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EXCELLENCE**



**MAKING MOBILITY  
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**THE TENGIZ  
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## Our Journey to Excellence: 10 Things You Should Know

We've made continual progress in building a culture of Operational Excellence.

Chevron is committed to the protection of people and the environment. Our achievements in safety, health, environment, efficiency and reliability – what we call Operational Excellence (OE) – are part of a journey over many decades.

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## Our Journey to Excellence: 10 Things You Should Know

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- 1 The roots of OE can be traced back several decades.
- 2 Chevron has the lowest incident rate in the industry.
- 3 OEMS Drives Performance Improvements.
- 4 We are committed to always follow our Tenets of Operation.
- 5 Around 70 percent of the workforce is employed as contractors.
- 6 We continually improve systems to prevent process safety incidents.
- 7 We have award-winning programs to protect the environment.
- 8 OE also means reliable and efficient operations.
- 9 Several programs are dedicated to employee health.
- 10 We strive for continual improvement, zero incidents.

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### 1 The roots of OE can be traced back several decades.



We've focused on safe, responsible operations throughout our history, but that intensified in the '80s following several non-Chevron industrial disasters costing hundreds of lives. Chevron initiated Policy 530: Protecting People and the Environment in 1989. In 2001, this became an enterprisewide OE strategy and the foundation of the OE Management System (OEMS): a systematic approach to managing safety, health, environment, reliability and efficiency.

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### 2 Chevron has the lowest incident rate in the industry.



Since 2001, workforce safety has significantly improved as a result of the increased focus on incident prevention. Days Away From Work Rate (DAFWR) has decreased 86 percent from 0.29 to 0.04; Total Recordable Injury Rate (TRIR) decreased 71 percent from 0.82 to 0.24 (2011 figures). Fatality rates are down from 6.12 to 1.8 (to Oct. 2012). As of 2011, Chevron had the lowest DAFWR and TRIR among industry peers.

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### 3 OEMS Drives Performance Improvements.



The OEMS was updated in 2007 and 2010 to reflect progress achieved and to continually improve OE processes and standards of operation. OEMS comprises three parts: Leadership Accountability requirements and expectations; Management System Process that systematically drives continuous improvement; and 13 subject matter specific OE Expectations. See link in the tab below for tools and resources.

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### 4 We are committed to always follow our Tenets of Operation.



"Do it safely or not at all" and "There is always time to do it right" are the overriding principles to our Tenets of Operation. We use these simple imperatives to guide daily decisions and instill Operational Discipline ("every task the right way, every time"). Every member of our workforce is empowered with Stop-Work Authority if they feel that any process or action is unsafe. Click on the tab below for a link to the tenets.

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### 5 Around 70 percent of the workforce is employed as contractors.



Contractors carry out many of the high-risk tasks and their safety performance is critical to our business success. When we measure our performance, we include contractor safety. Business units conduct significant contractor OE engagement including contractor safety forums to reinforce the company's OE expectations and tenets.

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### 6 We continually improve systems to prevent process safety incidents.



Recent incidents underscore the importance of achieving excellence in process safety. We are ramping up training and undertaking external reviews of process safety practices and programs, and raising the visibility of our primary process metric, Loss of Containment (LOC). LOC measures the number of incidents in which there was an unplanned or uncontrolled release of any material from primary containment resulting in a significant consequence.

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### 7 We have award-winning programs to protect the environment.



Our environmental stewardship process is a consistent, disciplined approach to improving performance and reducing impacts from the lifecycle of operations. We apply our Environmental, Social and Health Impact Assessment process to all major capital projects. Other efforts include investment in reducing the flaring and venting of natural gas, and a global Freshwater Statement. OEMS has driven an 88 percent improvement in our oil spill volume performance since 2004.

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### 8 OE also means reliable and efficient operations.



