In the past 3 months the subject of LPG has been given considerable attention in Parliament, in the media and by a larger section of our population than is generally realised. This brief talk is designed to provide some background to the events of recent months.

**Origins and Sources of LPG in Australia**

Liquefied petroleum gas or LPG is the collective name for the hydrocarbons, propane and butane, members of the same family of hydrocarbons as natural gas, and pentane, which is a significant constituent of petrol.

Butane and propane are readily liquefiable at moderate pressures or by refrigeration and are distinguishable from natural gas in that the latter can only be liquefied by reducing its temperature and not by simply applying pressure.

Liquefied natural gas is known as LNG and is transported at -165°C celsius in very expensive cryogenic vessels. LPG is generally transported and stored in pressure vessels and cylinders which are a familiar sight in Australia, but it can also be transported in refrigerated form at -48°C celsius, which is a low temperature rather than a cryogenic operation.

This difference is one of the principal reasons for the interest in LPG. The technology involved in liquefying and handling is so much simpler than is the case with LNG.

LPG in Australia is derived from separation during crude oil or natural gas production, or from the refining of crude oil.

In Australia, natural gas is reticulated to consumers in various centres which are connected by pipeline from the gas fields. Not all gas wells are suitable for extraction of LPG as some produce a relatively dry gas. Fields with a wet gas content such as Bass Strait, do and have lent themselves very much to the production of LPG.

The Cooper Basin field has to date produced dry natural gas. However, large volumes of wet gases are shortly to be tapped which could make available 250,000 tonnes per annum of LPG. The northwest shelf project is expected to produce vast volumes of natural gas and also approximately 750,000 tonnes per annum of LPG.

The other major source of LPG in Australia is its production as a by-product of the process of cracking crude oil from which a variety of other petroleum products is derived. Refineries produce LPG in varying quantities but every refinery must produce some LPG. Currently, refinery production in Australia is about 350,000 tonnes per annum.

**The Growth Pattern of Use in Australia of LPG**

Prior to the advent of refineries in Australia, small quantities of LPG were imported from overseas, but with the construction of refineries in the 1950s, LPG was marketed in volume in the familiar cylinders using such tradenames as Portagas, Heatane Gas and Speed-E-Gas. The market was primarily country homes, farms, fishing vessels, lighthouses, caravans, etc.

The big step forward in the use of LPG came in the late 1960s and early 70s in the replacement by LPG of coal gas in almost every provincial town and city in Australia.

Historically, towns gas was derived from coal. This became an uneconomic method of production. Thus, since the mid-60s, coal has been replaced by LPG as a source material for the production of gas for reticulated purposes in country areas. LPG is processed through a reforming unit in order that the resulting gas may be readily distributed through the mains network established for towns gas distribution. This change involved major capital adjustments in the close down of existing coal gas works and installation of LPG storage and reforming plant.

The use of LPG has allowed further development in gas distribution, i.e. "in situ" supply which obviates the necessity for a reticulation system. Where reticulation systems have become inefficient, the in situ filling of cylinders on the customers premises has been a desirable alternative.

Many country gas utilities have in recent times borrowed large sums of money to fund the capital investment necessary to modernise their plant in the
move from coal based gas to the alternatives I have mentioned. The repayment of these loan funds has been geared to the recovery of capital costs by amortisation over many years of subsequent use. Thus the utilities particularly local Government, are locked into the use of LPG for a long period after conversion. This has been a significant factor disregarded by many advocates of a quick move to world parity pricing.

Production and Consumption of LPG in Australia

In the 1960s, all the LPG in Australia was produced by local refineries and consumption approximated refinery production. In 1971 domestic consumption was 320,000 tonnes approximating to refinery production. Domestic consumption has risen to 470,000 tonnes in 1979. An official figure is not available for local refinery production in 1979, but is probably around 350,000 tonnes with the balance of consumption of over 100,000 tonnes being made up of naturally occurring LPG from the Bass Strait. In that year production from the Bass Strait was over 1.7 million tonnes, about five times refinery production. About 1.6 million tonnes was exported.

