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Stephen is the National Manager of the Gas Association.

After a 22 year career in the Royal New Zealand Air Force as an Engineering Officer, in 1990 he spent a further four years as a Director of Capability Procurement for the Ministry of Defence.

In 1995 he commenced a new career, joining the gas industry as the Associations Executive Officer. Then, in August 1997, he was appointed the Association National Manager and Secretary.

Stephen is also the Deputy Chairperson for the Gas & Petrochemical Industry Training Organisation, Trustee of the Kennedy Educational Scholarship Trust, and the ICGTI National Executive representative.



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**Country Presentation**

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## **“Gas Industry of New Zealand 1996- 2000”**

### **Introduction:**

It is with pleasure that the Gas Association of New Zealand takes this opportunity to make its country presentation to the members of GASEX. It has been some four years since the New Zealand gas industry was represented at GASEX by the then President, Derek Johnston. Now, on behalf of Peter Harcus, our new Chairman, it is my honour to make this presentation.

In the past four years, New Zealand’s energy industry has seen many changes, particularly for the gas industry, which had fared better than its counterpart, electricity when it comes to Regulation reviews. Whilst gas has been able to work much closer with officials, its ability to create a more robust and competitive market stems largely from its earlier manufactured gas days, and thus its maturity in such business.

In consultation with the Industry, gas regulatory changes over the last four years have seen a review of the Gas Act and its subordinate legislation. The outcomes see legislation continue its “light-handed” way, compared to the converse experienced by the electricity industry. Nonetheless, it is clear in multi-fuel energy businesses that consistency of governance/regulation must strive to minimise compliance/transaction costs. Therefore, it is in the gas industry’s interests to adopt a number of the reporting protocols the Government created under “Information Disclosure”, which parallels some of those in the electricity industry.

Emerging more and more as a challenge for the energy sector, will be environmental concerns; and for countries involved in GASEX, it appears likely that these may impact trade, should such ‘green’ benefits need to be displayed on products, or reported in company annual reports.

One of the other emerging aspects in four years for New Zealand, has been the creation of the industry training organisations, which are partially funded with Government money and industries’ contributions, which are required to facilitate knowledge and skill-based learning to ensure the competence and ongoing safety of all concerned.

The business drivers that ensure companies heed the call, are well legislated internationally under Occupational Health and Safety. New Zealand and Australia have taken major steps to ensure it embraces those requirements through industry training organisations, especially equipped as facilitators, and in some cases replacing the historic HR divisions. New Zealand has started to broker its expertise internationally, to assist in funding its training requirements, thus reducing the burden on taxpayer and consumers.

As the Association looks to change, the acquisition of statistical data has become more difficult to obtain. Most of it is now provided via Information Disclosure to a Government Department. Statistics in this paper apply to the year ended September 1999, and comparisons apply to that year relative to the year ended September 1998, unless otherwise

specified. Overall comments related to actual and proposed developments in the gas industry are as at January 2000. Should you wish to access this level of detail, please do so via New Zealand Energy Data File [www.moc.govt.nz/ran/emisg/emsu/](http://www.moc.govt.nz/ran/emisg/emsu/)

### **New Zealand Gas Industry:**

**Ownership.** Reform of the gas industry began in 1987 when the Crown publicly floated 30% of Petrocorp, through which the Government had managed its interests in the production, transmission and distribution of gas. The Government's remaining interest in Petrocorp, including the Natural Gas Corporation Limited (NGC), was sold in 1988.

NGC is listed on the New Zealand Stock Exchange and 71.6% owned by Australian Gas Light (AGL), which acquired the interests of Fletcher Energy (FCE) in June 1999. The rest is owned by a spread of public shareholders.

NGC operates the gas transmission network and owns about two-thirds of the 2600 km of high-pressure gas pipelines. Maui Development Limited (MDL) and NGC are the two transmission owners, with NGC also operating MDL's pipeline.

In 1999, NGC concluded a contract to transport gas to a co-generation station at the Te Rapa dairy factory and a new gas transmission agreement with Contact Energy to transport gas to the Otahuhu B power station.

