IS THE CURRENT PAPUA NEW GUINEA TAX REGIME AN OPTIMAL CHOICE FOR FUTURE GOLD PRODUCTION IN PNG, FIJI AND THE SOLOMON ISLANDS?

by

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ABSTRACT

The island nations of Papua New Guinea (PNG), Fiji and the Solomon Islands have recently been the target of large-scale exploration activities for gold. Two world class projects, Lihir and Porgera, have been identified. However, several smaller projects have also been found that are an order-of-magnitude smaller. Two of these are Misima, in PNG, and Gold Ridge, in the Solomon Islands.

Mineral taxation in PNG is a very complex regime based on the theory of taxing resource rents. The tax system of Fiji, on the other hand, is very simple. The Solomon Islands has no formal mineral tax regime. The PNG minerals tax was specifically written to tax the huge porphry copper deposits at Bougainville and Ok Tedi.

With the discovery and potential development of small to medium-sized gold projects, the problem arises of how to tax these projects. The PNG system was not designed with these types of projects in mind. The problem is, under conditions of uncertainty, how to tax these projects so that optimal revenues accrue to the government without discouraging exploration, development, or production.

This thesis examines the effects of three tax regimes on the Misima and Gold Ridge projects. The PNG tax, the

Fiji tax, and a "hybrid" tax were analyzed through the use of cash flow analysis. Gold prices of $350, $400, and $450 per ounce were used.

It was found that the PNG tax and the hybrid tax produced similiar results regarding investor rate of return and government revenues with regard to the Misima project. However, the PNG tax is at a disadvantage to the hybrid tax in the areas of imposition and administration.

The Gold Ridge project was found to be taxed most effectively by the Fiji tax. Except at the lowest price level of $350 per ounce gold, this system produced results for government tax collection that were very similiar to the far more complicated PNG and hybrid tax. Investor ROR was not significantly impacted, except at the lowest price level analyzed.

TABLE OF CONTENTS

LIST OF TABLES

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Chapter 1

INTRODUCTION

Recent gold exploration in the Melanesian nations of Papua New Guinea (PNG), Fiji, and the Solomon Islands will likely result in dramatic increases in gold mining. In June 1988 there were 254 gold exploration licenses in PNG, 110 in Fiji, and 30 in the Solomon Islands. Currently there are four major gold projects in the construction or feasibility stage in PNG that could have a combined annual production of 2.2 million ounces of gold. One medium-size project is undergoing final evaluation in the Solomon Islands. In Fiji, one small gold project is being considered and production is expected to increase at the Emperor Mine by 50 percent. A porphry copper project is also under re-evaluation there.

The two largest proposed gold projects in PNG, Lihir and Porgera, have estimated capital costs in the $700-$750 million range. Their respective average cash operating costs, (average variable costs of production) are $130 and $156 per ounce of gold (Mining Journal 1989, Feb. 24, 138). These costs are significantly below the $249 average cash operating cost for gold production in the non-communist world in 1988 and even further below the average "spot" gold price of $436.83 for the same year (Milling-Stanley 1989). Recoverable gold reserves are 9 million ounces for Porgera and 26 million ounces for Lihir. It appears these two projects have a significant cost advantage with regard to production costs compared to the world average. This is due to the economies of scale from a massive mining/milling rate and some high-grade ore zones. This production cost advantage, combined with large reserves, will likely result in economic "rents" being generated over the life of these "mega" mines. The current fiscal regime in PNG, with its additional profits tax of 35 percent, is structured to capture a share of this "rent."

However, there will likely be a number of gold deposits discovered in these countries that are an order of magnitude smaller or somewhere in between. These projects have no production cost advantage and may be marginal at gold prices below $375 per ounce. One example of a smaller project is Gold Ridge in the Solomon Islands. Drilling there is expected to indicate a geologic gold reserve of about 800,000 ounces. Cash operating costs are estimated to be $235 per ounce of gold and capital costs are expected to be in the range of $35 million (Graichen interview 1988). Another example is the Hidden Valley project in PNG, with gold and silver reserves that are equivalent to about 3 million ounces of gold. Misima is another PNG project with similiar total gold and silver reserves (2,500,000 ounces of gold), but with lower ore grades and higher tonnages (Lum and Callicutt 1989, 109). The Gold Ridge project would not likely yield significant rents at a gold price below $450 per ounce. Financial models presented later in this thesis indicate that rents would only be generated in a Misima-like project if average gold prices remained above $400 per ounce. If mining/milling rates or metallurgical recoveries are less than currently projected, the projects will yield more "normal" rates of return and rents will not be generated.

Therefore, a tax regime predicated upon heavy taxation of mineral economic rents may not be economically desirable in projects such as Gold Ridge, Misima, or Hidden Valley. Such a scheme puts the government at risk that tax revenues may be delayed or never realized at all.

The current minerals tax scheme in PNG grew out of the renegotiation of the Bougainville Tax agreement in 1974. The concept of a resource rent tax was developed at that time. This concept was further developed during negotiations concerning the Ok Tedi mine in 1975 and was incorporated into the general legislation in 1978. It is important to note that both the Bougainville (Panguna) project and the Ok Tedi projects are massive porphry copper deposits with gold as a byproduct. The current tax regime was formulated to deal specifically with these two projects. The types of deposits currently being discovered in PNG, Fiji, and the Solomon Islands are very different, geologically and economically, from Bougainville and Ok Tedi. Therefore, the current tax regime in Papua New Guinea as it affects the recently discovered gold deposits may not be the most effective way to maximize government revenues. Additionally, this regime may be suboptimal in other areas such as stability of revenue streams, neutrality, risk reduction for both government and investor, and ease of administration.

This thesis will analyze the Misima and Gold Ridge projects with respect to three tax regimes at different gold price scenarioes. Analyses will be made using the current PNG mining tax, the current Fiji mining tax, and a hybrid of the two. The objective will be to determine if the current PNG minerals taxation system is an optimal tax for governments to implement on recent gold discoveries in PNG, Fiji, and the Solomon Islands from the viewpoint of 1) revenue optimization; 2) ease of administration; 3) stabilization of tax revenues; 4) risk minimization; and 5) avoidance of distorting (discouraging) exploration and development.

Chapter 2

REGIONAL GOLD INDUSTRY

Papua New Guinea

Papua New Guinea ranked eighth in non-communist world gold production in 1988 with 1.05 million ounces of recorded production. This was 2 percent of total world mined gold production (excluding China and the U.S.S.R.). The Ok Tedi and Bougainville mines accounted for nearly all of this production (Milling-Stanley 1989, 22). Production figures for 1989 will be less from the Bougainville mine because of production disruptions caused by civil unrest. Some of the gold production shortfall will be made up from the commissioning of the Misima project in 1989.

The first significant gold discovery in PNG was in 1888 on Sudest Island. A series of gold rushes resulted in eastern Papua. Alluvial and lode deposits at Lakekamu, Misima, and Woodlark were discovered during this period. The Morobe goldfield was discovered in 1922, and by 1926, total gold production from PNG had totaled 500,000 ounces. The Bulolo Gold Dredging Company began airlifting dredging equipment to the area in 1927 and had eight dredges operating by 1939. Total gold production by 1940 was 2.4 million ounces. Currently the area is mined chiefly by local small-scale miners using sluices and dredges. Renison Goldfields also has a small open-pit operation in this area at Wau (Lum and Callicutt 1989, 3-4).

During the 1960s and 1970s, world exploration emphasis was on porphyry copper deposits. The first major discovery in PNG was the Bougainville deposit in 1961. Production commenced in 1972. Total production to December 1988 was 3 million tons of copper, 9.6 million ounces of gold and 24.6 million ounces of silver (CRA 1988).

Discovery of the Bougainville deposit demonstrated that PNG was a country with viable mineral potential. Other international mining companies began exploration, and in 1966 the Ok Tedi porphry copper and gold deposit was discovered. The economic viability of this project was made possible by the gold "cap" of 50 million tons of oxide ore with a grade of about 0.08 ounces of gold per ton. Production began in 1984 and the millionth ounce of gold was poured in 1986 (Lum and Callicutt 1989, 5). Gold production is expected to decline and the mine will become primarily a copper producer with gold as a byproduct. Gold production will still be significant, however, with production averaging approximately 500,000 ounces per year through 1992.

Exploration for gold has risen dramatically since the beginning of the 1980s. From 1983 to 1985 the number of exploration licenses, or prospecting authorities, rose from 58 to 116. By 1988, the number of active prospecting authorities had risen to 254 (PNG Dept. of Minerals and Energy 1988). Much of this exploration has occurred through the application of epithermal deposit exploration concepts.

These exploration efforts have led to the discovery of two world-class gold deposits at Lihir Island and Porgera. Medium sized deposits have been found at Misima, Hidden Valley, and Mount Kare. Two small deposits are currently under production at Wau and Kainantu. Other small- to medium-sized deposits have been discovered, but currently are not scheduled for development (see Table 1).

<u>Lihir</u>. The Ladolam deposit on Lihir Island is reportedly the largest undeveloped gold deposit outside of South Africa. The current estimated recoverable reserves are estimated at 26 million ounces of gold at a cutoff grade of 0.048 ounces of gold per ton. Initial production is estimated to be 800,000 ounces of gold per year. Capital costs will be in the $700 million range and average cash operating costs are estimated to be $130 per ounce.

Table 1. Reserves and Characteristics of PNG Gold Deposits as of June 1989

	Deposit Type	Reserves (millions of tons)	Grade (Au,Ag:g/t)
Boungainville	Porphyry Cu-Au	530.0	0.40% Cu, 0.46 Au
Ok Tedi	Porphyry Cu-Au	348.9	0.70% Cu, 0.56 Au
	Skarn	28.9	1.25% Cu, 1.58 Au
	Leach (oxide Au)	18.0	0.05% Cu, 2.00 Au
	Oxide Cu	19.0	1.74% Cu, 1.34 Au
Misima	Adularia Au-Ag	62.0	1.35 Au, 20.00 Ag
Lihir	Lihir Au	167.0	3.43 Au
Porgera			
(Wawuwari)	Adularia Au-Ag	78.6	3.50 Au, 9.90 Ag
(Zone 7)	Adularia Au-Ag	5.0	26.50 Au, 22.1 Ag
Wau	Adularia Au-Ag	0.8	1.60 Au
Mt. Victor	Skarn	0.3	3.63 Au
Hidden Valley	Adularia Au-Ag	40.0	1.60 Au, 2.70 Ag
Lakekamu	Alluvial	27.3	154 mg/cu m Au
Laloki	Besshi	0.4	3.75 Au, 10.76 Ag 3.93% Cu, 2.5% Zn
Wapolu	Adularia Au-Ag	13.5	1.20 Au
(Fergusson Is)		7.4	1.60 Au
		5.3	1.90 Au
Tabar	Lihir Au	18.0	1.00 Au
		3.5	2.30 Au
Busai			
(Woodlark Is)	Adularia Au-Ag	1.4	3.70 Au

Source: Lum and Callicutt 1989, 8.

Production is expected in the second half of 1991 (Mining Journal, Feb 24, 1989, 138).

Porgera. The Porgera deposit was discovered in 1938 but was not technically or economically viable until 1984. Current estimated ore reserves are 78.6 millions tons with an average ore grade of 0.11 ounces of gold per ton. There is a "high grade" zone containing 5 million tons at 0.85 ounces per ton gold and 0.70 ounces per ton of silver. Final mining permit applications were submitted to the PNG government in June of 1988 (Lum and Callicutt 1989, 6). Construction of the mine is expected to cost $750 million with average cash operating costs of $156 per ounce of gold (Mining Journal, Sept.16, 1988, 221). Annual production rates should exceed 800,000 ounces of gold for the first 5 years. Production rates should decline somewhat after this period for the remaining 10 years of mine life (Ord Minnett 1988, 53).

Misima. The Misima deposit, located in the eastern Papuan Archipelago, was discovered in the early 1900s. Reserves are estimated at 62 million tons of ore at an average grade of 0.043 ounces of gold per ton and 0.66 ounces per ton of silver. Construction began in January 1988, and the first ounce of gold was poured in May 1989.

Construction costs were $200 million. Average cash production cost per ounce of gold is expected to be $105 in the first year and $150 per ounce in following years (Ord Minnett 1988, 53). This differential in production costs in year one and the rest of the mine life is due to the higher production rate in year 1 of 400,000 ounces gold and 2.6 million ounces of silver, compared to expected annual production in the following years of 200,000 ounces gold and 2 million ounces silver. This higher rate/lower cost scenario for year 1 is because the surface ore (the first ore to be mined and milled) is oxidized and free-milling, and ore was stockpiled during the pre-production period (Ord Minnett 1988, 53).

Fiji

The main mineral resources of Fiji are a number of gold-silver deposits, porphry copper and volcanogenic base metal deposits, residual bauxite, phosphate and heavy-mineral sands. Currently, the only commercially producing projects are at Vatakoula (Emperor Mine) and Nasomo, both in the Tavua gold fields. Both projects are joint ventures between Emperor Gold Mining Company Ltd. and Western Mining Corporation Ltd. As of mid-1989, the Emperor Mine has produced 4 million ounces of gold and 1.4 million ounces of silver (Lum interview 1989).

There are three other significant deposits containing gold. Among these is the Namosi porphry copper and gold deposit. This deposit has copper tonnages and grades similiar to current reserves at Bougainville. Gold grades, however, are significantly lower (Table 2).

Table 2. Reserves and Characteristics of Fiji Gold Deposits as of June 1989

Name	Deposit Type	Reserves (millions of tons)	Average Grade (Au,Ag:g/t)
Emperor	Au-Ag-Te	1.2	6.4 Au
Nasomo	Au-Ag-Te	0.3	14.0 Au
Mt Kasi	High S Au		
(hardrock)		0.5	6.0 Au
(eluvial)		0.7	2.0 Au
Namosi	Porphry Cu-Au	500.0	0.5% Cu 0.15 Au
Faddy	Au-Cu-Zn	2.0	2.0

Source: Lum and Callicutt 1989, 311.

A new shaft was sunk at the Nasomo project at a cost of $10 million in 1987. Gold production from the expansion added 48,000 ounces of gold to total production in 1988. Yearly combined production from the Emperor-Nasomo project was expected to be 144,000 ounces Au in 1988. The Mt. Kasi project is still undergoing feasibility studies by its Australian developers, Range Resources and Newmont Pty., Ltd.

Exploration licenses (called Special Prospecting Licenses or SPLs) have declined from 110 in 1988 to 71 in 1989. Some of this decline has been due to financial difficulties encountered by the Australian junior firms that were doing most of the grass-roots exploration (Lum interview 1989).

Solomon Islands

Gold exploration in the Solomon Islands is primarily at the grass-roots level. The exception to this is the Gold Ridge project on Guadalcanal. In 1989 this project was in the final feasibility stages. The project was discovered by Cyprus Minerals and then sold to Arimco Ltd., of Australia. Reserves are estimated to be 12 million tons at an average grade of 0.08 ounces of gold per ton (Graichen interview 1988).

There is also an alluvial deposit on the Chovohio River (Mavu Project) on Guadalcanal. Reserves are estimated to be 20 million cubic meters with grades ranging from 0.3 to 2.0 grams per cubic meter. There are no current development plans for this project.

In July 1988 there were 34 gold exploration licenses in effect that covered 4882 sq km, or 18 percent of the total landmass of the Solomon Islands. These were held mostly by major mining firms such as BHP Minerals Ltd., Newmont Pty. Ltd., Cyprus Minerals Gold Ltd., Freeport of Australia, and Niugini Mining Ltd (Lum interview 1988).

Chapter 3

COUNTRY PROFILES

Fiji

The Fiji archipalego includes at least 332 islands scattered across 230,000 sq km (90,000 sq mi) in the southwest Pacific. Fiji is 2,100 km (1,300 mi) north of Auckland, 5,100 km (3,160 mi) southwest of Hawaii, and 3,100 km (1,900 mi) northeast of Sydney. The total land area is 18,333 sq km (7,150 sq mi). Estimated population in 1986 was 720,000. Fiji has jurisdiction over some 1.5 million sq km (600,000 sq mi) of surrounding ocean within its Exclusive Economic Zone (Pacific Information Bank 1987, 282).

Political Status

Fiji gained independence in 1970 after ninety-six years of British rule and became a self-governing nation within the Commonwealth of Nations. There was a bicameral parliament consisting of a nominated senate, an elected house of representatives, and a cabinet presided over by a prime minister (Pacific Information Bank 1987, 285).

Until 1987 the prime minister of Fiji was Ratu Sir Kamisese Mara, who had held that position since the country was granted independence. In May of 1987, Ratu Mara was defeated in elections by Dr. Timoci Bavadra. The army revolted and Bavadra's government was removed in a bloodless coup led by Colonel Sitiveni Rabuka. An interim government was installed under the leadership of Governor-General Ratu Sir Penaia Ganilau. In September of 1987, Rabuka led another coup and installed a government led by himself and Ratu Mara. The constitution was suspended and Parliament was dismissed. As of April 1989, a new constitution was being drafted and Mara and Rabuka were still in power (Lum interview 1989).

Economic Status

The economy of Fiji is primarily agrarian, with sugar cane the major crop. Other major exports are fish, gold, copra, and coconut oil. Significant increases are expected in exports of timber (pine), ginger, cocoa and non-traditional domestic exports such as clothing exports to Australia. The sugar industry provides employment for about 22 percent of the labor force and accounts for almost 75 percent of domestic exports. Sugar exports were expected to be US$142.8 million in 1988 (Price Waterhouse 1988). Gold exports were expected to be about US$35 million in 1988 and could increase to US$43 million by 1990 (Lum interview 1989).

The government's 1988 capital and operating budget called for expenditures of US$336.7 million and total receipts of US$254.5 million (Price Waterhouse 1988). Per capita income in 1984 was US$1,255. The 1985 Gross Domestic Product was US$960 million (Pacific Information Bank 1987, 290).

Solomon Islands

The Solomon Islands stretch in a double chain from Bougainville in the northwest to Vanuatu in the southeast. The total land area is 27,556 sq km (10,747 sq mi). The island of Guadalcanal has the largest land area (5,302 km/2,065 sq mi) and is the site of Honiara, the only urban area in the Solomon Islands. There are about 900 islands. The population is approximately 300,000 and is 94 percent Melanesian (Pacific Information Bank 1987, 302).

Political Status

The Solomon Islands is a parliamentary democracy with the British monarch as head of state, who is represented by a governor general appointed on the recommendation of the National Parliament every five years. Independence from Great Britain was achieved in 1978. The executive arm of the government is the National Cabinet headed by a prime minister who chooses his ministers, limited to 15, including the prime minister. The legislature is a single-chamber National Parliament composed of 38 elected members (Pacific Publications 1984, 181).

