



H. Reserves

Oil and Gas Reserves

The oil and gas reserves reported in this section apply to figures as at 1 January 2002. Oil and gas production is for calendar year 2001.

The reserves figures are derived from information provided by the field operators and are estimates of “proven and probable” (P50) reserves. The figures differ from those published by the Crown Minerals group of the Ministry of Economic Development that uses operators’ definitions of gross and net production.

The gas at the wellhead of a gas or oil field is a mixture of methane (the main component of natural gas), ethane, propane and butane (which together comprise LPG) and larger hydrocarbons (which are components of natural gasoline and condensate). This raw gas must be separated into its components to enable the maximum value to be gained. Figure H.1 illustrates the major steps in the separation of gas and condensate. Note that this is a generalised illustration only. It is similar to the process at Kapuni.

At Maui there is no reinjection or natural gasoline extraction.

The oil and gas reserves as at 1 January 2002, compared to the reserves as at January 2001, reflect both production for the calendar year 2001 reported in these tables as well as some revisions to the ultimate recoverable estimates provided by the operators. Total oil and gas reserves as at January 2002 were about 25% less than at January 2001. The ultimate recoverable oil and gas reserves for Kapuni and Ngatoro fields were revised upwards while Maui oil and gas reserves and McKee oil reserves have been revised downwards. Table H.1 and Chart H.1 give oil and condensate information, while Table H.2 and Chart H.2 give the counterpart information for gas.

The Maui oil data in Table H.1 and Maui gas reserves in Table H.2 are as at 1 January 2002 and were provided by Shell Todd Oil Services Ltd in late April 2002. The expected ultimate recovery of gas from the Maui field was revised downwards by Maui

Figure H.1: Gas/Condensate Separation Process (Generalised)

