



**29-31 AGUSTUS 2023**  
**YOGYAKARTA**

# Fit For Purpose Subsea Solutions

Azis Pekih soegiri



## ABSTRACT

### Fit For Purpose Subsea Solutions

Indonesia has a number of offshore fields that have been operating in excess of 30 years, each with they're own characteristics and operating challenges. In this presentation we are hoping to take a look at the many modes of subsea interventions and how each has they're own advantages and how they are implemented in various ways specifically in ONWJ Field.

It is intended that after this presentation we can get a better view and awareness how there is not a singular solution for any subsea intervention needs, and needs to be optimized based on operating requirements.

— Azis Peki Soegiri



# Pertamina Hulu Energi Offshore North West Java



**1971**

One of the first offshore field in Indonesia

**8.300 km<sup>2</sup>**

Across 2 provinces  
4 – 50 M Water

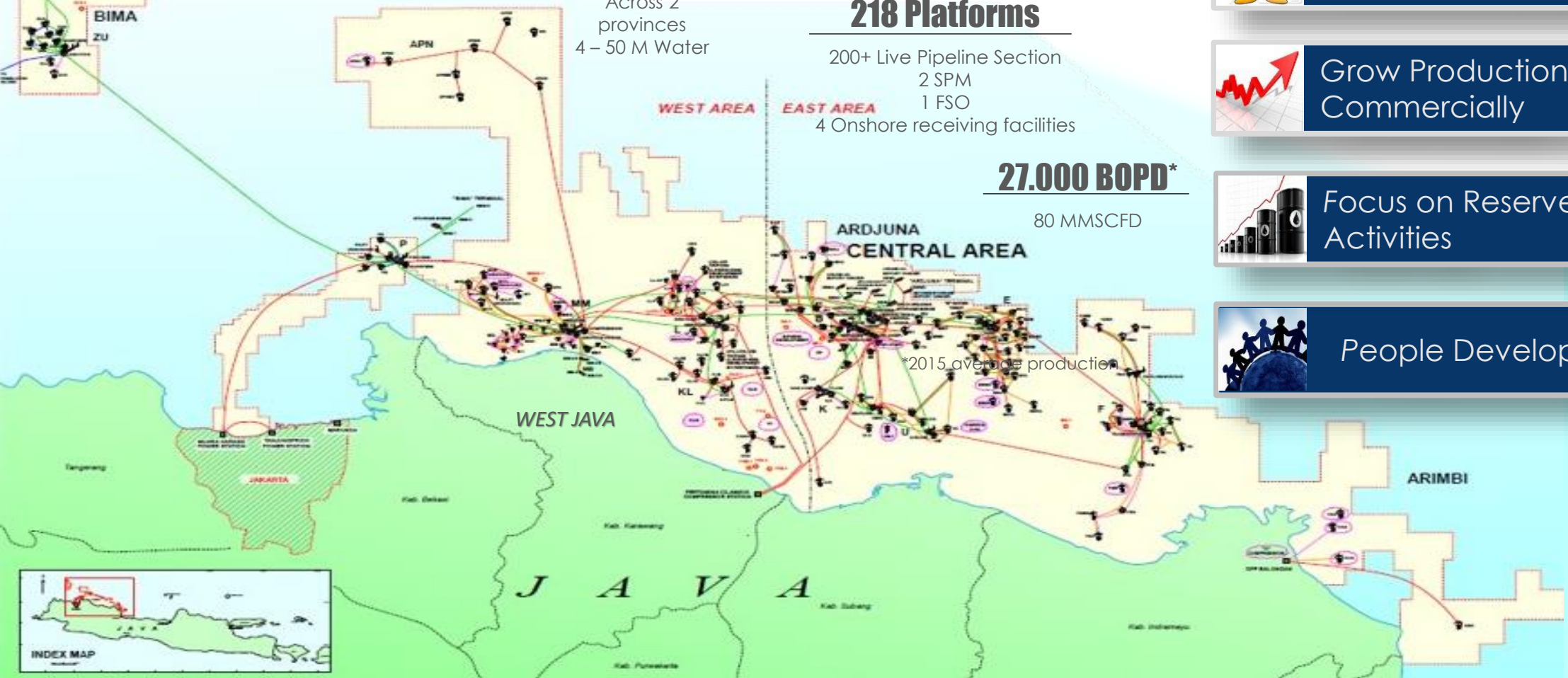
**218 Platforms**

200+ Live Pipeline Section  
2 SPM  
1 FSO  
4 Onshore receiving facilities

**27.000 BOPD\***

80 MMSCFD

\*2015 average production



## KEY OBJECTIVE



Safe and Reliable Operations



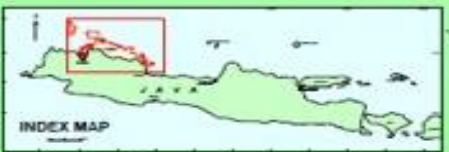
Grow Production Efficiently & Commercially