Many systematic processes help keep plant and machinery running reliably and efficiently. We've produced tangible gains in production efficiency and are driving comprehensive asset integrity plans across the business. Downstream and Chemicals has industry-leading mechanical availability and utilization rates. Its Unit Reliability Improvement Process systematically addresses process and procedures in refineries, plants and terminals. Our global energy efficiency performance in 2012 had improved by 34 percent compared with 1992.

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### 9 Several programs are dedicated to employee health.



In 2004, we launched a program to improve personal health and fitness for work. Among the successes has been the attention to HIV/AIDS and malaria education and prevention. Heart disease is the biggest health risk to our employees around the world, so we run a cardiovascular health program in several countries. Since introducing Repetitive Stress Injury (RSI) prevention programs in 2000, RSI incidents and rate have declined.

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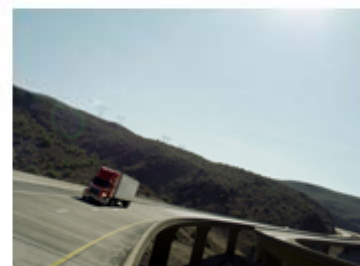


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### 10 We strive for continual improvement, zero incidents.



Our journey to zero is relentless. We have increased our focus on the five OE priorities: fatality prevention, process safety, environmental stewardship, operational discipline and compliance assurance. Our workforce is

helping us get there, actively deploying behavior observations, Stop-Work Authority and many other tools. Read more in the company's [Health, Environment and Safety Update](#).

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[Operational Excellence](#) – the route to all OE information.

[Fatality Prevention](#) – five steps to improving fatality prevention, plus many additional resources.

[Tenets of Operation](#) – this page also provides materials such as a stop-work authority card, posters and presentations.

[OE Management System](#) – explanation of the three main elements: Leadership Accountability; Management System Process; and 13 OE Expectations.

[Process Safety](#) – an explanation of process safety and related links and tools.

[RiskMan2](#) – a procedure for performing health, environment and safety risk assessments

[Environment and OE](#) – overview and resources.

[Reliability and Efficiency](#) – gateway to many related links and resources.

[Personal Health and Safety](#) – summary, links and resources.

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## Making Mobility Work

Employees and leaders are using iPads and iPhones as Chevron takes on the Enterprise Mobility challenge.

Armed with an iPad running a Chevron program called WellWalk, a young engineer rambles through our Kern River oil field in California, pausing to tap a satellite map on the touchscreen. His mission: pinpoint a site for a new well that won't disrupt the best producers nodding nearby.

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*Left: An iPad guides us to the optimal well location.*



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## Making Mobility Work

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### Getting the Measure of Mobility

"Our drilling rigs require a footprint at least 100 by 200 feet [30 by 60 meters]," says Mark Barrett, who helped design the program. "Before this, you couldn't test new well site alternatives without a tape measure."

WellWalk – see screen shot left – is Chevron's first mobile field application, or "app," invented exclusively for the iPad. More are likely to follow as part of our Enterprise Mobility initiative now enabling global adoption of tablets and smart phones. In addition to well siting, successes include: mobile access to select intranet sites such as Reservoir Management; a mobility champions working group; Mobility Resource Center; and Chevron app store.

Chevron's advocates and early adopters say we're just getting started.

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## Making Mobility Work

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### 'Next-Generation Information Delivery Platform'

Since we approved the use of Apple devices in 2011, more than 10,000 iPhones and iPads have been registered, says Jeff Cary, program manager of Enterprise Mobility. In January, we enabled access to our intranet on these devices, previously limited to e-mail, contacts and calendars, and recently optimized Inside Chevron (pictured) for viewing on tablet or phone. Access to SharePoint sites in particular enables workflow and is a big productivity milestone, Cary believes.

"This is the next-generation information delivery platform," he says. "It will enable business insights and quicker, more informed decisions. Ultimately, it will help us further integrate, automate and optimize our day-to-day operations and work processes."

