Hydrocarbons

Full-scope delivery services for upstream, midstream and downstream facilities located both onshore and offshore.
“Our full-scope global project services span the entire asset lifecycle from the initial conceptual phase of major greenfield developments to ongoing asset services and brownfield modifications projects.”

ANDY COLE, GROUP SECTOR MANAGING DIRECTOR - HYDROCARBONS

WORLEYPARSONS HAS BEEN DELIVERING ENGINEERING AND PROJECT MANAGEMENT SERVICES TO THE GLOBAL HYDROCARBONS INDUSTRY FOR OVER 60 YEARS.

Our full-scope global project services span the entire asset lifecycle from the initial conceptual phase of major greenfield developments to ongoing asset services and brownfield modifications projects. Our capability and experience span all oil and gas extraction and processing facility types and our global coverage enables us to provide comprehensive services to our customers wherever we are needed.

UPSTREAM, OFFSHORE

Mega Topsides
WorleyParsons is recognized as the leading global float-over and mega topsides design and installation consultant. Our Houston operation led the design of the mega topsides that set a world record for the heaviest integrated topsides installed by float-over method in open sea.

This topside weight record will be bettered when the platform topsides currently being designed in our Houston operation is installed in coming years.
Floating Production Systems and Subsea Developments
The floating production sector is becoming one of the most capital-intensive areas of the offshore oil and gas market with unique technological challenges as new oil and gas discoveries are being made in deeper waters, remote from other infrastructure, in more extreme climatic conditions. This move into “frontier locations” has called for progressively advancing technologies and strategies in order to deliver a consistently robust production capability within a framework of increasing environmental protection expectations.

By combining the capabilities of our subsea, floating systems and offshore pipeline division (INTECSEA) with the large topside design capability that exists in locations as diverse as Houston, London, Lagos, Kuala Lumpur, Perth and Melbourne, WorleyParsons provides our customers with global coverage in support of their deepwater field development opportunities.

For over 25 years, INTECSEA has provided frontier technology leadership for the energy industry’s most challenging offshore field development and pipeline projects. INTECSEA has designed subsea production systems, pipelines and floating systems in the harshest environments, and in locations as diverse as the Black Sea, Arctic Ocean, Mediterranean Sea, Gulf of Mexico, offshore West Africa and South China Sea.

Conventional Onshore Oil and Gas
WorleyParsons provides full-scope project services for greenfield and brownfield projects across all phases, processes and components of oil and gas production and transportation. WorleyParsons has specialist field development expertise in demanding environments including the deserts of Saudi Arabia and Australia, the arctic regions of Alaska and the remote steppes of Kazakhstan.

Recognized as gas processing specialists, WorleyParsons has designed and constructed over 400 gas processing plants throughout the world that correspond to a total capacity of over 50 MMscfd. The sizes of installations have varied considerably from small compressor stations to facilities processing over 3,000 MMscfd of gas.

Heavy Oil and Oil Sands
WorleyParsons has over 30 years of experience in processing heavy oil from fields located in Canada, Oman, Kuwait, Yemen, China, Russia, Venezuela and the United States.

From its long history in Canadian oil sands, WorleyParsons has been directly involved in the design and construction of over 3,000 oil sands upgrading and extraction related projects. This experience covers every aspect of oil sands mining extraction, including dry material handling, hydro-transport, extraction, froth treatment, solvent recovery and tailings technology. WorleyParsons’ primary heavy oil and oil sands design centers are located in Calgary and Edmonton.

Unconventional Oil and Gas
From the coal bed methane fields in Queensland Australia, to the shale oil and gas plays across North America, WorleyParsons has over 1,000 staff active on these type of field developments.

Unconventional oil and gas projects face a myriad of challenges, including:

- Gaining and maintaining the social license to operate
- Timely regulatory approvals management supporting oil and gas developments
- Water sourcing and disposal
- Supporting infrastructure, transportation and logistics issues, and availability of equipment due to the remote nature of these new basins.

WorleyParsons provides services that address the infrastructure, environmental and logistical issues associated with developing unconventional assets so our customers can see their products cost-effectively and efficiently reach the market.
**Onshore Pipelines**
From large-diameter, long-distance transmission pipeline systems to small-inch gathering and distribution systems, WorleyParsons has designed and managed the construction of over 100,000 km of pipeline, pipeline related facilities, and terminals around the world and is the largest onshore pipeline engineering and project delivery provider, globally.

**LNG**
As the worldwide demand for natural gas imports increases, the technical and regulatory challenges and the scale of the investment required to facilitate successful delivery of LNG projects have also increased. WorleyParsons works with our customers to independently evaluate and choose the most appropriate technologies and contracting form.

WorleyParsons delivers cohesive EPCM services that consider the complete LNG value chain for facilities worldwide. Our track record in LNG extends from opportunity evaluation studies and concept/technology selection, through to FEED and detailed EPCM for both greenfield and brownfield LNG developments including:
- Onshore large-scale LNG down through to small modular or peak shaver scale LNG
- Nearshore and offshore floating LNG
- LNG regasification (both onshore and nearshore).

**Refining**
Upgrading and optimizing existing assets have become a priority for refiners as they are affected by new product grades and by the introduction of unconventional feedstocks. WorleyParsons provides a comprehensive range of refinery services through all project phases. Our experience includes grassroots, revamps, clean fuels and expansion projects.

Through our proven workshare processes, customers around the world have access to the cumulative knowledge gained from over 60 years of refining EPCM experience, and from our delivery of over 2,100 projects worldwide.