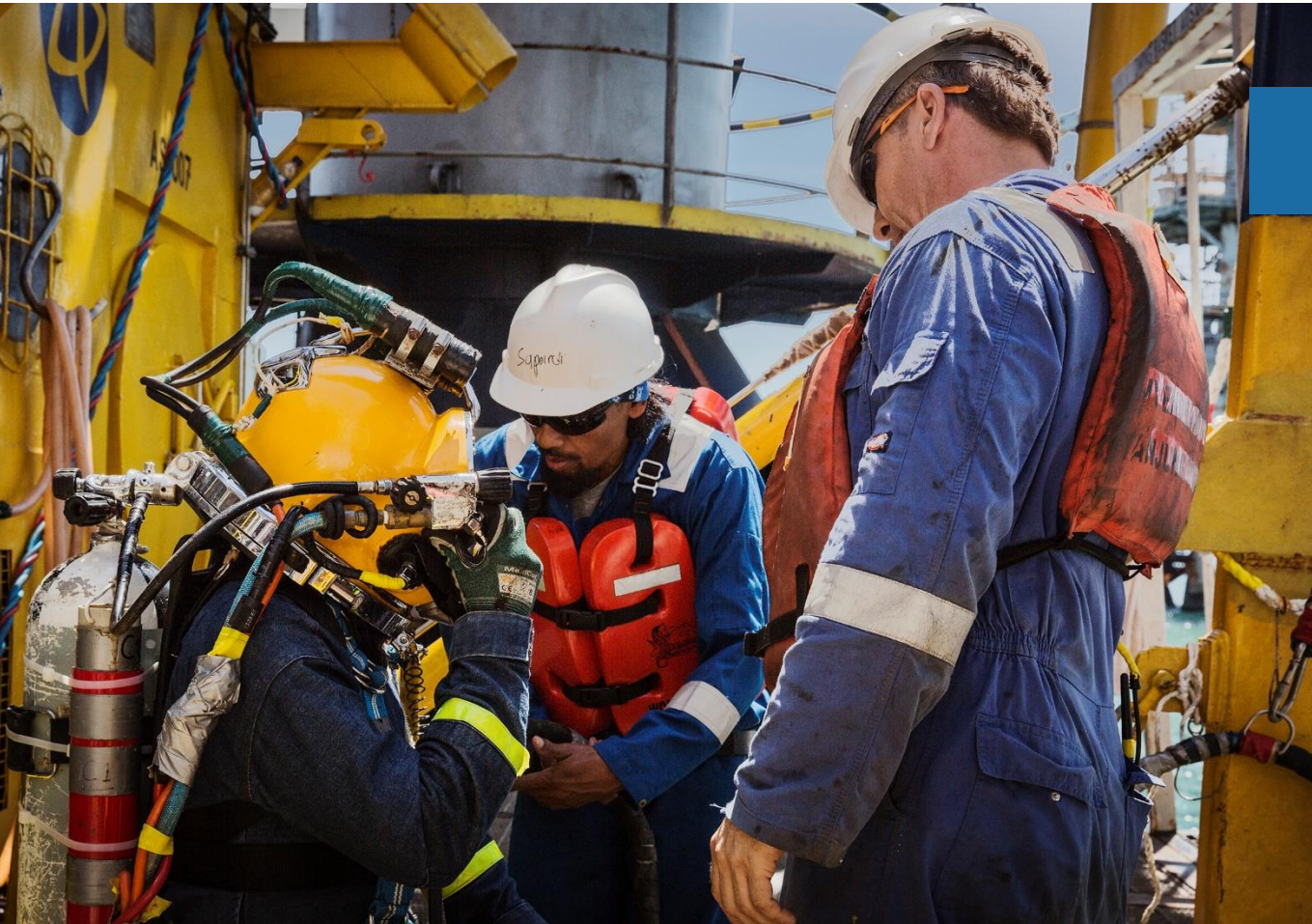


Focus on Reserves Adding Activities



People Development





## Surface Supplied Air Diving

### Advantages:

- Relatively lower cost
- Easy to mobilize
- Availability of personnel

### Limitations:

- Limited bottom time
- Loss of efficiency at over 30 m of depth

