

ZEE LATEST NEWS (2014)

SURVEY & DESIGN, DOCUMENTATION OF POTABLE WATER SUBMARINE PIPELINES IN "GREATER MALE' REGION"

The International tender by Male' Water & Sewerage Company Pvt Ltd in the Republic of Maldives was awarded to ZEE. The project involves the distribution of water from production point at Island Gulhifathu to islands Thilafushi, Viingili, Male' and Hulhule via Submarine Pipelines. The scope includes carrying out the FEED study compiling bid documents for EPCC/ tender vendor and Contractor selection assistance.

CONVERSION OF DERRICK BARGE (DB) TO DERRICK PIPELAY BARGE (DLB)

The conceptual and FEED for this Barge conversion was awarded to ZEE by a Korean Company. At this stage this project is kept confidential.

BLANKET ENGINEERING CONTRACT

British Gas India awarded Blanket Engineering Contract to carry out specialist Structural and Pipeline Engineering.

PERTAMINA EP – L-PARIGI (DECK RAISING PROJECT)

ZEE with Associate P T Synergy (Indonesia) successfully completed the deck raising project where three decks joined by walkways and Flare was simultaneously raised by four meters. It is believed that this is an international first.

RECENTLY COMPLETED AND ONGOING PROJECTS

HEEREMA MARINE CONTRACTORS NEDERLAND B.V.



Over the year, ZEE carried out a number of transportation and installation projects for platforms, piles, jackets and PLEM for HMC. These projects include;

- Dynamic Lift Analysis, using HMC in-house LIFTDIN Software;
 - Carry out lifting analysis of 2000T jacket,
 - Carry out dynamic lifting analysis of RSS Arc Installation,
 - Carry out dynamic lifting analysis for Mid Depth Buoy Installation,
 - Indicate limitation sea states during installation of Balder Manifold,
 - Carry out installation analysis for the installation of Satellite Platform Topside,
 - Indicate limitation sea states during installation of suction piles,
 - Carry out removal analysis for the removal of IVRR Subsea Manifold.
- Tower Launch Analysis
 - Carry out launch lifting analysis for RSS Tower during installation
- Riser Support System Tower Transportation Analysis
 - Carry out transportation and bollard pull analysis for RSS Tower,
- Mooring Analysis
 - Carry out mooring analysis for SSCV Thialf during the installation of High Voltage Direct Current (HVDC) converter station platform,
 - Carry out mooring analysis for SSCV Hermod during removal of Topside,
 - Carry out mooring analysis for SSCV Hermod during installation of Platform
- Tripod, Jacket and Piles Grillage and Seafastening Design,
 - Carry out grillage and seafastening design for LQP Jacket and LQP Piles,
 - Carry out grillage and seafastening design for flare deck, flare tripod and flare pile.
- Jacket and Piles Transport Analysis and bollard pull analysis for Jacket and Piles transport for several cases



Rolf, Lakshmi, Arnold & Maurice from HMC with ZEE Staff

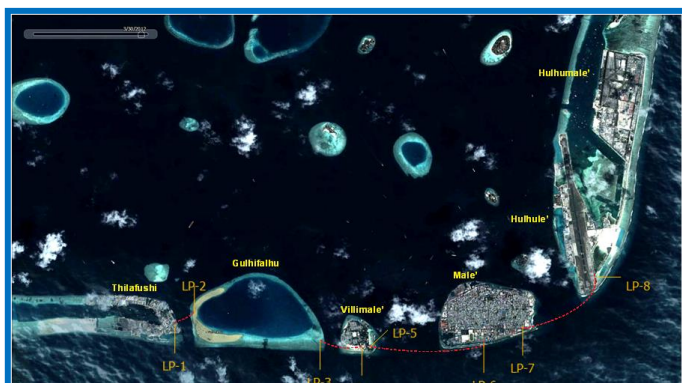
SURVEY AND DESIGN ENGINEERING OF POTABLE WATER SUBMARINE PIPELINE IN "GREATER MALE' REGION" for Male Water & Sewerage Company Maldives



The Governments of Maldives has decided to provides drinking water to Male' City, Capital of Maldives together with Villimale and Hulhumale'.

Collectively these three islands are referred to as Greater Male' region via Male Water and Sewerage Company (MWSC).

MWSC appointed ZEE to carry out Conceptual and FEED study for the submarine pipelines connecting the five islands.

