

# ExxonMobil

## EAP Inlet Gas Exchanger (IGE) Replacement Project

Project Case Study

# ariosh

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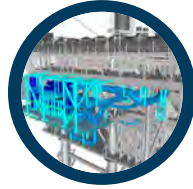
**Client**  
Mobil Producing Nigeria Unlimited

## Overview

- Install Jacks underneath Existing TEG Package.
  - Install tior lines at designated locations on the deck and attach both to TEG skid.
  - Jack up Existing TEG Package.
  - Install two guiderails and rollers along travel path
  - Jack down Existing TEG Package onto rollers.

## Objectives

- Mitigate 30 kbd NGL potential Unscheduled Volume Loss (UVL) for about six (6) months in the event of unplanned failure of the existing IGE.
  - Safely design, fabricate and install new IGE, pass-3 separator, and associated process piping, instrumentation, electrical, control and safety systems.
  - Fabricate and install a 50-ton deck extension on the east side of the EAP GX platform.



3D model of the IGE



Deck extension in place



IGE in place

## Engineering

- Installation Engineering
- Laser Scanning
- Virtual Installation and Constructibility Assessments
- Design verification

## Procurement/Logistics

- Strategic Sourcing
- Expedited Logistics
- Procurement of main equipment
- Provision of Offshore Vessels
- Vessel Management

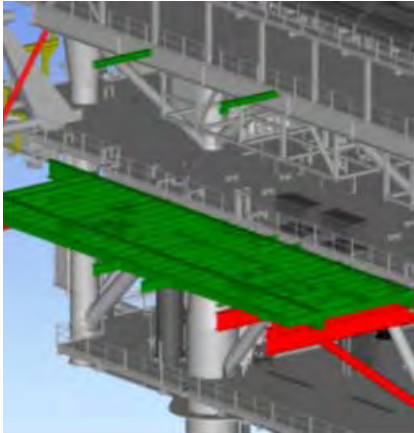
## Fabrication

- Fabrication of piping spools (SS, CS and LTCS),
- Deck Extension (receptor beams & pancake structure)
- Crossover staircase
- Fabrication Assurance/Dimension Control

## Installation

- Job Cards and Timesheet Database for Construction Coordination
- Installation of an additional Pass-3 Separator, new sets of piping, access platforms, strainers and Drop object protection frame

## Facility Digitization

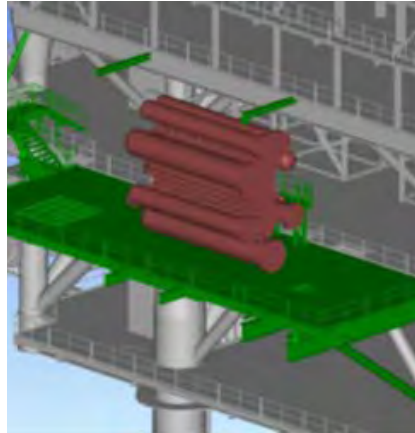


### Design Verification

- Pipe Fit/ Structural Fit assurance
- Clash checks between new and existing systems
- Spools tie in verification

### Virtual Installation

- New IGE, piping and existing facility were digitized and virtually installed



### Fabrication Assurance

- Linear and angular dimension control
- System Fit analysis ensures piping spools match design

## Installation Engineering

Ariosh carried out extensive installation engineering for First-Time-Install of the IGE, piping and structural members by using cutting edge engineering software.

### Step 1

- 3D model of the deck extension in Aveva E 3D
- Lifting analysis with SACS
- Offshore installation
- Deck extension in place

### Step 2

- 3D model of the IGE in Aveva E3D
- Detailed lifting analysis
- Offshore installation
- IGE in place



## End-to-end procurement for Project Materials

All other procurement except the major piping and structural items were carried out by Ariosh.

