The Gorgon subsea well design features a 10-3/4” x 7-5/8” monobore completion. This design represents the highest deliverability installation that is currently considered field proven. Other key factors that have influenced the well design includes the pressure and temperature conditions of 6588 psi and 161 deg C at a reservoir datum depth of 4000m TVDss, the wellbore environment comprising 16 mol% CO2, 6 mol% N2 and 25 ppmv H2S, and the perforating strategy.

The reservoir intervals planned for completion during the initial campaign (Zones 10, 30 and 50) are relatively high strength sands and have a low likelihood for free water production. Accordingly, no specific provision has been made for downhole components to isolate individual problem zones or sands. In the unlikely event that the zones do not perform as predicted and excessive water production is experienced, the monobore completion design will readily facilitate the installation of plugs and/or straddles to provide water shut-off as required. Water production due to water of condensation is expected, and provision for this is incorporated in the well design basis.

A cased, cemented and perforated completion strategy will be adopted for the initial completions. Sand control is not incorporated in the initial completions. Sand production has not been observed during any of the well tests on the Gorgon appraisal wells. Sanding studies also support this outcome, and indicate that due to higher average rock strength and greater overburden stress, sanding expectations are generally lower in Gorgon than they are at other offset NW Shelf gas fields, where sanding is known not to pose a problem.

The reservoir section will be drilled with a 8.3/4” open hole section, and then lined and cemented with 7” liner. In addition to the liner hanger, the liner will feature a liner top packer and 6m PBR.

The subsea well system will comprise a flow support base, a 7” x 2” horizontal xmas tree (HXT) including the subsea control module (SCM), concentric tubing hanger system and choke module assembly. The HXT will be installed prior to installing the well completion. The upper completion string will comprise 7.5/8” production tubing, a 10.3/4” x 7” production packer providing a mechanical barrier between the reservoir interval and the production annulus, a permanent downhole gauge to facilitate the downhole measurement of pressure and temperature, and a 7” surface controlled subsea safety valve to provide a mechanical barrier for the tubing string as required.

The upper completion string will be tied back from the liner top PBR using a non-sealing stinger. Once the completion is installed and pressure tested to satisfy well integrity requirements, the reservoir will be perforated using perforating guns deployed on wireline. Several wireline trips will be required to perforate the reservoir interval/s of each well.
A well cleanup will then be conducted from the MODU to ensure each well is cleaned as best as practical of well construction fluid, perforating debris and other well construction contaminates prior to well commissioning operations.

Due to the wellbore environment, the material specification for all flow wetted surfaces is primarily 25Cr or Nickel Alloy 718. All wells are designed to satisfy a minimal intervention requirement based on an expected well life of 40 years.

The drilling programme is summarised:
1. Move MODU on location.
2. Drill 36” hole.
3. Run and cement 30” structural casing.
4. Drill 26” hole with seawater.
5. Run and cement 20” surface casing.
6. Run BOP and riser.
7. Drill 17.1/2” hole with water based mud. Run and cement 14” intermediate casing.
8. Drill 12.1/4” x 13.1/2” (under-reamed) hole with Non Aqueous Fluid (NAF).
10. Drill 8.3/4” hole with NAF to TD.
11. Conduct wireline logging programme.
12. Run and cement 7” production liner.
13. Conduct cased hole cleanup and displace well to brine.
15. Pull riser and BOP
16. Move MODU to next well.

The completion programme is summarised:
1. Move MODU over well.
2. Install 7” horizontal subsea tree.
3. Run BOP and riser.
4. Retrieve suspension packer.
5. Run the 7.5/8” completion string with subsea test tree, 8.5/8” completion tubing riser, surface flow tree and coiled tubing lift frame.
6. Displace well to packer fluid and underbalance fluid, and tie-back the completion string from liner top PBR (non-sealing). Set production packer.
7. Perforate well on electricline.
8. Conduct MODU well cleanup.
10. Install tubing hanger plugs on slickline.
11. Pull coiled tubing lift frame, surface flow tree, completion riser and subsea test tree
12. Pull riser and BOP, or move MODU to next well
13. Install tree cap using ROV
14. Move MODU to next well