Economic Status

The Solomon Islands is primarily an agricultural country, with 90 percent of the population living in the rural areas. Most of the rural population is self-sufficient in food production and earns cash from copra and cocoa. The Solomon Islands has a relatively diverse economy compared to other countries in the region. It is one of the few Pacific Island countries that sometimes have a trade surplus, although this capacity has been temporarily diminished owing to hurricane damage in 1986 and depressed prices for copra. The GNP in 1986 was US$114 million (Pacific Information Bank 1987, 191).

Principal exports are tuna, timber, and agricultural products such as copra, palm oil, and cocoa. In 1987 export revenues were US$64.1 million. Tuna contributed 40 per cent of this total while logging provided 27 per cent of export revenues. Foreign aid has grown from US$10 million in 1978 to US$40.5 million in 1987. Inflation is currently a serious problem at 16 percent, and the local currency (Solomon dollar) has been depreciating against the U.S. dollar.

Labor rates are very low, with the minimum wage in 1986 being about US$35-$40 per week.

Papua New Guinea

Papua New Guinea consists of a mainland and more than 600 islands of varying sizes. The mainland is the eastern half of the island of New Guinea, the second largest island in the world after Greenland. The island as a whole has an area of 868,000 sq km (340,000 sq mi) of which the eastern 474,000 sq km (185,000 sq mi) is mainland Papua New Guinea. The western portion of the island is the Indonesian province of Irian Jaya.

The capital city is Port Moresby, located on the southern coast of New Guinea island. The main concentrations of population are in the rural highland valleys and in the main towns, which are Port Moresby (population 150,000), Lae, Rabul, Madang, Wewak, Goroka, Mt. Hagen, and the Kieta-Panguna urban area (Coopers and Lybrand 1988b, 15, and Pacific Information Bank 1987, 234).

The population of Papua New Guinea is about 3 million. Most of the indigenous people are classified as Melanesian. More than 85 percent of the indigenous people live in rural areas in clan or village communities. Between 70 and 75 percent of the people do not participate in the cash economy but practice subsistence agriculture. English is the official language of commerce and government, but the language understood by the majority of the nationals is Melanesian Pidgin (Pacific Information Bank 1987, 294).

Political Status

Papua New Guinea obtained full political independence in 1975 after two years of home rule. Except for the period of occupation by the Japanese during World War II, the country had been administered by Australia since World War I.

The government is a parliamentary democracy with the British monarch as head of state, represented by a governor-general. This is a ceremonial office, elected by the parliament. The prime minister acts as leader of the government. There is a National Executive Council, which is comprised of the prime minister and a number of ministers that he chooses. Legislative power is vested in the National Parliament, which is a single-house assembly of 109 members. Since Independence, government changeovers have taken place smoothly and in accordance with the constitution (Coopers & Lybrand 1988b, 22).

There are 19 provinces in PNG, reflecting fairly defined geographical regions. Each has its own elected provincial government. Each provincial government is headed by a premier and has a house assembly elected from the various districts.

Economic Status

The economy of Papua New Guinea is not a single economy but two distinct economies that exist side by side. These two economies can be defined as the traditional economy and the modern economy. The traditional economy exists much as it did before European colonization. Coexisting with the traditional economy is the modern, or cash, economy that has developed slowly over the past one hundred years or so.

The structure of PNG's cash economy is an "open" economy geared for international trade rather than for domestic consumption. The country exports primary products and imports finished goods. There is no strong manufacturing base. Total exports in 1987 were valued at US$1.28 billion. These exports were primarily gold and copper concentrates, (US$840 million) coffee, copra, forest products and fish. Imports for the same year were about US$1.03 billion. About 50 percent of imports were for food and other consumable goods, while 36 percent of imports were capital goods. The remainder of the import bill was mainly for petroleum products (Coopers & Lybrand 1988b, 23).

About 40 percent of PNG's gross domestic product (GDP) from the "cash economy" is exported. Consequently, the modern economy of PNG relies heavily on commodity export earnings which, in turn, rely on world economic conditions. If mining is removed from GDP calculations, economic growth contributed by other sources (mostly agriculture) has averaged only 1.5 percent during the past decade. With a population growth rate of 2.5 percent, per capita GDP would have declined without revenues from the Bougainville and Ok Tedi mines.

The PNG budget for 1988 was the equivlalent of US$1.95 billion. The major portions were for infrastructure, $174 million; economic development, $150 million; social services, $127 million; law and order (includes army), $112 million; administration, $103 million; debt service, $253 million, and provincial support, $255 million (U.S. Embassy, 1988). Some key economic indicators for a four-year period are shown in Table 3.

PNG is a net importer of virtually all manufactured products (40 percent from Australia and 18 percent from Japan) and has a freely exchangable currency and open markets. As a result almost 50 percent of its consumer price index is derived from import prices. Inflation

Table 3. Key Economic Indicators in PNG (Dollar amounts are million of U.S. dollars)

	1986	1987	1988	1989
Domestic Economy			(Projections)	
Population	3.5	3.6	3.7	3.8
Gross Domestic Product (GDP)	2544.9	2961.0	3263.4	3555.2
Consumer Price Index Change	5.5%	3.0%	5.0%	6.0%
Balance of Payments				
Exports (f.o.b.)	1033.0	1219.0	1284.0	1551.0
Imports (f.o.b.)	963.0	1104.0	1234.0	1540.0
Trade balance	70.0	115.0	51.0	11.0
Foreign debt	2086.7	2066.0	2097.0	na
Debt service-owed	297.0	290.0	369.0	402.0
Debt service-paid	297.0	290.0	369.0	402.0
Foreign exchange reserves	473.0	458.0	335.0	347.0

Source: U.S. Embassy 1988. Port Moresby.

averaged 3.3 percent in 1987 and is expected to be 5 percent in 1988 and 6 percent in 1989.

The only large-scale industries in PNG, besides plantations, are the copper/gold mines at Bougainville and Ok Tedi. Together these two mines had gross sales of US$840 million in 1987. Other industries are small operations that produce products for local consumption.

Tropical agriculture is the main employment base. Coffee is the biggest agricultural import, followed by cocoa, palm oil, copra, tea, and rubber. Most of these commodities have reached production plateaus. Timber ranks behind gold, copper, and coffee in total exports (Coopers & Lybrand 1988b, 23).

Chapter 4

MINERAL TAXATION IN PAPUA NEW GUINEA

Background

The current mineral taxation in PNG is derived from agreements written for the Bougainville porphry copper project. Construction of the mine began in 1969 and production was acheived in 1972. The original agreement, signed in 1967, was between the Australian colonial administration of PNG and Bougainville Copper Ltd. (BCL), a subsidiary of Conzic Riotinto of Australia (CRA). This agreement was incapable of appropriating a sizeable share of any mineral rent for PNG (Emerson 1984, 87). Instead, the agreement "provided for the retention by the operating company of a high proportion of any mineral rent." (Garnaut and Clunies Ross 1983, 228). The new government of PNG, formed when internal self-rule was granted by Australia in December 1973, recognized the fiscal inadequacies of the agreement and renegotiated the BCL fiscal package in 1974. The experiences gained by the new government in renegotiating this agreement and negotiating the Ok-Tedi agreement (1975-76) resulted in general rules that formed the basis for the current general legislation.

The original Bougainville agreement was very generous to BCL. (It should be remembered that this agreement was from the Australian colonial government in PNG to an Australian company.) There was a three-year income tax holiday followed by immediate deductibility of all capital expenditures. Twenty percent of the pre-tax net income from copper sales was exempt from income tax, which was to be assessed at special low rates in the early years. In effect, no income tax was likely to be paid for nearly a decade (Emerson 1984, 90). The only significant source of revenue prior to the eventual payment of income tax was the ad valorem royalty of 1.25 percent and dividends from the government's 20 percent equity.

Only the royalty and the government's equity participation survived the 1974 renegotiation. The income tax holiday, accelerated depreciation provisions, and the 20 percent income tax provision were all removed. An additional profits tax, in the form of a progressive profits tax (PPT), was introduced. It applied to income in any year which exceeded 15 percent of an agreed "capital base" and was taxed at the rate of 70 percent (Emerson 1984, 91).

The government had a powerful and sophisticated team of negotiators who attempted to reach a deal with Kennecott regarding the Ok Tedi project. The government team included

Nigel Agonia, Mekere Morauta, Ross Garnaut, David Beatty, Keith Palmer, Steven Zorn, John Kinna, and Hugh Davies. These negotiators had to operate within a series of policy constraints that stressed the creation of a minerals policy prototype that could generally be applied to future mining projects. They also had to formulate an agreement analagous to the renegotiated Bougainville Agreement. Generally, they accomplished this objective by articulating the concept of resource rent taxation. This was later renamed the additional profits tax (APT). They dealt with the difficult question of inflation indexing by linking the profitability threshold at which APT was paid to a New York corporate bond rate (Pintz 1984, 48).

Policy Objectives

The national government has ultimate responsibility for all policy matters that involve large-scale mineral development. The provincial governments do not have the power to levy any major fiscal charges on mining, although they do receive a portion of the royalties collected by the national government (Garnaut and Clunies Ross 1983, 229).

The government has preferred general fiscal rules for mineral investment rather than negotiation of all fiscal terms on each project individually. The Bougainville Copper agreement is perhaps not as ideal as current legislation might have provided, but this reflects the pressures of re-negotiating an unsatisfactory arrangement (Garnaut and Clunies Ross 1983, 242).

Current mining policy in PNG has been formulated to encourage development of mineral resources in a manner that will secure maximum benefits for the country and give appropriate returns to investors. The government views the development of the mineral deposit in the context of the government's wider social and economic development objectives. These objectives include the creation of employment opportunities for PNG, local infrastructure development, and generation of tax revenues (Chan 1987, 69).

The objective of the tax regime is to collect the maximum tax revenue (undiscounted) over the operating life of the mine consistent with its efficient exploitation. Other policy concerns include the need for resource conservation and the control of activities by major enterprises in the exploitation of natural resources (Walrond and Kumar 1986, 35).

Current Tax Regime for Mining

All mining operations in PNG, other than small projects operated by PNG citizens, are assigned a Special

Mining Lease. These are tenements granted by the State pursuant to Section 71 of the Mining Act, Chapter 195. As a general rule, any project with a capital outlay in excess of approximately $6 million (depending on the US dollar/PNG kina exchange rate) is regarded as a large scale mining project (Price Waterhouse 1984, 68).

There are two general schemes of taxation for mining operations under the Income Tax Act. Large projects that are issued a Special Mining Lease (SML) will be subject to the Special Mining Lease Provisions. Smaller projects will be under the General Provisions of the Act. Operations within the General Provisions are taxed the same way as other businesses in PNG. They are not subject to the additional profits tax. In addition, very large scale developments may be governed by special agreements. However, these agreements will not vary significantly from the Special Mining Lease Provisions. A SML, under the provisions of the Mining Act, can only be issued to a PNG citizen, a corporation registered in PNG under the Companies Act (Chapter 146) or a combination of the two. Therefore, foreign corporations must register in PNG to get the Special Mining Lease and are thus taxed as resident companies (Coopers & Lybrand 1988a, 4).

Project Basis of Assessment

Income derived from a SML is assessed as if it were the only income of the taxpayer. Deductions only are available for expenditures attributable to the project, with the exception of exploration costs incurred in areas that have been abandoned by the company with the revenue producing project. This means that when a SML has been surrendered, cancelled or has expired, any residual (unamortized) exploration expenditure may be allocated to another lease from which income is being derived by the same company. (Coopers & Lybrand 1988a, 5-6).

Royalty Tax

The Mining Act, Section 104, imposes a royalty of 1.25 percent of mineral f.o.b value (gross revenues). These revenues are paid to the national government. The government then distributes 20 percent of this amount to the provincial government where the mine is located. Until 1989, this distribution was 5 percent.

Royalty payments are deductible for the purposes of computing taxable income. No separate royalty has to be negotiated with the local or "custom" landholders. However, access fees and compensation for loss of land use have to be negotiated with custom landholders (Lum and Callicutt 1989, 27).

This royalty is low by international standards. For example, in a study of mineral taxation in developing countries by Kumar and Walrond (1983, 166) royalty rates for gold were 5 percent (of gross revenues) in Malaysia, Botswana, and Sierra Leone. In Zambia, there was a profit related mineral tax of 10 percent, which was refunded if the return on equity was less than 12 percent. The low royalty serves to encourage exploration and mine development since it lowers investor risk by reducing overall tax liability. The royalty should also reduce the need for government review of mine plans, since government revenues will be less dependent on output and more dependent on project profits. High profits are also the objective of the investor (Tilton, Millet, and Ward 1986, 25).

Corporate Income Tax

The corporate income tax was legislated by the Income Tax Act and is levied only by the national government. The rate for mining operations is 35 percent for resident companies and 48 percent for non-resident companies. Taxation for petroleum projects is 50 percent. However, the 35 percent rate will apply because the Special Mining License needed to start a project is granted only to a resident company (Lum and Callicutt 1989, 29).

Deductions allowed in calculating taxable income from mineral product revenues include the 1.25 percent royalty, operating expenses, interest charges, previous tax losses, depreciation of plant and equipment, and mine developent and exploration costs. Deductions for amortization of allowable exploration and capital expenditures are limited to the amount neccessary to reduce taxable income to nil. No tax losses are allowed due to depreciation. If needed, accelerated depreciation may be used to reduce taxable income to nil in the "investment recovery period," which is defined later in this discussion.

Exploration deduction. Allowable exploration expenditure is amortized on a reducing basis over the life of the mine. The deduction is calculated by dividing the unamortized balance by the lesser of the mine life or five. (Price Waterhouse 1984, 4).

Capital deductions. "Allowable capital expenditure" is amortized on a reducing balance basis over the life of the mine. The deduction is calculated by dividing the unamortized balance by the lesser of the mine life or ten. There is a special provision for non-replacement plant installed after production has commenced, which allows 25 percent of the cost as a deduction in the year of purchase.

(Coopers & Lybrand 1988a, 5). An example of a non-replacement plant item would be a new concentrator to increase production.

There is a somewhat confusing option available with regard to amortization of "allowable capital expenditure." Paragraph 18 in Coopers & Lybrand (1988a, 6) states:

> If mining plant is depreciated rather than included in "allowable capital expenditure," then it is deemed to have an effective life of ten years, which means that it can be depreciated at 10 percent straight-line or 15 percent reducing balance per annum.

Thus, actual physical plant can be depreciated under different rates from other capital costs such as metallurgical testing, environmental studies, acquisition costs, etc. Heavy earthmoving equipment can also be removed from allowable capital expenditure and amortized at a higher rate. According to Paragraph 28 of Coopers & Lybrand (1988a, 7):

> Mining plant can be depreciated at either 10 percent straight line or 15 percent reducing balance per annum. Heavy earthmoving equipment can be depreciated at 20 percent straight line or 30 percent reducing balance. A taxpayer may elect to switch from one method to the other, so it may be beneficial to use the reducing balance in the early years and then switch to the straight line.

Investment Recovery Period. The Tax Act provides mining operations under SMLs significant relief from taxation in the initial years of production. This is achieved through accelerated deductions of initial capital investment for exploration, development, plant and equipment. The investment recovery period is defined to continue from commercial start-up until cumulative after-tax cash flows equals the initial capital investment (Chan 1987, 71).

Accelerated deductions may be claimed in those years of the investment recovery period that after-tax net cash flow is less than the "target income." Target income is defined to be 25 percent of the initial capital investment. The accelerated deductions may be taken in amounts needed to reach the "target income" or reduce taxable income to nil. A tax loss situation cannot be created through accelerated deductions. Increasing the amortization deductions decreases net taxable income and thus taxes. This increases after-tax cash flow. These deductions may be taken in the following order: 1) allowable capital expenditure; 2) allowable exploration expenditure; and 3) plant depreciation (Coopers and Lybrand 1988a, 7).

During the investment recovery period the rate of income tax shall not exceed 35 percent. The additional profits tax will not apply.

Dividend Withholding Tax

Dividends which are paid out of retained earnings (after any income tax and APT taxes) are subject to a withholding tax of 17 percent when they are declared. This withholding tax applies to both resident and non-resident shareholders.

Additional Profits Tax

The additional profits tax (APT) is based on the theory of resource rent taxation (RRT). This tax concept will be discussed in depth in Chapter 6. The purpose of the tax is to capture for the government a portion of the economic "rents" that might be generated during times of high commodity prices or for projects with extremely low production costs (average variable cash costs of production).

The APT tax applies to Special Mining Leases after the end of the investment recovery period. It is imposed on the basis of after-tax cash flow and becomes payable when the accumulated value of net cash flow becomes positive. That positive amount is the amount of additional profits subject to APT. The current APT is 35 percent. When net cash flows are negative, the cumulative amount is carried forward and uplifted at an annual "accumulation rate" rate of either 20 percent or the U.S. prime rate plus 10 percent. The investing company can make a one-time election on the choice of accumulation rates. The cumulative amount is also adjusted for movements in the PNG kina/US dollar exchange rate (Coopers and Lybrand 1988a, 8).

The uplift, or accumulation, begins in the year of income in which substantial expenditure occurs on construction of the mining facility. There is no accumulation during the exploration phase.

Net cash flow can be broadly defined as assessable income (other than interest), less allowable deductions such as royalties and operating costs (excluding depreciation and interest payments), less capital and exploration expenditure, minus income tax paid (Pintz 1984, 66). The operation of the APT provisions are shown in Table 4.

Table 4. Additional Profits Tax Illustration

	Year 1	Year 2	Year 3
	K'000	K'000	K'000
(A) Net cash receipts (deficit) at end of previous year	(10,000)	(6,535)	--
Assessable mining income	15,000	20,000	23,000
Allowable deductions paid (other than depreciation, losses brought forward, amortized exploration or or capital)	(6,000)	(8,000)	(8,000)
Capital expenditure	(2,000)	--	(5,000)
Income tax	(2,590)	(2,500)	(4,669)
(B) Net cash receipts in year in year of income	4,410	9,500	5,331
(E) Average rate of kina to dollar, previous year	.91	.83	.88
(F) Average rate of kina to dollar, current year	.83	.88	.85
(R) Accumulation rate	20%	20%	20%
Accumulated Value of Net Cash Receipts: (F/E) x A (1+R) + B	(6,535)	1,185	5,331
Additional Profits Tax (@ rate of 70%-35%)	Nil	415	1,865

Source: Coopers & Lybrand 1988a, 9.

Chapter 5

MINERAL TAXATION IN FIJI AND THE SOLOMON ISLANDS

Fiji Tax Regime

The legislation in Fiji that affects mining is the Income Tax Act and the 1966 Mining Ordinance. The Mining Ordinance allows for royalties to be paid to the government on either a percentage basis (5 percent for gold) or a yield basis. The operators of the Emperor Mine (Western Mining Ltd.) negotiated a royalty with the Fiji government based on yield. A seven-year tax holiday was also granted. As of March 1989, the Emperor operation had paid no taxes or royalties to the Fiji government (Lum interview 1989).

