

Frontier

Issue One – September 2009

Exploring our People, Partnership and Performance



Human Energy™

Australian Prime Minister
and WA Premier visit
Barrow Island

Capital Stewardship
Plays Key Role
in Developing
Gorgon Project



Gorgon Green Light

The Work Begins!



On the Cover

- Prime Minister of Australia, the Hon. Kevin Rudd MP, on Barrow Island with Chevron Australia Managing Director Roy Krzywosinski



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Chevron is one of the world's leading integrated energy companies and through its Australian subsidiaries, has been present in Australia for more than 50 years. With the ingenuity and commitment of more than 1,400 people, Chevron Australia leads the development of the Gorgon and Wheatstone natural gas projects; manages its equal one-sixth interest in the North West Shelf Venture; and operates Australia's largest onshore oilfield on Barrow Island and the Thevenard Island oilfields. The company is also a participant in the Browse liquefied natural gas development and is a significant investor in exploration offshore north-west Australia, one of Chevron's four global focus areas for exploration. In addition, Chevron's Perth-based Global Technology Centre provides technology support and solutions to the company's operations in Australia and around the world.
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Contents

Message from the
Managing Director

Feature Story

North West Shelf

Asset Development

Exploration

News

4 Heralding a New Frontier for Australian Gas Development

6 Gorgon Green Light!
The Largest Single Resource Project in Australian History – Has Officially Begun!

16 North West Shelf 25th Anniversary

18 Capital Stewardship Plays Key Role in Developing Gorgon Project

21 Deepwater Discoveries and New Acreage

22 Chevron Notice Board



● Roy J. Krzywosinski – Chevron Australia Managing Director.

Heralding a **New Frontier** for Australian Gas Development

We are about to enter a new era of energy at Chevron Australia, embracing new frontiers in deepwater operations, supporting a step-change in engineering advances and best practices in environmental management.

These are truly inspiring times for Chevron Australia. We have two-significant liquefied natural gas (LNG) and domestic gas projects in our development portfolio – Gorgon and Wheatstone – which have the potential to secure energy supplies and boost the Australian economy for many decades to come.

To reflect the importance of both projects, we have structured this first issue of Chevron Australia's new *Frontier* magazine with two front covers – to showcase both our mega-projects, and the people, partnership and performance that we foster to deliver a sustainable and high-performing energy business.

The final 'green light' for the Gorgon Project was achieved in mid-September 2009.

The project's scope includes three, five million tonne per annum LNG trains; a domestic gas plant; and what is expected to be the world's largest underground carbon dioxide injection project. In mid-April we became a foundation member of the Global Carbon and Capture Storage Institute, in a clear demonstration of Chevron Australia's commitment to reducing greenhouse gas emissions.

Initial works for the Gorgon Project construction will begin immediately with major activities on Barrow Island (90 kilometres offshore from Onslow)

expected to commence before the end of 2009. We are targeting our first LNG sales for 2014 and domestic gas in 2015.

The Gorgon Project is an emerging Australian icon that will transcend generations with its substantial economic benefits, best-practice environmental management and innovative technological solutions.

We've also been making good progress on our wholly-owned Wheatstone Project in north-west Australia, progressing key environmental approvals; undertaking environmental engineering and social impact studies on and around our selected site at Ashburton North; and meeting with key stakeholders.

Significantly, on 30 July we awarded the onshore front-end engineering and design (FEED) contract for Wheatstone. The FEED contract kicks off work for the design of the first phase of the project, which includes two LNG processing trains each with a capacity of 4.3 million tonnes per annum, and a domestic gas plant.

Wheatstone is a very exciting project and is a key part of our plans to commercialise our significant natural gas resource base in Australia and also future gas development opportunities in the western Carnarvon Basin, including third party gas.

The Gorgon and Wheatstone Projects will position Chevron as a leader in LNG development in Australia.

We recently announced two natural gas finds in the north-west of the Western Australian coastline – the Clio-2 and Kentish Knock-1 discovery wells. This builds on the successful results we have enjoyed in Australia to date.

We've also successfully bid for the rights to a deepwater exploration permit area in the Exmouth Plateau region of the Carnarvon Basin, expanding our operated exploration acreage to more than 53,000 square kilometres.

The company is realising the opportunities we have as a leading lease holder in the Carnarvon Basin and, as we move forward with the Chevron-operated Gorgon and Wheatstone natural gas projects, Western Australia will play a key role in the growth of our global natural gas business.

The Gorgon Project is an emerging Australian icon that will transcend generations with its substantial economic benefits, best-practice environmental management and innovative technological solutions.

Another noteworthy milestone this year is the North West Shelf Venture reaching 25 years of domestic gas production and 20 years of liquefied natural gas exports to customers in the Asia Pacific region. As an equal one-sixth participant in the Venture, Chevron Australia is proud of its involvement in the \$A27 billion development which accounts for 40 per cent of Australia's oil and gas production.