Going mobile isn't new at Chevron, where nearly everyone has laptops and thousands carry BlackBerrys. Many employees used personally-owned iPhones and iPads before the Enterprise Mobility initiative – about 700 currently access our network, including some owned by leaders modeling mobility's potential.

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## Making Mobility Work

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### Planning to Track Operational Excellence

Younger employees view mobility as an essential capability and enabler of social media. iPads and iPhones are expected, for example, to enhance communication and collaboration via tools like podcasting and Yammer, our internal social media platform.

Cary expects demand for Apple devices to keep rising under Enterprise Mobility's international rollout – 14 countries so far, another 11 in 2013. This is supported by a Central Mobility Team under new operations manager Stacy Barlow.

Success stories include our Reservoir Management group, now presenting its web content, networking tools and data sites on iPhones to a 3,500-member community.

Other Enterprise Mobility pilots need more time and work: one aims to connect Apple devices to field facility alarms; another envisions a sophisticated mobile dashboard to track Operational Excellence (simulated in photo), but faces network security challenges. Going forward, devices meeting security requirements will be added.

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## Making Mobility Work

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### Convergence With Existing 'Handhelds'

From an iPad, Melody Meyer, president of Chevron Asia Pacific Exploration and Production, delivers major speeches, and Jay Pryor, president of Business Development (pictured at left with Sheila McNulty and Kurt Glaubit from corporate Policy, Government and Public Affairs), shows videos to potential partners. Bobby Ryan, vice president for Exploration, has loaded his iPhone with productivity apps.

But there's more to our mobility story. For a decade in refineries and oil fields, we've been deploying mobile data collection units, or "handhelds." Over 2,000 now help us automate routine tasks and streamline data analysis. None are Apple's, which aren't "intrinsically safe" like the rugged handhelds designed for use around petroleum operations and volatile substances, says Russell Crawford of Chevron Energy Technology Company.

But WellWalk's success suggests we'll ultimately see a safe convergence of both technologies to tap mobility's "limitless potential" in our operations. One vendor already offers a case which makes iPads intrinsically safe.

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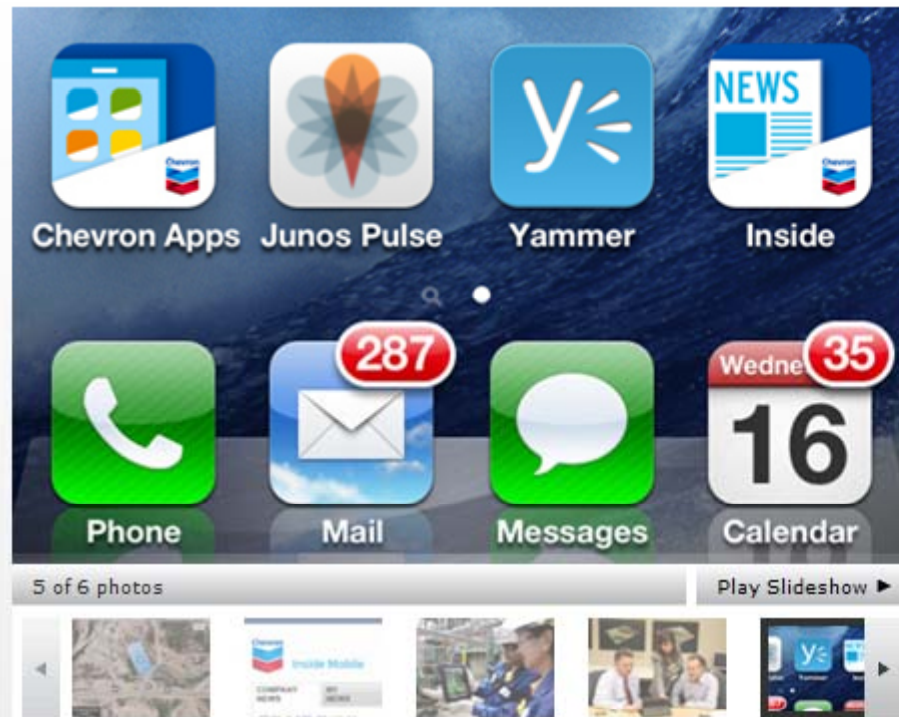
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### Looking to a Future World of Apps

In the years ahead, we'll adopt powerful apps from outside vendors – a challenge because of our security requirements. We'll adapt some of our most valuable, existing IT tools for use on tablets and smart phones.

