Barossa Offshore Project

Package No:	0482-MI20-94PO-9960
Package Name:	**OIL PRODUCTION SEPARATOR AND EOT**
Scope of Work	The well stream is routed to the FPSO via individual subsea manifolds and risers for the gas/condensate production. The inlet production stream from the Production Manifold is directed to the Production Separator. The Production Manifold and the Production Separator can be operated at High Pressure (HP) mode in early field life and Low Pressure (LP) Mode in late field life. The inlet production stream is separated in the Production Separator for bulk gas / liquid separation. The separated liquids from the Production Separator are further treated at lower operating pressures, enabling stabilization of the condensate before directing it to condensate storage in the hull.

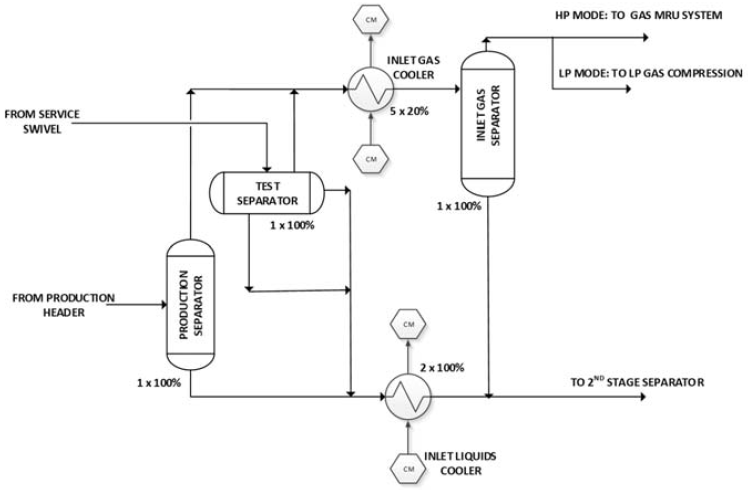
Total Production Flow Rates

Parameters	
Export Gas	625 MMscfd
Total Condensate	11,000 bpd
Produced Water	20,000 bpd

Inlet Separation System

The purpose of the Inlet Separation System is to separate gas, condensate and water and cool the production fluids for further treatment. The Inlet Separation System consists of the following equipment:

- **1 x 100% Test Separator**
- **1 x 100% Production Separator**
- 5 x 20% Inlet Gas Cooler (By Others)
- **1 x 100% Inlet Gas Separator**
- 2 x 100 Inlet Liquids Cooler (By Others)



Production fluids from the production header with a maximum arrival temperature of 116°C are routed to the Production Separator where gas is separated from water and condensate. The Production Separator is to be operated around 91 barg in High Pressure (HP) mode and around 34 barg in Low Pressure (LP) mode. The Production Separator also functions as a slug catcher with handling capacity at 45 m3.

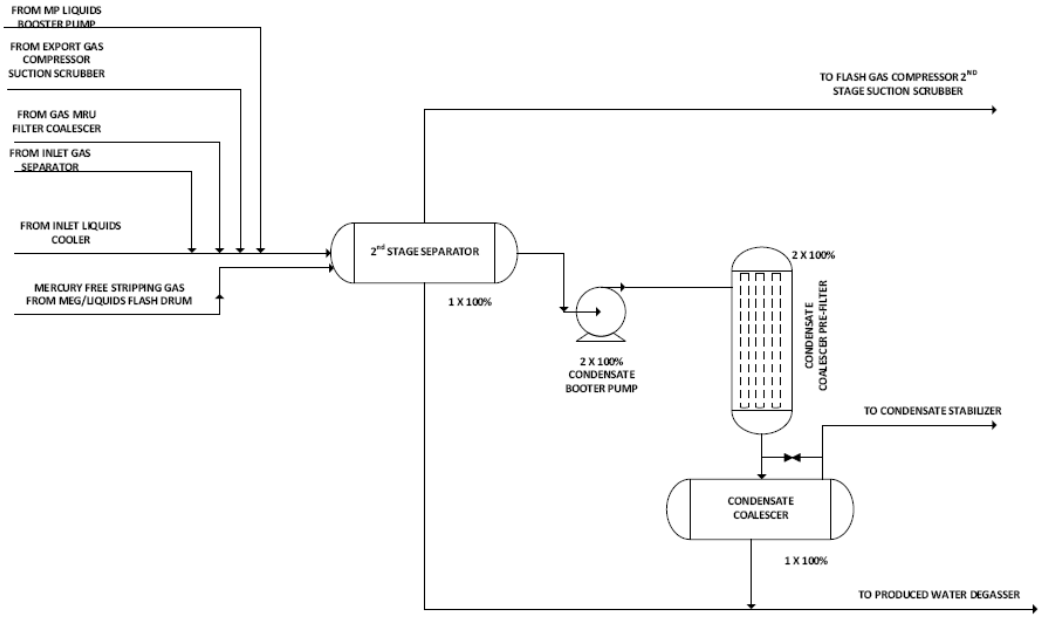
Liquids from the Production Separator are reduced in pressure and cooled to 50°C before being routed to the 2nd Stage Separator.