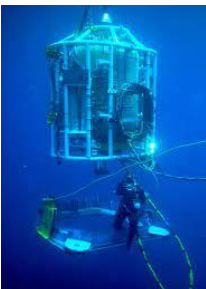
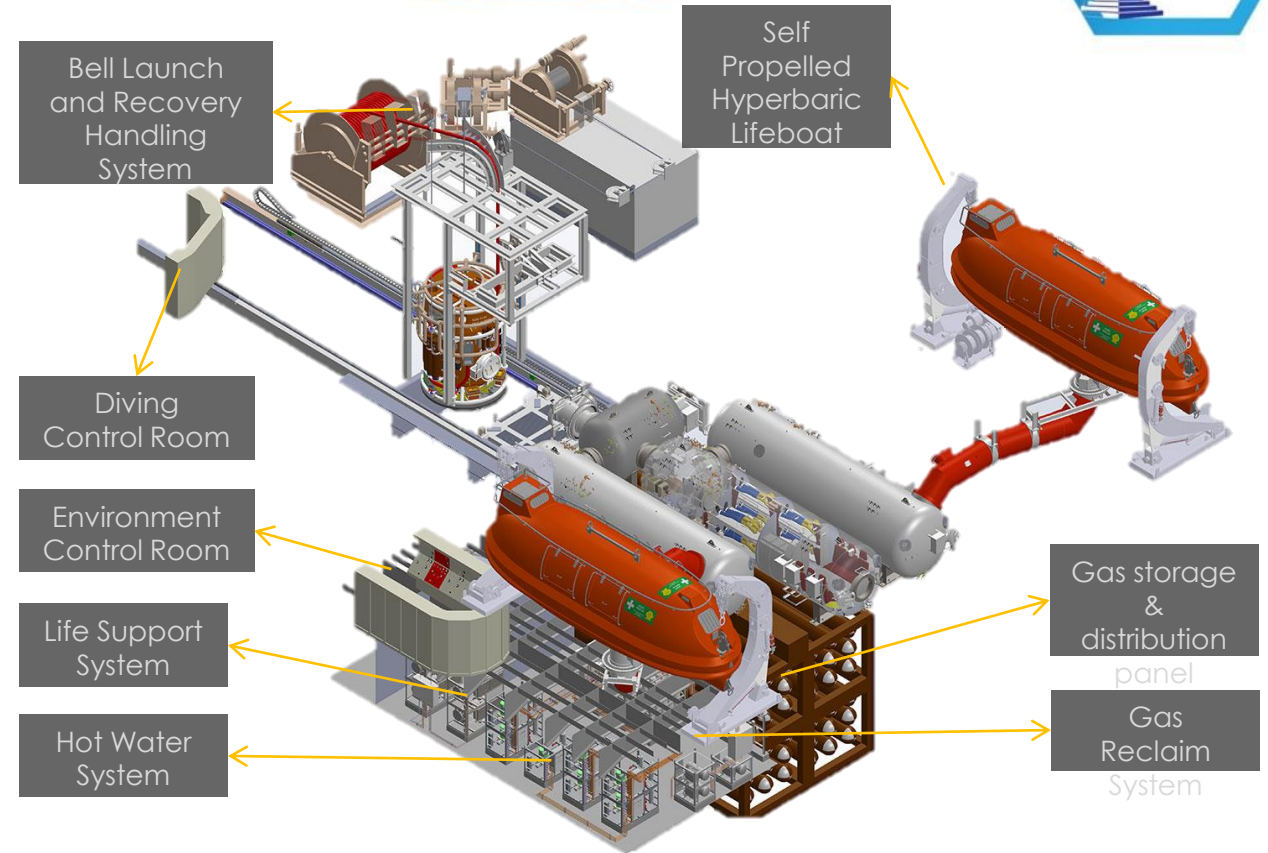
# Saturation Diving

## Advantages:

- Longer bottom times
- More efficient for underwater construction work
- Capable to over 100 m water depth

## Limitations:

- Significant higher cost
- More complicated to mobilize
- Lack of local based personnel