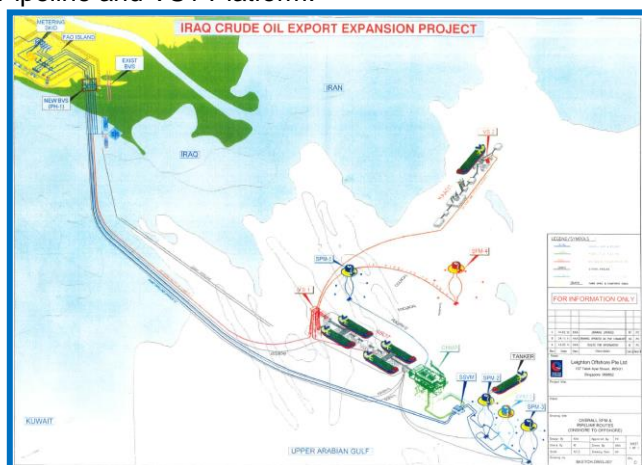


IRAQ SEALINE PROJECT – CRUDE OIL EXPORT FACILITIES RECONSTRUCTION for Leighton Offshore Pvt Ltd



The Project aims to establish the reliability of the existing pipeline system infrastructure among main terminals of onshore FAO Oil Storage Terminal (FOT), offshore Al Basrah Oil Terminal (ABOT) and offshore Khor Al Amaya Oil Terminal (KAAOT).

ZEE Engineering was appointed by LOPL to provide transportation and installation engineering services for "J" tubes, PLEM, Tie-in spools, Subsea Hoses, Risers, Pipeline and VS1 Platform.

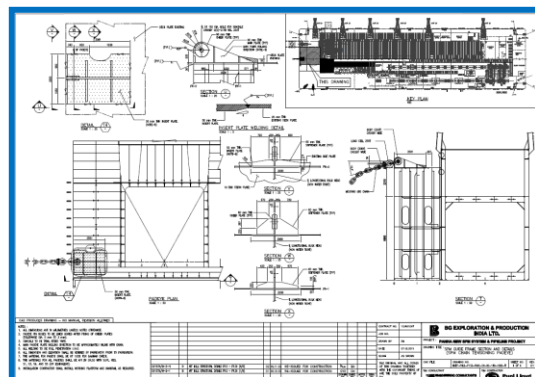


PANNA FIELD DEVELOPMENT PROJECT for British Gas Exploration Production India Ltd



BG INDIA

ZEE carried out a number of design assessments to check the integrity of the designs carried out by EPCC Contractors. These included PLEM, SPM, Pipeline and Riser Transportation and Installation Engineering.



SHELL BUKOM PIPELINE & PLEM REPLACEMENT PROJECT for Leighton Offshore Pvt Ltd



Shell Bukom Refinery situated at Bukom Island Singapore imports crude oil and other feedstock through several means. These include several jetties on the island itself but the bulk of the crude oil is through an SBM situated approximately 5.2 km from the island in deeper water necessary to accommodate VLCCs.

To extend the operating life of this pipeline it was recommended to replace a section of 2.7km from the PLEM that has most of the corroded spots. As part of the scope, the associated PLEM replacement, SBM refurbishment and mooring chains inspection will be carried out along with removal of the replaced section of existing pipeline.

ZEE was appointed by LO to carry out the following analysis;

- Pipeline and PLEM removal and installation engineering,
- Transportation and Installation engineering for re-routing Pipeline and PLEM including the removal of existing Pipeline and PLEM off site.

