



# Refining & supply



Now

*then*

**BELOW** In the beginning: Kurnell refinery's construction statistics are staggering even by today's standards. Some 30,000 tonnes of steel went into the work along with 33,600 cubic metres of concrete, 200 kilometres of pipes of all sizes, 877 concrete piles for the jetty and 56 crude oil, product and water tanks.

**ABOVE** The diesel hydrotreater (foreground) and benzene saturation unit at the Kurnell refinery in New South Wales were under construction in 2005 as part of Caltex's \$500 million Clean Fuels Project, one of the largest investments in the history of the company. During the year facilities were constructed at both refineries to enable them to reduce the level of benzene in petrol and sulfur in diesel to meet new Australian fuel quality standards.



## Both refineries during the year achieved throughput records in a number of areas



**ABOVE LEFT** Mark Hodgson (foreground) and Darryl Power in the control room at the Lytton refinery in Queensland.

**RIGHT** Operators in the Kurnell refinery control room in the 1950s monitored production without the help of today's high tech computerised equipment.



Caltex's Refining and Supply departments purchase crude oil, arrange its transportation to the company's refineries at Lytton in Queensland and Kurnell in New South Wales and refine the crude into petrol, diesel, jet and specialty products such as LPG and bitumen. The Supply department distributes products to a network of terminals around Australia and buys and sells products and schedules product movements to meet marketing sales.

### Key points for 2005

- 30% reduction in treated injury frequency rate for employees and long-term contractors
- Improvement programs enable near-record production at a time of significant planned shutdowns
- Higher utilisation and throughput
- Supply chain improvement program launched
- Construction of clean fuels facilities

2005 was a significant year for the company's refining operations which recorded strong throughput rates and utilisation at a time of strong refiner margins. This was achieved despite a high level of planned shutdown activity at both refineries for routine maintenance and preparation for clean fuels production.



**ABOVE LEFT** There are more than 100 petroleum product and crude oil tanks at the Kurnell refinery which hold an inventory of up to 600 million litres. Today the refinery processes around 26 million litres of crude each day, a dramatic increase on the 4 million litres a day throughput in 1956. **RIGHT** One of the original plants that went online 50 years ago was the no. 1 fluid catalytic cracking unit at Kurnell. It continues to produce petrol today.

Higher refiner margins were due to continued strong demand for fuels in the Asia Pacific region with the Caltex refiner margin in 2005 averaging US\$8.40 a barrel (2004: US\$6.60).

It was a year of exceptionally high project and construction activity across both Caltex refineries, with employees demonstrating a strong commitment to operational excellence and the success of the business.

### Production and utilisation

Production by Refining of all products in 2005 was 11.6 billion litres, the second highest on record after 2004 (11.8 billion litres), and the average utilisation for the refineries overall in 2005 was 74.5% (2004: 74.4%).

Steady refining throughput and utilisation rates enabled production to be maintained in a year of extended planned shutdowns, including a shutdown of one of the Kurnell refinery's crude units for 26 days in February and a 50-day full refinery shutdown at Lytton refinery in May/June.

Both refineries during the year achieved throughput records in a number of areas, setting a new total monthly production record of 1.1 billion litres in October.

These production achievements are evidence of the culture of continuous improvement, coordination across the supply chain and zeal for excellence demonstrated by employees.

### Building supply chain capability

The Supply department has significantly increased the volume of imports of petroleum products to meet marketing demands. Caltex imported 1.2 billion litres of transport fuels in 2005 which has steadily increased from 220 million litres in 2003. This volume is expected to further expand in 2006 primarily as a result of late completion of refinery facilities that allow the manufacture of 2006 compliant fuels. Our marketing business will continue to expand to meet customer demands and as a result, imports of finished products will continue to play a vital role in our overall supply chain.

Terminal infrastructure in North Queensland, Northern Territory and Victorian port locations is being improved to more efficiently receive imports.

In 2005, implementation began of a major supply chain improvement program to improve the flexibility and reliability of the supply chain. Designed to also support the planned expansion of our business, the program involves technology, process and organisational changes.

One of the initial projects completed in 2005 was a blending optimisation system to improve the utilisation of petrol blend stocks which will help the refineries meet the new clean fuels specifications. Other projects currently under way are related to significant improvements in information integration, refinery scheduling, demand planning and supply planning.

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**BELOW** These three 9.8 metre diameter spheres are designed to hold up to 453,000 litres of butane each. Butane is used as a component of petrol and autogas, and as an industrial fuel.



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**BELOW** Lytton refinery operators Rick Scott (left) and Dave Manning used a special model of the inner sections of the catalytic cracker to help plan major maintenance work in 2005.

**RIGHT** Twenty years ago, Rod Richardson was inspecting the results of a hydrostatic test on a heat exchanger at Kurnell refinery.



