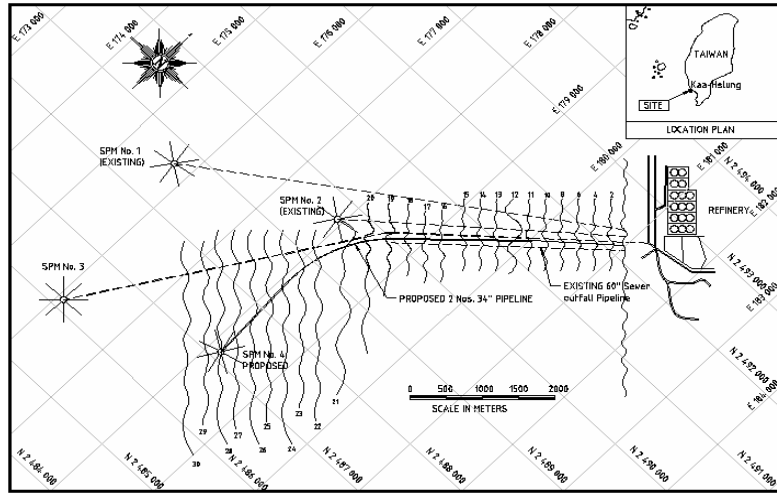


**PROJECT:**

# P. TALINDU SPM NO. 1 & PIPELINE



**OPERATOR:**

CHINESE PETROLEUM CORPORATION TAIWAN

**PROJECT VALUE:**

(APPROX. US\$ 10 MILLION)

**PROJECT DESCRIPTION:**

A 20 Inch Submarine Pipeline was installed at Shalung Terminal, Taoyan from shore point at onshore terminal facilities to SBM No. 1. The approximate length of pipeline was 4.65 km.

Date : 1992

**CLIENT:**

IPCO MARINE (Singapore) – EPCI Contractor  
PT. SATMARINDO (Indonesia) – Installation Contractor

**CONTACT PERSON:**

Mr. Alberto Rostrata

**ZEE'S SCOPE OF WORK:**

Complete inplace and installation engineering including stability for typhoon conditions, compiling procedure and site supervision.

- Inplace, bouyancy, stability spanning
- Installation, shore approach, pipelay, start-up termination, emergency repair, tie-in offshore, onshore, onshore civil engineering.

**ZEE'S VALUE OF WORK:** 200,000.00 US\$

**PROJECT:**

# BLOCK B SUBSEA DEVELOPMENT



**OPERATOR:**  
CONOCO PHILLIPS INDONESIA INC.

**PROJECT VALUE:**  
US\$ 85 MILLION

**PROJECT DESCRIPTION:**

The overall objectives of the Block B Subsea Development (BBSB) Project are to install facilities for the economic production of gas reserves from a number of reservoirs / fields. This marginal field will be developed during 2003, 2004 and 2005 in an optimized and efficient manner.

Date: 2002 – 2003

**CLIENT:**  
ZEE in association with PT. Wirazee Adhi Engineering

**CONTACT PERSON:**  
Alan Pennie  
Tel: (62-21) 524 1762  
[alan.pennie@conoco.com](mailto:alan.pennie@conoco.com)

**ZEE'S SCOPE OF WORK:**

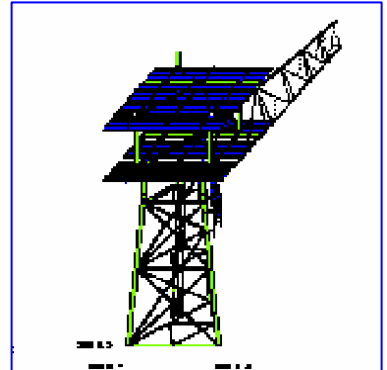
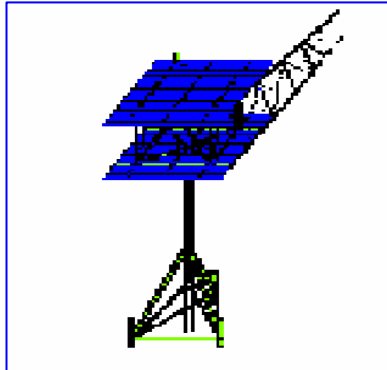
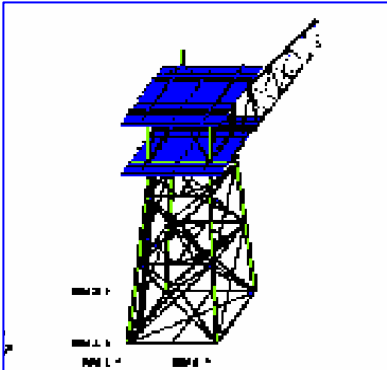
To carry out the FEED Study of the subsea facilities including flow lines, subsea controls and manifolds, complete process system and topside modifications.

Also included in the Scope of Work was the updating and the compilation of specifications, development of the EPCI ITB tender package.

**ZEE'S VALUE OF WORK:** 250,000.00 US\$

**PROJECT:**

**FPU Vs FIXED PLATFORM COST COMPARISON**



**OPERATOR:**

REPSOL – YPF – MAXUS SOUTHEAST SUMATRA

**PROJECT VALUE:**

US\$ 9.0 MILLION

**PROJECT DESCRIPTION:**

The Company plans to install a gas processing plant offshore.

The objective of the FEED Study was to compare the costs and benefits of FPU with fixed platform.

Date of Completion: 2001

**CLIENT:**

ZEE in association with PT. Wirazee Adhi Engineering

**CONTACT PERSON:**

Ramero de Los Reyes  
Tel:




**ZEE'S SCOPE OF WORK:**




The Scope of Work included the study of various platform options in terms of structural weight, installation, OPEX, CAPEX and other benefits.