**Petrochemicals**
We support our petrochemical customers around the world: from the Middle East to Latin America, Canada, Europe and the United States.

WorleyParsons has successfully delivered more than 600 petrochemical projects in 30 countries for many of the world’s leading plastics and resins manufacturing, petrochemical processing and hydrocarbon processing companies.

**Arctic**
WorleyParsons and INTECSEA are world leaders in concept selection, design and construction of oil and gas production facilities located in remote, hostile environments.

Our experience on over 5,000 Arctic projects for onshore and offshore developments extends from the eastern territories of Russia, Norway, Kazakhstan and Greenland to the territories of northern Canada and Alaska.

**Modularization**
Bringing skills across from our remote, harsh environments and offshore design heritage onto land based developments has enabled a degree of pre-fabrication never previously attempted with onshore modularization.

“WorleyParsons and INTECSEA are world leaders in concept selection, design and construction of oil and gas production facilities located in remote, hostile environments.”

**SPECIALIST SERVICES**

**MIDSTREAM**

**DOWNSTREAM**

**HYDROCARBONS**

"WorleyParsons Annual Report 2014  29"
Sulphur
Sulphur related design and technology have long been core services in which WorleyParsons is recognized as a world leader for large and small projects. Our expertise has been built up over many years providing a unique total sulphur management capability. We have designed over 600 sulphur recovery plants worldwide using in-house technologies and those of alliance partners and offer a complete range of sulphur recovery, including standard and oxygen-enriched Claus technology, tail gas treating technology and sulphur degassing, and are able to meet the most stringent environmental standards.

Standardization
Increasingly, owners across the oil and gas industry are employing standardization opportunities to create long term efficiency and reduce development investment. Standardization can come in many forms through the project development cycle including:

- Replicated design
- Smart plug-and-play designs to minimize waste and to aid flexibility
- Creating standard modularized building block solutions
- Lean project delivery philosophy
- Standardization of equipment across an asset
- Standardization of supply chain relationships
- Standardization of operational processes.

To achieve the objectives of standardization, a rigorous project management structure, strong leadership and a commitment to collaboration from the owner, contractors and suppliers are essential.

Collaboration meets innovation: Oil Spill Tracking Buoys
The Deepwater Horizon disaster in 2010 highlighted that very little was known about how oil spills spread. Accurately tracking a plume means clean-up efforts are coordinated and the threats to ecosystems and environmental integrity reduced. Analysis has shown that oil drifts along the surface of ocean water at 97% of current speed, but only at a fraction of the wind speed. The buoys deployed during the disaster sat too proud in the water and were driven the wrong way by wind.

WorleyParsons devised an innovative way to accurately track spills with the Oil Spill Tracking Buoy (OSTB) and therefore allow the rescue teams to react more quickly to limit the impact on both the environment and communities. The OSTB tracks a surface oil spill by limiting the buoy’s movements to the metocean conditions found at the air-sea interface, in the upper 0.5 m of the water column. This novel solution required material selection and manufacture, ocean validation and telecommunication engineers to come together to produce a device which is largely underwater but can continue to communicate in real-time with satellites. The OSTBs can be safely deployed from oil platforms or via helicopter and weighing only 7 kg, an OSTB can be deployed and recovered by a single person.

The OSTB is a perfect example of when collaboration meets innovation.

“We challenged WorleyParsons to develop an accurate cost effective and flexible solution for tracking oil spills. The challenge was accepted and the solution delivered was a new benchmark in Oil Spill Tracking Buoys. Either hire or purchase, deployable from significant heights, long signal transfer durations and designed to accurately emulate the movement of oil on the water, the solution was more than acceptable.”
North Rankin Redevelopment Project - project delivery in joint venture

The North Rankin Redevelopment Project involved the installation of a new gas compression platform, North Rankin B (NRB), to sit adjacent to the existing North Rankin A (NRA) platform. Connected by two 100m bridges, both platforms operate as a single integrated facility known as the North Rankin Complex for the recovery of approximately five trillion cubic feet of low pressure reserves from the North Rankin and Perseus fields.

The project involved the development of NRB with three 27 MW gas compression trains, low pressure separators, utilities, power generation and accommodation and was executed concurrently with a significant life extension program for the existing NRA platform. Much of the work was of a pioneering nature. The project required innovative approaches in engineering, fabrication, transportation and installation, including several world firsts. Installation of the 24,250 tonne topsides was undertaken using the float-over method. This involved the tallest and second heaviest float-over installation in open water, performed by steering the world’s largest barge between the jacket legs and gently lowering the topsides into place.

The project involved a worldwide effort, drawing on people and resources from many countries. Project management was performed in Perth and was extensively supported in the design and procurement and construction phases by engineers from the Eos joint venture, a 50/50 joint venture between WorleyParsons and KBR. Hook-up and commissioning services were provided by Transfield Worley, a 50/50 joint venture between WorleyParsons and Transfield Services.

As Western Australia’s largest single producer of domestic gas and one of the world’s largest producers of LNG, it was vital for the North West Shelf Project that NRA continued to operate and deliver gas to capacity throughout the 4 ½ year offshore construction period. Drawing upon expertise from across the world and led by the project management team in Perth, the project had a heavy emphasis on engineering and safety in design considerations associated with constructing, installing and commissioning the new platform, while maintaining safety, operations and production from the existing facility. Successful start-up of the dual platform complex was achieved in October 2013.