NGC operates extensive distribution and retail operations. There are five distributors: AGL/NGC Networks, Nova Gas, Qest, Wanganui Gas and Powerco and six retailers in New Zealand: NGC Energy Trading, Nova Gas, Qest, Wanganui Gas, which are also involved in distribution, while Enerco and TransAlta (recently bought by NGC) retail only. Retailer Enerco (formerly a distributor/retailer) is owned by the electricity retailer/generator Contact Energy, whose principal share holder is US-based Edison Mission Energy. Contact Energy bought Enerco from the Christchurch-based Orion Group. Powerco is a distribution network owner, having sold its gas retailing businesses to NGC in 1998.

Orion recently sold its distribution pipeline business to UnitedNetworks Ltd – until then, only an electricity network company.

**Deregulation.** The gas (and electricity) industries were deregulated in 1993 with, inter alia, the removal of gas franchise areas and the lapsing of wholesale gas price controls (retail) (price control had already lapsed).

**Production.** Currently, gas is entirely produced in the Taranaki region, where eight fields produce oil and gas (including condensate). New Zealand's production of natural gas is still dominated by the Maui field. The Maui field includes Maui F Sands, which commenced production in September 1996, and is owned by Fletcher Challenge Energy, Shell Petroleum Mining and Todd Energy. These two fields together provided 90.7% of total production. They are both operated by Shell Todd Oil Services Limited.

Other producing fields in the year to September 1999 were McKee & Kaimiro owned by Fletcher Challenge Energy; the Waihapa/Ngaere, Tariki/Ahuroa and Piakau (commenced production in November 1997) fields owned jointly by Fletcher Challenge Energy and Bligh Oil Minerals New Zealand Limited; and Ngatoro owned by Fletcher Challenge Energy, New Zealand Oil and Gas Services Limited and Ngatoro Energy Limited. Together they provide the remaining 9.3% of total gas production. See Table 1a.

Table 1a: Gross Gas Production by Field

<i>Maui</i>	<i>72.5%</i>
<i>Kapuni</i>	<i>18.2%</i>
<i>Tariki/Ahuroa</i>	<i>4.1%</i>
<i>McKee</i>	<i>3.8%</i>
<i>Ngatoro</i>	<i>0.7%</i>
<i>Kaimiro</i>	<i>0.5%</i>
<i>Waihapa/Ngaere*</i>	<i>0.2%</i>

\* *Waihapa/Ngaere Includes Piakau*

As Table 1a illustrates, the Maui Field produced 72% of New Zealand's gross gas production. Total New Zealand gas production in the year ended September 1999, excluding gas reinjected or flared and LPG extracted, rose 17% to 220.5 PJ compared with 187.9 PJ in the year ended September 1998. This was mainly due to increases in production at the Ngatoro (up 22%), Maui (including Maui F Sands, up 20%), and Tariki/Ahuroa (up 6.9%), McKee (up 6.3%) and Kapuni (3.4% up). The Waihapa/Mgaere (includes Piakau) and Kaimiro fields decreased their production by 23% and 6.5% respectively.

**Distribution.** There is an extensive gas reticulation system in the North Island comprising 2600 km of high pressure gas transmission pipelines, and low pressure distribution systems in most cities. In addition to natural gas, the gas industry produced 10.4PJ of liquefied petroleum gas (LPG), of which 4.6 PJ was exported.

**Compressed natural gas.** CNG is supplied to the automotive market through North Island service stations. The CNG market has decreased markedly following the removal of government subsidies in 1987.

**End use.** The three major groups of users of gas in New Zealand are petrochemicals, electricity generation and direct reticulated users, as the following table illustrates.