With the rapid growth of our workforce, we are renewing our commitment to achieving world-class safety performance, and supporting an Incident and Injury Free workplace.

Nowhere is this safety focus more evident than on Barrow Island, where there has not only been an increase in work, but also a much wider scope of activity. I would like to recognise the WA Oil team, in particular, for their ongoing focus on safety while responding to operational change.

Another key enabler of our ongoing business success is our focus on capital stewardship. More than ever before, we must demonstrate quality decision making to maximise our return on investment to deliver with excellence, while managing Chevron Australia's growing capital portfolio.

We've also put a lot of energy into working with our key stakeholders and community groups to build alignment and understanding. In particular, I would like to thank the Federal and State Governments for their ongoing support.

Finally, I'd like to acknowledge our people for their ongoing dedication and focus on working efficiently, cost-effectively and safely as our operations have been ramping up. We've been making solid progress in what is shaping up to be a momentous year for Chevron Australia.

Roy J. Krzywosinski

“It’s quite plain that this is a massive project. It’s not just the offshore drilling, it’s the piping onshore, it’s the CO₂ sequestration, it’s the LNG plant, and of course it’s the export facility as well...This is another good day for the Australian economy, for the building of jobs, and for the long-term development of Australia’s resource and energy sector.”

Prime Minister of Australia the Hon. Kevin Rudd MP, 1 September 2009



Gorgon Green Light!

The Gorgon Project - the largest single resource project in Australia’s history – has officially begun.

A Final Investment Decision by Project operator Chevron and its Gorgon Joint Venture Participants, ExxonMobil and Shell, has set Chevron and Australia on the path to becoming a major supplier of cleaner burning natural gas to the world.

At the same time, Australians will benefit from the Gorgon Project as it delivers huge economic benefits and creates more than 10,000 new direct and indirect jobs during peak construction.

The unprecedented scale and complexity of the project is ground-breaking and will make it an engineering icon – a modern-day equivalent of Australia’s Snowy Mountains Scheme.

The scope of the Project includes the construction of:

- ▶ Australia’s largest subsea infrastructure system;
- ▶ A three train, 15 million tonne per annum Liquefied Natural Gas (LNG) plant on Barrow Island supplying international markets;
- ▶ What is expected to be the world’s largest commercial-scale underground carbon dioxide injection project; and
- ▶ A domestic gas plant with capacity of 300 terajoules a day to supply the Western Australian mainland.

Chevron Australia Managing Director Roy Krzywosinski said he was proud to be part of a team set to make history and help generate economic benefits to generations of Australians.

“Chevron has been in Australia since 1952 and we are proud of our strong association with resource exploration and development, particularly here in Western Australia.

“We were here when first oil was discovered at Rough Range in 1953 and when natural gas first flowed from the North West Shelf in the 1980s.

“These were great moments in history and now we celebrate another with Gorgon – one of the largest LNG projects in the world being constructed right here in Western Australia.”

Greater Gorgon Area General Manager Colin Beckett said Chevron had assembled some of the best and brightest talent available to work on the Project.

“The official start of Gorgon is a milestone moment – not only for Chevron and the Project, but also the state and national economies.” Roy Krzywosinski, Chevron Australia Managing Director



Western Australia's economy will benefit from the Gorgon Project



Western Australian Premier, the Hon. Colin Barnett MLA on Barrow Island with Chevron Australia's General Manager Greater Gorgon Area, Colin Beckett.

“This is an exciting time for all of us – there is an incredible energy and pride flowing through our growing workforce and a renewed focus on delivering first gas,” Mr Beckett said.

The Gorgon Project will develop the Greater Gorgon gas fields off the north-west coast of Western Australia, home to Australia's largest-known gas resource of about 40 trillion cubic feet of gas. The fields contain enough resource to power a city of one million people for 800 years.

To avoid the need for offshore platforms, the Project will use subsea infrastructure for the production, gathering and transport of reservoir fluids from the gas fields to Barrow Island.

Approximately three LNG shipments per week will leave a dedicated LNG loading jetty for transport to major

international markets such as China, India, Japan and South Korea with the domestic gas piped to the Western Australian mainland.

The Gorgon Project will also break new ground with its commercial scale underground Carbon Dioxide (CO₂) Injection Project which will reduce its overall greenhouse gas emissions by approximately 40 per cent, or 3.4 million tonnes per annum (mtpa).

This will make the Gorgon Project one of the most greenhouse gas efficient LNG developments in the world, helping to achieve a net global reduction in greenhouse gases by about 45 mtpa - compared to the use of coal - equivalent to taking about two-thirds of all vehicles off Australian roads, or reducing Australia's annual greenhouse gas emissions by eight per cent.