The platform options considered were:

- 4 legged platform
- Tripod
- Monopod

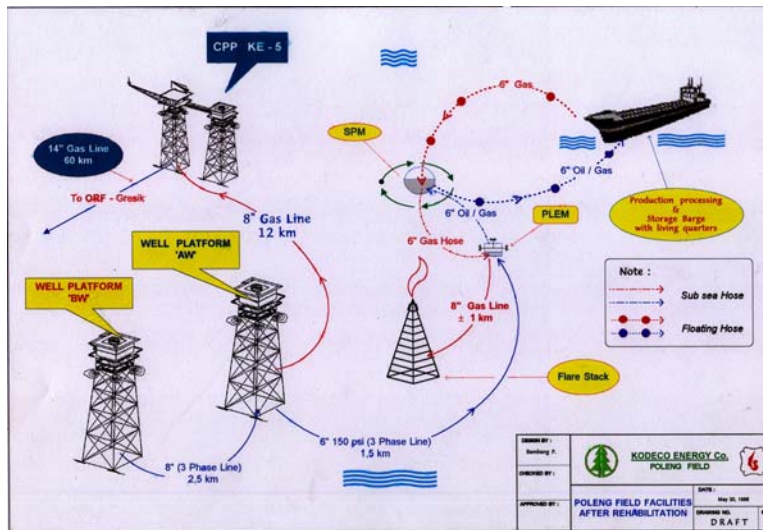
**ZEE'S VALUE OF WORK:** 125,000.00 US\$

<b>PROJECT:</b>	<b>MARGINAL FIELD DEVELOPMENT</b>	 
		
<b>OPERATOR:</b> REPSOL – YPF – MAXUS SOUTHEAST SUMATRA	<b>PROJECT VALUE:</b> US\$ 25 MILLION ANNUALLY	
<b>PROJECT DESCRIPTION:</b>  Currently the Company is developing marginal fields with a “guardian” monopod solution. A number of such fields have been developed with this option. For future development, the Company is looking into possible more efficient and cost effective solutions.  Date of Completion: 2001		
<b>CLIENT:</b>  ZEE in association with PT. Wirazee Adhi Engineering	<b>CONTACT PERSON:</b>  Ramero de Los Reyes Tel:	
<b>ZEE’S SCOPE OF WORK:</b>  The objective of this conceptual study was to provide an optimized solution for a typical marginal field development. For this study, various development options were considered and cost models were built for each option. Advantages / disadvantages and cost benefits (CAPEX, OPEX) for each option was compared with Company’s current marginal field philosophy.  The options compared were: <ul style="list-style-type: none"> <li>- Braced Monopod</li> <li>- Guyed Caisson</li> <li>- Tripod</li> <li>- Isolated Wells</li> <li>- Template</li> <li>- Remote Wells</li> <li>- Mini FSO</li> </ul> <b>ZEE’S VALUE OF WORK:</b> 85,000.00 US\$		

<b>PROJECT:</b>	<b>PROCESS WATER TREATMENT PLATFORM</b>	 
		
<b>OPERATOR:</b> REPSOL – YPF – MAXUS SOUTHEAST SUMATRA		<b>PROJECT VALUE:</b> US\$ 20.0 MILLION OVER 5 YEARS
<b>PROJECT DESCRIPTION:</b>  Currently the Company’s North Business Unit (NBU) offshore facilities is discharging approximately 1 million barrels of water per day. The Company’s objective is to achieve environmental performance excellence, by reducing oil-in-water concentration for water overboard to bellow 5 ppm. This to be achieved by improving the oil recovering from produced water.  Date :                2002		
<b>CLIENT:</b>  ZEE in association with PT. Wirazee Adhi Engineering	<b>CONTACT PERSON:</b>  Mariano Gonzales Tel:	
<b>ZEE’S SCOPE OF WORK:</b>  The proposed solution for oil recovery was to adopt a ‘skimer’ water treatment platform. The objective of this study was to evaluate the feasibility of various platform options. The Advantages / Disadvantages cost benefits (CAPEX, OPEX) for each option was compiled and compared.  The options considered were: <ul style="list-style-type: none"> <li>- 4/6 legged platform</li> <li>- Tripod</li> <li>- Braced Monopod</li> </ul> <b>ZEE’S VALUE OF WORK:</b> 120,000.00 US\$		

PROJECT:

# POLENG FIELD REHABILITATION



**OPERATOR:**  
KODECO ENERGY CO. (INDONESIA)

**PROJECT VALUE:**  
APPROX. US\$ 40.0 MILLION

## PROJECT DESCRIPTION:

The Company wishes to re-activate the abandoned Poleng Field with the objective of offloading oil offshore via floating production system.

Date: 1999

**CLIENT:**  
ZEE in association with PT. Wirazee Adhi Engineering

**CONTACT PERSON:**  
Mr. John Hunt  
Tel: (62-21) 515 9049

## ZEE'S SCOPE OF WORK:

Complete detail engineering including Process, Mechanical and Piping, Electrical and Instrumentation, Structural, Subsea Pipelines Mooring, Subsea etc.

- Upgrading / additional facilities for wellhead platforms AW and BW and Central Processing Platform (CPP)
- Offshore PLEM and SBM engineering
- Subsea Pipelines
- Design appraisal of FPSU, Offloading
- etc.

**ZEE'S VALUE OF WORK:** 320,000.00 US\$

**PROJECT:**

# RIG LEEN



**OPERATOR:**

MANSAL OFFSHORE (DOHA)

**PROJECT VALUE:**

US\$ 45 MILLION

**PROJECT DESCRIPTION:**

The Company requested a self propelled, self elevating jack-up rig for offshore support work in the GULF. The 4,500 Ton dwt Rig Leen was constructed by converting a conventional 2,000 Ton dwt landing craft. The vessel has a length of 60 meters, has 32 meters wide and has a depth of 4.8 meters. The rigs 4 legs each measured 240 feet in length have been designed to operate in water depths up to 150 feet.