For well testing, production fluids from the service header are routed to the Test Separator. Gas separated in the Test Separator is metered and then sent to the Inlet Gas Cooler. Produced water and condensate are separated and metered separately.

Condensate Separation system

The purpose of the Condensate Separation System is to separate the produced water from the condensate and in order to meet the condensate specification: BS&W maximum content 0.3%. The Condensate Separation System consists of the following components:

- **1 x 100% 2nd Stage Separator**
- 2 x 100% Condensate Booster Pump (By Others)
- 2 x 100% Condensate Coalescer Pre-Filer (By Others)
- **1 x 100% Condensate Coalescer**

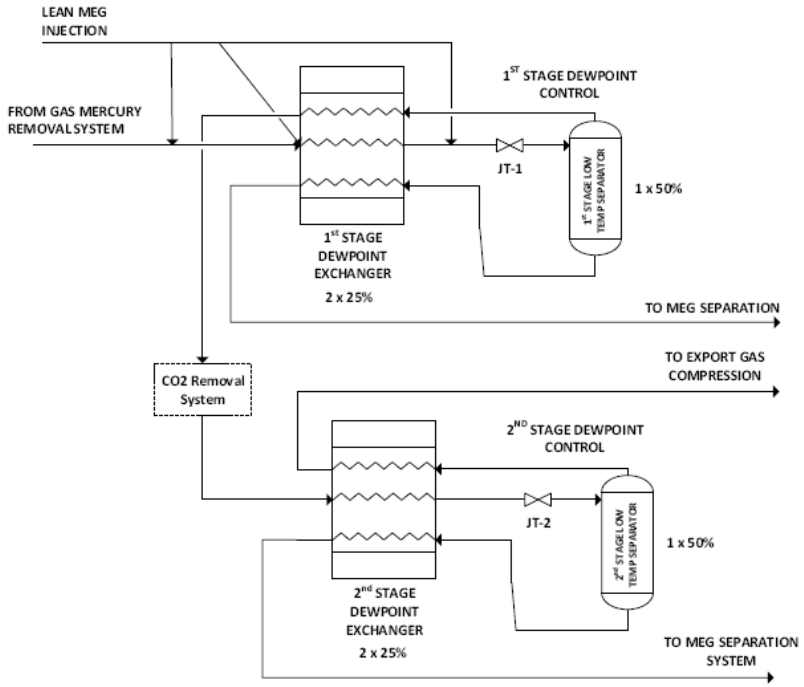


Liquids from the Inlet Liquids Cooler (at ~ 32 barg and 50°C) is combined with various liquid streams (from MP Liquids Booster Pump – recycled from lower pressure systems, Gas MRU Filter Coalescer, Inlet Gas Separator, Export Gas Compressor Suction Scrubber, Fuel Gas Scrubber). The combined liquid stream is sent to the 2nd Stage Separator where gas is flashed off and bulk produced water is separated from the condensate. The condensate is boosted in pressure via the Condensate Booster Pump to the Condensate Coalescer Pre-Filter and then to the Condensate Coalescer where water is further removed to meet the condensate design specification. The treated condensate stream is sent to the top section of the Condensate Stabilizer to be stabilized. The produced water separated from the 2nd Stage Separator and the Condensate Coalescer are combined and sent to the Produced Water Degasser for treatment.