The Gorgon Project will also continue Chevron's vital stewardship of Barrow Island, the A Class Reserve and haven for many species now extinct on mainland Australia.

Barrow Island has been an operating oil field for more than 40 years during which time Chevron has demonstrated that, with proper management and planning, development and conservation can coexist.

“We will work diligently on Barrow to manage our activities in a manner that supports and encourages positive biodiversity outcomes and avoids or minimises significant risks to sensitive species, habitats and ecosystems,” Mr Beckett said.

“The final conditions reflect the Gorgon Joint Venture Participants' commitment to safeguarding

Gorgon's rigorous and thorough environmental assessment process has been the most comprehensive in Australia. It culminated in August 2009 with the State and Federal Governments' final environmental approval incorporating some of the most stringent conditions imposed on a major project anywhere in the world.

Barrow Island's conservation values,” Mr Beckett said.

“It is the result of six years of preparation, including the research and contributions of numerous independent experts and extensive community consultation.”

In total the Gorgon Joint Venture is now committing approximately \$190 million in environmental offsets and Net Conservation Benefits, including \$62.5m to establish a North West Shelf Turtle Conservation Program and funding for a Department of Environment and Conservation presence on Barrow Island.

Mr Beckett said an effective quarantine management system was at the core of the Project's commitment to safeguarding Barrow Island's conservation values.

“Gorgon's quarantine management system is acknowledged by the WA Environmental Protection Authority as world's best practice and will be the world's biggest non-government quarantine initiative,” he said.

Mr Krzywosinski said above all else Chevron was dedicated to safely delivering the Gorgon Project.

“Our people are the key to safely delivering all our projects. Everyone has a duty to look after each other to make sure we all go home safely to our friends and families.

“Having the right people with the appropriate skills, commitment and 'operator mindset' is essential and this is where Chevron's corporate values and ongoing focus on safety, capital stewardship and operational excellence will be fundamental to our success.”

Mr Krzywosinski emphasised the Project was committed to providing full, fair and reasonable opportunity for Australian industry to supply goods and services.

“Gorgon will see \$33 billion* flowing to Australian purchased goods and services over its first 30 years. Many of the \$2 billion in contracts already awarded in 2009 alone include a significant percentage of local and regional content,” he said.

“The Project will be issuing further contracts that will run into tens of billions of dollars and there will continue to be opportunities for Australian industry and employment.”

Planning for the Gorgon Project started years ago the way most visionary projects do - with a series of resource discoveries - the West Tryal Rocks gas field in 1973, the Spar field in 1976 and Gorgon in 1984.

Further major discoveries in the early to mid 1990s (Chrysoar and Dionysus) culminated in reserves being certified and the Gorgon JVPs undertaking Front End Engineering and Design (FEED) work for an 8mtpa operation on the Burrup in 1998.

But the original timing did not prove right and, as with many projects, the Asian economic crisis in the same year delayed development soon after it had begun.

A year later a series of further gas discoveries - Io, Jansz and Geryon - re-invigorated the project and, in 2001, Chevron began promoting a standalone Barrow Island plant location.

The formal Environmental, Social and Economic Assessment process also began in 2001 and two years later the *Barrow Island Act 2003* was passed and 300 hectares of uncleared land, less than 1.3 per cent of the island, approved for development by the Western Australian Government.

In 2005 FEED started for a 2x5mtpa operation with supply from the Gorgon and Jansz-Io fields. Environmental approvals were granted two years later, but a simultaneous review of the Project scope and costs had led the JVPs to revise and expand the scope to a 3x5mtpa.

The Public Environmental Review started on the revised scope in 2008. In the same year the Project re-entered FEED and on-ground testing of a prototype drilling rig for the CO₂ Injection Project was successfully conducted.

At the same time, two deepwater rigs started operating off the north-west coast to undertake Chevron's largest ever drilling campaign in Australia as part of its commitment to commercialising the Greater Gorgon Area.

Pleasingly, 2009 has been a watershed year for the mega project with:

- ▶ the WA Environmental Protection Authority approving the revised and expanded 3x5mtpa scope with certain conditions
- ▶ upstream and downstream front end engineering and design completed
- ▶ key commercial agreements executed
- ▶ baseline survey work advanced and CO₂ baseline seismic work commenced on Barrow Island.
- ▶ In August Chevron welcomed the Australian Federal Government and the Western Australian State Government's decision to share between them the long-term liability for the Gorgon Project's carbon dioxide (CO₂) injection scheme.

With the Gorgon and Jansz fields in Commonwealth waters, and Barrow Island in State jurisdiction, government will indemnify the JVPs against third party claims following closure of the Project.

- ▶ State and Federal Government environmental approvals were completed in August and the Final Investment Decision (FID) made by the Gorgon JVPs in September.

Gorgon's story will be recorded in the pages of Australian history for generations to come.