Note: The drilling and completion programmes will be conducted in ‘batch’ mode.
Figure 1 Subsea Well Development Schematic
<table>
<thead>
<tr>
<th>Depth m MDBRT</th>
<th>Depth m TVDBRT</th>
<th>Deviation Deg</th>
<th>OD Inches</th>
<th>ID Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>7&quot; Tubing Hanger</td>
<td>240</td>
<td>240</td>
<td>0</td>
<td>18.750</td>
</tr>
<tr>
<td>30&quot; 457 ppf 1.5&quot; wt / 309.7 ppf 1&quot; wt X-52 Conductor</td>
<td>310</td>
<td>310</td>
<td>0</td>
<td>27.000</td>
</tr>
<tr>
<td>7-5/8&quot; 35.8 ppf 25Cr-125 Vam Top HC Tubing</td>
<td>540</td>
<td>540</td>
<td>0</td>
<td>9.070</td>
</tr>
<tr>
<td>7&quot; Tubing Retrievable Safety Valve (Non-Equalising)</td>
<td>640</td>
<td>640</td>
<td>0</td>
<td>18.750</td>
</tr>
<tr>
<td>TOC (500m below 20&quot; Casing Shoe)</td>
<td>1140</td>
<td>1121</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-5/8&quot; 35.8 ppf 25Cr-125 Vam Top HC Tubing</td>
<td></td>
<td></td>
<td></td>
<td>8.362</td>
</tr>
<tr>
<td>14&quot; 82.5 ppf P110 Intermediate Casing (10m above Gearle)</td>
<td>2296</td>
<td>2008</td>
<td>40.6</td>
<td>12.876</td>
</tr>
<tr>
<td>TOC (500m below 14&quot; Casing Shoe)</td>
<td>2796</td>
<td>2389</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7-5/8&quot; Permanent Downhole Gauge Mandrel (Dual)</td>
<td>3968</td>
<td>3279</td>
<td>40.6</td>
<td>9.105</td>
</tr>
<tr>
<td>Tubing X/over, 7-5/8&quot; x 7&quot;</td>
<td>3983</td>
<td>3291</td>
<td>40.6</td>
<td>8.140</td>
</tr>
<tr>
<td>7&quot; 32 ppf 25Cr-125 Vam Top HC Tubing (2 joints)</td>
<td></td>
<td></td>
<td>7.717</td>
<td>6.094</td>
</tr>
<tr>
<td>10-3/4&quot; x 7&quot; Production Packer</td>
<td>4008</td>
<td>3310</td>
<td>40.6</td>
<td>9.340</td>
</tr>
<tr>
<td>7&quot; x 5.75&quot; Landing Nipple, Top No-Go</td>
<td>4023</td>
<td>3321</td>
<td>40.6</td>
<td>7.732</td>
</tr>
<tr>
<td>Tie-back Assembly (Non-Sealing)</td>
<td>4038</td>
<td>3333</td>
<td>40.6</td>
<td>&lt;Hold&gt;</td>
</tr>
<tr>
<td>10-3/4&quot; x 7&quot; Liner Hanger / Liner Top Packer c/w 6m PBR</td>
<td>4041</td>
<td>3335</td>
<td>40.6</td>
<td>&lt;Hold&gt;</td>
</tr>
<tr>
<td>10-3/4&quot; 60.7 ppf T95 Vam Top Production Casing (600m) x 10-3/4&quot; 65.7 ppf T95 / C110 / P110 Vam Top Production Casing (30m above Intra-Jurassic Unconformity)</td>
<td>4191</td>
<td>3449</td>
<td>40.6</td>
<td>11.734</td>
</tr>
<tr>
<td>Top Perforation Interval (Zones 30 &amp; 50)</td>
<td>4518</td>
<td>3697</td>
<td>40.6</td>
<td></td>
</tr>
<tr>
<td>Base Perforation Interval</td>
<td>5001</td>
<td>4064</td>
<td>40.6</td>
<td></td>
</tr>
<tr>
<td>Base Sump</td>
<td>5061</td>
<td>4110</td>
<td>40.6</td>
<td></td>
</tr>
<tr>
<td>7&quot; 32 ppf 25Cr-125 Vam Top HC Liner</td>
<td>5101</td>
<td>4140</td>
<td>40.6</td>
<td>7.717</td>
</tr>
</tbody>
</table>

Notes:
- Air Gap = 25m, Water Depth = 215m
- Hole Sizes = 36", 26", 17-1/2", 12-1/4" x 13-1/2" (Under-reamed), 8-3/4" KOP = 695m MDBRT, EOB = 1300m MDBRT (1259m TVDBRT)
- Horizontal Stepout = 2675m
- Completion Equipment Material Spec = Alloy 718
- 7" Tubing Hanger has a 7" 32 pffp Vam Top connection (box down)
- 7" Safety Valve has 7-5/8" 35.8 pffp Vam Top HC connections
- Safety Valve Hold Open Sleeve ID (during well construction) = ±5.0"
- Control Line / PDHG Cable OD = 0.433" (11mm)
- 7-5/8" Cable Protector OD = ±9.35"
- Reservoir Pressure = 6588 psi at 4000m TVDss
- Reservoir Temperature = 321 deg F (161 deg C) at 4000m TVDss
- Wireline TCP Gun Configuration to be confirmed
- Subsea Tree Type = 7" Horizontal (with 7" flow bore)
- Special Drift = 9.600" for 60.7 pffp & 9.500" for 65.7 pffp 10-3/4" casing

Figure 2 Well Design Schematic