The Piper field lies in block 15/17n of the United Kingdom Continental Shelf located 193km north east of Aberdeen in the Central North Sea. Located at co-ordinates 58°27′41″N, 00°15′04″ E, the Piper ‘B’ platform stands in approximately 145m of water. Piper ‘B’ is an eight-legged fixed steel jacket supported platform. The Piper ‘B’ Platform was installed in 1992, and commenced production in February 1993.

Piper ‘B’s process facilities separate production from the Piper, Saltire, Chanter, Iona and Tweedsmuir reservoirs into oil, natural gas liquids (NGLs) and dry gas. The platform processes oil and condensate for onward transmission to Flotta Terminal. Piper receives gas for fuel gas provision from the Frigg gas network when required.
## OPERATIONAL INFORMATION

<table>
<thead>
<tr>
<th>Licence</th>
<th>P.220</th>
</tr>
</thead>
</table>
| **Licensees** | Repsol Sinopec Resources UK Limited (Op) 20.2770%  
Repsol Sinopec North Sea Limited 36.6670%  
Transworld Petroleum (U.K.) Limited 23.5000%  
Repsol Sinopec Alpha Limited 19.5560% |
| **Platform Type** | Eight-legged steel jacket |
| **Platform Weight** | Topside: 33,932 tonnes  
Jacket: 27,550 tonnes  
TOTAL: 61,482 tonnes |
| **Drilling** | Platform slots: 24  
Pre-drilled wells: 8 |
| **Wells** | Production: 12  
Injection: 5 |
| **Nearest Installations** | Saltire: 7.4 km  
Tartan: 18 km  
Claymore: 35 km |
| **Associated Fields** | Tweedsmuir: Subsea Tieback, 2 producers + 2 injectors  
Chanter*: 1 producer + 1 injector (drilled from Saltire)  
Iona*: 1 producer (drilled from Saltire)  
Saltire*: Oil and gas processing  
Dumbarton**: Gas received for processing |

*Chanter, Iona and Saltire not currently producing.  
**Gas export from Dumbarton currently suspended.
### Capacity Projection

The platform process system is nominally designed for the following quantities:

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Max Capacity</th>
<th>Projected ullage (% of maximum capacity)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2017</td>
</tr>
<tr>
<td>Piper Separator</td>
<td>BPD</td>
<td>212,000</td>
<td>●</td>
</tr>
<tr>
<td>Tweedsmuir Separator</td>
<td>BPD</td>
<td>57,000</td>
<td>●</td>
</tr>
<tr>
<td>Oil Export</td>
<td>BPD</td>
<td>140,000</td>
<td>●</td>
</tr>
<tr>
<td>Piper Produced Water</td>
<td>BPD</td>
<td>220,000</td>
<td>●</td>
</tr>
<tr>
<td>Tweedsmuir Produced Water</td>
<td>BPD</td>
<td>36,500</td>
<td>●</td>
</tr>
<tr>
<td>Piper Water Injection</td>
<td>BPD</td>
<td>107,000</td>
<td>●</td>
</tr>
<tr>
<td>Piper 1st Compressor</td>
<td>MMscfd</td>
<td>140</td>
<td>●</td>
</tr>
<tr>
<td>Piper Sweetening</td>
<td>MMscfd</td>
<td>140</td>
<td>●</td>
</tr>
<tr>
<td>Tweedsmuir 1st Compressor</td>
<td>MMscfd</td>
<td>140</td>
<td>●</td>
</tr>
<tr>
<td>Tweedsmuir Sweetening</td>
<td>MMscfd</td>
<td>54</td>
<td>●</td>
</tr>
<tr>
<td>2nd Stage Compression</td>
<td>MMscfd</td>
<td>140</td>
<td>●</td>
</tr>
<tr>
<td>Gas Dehydration</td>
<td>MMscfd</td>
<td>108</td>
<td>●</td>
</tr>
<tr>
<td>NGL recovery</td>
<td>MMscfd</td>
<td>108</td>
<td>●</td>
</tr>
<tr>
<td>3rd Stage Compression</td>
<td>MMscfd</td>
<td>84</td>
<td>●</td>
</tr>
</tbody>
</table>

### Available Capacities:

- **● > 25%**
- **●● 5% to 25%**
- **●●● < 5%**
**PRIMARY SEPARATION PROCESSING FACILITIES**

**Piper**

The Piper fluids are separated in the Piper Separator operating at a pressure of circa 9 barg at 70°C. The oil phase is drawn from the separator by the Piper Booster Pumps and pumped via the Metering Package to the MOL suction manifold. MOL Pumps pump the final production through the subsea pipeline to the Flotta Terminal.