◉ Euros on Barrow Island

* Independent economic modelling provided by Acil Tasman.

Barrow Island - A Special Place

Barrow Island has a special place in Western Australia's history, geography and social development.

Located about 90 kilometres north-west of Onslow in the Carnarvon Basin on the North West Shelf, it is Western Australia's second largest island, approximately 25 kilometres long by 10 kilometres wide and totalling 23,400 hectares.

It is recognised as a reservoir of flora and fauna that was isolated from the mainland by rising sea levels about 8,000 years ago.

The island supports almost 300 species of plants, 13 terrestrial native mammal species, more than 118 bird species, almost 2000 species of terrestrial invertebrates and at least 34 taxa of subterranean fauna. Three species of marine turtles also nest on the island.

In 1910, Barrow Island was designated as a Class A status Nature Reserve reflecting its importance as a refuge for wildlife species, some of which are endemic to Barrow Island and some of which have vulnerable and/or threatened populations on the mainland.

Barrow Island is vested in the Conservation Commission of WA and managed by the Department of Environment and Conservation (DEC) for the purpose of wildlife and landscape conservation, scientific study and preservation of features of archaeological, historic and scientific interest.

Fast Facts about Barrow Island

- ▶ Barrow Island has produced more than 300 million barrels of oil since 1967. Chevron Australia Pty Ltd is the operator of the Barrow Island Joint Venture within petroleum tenures L1H (R1), TL/3, L10, EP/61, EP/62 and WA-7-L. The other Joint Venture participants are Santos Offshore Pty Ltd and Mobil Australia Resources Company Pty Ltd.
- ▶ The bulk of the operating field is located in the southern part of the island and the majority of oil storage and export, air and sea transport and personnel accommodation facilities are located on the eastern coast.
- ▶ The Chevron-operated Gorgon Project will confine itself to a 300 hectare footprint on Barrow Island, 1.3 per cent of the land surface area.
- ▶ Project infrastructure will include subsea pipelines to Barrow Island; a gas processing facility on the island's east coast consisting of three, five million tonne per annum LNG trains; and LNG shipping facilities to transport products to international markets.
- ▶ More than 1000 crude oil tankers have safely loaded at Barrow Island.

“The Project currently employs around 1400 people within Chevron and engineering, procurement, construction management (EPCm) contractors.”



Who We Are

The Gorgon Project is being developed by the Australian subsidiaries of three leading international energy companies.

Chevron is operator of the Project with a 50 per cent interest, and ExxonMobil and Shell each hold 25 per cent.

Chevron, ExxonMobil and Shell are leading companies in the global oil and gas industry with proven technical and management skills for safe, efficient and environmentally responsible development.

The Gorgon Project’s downstream EPCm contractor is Kellogg Joint Venture (KJV), an unincorporated joint venture between KBR, JGC Corporation, Hatch and Clough.

The downstream component of the project includes the Front End

Engineering and Design for the Project’s gas processing and export facilities on Barrow Island.

The downstream team has established an LNG design office in London. Reporting to the Project Directorate in Perth, the office is a combined team of Chevron and Kellogg Joint Venture (KJV) staff and contractors.

The Project’s upstream EPCm contractor is Gorgon Upstream Joint Venture (GUJV) a 50/50 joint venture between Technip and JP Kenny.

The upstream component includes a subsea gas-gathering system which will be located on the ocean floor of the Gorgon gas fields west of Barrow Island in the main section of the site in 200-1, 350 metre water depth.

Gorgon Firsts

- › Biggest single private sector construction investment ever in Australia
- › The first commercial project in Australia to significantly reduce emissions by the underground injection of carbon dioxide
- › Expected to be the world’s largest underground CO₂ injection project
- › Australia’s largest subsea development of two world-scale gas fields
- › The world’s first detailed environmental impact assessment including public review and comment
- › The most rigorous and stringent conditions ever on a resource project
- › The most comprehensive quarantine system of its kind in the world, that will be the largest non-government quarantine initiative ever undertaken

Major Project Contracts let to date:

- › Barrow Island Supply Base and Logistics – \$200m
- › Integrated Logistics Services - \$600m
- › Barrow Island Site Preparation – \$500m
- › Barrow Island Construction Village – \$520m
- › Supply and Operation of Marine Vessels – \$240m
- › Mainland Supply Base Operations and Transportation – \$250m

Gorgon Project Benefits

- › 3x 5mtpa LNG trains supplying natural liquefied gas for international markets
- › Domestic gas plant capable of producing up to 300 terajoules per day
- › Learnings from the world’s largest commercial scale carbon dioxide injection project will be shared publicly
- › One of the most greenhouse gas efficient LNG developments in the world
- › Peak construction employment of 10,000 direct and indirect jobs
- › More than 3,500 ongoing direct and indirect jobs through the first 30 years
- › Over the first 30 years*:
 - Boost to Australia’s Gross Domestic Product by \$64 billion
 - Generating \$33 billion of local goods and services
 - Anticipated government earnings of \$40 billion
- › \$62.5m to establish a North West Shelf Flatback Turtle Conservation Program
- › \$60m Net Conservation Benefits program to improve biodiversity conservation values

