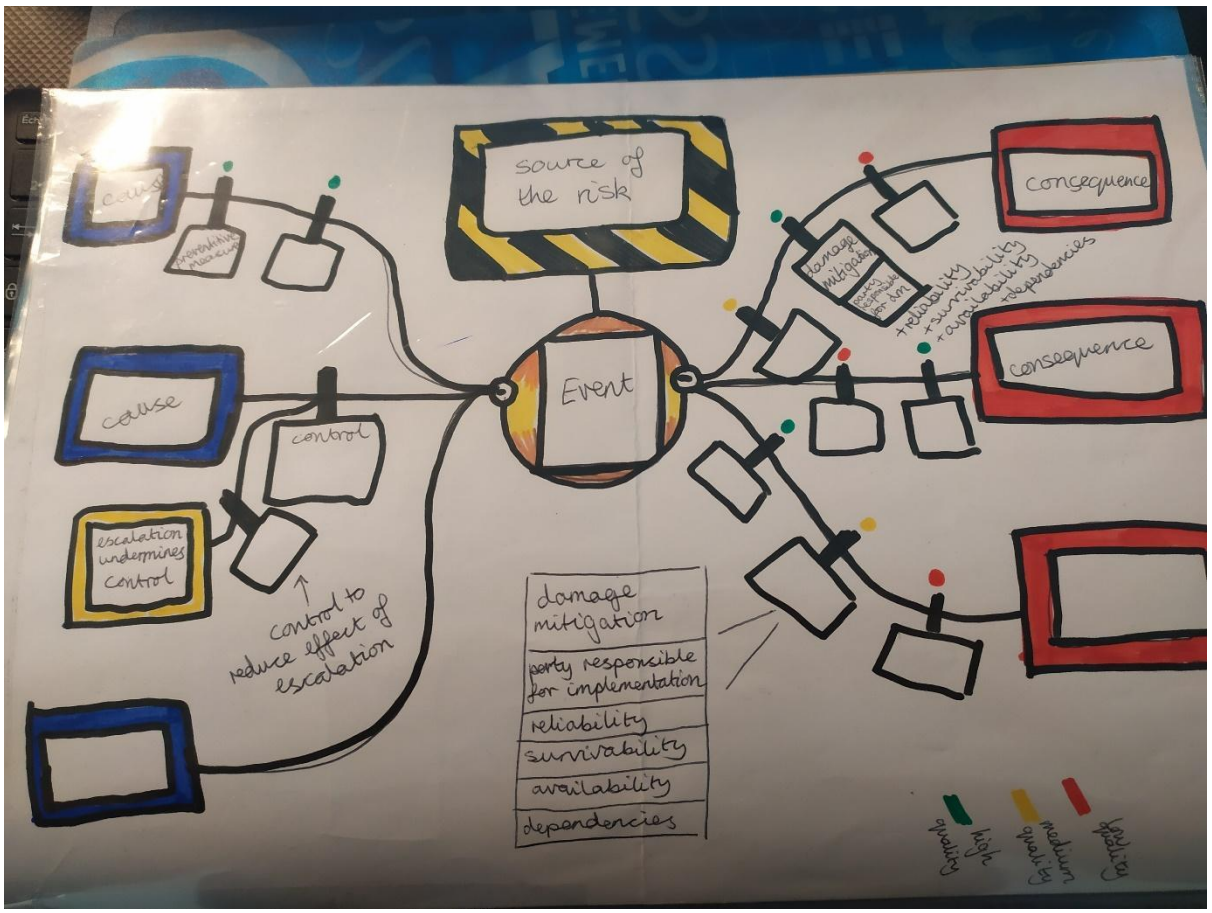
7-8 Step seven and eight – identify escalation factors and escalation factor barriers