### Improvements deliver sound results and platforms for growth

Further work with the Loss Prevention System, contributed to a 30% reduction in treated injuries for employees and long-term contractors in 2005.

During the year, there was strong progress made on an improvement program launched in late 2004 to lift the productivity of refining operations. The program ranges from small low cost projects to major projects involving significant capital investment and environmental and statutory approvals.

The focus is on increasing production of diesel and high octane petrol, removing refinery production constraints and reducing unit costs.

By the end of 2005, the program produced significant cost and efficiency gains which are reflected in the increased profits.

One example of a low cost, high return project executed at the Kurnell refinery is a \$2.5 million crude blending project. The installation of additional pump and piping infrastructure increased flexibility to process different crude types combinations. This will improve plant efficiency and increase throughput, adding approximately \$3 million a year to earnings before interest and tax.

Caltex refineries enjoy a long history of  
close partnerships with their local communities

There has been a significant increase in the number of capital projects at the refineries, with around 300 small to medium projects in progress across both refineries in 2005. To accommodate this increased activity, alliances were formed with two external partners. The new arrangement provides the refineries with design engineering, construction and project management resources as needed.

### Clean Fuels Project

During the year, major resources were committed to the Clean Fuels Project which will cut air pollution by reducing benzene in petrol and sulfur in diesel to standards required by the Australian Government.

The \$500 million project involves four major processing units being significantly modified or newly constructed. These are diesel hydrotreaters at both refineries to enable Caltex to produce diesel to the new standards of 50 parts per million (ppm) of sulfur in 2006 and 10 ppm in 2009, and benzene hydrogenation units to produce petrol with a maximum of 1% benzene in 2006.

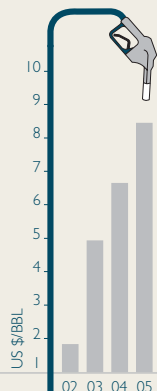
Completion of construction on the processing plants was delayed due to a shortage of skilled workers and late delivery of materials and equipment. The Australian Government granted Caltex a short-term variation to the 1 January 2006 deadline for producing fuels to the new standard.

The variation has allowed the company to ensure certainty of supply to its customers while plant construction and commissioning is completed.

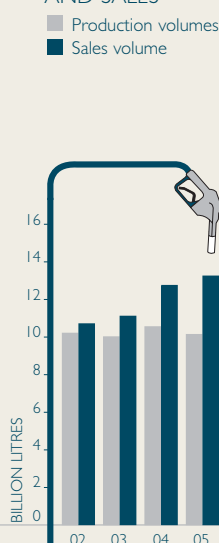
### Working with our communities

The Caltex refineries enjoy a long history of close partnerships with their local communities, including councils, community groups, sporting groups and schools. Both the Lytton and Kurnell refineries support local surf and lifesaving clubs, sports teams and welfare groups and a range of other local activities and events that are special to these communities. For example, Kurnell sponsors an annual operatic performance on the beach event at nearby Cronulla, and Lytton refinery every year awards 14 local primary school children a Special Service to the School Award.

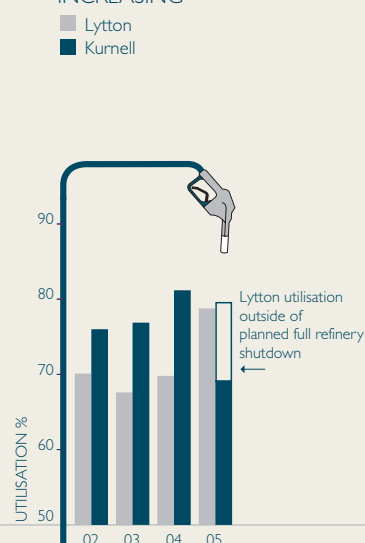
2005 CALTEX REFINER MARGIN



TRANSPORT FUELS PRODUCTION AND SALES



REFINERY UTILISATION IS INCREASING



Lytton refinery in July 2005 celebrated its 40th anniversary with a community open day attended by 3,000 people which included an official opening by the State Minister for Transport and Main Roads and Member for Lytton Paul Lucas MP, refinery bus tours and demonstrations of refining operations. Students from seven local schools provided entertainment with music, singing and dancing.

A colourful open day celebration was held for Kurnell refinery employees and their families in November to commemorate 50 years since oil processing was first tested at the refinery, ahead of a program in 2006 to mark the 50th anniversary since Caltex pumped its first refined fuel to market. Kurnell refinery employees, former long-serving employees and local residents formed a committee to organise the refinery's 50th anniversary celebrations at the Kurnell refinery in February 2006.

Both refineries are committed to communicating and consulting with neighbouring communities through programs of community meetings and participation in local associations.

