

## Screening Methodology for Seismic Risk Assessment of Aging Structures in Oil and Gas Plants

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**Abstract :** With the issuance of Malaysian National Annex 2017 as a part of MS EN 1998-1:2015, the seismic mapping of Malaysian Peninsular including Sabah and Sarawak has undergone some changes in terms of the Peak Ground Acceleration (PGA) value. The revision to the PGA has raised a concern on the safety of oil and gas onshore structures as these structures were not designed to accommodate the new PGA values which are much higher than the previous values used in the original design. In view of the high numbers of structures and buildings to be re-assessed, a risk assessment methodology has been developed to prioritize and rank the assets in terms of their criticality against the new seismic loading. To-date such risk assessment method for oil and gas onshore structures is lacking, and it is the main intention of this technical paper to share the risk assessment methodology and risk elements scoring finalized via Delphi Method. The finalized methodology and the values used to rank the risk elements have been established based on years of relevant experience on the subject matter and based on a series of rigorous discussions with professionals in the industry. The risk scoring is mapped against the risk matrix (i.e., the LOF versus COF) and hence, the overall risk for the assets can be obtained. The overall risk can be used to prioritize and optimize integrity assessment, repair and strengthening work against the new seismic mapping of the country.

**Keywords :** methodology, PGA, risk, seismic

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