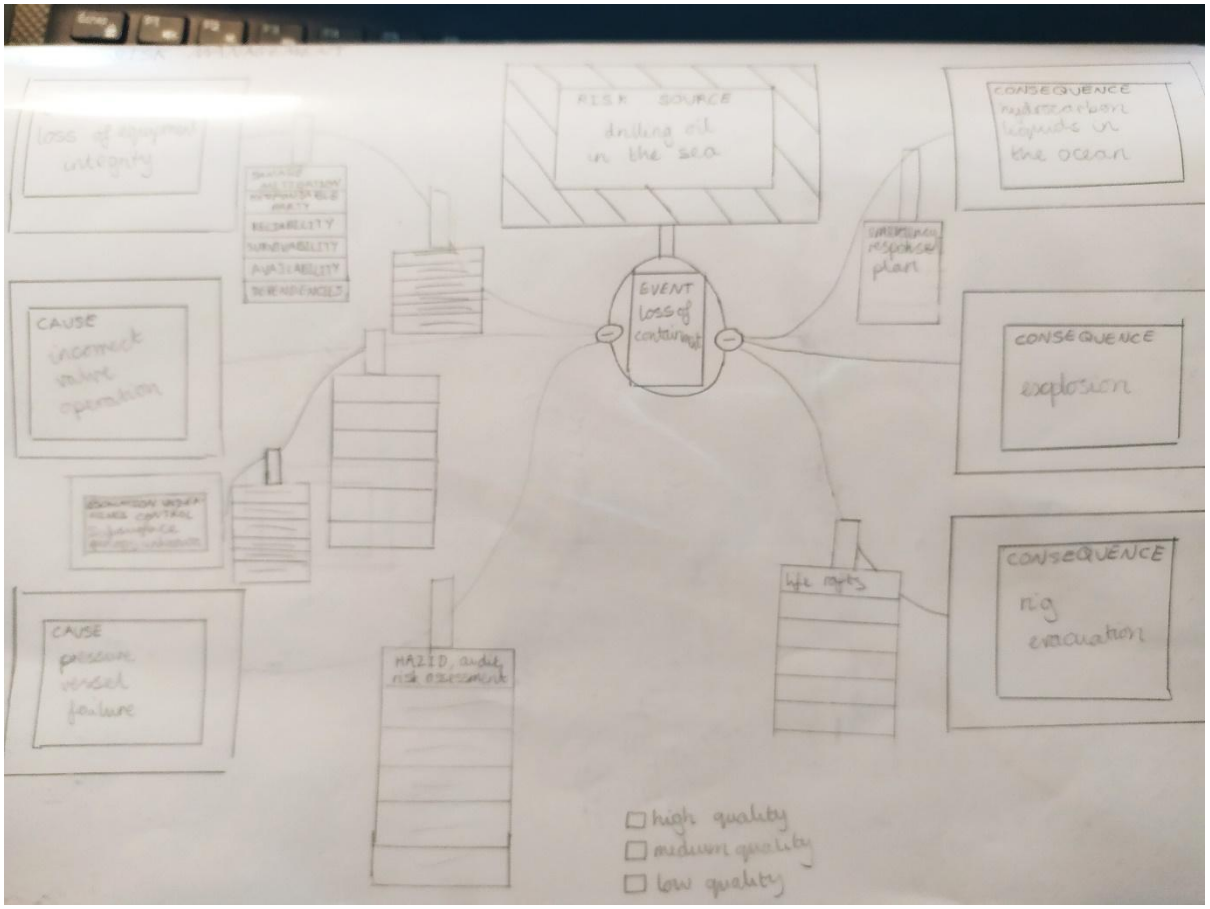
Once the control measures are identified, the bowtie method takes it one step further and identifies specific conditions or actions that make it more likely that a barrier will fail. These are called escalation factors. There are barriers for escalation factors as well. These barriers protect the main barrier from an escalation factor.

Next step after the basic bowtie

After creating the basic bowtie diagram, there are several ways to work out the barriers in more detail. One good way is to identify and link the underlying management system activities to the barriers. This will tell you what should be done to keep the barriers working, like maintenance activities on hardware barriers.

Annexes


source of the risk
cause
cause
control
escalation undermines control
control to reduce effect of escalation
Event
consequence
consequence
damage mitigation
party responsible for implementation
reliability
survivability
availability
dependencies
high quality
medium quality
low quality


RISK SOURCE
drilling oil in the sea
EVENT
loss of containment
CAUSE
incorrect valve operation
CAUSE
pressure vessel failure
CONSEQUENCE
explosion
CONSEQUENCE
oil evacuation
life rafts
HAZID, audit, risk assessment
high quality
midium quality
low quality


Bow tie
Contexte
Technologie
documention to review for next week
P ID
datasheet
Procédure
risk management
document control
HSE
Humaine
organisationnelle
Fonctionalités
Environnement Offshore
Plateforme opérationnelle
onshore
Analyses HSE
Procédures
Modules cost control
ICPI
Mesurer l'impact
Informations génériques
Sous-sujet 4
Modules existants
Analyse HSE
Document control
Risk management
Quality management
Cost control
...
Résumé
notamment
Créer une brique permettant de gérer les implications
Questions
ex. intégrer la législation jusqu'à quel niveau ?
quel cadrage sur la démo du principe de "boutie" ?
Démo technique sur un processus ciblé ?
Feedback lorsque modification sont effectué
Déclencher une alerte
gestion technique
assignation des responsabilité
Scénario
Proposition de scénario d'usage le plus général possible
offshore
drilling
fpso
shore
usine
impact
management of change
pêcherie