

## **BUZZARD INSTALLATION**



### **DESCRIPTION OF INFRASTRUCTURE**

The Buzzard complex comprises four separate platforms each supported by steel jackets interconnected by three bridges. The four platforms are the wellhead platform W, the production platform P, the utilities/living quarter platform QU and the production sweetening platform PS.



- The W platform is a four-leg jacket supporting an integrated deck with conductors, wellhead trees, allowance for a potential modular drilling unit, and access to the wells and wellheads for heavy duty jack-up drilling rigs.
- The P platform is a four-leg jacket supporting an integrated deck with well fluid processing to export/import gas and oil export quality standards including acid gas removal. Other facilities include well water injection pumps, HP & LP flares, and lift gas compression. All export and injection risers plus spare risers for future expansion are also located on the P platform.
- The QU platform is a four-leg jacket supporting an integrated deck with living quarters, the main control room, offices and workshops, lifeboats, helideck, main and emergency power generation and utilities including seawater lift pumps and sulphate removal.
- The PS platform carries the oil stripper facilities to remove H<sub>2</sub>S from the oil to meet the Forties entry specification. The PS platform also includes spare risers for future expansion.

### **ENTRY SPECIFICATION**

The entry specification for any third-party tie back to the Buzzard Platform for offshore processing would be assessed on an individual basis. The existing facilities process sour well stream fluids.

## EXIT SPECIFICATION

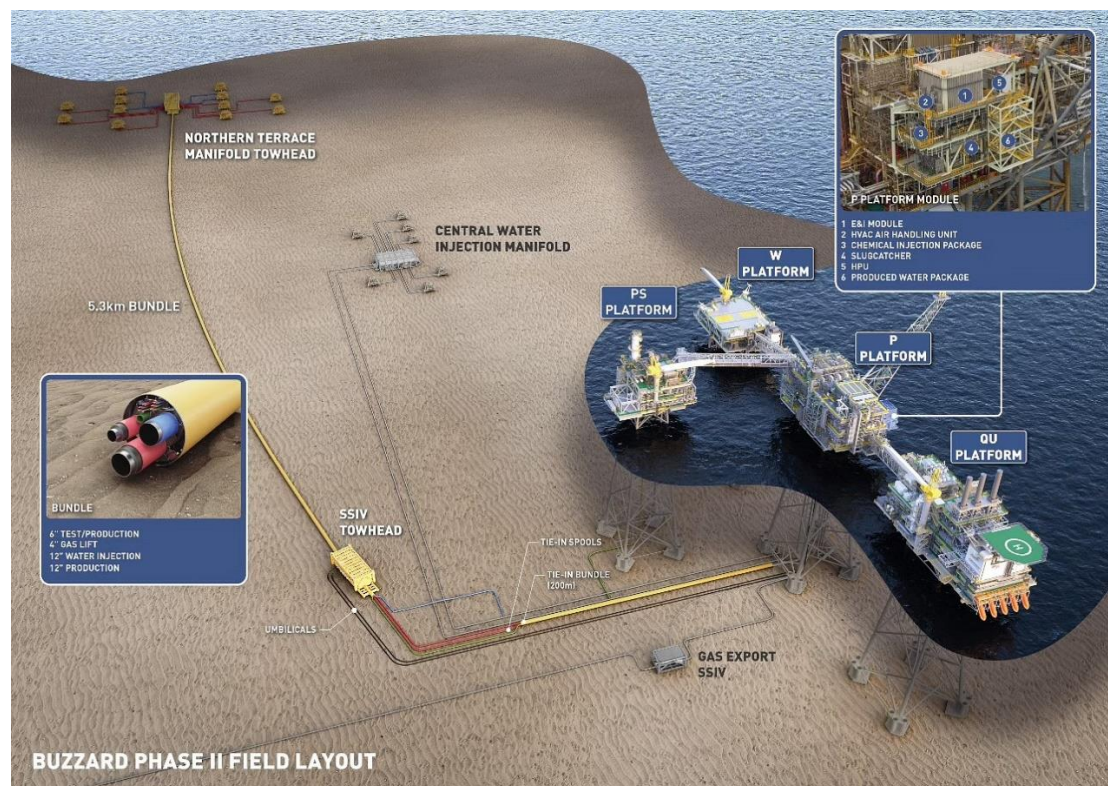
Crude oil is exported via the Forties Pipelines System (FPS). The export stream meets contractual FPS entry specifications.