Table 1b: Gas Use by Sector

<i>Electricity Generation (including cogeneration)</i>	<i>42.5%</i>
<i>Methanol</i>	<i>38.7%</i>
<i>Industry &amp; Commercial</i>	<i>13.0%</i>
<i>Ammonia/Urea</i>	<i>3.0%</i>
<i>Residential</i>	<i>2.6%</i>
<i>Transport</i>	<i>0.2%</i>

**Petrochemicals.** Forty-two percent of New Zealand’s natural gas was used for petrochemicals, in the production of chemical methanol at the Motunui and Waitara methanol plants (both owned and operated by Methanex New Zealand Limited). Crude methanol is produced from natural gas and then either distilled into high (“AA”) grade methanol or made into synthetic petrol with the product mix depending on relative prices. In April 1999, Methanex permanently closed the methanol to petrol unit at the Motunui plant. Gas used in chemical methanol production increased by 25% compared to last year. Petrochem Limited (owned by BOP Fertiliser since 1992) manufactures ammonia and urea from natural gas. The ammonia/urea plant used Maui gas for fuel and a mixture of Maui and Kapuni LTS (gas which has been treated in the low temperature separator at the Kapuni Gas Treatment Plant) gas as a feedstock.

**Electricity generation.** Forty-two percent of New Zealand’s gas was used for electricity generation, including cogeneration. Maui and some Kapuni gas is used by the two main generators, Contact Energy Limited and ECNZ and its successors. The Taranaki combined cycle power station at Stratford has been fully operational since July 1998 and is a major generator. It is owned by TransAlta (recently bought by NGC). Gas is increasingly being used for cogeneration (Southdown Power Station, Kiwi Cooperative Dairies Limited and Kapuni Gas Treatment Plant). Gas consumption for electricity generation and cogeneration in the year ended September 1999 increased 26% and 13% to 69 PJ and 22 PJ respectively.

**Other end use.** The remaining 16% of New Zealand’s gas use was reticulated throughout the North Island (by NGC) through a high-pressure pipeline system direct to major users, and to gas utilities for distribution to other industrial users and to the commercial and residential sectors. Of the 34 PJ of consumer energy (excluding cogeneration) reticulated in the year ended September 1999, 22.2 PJ was used by industry, 5.4 PJ by the commercial sector, 5.6 PJ by the residential sector and 0.4 PJ in transport (as CNG), as the following table illustrates.

Table 1c: End use by Sector & Consumers

Sector	Consumers	
<i>Industrial (excluding cogeneration)</i>	<b>68.0%</b>	
<i>Commercial (excluding cogeneration)</i>	<b>15.2%</b>	<b>10,800</b>
<i>Residential</i>	<b>16.7%</b>	<b>196,000</b>
<i>Domestic Transport</i>	<b>1.1%</b>	<b>90</b>

Annual per capita end use of gas is 8.8 GJ (234 M<sup>3</sup>).

Reticulated demand (observed, excluding cogeneration) decreased 7.6% to 34 PJ compared with 36 PJ in the year ended September 1998.

### **Training & Competence:**

**The Gas and Petrochemical Industry Training Organisation (G&P ITO):** The G&P ITO is one of 52 industry training organisations established under the New Zealand Government's Skill New Zealand industry training strategy. This strategy seeks to raise skills and provide a flexible, dynamic workforce that is globally competitive.

The Gas and Petrochemical Industry Training Organisation is New Zealand's leading facilitator of competency-based learning and development for the gas, petrochemical and other related industries. The ITO is the recognised standards-setting body for the industry and represents all major employers in the upstream and downstream sectors of the hydrocarbon industry in New Zealand. The New Zealand Government through the New Zealand Ministry of Education, in part, funds the Organisation.

The ITO specialises in practical and innovative workplace learning solutions that encourage life-long learning, boost competitive advantage, and recognise the skills and current competency of individuals.

Established in 1994, the ITO has a strong track record in working with businesses to implement competency-based learning. Learning and assessment outcomes are measured against nationally developed and endorsed competency standards, which clearly define the competences for all areas of skill and knowledge in the hydrocarbon industry, from drilling and extraction to product retail and marketing.

A ten member Board representing all industry stakeholders governs the ITO. Sector advisory groups of technical experts ensure that competency standards, training and assessment are fit for purpose.

**Training and Assessment Based upon Industry Standards:** The Gas and Petrochemical ITO is recognised by the New Zealand Qualifications Authority [NZQA] as the official training standards-setting body for the hydrocarbon industry. All training and assessment administered by the ITO is assessed against competency standards which are recognised in both New Zealand and Australia, and which represent the best and latest in global best-practice and technology.

