

## **ABSTRACT**

*Rajawali Swiber Cakrawala is known as a construction company integrated with engineering, procurement, construction and installation (EPCI), especially for projects of oil and gas. In 2013, in the Rajawali Swiber Cakrawala develop Facility B as satellite of Facility A located in the Natuna Sea. On the construction of facilities in offshore platforms. Rajawali Swiber Cakrawala as an integrated EPCI construction companies need to do an analysis of Reliability, Availability and Maintainability (RAM Analysis) of the facilities that will be built to find a picture of performance, availability and reliability facilities during the operational time and determine the capacity of the production facilities for a year.*

*The purpose of this study was to determine the value of Plant Availability Factor, determine the equipment which identified as performance killer, and know the value of Plant Availability Factor after improvements. Facilities that become object of study consists of Subsea Production Wells, Subsea Subsurface Systems, Subsea and Topside Located Liquid Separation System which is integrated into the production system and called as Subsea Production System.*

*Based on the calculation of RAM Analysis, Subsea Production System has a value of 38.34% reliability analytical and simulation approach value 43.10% at the time of 8760 hours. Inherent availability of Subsea Production System based analytical approach by 99.81%, and 99.88% of simulation approach. Operational availability of Subsea Production System based analytical approach by 99.88%, and 94.80% of simulation approach. Equipment on Subsea Production System has a value of maintainability of 5-65 hours. Based on the evaluations that have been done, it is done to improve the system performance improvement on most equipment downtime causes. The equipment is Condensate Separator. The results show the improvement of availability inherent value increased by 0.05% from 99.88% to 99.93%, and the value of operational availability increased by 3.05%, from 95.39% to 98.44%.*

*A method such as Reliability Centred Maintenance (RCM) could be used to develop preventive maintenance program to improve the facilities reliability and availability.*

*Keywords: Reliability, Availability, Maintainability, RBD, Plant Availability Factor*