**CLIENT:**

MANSAL OFFSHORE

**CONTACT PERSON:**

Tony Bromham  
Tel: (971) 506312082

**ZEE'S SCOPE OF WORK:**

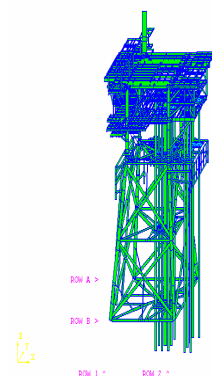
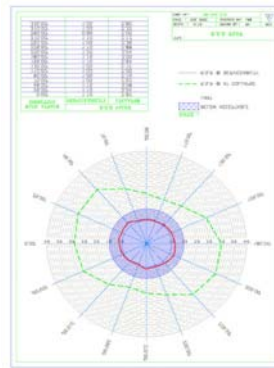
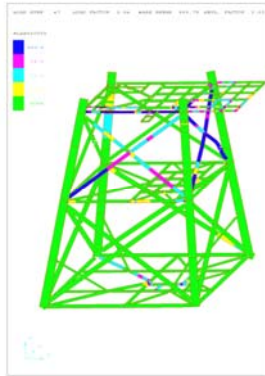
Complete detail engineering which included:

- Naval Architecture, stability
- Structural Design
- Process
- Mechanical Hydraulics
- Instrumentation
- Electrical
- Assistance in Project Management
- Site Supervision

**ZEE'S VALUE OF WORK:** 2.0 MILLION US\$

**PROJECT:**

# PLATFORM RECERTIFICATION



**OPERATOR:**  
REPSOL – YPF – MAXUS SOUTHEAST SUMATRA

**PROJECT VALUE:**  
ENHANCED PRODUCTION  
VALUE NOT KNOWN

## PROJECT DESCRIPTION:

The Company has a number of platforms which has exceeded the design life. The Company needs to keep these platforms operative with enhancements for additional output. A structural integrity audit needs to be carried out on these platforms for third party certification. Platforms needed to be strengthened where required.

### Platforms Investigated

- WIDURI PROCESS    - FARIDA-A    - INTAN-A    - ZELDA-E    - CINTA-B    - KARMILA-A    - INDRI-A
- WIDURI-A            - FARIDA-B    - INTAN-B    - ZELDA-D    - SELATAN-B    - KRISNA-A    - WANDA-A
- WIDURI-B            - FARIDA-C    - ZELDA-C    - RAMA-F    - SUNARI-A    - YVONNE-A
- WIDURI-D            - ZELDA-A    - RAMA-E    - SELATAN-C    - TITI-A

**CLIENT:**  
ZEE in association with PT. Wirazee Adhi Engineering

**CONTACT PERSON:**  
Ramero de Los Reyes  
Tel:

## ZEE'S SCOPE OF WORK:

- A structural survey was carried out on the platforms for "as-it-is" state. This included the structural members and equipment.
- An accurate model of the structure was compiled which included damaged and added members such as conductors and additional weight components.
- A standard elastic soil pile interaction analysis was carried out.
- If failure was encountered, a full plastic analysis (push over) was carried out to establish the reserve strength of the jacket.
- Fatigue analysis was carried out to establish the integrity of the joints.
- Jacket inspection program was also recommended.

**ZEE'S VALUE OF WORK:**      800,000.00 US\$

**PROJECT:**

# EARLY PRODUCTION SYSTEM



**OPERATOR:**  
ARCO (QATAR)

**PROJECT VALUE:**  
US\$ 25.0 MILLION

## PROJECT DESCRIPTION:

Mansal Offshore was requested by ARCO (QATAR) to provide an early production system for 35,000 bbl/day production. The proposal by Mansal was a Rig at the wellhead and pipeline to SBM and FPSO.

## CLIENT:

MANSAL OFFSHORE (DOHA)

## CONTACT PERSON:

Tony Bromham  
Tel: (971) 506312082

## ZEE'S SCOPE OF WORK:

- Conversion of Rig Muna for processing 35,000 bbl/day including skid modification for Process, Mechanical, Electrical and Instrumentation
- Structural modification including new heli-deck
- Sub-sea pipeline
- FSO / SBM Mooring Analysis

**ZEE'S VALUE OF WORK:** 400,000.00 US\$

**PROJECT:**

**M3DRA JACKET, LOAD OUT & SEAFASTENING**



**OPERATOR:**  
SHELL BRUNEI

**PROJECT VALUE:**  
NOT KNOWN

**PROJECT DESCRIPTION:**

The M3DRA jacket with a total weight of 6,500.0 Tons was fabricated at PROMET fabrication yard at Telok Romania (J.B, Malaysia).

Date : 1997

**CLIENT:**

S.E.P.M / PROMET (SINGAPORE)

**CONTACT PERSON:**

Ng Kah Kit  
Tel: (65) 6265 0477

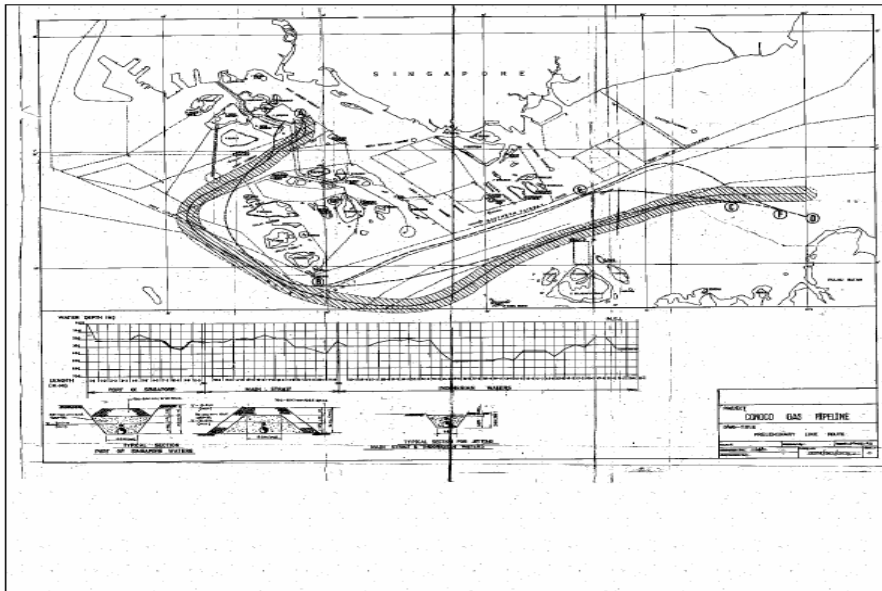
**ZEE'S SCOPE OF WORK:**

- Load out Engineering and Supervision
- Sea fastening design and supervision

**ZEE'S VALUE OF WORK:** 150,000.00 US\$

**PROJECT:**

# 36 INCH GAS PIPELINE TO SINGAPORE



**OPERATOR:**

CONOCO PHILLIPS INDONESIA INC.