Gorgon Project Timeline

Date	Action
1973	West Tryal Rocks field discovered
1976	Spar field discovered
1984	Gorgon field discovered
1994	Chrysoar field discovered
1996	Dionysus field discovered
1998	Reserves certified and Gorgon JVPs undertake Front End Engineering and Design (FEED) work (8mtpa Burrup) Asian economic crisis puts a hold on project
1999	Io, Jansz and Geryon fields discovered
2001	Chevron promotes standalone Barrow Island plant location
2003	Environmental, Social and Economic Assessment process completed <i>Barrow Island Act 2003</i> passed; WA Government approves 300 hectares for development
2005	FEED commences for 2x5mtpa with supply from Gorgon and Io/ Jansz Framework Agreement Signed
2006	Chandon and Clio fields discovered
2007	Environmental approvals for 2x5mtpa granted; 3x5mtpa scheme agreed by JVPs
2008	Public Environmental Review starts on revised and expanded scope Successful on-ground test of prototype drilling rig for CO ₂ Injection Project
2009	WA Environmental Protection Authority approves revised and expanded 3x5mtpa scope Gorgon Downstream FEED completed Arrival of Ensco 7500 rig starts one of the largest drilling programs in Australia Expressions of Interest for domestic gas State and Federal Government environmental approvals completed Production Licenses offered Gorgon Project Final Investment Decision (FID) by JVPs

A new era of energy

The Gorgon Project has touched many people on its journey to a final go ahead.

Chevron Australia, as operator of the Gorgon Project, along with its joint venture participants, ExxonMobil and Shell, would like to thank everyone that has contributed to the achievement of this significant milestone.

With the project now poised to begin a new chapter as work starts on Barrow Island, Gorgon is going to continue to touch the lives of many for generations to come.



Managing Director of Chevron Australia, Roy Krzywosinski, standing on the Gorgon site at Barrow Island.

North West Shelf Venture Celebrates 25 Years of World Class Energy



In 2009 the North West Shelf Venture (NWSV) commemorates two significant milestones – 25 years of domestic gas production and 20 years of liquefied natural gas exports to customers in the Asia Pacific region.

Representing Australia's largest resource development to-date, the NWSV supplies oil and gas to Australian and international markets from huge gas and condensate fields in the Carnarvon Basin on Australia's north-west continental shelf.

As an equal one-sixth participant in the Venture, Chevron Australia is proud of its involvement in the A\$27 billion project which not only accounts for 40 per cent of Australia's oil and gas production, but also boasts an enviable reputation for safe and reliable delivery of liquefied natural gas (LNG) to customers in the Asia Pacific Region.

Chevron's Manager of Non Operated Joint Ventures, Dave Minemier, said that the North West Shelf Venture has been a major contributor to the economic, social and environmental fabric in Western Australia and Australia for over 25 years, and will continue into the future.

"The Venture is a significant operation in Australia, injecting A\$3 billion a year in taxes and royalties, investing almost A\$800 million a year in operating costs, and providing employment and opportunities for Australian companies to participate in its projects.

Chevron and the Venture participants will continue to make significant investments in developing its infrastructure for the future, to make sure that the energy produced will continue to fuel development

around the world, and in Western Australia for generations to come," Dave said.

In July, Western Australian Premier, the Hon. Colin Barnett MLA joined the Venture participants, which included Chevron, Shell, BP, BHP Billiton, Japan LNG Australia, and Woodside Petroleum (operator) in commemorating the anniversary at a special ceremony at Perth Town Hall where he concluded his address by stating "No other project compares to the NWSV in the prosperity it has brought to WA... this is Australia's greatest industrial project".



North West Shelf Venture: A Snapshot Operations

- › The NWSV is Western Australia's largest producer of domestic gas, and currently provides about 65 per cent of total State gas production
- › Since 1989 the Venture has safely delivered more than 2700 LNG cargoes to customers in the Asia Pacific region and other parts of the world
- › The Venture also produces oil and condensate for international energy markets and has, to-date, delivered more than 1000 cargoes of condensate

Economic Investment

- › Production from the North West Shelf Venture accounts for about one per cent of Australia's gross domestic product and contributes more than A\$1 billion each year in taxes and royalties
- › Almost A\$800 million a year in operating costs is spent by the Venture, providing opportunities for Australian companies, creating employment, and investing in infrastructure to support the Shire of Roebourne community

Continued Growth

- › In 2009, the North West Shelf Australia LNG sellers successfully completed a new era of agreements with their original 1985 Japan customers for the additional supply of LNG
- › In 2008 the NWSV completed the A\$2.6 billion Phase V Expansion Project, the A\$1.6 billion Angel platform and the Perseus over Goodwyn Project
- › In March 2008, the NWSV approved funding of the A\$5 billion North Rankin Redevelopment Project which is scheduled for start-up in 2013

Capital Stewardship Plays Key Role in Developing Gorgon Project



Chris Oliver, Upstream Engineering Manager, has overseen some innovative technological solutions to economically unlock the deepwater gas resources of Chevron Australia's Gorgon Project.