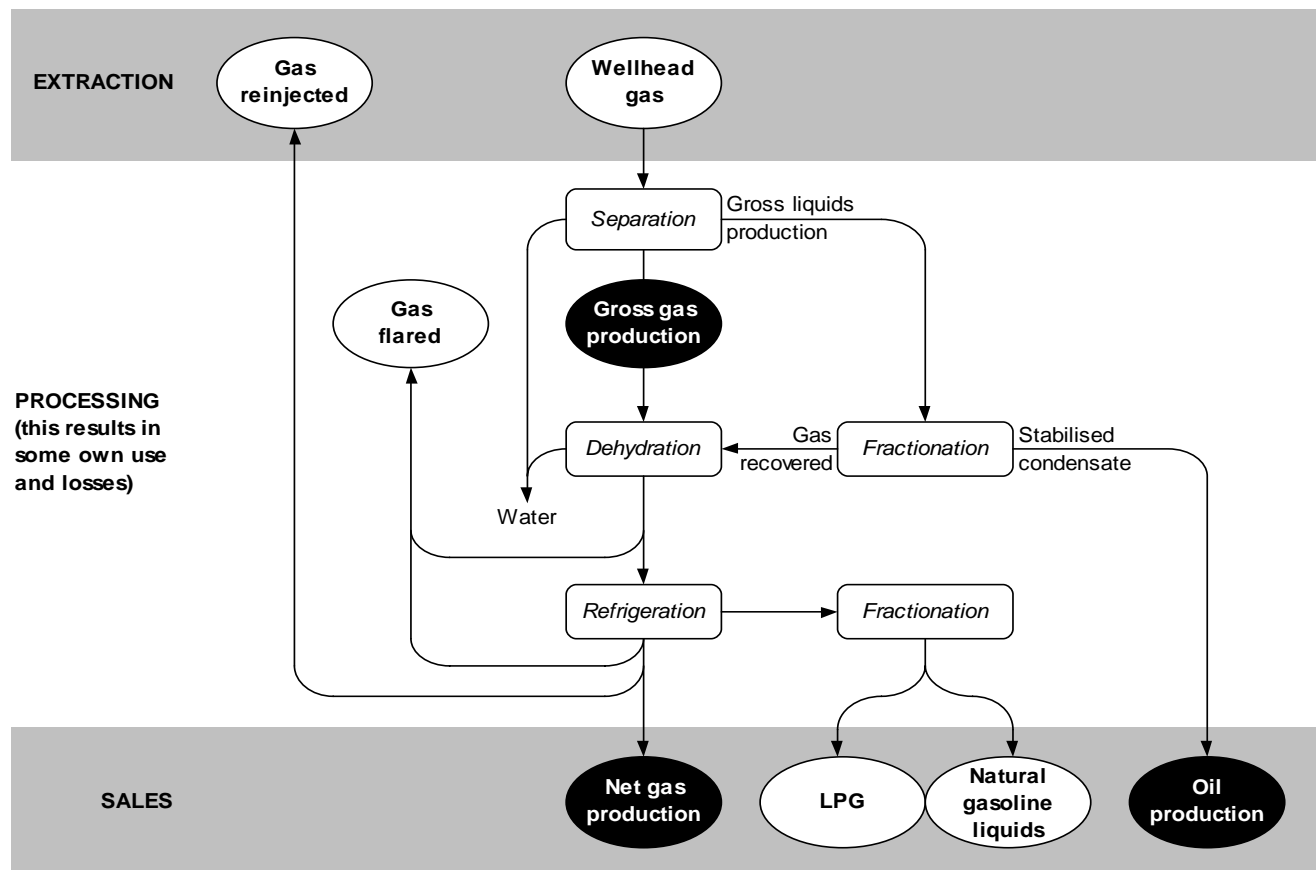


Table H.1: Oil and Condensate Reserves and Production

Field	Reserves*					Production*	
	Ultimate Recoverable		As at 1 January 2002		Gross Calorific Value**	2001	
	<i>Mm</i> ³	<i>PJ</i>	<i>Mm</i> ³	<i>PJ</i>	<i>PJ/Mm</i> ³	<i>Mm</i> ³	<i>PJ</i>
Kaimiro	0.54	19.8	0.16	5.9	36.82	0.028	1.04
Kapuni*	10.37	367.2	0.96	34.0	35.41	0.217	6.65
Kupe	2.59	95.4	2.59	95.4	36.80	0.000	0.00
Maui *	35.43	1,152.2	7.52	244.6	32.52	1.720	60.57
McKee	7.54	287.3	0.58	22.3	38.10	0.175	6.68
Mangahewa	0.12	4.4	0.10	3.6	36.30	0.008	0.32
Ngatoro***	0.81	26.2	0.26	8.6	31.64	0.081	2.46
Piakau	0.24	9.5	0.00	0.0	39.41	0.000	0.00
Tariki/Ahuroa *	1.00	36.7	0.51	18.8	36.82	0.087	2.86
Waihapa/Ngaere	3.79	149.3	0.06	2.4	39.41	0.024	0.94
TOTAL	62.42	2,147.9	12.75	435.4		2.340	81.51

* Reserves are estimated as "proven and probable" or P50 by the field operators, and include LPG.

** Gross calorific values are estimated by averaging annual figures over the life of the field.

*** Includes information for Goldie well.

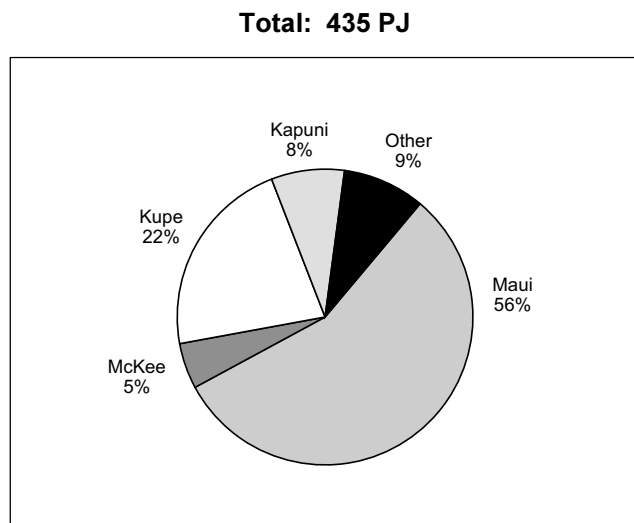
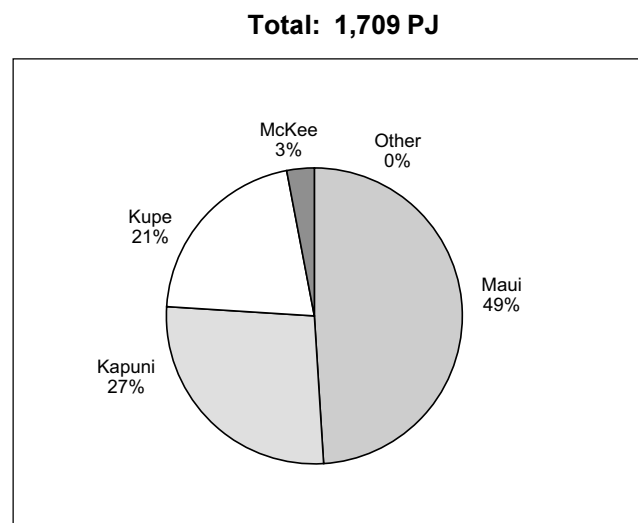
Table H.2: Gas Reserves and Production