Ariosh employed strategic sourcing and expedited handling logistics and warehouse preservation to ensure quality supply of project materials:

### Procurement Strategy:

- Purchasing & Strategic Sourcing
- QA/QC and Inspections
- Expedited Handling & Logistics
- Warehousing & Materials Preservation
- Material and Inventory Management



#### Insulation Materials

50 Tons of high grade foam glass insulation materials for stainless steel pipes



#### Painting and Fireproofing Materials

2 Tons of imported fireproofing materials, 1000 liters of paint materials

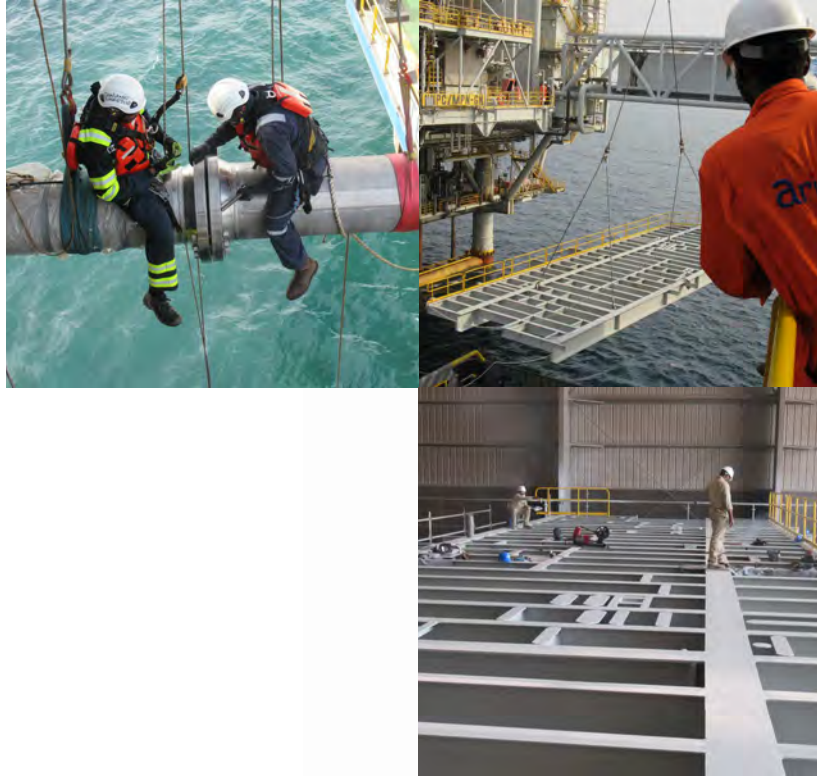


#### Mechanical Equipment

Procured the separators and the strainers

## Access and Critical Lifting

- JUB Platform Gang Way
- 300 Tons Scaffold Erection
- E & I Rope Access Technicians
- Fitting and Welding Rope Access Technicians
- 200 Tons Bull Ray JUB Crane
- 200 Tons TC1 JUB Crane



## Offshore

- Pre-shutdown operations
- Installation of the deck extension
- Demolition of existing Platform
- Installation of new E&I Systems
- Installation of new IGE and 3-pass separator on the deck extension
- Installation of piping and associated supports
- Tie-in of equipment instruments
- New Line of Sight Gas Detectors
- New UV/IR Flame
- Systems completion & commissioning

## Onshore

- Fabrication of 88.5ft x 30ft Deck Extension
- 85 Tons, deck extension receptor, beams and diagonal braces
- Fabrication of cross over stairway and access platform
- E&I stands and supports
- Process gas lines HN & GN lines
- Offshore load out of the IGE equipment /skid and Pass-3 Separator
- Other fabricated piping & structures

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## Values Added



### Cost

The Approved Work Order was completed within budget estimate and planned profit margin.



### Schedule

ExxonMobil planned to commence production of NGL by July 2018, we delivered in June 2018. One month ahead of schedule.



### SSHE

700,000 Project Safe Working Man-hours with Zero LTI



### Quality

Project was executed in accordance with ISO 9001 standards



### Production

NGL production safely continued upon project completion

## Oshe Honmi



### Main Installation Vessel (MIV)

- 10 Point Mooring System
- 402 Pax Accommodation
- SCM, 300T SWL, Man-Riding Crane Certified
- 1500 sqm Clear Deck Space, 15T/m2 Strength
- Boat Landing

## Oshe Rewo



### Anchor Handling Tug Supply Vessel (AHTS)

- 2 X AHTW - 150-150-01 Tow Winch
- 405 sw.m Deck Space
- 150 T Winch Heave
- 48 Pax Accommodation
- 1200m/60mm Towing Wire
- 7Tm2 Deck Strength

## Oshe 3



### Anchor Handling Tug Vessel (AHT)

- 2FFS Water Monitors 1200/300 m2/h
- 20 PAX Accommodation
- 50mm Towing Wire Diameter
- 1000m/50mm Drum Capacity
- 1000m Drum Wire Length
- 1 x AHTW - 100-100-01 Tow Winch



**Thank You!**

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