



# SHUTDOWN MANAGEMENT

PUMA ENERGY – NAPA NAPA REFINERY  
PORT MORESBY, PAPUA NEW GUINEA





## The Opportunity

Carrying out project work in Papua New Guinea can sometimes be difficult with cultural, climatic and commercial divergences presenting challenging conditions. For Fitzroy Engineering this project was the first opportunity to work with a new client in a new market and success was a non-negotiable outcome.

Our contract was based on a predefined scope to prepare a shutdown budget for Puma Energy and include a review of the client's Turnaround & Inspection (T&I) scheduled shutdown requirements. This resulted in Fitzroy completing the planning, management and execution the 2014 scheduled T&I turnaround at the 28,000 b/d oil refinery at Napa Napa on the western shore of Port Moresby Harbour in Papua New Guinea.

## The Project

This required the compilation of a high level execution plan, development of an HSSE plan and controls, all quality documentation, execution work packs, JSA's, equipment lists, identification of replacement parts for procurement and development of expenditure budgets. All were submitted to the client for pre-approval before final development of the T&I execution plan and final documentation.

The planning phase required three site visits to PNG during the pre-shutdown phase by our T&I manager, senior planner and a shutdown supervisor. This occurred over a 12 month period on a part time basis with the majority of the work carried out in NZ by our planning team. Included in the work scope was management of all of the pre-shut activities such as scaffold erection, blind points tagging, insulation, cladding removal, and alternate hot unbolting of column and vessel man-ways and heat exchanger nozzles.

This was overseen by our T&I manager and a small contingent of supervisors starting on site two weeks before the shut start date.

The shutdown was managed by our expat team of T&I Manager, one planner and eleven supervisors supported by the Puma operations staff. It was a 12 hour per day operation for 31 days with rostered days off for fatigue management and some critical activities on a two shift basis. During the shut some 68 pressure vessels, columns, heat exchangers, fin fan coolers, heaters and tanks were opened and inspected, cleaned and repaired as necessary along with all pressure safety valves, shutdown valves and control valves. The shut heat exchanger programme involved opening all vessels and in most cases pulling the tube bundles out for cleaning, inspection and some bundle replacements. For this we employed Fitzroy's own 25 tonne aerial tube bundle puller.

- Project value for Fitzroy approx \$2m
- Total peak manning number 180
- 60,000 man hours with ZERO lost time injuries

## DIPS

The shutdown was programmed and work packs developed using Fitzroy's proprietary Dialog Intelligent Planning System (DIPS). This is a powerful and fully comprehensive integrated software package which allows us to plan & prepare, schedule, cost, execute and manage turnarounds, while providing real time progress and cost reporting for our clients. DIPS incorporates all Job Methodologies and Job Safety Analyses, subcontractor and asset allocation, and generates valuable retrievable information for use in future work.



*Napa Napa Refinery*



*Pulling a Heat Exchanger Bundle*

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