**PROJECT VALUE:**

US\$ 100,0 MILLION

## PROJECT DESCRIPTION:

Conoco Indonesia intends to supply gas to Singapore. Conceptual design was carried out to establish the preliminary design and the project costs. The proposed line was 36 inch in diameter and the routing was from Pulau Seraya to Pulau Batam.

Date: 1990

**CLIENT:**

SEMBAWANG MARITIME LTD. (SINGAPORE)

**CONTACT PERSON:**

Mr. Robert Sutherland

## ZEE'S SCOPE OF WORK:

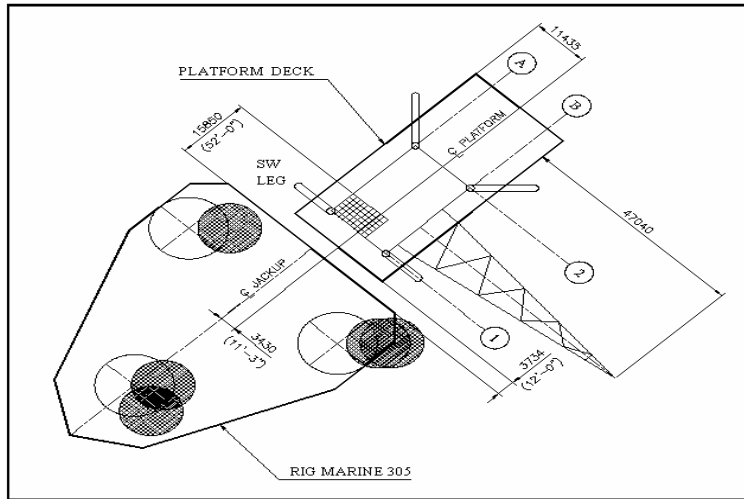
The Scope of Work included:

- Pipeline Sizing, Stability
- Recommended Route, Option, Row
- Required pipelay spread, logistic
- Environmental and Safety Regulations (Singapore)
- Pipeline burial (in harbor), rock armor requirements
- Construction, Certification and Operational Requirements
- Complete cost estimate with break down
- Project Schedule

**ZEE'S VALUE OF WORK:** 150,000.00 US\$

**PROJECT:**

**FOUNDATION STUDY FOR JACK-UP RIG AT  
"ANOVA" PLATFORM**



**OPERATOR:**

PREMIER OIL NATUNA SEA LTD. (INDONESIA)

**PROJECT VALUE:**

**PROJECT DESCRIPTION:**

The Company have plans to mobilize Jack-Up Rig Marine-305 in south face of existing platform Anova for drilling / work over. Due to existing spud can holes, the Company requires a study to check for punch through and a foundation solution to prevent such occurrence.

Date: 1998

**CLIENT:**

ZEE in association with PT. Wirazee Adhi Engineering

**CONTACT PERSON:**

David Brittan  
Mark Horsan  
Tel: (62-21) 718 2001

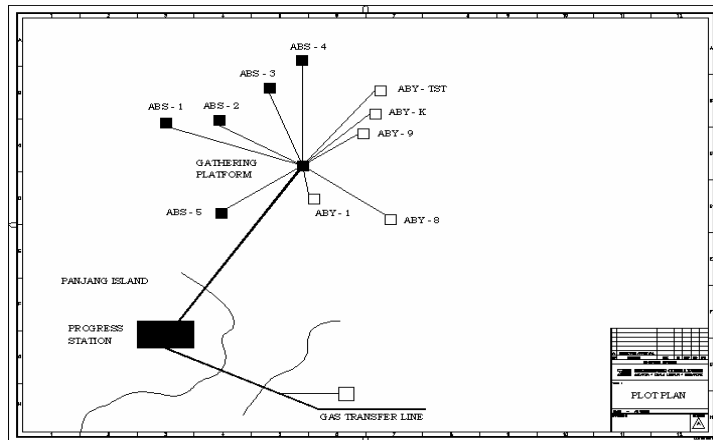
**ZEE'S SCOPE OF WORK:**

- Soil stabilization, rock fill
- New location for spud cans
- Foundation / soil study for punch through
- Recommendation, Risks

**ZEE'S VALUE OF WORK:** 60,000.00 US\$

**PROJECT:**

# ABS PHASE 1



**OPERATOR:**  
JAPEX (INDONESIA)

**PROJECT VALUE:**  
US\$ 120,0 MILLION

**PROJECT DESCRIPTION:**

Phase 1 development of the ABS Field for JAPEX. Complete detail engineering for 6 nos minimum facilities well head platforms, 1 gathering platform, all in shallow water, all subsea pipelines, Process Station in Panjang Island, storage facilities, gas transfer trunk line to mulaning station.

Project involved all disciplines, detail engineering, installation engineering, hook up and commissioning.

Date: 1990

**CLIENT:**  
PT. NISCONI (INDONESIA)

**CONTACT PERSON:**  
Mr. Matsunaga  
Tel: (62-21) 720 7564

**ZEE'S SCOPE OF WORK:**

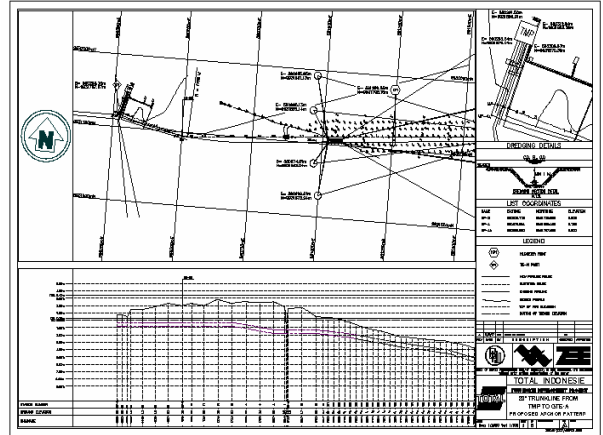
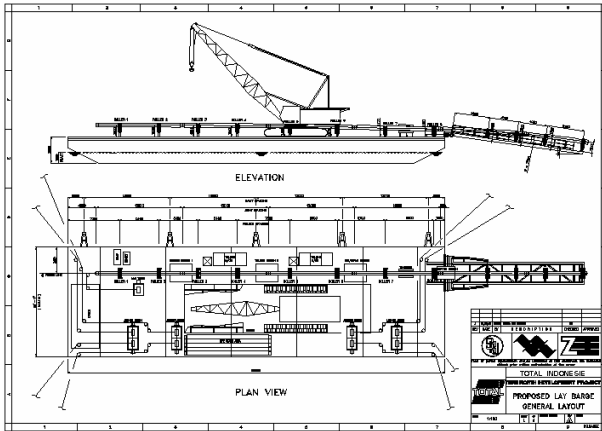
Detail engineering for:

- 6 nos minimum facilities shallow water platforms
- 1 no Gathering Platform
- Subsea Pipelines
- Process Station
- Storage Tanks
- Gas Trunk line to mulaning station

**ZEE'S VALUE OF WORK:** 1,2 MILLION US\$

**PROJECT:**

# 20" TRUNK LINE, TMP TO GTS-A



**OPERATOR:**  
TOTAL INDONESIE

**PROJECT VALUE:**  
NOT KNOWN

## PROJECT DESCRIPTION:

Detail and installation engineering and commissioning of the 20" Trunk Line. The pipeline routing is in swampy area very shallow water.

**CLIENT:**  
ISTANA KARANG LAUT

**CONTACT PERSON:**  
Mr. Mike Clark  
Tel: (62-21) 314 6018

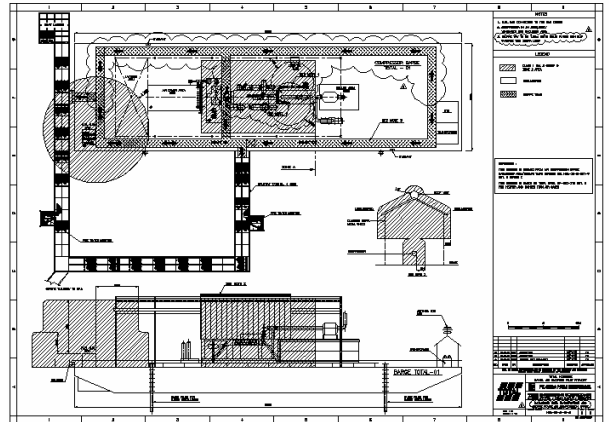
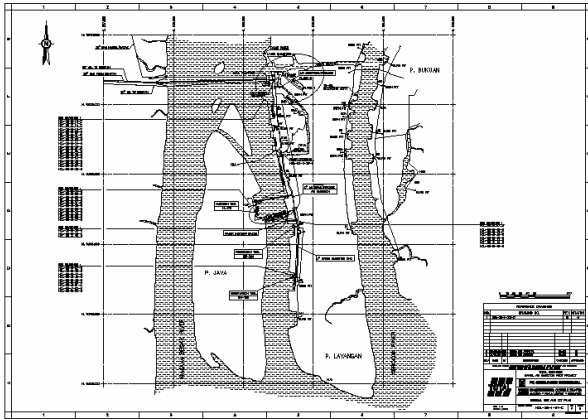
## ZEE'S SCOPE OF WORK:

- Pipeline detail and installation engineering
- Detail design of the converted lay barge (Flat top barge to pipelay mode)
- Construction and installation supervision

**ZEE'S VALUE OF WORK:** 250,000.00 US\$

**PROJECT:**

# AIR INJECTION PILOT PROJECT



**OPERATOR:**  
TOTAL INDONESIA

**PROJECT VALUE:**  
US\$ 30.0 MILLION

## PROJECT DESCRIPTION:

This is a Pilot Project, where an air injection module of 3.3 MMSCFD will be installed on a dedicated barge. An existing air injection well will be connected to a high pressure air pipeline.

An already existing production well will direct the production of HANDIL treatment facilities, and after analysis will be mixed with the other production wells.

Date: 1998

**CLIENT:**  
PT. CITRA PANJI (INDONESIA)

**CONTACT PERSON:**  
Mr. Agus Hartanto  
Tel: (62-21) 7653723

## ZEE'S SCOPE OF WORK:

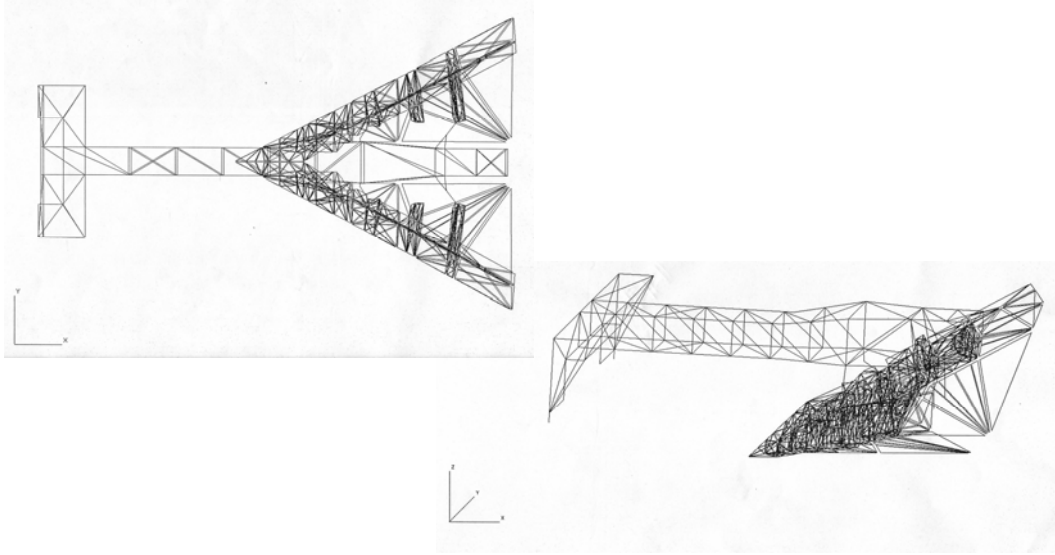
Complete detail engineering for all disciplines:

- Process
- Mechanical
- Mechanical Piping
- Pipeline
- Instrumentation
- Naval Architecture
- Structural / Civil
- Commissioning
- Construction Supervision

**ZEE'S VALUE OF WORK:** 500,000.00 US\$

**PROJECT:**

# PLOUGH MODIFICATION



**OPERATOR:**  
ROCK WATER (SINGAPORE)

**PROJECT VALUE:**  
NOT KNOWN

**PROJECT DESCRIPTION:**

Existing “gunanusa” plough had to be modified for pipe burial project. The diameter of pipeline to be buried was 20 inches.

