

## Enhancing the Implementation Strategy of Simultaneous Operations (SIMOPS) for the Major Turnaround at Pertamina Plaju Refinery

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**Abstract :** Amidst the backdrop of Pertamina Plaju Refinery, which stands as the oldest and historically less technologically advanced among Pertamina's refineries, lies a unique challenge. Originally integrating facilities established by Shell in 1904 and Stanvac (originally Standard Oil) in 1926, the primary challenge at Plaju Refinery does not solely revolve around complexity; instead, it lies in ensuring reliability, considering its operational history of over a century. After centuries of existence, Plaju Refinery has never undergone a comprehensive major turnaround encompassing all its units. The usual practice involves partial turnarounds that are sequentially conducted across its primary, secondary, and tertiary units (utilities and offsite). However, a significant shift is on the horizon. In the Q-IV of 2023, the refinery embarks on its first-ever major turnaround since its establishment. This decision was driven by the alignment of maintenance timelines across various units. Plaju Refinery's major turnaround was scheduled for October-November 2023, spanning 45 calendar days, with the objective of enhancing the operational reliability of all refinery units. The extensive job list for this turnaround encompasses 1583 tasks across 18 units/areas, involving approximately 9000 contracted workers. In this context, the Strategy of Simultaneous Operations (SIMOPS) execution emerges as a pivotal tool to optimize time efficiency and ensure safety. A Hazard Effect Management Process (HEMP) has been employed to assess the risk ratings of each task within the turnaround. Out of the tasks assessed, 22 are deemed high-risk and necessitate mitigation. The SIMOPS approach serves as a preventive measure against potential incidents. It is noteworthy that every turnaround period at Pertamina Plaju Refinery involves SIMOPS-related tasks. In this context, enhancing the implementation strategy of "Simultaneous Operations (SIMOPS)" becomes imperative to minimize the occurrence of incidents. At least four improvements have been introduced in the enhancement process for the major turnaround at Refinery Plaju. The first improvement involves conducting systematic risk assessment and potential hazard mitigation studies for SIMOPS tasks before task execution, as opposed to the previous on-site approach. The second improvement includes the completion of SIMOPS Job Mitigation and Work Matrices Sheets, which was often neglected in the past. The third improvement emphasizes comprehensive awareness to workers/contractors regarding potential hazards and mitigation strategies for SIMOPS tasks before and during the major turnaround. The final improvement is the introduction of a daily program for inspecting and observing work in progress for SIMOPS tasks. Prior to these improvements, there was no established program for monitoring ongoing activities related to SIMOPS tasks during the turnaround. This study elucidates the steps taken to enhance SIMOPS within Pertamina, drawing from the experiences of Plaju Refinery as a guide. A real actual case study will be provided from our experience in the operational unit. In conclusion, these efforts are essential for the success of the first-ever major turnaround at Plaju Refinery, with the SIMOPS strategy serving as a central component. Based on these experiences, enhancements have been made to Pertamina's official Internal Guidelines for Executing SIMOPS Risk Mitigation, benefiting all Pertamina units.

**Keywords :** process safety management, turn around, oil refinery, risk assessment

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