<u>Hydrocarbon Dewpointing System</u>

The purpose of the Hydrocarbon Dewpointing System is to remove the heavy hydrocarbon components from the gas stream to meet the export gas specification: C5+ to be less than 0.08 mol%. The Hydrocarbon Dew pointing System consists of **two (2) x 50%** trains, each with the following equipment:

- 2 x 25% 1st Stage Dewpoint Exchanger (By others)
- **1 x 50% 1st Stage Low Temperature Separator (LTS)**
- 2 x 25% 2nd Stage Dewpoint Exchanger (By others)
- **1 x 50% 2nd Stage Low Temperature Separator (LTS)**
- Direct MEG injection for hydrate prevention for the 1st Stage Dewpoint Control (By others)



Gas from the Gas Mercury Removal System is cooled at the 1st Stage Dewpoint Exchanger to a temperature of about -21 °C. MEG is injected at upstream and at the head of the 1st Stage Dewpoint Exchanger to prevent hydrate formation. Gas leaving the 1st Stage Dewpoint Exchanger goes through a JT valve. Another MEG injection point is provided upstream of the JT valve. Pressure is reduced from 87 barg to 69 barg via JT expansion. Temperature is dropped to -25°C ~ -30°C (design is to cover the temperature range for operational flexibility). Condensed liquids and water/MEG are separated in the 1st Stage Low Temperature Separator (LTS). Low temperature gas and liquids are sent to the 1st Stage Dewpoint Exchanger to cool the inlet gas.
Gas from the 1st Stage Dewpoint Exchanger is then sent to the CO2 Removal System where water permeates the CO2 membranes along with CO2 and H2S. Gas from the CO2 Removal System is further dehydrated to a water content below 2.2 ppm (mol).

After the CO2 Removal System, a 2nd Stage Dewpoint Control System is provided to further dewpoint the gas to meet design specification of C5+ less than 0.08 mol%. The 2nd Dewpoint Exchanger is to cool the inlet gas from 24 °C to ~ -34°C. The gas then goes through a JT valve where pressure is reduced from 63 barg to 53 barg and the temperature is reduced to -37°C ~ -42°C via JT expansion. Condensed liquids are separated in the 2nd Stage LTS. Gas and liquids from the 2nd Stage LTS go to the 2nd Stage Dewpoint Exchanger to cool down the inlet gas. Gas from the 2nd Stage Dewpoint Exchanger is then sent to the Export Gas Compression System.

Depending on reservoir fluid compositions, pressure and temperature in the dewpoint exchanger and JT systems may be adjusted slightly in order to meet the export gas C5+ spec. Mercury decanting is considered in the 1st Stage Low Temperature Separator to remove any free mercury drop-out in case of upset conditions at the Gas MRU System.

There is a possibility to include 1 x 100% MEG/Liquid coalescer to the scope during execution phase.

- Contract Award Q2 2020; Delivery Q3 2021 all units

Project Registration

ConocoPhillips is committed to ensuring Australian Industry full, fair and reasonable opportunity to participate in the Barossa Offshore Project. Expressions of Interest are invited from contractors and suppliers with the relevant capability and capacity to undertake the scope of work.

This is a request for specific expressions of interest. Contractors and suppliers will be considered for prequalification and tender if suitably qualified against this package.

Note that an important part of the project registration process is to register an Expression of Interest at the correct Scope level.

Scope level definition:

Full scope: Able to produce / supply the entire package.
Partial scope: Able to produce / supply one or more of the sub-packages.

All registrations are to be completed via ICN Gateway *BarossaOffshore.icn.org.au*. Please contact the ICNNT if registration assistance is required. Contact details: (08) 8922 9422 or *admin@icnnt.org.au*.

Project Website: ConocoPhillips Australia