Date : 1992

**CLIENT:**  
ROCK WATER (SINGAPORE)

**CONTACT PERSON:**  
Mr. Eng Bee

**ZEE’S SCOPE OF WORK:**

To carry out the structural integrity of the plough.

A detailed Finite Element structural analysis was carried out.

**ZEE’S VALUE OF WORK:** 50,000.00 US\$

**PROJECT:**

# ARCO (INDONESIA) BLQ



**OPERATOR:**  
ATLANTIC RITCHFIELD (INDONESIA)

**PROJECT VALUE:**  
US\$10MILLION

**PROJECT DESCRIPTION:**

EPC contract for the BLQ Jacket and Topside.

**CLIENT:**

PT Satmarindo (Indonesia)

**CONTACT PERSON:**

Mr. Alberto Rostratar

**ZEE'S SCOPE OF WORK:**

- The Load Out and Seafastening Design of the BLQ topside which was fabricated in Adiguna Shipyard (Indonesia).
- Load Out Supervision.

**ZEE'S VALUE OF WORK:** 20,000.00 US\$

**PROJECT:**

# ARCO LL4A



**OPERATOR:**  
ATLANTIC RITCHFIELD (INDONESIA)

**PROJECT VALUE:**  
US\$2.0MILLION

**PROJECT DESCRIPTION:**

ARCO wanted to reduce pipeline installation costs specially for shorter subsea pipelines. In LL4A project the Rentis Method (on-surface tow) was used for the first time. The pipeline bundle 6" and 4" was assembled on-shore (length 2.1km) and towed 65km offshore and installed.

**CLIENT:**  
Atlantic Ritchfield (Indonesia)

**CONTACT PERSON:**

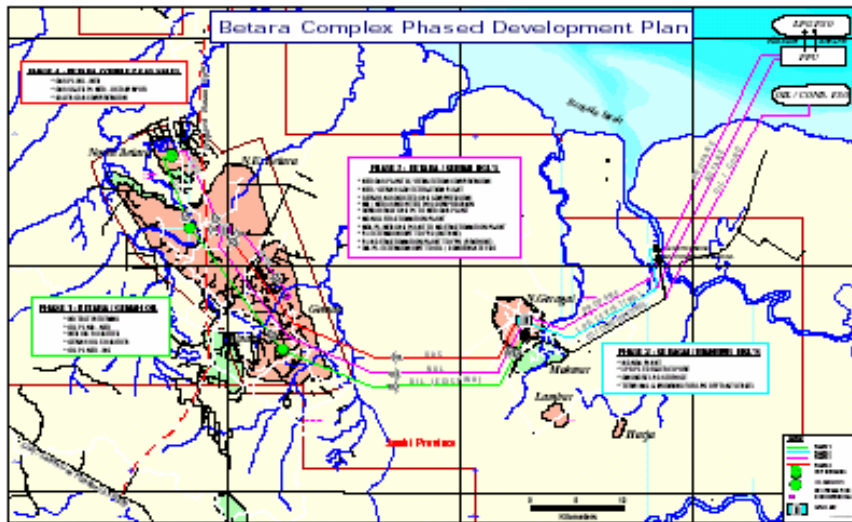
**ZEE'S SCOPE OF WORK:**

- Conceptual study
- Detail Engineering
  - Buoyancy System
  - On Shore Fabrication Supervision
  - In-place Engineering
  - Installation Engineering
  - Offshore installation Supervision.
- Project management.

**ZEE'S VALUE OF WORK:** 60,000.00 US\$

**PROJECT:**

# BETARA COMPLEX DEVELOPMENT (Sheet 1/5)



**OPERATOR:**

PETROCHINA INTERNATIONAL JABUNG LTD.  
(INDONESIA)

**PROJECT VALUE:**

TOTAL PROJECT US\$ 340 MILLION

**PROJECT DESCRIPTION:**

In the BCD Project, five (5) additional on-shore fields will be developed and the refined products gas and condensate will be exported via offshore terminal.

The project includes gathering lines, refining and fractionating units, onshore trunk lines, horizontal drilling at shore approach, submarine pipelines and two (2) marine offloading terminals. The EPCI contractors were Chiyoda and SembCorp. Chiyoda's scope of work was the building of the refinery whilst SembCorp undertook all the pipelines and the offshore facilities.

Date: 2004

**CLIENT:**

PT. SEMBCORP (INDONESIA)

**CONTACT PERSON:**

Mr. M. Subramaniam  
Tel: (65) 91180145  
Mr. C.Y Ng  
Tel: (65) 96196137

**ZEE'S SCOPE OF WORK:**

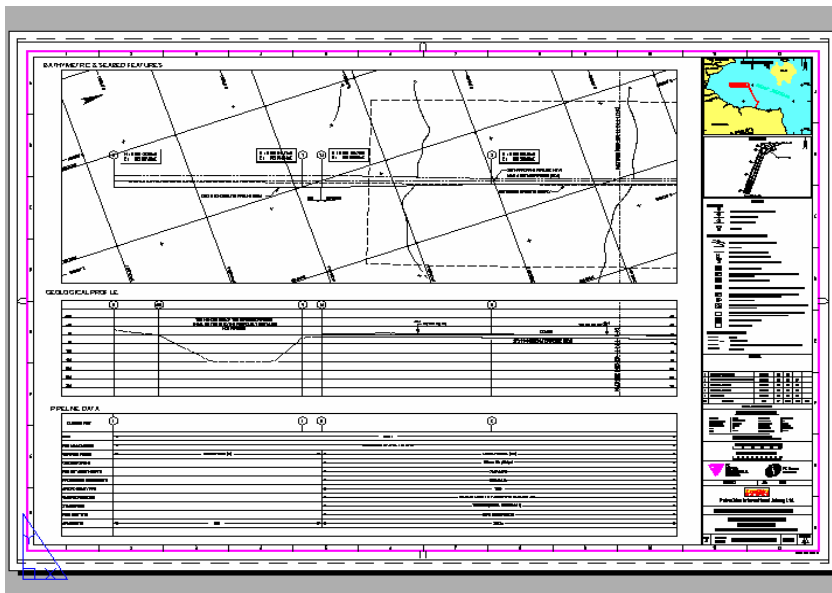
The offshore facility design including

- 3 Submarine Pipelines - (sheet 2)
- Processing Platform, Dolphins and the Anchor Piles - (sheet 3)
- Mooring Analysis / Design - (sheet 4)
- Model Testing of F.S.O.

