

## Nigeria LNG Limited, Nigeria

### Performance Improvement Project

Nigeria LNG Limited (NLNG) is jointly owned by Nigerian National Petroleum Corporation (NNPC) (49%), Shell (25.6%), Total LNG Nigeria Ltd. (15%) and Eni (10.4%). It was incorporated as a limited liability company on May 17, 1989, to harness Nigeria's vast natural gas resources and produce Liquefied Natural Gas (LNG) and Natural Gas Liquids (NGLs) for export. With six trains currently in production, it is one of the world's largest LNG complexes.

NLNG were scheduled to bring on line the sixth LNG train in December 2007. The objective of our involvement was firstly to understand whether various functions such as maintenance, workshops/services and supply chain could absorb the additional activity of a sixth train with minimal impact on costs. Secondly, should this be achievable, the next step was to implement the

"Renoir has fully met our expectations and we are extremely pleased with the results"

*Production Director  
Nigeria LNG Ltd.*

#### Key Results

Absorbed the activity of the 6th train with no additional maintenance staff and with no increase in overtime / backlogs

Increased staff utilisation from 53% to 80%

Improvement in plan attainment and ratio of preventive to reactive activities

Planned vs unplanned activity increase from 55:45 to 70:30

Overtime and backlogs stable

Reduction in logistics costs of \$500,000 per annum

Stock accuracy increased to 98%

#### ANALYSIS

The analysis was conducted in both maintenance and supply chain functions and showed, amongst other things:

- **Planning, Maintenance & Workshops/Services:**
  - Plan attainment was low, with a disproportionate amount of time being spent on reactive rather than preventative maintenance
  - Staff utilization planning was highly inaccurate
  - Supervisors spent only 25% of their time actually supervising work
  - No systematic approach to variance management
  - Disciplines were lax; long lunch times, little supervisory presence on the floor
- **Procurement, Inventory and Logistics:**
  - The stock control system (Pacer) did not reflect the true warehouse inventory
  - Bureaucratic and cumbersome buying processes caused long delays in getting material
  - Min/max stock levels did not reflect the business needs
  - As a result, logistics costs were high as unexpected shortages required fast track purchasing and delivery

#### PROJECT RESULTS

We set out to achieve an effective and consistent approach across all trains by:

- Increasing output levels through better planning, standard setting and job scheduling
- Improve the ratio of planned vs unplanned activity

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- Improving decision making (more informed decisions) through better reporting mechanisms and quality of information
- Improving supervisory effectiveness
- Improving predictability and reducing internal lead times associated with supply of materials and parts through removal of non-value added activity
- Improving availability of parts and materials through more efficient warehousing and inventory control

The Project started by setting up a Task Force involving NLNG staff and Renoir consultants. Several Focus Areas were identified covering functions such as Maintenance, Supply Chain & Workshops/Services. In addition, an additional cross-functional Focus Area was identified to evaluate results during the course of the project

The purpose of the Action Teams was to facilitate improvements in each of the Focus Areas and ensure consistency and co-ordination across the organisation.

The key performance indicators used to measure project success were:

**SUPPLY CHAIN**

No	KPI
1	Tender Process Time - Minor
2	Tender Process Time - Senior
3	Tender Process Time - Corporate
4	No. of Outstanding Request
5	No. of Items within Lead Time - Courier
6	No. of Items within Lead Time - Sea
7	No. of Items within Lead Time - Air
8	Savings (USD)
9	Stock Availability
10	Tender Process Time
11	Savings (USD)
12	No. of Invoice Paid within the agreed credit period
13	No. of Invoice Not Paid within the agreed credit period

**MAINTENANCE**

No	KPI
1	No. of staff - supervisors & below - NLNG
2	No. of staff - supervisors & below - Contractors
3	Overtime hours - NLNG
4	Overtime hours - Contractors
5	Schedule adherence / attainment
6	%age Proactive work complete as scheduled
7	Planned man-hours completed over actual man-hours used
8	Percentage split of corrective & proactive man-hours

In addition, management action teams consisting of key individuals on a part time basis were set up. Disciplined adherence to project management principles ensured the project delivered the results within the expected timeframe.

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