Exports of LPG to Japan

The majority of LPG exported from Bass Strait is sold to Japan. The value of the product over the years in which it has been exported to Japan has continued to increase and current sales are made at prices at the order of A$250 per tonne. The FOB price currently being achieved is basically in line with the value of LPG on the world market. This is known as the export parity price.

At the end of 1973, prior to the massive increase in world crude prices, LPG was being exported from the Bass Strait for less than $30 per tonne. The LPG export project was, it seems, funded and implemented on the premise that FOB sales at less than $30 per tonne were sufficient to justify the investment, and important point to bear in mind at a time when there are suggestions that LPG prices of over $200 will not encourage production of that resource.

Federal Government’s LPG Policy

An important part of the Government’s energy policy as announced by Prime Minister Fraser on the 27th June, 1979, was the use of Liquid Petroleum Gas for automotive purposes. The Prime Minister said, “LPG has considerable potential for saving motor spirit in both the short and long term. Ultimately 10 to 15% of Australia’s motor vehicles could be powered by LPG.” At that time the Government decided to remove the 2.125 cents per litre tax on LPG for automotive use and the 15 percent sales tax applicable to kits used in vehicle conversion of LPG.

It is interesting to note that more than 200,000 taxis in Japan are running on LPG. In 1978 automotive usage of LPG in Japan was 1.7 million tonnes. There are about 4,000 taxis in Sydney, a number of which have already converted to LPG. It should be noted that the exhaust emission from a vehicle burning LPG is cleaner than that from a petrol driven engine. It should not be overlooked that wholesale conversion of Sydney taxis to LPG could reduce inner city pollution levels to a substantial degree.

Inland Versus Export Sales

LPG used in the various States in Australia is generally sourced in the first instance from available local refinery suppliers. As the use of LPG at most interstate locations exceeds the supply of readily available product, it naturally becomes necessary to import “top up” product from, at this stage, Bass Strait. Other naturally occurring LPG sources will without doubt in the future also provide top-up material for domestic consumption.

The recently established Government policy which requires producers to meet domestic needs at a price of $205 per tonne may be criticised by those producers whose ability to achieve higher prices on a world market is accordingly restricted. This apparent burden must be seen in the context of what benefits should flow to Australians generally through our good fortune in having access to this energy source. The $205 per tonne is equivalent to about 42 cents per therm. Producers generally enjoy delivered price of less than 10 cents per therm for natural gas which may well come from the same hole in the ground. This price is all the producer would achieve if the LPG remained in the gas stream.

Recent LPG Price Movements

The pricing and policy situation today must be examined in the light of recent years. The price of propane had risen by over 100% from $69 in August, 1978, to $147 per tonne in August, 1979. Early in January, 1980, the Federal Government announced a temporary 3 year subsidy scheme of $80 per tonne for domestic users of LPG. On the 29th January, 1980, the PJT announced an increase of $105 per tonne for Victorian refinery propane and $166 per tonne for butane. In accordance with Government policy, the domestic price of Bass Strait LPG was raised by the same amount, thus setting the new
propane price at $252 per tonne and butane at $301 per tonne.

This negated the temporary relief given to domestic users by the Government some days earlier. It also put at risk the potential petrol saving measures announced by Mr. Fraser on the 29th June, 1979. This increase announced by the PJT meant an increase in Sydney prices for propane of 231 percent in the 2 years since December, 1977, and for butane of 471 percent. These rises compare with 92 percent for super grade petrol, and 89 percent for distillate and were, to my mind, obviously inequitable.

In arriving at this decision, the PJT departed from its usual approach of basing approval upon cost increase factors, to one of arbitrarily selecting an alleged world parity figure for LPG and increasing the price to that figure. This approach was not used in setting the prices for other products refined from oil.

In this regard it was inconsistent that all other petroleum products were increased by approximately $45 per tonne whereas LPG was increased by $105 and $166 for propane and butane respectively. Further, it was incomprehensible that having adopted “export parity price” for LPG, that there should also be a differential of $13 per tonne between Sydney/Brisbane and the Melbourne prices.

