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Strengthening Buy Quiet Implementation During Design Stage in Oil and Gas Industry

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ABSTRACT

Objective: Implementing Buy Quiet strategy during design stage is crucial to optimally minimizing noise emissions at the source by selecting or designing quieter equipment. PETRONAS Project Delivery has incorporated the Buy Quiet strategy through 5 primary stages. Firstly, during Feasibility Study where buying quieter equipment shall be top priority. Secondly, during Front End Loading by putting requirement to conduct Predictive Noise Control Study using acoustic modelling in identifying potential noise sources, locations, and magnitudes. Thirdly, Detailed design where the noise study should be updated using the latest equipment data to ensure noise control measures are designed correctly. Fourthly, during Factory Acceptance Test (FAT) where a noise measurement should be performed to verify that noise levels meet the project specification. Finally, during commissioning through area noise measurement should be conducted to ensure that noise levels are within the acceptable limits. **Method:** A situational assessment was conducted on seven capital projects in checking compliance against requirements outlined in the internal procedure. The assessment starts by reviewing the projects' contracts to ensure the Buy Quiet requirement was included and the selection criteria for selecting quiet equipment were clearly stated. This helps to establish project's noise reduction expectations and to ensure that equipment suppliers were aware of the compulsory noise requirement. Second steps are verifying the noise data sheets collected during the FAT which to confirm that the equipment met the noise measurements outlined in the predictive noise control study. Any deficiencies or discrepancies identified are addressed prior to installation to ensure the noise reduction target are achieved. Lastly, potential engineering controls were evaluated based on their effectiveness, cost, reliability, and feasibility. This involved considering options such as noise barriers, equipment enclosures, and vibration isolation systems to reduce noise exposure. **Findings:** Based on the contract review assessment, 71% were found complying the Buy Quiet requirement. However, around 30% were unable to comply due to technical complexity in designing for quiet operation, high production costs, and other design priorities that took precedence over noise reduction during the design stage which pose challenges in achieving Best in Class delivery. One of the primary challenges during the design stage was identifying the sources of noise, particularly in complex environments with multiple sources of noise which conducting a comprehensive noise survey could address this issue. Implementing noise reduction measures could also be expensive, and it was crucial to consider the cost of these measures in relation to the potential benefits in terms of reduced noise levels and the potential impact on productivity. By taking steps to address these challenges during the design stage, the likelihood of a successful implementation of the Buy Quiet Program could be increased. **Conclusion:** In summary, by selecting quieter equipment, the risk of noise-induced hearing loss can be reduced, resulting in healthier and safer work environment for employees. By prioritizing noise control during design stage, companies can potentially reduce the need for costly administrative and engineering controls, resulting in significant cost savings.

Keywords: Noise, project design, buy quiet, Factory Acceptance Test