Logistic & Integrated Barge Sequence: Optimising Cost, Maximising Value

SCM Summit 2015
14 – 16 Apr 2015, Jakarta

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Improved Logistics Performance and Collaboration Operation

SCM Summit 2015
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In the Early Years, PETRONAS Focused its Efforts in Managing the Production Sharing Contractors

- PETRONAS has since evolved, with two key roles are now spearheaded by 2 separate entities:

  1) Malaysia Petroleum Management (MPM) in PETRONAS; and

  2) PETRONAS Carigali Sdn Bhd (PCSB), a subsidiary of PETRONAS

Malaysia Petroleum Management (MPM)
- Host Authority Role, acts as Resource Owner and Manager of Malaysia’s domestic oil & gas assets

PETRONAS Carigali Sdn Bhd (PCSB)
- PS Contractor Role, a wholly-owned subsidiary, is the Upstream Operating Arm for PETRONAS

Other Group of Companies
Outline

• Offshore Works Supported by Logistics & Why We Need Barges
• Logistics Management Challenges & Eliminating Roadblock
• Integrated Barge Sequence – Key Drivers
• Integrated Barge Sequence – Key Success Factors
• Challenges
These Marine Assets are Deployed to Support Various Types of Offshore Works by Logistics Department

Focus Area:-
- Installation Barges-Construction & Installation Department
- Hook-Up & Commissioning (HUC) Barges-HUC Department
- Drilling Rigs-Wells Department
- Marine support vessels & accommodation work boat/barges-SCM Logistics Department
Some Marine Vessels are Required to Enable Oil & Gas Exploration, Development and Production Activities

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<th>Pipelay barge</th>
<th>Underwater Remote Operated Vehicle (ROV)</th>
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<th>Structural Installation - Modular</th>
<th>Workbarges, Workboats &amp; Offshore Support Vessel (OSV)</th>
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<th>Structural Installation - Floatover</th>
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NOTE: The above images are taken from the public domain for illustration purposes only.
How We Chose to Operate Offshore Logistics is Crucial for Sustainability of Our Oil & Gas Operations

Business Challenges

Rising costs & logistics challenges

We must improve

EFFICIENCY despite

uncertainties in economical inflation and escalation

Increasing in vessel count & rise in fuel consumption

Berth congestion, long wait at anchorage

Increasing materials surplus

Independent operation by regions & sectors with dedicated vessels

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Reimagining Energy™: Constantly finding new solutions to stay ahead

Logistics

CONTROL TOWER

- Total Visibility of Assets
- Single Point of Command
- Share Assets & Optimise
- Measure & Improve

- Marine
- Aviation
- Drilling & Production Materials
- Supply Base & Warehouse
- Freight Forwarding & Land Transportation

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We Have Gradually Put Several Systems in Place, Since the Beginning of 2014

5 anchors for measurement at All Levels

1. **VALUE CREATION,** $\Delta_p$
   - How profitable or
   - How much Fund we liberate

2. **HSE**
   - How safe are we

3. **EFFICIENCY**
   - How effectively do we use our resources and assets

4. **CAPABILITY**
   - Do we build our capability

5. **PRODUCTIVITY**
   - Do we extract the best output from our resources & assets

Shaded Area, equivalent to around 60 vessels reduction

Control of our operation through Vessel Tracking System

20% Reduction in Marine Cost

30% Fuel Reduction

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What We Have Learnt Along the Way
Sharing or Integrated Barge Sequence
Single or several vessels/barges planned to serve multiple offshore works or projects or fields to maximise the utilisation & optimise cost

Some pipelay barges, structural installation barges were scheduled for multiple projects

Focusing on Integrated Barge Sequence alone, will be less likely to work!
Integrated Sharing Requires Integrated Planning Starting from Host Country, Down to Activity Levels at All PSCs

1. 30 year Production PLAN @ national level

2. Who will DELIVER the Volume @ PSC & field level

3. Activities & Schedule @ field level

4. Resource Demand @ field level

5. Cluster of Projects

- Exploration - Discovered resource with future reserve to be developed (Notional Development)
- Field A + Field B + Field C

- Installation, HUC
- Turn around, maintenance
- Drilling, Workover

- Manning & labours
- Yard space, barges, rigs, supply bases, vessels, choppers
- Materials
- Machineries
- Equipment
Integrated Barge Schedule is developed & agreed across PSCs, followed by integrated overall view on progress and readiness of other activities.