Income Tax

A mineral exploration/development company doing business in Fiji must register with the Companies Office, either as a Fijian company or as an incorporated overseas subsidiary. In either case, income taxes will apply at a resident company rate. The effective tax consists of the "normal tax" (35 percent) and the "base tax" (2.5 percent), making the total income tax 37.5 percent of net income before taxes. There is currently no additional tax on "excess profits" (Price Waterhouse 1982, 33-35).

Depreciation of exploration and capital costs is allowed on a 5-year straight line basis. This applies to all costs incurred in exploration, lease acquisition or development in Fiji, regardless of whether they occurred on the project producing revenue. (See Mining Industry Concessions).

Dividend Withholding Tax

A dividend withholding tax of 15 percent is imposed on dividends paid to nonresident shareholders. Withholding is 5 percent if the dividend is paid to a Fiji resident (Price Waterhouse 1982, 36).

Mining Industry Concessions

There are three concessions available to the mining industry under the Income Tax Act (Price Waterhouse 1982, 44-45):

> 1) Where a taxpayer holds a valid prospecting license, he may write off against his total income from all sources such amount of his expenditure on prospecting for minerals as the Commissioner of Inland Revenue may allow.
>
> 2) As an alternative to normal depreciation, a taxpayer engaged in mining, who has incurred certain specified expenditure, may in any five out of the first eight or last eight years of a nine-year period, commencing with the year in which the expenditure was incurred, write off one-fifth of such expenditure against his total income. The specified expenditures are:
>
> a) Capital expenditure incurred in the development of mines and the extraction,

treatment, refinement and sale of minerals therefrom.

b) Expenditure incurred in the acquisition of any mining lease or tenement.

3) The Minister of Finance, where he is satisfied that it is desirable for the economic development of Fiji, may direct that the income of any mining company shall either be exempt from tax or taxed at a reduced rate.

Royalty Tax

Royalties are payable to the government of Fiji. The royalties are based on a percentage (5 percent f.o.b. or gross revenues) or on a yield basis (basically, 10 percent). In the case of the Emperor Mine, these were negotiable (Lum interview 1989). The regulations from the 1966 Mining Ordinance that concern royalties are Regulation 6 and Regulation 7.

Regulation 6 provides for a 3 percent royalty on bauxite or iron ore, with a 5 percent royalty for "any other mineral" unless "otherwise determined by the Director with the approval of the Governor-in-Council."

Regulation 7 states that "the Director may permit such holder to pay royalties on all minerals...on a yield basis." If the yield (basically, net income) is less than 20 percent of the sale value of the minerals, the royalty would be 10 percent of the yield. For every percentage point the yield exceeds 20 percent of sales, the royalty shall be increased an additional one-fifth of one percent (0.2 percent).

Solomon Islands Tax Regime

There was no formal mining taxation system in the Solomon Islands as of July 1988. The tax negotiations between Cyprus Minerals, the operators of the Gold Ridge project at that time, and the government were confidential and unfinalized. There was a royalty agreement between Zanex, who attempted an alluvial gold project, and the government. This agreement was not available for public review. However, some members of the expatriate minerals exploration community who were familiar with the situation said the royalties were extremely high and unreasonable (Lum and Callicutt 1989, 212).

Section 76 of the current Mining Ordinance deals with royalties. Rates are not specifically set. The Minister of Natural Resources is given power to defer royalty payments.

A Mines and Minerals Bill (1988) written by the National Parliament had not yet been finalized or approved as of March 1989 (Lum interview 1989). This bill calls for the payment of royalties to the government, but no specific rates are set. Instead, "The rate of royalty payable shall be at such rate as prescribed by the Minister (Mining) in consultation with the Minister of Finance."

Chapter 6

TAXATION OF NATURAL RESOURCE PROJECTS

Policy Objectives

This discussion is addressed primarily to the situation of national economies in which natural resource projects are financed externally. This includes the small developing economies of PNG, Fiji, and the Solomon Islands. These are referred to by Garnaut and Clunies Ross (1979, 194) as "Case One" countries. "Case Two" countries refers to those developed countries, such as the United States and Canada, that have their own capital markets. Projects can be financed from sources within the country. The Case One, or developing country's government has different taxation policy objectives from the Case Two nation. There are so few competitive or similiar industries in the Case One country that capital that is diverted from mining is not likely to enter another industry within the country. The opposite may be true in developed economies. Therefore, the Case One nation's tax policy goals need not worry about neutrality of its tax regime among industries (Garnaut and Clunies Ross 1979, 194).

The main problem in taxing natural resource projects in developing countries is to establish a stable, consistent system of mineral taxation, under conditions of uncertainty, that collects maximum tax revenues without discouraging mineral exploration or mine development. At the same time, the foreign investor must be assured of a return on investment that is commensurate with the risk involved (Palmer 1980, 517).

Considerations suggested by Emerson (1980, 125) that provide an additional rationale for tax policy are allocative neutrality, resource conservation, and environmental protection. He points out, however, that "revenue maximization is an omnipresent objective commonly receiving priority in policy formulation." He does not elaborate on whether "revenue maximization" means collecting the most revenues over time or collecting a revenue stream with the highest net present value.

The extraction of the maximum revenue possible consistent with the continued development of mineral resources was also identified by Mikesell and Whitney (1987, 96-97) as the objective of developing countries. They point out that one of the difficulties in devising a tax system to capture economic rents is that different projects will have different probability distributions for net revenues.

One of the considerations often overlooked is the exact definition of "revenue maximization." This term could be construed as either the maximum total revenue over the project life, or the net present value (NPV) of the tax revenue stream over time at some social disount rate. For the purposes of evaluating the effects of different tax systems described in Chapters 4 and 5, "revenue maximation" is considered to be NPV maximization.

Criteria For Evaluating Alternative Taxation Devices

A minerals tax policy with revenue maximization as the prime objective should satisfy several criteria. The areas of most concern are neutrality, stability, ease of imposition, and ease of administration.

Neutrality

The concept of neutrality with regard to taxation means that the tax should not alter decisions on consumption, production, or trade. While this criterion can seldom be completely accomplished in practice, it should be maintained as a criterion by which tax systems are judged. A tax can be described as neutral if it extracts no more and no less than the economic rent (Garnaut and Clunies Ross 1979, 193).

A non-neutral tax would cause investors to change their decisions on mineral exploration activity, number or size of mines to be opened, and ore grades to be mined. Any tax that would cause a reduction in exploration activity or mine development might shrink the revenue base. Often, a neutral tax would be a revenue maximizing tax. But in practice it is not possible to create a tax that is perfectly neutral. Governments need to know the investor's supply price of investment, or hurdle rate, to set a tax on return to capital that would capture all rent, yet not dissuade investment. This can create a conflict between neutrality and revenue maximization (Emerson 1984, 18).

Stability

The taxation arrangements should be such that the investors can feel confident that they will not change significantly between the time exploration begins and the time a commercial discovery is made. This is to avoid what Palmer (1980, 519-520) describes as an "obsolescing bargain." This situation occurs when the investor, before exploration, negotiates generous fiscal terms with the government. The host government grants these terms because it desires that the exploration investment take place. If a commercial discovery occurs and project development becomes a strong possibility, the original terms may then be perceived by the government as too generous. There may be strong political demands for new terms. The government then has bargaining leverage because the investor has already spent large sums on exploration and does not want to jeopardize the investment. The process of renegotiation can raise the political risk perceived by new investors and thus discourage new exploration (Palmer 1980, 520).

Frequent and unanticipated changes in the fiscal arrangements will affect investors' perceptions of political, or sovereign risk. This could adversely affect the future revenue base. However, taxation should be somewhat flexible to adapt to fluctuations in project profitability. This flexibility should be built into the tax legislation to avoid discretionary adjustments by the taxing authorities (Emerson 1984, 18).

Imposition

Different taxes vary in the ease which the tax base may be identified and the proper rate determined. For example, an ad valorem or royalty tax based on gross revenues is usually easier to identify than one on mineral rent. Therefore a government may prefer a simple tax, such as a production royalty, instead of a complex rent taxation scheme which is tied to currency exchange rates, inflation, and perceptions of what an acceptable investor rate of return may be (Emerson 1984, 19).

Administration

A practical question of implementation is the ease with which different tax systems may be enforced. The potential for avoiding taxes and the associated cost of enforcing them varies. In some developing countries, such as the Solomon Islands, the ability to enforce complex tax regimes may be weak. Papua New Guinea and Fiji both have administrative branches of government that are more able to enforce tax legislation. Governments may elect to choose a more simple taxation arrangement because it is easy to administer, even if this deprives them of optimal tax revenue collections (Emerson 1984, 19).

Mineral Rent

Mineral rents represent the net value of a mineral deposit above all costs which must be incurred for exploration, development, and production. These costs include the returns to capital invested which are just sufficient to attract the capital to the enterprise (Emerson 1984, 12). Mineral rent is based on the classical concept of economic rent. Garnaut and Clunies Ross (1983, 27) explain economic rent as "the excess of total revenue derived from some activity over the sum of the supply prices of all capital, labor, and other inputs neccessary to undertake the activity."

Mineral rents generated by exploitation of a resource can be a function of the efficiency with which the deposit is exploited. Production efficiencies can occur due to particular characteristics of a specific deposit. The efficiencies can occur because of high ore grades, low stripping ratios (for surface mines), simple versus complex metallurgy, proximity to existing infrastructure, availability of skilled personnel, and cost of transporting the final product. Of course, rents can also be generated (in the short run) by high commodity prices that provide financial returns that exceed the investor's supply price of investment.

The supply price of investment is the minimum return neccessary that is consistent with the decision to invest. These returns may be expressed as a rate of return (ROR) or as an absolute amount (net present value) (Emerson 1984, 15). The supply price of investment will be affected by the degree of the investor's aversion to risk. Mining is subject to a certain "critical mass" of risk owing to the cyclical nature of the price of the commodities mined and geologic and technical uncertainties. Increased risk above this "critical mass" can be accepted only if it is compensated for by a sufficient increase in the expected ROR or NPV (Palmer 1980, 522).

Garnaut and Clunies Ross (1975, 274-275) make the important point that expected risk and hence, the supply price of investment can be strongly influenced by the tax structure. A tax structure that increases the investor's expected risk will raise his supply price of investment. Since mineral rent occurs on returns above this supply price, the lower the supply price of investment, the higher are the expected rent taxation revenues accruing to the government consistent with a decision to invest (Palmer 1980, 522). The "supply price of investment" is the equivalent of the investor's hurdle rate. The determination of the investor hurdle rate by the taxing authority is of critical importance in forming a neutral tax policy.

Evaluation of Alternative Mineral Taxes

Five taxation devices are described in this section. According to Emerson (1984, 19) all explicit taxes applied to mining around the world today may be classified as one of these six, as a variant of one of them, or as a combination of two or more of them.

Fixed Fee (FF)

A fixed fee tax is the sale of a mining right by charging a prior lump-sum fee. The payment can be spread out over time. This approach is most appropriate when the government and investor both have little idea what they are selling or buying. A problem arises, of course, if a successful project is discovered and the government feels it didn't receive an appropriate amount on the front end. This is when the problems associated with the previously mentioned "obsolescing bargain" arise.

Cash bids offered by risk-averse investors, even in highly competitive situations, will be less than the expected tax payments to which they would agree from a tax based on profitability. This is because the investor has assumed all of the risk with the payment of the FF. The government then has no risk since the investor has all of their money up front (Emerson 1984, 20).

If the amount required to win a lease is very large, competition may be limited since many companies may not be able to finance such a large sum. The scale of the bid could be reduced if the FF were combined with a pre-arranged tax based on profitability. The FF would be very easy to impose, once the difficult task of determining what scale the bid should be has been accomplished (Garnaut and Clunies Ross 1983, 92).

Specific or Ad Valorem Duty

The specific or ad valorem duty (SAVD), typically called a royalty, production levy, or severence tax is based upon the volume or value of the commodity. This type of tax is one of the most common taxes in mining. The tax is relatively easy to administer and impose. The difficulty with the SAVD is in determining the tax rate. The rate should not be so high that marginal projects become uneconomic.

The SAVD is non-neutral, since it reduces revenues from each unit of mineral production being taxed. Over the long run this could affect the economic cutoff grade for some mines. This could result in under-utilization of the deposit and premature closure of the mine (Emerson 1984, 20).

The SAVD used as the main form of taxation does not perform well in terms of stability. Revenues could vary with the price cycle of the commodity being taxed. In times of high mineral prices, political pressures might be brought on the taxing authority to raise the SAVD rate (Garnaut and Clunies Ross, 1983, 93).

One method of attempting to reduce the non-neutrality of the SAVD and to increase its stability is to apply it on a sliding scale. The scale could be linked to mineral prices so that when mineral prices are low, the SAVD rate would decrease. This could still be distorting under some circumstances. For example, a mine may have just opened and, despite high mineral prices, may not yet have yielded profits sufficient to cover the costs of exploration and development. The sliding SAVD rate would still apply at the high rate. When prices and the SAVD rate are both low, there may be some mines already in operation that have already recovered the costs of exploration and start-up. The low rate of royalty might allow the investors to retain a large share of the mineral rent, if the SAVD is the primary method of taxation.

Higher Rate of Income Tax

One way of imposing an additional tax on mining is to simply tax profits at a higher than normal rate. If a country already has an income tax established, the imposition of this tax is simplified. There might be greater problems of administration than those associated with the FF or SAVD. If properly administered, however, this type of tax could have far greater adaptability to the circumstances of the project. The imposition of such a tax does raise problems of judgment concerning the rate. If the rate is too high, marginal projects may not be attempted, and if the rate is too low, revenue may be lost.

Progressive Profits Tax

The principle behind the progressive profits tax (PPT) is to tax projects at different rates of accounting profits. This differs from a resource rent tax in that profits, not cumulative cash flow, are the basis for the tax. The tax would be effective before the investor has recovered his investment. Under the PPT, accounting profits representing an annual return on investment (ROI) up to a specified percentage are taxed at one rate and accounting profits that exceed that return are taxed at a higher rate or rates. For example, if total investment amounts to $100 million and the ROI at which the PPT is triggered is 15 percent, accounting profits up to $15 million in any year are taxed at the normal rate of say, 35 percent. Any accounting profits that year in excess of $15 million are taxed at a higher rate (Emerson 1984, 22).

The PPT has an administrative disadvantage compared to the FF and SAVD owing to the potential difficulty of defining actual investment and accounting profits. It might be probable that the large, multi-national mining firm might be able to employ accountants more skilled than those employed by the governments of Fiji, PNG, or the Solomon Islands. Since this tax is based on "accounting profits," the potential for cheating by the investor certainly exists.

Resource Rent Tax

The resource rent tax (RRT) is described to tax mineral rents described earlier in this chapter. The mechanics of this tax, as it applies to the PNG tax system, was described in Chapter 4.

This tax was developed specifically for the taxation of mineral rent. It is incorporated into the PNG minerals tax legislation as the additional profits tax. Basically, the RRT taxes positive net present value. All cash inflows and outflows are added together each year to get a net cash flow. In early years cash flow will be negative since there are no revenues. Expenditures are made on exploration and construction. The negative cash flow is accumulated year by year at a pre-determined interest rate until the accumulated value becomes positive. At that point there is a positive net present value, which is taxed at the RRT rate (35 percent in PNG). Subsequent positive annual net present cash flows are also taxed at the RRT rate. If net cash flows are negative in any following years, the accumulation process starts again and the negative cash flows are carried forward until they become positive again. The RRT does not apply during this period of negative cash flow (Garnaut and Clunies Ross, 1983, 98.)

In theory, the tax should not distort production. This is because the tax does not apply until the project has reached a pre-determined level of profitability. However, setting the rate of profitability can in practice discourage mineral development if the tax rate is set too high, or the level of profitability at which the tax takes effect is too low.

The RRT tax is usually assessed on individual project revenue and is not imposed on company income from other sources. This simplifies the administration and imposition of the tax. Since the rate at which the RRT applies is set at the beginning of the project, the tax is stable and predictable. The problem of the "obsolescing bargain" is avoided if the mine becomes very profitable.

The disadvantage of using only a pure RRT for taxation is the delay in receiving tax revenues. It might be several years before a project reaches a positive accumulated net cash flow. This disadvantage can be alleviated somewhat by utilizing other taxes, such as an ad valorem tax or income tax, to form a "hybrid" system that provides more immediate and stable tax revenues (Palmer 1980, 529).

Chapter 7

CASH FLOW MODEL PARAMETERS

Project Descriptions

The world class PNG gold projects at Lihir and Porgera are likely to be the exceptions in gold exploration in PNG, Fiji, and the Solomon Islands. Because of severe terrain and lack of infrastructure and access, a minimum economic mine size in PNG will probably be on the order of the Misima and Mt. Kare gold projects. Both Fiji and the Solomon Islands are smaller and have less severe terrain than PNG. Therefore, smaller mines such as the Gold Ridge gold project could be economically feasible in those countries. Misima and Gold Ridge will probably typify the deposits most likely to be developed in these countries over time. Misima could be considered a medium-sized project and Gold Ridge a small project. A basic description of both projects is shown in Table 5.

Tax Regime Summary

The current tax regimes of PNG and Fiji were applied to the Misima and Gold Ridge projects. A "hybrid" tax was also used to determine if there is a more optimal taxation approach than the PNG tax regime for gold projects of less than "world class" size. The hybrid tax has an ad valorem

Table 5. Misima and Gold Ridge Project Parameters
(1 troy oz Au = 31.1 grams)

	Gold Ridge	Misima
Reserves (tons/ore)	10,000,000	62,500,000
Ore Grades: Au	2.5 g/t	1.35 g/t
Ag	na	20.0 g/t
Mine life (based on current reserves)	10 years	11 years
Mine type	Open pit	Open pit
Mill type	CIP*	CIP*
Initial Capital costs:		
Exploration-	$ 5,000,000	$ 12,000,000
Mine/mill-	35,000,000	200,000,000
Replacement-	10,000,000**	20,000,000**
Production cost ($/oz Au)	$235.00	$110.00 (Yr 1)*** 150.00 (Yr 2-11)
Gold recovery	90%	90%

* CIP is an abbreviation for carbon-in-pulp.

**Misima: $10,000,000 in yr 10 and 15
Gold Ridge: $5,000,000 in yr 9 and 14

***Production costs are less in Year 1 because ore was stockpiled during plant construction, initial ore grades were higher, and the surface ore was more weathered and thus less refractory. There are no additional significant marginal costs associated with recovering the silver.

Sources: Mining Journal, Feb. 24, 1989, 138.
Lum and Callicutt 1989, 78 and 223.
Graichen 1988, Interview.

royalty tax (higher than PNG and less than Fiji), a "normal" rate of income tax, dividend withholding, straight-line depreciation (no accelerated provisions), and an additional profits tax. The three taxes are summarized in Table 6.

Table 6. Taxation Summary

Tax	PNG	HYBRID	FIJI
Ad valorem (gross revenues)	1.25%	2.5%	5%
Income tax	35%	35%	37.5%
Dividend withholding	17%	15%	15%
Additional Profits Tax	35%	35%	none
Depreciation:			
-Exploration	5 year DB*	5 year SL**	5 year SL
-Capital	10 year DB***	5 year SL	5 year SL
-Accelerated Depreciation	Yes	No	No

*Declining balance. The unamortized balance is divided by 5.