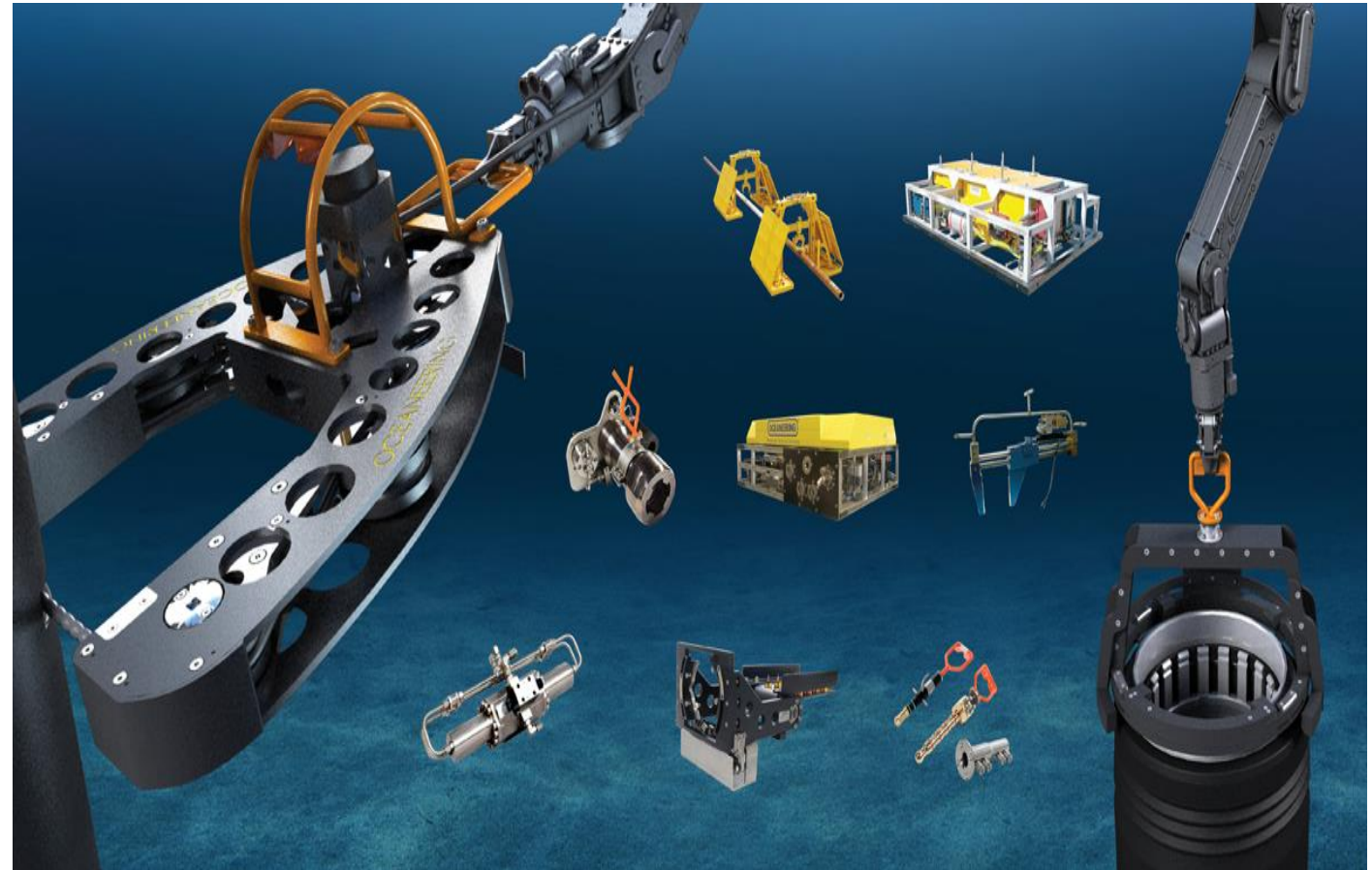
# Remotely Operated Vehicle

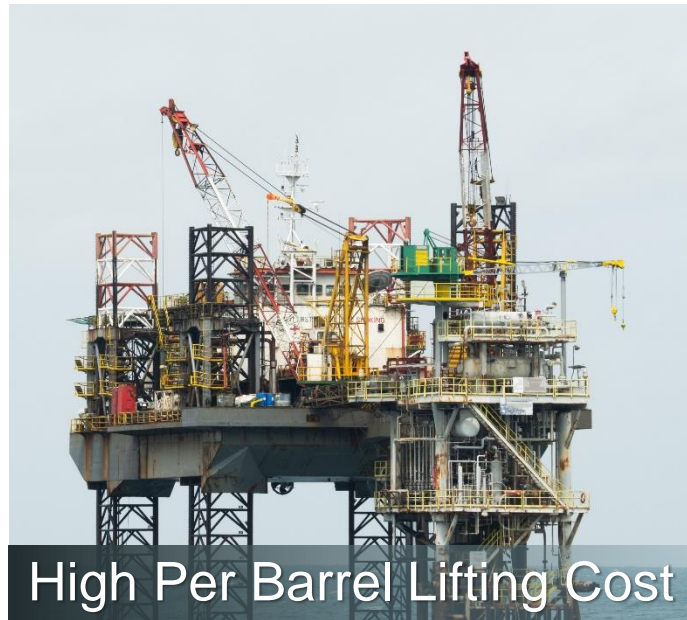
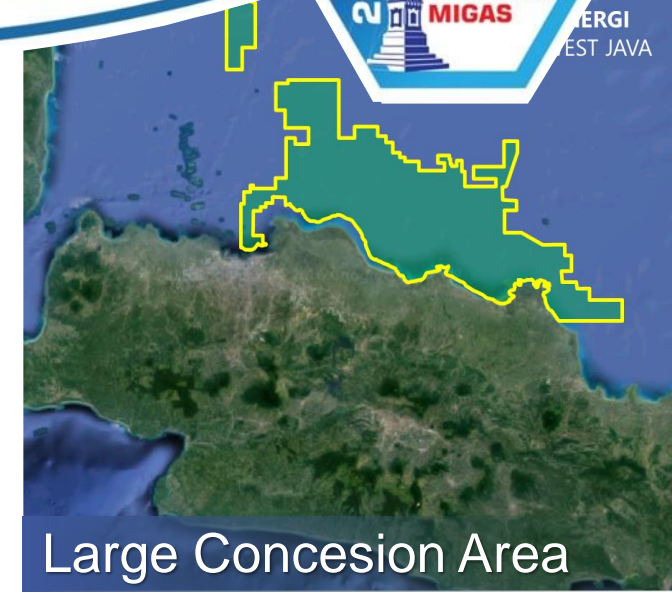
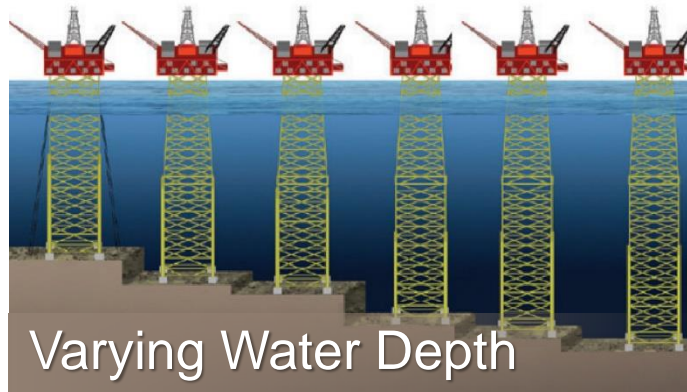
## Advantages:

- Relatively lower cost
- Less risk to manpower (divers)
- Relatively easy to mobilize

## Limitations:

- Depended to subsea facility architecture
- Less dexterity compared to divers





IKATAN AHLI FASILITAS PRODUKSI  
MINYAK DAN GAS BUMI INDONESIA



BERGI  
EST JAVA

Gandaria Office Tower, 5th Floor  
Jl. Sultan Iskandar Muda, Jakarta 12240

# Operational Challenges



**DP2 + Sat Dive**



**Self deploy 4PM + Air Dive**



**AHTS Helped 4PM + Air Dive**



**DP2 + Air Dive**

<b>Daily Rate</b>	: USD 100 K per day
<b>UWPI</b>	: 3 days
<b>Anodepod Inst</b>	: 0.5 day
<b>Pipeline Repair</b>	: 1.5 days
<b>Pipeline Sectional:</b>	: 8 days

<b>Daily Rate</b>	: USD 25 K per day
<b>UWPI</b>	: 5 days
<b>Anodepod Inst</b>	: 5 days
<b>Pipeline Repair</b>	: 5 days
<b>Pipeline Sectional:</b>	: 23 days

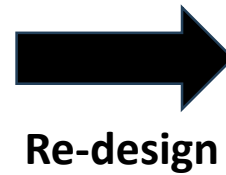
<b>Daily Rate</b>	: USD 23 K per day
<b>UWPI</b>	: 7 days
<b>Anodepod Inst</b>	: No Crane
<b>Pipeline Repair</b>	: 5 days
<b>Pipeline Sectional:</b>	: No Crane

<b>Daily Rate</b>	: USD 50 K per day
<b>UWPI</b>	: 3 days
<b>Anodepod Inst</b>	: 3 days
<b>Pipeline Repair</b>	: 3 days
<b>Pipeline Sectional:</b>	: 18 days