You can imagine the justifiable reaction in Queensland to a PJT decision which in effect said World parity price for Victoria but Queensland pays $13 more.

It seems that those people who, through their submissions, persuaded the PJT to adopt a world parity pricing concept for LPG, should now do some deep soul searching. In retrospect they have in my opinion, probably done their employers an extreme disservice by failing to recognise both the extent to which LPG is used around Australia and the extremely adverse affect such a dramatic price movement would have on those users. The furore created by that inequitable price increase has now, and for the future, created an awareness of the importance of LPG pricing policies in the minds of hundreds of thousands of Australians, and in particular Local Government and State Government bodies.

While the community may basically accept a world pricing policy concept, it can only be in circumstances where it impinges fairly on all sectors of the community. For example, where decentralised industry relies upon LPG to produce goods in a market where their competitors may be using natural gas or an industrial fuel oil, there could be no doubt of the inequity in applying price increases as out of balance as those which applied on January 29.

**Difficulties for Consumers**

Regard should be given to the fact that no other suitable source of energy is currently available to thousands of consumers in many towns away from the main centres of population and throughout the country. These people rely almost entirely on LPG for many purposes and had to bear quite dramatic price increases in the past year. It has been suggested that consumers change from gas to electricity, however, this will cause an increase in peak load demand for electricity, which in the case of South Australia and Victoria, will be met by the use of natural gas to generate power at a much lower overall efficiency. Is not the use of natural gas to generate electricity more wasteful of a national asset than the direct use of LPG? In any event, why should a consumer of gas outside of capital cities be forced to outlay money in order to convert away from the use of LPG without adequate notice and adjustment period?

**Consumer Response and Government Reaction**

There are over 300,000 domestic users of LPG in Australia, that is people who rely on LPG as a source of fuel for cooking and/or heating, and their plight has now been recognised by the Government. The Federal Government announced on the 8th April, 1980, that the price of both propane and butane would be reduced to a maximum price ex-refinery of $205 per tonne, a reduction of 20% for propane and about 30% for butane. Although even at these prices the increase in the LPG price was still greater than the increase in most other petroleum products.

The Government reiterated that producers of LPG were expected to supply the domestic market as a first priority. Its highest priority was its use as a motor vehicle fuel, particularly for fleet vehicles in capital cities. The Government’s next priority is a petrochemical feedstock, the price of which, according to the Government’s policy is subject to “commercial negotiation”. The Government in its announcement stated that, and I quote, “future price increases for LPG will be linked with percentage increases in the indigenous crude oil price”. This means that the current differential will be maintained. The government recognised the fact that the new price arrangements would in fact still make LPG a higher priced energy product than other forms of energy used domestically and stated that it would continue with an $80 per tonne subsidy for household usage. The Government stated that they wished to see domestic use of LPG phased out and replaced by electricity and

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natural gas over a period of three years.

I cannot stress too strongly that the Government's policy move in re-setting the price of LPG has in fact moved the price back to where it should have been had LPG been dealt with in a similar way to the way in which all other petroleum products were affected.

It must now be clear that media reports by commentators who have claimed that the users of LPG have enjoyed some special privilege must be disregarded as nonsense. The correction by the Government of the inequality created by the PJT on January 29 can hardly be described as a privilege.

It is equally wrong to believe that the Government pricing policy benefits only farmers and rural dwellers. Among significant communities who rely heavily on LPG and will benefit from the changed pricing structure are provincial industrial cities such as Whyalla, Broken Hill, Rockhampton and Townsville.

One effect of the Government decision has been to put impetus back into the conversion of motor vehicles to the use of LPG. It had practically come to a halt following the January 29 PJT decision.

Reaction of Other Parties

In gauging the recent reaction to the Government's policy, one must look closely at various group motives. Those groups who may be seen as LPG users have shown to be clearly in favour of the Government announcement and the reassurance it brings to their decisions to embrace LPG as an automotive fuel. In many cases the effective use of LPG requires significant investment decisions to be made and as we know, investment decisions are more readily made in conditions of stability.