Having joined the ABU in early 2003, he felt it was timely to share some of the key decision-making that supported the 'Jansz Northern Route' evaluation, prior to starting a new role with Chevron's Chuangdongbei natural gas operations in the Sichuan province in southwest China.

Project Background

"It goes without saying that we and our industry partners in the Gorgon Upstream Joint Venture - JP Kenny and Technip - have had to overcome technical challenges during front end engineering and design," Chris said.

"In particular, with running a pipeline from the deepwater Jansz field to the LNG plant on Barrow Island which has to traverse the continental shelf and deal with oceanic depths of up to 1350 meters." The 'Jansz Northern Route' is simply the direction of the proposed subsea pipeline, versus an alternative 'Southern Route' which has more benign terrain than the preferred route.

Detailed Risk Assessment

"In short, after a comprehensive decision analysis process, our Project Team recommended the Jansz Northern Route solution as representing a sound economic/risk investment," explained Chris.

"Through our modeling we were able to demonstrate that, despite its additional technical challenges, the Northern Route has similar levels of project risk to the Southern Route.

"Importantly, all risk associated with the Northern Route were deemed acceptable, in line with Chevron's risk assessment criteria."

Technical Challenges

"Clearly, as our industry drills deeper and farther for hydrocarbons, the stakes of such projects are rising. Many technical challenges also remain to be solved," Chris said.

"The innovative technological solutions offered by the Jansz Northern Route play a key role in enabling the Gorgon Project to be Australia's first all subsea 'mega project'.

"I mentioned the need to traverse the continental shelf in constructing the pipeline, in taking the Northern Route. This will be no simple matter. It will involve crossing an underwater escarpment 100-200 metres in height, with slopes of up to 80 degrees!

"There is also the impact of soliton waves to be considered. These are internal waves that can create high oscillating currents in water depths down to 250 metres and in some instances also break and cause high local currents of up to 2 metres that do not break up, spread out or lose strength over distance.

"Further, given the expected asset operating life of the Gorgon Project, we had to design a pipeline that could withstand this challenging environment for 50 to 60 years!

"This is definitely entering new territory for longevity in engineering design, as similar projects globally have had a considerably shorter design life. So there was a serious consideration of the lifetime pipeline integrity in our design work, along with the need to develop subsea repair technologies for the pipeline.

"This presented a number of challenges, which led to the development of the 'Super Span' solution."

Finding a Creative, Doable Solution

"I was impressed with the way these challenges were dealt with. First, our Project Team selected a southern route to Barrow Island which did not require crossing the steep sections of the scarp and worked to demonstrate this was a feasible base case," Chris explained.

"This involved adding a number of specialists to the team - including members from the Gorgon JVP ExxonMobil partnership, and from the University of Western Australia. They worked in conjunction with local specialist geotechnical consultants in evaluating the seabed profile, geotechnical hazards, span assessments and pipeline design.

"But the southern option added 45 kilometers to the pipeline route which resulted in increased pipeline backpressure and significant costs.

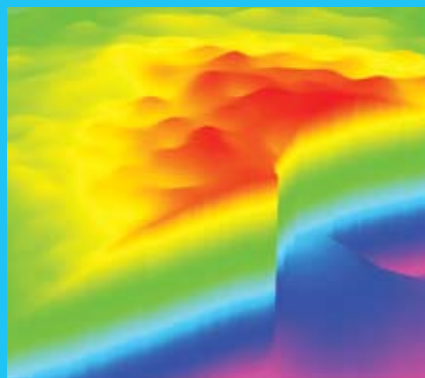
"The team then focused on route optimisation and creative, doable alternatives.

"A route passing just north of the Gorgon Field was subsequently developed that took advantage of a section of the scarp where the maximum height is only about 100 meters, and where the seabed slopes were such that the pipeline free span could be managed.

"In crossing the scarp, we will create a 'Super Span' which is a longer free span than is normally dealt with in pipeline design that behaves more like a cable than a 'traditional' beam with associated pipeline structural design challenges.

“The significant economic and improved reliability benefits identified in the evaluation of the Jansz Northern Route clearly demonstrate the critical link between quality decision-making and sound capital stewardship.”