**Straight line.

***Delcining balance. The unamortized balance is divided by 10.

PNG Tax Summary. There is a tax deductible 1.25 percent f.o.b. royalty on gold production gross revenues. The income tax is 35 percent. Dividend withholding taxes paid to the PNG government are 17 percent on dividends paid to non-residents. There is an additional profits tax (APT) of 35 percent on after tax cash flows above a rate of return of 20 percent (or the U.S. prime rate plus 10 percent) on initial capital and exploration costs. Exploration expenditures are depreciated by dividing the unamortized balance by five. Allowable capital expenditures are depreciated by dividing the unamortized balance by 10 or years remaining of mine life, whichever is less. A 15 percent declining balance or 10-year straight line depreciation may also be elected for some plant items. Heavy earth-moving equipment may be amortized using 5-year straight line depreciation or at a 30 percent declining balance. During the investment recovery period, depreciation can be accelerated to reduce taxable income to zero. Losses can be carried forward for 7 years.

Fiji Tax Summary. Production royalties are either 5 percent of gross mineral revenues or 10 percent of the after-tax yield. The 5 percent ad valorem tax was used in the cash flow models. This royalty tax is deductible for tax purposes. Depreciation of exploration and capital costs is 5-year straight line. Income tax is 37.5 percent and the dividend withholding tax paid to the Fiji government on dividends paid to non-residents is 15 percent. There is no additional profits tax.

Hybrid Tax Summary. Ad valorem royalties on production are 2.5 percent and are deductible for tax purposes. Income tax is at 35 percent and there is a 15 percent dividend withholding tax. Depreciation of exploration and capital expenditures is 5-year straight line and cannot be accelerated. There is an additional profits tax of 35 percent on after-tax cash flows above a 20 percent rate of return on initial capital and exploration costs.

Model Assumptions. The following assumptions were used in all cash flow models to simplify the analysis:

1) All output is sold.

2) All costs and revenues are U.S. dollars.

3) The analyses are made using constant dollars.

4) Operating costs include both mining and milling.

5) The host government has no equity in the project.

6) Interest income or expense is excluded. This is to simplify the analyses.

7) There are no lags in receipts and expenditures. Taxes, dividends, and royalties are assumed to be paid in the year they are incurred.

8) Mine life and production rates are based on current published reserves.

9) No salvage values for either project were available from the literature. An attempt to approximate a salvage value was made by assuming that ongoing exploration would likely expand reserves for 5 years of additional production. A net present value from the cash flows of this 5-year period was calculated. This NPV was included in the final calculation of investor and government NPV.

10) A net present value (NPV) was calculated for both investor and government revenues at the rate of 10 percent. This evaluation criteria was used because net present value analysis puts the revenue streams to both the government and the investor on a common evaluation basis. The revenue stream to the investor is from net, after tax, cash flow from project operations. The revenue stream to the government is the sum of the various taxes imposed on the operation. Net present value can be considered the cumulative present worth of positive and negative revenue streams at a specified discount rate to handle the time value of money (Stermole 1987, 9).

11) The 10 percent discount rate used to calculate net present value is more likely to represent a government's social discount rate than an investor's required hurdle rate. The hurdle rate for investors for mining projects would likely be substantially higher. However, since this

thesis deals with tax regimes as they affect government revenues, the lower discount rate is appropriate.

The 10 percent rate is a combination of a real rate of interest of 5 percent plus an additional 5 percent for the risk factors involved to the government. The real rate was derived by subtracting the approximate rate of inflation, 5 percent, from the current (March 1990) U.S. prime rate of 10 percent. A "risk premium" of 5 percent was arbitrarily chosen to account for technological and geologic risks that could affect the success of the project.

12) The cash flows were computed at prices of $350, $400, and $450 per ounce of gold. This price range accounts for about 85 percent of the monthly average gold prices from January 1984 to March 1989 (Milling Stanley 1989, 12).

13) The net present values (NPV) and investor rates of return (ROR) were calculated with the use of a LOTUS spreadsheet computer program.

Results of Cash Flow Analyses

The net present values of the revenue streams to both the government and the investor are shown for the Misima Mine in Table 7. In this model, the government NPV at the $350 per ounce level was highest under the Fiji tax.

Table 7. Cash Flow Model Analysis: Misima Model
(U.S. millions of dollars)

	PNG Tax	Fiji Tax	Hybrid Tax
Au: $350/oz			
Investor NPV @ 10%	$ 81.9	$ 72.4	$ 81.5
Total govt revenues:	$252.8	$292.7	$244.5
Govt NPV @ 10%	$119.1	$126.2	$107.6
Au: $400/oz			
Investor NPV @ 10%	$110.4	$115.9	$107.6
Total govt revenues:	$415.5	$372.2	$440.4
Govt NPV @ 10%	$177.7	$165.7	$177.1
Au: $450/oz			
Investor NPV @ 10%	$135.5	$161.4	$133.2
Total govt revenues:	$563.2	$455.3	$577.0
Govt NPV @ 10%	$244.3	$207.0	$241.1

Source: Appendix

and the hybrid tax are virtually identical in the discounted revenues realized by the government. Higher total revenues are provided under the hybrid tax. This occurs because the larger amounts collected by the hybrid tax occur somewhat further out in time from the start of production.

The investor's NPV is lowest under the Fiji tax compared with the other two taxes at the $350 level. At the $400 and $450 levels, the investor's NPV is significantly higher under the Fiji tax. This is because the Fiji tax does not capture rents when they are generated at these favorable price levels. These rents accrue to the investor instead.

The government and investor NPVs from the Gold Ridge Mine are shown in Table 8. At the $350 and $400 levels, the Fiji tax captured both higher total and discounted revenues for the government. At the $450 level, total revenues for the government dropped compared to the PNG and hybrid tax, but the discounted revenues (NPV) were not significantly different from the other two taxes. There was no significant difference in the government's NPV between the hybrid and PNG tax. The higher tax collection by the Fiji tax system at the $350 and $400 levels occurs at significant

Table 8. Cash Flow Model Analysis: Gold Ridge Model
(U.S. millions of dollars)

	PNG Tax	Fiji Tax	Hybrid Tax
Au: $350/oz			
Investor NPV @ 10%	$ 4.0	$ (.6)	$ 2.4
Total govt revenues:	$28.0	$38.1	$31.3
Govt NPV @ 10%	$10.0	$15.2	$11.7
Au: $400/oz			
Investor NPV @ 10%	$17.9	$12.8	$16.4
Total govt revenues:	$47.0	$62.3	$53.5
Govt NPV @ 10%	$20.9	$26.4	$22.3
Au: $450/oz			
Investor NPV @ 10%	$25.6	$25.8	$24.9
Total govt revenues:	$96.0	$86.5	$99.0
Govt NPV @ 10%	$39.5	$38.2	$39.7

Source: Appendix

hybrid and PNG tax. The higher tax collection by the Fiji tax system at the $350 and $400 levels occurs at significant expense to the investor. The investor's NPV is the lowest under the Fiji tax system at these price levels compared to the other two tax schemes.

Chapter 8

CONCLUSIONS

Small, non-rent producing projects such as the Gold Ridge project, (800,000 ounces of geologic reserves) could be taxed effectively by a relatively simple tax such as the Fiji tax. The high (relative to PNG's ad valorem of 1.25 percent) ad valorem tax of 5 percent used by Fiji is somewhat offset in impact to the investor by the generous depreciation provisions in the tax law. There should be concern that the high ad valorem tax in Fiji might discourage mine development of new gold projects that are clearly marginal. A simple remedy might be a "sliding-scale" royalty for new projects based on gold price. The relatively simple Fiji tax will not capture economic rents if they occur. However, it meets the criteria for ease of administration and imposition. This could be a very important consideration in less developed countries.

The medium-sized gold mine, Missma, (2.5 million ounces of geologic reserves) produces mineral rents at the $400 and $450 oz/gold price levels. The Fiji tax failed to capture significant portions of this rent for the government at these price levels. Rent-based taxes, such as the PNG and hybrid tax schemes, did capture a portion of the rents.

These types of taxes are the optimal tax regime for mines of this magnitude or larger.

It is likely that, in the quest for "world class" gold deposits such as Lihir and Porgera, some small- and medium-size projects will also be found in Fiji, PNG and the Solomon Islands. This is also true for other geologically similiar countries in the region, such as Indonesia, Malaysia, Thailand, and the Philippines.

These developing countries will need a minerals tax regime that would optimize government revenues over time and yet be neutral, stable, and easy to administer and impose.

The PNG tax system, while meeting the criteria for neutrality and revenue maximization, can be difficult for an undeveloped country to administer and impose. This system has no significant revenue gathering advantages for government when applied to small, non-rent producing mines.

The hybrid tax, compared to the PNG tax, is much easier to administer and impose because the depreciation provisions are much more straightforward. This tax should meet the criteria for neutrality at least as well as the PNG tax since the results on investor ROR were very similiar to those under the PNG tax. The higher (than PNG) ad valorem royalty provides revenues more immediately for government.

Revenues are optimized over time by capturing rents if they occur.

The Fiji tax, except in the case of low gold prices, is just as effective as the rent-based PNG and hybrid taxes on small, possibly marginal projects. This tax has the advantage of being easily imposed and monitored owing to its simplicity. It has the possible disadvantage of discouraging production from marginal mines.

Thus, the use of a complicated, resource rent based tax like the PNG tax regime is not the optimal choice for small gold mines in developing countries such as PNG, Fiji, and the Solomon Islands. This is especially true for small mines, from the criteria of imposition and administration. A "small" gold mine could probably be considered one that has less than 1 million ounces of recoverable reserves.

A medium sized gold project might be considered one that has between 1 and 2.5 million ounces of recoverable gold. These projects could possibly have the potential for generating rents at gold prices above $400 per ounce of gold. These types of projects should be taxed under a system such as the hybrid tax. Its simpler depreciation provisions make it much easier to administer and monitor. Cheating by the investor in his accounting practices is harder to achieve. The higher ad valorem would ensure a more stable revenue stream that is independent of of project profits. Since most of the projects under exploration in Fiji, PNG, and the Solomon Islands by outside investors are medium or small projects, alternate systems of taxation other than the current PNG tax regime would be a more optimal choice for these countries.

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Appendix

TAX REGIME CASH FLOW ANALYSES

Model 1.
Gold Ridge Project
(1) Fiji tax regime. Dollar amounts are constant US dollars (x 1000).
(2) Au @ $350/oz .

YEAR	1-3	4	5	6	7	8
Output (1000 oz Au)			72.34	72.34	72.34	72.34
Revenue @ $350/oz			$25,319.00	$25,319.00	$25,319.00	$25,319.00
Less: Exploration	(5,000.00)					
Capital Expenditure	(15,000.00)	(20,000.00)				
Less: Govt Royalty @ 5.0%			1,265.95	1,265.95	1,265.95	1,265.95
Operating Costs @ $17/ton ($235 oz Au)			17,000.00	17,000.00	17,000.00	17,000.00
Operating Profit			7,053.05	7,053.05	7,053.05	7,053.05
Less Amortization/Depreciation:						
-Allowable Capital Expenditure			7,000.00	7,000.00	7,000.00	7,000.00
-Exploration Expenditure			53.05	53.05	53.05	53.05
Taxable Revenues			0.00	0.00	0.00	0.00
Less: Income Tax @ 37.5%			0.00	0.00	0.00	0.00
Net Income			0.00	0.00	0.00	0.00
Plus: Sum Amortization/Depreciation			7,053.05	7,053.05	7,053.05	7,053.05
Net Cash Flow (NCF)	($20,000)	($20,000)	$7,053.05	$7,053.05	$7,053.05	$7,053.05
Government Revenues:						
-Royalties (5%)			1,265.95	1,265.95	1,265.95	1,265.95
-Income Tax (37.5%)			0.00	0.00	0.00	0.00
-Dividend Witholding (15%)			0.00	0.00	0.00	0.00
Total			1,265.95	1,265.95	1,265.95	1,265.95

Total Government Revenues (Years 5-19)	$38,094.66
NPV of Government Revenues @ 10%	$7.00
Investor Rate of Return	9.67%
Investor NPV @ 10%	($582.45)

Model 1.
Gold Ridge Project
(1) Fiji tax regime.
(2) Au @ $350/oz

YEAR	9	10	11	12	13	14	15-19
Output (1000 oz Au)	72.34	72.34	72.34	72.34	72.34	72.34	
Revenue @ $350/oz	$25,319.00	$25,319.00	$25,319.00	$25,319.00	$25,319.00	$25,319.00	
Less: Exploration							
Capital Expend	(5,000.00)					(5,000.00)	
Less: Govt Royalty @	1,265.95	1,265.95	1,265.95	1,265.95	1,265.95	1,265.95	
Operating Cost	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	
Operating Profit	2,053.05	7,053.05	7,053.05	7,053.05	7,053.05	2,053.05	
Less Amortization/De							
-Allowable Capital E	2,053.05	5,946.95	1,000.00	1,000.00	1,000.00	1,000.00	
-Exploration Expendi	0.00	1,106.10	3,681.70				
Taxable Revenues	0.00	0.00	2,371.35	6,053.05	6,053.05	1,053.05	
Less: Income Tax @ 3	0.00	0.00	889.26	2,269.89	2,269.89	394.89	
Net Income	0.00	0.00	1,482.09	3,783.16	3,783.16	658.16	
Plus: Sum Amortizati	2,053.05	7,053.05	4,681.70	1,000.00	1,000.00	1,000.00	
Net Cash Flow (NCF)	$2,053.05	$7,053.05	$6,163.79	$4,783.16	$4,783.16	$1,658.16	$16,033.89 (NPV of NCF, yr 15-19)
Government Revenues:							
-Royalties (5%)	1,265.95	1,265.95	1,265.95	1,265.95	1,265.95	1,265.95	
-Income Tax (37.5%)	0.00	0.00	889.26	2,269.89	2,269.89	394.89	
-Dividend Witholding	0.00	0.00	100.04	255.36	255.36	44.43	
Total	1,265.95	1,265.95	2,255.25	3,791.21	3,791.21	1,705.27	12,708.72

Model 2.
Gold Ridge Project
(1) Fiji Tax Regime. Dollar amounts are constant US dollars (x 1000).
(2) Au @ $400/oz

YEAR	1-3	4	5	6	7	8
Output (1000 oz Au)			72.34	72.34	72.34	72.34
Revenue @ $400/oz			$28,936.00	$28,936.00	$28,936.00	$28,936.00
Less: Exploration	(5,000.00)					
Capital Expenditure	(15,000.00)	(20,000.00)				
Less: Govt Royalty @ 5.0%			1,446.80	1,446.80	1,446.80	1,446.80
Operating Costs @ $17/ton ($235 oz Au)			17,000.00	17,000.00	17,000.00	17,000.00
Operating Profit			10,489.20	10,489.20	10,489.20	10,489.20
Less Amortization/Depreciation:						
-Allowable Capital Expenditure			7,000.00	7,000.00	7,000.00	7,000.00
-Exploration Expenditure			1,000.00	1,000.00	1,000.00	1,000.00
Taxable Revenues			2,489.20	2,489.20	2,489.20	2,489.20
Less: Income Tax @ 37.5%			933.45	933.45	933.45	933.45
Net Income			1,555.75	1,555.75	1,555.75	1,555.75
Plus: Sum Amortization/Depreciation			8,000.00	8,000.00	8,000.00	8,000.00
Net Cash Flow (NCF)	($20,000)	($20,000)	$9,555.75	$9,555.75	$9,555.75	$9,555.75
Government Revenues:						
-Royalties (5%)			1,446.80	1,446.80	1,446.80	1,446.80
-Income Tax (37.5%)			933.45	933.45	933.45	933.45
-Dividend Witholding (15%)			105.01	105.01	105.01	105.01
Total			2,485.26	2,485.26	2,485.26	2,485.26

Total Government Revenues (Years 5-19)	$62,310.20
NPV of Government Revenues @ 10%	$26,454.24
Investor Rate of Return	16.61%
Investor NPV @ 10%	$12,795.00

Model 2.
Gold Ridge Project
(1) Fiji Tax Regime.
(2) Au @ $400/oz

YEAR	9	10	11	12	13	14	15-19
Output (1000 oz Au)	72.34	72.34	72.34	72.34	72.34	72.34	
Revenue @ $400/oz	$28,936.00	$28,936.00	$28,936.00	$28,936.00	$28,936.00	$28,936.00	
Less: Exploration							
Capital Expend	(5,000.00)					(5,000.00)	
Less: Govt Royalty @	1,446.80	1,446.80	1,446.80	1,446.80	1,446.80	1,446.80	
Operating Cost	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	
Operating Profit	5,489.20	10,489.20	10,489.20	10,489.20	10,489.20	5,489.20	
Less Amortization/De							
-Allowable Capital E	4,489.20	3,510.80	1,000.00	1,000.00	1,000.00	1,000.00	
-Exploration Expendi	1,000.00						
Taxable Revenues	0.00	6,978.40	9,489.20	9,489.20	9,489.20	4,489.20	
Less: Income Tax @ 3	0.00	2,616.90	3,558.45	3,558.45	3,558.45	1,683.45	
Net Income	0.00	4,361.50	5,930.75	5,930.75	5,930.75	2,805.75	
Plus: Sum Amortizati	5,489.20	3,510.80	1,000.00	1,000.00	1,000.00	1,000.00	
Net Cash Flow (NCF)	$5,489.20	$7,872.30	$6,930.75	$6,930.75	$6,930.75	$3,805.75	$23,233.02 (NPV of NCF, yr 15-19)
Government Revenues:							
-Royalties (5%)	1,446.80	1,446.80	1,446.80	1,446.80	1,446.80	1,446.80	
-Income Tax (37.5%)	0.00	2,616.90	3,558.45	3,558.45	3,558.45	1,683.45	
-Dividend Witholding	0.00	294.40	400.33	400.33	400.33	189.39	
Total	1,446.80	4,358.10	5,405.58	5,405.58	5,405.58	3,319.64	18,116.99

Model 3.
Gold Ridge Project
(1) Fiji tax regime. Dollar amounts are constant US dollars (x 1000).
(2) Au @ $450/oz