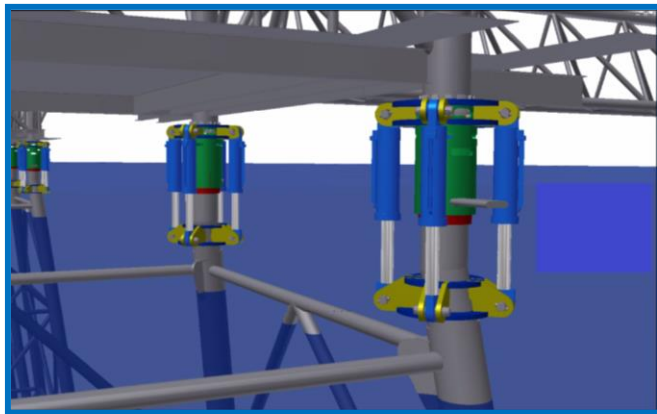


PROJECTS COMPLETED WITH J V PARTNER PT SYNERGY

LIMA COMPLEX SUBSIDENCE REMEDIATION (DECK RAISING) DETAIL DESIGN for PT Pertamina HE ONWJ



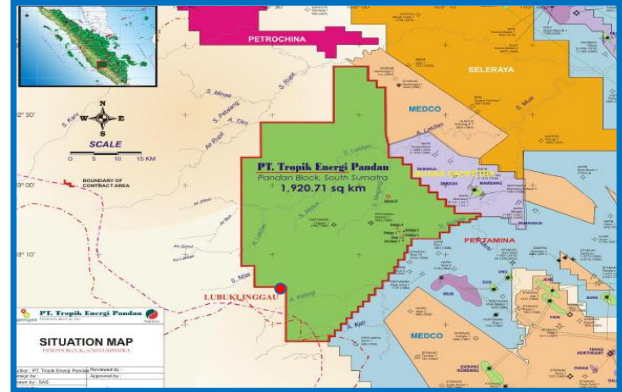
The Lima Flow Station and associated NUI's are located above the Parigi, Main Massive and Talang Akar formations. The Parigi formation is owned by Pertamina EP, whereas Main Massive and Talang Akar are owned by PHE-ONWJ. The old platforms have been sinking over the years ZEE with associates Synergy carried out detail design engineering for rising simultaneously three platforms with bridges and flare by 4 meters to raise the sinking platforms.



TROPIK ENERGY PANDAN BLOCK DEVELOPMENT for PT Tropik Energi Pandan



The Pandan Block is located onshore in the Musi Rawas, South Sumatra region of Indonesia. ZEE carried out the FEED study for the development of Sriwijaya and Ario Damar fields for surface production facilities. New pipelines connecting K39, KE54, KE38P and PPP Platform facilities.



UL FIELD DEVELOPMENT for Pertamina HE




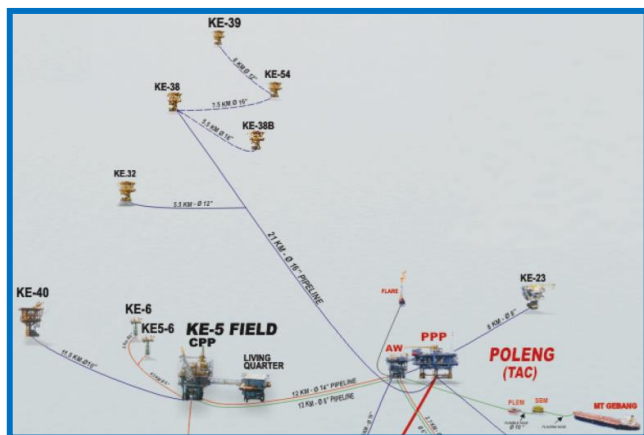
The new UL gas and oil reserve requires facilities and pipelines for gathering and subsequent processing and export with initial rate of 2200 BOPD and 10 Mscfd. ZEE carried Detail Engineering for ULA to UW Subsea Pipeline. ZEE also carried out Loadout, Seafastening, transportation and Installation Engineering for the deck.




KE 38 MOPU for PT Pertamina HE WMO



 Pertamina Hulu Energi West Madura Offshore (PHE WMO) is planning to further develop KE field in the vicinity of KE-38. This comprises of the installation of several WHP platforms. In order to provide these facilities in a short period of time, a Temporary Production Facility (TPF) has been identified as being the best solution. ZEE engineering carried out the Detail Engineering including T&I for the TPF.

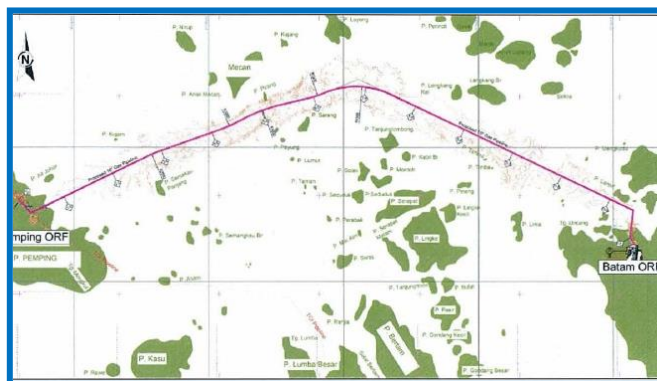


PLNB UBE PIPELINE PEMPING TO TANJUNG UNCANG for PT PLN Batam - UBE




Consortium PT. PLN Batam and PT. Universal Batam Energy intends to develop a pipeline transporting gas from Premier Oil 's field via existing WNTS which is operated by ConocoPhillips Indonesia (COPI). It is proposed to install a new 16-inch gas pipeline from Pemping Island (Pemping ORF) to Tanjung Uncang (Batam ORF) consisting of approximately 12.5 km offshore pipeline and 1 km onshore pipeline

ZEE carried Detail Engineering for project.



STAR ENERGY KRA SOUTH FEED for PT Star Energy



 Star Energy (Kakap) Ltd is developing the KAKAP Field which consists of KG, KRA, KH and KF fields, located in West Natuna Sea, Indonesia. It is producing sales gas sold to Singapore through a 14" pipeline which is connected to the main West Natuna Transmission System (WNTS) pipeline. On this project ZEE carried out Detail Engineering.