Chris Oliver, Upstream Engineering Manager



“As you can imagine, we conducted a significant amount of testing to arrive at our recommendation to place the pipeline over the scarp – confirming the long-term integrity and robustness of the ‘Super Span’.

“For example, we’ve commissioned flow modeling of the pipe through the Energy Technology Company (ETC) in Houston to explore the ‘surge effects’ of the hydrocarbons due to the angle of the pipeline over the scarp, possible impact on flow regime, and resulting fatigue of the pipeline.

“Challenges which were overcome included transport of reservoir fines production from Jansz up the inclined pipe at the scarp crossing and developing techniques for safe trenching of the scarp soils to reduce pipeline spans and fatigue.

Economic and Improved Reliability Benefits

“Importantly, the Jansz Northern Route realises significant installation cost savings as well as improvements in the operability of the system due to the shorter overall pipeline length to Barrow Island,” said Chris.

“Improved deliverability from lower pipeline back pressures acting on the wells defers the installation of future drilling campaigns and capital spend, thereby increasing Chevron ABU’s Net Present Value (NPV) returns on our capital investment.

“The significant economic and improved reliability benefits identified in the evaluation of the Jansz Northern Route clearly demonstrate the critical link between quality decision-making and sound capital stewardship,” Chris concluded.

Chevron Awarded New Acreage

We have been successful in a bid, together with Shell Development (Australia) Pty Ltd, for the rights to a deepwater exploration permit area in the frontier of the Carnarvon Basin.

Permit area W08-22 is located 480 kilometres north-west of the Western Australian coastline in the Exmouth Plateau region. Chevron Australia will be the operator and its affiliate Chevron Services Australia Pty Ltd will hold a 50 per cent interest. Shell Development (Australia) holds the remaining 50 per cent.

Over the next two years, we will continue to spend on exploration and appraisal drilling in Australia. With this latest exploration permit, we now have access to more than 53,000 square kilometres of acreage and a non-operated interest in more than 16,000 square kilometres of acreage in Australia, all of which is located offshore north-west Australia.

The work program for the 6,167 square kilometre block includes: geotechnical studies; seismic data acquisition, including a minimum 501 square kilometre new 3D seismic survey to be conducted during the first year; and the drilling of one exploration well in the first three-year term. A seismic acquisition program will begin by early 2010.

Discoveries in Deepwater Frontier Support Long-Term Growth Plans

Our growing exploration, appraisal and development portfolio at Chevron Australia has been further strengthened with the discovery of two natural gas finds north-west of the Western Australian coastline.

In mid August 2009 Chevron Australia, along with Shell Development (Australia) Pty Ltd, announced that two deepwater gas discoveries had been made in jointly held blocks located in the Carnarvon Basin, Australia’s premier hydrocarbon area.

The Clio-2 and Kentish Knock-1 deepwater discovery wells will provide key support for our long-term growth plans, and delivery of Chevron’s global gas commercialisation strategy.

Both discoveries were drilled using the Atwood Eagle semi-submersible rig. The Atwood Eagle has a maximum water depth capability of 1,500 metres (5,000 feet) and can drill to approximately 7,600 metres (25,000 feet).

Chevron Australia Asset Development General Manager, Brenda Dulaney, said “These two gas discoveries demonstrate our commitment to actively exploring and developing Western Australia’s world-class gas resources.

“The company is realising the opportunities we have as a leading lease holder in the Carnarvon Basin.”

Offshore north-west Australia is one of four global exploration and development focus areas for Chevron, along with the Gulf of Mexico, offshore West Africa and the Gulf of Thailand.

Chevron Australia is the operator of WA-205-P with 66.66 per cent interest while Shell Development (Australia) holds the remaining interest. Chevron Australia also operates permit WA-365-P with a 50 per cent interest while Shell Development (Australia) holds the remaining interest.

“As we move forward with the Chevron operated Gorgon and Wheatstone natural gas projects, Western Australia will play a key role in the growth of our global natural gas business.”

Roy Krzywosinski, Chevron Australia Managing Director

Notice Board

News 2009

May

› **Chevron Australia and the Exmouth Early Years Action Group joined forces with Ngala**, an early parenting organisation in Exmouth, to provide a series of four parenting workshops aimed at increasing and enhancing the skills of parents.

› A **new partnership** between **Chevron Australia** and the **Royal Flying Doctor Service (RFDS)** is established and aims to build the capacity of the RFDS to raise community funds and expand its services in Western Australia. The Chevron RFDS Spirit of the West Awards, which is underpinned by a four year, \$1 million funding commitment from Chevron, will assist the RFDS to establish a new program to recognise top fundraisers and staff who have made an outstanding contribution through their service.

› **Caltex Australia**, which is Australia's biggest oil refiner and is half-owned by Chevron, **agreed to acquire the Mobil retail petrol chain** in May 2009. The deal requires Australian Competition and

Consumer Commission and Foreign Investment Review Board approval, in the coming months.

