BPTT’s – Steering towards reducing Marine GHG

Sham Parasram
1 July, 2019
BP’s Commitment to a low carbon future

Our targets include:

- Zero net growth in operational emissions from 2015 to 2025
- A goal of 3.5 million tonnes of sustainable greenhouse gas (GHG) emissions reduction in the same timeframe
- The aim of limiting methane intensity to 0.2%
BP Group – Carbon Ambitions

Reducing emissions in our operations

**Zero**
net growth in operational emissions out to 2025

**3.5Mte**
of sustainable GHG emissions reductions by 2025

Targeting methane intensity of **0.2%**

Improving our products

Provide lower emissions gas

Develop more efficient and lower carbon fuels, lubricants and petrochemicals

Creating low carbon businesses

Expand low carbon and renewable businesses

$500 million invested in low carbon activities each year

Collaborate and invest in the Oil and Gas Climate Initiative’s $1 billion fund for research and technology

Advancing low carbon

Our accreditation programme for lower carbon activities
BPTT - Reducing our marine carbon footprint

CO₂ Emissions 2017 – 2019
Term vessel fleet
Tonnes

<table>
<thead>
<tr>
<th>Year</th>
<th>Vessels</th>
<th>Emissions</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>16</td>
<td>43,777</td>
<td>26%</td>
</tr>
<tr>
<td>2018</td>
<td>14</td>
<td>32,522</td>
<td>19%</td>
</tr>
<tr>
<td>2019</td>
<td>14</td>
<td>26,395</td>
<td>40%</td>
</tr>
</tbody>
</table>

17,382 reduction
Our Journey

2017

Problems
1. Lack of efficient logistics planning
2. Poor deck utilization
3. High standby time offshore
4. Vessels with inefficient propulsion technology i.e. CPP, diesel propulsion
5. High inter-field transfers

What was done differently:
1. Changed strategy to having fit for purpose vessels, e.g. from term AHTS to spot hire, as required
2. Operating vessels at economical speeds - no 'hot shot' sailings
3. Fixed sailing schedule
4. Vessels assigned to support functions rather assets
5. Clear guidelines in Marine Operations Manual - regulating standby time in 500m Safety Zone
6. Change of diesel propulsion to mainly diesel electric. Increased Azimuth drive in fleet.
Reduction of transit time/distance offshore

- Reduce vessel standby time when in 500M zone of facility – *Less fuel burn on DP and emissions*
- Current fleet under 8 years and have met the energy efficiency mandate.
- All vessels in fleet are Diesel electric. – due to varying demand on engine power this configuration is more efficient than traditional methods.
- Economic speed sailing – using the minimal diesel generators to sail to and from offshore installation.
- Regular time for maintenance to clean hulls for marine growth – Trinidad waters present good condition for the flourishing of marine flora and fauna on the vessel’ hull. This includes propeller cleaning.
- Proper planned cargo delivery routing – reduction the need to stay in 500MZ unnecessarily as well as prevent repeat entry to delivery cargo to the facilities during one sailing.
Our Contractors Initiatives

Policies

**Environmental Protection Plan/Policy**
This is aimed at reducing GHG emissions established with firm commitment of senior executives. Establish annual Environmental Protection KPIs i.e. fuel consumption and CO2 reduction targets.

**14001 Certification**
Pursuit/achieved ISO 14001 Environmental Management System (EMS) certification

**Compliance with SEEMP & EEDI**
July 2011 - Vessels outfitted with Ship Energy Efficiency Management Plan (SEEMP) which is audited by Class utilizing the Energy Efficiency Operational Indicator (EEOI).

January 2013 - Energy Efficient Design Index (EEDI), new ship design are required to meet the reference level for their ship type (grams of CO2/ship capacity mile)

**Remote Monitoring Center**
For oversight of vessels operations.

**Cold Ironing**
“Cold ironing” - vessels plugged into electrical shore power during port calls.

**Power Management System (PMS)**
Vessels fitted with Power Management System (PMS) which automatically removes non-essential generators from the switchboard based on operational requirements (i.e. standby mode)

**Energy Storage System and/or Hybrid Technology**
Pursuit of Energy Storage System and/or Hybrid Technology – battery technology and/or alternative power supply to support main electrical consumers such as DP system; thus, reducing diesel generators usage.

**Hybrid battery system cuts offshore construction vessel fuel consumption**
Wärtsilä has installed three energy storage systems onboard an offshore construction vessel to provide energy and load sharing capability.

Mar 15th, 2019
• BP will continue to seek new technologies/process that will enable to achieve BP global GHG objective.

• Our culture will continue to evolve and adapting to efficient ways of working.

• Promote the use of innovative technology in maritime operations.