# Dinamic changes



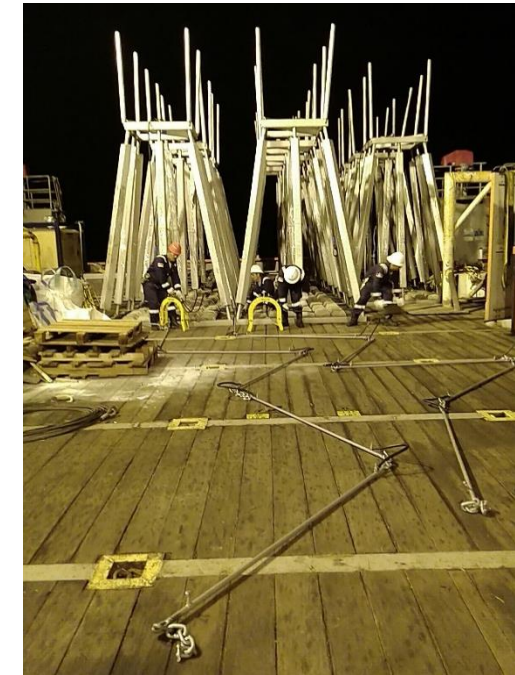
4 Legged Anodepod  
**Cable** connection is prone to **theft**



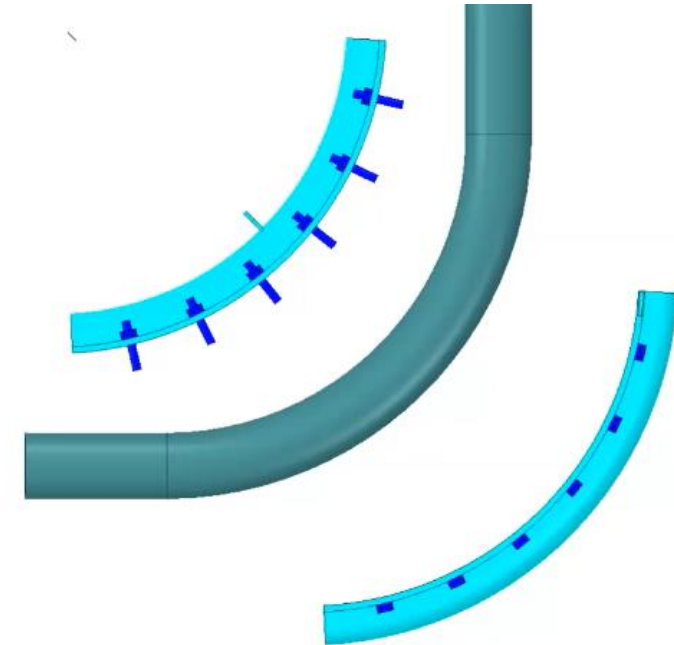
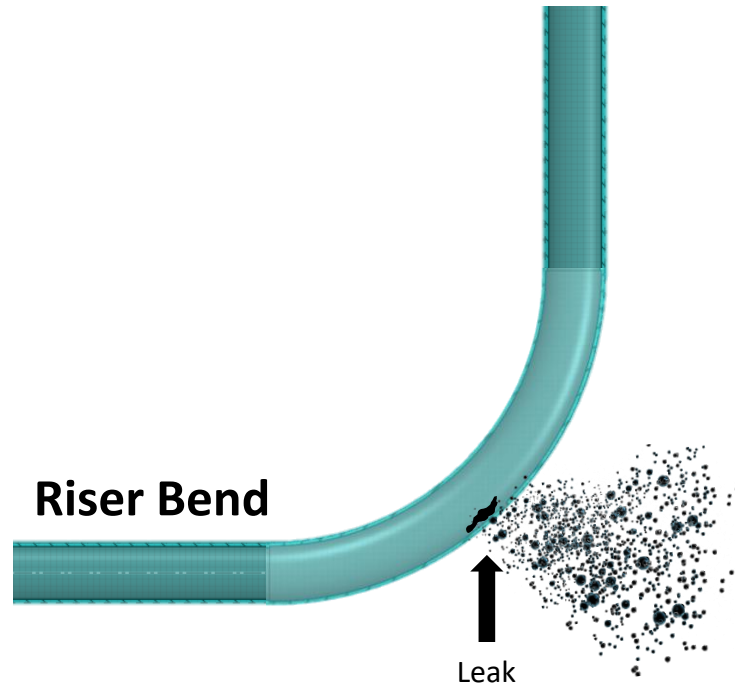
Re-design