As with WellWalk, we'll create our own apps with help from outside or from our Mobility Center of Excellence. Internal users can access these apps through the new Chevron Mobile App Store – one of the Chevron-related icons on this iPhone screen, left.

Because we're all familiar with existing Microsoft systems, Cary notes, our IT organizational capability needs some retooling for the mobility era. Maintaining network security will remain paramount because mobile solutions must access our internal data from the Internet: "We have to do this safely and securely, so while some ideas can advance now, others will take longer."

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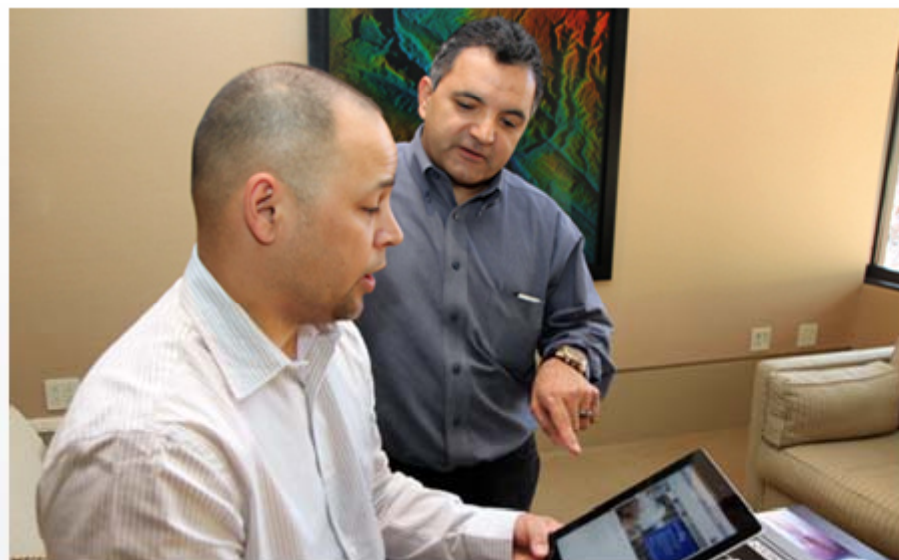
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### Employee Ideas Can Help Us Move Faster

Cary is confident that we'll find ideas for new apps of all kinds, logging mobility gains in individual, group and organizational efficiency. Our list of employee ideas for apps reached 250 last year: "There's no telling how many apps innovative employees will create to benefit the business."

So our direction is clear, the technology is here, but the outcome and pace are up to us, suggests Gerardo Peniche (pictured right), who supports mobility for the company's executives. Working on an iPad with Peniche is Joey Sablan, who provides IT support to executives.

"Which apps will truly enhance our work, deliver value and give us a return on investment in these devices?" he asks. "It's not easy to answer how we will enable workflows in new ways, gain competitive advantage and enhance the bottom line. But the pressure is on throughout Chevron, from partners and from the outside world, to move faster."

Find out more from [Global Mobility Services](#) on how to get connected.

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## How to Perform a Turnaround

Meticulous planning and a cast of thousands combined to achieve one of the biggest maintenance shutdowns ever.

The Sour Gas Injection and Second Generation Plant (SGI/SGP) has boosted production at Tengiz since 2008. A major make-over was due. The brief: deploy 6,500 people to clean, replace, repair, test and restart 500-plus pieces of equipment. And plan for future growth by including 200 tie-ins for later expansions.

