



Gorgon Project Upstream Facilities

Narrator

The Gorgon Project's natural gas supply undergoes a long journey to reach the onshore processing plant on Barrow Island.

Ashley Geneve, Offshore Construction Manager

We are pushing technology across the board, not only in the design phase but also in the installation phase.

Narrator

...culminating in the largest subsea gathering system in Australia's history.

Narrator

The vast Gorgon and Jansz-lo gas fields provide the source gas behind Australia's largest single resource project.

David Equid, Gorgon Upstream Facilities Project Manager 2005 – 2014

There's 18 wells in total, eight on Gorgon and 10 on Jansz-lo, so the drilling groups were out there drilling the wells that go down into the reservoir and actually it let us recover the gas from the fields.

Narrator

Completing each well involves installing the well head... and connecting a 'Christmas Tree'.

David Equid, Gorgon Upstream Facilities Project Manager 2005 – 2014

It's a very special piece of equipment. Not only does it have the valves, it also has the controls, the smarts that let us operate those valves from Barrow Island.

Narrator

The production system consists of 20 subsea structures – including manifolds.

Milton Bruce, Gorgon Upstream Facilities Execution Manager

A manifold is a subsea structure where you have various pipes and valves that control the fluids that come either to and fro the wells.

It's more like a distribution centre.

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Ashley Geneve, Offshore Construction Manager

The structures for Gorgon and Janz are different from other past projects. These structures are much bigger. We're lifting a 1000 tonne structures down to 1300 meters. A lot of cranes nowadays don't have the capability to lift a 1000 tonnes let alone to lift it all the way down to the sea bed. So we've had to develop a new deep water lowering system to actually enable that to happen safely.

Rory Denniss, Health Safety Environment Advisor

We factor safety into everything because everything out here is big, it's unforgiving and there's always risks with everything that we do. All the equipment that we handle is big and it's heavy. So we have to be careful.

Paul Nichols, ROV Supervisor

We're utilizing a lot of heavy lifting equipment to put these installations in. We need an ROV with the capabilities of heavy lifting. We want to be able to then go straight into survey or inspection of the equipment of the installation once it's on the sea bed.

Narrator

Gas gathered at the subsea structures is transported along pipelines.

Ashley Geneve, Offshore Construction Manager

During that fabrication process, you have to have very strict tolerances on how big and how the wall thickness needs to match each and every other joint. That pipe is then cut up into 12 meter sections and then transported down to the pipelay vessel. These vessels are the largest in the world and deploying some of the largest pipelines in the deepest oceans in the world.

Milton Bruce, Gorgon Upstream Facilities Execution Manager

A join of pipe 12 or 13 meters long they weigh upwards of 10 tonnes. Handling each piece of pipe offshore of this size, this weight is a very delicate operation.

Ashley Geneve, Offshore Construction Manager

Those joints get put into the firing line. So in that firing line we line up the joints of pipe. We weld them together; we inspect them; and then gradually lower them off the back of the vessel.

Milton Bruce, Gorgon Upstream Facilities Execution Manager

Normally on a good day on a pipeline spread, we would like to get 100, 125 joins a day of this size pipe. When we were welding the scarp welds we were happy to get 4 to 6. This is how complicated, how exact, that these welds had to be.

Narrator

Crossing the scarp presented the team with one its greatest challenges.

David Equid, Gorgon Upstream Facilities Project Manager 2005 - 2014

The escarpment, it's very simply, it's like an underwater cliff. We actually went into a very extensive program of seabed investigations. It ended up going on for several years, looking for the different ways we could route the pipelines to get them back to Barrow Island.

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Milton Bruce, Gorgon Upstream Facilities Execution Manager

During a normal pipeline construction activity we're comfortable with a 20, 30 meter free span. This free span is somewhere in the neighborhood of 250 to 300 meters.

Narrator

The pipeline system is complete with the installation of tie-in spools.

Milton Bruce, Gorgon Upstream Facilities Execution Manager

A spool is basically an interconnecting piece of pipe between the well head and the manifold. These are the last pieces of the puzzle that we had to install to ensure that we had a complete pipeline system from the well to Barrow Island. Each spool was installed either using a space frame or tubular space frame with outriggers.

Narrator

The pipelines come ashore on the West coast of Barrow Island.

David Equid, Gorgon Upstream Facilities Project Manager 2005 - 2014

The drill rig we had at North White's Beach, there was actually two of them, is designed to drill sideways. By using the horizontal directional drilling technique we were able to limit our impact on the Island. We were able to retain the natural features of the site.

Narrator

Pipelines and umbilicals are threaded through the shore crossing.

David Equid, Gorgon Upstream Facilities Project Manager 2005 - 2014

The umbilicals for both Gorgon and Jansz-lo are the lifeline that allows us to operate the subsea equipment. Back behind the sand dunes at the beach there's actually a termination point where those umbilicals are anchored and tied off. Then from there back to the LNG plant we have bundles of hydraulics and separate power and fibre optic.

Ashley Geneve, Offshore Construction Manager

The Gorgon Project is different from other projects in the fact it's the size and the magnitude of what we're trying to do.

Milton Bruce, Gorgon Upstream Facilities Execution Manager

You know to build something that will last for 50 years, from an engineering perspective this is major. What we're doing today will benefit people who are not born yet.