YEAR	1-3	4	5	6	7	8
Output (1000 oz Au)			72.34	72.34	72.34	72.34
Revenue @ $450/oz			$32,553.00	$32,553.00	$32,553.00	$32,553.00
Less: Exploration	(5,000.00)					
Capital Expenditure	(15,000.00)	(20,000.00)				
Less: Govt Royalty @ 5.0%			1,627.65	1,627.65	1,627.65	1,627.65
Operating Costs @ $17/ton ($235 oz Au)			17,000.00	17,000.00	17,000.00	17,000.00
Operating Profit			13,925.35	13,925.35	13,925.35	13,925.35
Less Amortization/Depreciation:						
-Allowable Capital Expenditure			7,000.00	7,000.00	7,000.00	7,000.00
-Exploration Expenditure			1,000.00	1,000.00	1,000.00	1,000.00
Taxable Revenues			5,925.35	5,925.35	5,925.35	5,925.35
Less: Income Tax @ 37.5%			2,222.01	2,222.01	2,222.01	2,222.01
Net Income			3,703.34	3,703.34	3,703.34	3,703.34
Plus: Sum Amortization/Depreciation			8,000.00	8,000.00	8,000.00	8,000.00
Net Cash Flow (NCF)	($20,000)	($20,000)	$11,703.34	$11,703.34	$11,703.34	$11,703.34
Government Revenues:						
-Royalties (5%)			1,627.65	1,627.65	1,627.65	1,627.65
-Income Tax (37.5%)			2,222.01	2,222.01	2,222.01	2,222.01
-Dividend Witholding (15%)			249.98	249.98	249.98	249.98
Total			4,099.63	4,099.63	4,099.63	4,099.63

Total Government Revenues (Years 5-19)	$86,525.73
NPV of Government Revenues @ 10%	$38,212.61
Investor Rate of Return	22.33%
Investor NPV @ 10%	$25,830.03

Model 3.
Gold Ridge Project
(1) Fiji tax regime.
(2) Au @ $450/oz

YEAR	9	10	11	12	13	14
Output (1000 oz Au)	72.34	72.34	72.34	72.34	72.34	72.34
Revenue @ $450/oz	$32,553.00	$32,553.00	$32,553.00	$32,553.00	$32,553.00	$32,553.00
Less: Exploration						
Capital Expend	(5,000.00)					(5,000.00)
Less: Govt Royalty @	1,627.65	1,627.65	1,627.65	1,627.65	1,627.65	1,627.65
Operating Cost	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00
Operating Profit	8,925.35	13,925.35	13,925.35	13,925.35	13,925.35	8,925.35
Less Amortization/De						
-Allowable Capital E	7,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
-Exploration Expendi	1,000.00					
Taxable Revenues	925.35	12,925.35	12,925.35	12,925.35	12,925.35	7,925.35
Less: Income Tax @ 3	347.01	4,847.01	4,847.01	4,847.01	4,847.01	2,972.01
Net Income	578.34	8,078.34	8,078.34	8,078.34	8,078.34	4,953.34
Plus: Sum Amortizati	8,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Net Cash Flow (NCF)	$8,578.34	$9,078.34	$9,078.34	$9,078.34	$9,078.34	$5,953.34
Government Revenues:						
-Royalties (5%)	1,627.65	1,627.65	1,627.65	1,627.65	1,627.65	1,627.65
-Income Tax (37.5%)	347.01	4,847.01	4,847.01	4,847.01	4,847.01	2,972.01
-Dividend Witholding	39.04	545.29	545.29	545.29	545.29	334.35
Total	2,013.69	7,019.94	7,019.94	7,019.94	7,019.94	4,934.01

Model 4.
Gold Ridge Project
(1) PNG tax regime. Dollar amounts are constant US dollars (x 1000).
(2) Au @ $350/oz

YEAR	1-3	4	5	6	7	8
Output (1000 oz Au)			72.34	72.34	72.34	72.34
Revenue @ $350/oz			$25,319.00	$25,319.00	$25,319.00	$25,319.00
Less: Exploration	(5,000.00)					
Capital Expenditure	(15,000.00)	(20,000.00)				
Less: Govt Royalty @ 1.25%			316.49	316.49	316.49	316.49
Operating Costs ($235 oz Au)			17,000.00	17,000.00	17,000.00	17,000.00
Operating Profit			8,002.51	8,002.51	8,002.51	8,002.51
Less Amortization/Depreciation:						
-Allowable Capital Expenditure			3,500.00	2,800.00	2,079.75	1,343.50
-Exploration Expenditure			1,000.00	800.00	640.00	512.00
-Accelerated Deduction: Capital Expenditure*			3,502.51	4,402.51	5,282.76	6,147.01
Taxable Revenues			0.00	0.00	0.00	0.00
Less: Income Tax @ 35%			0.00	0.00	0.00	0.00
Net Income			0.00	0.00	0.00	0.00
Plus: Sum Amortization/Depreciation			8,002.51	8,002.51	8,002.51	8,002.51
Net Cash Flow (NCF)	($20,000)	($20,000)	$8,002.51	$8,002.51	$8,002.51	$8,002.51
Accumulated NCF at 20% "Accumulation Rate":	(20,000.00)	(44,000.00)	(44,797.49)	(45,754.47)	(46,902.86)	(48,280.92)
Income Subject to Additional Profits Tax: Accumulated NCF > 0			0.00	0.00	0.00	0.00
APT @ 35%			0.00	0.00	0.00	0.00
Government Revenues:						
-Royalties (1.25%)			316.49	316.49	316.49	316.49
-Income Tax @ 35%			0.00	0.00	0.00	0.00
-Dividend Withholding @ 17%			0.00	0.00	0.00	0.00
Total			316.49	316.49	316.49	316.49

Total Government Revenues (Years 5-19) $28,090.50
Net Present Value @ 10% $10,031.49
Investor Rate of Return 12.18%
Investor NPV @ 10% $3,955.91
*Accelerated depreciation allowed to reduce taxable revenues
to zero in attempt to reach target income" of $10,000 (25% x $40,000)

Model 4.
Gold Ridge Project
(1) PNG tax regime.
(2) Au @ $350/oz

YEAR	9	10	11	12	13	14	15-19
Output (1000 oz Au)	72.34	72.34	72.34	72.34	72.34	72.34	
Revenue @ $350/oz	$25,319.00	$25,319.00	$25,319.00	$25,319.00	$25,319.00	$25,319.00	
Less: Exploration							
Capital Expend	(5,000.00)					(5,000.00)	
Less: Govt Royalty @	316.49	316.49	316.49	316.49	316.49	316.49	
Operating Cost	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	
Operating Profit	3,002.51	8,002.51	8,002.51	8,002.51	8,002.51	3,002.51	
Less Amortization/De							
-Allowable Capital E	594.20	834.90	675.24	0.00	0.00	0.00	
-Exploration Expendi	409.60	327.70	327.70	327.70	327.70	327.70	
-Accelerated Deducti	1,998.71	6,839.91	0.00	0.00	0.00	0.00	
Taxable Revenues	0.00	0.00	6,999.57	7,674.81	7,674.81	2,674.81	
Less: Income Tax @ 3	0.00	0.00	2,449.85	2,686.18	2,686.18	936.18	
Net Income	0.00	0.00	4,549.72	4,988.63	4,988.63	1,738.63	
Plus: Sum Amortizati	3,002.51	8,002.51	1,002.94	327.70	327.70	327.70	
Net Cash Flow (NCF)	$3,002.51	$8,002.51	$5,552.66	$5,316.33	$5,316.33	$2,066.33	18,994.42 (NPV yr 15-19)
Accumulated NCF							
at 20% "Accumulation	(54,934.59)	(57,918.99)	(63,950.13)	(71,423.83)	(80,392.27)	(94,404.39)	
Income Subject to Ad							
Tax: Accumulated NCF	0.00	0.00	0.00	0.00	0.00	0.00	
APT @ 35%	0.00	0.00	0.00	0.00	0.00	0.00	
Government Revenues:							
-Royalties (1.25%)	316.49	316.49	316.49	316.49	316.49	316.49	
-Income Tax @ 35%	0.00	0.00	2,449.85	2,686.18	2,686.18	936.18	
-Dividend Withholdin	0.00	0.00	348.05	381.63	381.63	133.01	
Total	316.49	316.49	3,114.39	3,384.30	3,384.30	1,385.68	10,004.78 (NPV yr 15-19)

Model 5.
Gold Ridge Project
(1) PNG tax regime. Dollar amounts are constant US dollars (x 1000).
(2) Au @ $400/oz

YEAR	1-3	4	5	6	7	8
Output (1000 oz Au)			72.34	72.34	72.34	72.34
Revenue @ $400/oz			$28,936.00	$28,936.00	$28,936.00	$28,936.00
Less: Exploration	(5,000.00)					
Capital Expenditure	(15,000.00)	(20,000.00)				
Less: Govt Royalty @ 1.25%			361.70	361.70	361.70	361.70
Operating Costs @$17/ton ($235 oz Au)			17,000.00	17,000.00	17,000.00	17,000.00
Operating Profit			11,574.30	11,574.30	11,574.30	11,574.30
Less Amortization/Depreciation:						
-Allowable Capital Expenditure			3,500.00	3,212.30	2,828.50	2,311.50
-Exploration Expenditure			1,000.00	800.00	640.00	512.00
-Accelerated Deduction: Capital Expenditure			2,585.00	3,074.70	3,619.00	4,264.20
Taxable Revenues			4,489.30	4,487.30	4,486.80	4,486.60
Less: Income Tax @ 35%			1,571.25	1,570.55	1,570.38	1,570.31
Net Income			2,918.05	2,916.75	2,916.42	2,916.29
Plus: Sum Amortization/Depreciation			7,085.00	7,087.00	7,087.50	7,087.70
Net Cash Flow (NCF)*	($20,000)	($20,000)	$10,003.05	$10,003.75	$10,003.92	$10,003.99
NCF Accumulated at 20% "Accumulation Rate":	(20,000.00)	(44,000.00)	(42,796.96)	(41,352.60)	(39,619.20)	(37,539.05)
Income Subject to Additional Profits Tax: Accumulated NCF > 0			0.00	0.00	0.00	0.00
APT @ 35%			0.00	0.00	0.00	0.00
Government Revenues:						
-Royalties (1.25%)			361.70	361.70	361.70	361.70
-Income Tax @ 35%			1,571.25	1,570.55	1,570.38	1,570.31
-Dividend Withholding @ 17%			223.23	223.13	223.11	223.10
Total			2,156.19	2,155.39	2,155.19	2,155.11

Total Government Revenues (Years 5-19) $46,985.67
Net Present Value @ 10% $20,890.75
Investor Rate of return 18.62%
Investor NPV @ 10% $17,943.52
*Meets "target income" of $10,000, calculated by multiplying $40,000 (exploration and capital cost) by 25%.

Model 5.
Gold Ridge Project
(1) PNG tax regime.
(2) Au @ $400/oz

YEAR	9	10	11	12	13	14	15-19
Output (1000 oz Au)	72.34	72.34	72.34	72.34	72.34	72.34	
Revenue @ $400/oz	$28,936.00	$28,936.00	$28,936.00	$28,936.00	$28,936.00	$28,936.00	
Less: Exploration							
Capital Expend	(5,000.00)					(5,000.00)	
Less: Govt Royalty @	361.70	361.70	361.70	361.70	361.70	361.70	
Operating Cost	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	
Operating Profit	6,574.30	11,574.30	11,574.30	11,574.30	11,574.30	6,574.30	
Less Amortization/De							
-Allowable Capital E	1,600.80	2,600.80	2,600.80	2,600.80	2,600.80	2,600.80	
-Exploration Expendi	409.60	327.70	327.70	327.70	327.70	327.70	
-Accelerated Deducti							
Taxable Revenues	4,563.90	8,645.80	8,645.80	8,645.80	8,645.80	3,645.80	
Less: Income Tax @ 3	1,597.37	3,026.03	3,026.03	3,026.03	3,026.03	1,276.03	
Net Income	2,966.54	5,619.77	5,619.77	5,619.77	5,619.77	2,369.77	
Plus: Sum Amortizati	2,010.40	2,928.50	2,928.50	2,928.50	2,928.50	2,928.50	
Net Cash Flow (NCF)*	$4,976.94	$8,548.27	$8,548.27	$8,548.27	$8,548.27	$5,298.27	$28,655.13 (NPV yr 15-19)
NCF Accumulated							
at 20% "Accumulation	(40,069.93)	(39,535.64)	(38,894.50)	(38,125.13)	(37,201.89)	(39,343.99)	
Income Subject to Ad							
Tax: Accumulated NCF	0.00	0.00	0.00	0.00	0.00	0.00	
APT @ 35%	0.00	0.00	0.00	0.00	0.00	0.00	
Government Revenues:							
-Royalties (1.25%)	361.70	361.70	361.70	361.70	361.70	361.70	
-Income Tax @ 35%	1,597.37	3,026.03	3,026.03	3,026.03	3,026.03	1,276.03	
-Dividend Withholdin	226.94	429.91	429.91	429.91	429.91	181.29	
Total	2,186.00	3,817.64	3,817.64	3,817.64	3,817.64	1,819.02	12,797.40 (NPV yr 15-19)

Model 6.
Gold Ridge Project
(1) PNG Tax Regime. Dollar amounts are constant US dollars (x 1000).
(2) Au @ $450/oz

YEAR	1-3	4	5	6	7	8
Output (1000 oz Au)			72.34	72.34	72.34	72.34
Revenue @ $450/oz			$32,553.00	$32,553.00	$32,553.00	$32,553.00
Less: Exploration	(5,000.00)					
Capital Expenditure	(15,000.00)	(20,000.00)				
Less: Govt Royalty @ 1.25%			406.91	406.91	406.91	406.91
Operating Costs ($235 oz Au)			17,000.00	17,000.00	17,000.00	17,000.00
Operating Profit			15,146.09	15,146.09	15,146.09	15,146.09
Less Amortization/Depreciation:						
-Allowable Capital Expenditure			2,500.00	2,500.00	2,500.00	2,500.00
-Exploration Expenditure			1,000.00	800.00	640.00	512.00
-Plant (Earth Moving Equip)			3,000.00	2,100.00	1,633.30	1,633.30
-Accelerated Deduction: Capital Expenditure			0.00	0.00	0.00	0.00
Taxable Revenues			8,646.09	9,746.09	10,372.79	10,500.79
Less: Income Tax @ 35%			3,026.13	3,411.13	3,630.48	3,675.28
Net Income			5,619.96	6,334.96	6,742.31	6,825.51
Plus: Sum Amortization/Depreciation			6,500.00	5,400.00	4,773.30	4,645.30
Net Cash Flow (NCF)	($20,000)	($20,000)	$12,119.96	$11,734.96	$11,515.61	$11,470.81
Accumulated NCF at 20% "Accumulation Rate":	(20,000.00)	(44,000.00)	(40,680.04)	(37,081.09)	(32,981.70)	(28,107.23)
Income Subject to Additional Profits Tax: Accumulated NCF > 0			0.00	0.00	0.00	0.00
APT @ 35%			0.00	0.00	0.00	0.00
NCF After APT	(20,000.00)	(20,000.00)	12,119.96	11,734.96	11,515.61	11,470.81
Government Revenues:						
-Royalties (1.25%)			406.91	406.91	406.91	406.91
-Income Tax @ 35%			3,026.13	3,411.13	3,630.48	3,675.28
-Dividend Withholding @ 17%			429.93	484.62	515.79	522.15
-APT			0.00	0.00	0.00	0.00
Total			3,862.97	4,302.67	4,553.17	4,604.34

Total Government Revenues (Years 5-19) $96,027.66
Net Present Value @ 10% $39,547.48
Investor Rate of Return 23.76% Investor ROR (after APT) 22.63%
Investor NPV @ 10% $30,856.69 Investor NPV @10% (after APT) $25,639.53

Model 6.
Gold Ridge Project
(1) PNG Tax Regime.
(2) Au @ $450/oz

YEAR	9	10	11	12	13	14	15-19
Output (1000 oz Au)	72.34	72.34	72.34	72.34	72.34	72.34	
Revenue @ $450/oz	$32,553.00	$32,553.00	$32,553.00	$32,553.00	$32,553.00	$32,553.00	
Less: Exploration							
Capital Expend	(5,000.00)					(5,000.00)	
Less: Govt Royalty @	406.91	406.91	406.91	406.91	406.91	406.91	
Operating Cost	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	
Operating Profit	10,146.09	15,146.09	15,146.09	15,146.09	15,146.09	10,146.09	
Less Amortization/De							
-Allowable Capital E	2,500.00	3,500.00	3,500.00	3,500.00	3,500.00	3,500.00	
-Exploration Expendi	409.60	327.70	327.70	327.70	327.70	327.70	
-Plant (Earth Moving	1,633.30	0.00	0.00	0.00	0.00	0.00	
-Accelerated Deducti	0.00	0.00	0.00	0.00	0.00	0.00	
Taxable Revenues	5,603.19	11,318.39	11,318.39	11,318.39	11,318.39	6,318.39	
Less: Income Tax @ 3	1,961.12	3,961.44	3,961.44	3,961.44	3,961.44	2,211.44	
Net Income	3,642.07	7,356.95	7,356.95	7,356.95	7,356.95	4,106.95	
Plus: Sum Amortizati	4,542.90	3,827.70	3,827.70	3,827.70	3,827.70	3,827.70	
Net Cash Flow (NCF)	$8,184.97	$11,184.65	$11,184.65	$11,184.65	$11,184.65	$7,934.65	$34,175.05 (NPV yr 15-19
Accumulated NCF							
at 20% "Accumulation	(25,543.70)	(19,467.79)	(12,176.70)	(3,427.39)	7,071.79	7,934.65	
Income Subject to Ad							
Tax: Accumulated NCF	0.00	0.00	0.00	0.00	7,071.79	7,934.65	
APT @ 35%	0.00	0.00	0.00	0.00	2,475.12	2,777.13	
NCF After APT	8,184.97	11,184.65	11,184.65	11,184.65	8,709.53	5,157.52	22,213.75 (NPV yr 15-19)
Government Revenues:							
-Royalties (1.25%)	406.91	406.91	406.91	406.91	406.91	406.91	
-Income Tax @ 35%	1,961.12	3,961.44	3,961.44	3,961.44	3,961.44	2,211.44	
-Dividend Withholdin	278.62	562.81	562.81	562.81	562.81	314.18	
-APT	0.00	0.00	0.00	0.00	2,475.12	2,777.13	
Total	2,646.65	4,931.15	4,931.15	4,931.15	7,406.28	5,709.66	32,280.21 (NPV yr 15-19)

Model 7.
Gold Ridge Project
(1) Hybrid Tax Regime. Dollar amounts are constant US dollars (x 1000).
(2) Au @ $350/oz