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*Left: Part of the massive maintenance team at Tengiz.*



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## How to Perform a Turnaround

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### 1. Huge in Scope

This was the first simultaneous turnaround of SGI/SGP at the giant Tengiz oil field in Kazakhstan. They are two of the world's largest facilities of their kind, and this was one of the largest turnarounds in Chevron's history. The specially trained workforce clocked 2.6 million hours in total.

To put the scale of this in perspective, Chevron's other largest sulfur recovery units, at Pascagoula, El Segundo and Richmond refineries, have a combined total capacity of about 49 million standard cubic feet per day (mmscfd) from 11 plants. The Second Generation Plant's one unit has a capacity of about 80 mmscfd.

1 Huge in Scope

2 Planned Over Several Years

3 Prepared for 'Discovery'

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## How to Perform a Turnaround

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### 2. Planned Over Several Years

Planning began in 2010, and the planning team included a peak of 80 total positions from groups across Chevron's Tengizchevroil (TCO) affiliate.

The team used IMPACT – Chevron's Initiative for Managing PACesetter Turnarounds – a seven-phase approach to ensure production downtime is minimized and availability targets are met.

Final project costs were within budget and, although SGI startup was six days late due to problems with a turbine bearing, SGP startup was three days ahead of the business plan target and eight ahead of benchmarking data.

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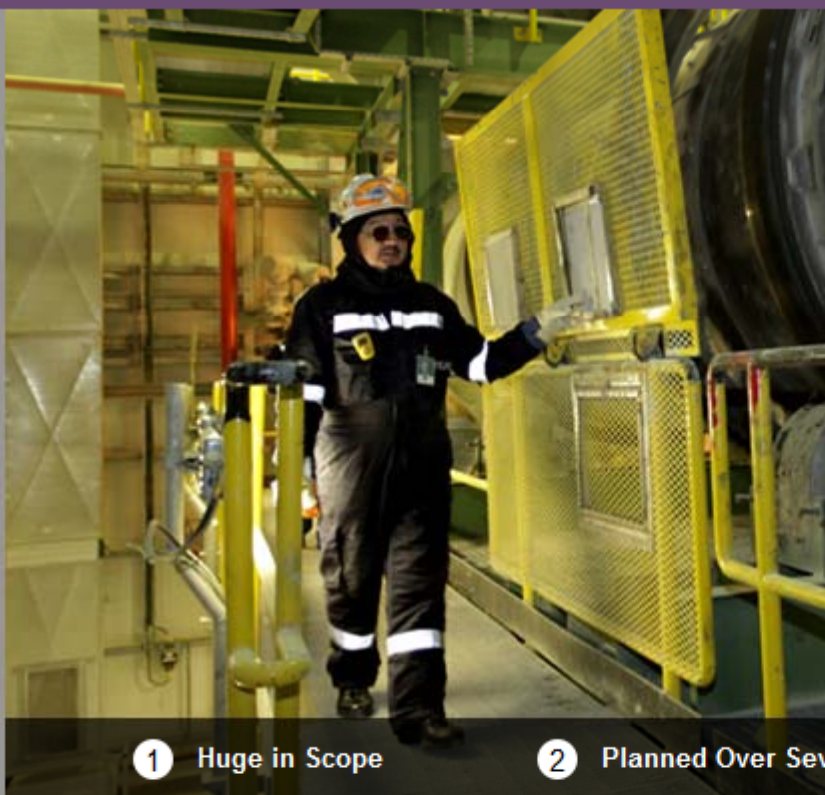
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### 3. Prepared for 'Discovery'

The IMPACT process developed contingencies for "discovery" work. And the team, sometimes on short notice, efficiently procured and transported a large volume of materials and tools for this.

All TCO teams placed a priority on supporting and supplying resources for the turnaround. "The design engineering team completed all original scope job packs on time, and we received great support from Chevron Downstream & Chemicals, Energy Technology Company and Global Power," says Brad Middleton, TCO production operations manager. "We also worked proactively with over 30 contract companies on all stages of planning."