The interests associated with the production of LPG, or the potential production of LPG, from naturally occurring sources would not have received the Government's policy with much favour, as it clearly has a direct bearing on their sales revenue forecasts but in my opinion that is a short term view, for the Government policy relates price increases in LPG to crude oil and we all have a pretty fair idea as to what is going to happen to crude oil prices.

Likewise, the producers must relate the LPG prices fixed by the Government to the prices they have been able to negotiate for natural gas from the same sources. To put the matter into perspective, natural gas is being delivered to Adelaide for the equivalent of $36 per tonne for LPG, is being delivered to Melbourne for the equivalent of $18 per tonne for LPG, and to Sydney for the equivalent of $45 per tonne. Clearly, the Government fixed price of $205 per tonne for naturally occurring LPG can hardly be regarded as unreasonable.

Reaction from the oil industry in connection with refinery produced LPG appears to be mixed. There was surprise at the high price the PJT awarded on January 29 and I believe it would be fair to say that most oil companies have no objection to the reduced price of LPG now fixed, providing they are able to recover the loss of revenue over the other products. Since LPG represents only about 4 percent of refinery output, the price effect on other products is insignificant.

Automotive Market in Sydney

In New South Wales, LPG has not had the same competitive advantage as it has enjoyed in Victoria, that is up until now. We at Boral feel that in the next ten years, New South Wales could show a growth in automotive use from about 25,000 tonnes in 1980 to over 500,000 tonnes in 1990. This represents an annual increase of approximately 35% per annum. Obviously with the sort of growth that we envisage there will, and have been, teething troubles. These have centred around the availability of conversion kits, the availability of LPG cylinders for motor vehicles, and not the least, the experienced and skilled tradesmen required to convert vehicles to run on a dual fuel system. It is fair to say that we at Boral have spent a lot of our executive time in getting the College of Technical and Advanced Education courses instituted and in the design of the course to train licensed mechanics to be able to convert cars to the dual LPG/petrol system.

Problems have also occurred with the setting up of a distribution network throughout the metropolitan area. Many local Councils have a fear of an accident involving an LPG tank and have resisted the installation of a large LPG storage tank in their municipalities. Despite this we have approximately 60 outlets throughout New South Wales, half of which are in the metropolitan area. All these installations meet stringent safety standards and are in accordance with codes prescribed by the New South Wales Government. We are endeavouring to install more outlets throughout the metropolitan area. All of this takes time and, more importantly, and education process aimed at Councils to increase their appreciation of the safety aspects of LPG.

The investment required is large, the storage terminal to be established at Botany Bay and jointly owned by Boral Ltd. and Australian Gas Light Co. will cost about six million dollars, each semi trailer tanker unit costs $140,000 and to set up one LPG outlet to
supply a fleet costs about $400,000.
For these reasons alone a clear Government policy is required before the investment decisions could be made.
Boral Ltd. is planning to make similar investments in Queensland and W.A.

In conclusion, the Government announced in June last year a carefully considered policy to promote the use of LPG within Australia as a replacement automotive fuel. Acting without Government direction the PJT departed from its usual policy and fixed prices for LPG on a basis completely unrelated to cost movements and thus effectively frustrated the Government's policy within months of it being introduced. I believe our Prime Minister, The Hon. Malcolm Fraser and his newly appointed Minister, The Hon. Senator J.L. Carrick, were quick to recognise the implications of the PJT's decision of January 29. The effects of that decision had not only to be related to the 100,000 tonnes per annum or so of naturally occurring LPG being sold into Australia at present, but also to the effect on the growth rate of the LPG market and to the pricing and economic effects of possibly 2 million tonnes of LPG per annum being sold into Australia in the late 80s. They are, in my view to be complimented on moving quickly to take corrective action and re-establish an LPG policy within three months, which policy, while it may not give us all what we each individually sought, is in my view well balanced and generally equitable to the community as a whole.
The Government's LPG policy is now clear to everyone and in my view it is up to all sections of the industry to work together for the benefit of Australia and make this policy work.

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