Off-gas from the Piper Separator is cooled in the Piper Separator Gas Coolers resulting in some condensate and water drop-out. The condensate is removed in the Piper Condensate KO Drum and returned by the Piper LP Condensate Pumps to the Piper Separator. The off-gas from the condensate knockout drum passes to the 1st stage gas compression facilities.

The produced water separated in the Piper separator is routed to the produced water clean-up facilities comprising the Hydrocyclone Package and produced Water Degasser prior to discharge overboard.

**Tweedsmuir**

Tweedsmuir fluid bulk gas / liquid separation occurs in the Slug Suppression System which operates at about 11 barg. The gas is routed via the Tweedsmuir Condensate KO drum to the Trim Cooler for further water/condensate removal.

The liquids from the Slug Suppression System are routed via the Tweedsmuir Heater to the 3-phase Tweedsmuir Separator. The gas from the Tweedsmuir Separator flows to the Tweedsmuir KO drum either directly (Separator in HP mode) or via Eductor (Separator in LP mode). Eductor is used for pipeline depressurisation and Cold Restart.

Oil from the Tweedsmuir Separator is routed to Crude Oil Booster Pumps and is then metered and exported via the MOL Pumps to Flotta with the Piper oil.

Produced water from the Tweedsmuir Separator is passed through hydrocyclones and a degasser before being discharged overboard.
GAS TREATMENT FACILITIES

Gas originating from the Piper B and Tweedsmuir Oil Separation Systems undergoes compression and treatment processes to make it suitable for use as:

- Lift Gas for Piper B and Tweedsmuir fields
- Platform fuel gas
- Export/sales gas

Gas treatment consists of sweetening, dehydration and NGL recovery. In gas sweetening, H2S/CO2 are removed by passing gas against Amine solution (MDEA in Piper B GSP & UCARSOL AP806 in Tweedsmuir GSP) in a contactor tower. The gas from the Piper and Tweedsmuir Oil Separation Systems is treated by dedicated gas sweetening systems. In gas dehydration, water is removed by adsorption onto a molecular sieve bed. Finally, NGLs are removed by cooling of the gas as it expands across Joule Thomson (J-T) valves.

Treated gas which is surplus to lift gas and fuel gas requirements is exported to onshore facilities.

PIPELINES

Oil Export: 30” * 33.8km
Joins main oil line to Flotta Pipeline 4.5km

Gas Export: 16” * 1.8km + 18” * 53km
Joins gas pipeline system to St Fergus Terminal and links in to the Claymore gas import line

Piper ‘B’ – Saltire: 40” * 7.4km Interfield Pipeline Bundle containing:
10” multiphase oil/gas import from Saltire
16” water injection to Saltire
8” gas lift to Saltire
All of these pipelines are not in service
Power supply is provided to Saltire.

MacCulloch Oil Pipeline: 10” * 35km (Not in service)

MacCulloch Gas Pipeline: 6” * 35km (Not in service)
## ENTRY SPECIFICATION

Subject to discussion and negotiation with Flotta Terminal

## EXIT SPECIFICATION

<table>
<thead>
<tr>
<th>Category</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude Oil Export</td>
<td>Set by Flotta Pipeline System entry requirements</td>
</tr>
<tr>
<td>Gas Export</td>
<td>Set by St Fergus entry requirements</td>
</tr>
<tr>
<td>Produced Water</td>
<td>&lt; 30 mg/L oil in water</td>
</tr>
<tr>
<td>(Prevention of Oil Pollution Act 1971)</td>
<td></td>
</tr>
</tbody>
</table>