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### 4. Trained in Safety

The 6,500 contractors completed safety classes before work began. Chevron's refining organization provided more than 40 people experienced in planned maintenance to help monitor progress and safety.

A safety team of about 30 people was put in place during execution. Behavior Based Safety observations were continually processed so that the turnaround manager could identify new high-risk behaviors. More than 13,000 observations were made with over 1,200 uses of Stop-Work Authority. "Contractors as well as employees were not afraid to stop the work if something unsafe was observed," says Middleton.

4 Trained in Safety

5 Tested and Flowing

6 Future Growth Ready



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### 5. Tested and Flowing

Quality Assurance and Control (QA/QC) and Reliability testing were covered in detail in the planning process. So when it came to completing the work, operators followed each piece of pipe to every item of equipment to ensure the plant was ready to go.

Of special note, TCO has a rigorous bolting program. Every flange or joint opened during the turnaround went through a QA/QC process to ensure the joint was made up correctly with the correct gaskets. Each was pressure tested to ensure it was tight and ready for accepting feedstock. "We opened over 7,000 flanges and started the plant without a single leak," says Middleton.

4 Trained in Safety

5 Tested and Flowing

6 Future Growth Ready



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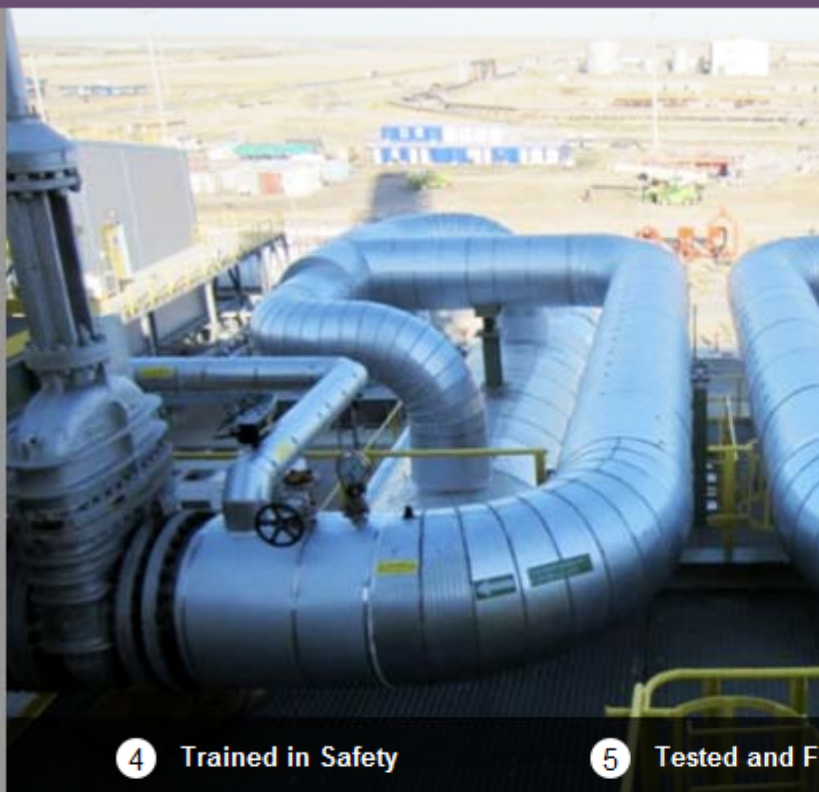
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### 6. Future Growth Ready

The 200 tie-ins enable future expansion to progress without having another major outage.

In particular, they pave the way for the Capacity & Reliability project. Preliminary work, pictured, began last winter prior to the turnaround.

With current gross crude oil production averaging 528,000 barrels of oil per day (2012), the next expansion of the field, the Future Growth Project (FGP), should increase production from this prolific asset to around 820,000 barrels per day.

4 Trained in Safety

5 Tested and Flowing

6 Future Growth Ready