These standards have been developed specifically by representatives from throughout the industry, and are reviewed regularly to ensure their continued relevance to the industry.

Each competency standard clearly defines what a person must know and be able to do, to be considered competent in a particular area of skill and knowledge.

The ITO have, in addition to these competency standards, developed a series of Common Assessment Tasks [CAT's] which are intended to support the assessment process, ensuring national and international validity and consistency of assessment process and outcome.

As the nationally-recognised standards-setter for the industry, the ITO has access to all 15,000 competency standards on the New Zealand National Qualifications Framework. This means that in addition to using ITO industry-specific standards, businesses are able to access standards for other relevant areas such as management, health and safety, communications and teamwork. In this way, the ITO can deliver learning solutions which are applicable across an entire organisation.

**Staff and Services:** Our staff combine extensive industry experience with expertise across all aspects of competency-based education. We work with a wide range of companies, in New Zealand and around the world, to lift skills and performance through on-job/off-job learning leading to competency assurance. Working closely with employers and training providers, our staff are committed to developing and maintaining industry partnerships that deliver innovative learning solutions.

The ITO's products and services are designed to meet the diverse needs of an evolving industry. We can:

- establish the effectiveness of your current training arrangements;
- identify future training needs for your company and its staff, ensuring that your business meets its obligations under regulatory legislation;
- create standards-based learning solutions that further your business and production objectives;
- broker, coordinate and administer the delivery of all your training and assessment activity;
- ensure that all learning and development has measurable outcomes and is linked to your bottom line business performance;
- tailor learning options to suit the size and nature of your operation;
- ensure the quality and validity of your assessment processes, activities and outcomes;
- provide ongoing advice on issues of learning and development.

Moreover, the ITO can package the delivery of all the above into the development and implementation of a Competency Management and Assurance Framework which delivers and maintains ongoing competency assurance.

**International Services:** The Gas and Petrochemical ITO is a world leader in the field of workplace learning and assessment. We work with companies around the world on learning and development strategy, and competency assurance and quality management systems for learning and development delivery.



The ITO has successfully implemented competence management and assurance systems for both large multinational organisations and smaller employers in New Zealand and abroad. These focus on ensuring at all times the competency of employees to perform their work safely, effectively and efficiently. The ITO has implemented such Competency Management and Assurance Frameworks linked to Asset Management Processes for companies such as Dynochem New Zealand, Shell Todd Oil Services, and most recently, Shell Philippines Exploration's \$USD2 billion Malampaya Field Development Project.

### **Future Regulatory and Business Challenges**

The past four years have seen the emergence and maturing of a number of legislative requirements, most of which impact on reporting:

- Business and Safety Reporting;
- Information Disclosure on asset valuation – (ODV) and Safety Systems;
- Rating methodology – ODV, with some utilities opting for ODRC;
- Local Body rating – differentials based on ODV.

Also the gas industry has taken the lead to produce its own Memoranda of Information relevant to:

- Gas pipeline open access;
- Reconciliation & Metering;
- Transportation Tariffs;
- Emergency Outage Planning;
- EnergySafe review and safety standards funding;
- Competence - minimum levels of entry;
- Separate gas transport and trader business units.

Overall, New Zealand faces a number of significant challenges as the energy industry considers the “utility” approach. Brought about by its population, demographics and the retail one stop shop approach, even the Gas Association has looked to change to better suit the dynamics of its members’ business.

Local Authorities will look to place utility assets on their valuation rolls, and watch the differential rating potentially swell their coffers. Some would now question whether it is timely to reassess the entire utility world, and in the Gas Association’s experience, it is much better to lead such debates.

As GASEX will no doubt look to do, my members already ask where they can maximise their return for such liaisons. Perhaps then, GASEX must look to its collective strength to see what and where it wishes to be in 2002, and the value it can derive from its collective experience, competence and knowledge, and the value this opportunity offers for networking?

So, as we all strive to look for improvement, and a greater return on investment, one is reminded of Henry Ford's comments.....“Don' find fault – find a remedy”.

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