YEAR	1-3	4	5	6	7	8
Output (1000 oz Au)			72.34	72.34	72.34	72.34
Revenue @ $350/oz			$25,319.00	$25,319.00	$25,319.00	$25,319.00
Less: Exploration	(5,000.00)					
Capital Expenditure	(15,000.00)	(20,000.00)				
Less: Govt Royalty @ 2.5%			632.98	632.98	632.98	632.98
Operating Costs @ $17/ton ($235 oz Au)			17,000.00	17,000.00	17,000.00	17,000.00
Operating Profit			7,686.03	7,686.03	7,686.03	7,686.03
Less Amortization/Depreciation:						
-Allowable Capital Expenditure			6,686.02	6,686.02	6,686.02	6,686.02
-Exploration Expenditure			1,000.00	1,000.00	1,000.00	1,000.00
-Accelerated Deduction: Capital Expenditure			0.00	0.00	0.00	0.00
Taxable Revenues			0.00	0.00	0.00	0.00
Less: Income Tax @ 35%			0.00	0.00	0.00	0.00
Net Income			0.00	0.00	0.00	0.00
Plus: Sum Amortization/Depreciation			7,686.02	7,686.02	7,686.02	7,686.02
Net Cash Flow (NCF)	($20,000)	($20,000)	$7,686.02	$7,686.02	$7,686.02	$7,686.02
NCF Accumulated at 20% "Accumulation Rate":	(20,000.00)	(44,000.00)	(45,113.98)	(46,450.75)	(48,054.88)	(49,979.83)
Income Subject to Additional Profits Tax: Accumulated NCF > 0			0.00	0.00	0.00	0.00
APT @ 35%			0.00	0.00	0.00	0.00
NCF After APT	(20,000.00)	(20,000.00)	7,686.02	7,686.02	7,686.02	7,686.02
Government Revenues:						
-Royalties (2.50%)			632.98	632.98	632.98	632.98
-Income Tax @ 35%			0.00	0.00	0.00	0.00
-Dividend Withholding @ 15%			0.00	0.00	0.00	0.00
-APT			0.00	0.00	0.00	0.00
Total			632.98	632.98	632.98	632.98

Total Government Revenues (Years 5-19) $31,272.16
Net Present Value @ 10% $11,705.74
Investor ROR 11.35%
Investor NPV @10% (after APT) $2,430.19

Model 7.
Gold Ridge Project
(1) Hybrid Tax Regim
(2) Au @ $350/oz

YEAR	9	10	11	12	13
Output (1000 oz Au)	72.34	72.34	72.34	72.34	72.34
Revenue @ $350/oz	$25,319.00	$25,319.00	$25,319.00	$25,319.00	$25,319.00
Less: Exploration					
Capital Expend	(5,000.00)				
Less: Govt Royalty @	632.98	632.98	632.98	632.98	632.98
Operating Cost	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00
Operating Profit	2,686.03	7,686.03	7,686.03	7,686.03	7,686.03
Less Amortization/De					
-Allowable Capital E	1,686.02	7,569.90	1,000.00	1,000.00	1,000.00
-Exploration Expendi	1,000.00	0.00	0.00	0.00	0.00
-Accelerated Deducti	0.00	0.00	0.00	0.00	0.00
Taxable Revenues	0.01	116.13	6,686.03	6,686.03	6,686.03
Less: Income Tax @ 3	0.00	40.64	2,340.11	2,340.11	2,340.11
Net Income	0.00	75.48	4,345.92	4,345.92	4,345.92
Plus: Sum Amortizati	2,686.02	7,569.90	1,000.00	1,000.00	1,000.00
Net Cash Flow (NCF)	$2,686.02	$7,645.38	$5,345.92	$5,345.92	$5,345.92
NCF Accumulated					
at 20% "Accumulation	(57,289.77)	(61,102.34)	(67,976.89)	(76,226.36)	(86,125.71)
Income Subject to Ad					
Tax: Accumulated NCF	0.00	0.00	0.00	0.00	0.00
APT @ 35%	0.00	0.00	0.00	0.00	0.00
NCF After APT	2,686.02	7,645.38	5,345.92	5,345.92	5,345.92
Government Revenues:					
-Royalties (2.50%)	632.98	632.98	632.98	632.98	632.98
-Income Tax @ 35%	0.00	40.64	2,340.11	2,340.11	2,340.11
-Dividend Withholdin	0.00	5.09	293.35	293.35	293.35
-APT	0.00	0.00	0.00	0.00	0.00
Total	632.98	678.71	3,266.43	3,266.43	3,266.43

Model 7.
Gold Ridge Project
(1) Hybrid Tax Regim
(2) Au @ $350/oz

YEAR	14	15-19
Output (1000 oz Au)	72.34	
Revenue @ $350/oz	$25,319.00	
Less: Exploration		
Capital Expend	(5,000.00)	
Less: Govt Royalty @	632.98	
Operating Cost	17,000.00	

Operating Profit	2,686.03	
Less Amortization/De		
-Allowable Capital E	1,000.00	
-Exploration Expendi	0.00	
-Accelerated Deducti	0.00	

Taxable Revenues	1,686.03	
Less: Income Tax @ 3	590.11	

Net Income	1,095.92	
Plus: Sum Amortizati	1,000.00	
	----------	-------------
Net Cash Flow (NCF)	$2,095.92	$17,920.35
		(NPV yr 15-19)
NCF Accumulated		
at 20% "Accumulation(101,254.94)		
Income Subject to Ad		
Tax: Accumulated NCF	0.00	
APT @ 35%	0.00	
NCF After APT	2,095.92	17,920.35
Government Revenues:		
-Royalties (2.50%)	632.98	
-Income Tax @ 35%	590.11	
-Dividend Withholdin	73.97	
-APT	0.00	
	----------	----------
Total	1,297.06	10,949.61
		(NPV yr 15-19)

Model 8.
Gold Ridge Project
(1) Hybrid Tax Regime. Dollar amounts are constant US dollars (x 1000).
(2) Au @ $400/oz

YEAR	1-3	4	5	6	7	8
Output (1000 oz Au)			72.34	72.34	72.34	72.34
Revenue @ $400/oz			$28,936.00	$28,936.00	$28,936.00	$28,936.00
Less: Exploration	(5,000.00)					
Capital Expenditure	(15,000.00)	(20,000.00)				
Less: Govt Royalty @ 2.5%			723.40	723.40	723.40	723.40
Operating Costs @$17/ton ($235 oz Au)			17,000.00	17,000.00	17,000.00	17,000.00
Operating Profit			11,212.60	11,212.60	11,212.60	11,212.60
Less Amortization/Depreciation:						
-Allowable Capital Expenditure			7,000.00	7,000.00	7,000.00	7,000.00
-Exploration Expenditure			1,000.00	1,000.00	1,000.00	1,000.00
-Accelerated Deduction: Capital Expenditure						
Taxable Revenues			3,212.60	3,212.60	3,212.60	3,212.60
Less: Income Tax @ 35%			1,124.41	1,124.41	1,124.41	1,124.41
Net Income			2,088.19	2,088.19	2,088.19	2,088.19
Plus: Sum Amortization/Depreciation			8,000.00	8,000.00	8,000.00	8,000.00
Net Cash Flow (NCF)	($20,000)	($20,000)	$10,088.19	$10,088.19	$10,088.19	$10,088.19
Accumulated NCF at 20% "Accumulation Rate":	(20,000.00)	(44,000.00)	(42,711.81)	(41,165.98)	(39,310.99)	(37,085.00)
Income Subject to Additional Profits Tax: Accumulated NCF > 0			0.00	0.00	0.00	0.00
APT @ 35%			0.00	0.00	0.00	0.00
Government Revenues:						
-Royalties (2.5%)			723.40	723.40	723.40	723.40
-Income Tax @ 35%			1,124.41	1,124.41	1,124.41	1,124.41
-Dividend Withholding @ 15%			140.95	140.95	140.95	140.95
Total			1,988.76	1,988.76	1,988.76	1,988.76
Total Government Revenues (Years 5-19)			53,463.94			
Net Present Value @ 10%			22,343.38			
Investor ROR	18.24%					
Investor NPV @10%	$16,436.91					

Model 8.
Gold Ridge Project
(1) Hybrid Tax Regim
(2) Au @ $400/oz

YEAR	9	10	11	12	13	14	15-19
Output (1000 oz Au)	72.34	72.34	72.34	72.34	72.34	72.34	
Revenue @ $400/oz	$28,936.00	$28,936.00	$28,936.00	$28,936.00	$28,936.00	$28,936.00	
Less: Exploration							
Capital Expend							
	(5,000.00)					(5,000.00)	
Less: Govt Royalty @	723.40	723.40	723.40	723.40	723.40	723.40	
Operating Cost	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	
Operating Profit	6,212.60	11,212.60	11,212.60	11,212.60	11,212.60	6,212.60	
Less Amortization/De							
-Allowable Capital E	5,212.60	2,787.40	1,000.00	1,000.00	1,000.00	1,000.00	
-Exploration Expendi	1,000.00						
-Accelerated Deducti							
Taxable Revenues	0.00	8,425.20	10,212.60	10,212.60	10,212.60	5,212.60	
Less: Income Tax @ 3	0.00	2,948.82	3,574.41	3,574.41	3,574.41	1,824.41	
Net Income	0.00	5,476.38	6,638.19	6,638.19	6,638.19	3,388.19	
Plus: Sum Amortizati	6,212.60	2,787.40	1,000.00	1,000.00	1,000.00	1,000.00	
Net Cash Flow (NCF)	$6,212.60	$8,263.78	$7,638.19	$7,638.19	$7,638.19	$4,388.19	$25,604.40 (NPV yr 15-19)
Accumulated NCF							
at 20% "Accumulation	(38,289.40)	(37,683.49)	(37,582.00)	(37,460.21)	(37,314.07)	(40,388.69)	
Income Subject to Ad							
Tax: Accumulated NCF	0.00	0.00	0.00	0.00	0.00	0.00	
APT @ 35%	0.00	0.00	0.00	0.00	0.00	0.00	
Government Revenues:							
-Royalties (2.5%)	723.40	723.40	723.40	723.40	723.40	723.40	
-Income Tax @ 35%	0.00	2,948.82	3,574.41	3,574.41	3,574.41	1,824.41	
-Dividend Withholdin	0.00	369.66	448.08	448.08	448.08	228.70	
Total	723.40	4,041.88	4,745.89	4,745.89	4,745.89	2,776.51	15,908.96 (NPV yr 15-19)

Model 9.
Gold Ridge Project
(1) Hybrid Tax Regime. Dollar amounts are US constant dollars (x 1000).
(2) Au @ $450/oz

YEAR	1-3	4	5	6	7	8
Output (1000 oz Au)			72.34	72.34	72.34	72.34
Revenue @ $450/oz			$32,553.00	$32,553.00	$32,553.00	$32,553.00
Less: Exploration	(5,000.00)					
Capital Expenditure	(15,000.00)	(20,000.00)				
Less: Govt Royalty @ 2.5%			813.83	813.83	813.83	813.83
Operating Costs @ $17/ton ($235 oz Au)			17,000.00	17,000.00	17,000.00	17,000.00
Operating Profit			14,739.18	14,739.18	14,739.18	14,739.18
Less Amortization/Depreciation:						
-Allowable Capital Expenditure			7,000.00	7,000.00	7,000.00	7,000.00
-Exploration Expenditure			1,000.00	1,000.00	1,000.00	1,000.00
-Accelerated Deduction: Capital Expenditure						
Taxable Revenues			6,739.18	6,739.18	6,739.18	6,739.18
Less: Income Tax @ 35%			2,358.71	2,358.71	2,358.71	2,358.71
Net Income			4,380.46	4,380.46	4,380.46	4,380.46
Plus: Sum Amortization/Depreciation			8,000.00	8,000.00	8,000.00	8,000.00
Net Cash Flow (NCF)	($20,000)	($20,000)	$12,380.46	$12,380.46	$12,380.46	$12,380.46
NCF Accumulated at 20% "Accumulation Rate":	(20,000.00)	(44,000.00)	(40,419.54)	(36,122.98)	(30,967.11)	(24,780.07)
Income Subject to Additional Profits Tax (APT): Accumulated NCF > 0			0.00	0.00	0.00	0.00
APT @ 35%			0.00	0.00	0.00	0.00
NCF After APT	(20,000.00)	(20,000.00)	12,380.46	12,380.46	12,380.46	12,380.46
Government Revenues:						
-Royalties (2.5%)			813.83	813.83	813.83	813.83
-Income Tax @ 35%			2,358.71	2,358.71	2,358.71	2,358.71
-Dividend Withholding @ 15%			295.68	295.68	295.68	295.68
-APT			0	0	0	0
Total			3,468.22	3,468.22	3,468.22	3,468.22

Total Government Revenues (Years 5-19)	$99,036.89	APT	$23,381.13
Net Present Value @ 10%	$39,679.71	NPV of APT @10%	$6,547.24
Investor ROR(no APT)	24.08%		
Investor NPV @10% (No APT)	$30,332.41		
Investor ROR (after APT)	22.86%		
Investor NPV @10% (after APT)	$24,921.47		

Model 9.
Gold Ridge Project
(1) Hybrid Tax Regim
(2) Au @ $450/oz

YEAR	9	10	11	12	13	14	15-19
Output (1000 oz Au)	72.34	72.34	72.34	72.34	72.34	72.34	
Revenue @ $450/oz	$32,553.00	$32,553.00	$32,553.00	$32,553.00	$32,553.00	$32,553.00	
Less: Exploration							
Capital Expend	(5,000.00)					(5,000.00)	
Less: Govt Royalty @	813.83	813.83	813.83	813.83	813.83	813.83	
Operating Cost	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	17,000.00	
Operating Profit	9,739.18	14,739.18	14,739.18	14,739.18	14,739.18	9,739.18	
Less Amortization/De							
-Allowable Capital E	7,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	
-Exploration Expendi	1,000.00						
-Accelerated Deducti							
Taxable Revenues	1,739.17	13,739.18	13,739.18	13,739.18	13,739.18	8,739.18	
Less: Income Tax @ 3	608.71	4,808.71	4,808.71	4,808.71	4,808.71	3,058.71	
Net Income	1,130.46	8,930.46	8,930.46	8,930.46	8,930.46	5,680.46	
Plus: Sum Amortizati	8,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	
Net Cash Flow (NCF)	$9,130.46	$9,930.46	$9,930.46	$9,930.46	$9,930.46	$6,680.46	$33,288.44
							(NPV yr 15-19)
NCF Accumulated							
at 20% "Accumulation	(20,605.62)	(14,796.28)	(7,825.07)	540.38	9,930.46	6,680.46	
Income Subject to Ad							
Tax (APT): Accumulat	0.00	0.00	0.00	540.00	9,930.46	6,680.46	
APT @ 35%	0.00	0.00	0.00	189.00	3,475.66	2,338.16	
NCF After APT	9,130.46	9,930.46	9,930.46	9,741.46	6,454.80	4,342.30	21,637.49
							(NPV yr 15-19)
Government Revenues:							
-Royalties (2.5%)	813.83	813.83	813.83	813.83	813.83	813.83	
-Income Tax @ 35%	608.71	4,808.71	4,808.71	4,808.71	4,808.71	3,058.71	
-Dividend Withholdin	76.31	602.81	602.81	602.81	602.81	383.43	
-APT	0	0	0.00	189.00	3,475.66	2,338.16	11,650.95
Total	1,498.84	6,225.34	6,225.34	6,414.34	9,701.00	6,594.13	32,519.26
							(NPV yr 15-19)

Model 10.
Misima Project.
(1) Fiji Tax Regime. Dollar amounts are constant US dollars (x 1000).
(2) Au @ $350/oz, Ag @ $5.00/oz

YEAR	1-3	4	5	6	7
Output: Au oz 1000			400.00	200.00	200.00
Ag oz x 1000			2,600.00	2,000.00	2,000.00
Revenues: Au @ $350/oz			$140,000.00	$70,000.00	$70,000.00
Ag @ $5.00/oz			$13,000.00	$10,000.00	$10,000.00
Total Revenue			$153,000.00	$80,000.00	$80,000.00
Less: Exploration	(12,000.00)				
Capital Expenditure	(50,000.00)	(150,000.00)			
Less: Govt Royalty @ 5.0%			7,650.00	4,000.00	4,000.00
Operating Costs			44,000.00	30,000.00	30,000.00
Operating Profit	(62,000.00)	(150,000.00)	101,350.00	46,000.00	46,000.00
Less Amortization/Depreciation:					
-Allowable Capital Expenditure			40,000.00	40,000.00	40,000.00
-Exploration Expenditure			2,400.00	2,400.00	2,400.00
Taxable Revenues			58,950.00	3,600.00	3,600.00
Less: Income Tax @ 37.5%			22,106.25	1,350.00	1,350.00
Net Income			36,843.75	2,250.00	2,250.00
Plus: Sum Amortization/Depreciation			42,400.00	42,400.00	42,400.00
Net Cash Flow (NCF)	(62,000.00)	(150,000.00)	79,243.75	44,650.00	44,650.00
Government Revenues:					
-Royalties (5%)			7,650.00	4,000.00	4,000.00
-Income Tax (37.5%)			22,106.25	1,350.00	1,350.00
-Dividend Witholding (15%)			2,486.95	151.88	151.88
Total			32,243.20	5,501.88	5,501.88

Total Government Revenues (Years 5-20) $292,660.08
NPV of Government Revenues @ 10% $126,156.73

Investor ROR 18.10%
Investor NPV @ 10% $72,438.54

Model 10.
Misima Project.
(1) Fiji Tax Regime
(2) Au @ $350/oz, Ag

YEAR	8	9	10	11	12
Output: Au oz 1000	200.00	200.00	200.00	200.00	200.00
Ag oz x 1000	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Revenues: Au @ $350/	$70,000.00	$70,000.00	$70,000.00	$70,000.00	$70,000.00
Ag @ $5.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00
Total Revenue	$80,000.00	$80,000.00	$80,000.00	$80,000.00	$80,000.00
Less: Exploration					
Capital Expend			(10,000.00)		
Less: Govt Royalty @	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00
Operating Cost	30,000.00	30,000.00	30,000.00	30,000.00	30,000.00
Operating Profit	46,000.00	46,000.00	36,000.00	46,000.00	46,000.00
Less Amortization/De					
-Allowable Capital E	40,000.00	40,000.00	0.00	2,000.00	2,000.00
-Exploration Expendi	2,400.00	2,400.00	0.00		
Taxable Revenues	3,600.00	3,600.00	36,000.00	44,000.00	44,000.00
Less: Income Tax @ 3	1,350.00	1,350.00	13,500.00	16,500.00	16,500.00
Net Income	2,250.00	2,250.00	22,500.00	27,500.00	27,500.00
Plus: Sum Amortizati	42,400.00	42,400.00	0.00	2,000.00	2,000.00
Net Cash Flow (NCF)	44,650.00	44,650.00	22,500.00	29,500.00	29,500.00
Government Revenues:					
-Royalties (5%)	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00
-Income Tax (37.5%)	1,350.00	1,350.00	13,500.00	16,500.00	16,500.00
-Dividend Witholding	151.88	151.88	1,518.75	1,856.25	1,856.25
Total	5,501.88	5,501.88	19,018.75	22,356.25	22,356.25