8 Legged Anodepod (**more lifetime**)  
**Economical Round Bar** connection which  
is more **anti-theft**

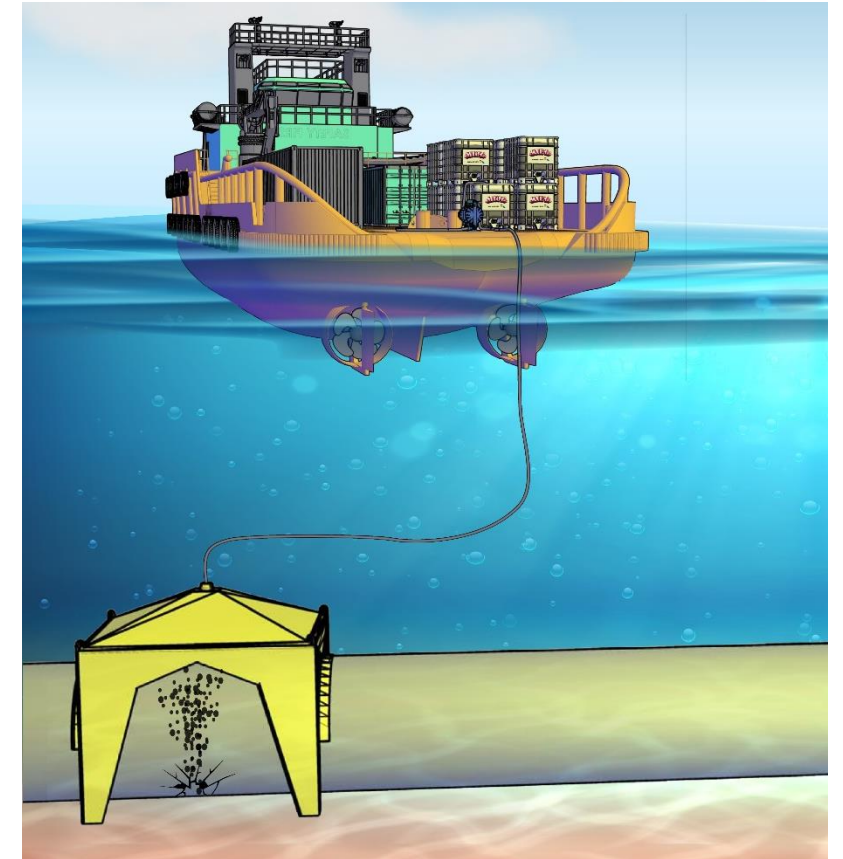
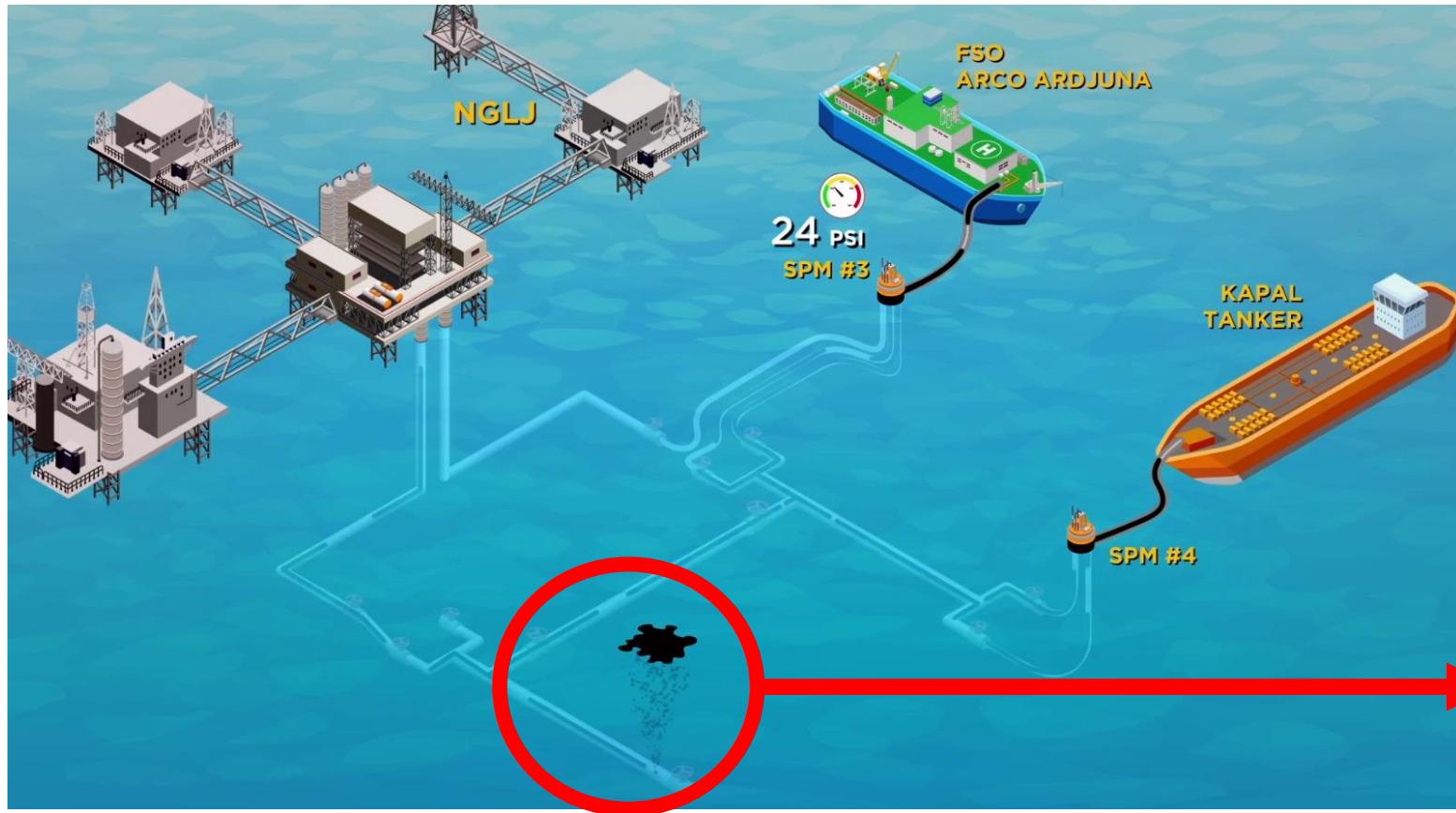