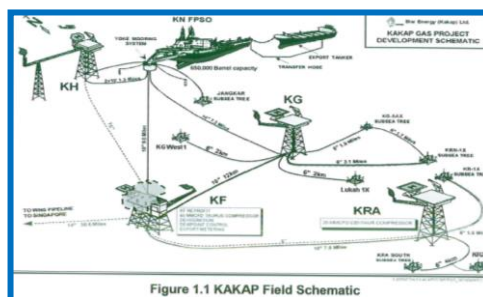


Figure 1.1 KAKAP Field Schematic

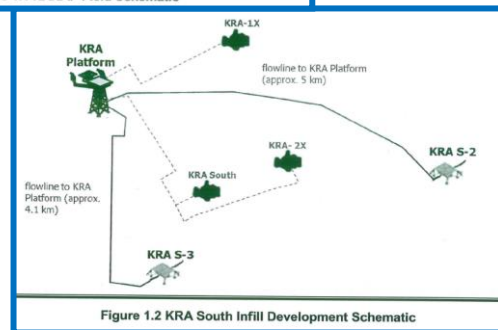

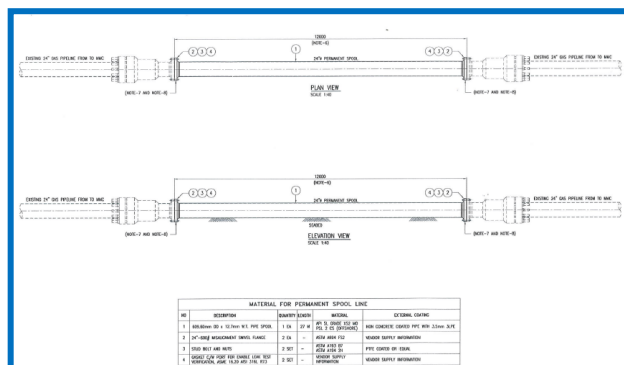


Figure 1.2 KRA South Infill Development Schematic

APN MMC HOT TAP for PT Pertamina HE ONWJ



 PHE ONWJ intends to repair 24" MGL APNA-MMC gas production pipeline by using hot tap method cutting and installing 24" mechanical connectors. ZEE carried out Hot Tap detail design, pipeline tie-in methodology.



WORK SHOPS & SEMINARS

ZEE had a very successful 2013 in marketing Orcaflex software package. The sales were supported by a number of events such as user group meetings held in Singapore and in Malaysia. Open training was also conducted by Orcina to provide hands on experience in using the software. ZEE also conducted training to complement Orcina courses.

ORCAFLEX



A software package developed by Orcina Ltd in the UK, OrcaFlex is used to carry out large deflection, non-linear, dynamic simulations of slender structures, such as:

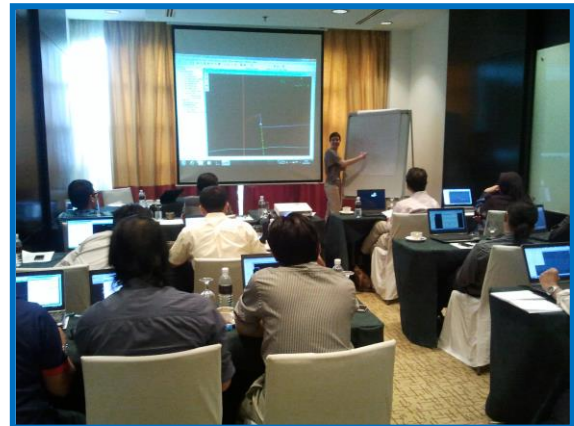
Riser Systems, Installation & Decommissioning, Moorings & Global Performance, Pipelay & Pipelines, Renewables Wave power systems, Towed Systems, Bundles, TLPs, Fishfarms, etc.

OrcaFlex, and the support provide by Orcina and their agents, are widely regarded as pre-eminent in this field.

See www.orcina.com for more details

ZEE are Orcina's exclusive agent for marketing and supporting Orcina's products and services in Malaysia, Singapore and Indonesia. ZEE also uses the software in-house which enables to provide quality support.

Numerous trainings and open seminar was conducted by both Orcina and ZEE for the software.



ORCAFLEX Training in KL and Singapore

PIPELINE IN-SERVICE ANALYSIS TO DNV FS 101

ZEE has been developing and using in-house a suite of programs to DnV FS101 code. Shortly ZEE intends to market the suite for public use. Please contact ZEE for further details.