Model 10.
Misima Project.
(1) Fiji Tax Regime
(2) Au @ $350/oz, Ag

YEAR	13	14	15	16-20
Output: Au oz 1000	200.00	200.00	200.00	
Ag oz x 1000	2,000.00	2,000.00	2,000.00	
Revenues: Au @ $350/	$70,000.00	$70,000.00	$70,000.00	
Ag @ $5.00	$10,000.00	$10,000.00	$10,000.00	
Total Revenue	$80,000.00	$80,000.00	$80,000.00	
Less: Exploration				
Capital Expend			(10,000.00)	
Less: Govt Royalty @	4,000.00	4,000.00	4,000.00	
Operating Cost	30,000.00	30,000.00	30,000.00	
Operating Profit	46,000.00	46,000.00	36,000.00	
Less Amortization/De				
-Allowable Capital E	2,000.00	2,000.00	2,000.00	
-Exploration Expendi				
Taxable Revenues	44,000.00	44,000.00	34,000.00	
Less: Income Tax @ 3	16,500.00	16,500.00	12,750.00	
Net Income	27,500.00	27,500.00	21,250.00	
Plus: Sum Amortizati	2,000.00	2,000.00	2,000.00	
Net Cash Flow (NCF)	29,500.00	29,500.00	23,250.00	98,888.58 (NPV yr 16-20)
Government Revenues:				
-Royalties (5%)	4,000.00	4,000.00	4,000.00	
-Income Tax (37.5%)	16,500.00	16,500.00	12,750.00	
-Dividend Witholding	1,856.25	1,856.25	1,434.38	
Total	22,356.25	22,356.25	18,184.38	74,941.62 (NPV yr 16-20)

Model 11.
Misima Project.
(1) Fiji Tax Regime. Dollar amounts are constant US dollars (x 1000).
(2) Au @ $400/oz, Ag @ $5.25/oz

YEAR	1-3	4	5	6	7
Output: Au oz 1000			400.00	200.00	200.00
Ag oz x 1000			2,600.00	2,000.00	2,000.00
Revenues: Au @ $400/oz			$160,000.00	$80,000.00	$80,000.00
Ag @ $5.25/oz			$13,650.00	$10,500.00	$10,500.00
Total Revenue			$173,650.00	$90,500.00	$90,500.00
Less: Exploration	(12,000.00)				
Capital Expenditure	(50,000.00)	(150,000.00)			
Less: Govt Royalty @ 5.0%			8,682.50	4,525.00	4,525.00
Operating Costs			44,000.00	30,000.00	30,000.00
Operating Profit	(62,000.00)	(150,000.00)	120,967.50	55,975.00	55,975.00
Less Amortization/Depreciation:					
-Allowable Capital Expenditure			40,000.00	40,000.00	40,000.00
-Exploration Expenditure			2,400.00	2,400.00	2,400.00
Taxable Revenues			78,567.50	13,575.00	13,575.00
Less: Income Tax @ 37.5%			29,462.81	5,090.63	5,090.63
Net Income			49,104.69	8,484.38	8,484.38
Plus: Sum Amortization/Depreciation			42,400.00	42,400.00	42,400.00
Net Cash Flow (NCF)	(62,000.00)	(150,000.00)	91,504.69	50,884.38	50,884.38
Government Revenues:					
-Royalties (5%)			8,682.50	4,525.00	4,525.00
-Income Tax (37.5%)			29,462.81	5,090.63	5,090.63
-Dividend Witholding (15%)			3,314.57	572.70	572.70
Total			41,459.88	10,188.32	10,188.32

Total Government Revenues (Years 5-20)	$372,173.43
NPV of Government Revenues @ 10%	$165,719.46
Investor Rate of Return	22.45%
Investor NPV @ 10%	$115,934.63

Model 11.
Misima Project.
(1) Fiji Tax Regime
(2) Au @ $400/oz, Ag

YEAR	8	9	10	11	12
Output: Au oz 1000	200.00	200.00	200.00	200.00	200.00
Ag oz x 1000	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Revenues: Au @ $400/	$80,000.00	$80,000.00	$80,000.00	$80,000.00	$80,000.00
Ag @ $5.25	$10,500.00	$10,500.00	$10,500.00	$10,500.00	$10,500.00
Total Revenue	$90,500.00	$90,500.00	$90,500.00	$90,500.00	$90,500.00
Less: Exploration					
Capital Expend			(10,000.00)		
Less: Govt Royalty @	4,525.00	4,525.00	4,525.00	4,525.00	4,525.00
Operating Cost	30,000.00	30,000.00	30,000.00	30,000.00	30,000.00
Operating Profit	55,975.00	55,975.00	45,975.00	55,975.00	55,975.00
Less Amortization/De					
-Allowable Capital E	40,000.00	40,000.00		2,000.00	2,000.00
-Exploration Expendi	2,400.00	2,400.00			
Taxable Revenues	13,575.00	13,575.00	45,975.00	53,975.00	53,975.00
Less: Income Tax @ 3	5,090.63	5,090.63	17,240.63	20,240.63	20,240.63
Net Income	8,484.38	8,484.38	28,734.38	33,734.38	33,734.38
Plus: Sum Amortizati	42,400.00	42,400.00	0.00	2,000.00	2,000.00
Net Cash Flow (NCF)	50,884.38	50,884.38	28,734.38	35,734.38	35,734.38
Government Revenues:					
-Royalties (5%)	4,525.00	4,525.00	4,525.00	4,525.00	4,525.00
-Income Tax (37.5%)	5,090.63	5,090.63	17,240.63	20,240.63	20,240.63
-Dividend Witholding	572.70	572.70	1,939.57	2,277.07	2,277.07
Total	10,188.32	10,188.32	23,705.20	27,042.70	27,042.70

Model 11.
Misima Project.
(1) Fiji Tax Regime
(2) Au @ $400/oz, Ag

YEAR	13	14	15	16-20
Output: Au oz 1000	200.00	200.00	200.00	
Ag oz x 1000	2,000.00	2,000.00	2,000.00	
Revenues: Au @ $400/	$80,000.00	$80,000.00	$80,000.00	
Ag @ $5.25	$10,500.00	$10,500.00	$10,500.00	
Total Revenue	$90,500.00	$90,500.00	$90,500.00	
Less: Exploration				
Capital Expend			(10,000.00)	
Less: Govt Royalty @	4,525.00	4,525.00	4,525.00	
Operating Cost	30,000.00	30,000.00	30,000.00	
Operating Profit	55,975.00	55,975.00	45,975.00	
Less Amortization/De				
-Allowable Capital E	2,000.00	2,000.00	2,000.00	
-Exploration Expendi				
Taxable Revenues	53,975.00	53,975.00	43,975.00	
Less: Income Tax @ 3	20,240.63	20,240.63	16,490.63	
Net Income	33,734.38	33,734.38	27,484.38	
Plus: Sum Amortizati	2,000.00	2,000.00	2,000.00	
Net Cash Flow (NCF)	35,734.38	35,734.38	29,484.38	119,787.18 (NPV yr 16-20)
Government Revenues:				
-Royalties (5%)	4,525.00	4,525.00	4,525.00	
-Income Tax (37.5%)	20,240.63	20,240.63	16,490.63	
-Dividend Witholding	2,277.07	2,277.07	1,855.20	
Total	27,042.70	27,042.70	22,870.82	90,651.32 (NPV yr 16-20)

Model 12.
Misima Project.
(1) Fiji Tax Regime. Dollar amounts are constant US dollars (x 1000).
(2) Au @ $450/oz, Ag @ $5.75/oz

YEAR	1-3	4	5	6	7
Output: Au oz 1000			400.00	200.00	200.00
Ag oz x 1000			2,600.00	2,000.00	2,000.00
Revenues: Au @ $450/oz			$180,000.00	$90,000.00	$90,000.00
Ag @ $5.75/oz			$14,950.00	$11,500.00	$11,500.00
Total Revenue			$194,950.00	$101,500.00	$101,500.00
Less: Exploration	(12,000.00)				
Capital Expenditure	(50,000.00)	(150,000.00)			
Less: Govt Royalty @ 5.0%			9,747.50	5,075.00	5,075.00
Operating Costs			44,000.00	30,000.00	30,000.00
Operating Profit	(62,000.00)	(150,000.00)	141,202.50	66,425.00	66,425.00
Less Amortization/Depreciation:					
-Allowable Capital Expenditure			40,000.00	40,000.00	40,000.00
-Exploration Expenditure			2,400.00	2,400.00	2,400.00
Taxable Revenues			98,802.50	24,025.00	24,025.00
Less: Income Tax @ 37.5%			37,050.94	9,009.38	9,009.38
Net Income			61,751.56	15,015.63	15,015.63
Plus: Sum Amortization/Depreciation			42,400.00	42,400.00	42,400.00
Net Cash Flow (NCF)	(62,000.00)	(150,000.00)	104,151.56	57,415.63	57,415.63
Government Revenues:					
-Royalties (5%)			9,747.50	5,075.00	5,075.00
-Income Tax (37.5%)			37,050.94	9,009.38	9,009.38
-Dividend Witholding (15%)			4,168.23	1,013.55	1,013.55
Total			50,966.67	15,097.93	15,097.93

Total Government Revenues (Years 5-20)) $455,324.36
NPV of Government Revenues @ 10% $207,030.87

Investor Rate of Return 26.76%
Investor NPV @ 10% $161,353.27

Model 12.
Misima Project.
(1) Fiji Tax Regime
(2) Au @ $450/oz, Ag

YEAR	8	9	10	11	12
Output: Au oz 1000	200.00	200.00	200.00	200.00	200.00
Ag oz x 1000	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Revenues: Au @ $450/	$90,000.00	$90,000.00	$90,000.00	$90,000.00	$90,000.00
Ag @ $5.75	$11,500.00	$11,500.00	$11,500.00	$11,500.00	$11,500.00
Total Revenue	$101,500.00	$101,500.00	$101,500.00	$101,500.00	$101,500.00
Less: Exploration					
Capital Expend			(10,000.00)		
Less: Govt Royalty @	5,075.00	5,075.00	5,075.00	5,075.00	5,075.00
Operating Cost	30,000.00	30,000.00	30,000.00	30,000.00	30,000.00
Operating Profit	66,425.00	66,425.00	56,425.00	66,425.00	66,425.00
Less Amortization/De					
-Allowable Capital E	40,000.00	40,000.00		2,000.00	2,000.00
-Exploration Expendi	2,400.00	2,400.00			
Taxable Revenues	24,025.00	24,025.00	56,425.00	64,425.00	64,425.00
Less: Income Tax @ 3	9,009.38	9,009.38	21,159.38	24,159.38	24,159.38
Net Income	15,015.63	15,015.63	35,265.63	40,265.63	40,265.63
Plus: Sum Amortizati	42,400.00	42,400.00	0.00	2,000.00	2,000.00
Net Cash Flow (NCF)	57,415.63	57,415.63	35,265.63	42,265.63	42,265.63
Government Revenues:					
-Royalties (5%)	5,075.00	5,075.00	5,075.00	5,075.00	5,075.00
-Income Tax (37.5%)	9,009.38	9,009.38	21,159.38	24,159.38	24,159.38
-Dividend Witholding	1,013.55	1,013.55	2,380.43	2,717.93	2,717.93
Total	15,097.93	15,097.93	28,614.80	31,952.30	31,952.30

Model 12.
Misima Project.
(1) Fiji Tax Regime
(2) Au @ $450/oz, Ag

YEAR	13	14	15	16-20
Output: Au oz 1000	200.00	200.00	200.00	
Ag oz x 1000	2,000.00	2,000.00	2,000.00	
Revenues: Au @ $450/	$90,000.00	$90,000.00	$90,000.00	
Ag @ $5.75	$11,500.00	$11,500.00	$11,500.00	
Total Revenue	$101,500.00	$101,500.00	$101,500.00	
Less: Exploration				
Capital Expend			(10,000.00)	
Less: Govt Royalty @	5,075.00	5,075.00	5,075.00	
Operating Cost	30,000.00	30,000.00	30,000.00	
Operating Profit	66,425.00	66,425.00	56,425.00	
Less Amortization/De				
-Allowable Capital E	2,000.00	2,000.00	2,000.00	
-Exploration Expendi				
Taxable Revenues	64,425.00	64,425.00	54,425.00	
Less: Income Tax @ 3	24,159.38	24,159.38	20,409.38	
Net Income	40,265.63	40,265.63	34,015.63	
Plus: Sum Amortizati	2,000.00	2,000.00	2,000.00	
Net Cash Flow (NCF)	42,265.63	42,265.63	36,015.63	141,680.95 (NPV yr 16-20)
Government Revenues:				
-Royalties (5%)	5,075.00	5,075.00	5,075.00	
-Income Tax (37.5%)	24,159.38	24,159.38	20,409.38	
-Dividend Witholding	2,717.93	2,717.93	2,296.05	
Total	31,952.30	31,952.30	27,780.43	107,109.07 (NPV yr 16-20)

Model 13.
Misima Project.
(1) PNG Tax Regime. Dollar amounts are constant US dollars (x 1000).
(2) Au @ $350/oz, Ag @ 5.00/oz

YEAR	1-3	4	5	6	7
Output: Au oz x 1000			400.00	200.00	200.00
Ag oz x 1000			2,600.00	2,000.00	2,000.00
Revenues: Au @ $350/oz			$140,000.00	$70,000.00	$70,000.00
Ag @ $5.00/oz			$13,000.00	$10,000.00	$10,000.00
Total Revenue			$153,000.00	$80,000.00	$80,000.00
Less: Exploration	(12,000.00)				
Capital Expenditure	(50,000.00)	(150,000.00)			
Less: Govt Royalty @ 1.25%			1,912.50	1,000.00	1,000.00
Operating Costs			44,000.00	30,000.00	30,000.00
Operating Profit	(62,000.00)	(150,000.00)	107,087.50	49,000.00	49,000.00
Less Amortization/Depreciation:					
-Allowable Capital Expenditure			18,000.00	16,200.00	16,200.00
-Exploration Expenditure			2,400.00	1,920.00	1,540.00
-Plant (Earth Moving Equip)			6,000.00	5,200.00	2,930.00
-Accelerated Deduction: Capital Expenditure			0.00	0.00	0.00
Taxable Revenues			80,687.50	25,680.00	28,330.00
Less: Income tax @35%			28,240.63	8,988.00	9,915.50
Net Income			52,446.88	16,692.00	18,414.50
Plus: Sum Amortization/Depreciation			26,400.00	23,320.00	20,670.00
Net Cash Flow (NCF)	(62,000.00)	(150,000.00)	78,846.88	40,012.00	39,084.50
NCF Accumulated at 20% Accumulation Rate:	(62,000.00)	(224,400.00)	(190,433.13)	(188,507.75)	(187,124.80)
Income Subject to Additional Profits Tax (APT): Accumulated NCF > 0			0.00	0.00	0.00
APT @ 35%			0.00	0.00	0.00
NCF After APT	(62,000.00)	(150,000.00)	78,846.88	40,012.00	39,084.50
Government Revenues:					
-Royalties @ 1.25% NSR			1,912.50	1,000.00	1,000.00
-Income Tax @ 35%			28,240.63	8,988.00	9,915.50
-Dividend Withholding @ 17%			4,012.19	1,276.94	1,408.71
-APT @ 35%			0.00	0.00	0.00
Total			34,165.31	11,264.94	12,324.21

Total Govt Revenues (Yr 5-20)	$252,785.23	Investor Rate of Return	18.38%
Govt NPV @ 10%	$119,131.60	Investor NPV @ 10%	$81,891.60

Model 13.
Misima Project.
(1) PNG Tax Regime.
(2) Au @ $350/oz, Ag

YEAR	8	9	10	11	12	13
Output: Au oz x 1000	200.00	200.00	200.00	200.00	200.00	200.00
Ag oz x 1000	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Revenues: Au @ $350/	$70,000.00	$70,000.00	$70,000.00	$70,000.00	$70,000.00	$70,000.00
Ag @ $5.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00
Total Revenue	$80,000.00	$80,000.00	$80,000.00	$80,000.00	$80,000.00	$80,000.00
Less: Exploration						
Capital Expend			(10,000.00)			
Less: Govt Royalty @	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Operating Cost	30,000.00	30,000.00	30,000.00	30,000.00	30,000.00	30,000.00
Operating Profit	49,000.00	49,000.00	39,000.00	49,000.00	49,000.00	49,000.00
Less Amortization/De						
-Allowable Capital E	16,200.00	16,200.00	16,200.00	18,200.00	18,200.00	18,200.00
-Exploration Expendi	1,230.00	980.00	790.00	630.00	630.00	630.00
-Plant (Earth Moving	2,930.00	2,930.00	0.00	0.00	0.00	0.00
-Accelerated Deducti	0.00	0.00	0.00	0.00	0.00	0.00
Taxable Revenues	28,640.00	28,890.00	22,010.00	30,170.00	30,170.00	30,170.00
Less: Income tax @35	10,024.00	10,111.50	7,703.50	10,559.50	10,559.50	10,559.50
Net Income	18,616.00	18,778.50	14,306.50	19,610.50	19,610.50	19,610.50
Plus: Sum Amortizati	20,360.00	20,110.00	16,990.00	18,830.00	18,830.00	18,830.00
Net Cash Flow (NCF)	38,976.00	38,888.50	31,296.50	38,440.50	38,440.50	38,440.50
NCF Accumulated						
at 20% Accumulation	(185,573.76)	(183,800.01)	(189,263.51)	(188,675.72)	(187,970.36)	(187,123.93)
Income Subject to Ad						
Tax (APT): Accumulat	0.00	0.00	0.00	0.00	0.00	0.00
APT @ 35%	0.00	0.00	0.00	0.00	0.00	0.00
NCF After APT	38,976.00	38,888.50	31,296.50	38,440.50	38,440.50	38,440.50
Government Revenues:						
-Royalties @ 1.25% N	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
-Income Tax @ 35%	10,024.00	10,111.50	7,703.50	10,559.50	10,559.50	10,559.50
-Dividend Withholdin	1,424.12	1,436.56	1,094.45	1,500.20	1,500.20	1,500.20
-APT @ 35%	0.00	0.00	0.00	0.00	0.00	0.00
Total	12,448.12	12,548.06	9,797.95	13,059.70	13,059.70	13,059.70

Model 13.
Misima Project.
(1) PNG Tax Regime.
(2) Au @ $350/oz, Ag

YEAR	14	15	16-20
Output: Au oz x 1000	200.00	200.00	
Ag oz x 1000	2,000.00	2,000.00	
Revenues: Au @ $350/	$70,000.00	$70,000.00	
Ag @ $5.00	$10,000.00	$10,000.00	
Total Revenue	$80,000.00	$80,000.00	
Less: Exploration			
Capital Expend		(10,000.00)	
Less: Govt Royalty @	1,000.00	1,000.00	
Operating Cost	30,000.00	30,000.00	
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Operating Profit	49,000.00	39,000.00	
Less Amortization/De			
-Allowable Capital E	18,200.00	18,200.00	
-Exploration Expendi	630.00	630.00	
-Plant (Earth Moving	0.00	0.00	
-Accelerated Deducti	0.00	0.00	
	------------	------------	
Taxable Revenues	30,170.00	20,170.00	
Less: Income tax @35	10,559.50	7,059.50	
	------------	------------	
Net Income	19,610.50	13,110.50	
Plus: Sum Amortizati	18,830.00	18,830.00	
	------------	------------	
Net Cash Flow (NCF)	38,440.50	31,940.50	109,112.65 (NPV yr 16-20)
NCF Accumulated			
at 20% Accumulation	(186,108.22)	(191,389.36)	
Income Subject to Ad			
Tax (APT): Accumulat	0.00	0.00	
APT @ 35%	0.00	0.00	
NCF After APT	38,440.50	31,940.50	109,112.65 (NPV yr 16-20)
Government Revenues:			
-Royalties @ 1.25% N	1,000.00	1,000.00	
-Income Tax @ 35%	10,559.50	7,059.50	
-Dividend Withholdin	1,500.20	1,002.95	
-APT @ 35%	0.00	0.00	0.00
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Total	13,059.70	9,062.45	66,329.34 (NPV yr 16-20)

