Optimising Barrier Management

Onderwerp/vraagstelling

This study is initiated due to findings of the HSE's-Asset Integrity Programme. Venture Production Nederland BV (VPN) considers better control of barriers a means to improve control of major accident hazards. This study has looked closer at barrier management:

“How can Venture Production Nederland BV improve the management of barriers devised to prevent major accident hazards?”

Methoden en technieken & Resultaten/discussie

The problem solving cycle from Hale's model was used to position the study. The bow-tie methodology has been selected to make an inventorisation of all VPN's barriers in major accident hazards management.

Conclusions:

The bowtie sessions have concluded in 11 bow-ties which depict the major hazards for the VPN's organisation. It has resulted in 847 independent and multifunctional barriers.

The interdependency analysis has concluded which barriers are critical and how many times they are deployed. Currently the most critical barrier is the Permit to Work System, it has been deployed 18 times in the 11 bow-ties. The consequence of failure of a critical barrier is a higher probability of a major accident event occurring. Failure probabilities may increase over time in relation to the current maintenance strategy. It can be concluded that degradation of barriers may lead to an increase in failure probabilities. It can be concluded that the management of barriers needs to be improved. The current situation is not as safe as we believe it to be. The aging aspect of the installations is not in our favour.

Discussion:

This thesis has shown there is a lot to think about. The fact that there is no consideration of barriers being dependent, interdependent or multifunctional. QRA is carried out for oil and gas platforms based on a number of assumptions, for example failure probabilities. The fact that barriers degrade over time and that these barriers are used in multiple scenarios we can ask the following questions how valid are our QRA’s, what are our true risk figures?