1. Fabrication milestones of each asset to assess installation readiness.

2. Installation duration, PSC Block & milestone progress of each asset to assess barges readiness & HUC readiness.

3. HUC, Topside Maintenance, Rejuvenation milestones of each asset to assess barges readiness.

4. Drilling programme & activities to assess location readiness to prevent overlapping activities.
Similarly, for Maintenance, Turn-around, Rejuvenation & HUC, Same Visibility Applies

1. Fabrication milestone progress of each asset to assess installation readiness

2. Installation duration, PSC Block & milestone progress of each asset to assess barges readiness & HUC readiness.

3. HUC, Topside Maintenance, Rejuvenation milestones of each location to assess barges readiness.

4. Drilling program & activities to assess location readiness to prevent activity clashing.
What PCSB Has Already Put in Place

**Master Integrated Schedule, consisting of:-**

1. Production Integrated Activity Planning
2. Integrated Fabrication Planning
3. Integrated Installation Sequence
4. Integrated Drilling Sequence
5. Integrated Barge Sequence
6. Integrated Vessel Sequence
Dedicated Team Manages Resource Identification, Allocation & Utilisation Under Master Integrated Schedule (MIS)

- Clear Term of Reference
- Vertical & Horizontal line of visibility and accountability
- Decision Making authority
- **SCM Logistics unit is a permanent member** in Monthly coordination & interfacing.
- **SCM Logistics unit is a critical member** in Bi-weekly Working Committee coordination (Production planners, Projects, Logistics, Fabrication, Installation, HUC, Drilling, Rejuvenation, Turn around, Maintenance etc.)
Some Challenges

1) Dispute & competition for priority amongst PSC or projects

2) Cascading Impact due to Dynamic Change in actual execution: -
   - POD/FDP maturity and speed
   - Portfolio swapping by some PSC
   - Actual execution pace or progress
   - Operational upsets & constraints

3) Cost allocation when certain portfolio dropped from sequence
Thank you
Mr Syaharudin graduated from University of Manchester, United Kingdom in Electrical & Electronics Engineering. He joined PETRONAS in 1995 as a project engineer. In his early years in PETRONAS, his work portfolio was in Property and Building Construction sector. He was involved in PETRONAS Twin Towers Development as part of Employer’s Representative Office as well as concurrently managing the development of PETRONAS’ first Science Centre and Concert Hall. By 2000, his portfolio was enhanced to include all land and properties under PETRONAS Holding Company and a few PETRONAS subsidiaries; covering high rise buildings, PETRONAS training and research centres.

He moved to PETRONAS Downstream Business in 2004 managing gas district cooling plants development projects. He continued gaining experiences in Oil and Gas downstream sector for four years, with involvement in various operational cycles that includes engineering, project management and plant operation.

2008 was the year that he moved to PETRONAS Upstream Business and has been with PETRONAS Carigali since. His first portfolio in PETRONAS Carigali Sdn Bhd (PCSB) was the Manager of Project Services for the development of Enhanced Oil Recovery (EOR) project, an initiative to rejuvenate a rapid production declined of a 30-year old field, through Gravity Assisted Simultaneous Water and Gas injection (GASWAG) technique. He further continued to contribute in streamlining PCSB global projects when he moved to Project Planning & Control under Development Division as a Senior Manager. Apart from managing all integrated projects throughout the World, international project benchmarking was launched to learn and transform project deliveries within PETRONAS Carigali to be in the league with World’s best; with rapid progress towards the mission based on annual benchmarking results.

He is currently the General Manager of Logistic, Supply Chain Management Division of PCSB. He is leading a team that is transforming Logistics to drive efficiency, productivity and cost competitiveness. He is currently also championing a workstream to integrate offshore logistics among all Production Sharing Contractors in Malaysia using Control Tower philosophy, as part of Malaysia Oil & Gas Industry Cost Reduction Alliance 2.0 (CORAL).
In Oil & Gas Development and Production Phases, Various Types of Barges Are Deployed for Specific Works

Legend:
- TA – Turnaround
- Maint – Maintenance
- Rejuv – Rejuvenation

Barges Counts

Cost per Barge

Time

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Choices Adopted in Carrying Out Offshore Installation Works

**Independent**

- Host Country
  - PSC
  - Installer

**Integrated Sharing**

- Host Country
  - PSC
  - Installer

- **Mob/Demob**
  - Each PSC acquire installation services & incur each cost element
  - Share mobilization/demobilization cost element

- **DCR**
  - Each PSC jointly acquire installation services for series of installation works

- **Fuel Cost**