June

› **The Australian Petroleum Production & Exploration Association (APPEA) recognised Chevron with a Safety Performance Award**, which was presented by the Minister for Resources and Energy, The Hon. Martin Ferguson AM MP, at the 2009 APPEA Conference in Darwin.

The award acknowledged Chevron's 2008 safety performance and innovative approach to strain and sprain prevention, which included programs focusing on education, hazard identification and workplace design.

July

› **Chevron Australia hosted the Premier of Western Australia, the Hon. Colin Barnett MLA, on a visit to Barrow Island.** Colin Barnett said that: "There is no other project in Australia of the scale and value of the Gorgon LNG Project – this is of national and international significance."

› Chevron Australia and our **North West Shelf** partners, Royal Dutch Shell, BP, BHP Billiton, Japan LNG Australia, and Woodside Petroleum (operator), **celebrated 25 years of domestic gas production and 20 years of liquefied natural gas exports** to customers in the Asia Pacific region.

› **Chevron Corp. announced the award of a major onshore front-end engineering and design (FEED) contract** for the first phase of the **Wheatstone** natural gas development in north-west Australia. The contract for the first phase of the project – which consists of two liquefied natural gas (LNG) processing trains each with a capacity of about 4.3 million tons per year and a domestic gas plant – was awarded to Bechtel Oil, Gas & Chemicals, Inc.

August

› The **2009 Chevron Community Spirit Grants** were presented to 28 community organisations in the towns of Exmouth, Onslow, Karratha and Dampier in the north-west of Western Australia. These organisations have shared in up to \$80,000 to implement projects that will benefit their communities in the areas of: families and children, sport, volunteers and the environment.

› **Chevron Australia welcomed the timely environmental approvals of the expanded and revised scope of the Gorgon Project** development on Barrow Island by the Western Australian Environment Minister, the Hon. Donna Faragher MLC and the Federal Environment Minister, Peter Garrett AM MP. Peter Garrett said that: "Barrow Island has been the location of industrial activities for some decades. It is the case that it's a Class A nature reserve and I want to make note of the significant efforts that Chevron has undertaken in relation to the quarantine measures on that island for some period of time."

› **Chevron Australia** announced that it had been **awarded the rights to a deepwater exploration permit with gas potential offshore Western Australia.** Permit area W08-22 is located 480 kilometres north-west of the Western Australian coastline in the Exmouth Plateau region. The area is regarded as the deepwater frontier of the Carnarvon Basin, Australia's premier hydrocarbon basin, which includes the North West Shelf and the Greater Gorgon areas. Chevron Australia Pty Ltd announced two

deepwater gas discoveries located in the Carnarvon Basin, offshore Western Australia. The Clio-2 discovery well follows the significant Clio-1 discovery and is located in the WA-205-P permit area approximately 150 kilometres (90 miles) north-west of Onslow. Situated in 990 metres (3,200 feet) of water and drilled to a depth of 4,405 metres (14,400 feet), the well discovered 115 metres (375 feet) of net gas pay. The Kentish Knock-1 discovery well is located 300 kilometres (185 miles) north-west of the Western Australian coastline in the WA-365-P permit area. Situated within the Exmouth Plateau, the area is the deepwater frontier of the Carnarvon Basin. In approximately 1,200 metres (4,000 feet) of water and drilled to a depth of 2,500 metres (8,300 feet), the well discovered 34 metres (110 feet) of net gas pay.

› **The Australian and Western Australian Governments agreed to jointly accept any long term liability arising from the storage of CO₂ in geological formations under Barrow Island** as part of the Gorgon LNG project. With the Gorgon and Jansz fields in Commonwealth waters, and Barrow Island in State jurisdiction, government will indemnify the Gorgon Joint Venture Participants (JVPs) against third party claims following closure of the project. The decision for government to accept a share of the long term liability for CO₂ storage acknowledges the Gorgon LNG project's scale and significance to the Australian economy, the opportunity it provides to demonstrate CO₂ injection technology at industrial scale, and the environmental significance of Barrow Island.

September

› On a visit to Barrow Island the **Australian Prime Minister, the Hon. Kevin Rudd MP, announced the offer of production licences and offered the renewal of retention leases of gas fields in the Greater Gorgon Area.**

Chevron Australia was offered a total of five production licences for the Gorgon and Jansz-lo gas fields to provide initial gas to supply for the Project. Further, the renewal of seven retention leases was offered for Geryon, Orthrus, Maenad, Urania and West Tryal Rocks gas fields

› **Chevron Australia launched a brand new website** to showcase its growing Australian business. The new site provides a comprehensive overview of the Gorgon and Wheatstone projects, as well as our commitment to the environment and the community.

www.ChevronAustralia.com