Gas is processed on the Buzzard facilities to meet the contractual FRIGG entry specifications and is exported via the FRIGG system to St Fergus where natural gas and natural gas liquids are separated. The natural gas is sent to the National Transmission System (NTS) and the natural gas liquids are either sent on to FPS or to the SEGAL natural gas liquids pipeline for further processing into specification products.

## PRIMARY SEPARATION PROCESSING FACILITIES

The Buzzard process systems are designed to process well stream fluids from the Buzzard reservoirs and export the separated oil and gas to shore. These primary separation facilities include a single, two-stage, three-phase, separation train, water injection and produced water disposal/re-injection.

As part of the Buzzard Phase 2 project a new process module has been installed on the P platform to receive fluids from additional wells developed via new subsea infrastructure. This process module includes a two-phase slug catcher, produced water treatment facilities, chemical injection, Subsea control systems and a Local Equipment Room. Installation and hook-up of the module and first production from Buzzard Phase 2 took place in 2021.



## GAS TREATMENT FACILITIES

The Buzzard gas is compressed and passed through a mercury removal bed before an acid gas removal unit to remove H<sub>2</sub>S and CO<sub>2</sub>. The gas then undergoes further H<sub>2</sub>S polishing, dehydration, hydrocarbon dew-pointing and further compression for gas lift and export. Please note that the Gas Export and Gas Lift maximum capacity values that are summarised in *Table 2* cannot be achieved coincidentally.

## SUMMARY OF WEIGHT BUDGETS

The current weight position for each of the Buzzard platforms is summarised in below, with the spare tonnage highlighted in yellow.

| Topside Weight (te.) | Platform |        |        |       |
|----------------------|----------|--------|--------|-------|
|                      | QU       | P      | PS     | W     |
| Dry                  | 10,313   | 11,861 | 5,646  | 3,600 |
| Operating            | 13,391   | 15,676 | 7,585  | 6,631 |
| Not-To-Exceed (NTE)  | 15,000   | 15,750 | 11,000 | 8,000 |
| Spare                | 1,609    | 74     | 3,415  | 1,369 |

*Table 1: Buzzard Weight Budget Summary*

### INDICATIVE SYSTEM CAPACITIES (Including the Buzzard Phase 2 Module)

|                                  |   |
|----------------------------------|---|
| Entry Specification              | Sour Crude Oil                                      |
| Exit Specification               | Crude Oil exported via FPS. Gas exported via FRIGG. |
| Oil Export                       | 216,000 bopd  |
| Gas Compression                  | 70 MMscfd   |
| Gas Export                       | 45 MMscfd   |
| Gas Lift                         | 60 MMscfd   |
| Produced Water Handling          | 372,000 bwpd  |
| Total Liquid Handling            | 400,000 blpd  |
| H <sub>2</sub> S Removal         | 500 ppm by wt in the incoming well fluids           |
| Dehydration                      | 75 MMscfd   |
| Treated (Desulphinated) Seawater | 230,000 bwpd  |
| Water Injection                  | 364,000 bwpd  |

*Table 2: Summary of System Capacities*

| ULLAGE                            | 2022 | 2023 | 2024 | 2025 | 2026 |
|-----------------------------------|------|------|------|------|------|
| Oil Export                        | G    | G    | G    | G    | G    |
| Gas Compression                   | R    | R    | R    | R    | R    |
| Gas Export                        | G    | G    | G    | G    | G    |
| Gas Lift                          | R    | R    | R    | R    | R    |
| Produced Water Handling           | R    | A    | A    | A    | A    |
| Total Liquid Handling             | R    | R    | A    | A    | A    |
| Gas Dehydration                   | R    | R    | R    | R    | R    |
| Water Injection                   | A    | A    | A    | A    | A    |
| Treated (Desulphinated) Sea Water | G    | G    | G    | G    | G    |

|   |             |
|---|-------------|
| R | <5% Ullage  |
| A | 5% to < 25% |
| G | > 25%       |