**ZEE'S VALUE OF WORK:** TOTAL US\$ 1.5 MILLION

**PROJECT:**

# BETARA COMPLEX DEVELOPMENT (Sheet 2/5)



**OPERATOR:**  
PETROCHINA INTERNATIONAL JABUNG LTD.  
(INDONESIA)

**PROJECT VALUE:**  
TOTAL PROJECT US\$ 340 MILLION

**PROJECT DESCRIPTION:**

Refer to Sheet 1

**CLIENT:**  
PT. SEMBCORP (INDONESIA)

**CONTACT PERSON:**  
Mr. M. Subramaniam  
Tel: (65) 91180145  
Mr. C.Y. Ng  
Tel: (65) 96196137

**ZEE'S SCOPE OF WORK:**

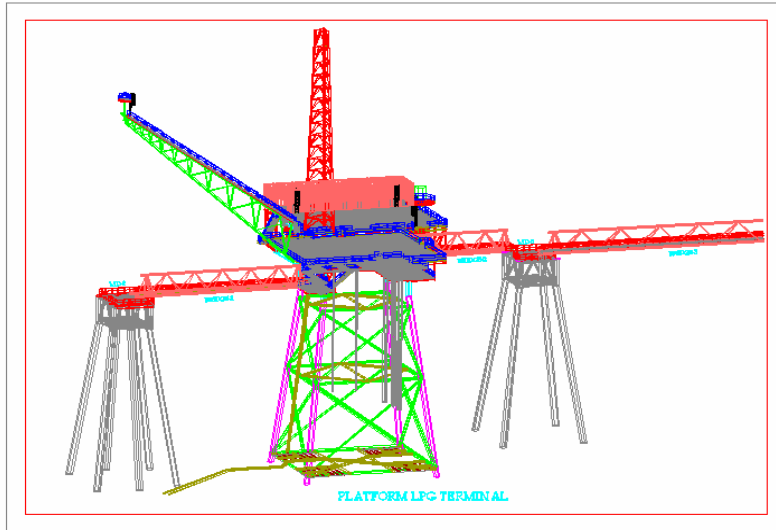
Related to three (3) Subsea Pipelines – 10 inch Condensate, 8 inch Propane and 6 inch Butane.

- In-place design – sizing, spanning, stability, shore approach etc.
- Installation Engineering
- Specifications
- Assisting in Vendor selection and leasing
- Assisting in certification by third parties

**ZEE'S VALUE OF WORK:** TOTAL US\$ 1.5 MILLION

**PROJECT:**

**BETARA COMPLEX DEVELOPMENT  
(Sheet 3/5)**



**OPERATOR:**  
PETROCHINA INTERNATIONAL JABUNG LTD.  
(INDONESIA)

**PROJECT VALUE:**  
TOTAL PROJECT US\$ 340 MILLION

**PROJECT DESCRIPTION:**

Refer to Sheet 1

**CLIENT:**  
PT. SEMBCORP (INDONESIA)

**CONTACT PERSON:**  
Mr. M. Subramaniam  
Tel: (65) 91180145  
Mr. C.Y. Ng  
Tel: (65) 96196137

**ZEE'S SCOPE OF WORK:**

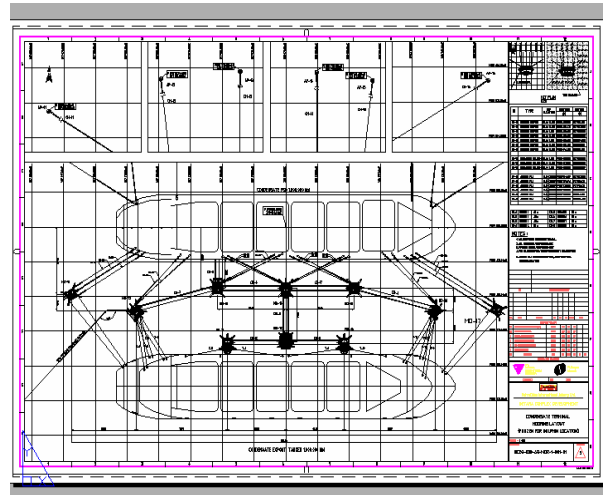
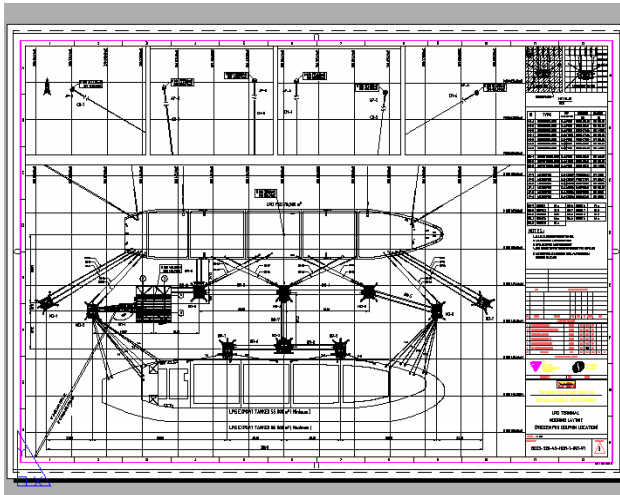
Related to the Design of the Process Platform, Dolphin and Anchor Piles.

- Conceptual and Detail Design
- Installation Engineering
- Specification
- Vendor Selection
- Liaising with the fabricators
- Assistance in certification by third parties.