Field	Reserves*					Production**	
	Ultimate Recoverable		As at 1 January 2002		Gross Calorific Value	2001	
	<i>Mm</i> ³	<i>PJ</i>	<i>Mm</i> ³	<i>PJ</i>	<i>PJ/Mm</i> ³	<i>Mm</i> ³	<i>PJ</i>
Kaimiro	585	22	319	12	0.037	14.7	0.47
Kapuni**	40,851	1,104	14,888	402	0.027	974.8	25.88
Kupe	7,476	309	7,476	309	0.041	0.0	0.00
Maui**	97,754	3,748	19,561	750	0.038	4,794.6	195.47
McKee	3,420	140	1,081	44	0.041	228.0	9.38
Mangahewa	2,936	115	2,788	109	0.039	83.1	3.22
Ngatoro***	258	12	91	4	0.052	41.7	2.11
Piakau	136	7	0	0	0.049	0.0	0.00
Tariki/Ahuroa**	3,098	127	1,918	79	0.041	310.9	12.69
Waihapa/Ngaere	611	23	13	0.5	0.038	7.3	0.30
TOTAL	157,125	5,606	48,135	1,709		6,455.0	249.52

* Reserves are estimated as "proven and probable" or P50 by the field operators, and exclude LPG.

** Excludes LPG for Kapuni, Maui and Tariki/Ahuroa and also reinjection for Kapuni. The figures here differ from those in Table E.2a in that own use, losses and flared are included here.

*** Includes information for Goldie well.

Chart H.1: Oil and Condensate Reserves by Energy Content as at 1 January 2002**Chart H.2: Gas Reserves by Energy Content as at 1 January 2002**

Development Limited in November 2001 (figures refer to wellhead gas volumes).

An independent expert, Netherland Sewell of Texas, has since carried out a re-determination of the Maui gas reserves with a final report released in early February 2003. The independent expert estimated total economically recoverable Maui gas as 3562 PJ, implying that there were approximately 370 PJ of economically recoverable Maui gas remaining as at 1 January 2003. However, it is unclear whether the independent expert's estimate is on a comparable basis with the other figures quoted here.

Exploration is currently occurring on and offshore Taranaki, Canterbury, Westland and the East Coast/Hawkes Bay, offshore Northland, and onshore Southland. Encouraging discoveries have been made in onshore and offshore Taranaki.

Estimates made in 2001 suggested that the off-shore north Taranaki gas-condensate field Pohokura

contained around 27,300 Mm³ (or 800 PJ) of gas and around 8.43 Mm³ of oil. Technical studies during 2002 indicated that Pohokura reserves are subject to a wide degree of uncertainty. Recently there has been comment from a member of the Pohokura joint venture that gas reserves may be only of the order of 600 PJ. The operator STOS completed drilling two appraisal wells in early 2003 but the joint venture partners are yet to release any results. The Pohokura field is not expected to be in production until 2006.

The Rimu discovery onshore south Taranaki had been reported to have potential reserves of about 2 Mm³ of oil and dry gas reserves of about 83 PJ. The Rimu field operated by Swift Energy New Zealand Limited commenced oil production in April 2002, but recent indications have been that recoverable gas reserves may be considerably less than previously thought. Rimu will be included in Table H.1 and Table H.2 after a full year of production and Pohokura when more data are available.