**Table 3: Indicative Summary of Ullage Available**

## RISER AVAILABILITY

The Buzzard development was designed with three pre-installed spare riser clusters on the P platform for future development opportunities. These are located within caissons RC1, RC2 and RC3. Each of these caissons includes a Production, Test, Gas lift, and Water Injection riser. The set of risers inside the RC1 caisson have subsequently been used by the Buzzard phase II development. As such, RC2 and RC3 riser clusters are available for future tie-back opportunities. Table 4 summarises the Buzzard risers. There are a further two spare risers on the PS platform; 10” Production (A-0401) and 8” Test (A-0405).

| Ref | Platform         | Caisson | Service                                      | OD x thk (mm)                             | Bottom Elevation | Top Elevation |
|-----|------------------|---------|--|---|------------------|---------------|
| R1  | Process Platform | None    | 18” Oil Export                               | 466.6 x 17.5                              | -95.100          | +22.728       |
| R2  |                  |         | 10” Gas Export                               | 273.1 x 12.7                              | -95.100          | +22.750       |
| R3  |                  |         | 16” Water Injection (to SWIM)                | 406.4 x 15.9<br>+ 3mm CRA<br>625 cladding | -95.100          | +22.622       |
| R4  |                  |         | 16” Water Injection (to CWIM)                | 406.4 x 15.9<br>+ 3mm CRA<br>625 cladding | -95.100          | +22.750       |
| R5  | Process Platform | RC1     | 10” Production (Future - Northern Area)      | 273.1 x 20.6                              | -94.900          | +22.872       |
| R6  |                  |         | 10” Test (Future - Northern Area)            | 273.1 x 20.6                              | -94.900          | +22.872       |
| R7  |                  |         | 4” Gas Lift (Future - Northern Area)         | 114.3 x 7.9                               | -95.350          | +22.793       |
| R8  |                  |         | 10” Water Injection (Future - Northern Area) | 273.1 x 20.6                              | -95.350          | +22.872       |
| R9  | Process Platform | RC2     | 8” Production (Future – North Flank 1)       | 219.1 x 18.3                              | -94.900          | +22.845       |
| R10 |                  |         | 8” Test (Future – North Flank 1)             | 219.1 x 18.3                              | -95.350          | +22.845       |
| R11 |                  |         | 4” Gas Lift (Future – North Flank 1)         | 114.3 x 7.9                               | -95.350          | +22.793       |
| R12 |                  |         | 8” Water Injection (Future – North Flank 1)  | 219.1 x 18.3                              | -94.900          | +22.845       |
| R13 | Process Platform | RC3     | 8” Production (Future – North Flank 2)       | 219.1 x 18.3                              | -94.900          | +22.845       |
| R14 |                  |         | 8” Test (Future – North Flank 2)             | 219.1 x 18.3                              | -95.350          | +22.845       |
| R15 |                  |         | 4” Gas Lift (Future – North Flank 2)         | 114.3 x 7.9                               | -95.350          | +22.713       |
| R16 |                  |         | 8” Water Injection (Future – North Flank 2)  | 219.1 x 18.3                              | -94.900          | +22.845       |

**Table 4: Summary Listing of Pipeline Risers (P Platform)**

## **ADDITIONAL INFORMATION**

For additional information please contact:

Carl Fiddimore, Commercial Manager  
CNOOC Petroleum Europe Limited  
Prospect House, 97 Oxford Road  
UB8 1LU, United Kingdom

Tel: +44 (0) 1895 237 700

Email: [Carl.Fiddimore@intl.cnooltd.com](mailto:Carl.Fiddimore@intl.cnooltd.com)