

A Study on Impact of Scheduled Preventive Maintenance on Overall Self-Life as Well as Reduction of Operational down Time of Critical Oil Field Mobile Equipment

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Abstract : Exploration and production of Oil & Gas is a very challenging business on which a nation's energy security depends on. The exploration and Production of hydrocarbon is a very precise and time-bound process. The striking rate of hydrocarbon in a drilled well is so uncertain that the success rate is only 31% in 2021 as per Rigzone. Huge cost is involved in drilling as well as the production of hydrocarbon from a well. Due to this very reason, no one can effort to lose a well because of faulty machines, which increases the non-productive time (NPT). Numerous activities that include manpower and machines synchronized together works in a precise way to complete the full cycle of exploration, rig movement, drilling and production of crude oil. There are several machines, both fixed and mobile, are used in the complete cycle. Most of these machines have a tight schedule of work operating in various drilling sites that are simultaneously being drilled, providing a very narrow window for maintenance. The shutdown of any of these machines for even a small period of time delays the whole project and increases the cost of production of hydrocarbon by manifolds. Moreover, these machines are custom designed exclusively for oil field operations to be only used in Mining Exploration Licensed area (MEL) earmarked by the government and are imported and very costly in nature. The cost of some of these mobile units like Well Logging Units, Coil Tubing units, Nitrogen pumping units etc. that are used for Well stimulation and activation process exceeds more than 1 million USD per unit. So the increase of self-life of these units also generates huge revenues during the extended duration of their services. In this paper we are considering the very critical mobile oil field equipment like Well Logging Unit, Coil Tubing unit, well-killing unit, Nitrogen pumping unit, MOL Oil Field Truck, Hot Oil Circulation Unit etc., and their extensive preventive maintenance in our auto workshop. This paper is the outcome of 10 years of structured automobile maintenance and minute documentation of each associated event that allowed us to perform the comparative study between the new practices of preventive maintenance over the age-old practice of system-based corrective maintenance and its impact on the self-life of the equipment.

Keywords : automobile maintenance, preventive maintenance, symptom based maintenance, workshop technologies

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