**ZEE'S VALUE OF WORK:** TOTAL US\$ 1.5 MILLION

**PROJECT:**

# BETARA COMPLEX DEVELOPMENT (Sheet 4/5)



**OPERATOR:**  
PETROCHINA INTERNATIONAL JABUNG LTD.  
(INDONESIA)

**PROJECT VALUE:**  
TOTAL PROJECT US\$ 340 MILLION

**PROJECT DESCRIPTION:**

Refer to Sheet 1

**CLIENT:**  
PT. SEMBCORP (INDONESIA)

**CONTACT PERSON:**  
Mr. M. Subramaniam  
Tel: (65) 91180145  
Mr. C.Y. Ng  
Tel: (65) 96196137

**ZEE'S SCOPE OF WORK:**

- Related to Mooring Design
- Carried out full time Domain Mooring Analysis
  - Design of Mooring Chains, Hawsers, and attachments
  - Supervised model testing of the system
  - Specification
  - Assisting in certification by third parties.

**ZEE'S VALUE OF WORK:** TOTAL US\$ 1.5 MILLION

**PROJECT:**

**BETARA COMPLEX DEVELOPMENT  
(Sheet 5/5)**



**OPERATOR:**  
PETROCHINA INTERNATIONAL JABUNG LTD.  
(INDONESIA)

**PROJECT VALUE:**  
TOTAL PROJECT US\$ 340 MILLION

**PROJECT DESCRIPTION:**

Refer to Sheet 1

**CLIENT:**  
PT. SEMBCORP (INDONESIA)

**CONTACT PERSON:**  
Mr. M. Subramaniam  
Tel: (65) 91180145  
Mr. C.Y. Ng  
Tel: (65) 96196137

**ZEE'S SCOPE OF WORK:**

Related to Model Testing.

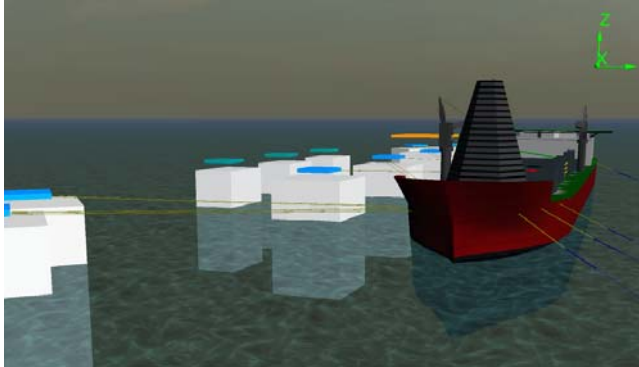
Was in charge of the model testing which was carried out at Indonesian Hydrodynamic Laboratory (Surabaya, Indonesia).

- Selection of facilities
- Compiling Specification
- Supervising the Testing
- Verification of Test Results

**ZEE'S VALUE OF WORK:** TOTAL US\$ 1.5 MILLION

**PROJECT:**

# BETARA COMPLEX DEVELOPMENT



**OPERATOR:**  
PETROCHINA INTERNATIONAL JABUNG LTD

**PROJECT VALUE:**  
US\$ 340 M

**PROJECT DESCRIPTION:**

3D Time Domain, Random Wave simulation of two (2) Offloading Terminal namely the Condensate Terminal and LPG Terminal. Project was undertaken utilizing OrcaFlex v8.4 software.

**CLIENT:**  
PT. SEMBCORP (INDONESIA)

**CONTACT PERSON:**  
Project Manager  
Mr. M. Subramaniam  
TEL : +(65)-91180145

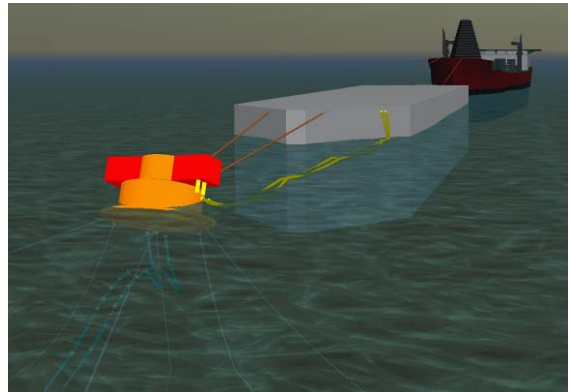
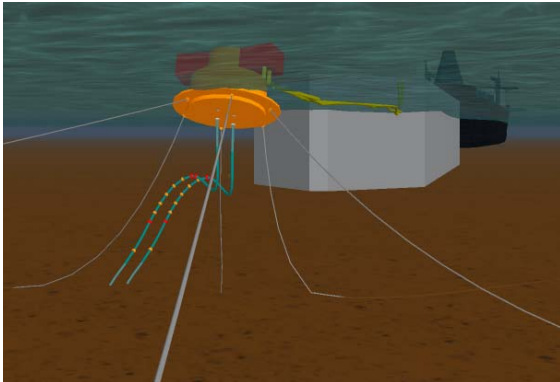
**ZEE'S SCOPE OF WORK:**

Complete 3D Time Domain simulation of the moored FSOs and Tankers in Random Sea to comply with DnV's Ultimate (ULS), Accidental (ALS) and Fatigue (FLS) Limit states. Scope included validation of the Time Domain simulated results with results obtained from Model Test.

**ZEE'S VALUE OF WORK:** TOTAL US\$ 120 K

**PROJECT:**

# RELOCATION OF TUBAN TERMINAL



**OPERATOR:**  
PETROCHINA INTERNATIONAL JABUNG LTD

**PROJECT VALUE:**  
UNKNOWN

**PROJECT DESCRIPTION:**

Front End Engineering Design (FEED) studies to relocate the Crude Oil Offloading Facilities approximately 1.5km further into deeper water depth. The involves installation of new PLEM, new subsea pipeline from existing SPM PLEM to new SPM PLEM, Installation on SPM, and installation of new FSO.

**CLIENT:**  
PETROCHINA INTERNATIONAL

**CONTACT PERSON:**  
Project Manager  
Mr. Adityawan  
Tel: +(62) 816 1181015

**ZEE'S SCOPE OF WORK:**

FEED Studies involving complete design of the new Subsea Pipeline, new PLEM, and mooring analysis of the new Crude Oil Offloading facilities. 3D Time Domain, Random Wave analysis was carried out for the mooring system, in accordance with ABS and DnV's Limit state requirements.

**ZEE'S VALUE OF WORK:** Total US\$ 80 K