# Dinamic changes



**Inhouse engineering, design and fabricate a new bend clamp for pipeline leak repair rather than PO a Manufacture bend clamp which high cost and long lead item**

# Dinamic changes

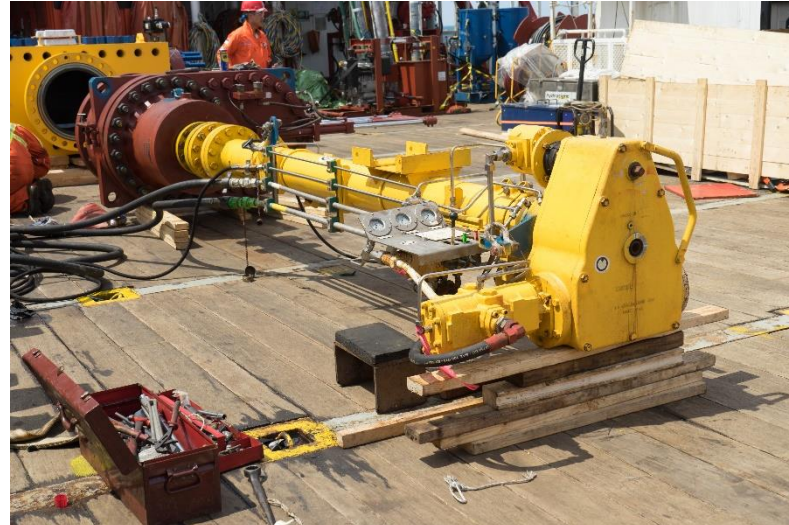


**Superdome invention**, a tool to catch crude oil leaking from a pipeline so that pipeline repair can be done without interrupting crude oil transfer/lifting

# Exploring New Opportunities



Pilot Project



New Technology

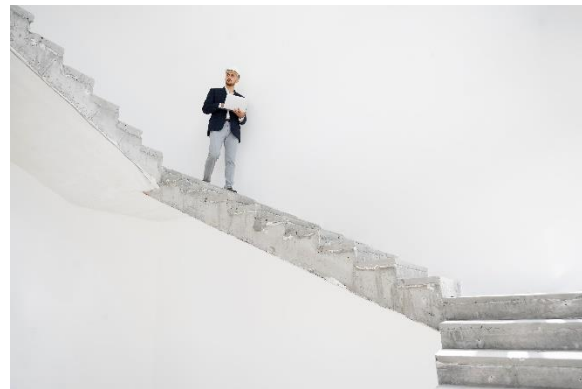


Re-visiting past experience and lesson learned



## Conclusions

- No one solution
- Define primary objective
- Low tech can work
- Don't be afraid to take a step back
- Adaptive to change
- Strive for contractual flexibility





**A smooth sea never  
made a skilled sailor**

*Franklin D. Roosevelt*