Model 14. Misima Project
(1) PNG Tax Regime. Dollar amounts are constant US dollars (x 1000).
(2) Au @ $400/oz, Ag @ 5.25/oz

YEAR	1-3	4	5	6	7
Output: Au oz x 1000			400.00	200.00	200.00
Ag oz x 1000			2,600.00	2,000.00	2,000.00
Revenues: Au @ $400/oz			$160,000.00	$80,000.00	$80,000.00
Ag @ $5.25/oz			$13,650.00	$10,500.00	$10,500.00
Total Revenue			$173,650.00	$90,500.00	$90,500.00
Less: Exploration	(12,000.00)				
Capital Expenditure	(50,000.00)	(150,000.00)			
Less: Govt Royalty @ 1.25%			2,170.63	1,131.25	1,131.25
Operating Costs			44,000.00	30,000.00	30,000.00
Operating Profit	(62,000.00)	(150,000.00)	127,479.38	59,368.75	59,368.75
Less Amortization/Depreciation:					
-Allowable Capital Expenditure			18,000.00	16,200.00	16,200.00
-Exploration Expenditure			2,400.00	1,920.00	1,540.00
-Plant (Earth Moving Equip)			6,000.00	5,200.00	2,930.00
-Accelerated Deduction: Capital Expenditure			0.00	0.00	0.00
Taxable Revenues			101,079.38	36,048.75	38,698.75
Less: Income tax @35%			35,377.78	12,617.06	13,544.56
Net Income			65,701.59	23,431.69	25,154.19
Plus: Sum Amortization/Depreciation			26,400.00	23,320.00	20,670.00
Net Cash Flow (NCF)	(62,000.00)	(150,000.00)	92,101.59	46,751.69	45,824.19
NCF Accumulated at 20% Accumulation Rate:	(62,000.00)	(224,400.00)	(177,178.41)	(165,862.40)	(153,210.69)
Income Subject to Additional Profits Tax (APT): Accumulated NCF > 0			0.00	0.00	0.00
APT @ 35%			0.00	0.00	0.00
NCF After APT	(62,000.00)	(150,000.00)	92,101.59	46,751.69	45,824.19
Government Revenues:					
-Royalties @ 1.25% NSR			2,170.63	1,131.25	1,131.25
-Income Tax @ 35%			35,377.78	12,617.06	13,544.56
-Dividend Withholding @ 17%			5,026.17	1,792.52	1,924.30
-APT @ 35%			0.00	0.00	0.00
Total			42,574.58	15,540.84	16,600.11

Total Govt Revenues (Yr 5-20)	$415,489.45	APT	$90,156.48
NPV @ 10%	$177,692.32	NPV of APT @	$22,463.80
Investor Rate of Return (No APT)	22.77%	Investor NPV @10% (No Apt)	$128,913.17
Investor Rate of Return (After A	21.91%	Investor NPV @10% (After APT)	$110,348.04

Model 14. Misima
(1) PNG Tax Regime.
(2) Au @ $400/oz, Ag

YEAR	8	9	10	11	12
Output: Au oz x 1000	200.00	200.00	200.00	200.00	200.00
Ag oz x 1000	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Revenues: Au @ $400/	$80,000.00	$80,000.00	$80,000.00	$80,000.00	$80,000.00
Ag @ $5.25	$10,500.00	$10,500.00	$10,500.00	$10,500.00	$10,500.00
Total Revenue	$90,500.00	$90,500.00	$90,500.00	$90,500.00	$90,500.00
Less: Exploration					
Capital Expend			(10,000.00)		
Less: Govt Royalty @	1,131.25	1,131.25	1,131.25	1,131.25	1,131.25
Operating Cost	30,000.00	30,000.00	30,000.00	30,000.00	30,000.00
Operating Profit	59,368.75	59,368.75	49,368.75	59,368.75	59,368.75
Less Amortization/De					
-Allowable Capital E	16,200.00	16,200.00	16,200.00	18,200.00	18,200.00
-Exploration Expendi	1,230.00	980.00	790.00	630.00	630.00
-Plant (Earth Moving	2,930.00	2,930.00			
-Accelerated Deducti	0.00	0.00	0.00	0.00	0.00
Taxable Revenues	39,008.75	39,258.75	32,378.75	40,538.75	40,538.75
Less: Income tax @35	13,653.06	13,740.56	11,332.56	14,188.56	14,188.56
Net Income	25,355.69	25,518.19	21,046.19	26,350.19	26,350.19
Plus: Sum Amortizati	20,360.00	20,110.00	16,990.00	18,830.00	18,830.00
Net Cash Flow (NCF)	45,715.69	45,628.19	38,036.19	45,180.19	45,180.19
NCF Accumulated					
at 20% Accumulation	(138,137.14)	(120,136.38)	(106,127.47)	(82,172.78)	(53,427.15)
Income Subject to Ad					
Tax (APT): Accumulat	0.00	0.00	0.00	0.00	0.00
APT @ 35%	0.00	0.00	0.00	0.00	0.00
NCF After APT	45,715.69	45,628.19	38,036.19	45,180.19	45,180.19
Government Revenues:					
-Royalties @ 1.25% N	1,131.25	1,131.25	1,131.25	1,131.25	1,131.25
-Income Tax @ 35%	13,653.06	13,740.56	11,332.56	14,188.56	14,188.56
-Dividend Withholdin	1,939.71	1,952.14	1,610.03	2,015.79	2,015.79
-APT @ 35%	0.00	0.00	0.00	0.00	0.00
Total	16,724.02	16,823.95	14,073.85	17,335.60	17,335.60

Model 14. Misima
(1) PNG Tax Regime.
(2) Au @ $400/oz, Ag

YEAR	13	14	15	16-20
Output: Au oz x 1000	200.00	200.00	200.00	
Ag oz x 1000	2,000.00	2,000.00	2,000.00	
Revenues: Au @ $400/	$80,000.00	$80,000.00	$80,000.00	
Ag @ $5.25	$10,500.00	$10,500.00	$10,500.00	
Total Revenue	$90,500.00	$90,500.00	$90,500.00	
Less: Exploration				
Capital Expend			(10,000.00)	
Less: Govt Royalty @	1,131.25	1,131.25	1,131.25	
Operating Cost	30,000.00	30,000.00	30,000.00	
Operating Profit	59,368.75	59,368.75	49,368.75	
Less Amortization/De				
-Allowable Capital E	18,200.00	18,200.00	18,200.00	
-Exploration Expendi	630.00	630.00	630.00	
-Plant (Earth Moving				
-Accelerated Deducti	0.00	0.00	0.00	
Taxable Revenues	40,538.75	40,538.75	30,538.75	
Less: Income tax @35	14,188.56	14,188.56	10,688.56	
Net Income	26,350.19	26,350.19	19,850.19	
Plus: Sum Amortizati	18,830.00	18,830.00	18,830.00	
Net Cash Flow (NCF)	45,180.19	45,180.19	38,680.19	131,705.13 (NPV yr 16-20)
NCF Accumulated				
at 20% Accumulation	(18,932.39)	22,461.32	38,680.19	
Income Subject to Ad				
Tax (APT): Accumulat	0.00	22,461.32	38,680.19	
APT @ 35%	0.00	7,861.46	13,538.07	
NCF After APT	45,180.19	37,318.73	25,142.12	85,608.33 (NPV yr 16-20)
Government Revenues:				
-Royalties @ 1.25% N	1,131.25	1,131.25	1,131.25	
-Income Tax @ 35%	14,188.56	14,188.56	10,688.56	
-Dividend Withholdin	2,015.79	2,015.79	1,518.54	
-APT @ 35%	0.00	7,861.46	13,538.07	46,096.79
Total	17,335.60	25,197.06	26,876.42	126,759.61 (NPV yr 16-20)

Model 15. Misima Project

(1) PNG Tax Regime. Dollar amounts are constant US dollars (x 1000).

(2) Au @ $450/oz, Ag @ 5.75/oz

YEAR	1-3	4	5	6	7
Output: Au oz x 1000			400.00	200.00	200.00
Ag oz x 1000			2,600.00	2,000.00	2,000.00
Revenues: Au @ $450/oz			$180,000.00	$90,000.00	$90,000.00
Ag @ $5.75/oz			$14,950.00	$11,500.00	$11,500.00
Total Revenue			$194,950.00	$101,500.00	$101,500.00
Less: Exploration	(12,000.00)				
Capital Expenditure	(50,000.00)	(150,000.00)			
Less: Govt Royalty @ 1.25%			2,436.88	1,268.75	1,268.75
Operating Costs			44,000.00	30,000.00	30,000.00
Operating Profit	(62,000.00)	(150,000.00)	148,513.13	70,231.25	70,231.25
Less Amortization/Depreciation:					
-Allowable Capital Expenditure			18,000.00	16,200.00	16,200.00
-Exploration Expenditure			2,400.00	1,920.00	1,540.00
-Plant (Earth Moving Equip)			6,000.00	5,200.00	2,930.00
-Accelerated Deduction: Capital Expenditure			0.00	0.00	0.00
Taxable Revenues			122,113.13	46,911.25	49,561.25
Less: Income tax @35%			42,739.59	16,418.94	17,346.44
Net Income			79,373.53	30,492.31	32,214.81
Plus: Sum Amortization/Depreciation			26,400.00	23,320.00	20,670.00
Net Cash Flow (NCF)	(62,000.00)	(150,000.00)	105,773.53	53,812.31	52,884.81
NCF Accumulated at 20% Accumulation Rate:	(62,000.00)	(224,400.00)	(163,506.47)	(142,395.45)	(117,989.73)
Income Subject to Additional Profits Tax (APT): Accumulated NCF > 0			0.00	0.00	0.00
APT @ 35%			0.00	0.00	0.00
NCF After APT	(62,000.00)	(150,000.00)	105,773.53	53,812.31	52,884.81
Government Revenues:					
-Royalties @ 1.25% NSR			2,436.88	1,268.75	1,268.75
-Income Tax @ 35%			42,739.59	16,418.94	17,346.44
-Dividend Withholding @ 17%			6,072.08	2,332.66	2,464.43
-APT @ 35%			0.00	0.00	0.00
Total			51,248.54	20,020.35	21,079.62

Total Govt Revenues (Yr 5-20)	$563,241.81	APT	$162,042.18
NPV @ 10%	$244,358.87	NPV of APT @10%	$33,084.08
Investor Rate of Return (No APT)	27.17%	Investor NPV @10% (No Apt)	$178,013.11
Investor Rate of Return (After A	25.23%	Investor NPV @10% (After APT)	$135,502.41

Model 15. Misima
(1) PNG Tax Regime.
(2) Au @ $450/oz, Ag

YEAR	8	9	10	11	12
Output: Au oz x 1000	200.00	200.00	200.00	200.00	200.00
Ag oz x 1000	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Revenues: Au @ $450/	$90,000.00	$90,000.00	$90,000.00	$90,000.00	$90,000.00
Ag @ $5.75	$11,500.00	$11,500.00	$11,500.00	$11,500.00	$11,500.00
Total Revenue	$101,500.00	$101,500.00	$101,500.00	$101,500.00	$101,500.00
Less: Exploration					
Capital Expend			(10,000.00)		
Less: Govt Royalty @	1,268.75	1,268.75	1,268.75	1,268.75	1,268.75
Operating Cost	30,000.00	30,000.00	30,000.00	30,000.00	30,000.00
Operating Profit	70,231.25	70,231.25	60,231.25	70,231.25	70,231.25
Less Amortization/De					
-Allowable Capital E	16,200.00	16,200.00	16,200.00	18,200.00	18,200.00
-Exploration Expendi	1,230.00	980.00	790.00	630.00	630.00
-Plant (Earth Moving	2,930.00	2,930.00			
-Accelerated Deducti	0.00	0.00	0.00	0.00	0.00
Taxable Revenues	49,871.25	50,121.25	43,241.25	51,401.25	51,401.25
Less: Income tax @35	17,454.94	17,542.44	15,134.44	17,990.44	17,990.44
Net Income	32,416.31	32,578.81	28,106.81	33,410.81	33,410.81
Plus: Sum Amortizati	20,360.00	20,110.00	16,990.00	18,830.00	18,830.00
Net Cash Flow (NCF)	52,776.31	52,688.81	45,096.81	52,240.81	52,240.81
NCF Accumulated					
at 20% Accumulation	(88,811.36)	(53,884.82)	(19,564.97)	28,762.85	52,240.81
Income Subject to Ad					
Tax (APT): Accumulat	0.00	0.00	0.00	28,762.85	52,240.81
APT @ 35%	0.00	0.00	0.00	10,067.00	18,284.28
NCF After APT	52,776.31	52,688.81	45,096.81	42,173.82	33,956.53
Government Revenues:					
-Royalties @ 1.25% N	1,268.75	1,268.75	1,268.75	1,268.75	1,268.75
-Income Tax @ 35%	17,454.94	17,542.44	15,134.44	17,990.44	17,990.44
-Dividend Withholdin	2,479.85	2,492.28	2,150.17	2,555.93	2,555.93
-APT @ 35%	0.00	0.00	0.00	10,067.00	18,284.28
Total	21,203.54	21,303.47	18,553.36	31,882.11	40,099.39

Model 15. Misima
(1) PNG Tax Regime.
(2) Au @ $450/oz, Ag

YEAR	13	14	15	16-20
Output: Au oz x 1000	200.00	200.00	200.00	
Ag oz x 1000	2,000.00	2,000.00	2,000.00	
Revenues: Au @ $450/	$90,000.00	$90,000.00	$90,000.00	
Ag @ $5.75	$11,500.00	$11,500.00	$11,500.00	
Total Revenue	$101,500.00	$101,500.00	$101,500.00	
Less: Exploration				
Capital Expend			(10,000.00)	
Less: Govt Royalty @	1,268.75	1,268.75	1,268.75	
Operating Cost	30,000.00	30,000.00	30,000.00	
Operating Profit	70,231.25	70,231.25	60,231.25	
Less Amortization/De				
-Allowable Capital E	18,200.00	18,200.00	18,200.00	
-Exploration Expendi	630.00	630.00	630.00	
-Plant (Earth Moving				
-Accelerated Deducti	0.00	0.00	0.00	
Taxable Revenues	51,401.25	51,401.25	41,401.25	
Less: Income tax @35	17,990.44	17,990.44	14,490.44	
Net Income	33,410.81	33,410.81	26,910.81	
Plus: Sum Amortizati	18,830.00	18,830.00	18,830.00	
Net Cash Flow (NCF)	52,240.81	52,240.81	45,740.81	155,373.44 (NPV yr 16-20)
NCF Accumulated				
at 20% Accumulation	52,240.81	52,240.81	45,740.81	
Income Subject to Ad				
Tax (APT): Accumulat	52,240.81	52,240.81	45,740.81	
APT @ 35%	18,284.28	18,284.28	16,009.28	
NCF After APT	33,956.53	33,956.53	29,731.53	100,992.73 (NPV yr 16-20)
Government Revenues:				
-Royalties @ 1.25% N	1,268.75	1,268.75	1,268.75	
-Income Tax @ 35%	17,990.44	17,990.44	14,490.44	
-Dividend Withholdin	2,555.93	2,555.93	2,058.68	
-APT @ 35%	18,284.28	18,284.28	16,009.28	54,380.70
Total	40,099.39	40,099.40	33,827.15	150,059.54 (NPV yr 16-20)

Model 16.
Misima Project.
(1) Hybrid Tax Regime. Dollars amounts are constant US dollars (x 1000).
(2) Au @ $350/oz, Au @ $5.00/oz

YEAR	1-3	4	5	6	7
Output: Au oz x 1000			400.00	200.00	200.00
Ag oz x 1000			2,600.00	2,000.00	2,000.00
Revenues: Au @ $350/oz			$140,000.00	$70,000.00	$70,000.00
Ag @ $5.00/oz			$13,000.00	$10,000.00	$10,000.00
Total Revenue			$153,000.00	$80,000.00	$80,000.00
Less: Exploration	(12,000.00)				
Capital Expenditure	(50,000.00)	(150,000.00)			
Less: Govt Royalty @ 2.50%			3,825.00	2,000.00	2,000.00
Operating Costs			44,000.00	30,000.00	30,000.00
Operating Profit	(62,000.00)	(150,000.00)	105,175.00	48,000.00	48,000.00
Less Amortization/Depreciation:					
-Allowable Capital Expenditure			40,000.00	40,000.00	40,000.00
-Exploration Expenditure			2,400.00	2,400.00	2,400.00
-Plant (Earth Moving Equip)			0.00	0.00	0.00
-Accelerated Deduction: Capital Expenditure			0.00	0.00	0.00
Taxable Revenues			62,775.00	5,600.00	5,600.00
Less: Income tax @35%			21,971.25	1,960.00	1,960.00
Net Income			40,803.75	3,640.00	3,640.00
Plus: Sum Amortization/Depreciation			42,400.00	42,400.00	42,400.00
Net Cash Flow (NCF)	(62,000.00)	(150,000.00)	83,203.75	46,040.00	46,040.00
NCF Accumulated at 20% Accumulation Rate:	(62,000.00)	(224,400.00)	(186,076.25)	(177,251.50)	(166,661.80)
Income Subject to Additional Profits Tax (APT): Accumulated NCF > 0			0.00	0.00	0.00
APT @ 35%			0.00	0.00	0.00
NCF After APT	(62,000.00)	(150,000.00)	83,203.75	46,040.00	46,040.00
Government Revenues:					
-Royalties @ 2.50% NSR			3,825.00	2,000.00	2,000.00
-Income Tax @ 35%			21,971.25	1,960.00	1,960.00
-Dividend Withholding @ 15%			2,754.25	245.70	245.70
-APT @ 35%			0.00	0.00	0.00
Total			28,550.50	4,205.70	4,205.70

Total Govt Revenues (Yr 5-20)	$244,454.30	Investor Rate of Return	19.18%
Net Present Value (NPV) @ 10%	$107,576.88	Investor NPV @ 10%	$81,450.61

Model 16.
Misima Project.
(1) Hybrid Tax Regim
(2) Au @ $350/oz, Au

YEAR	8	9	10	11	12
Output: Au oz x 1000	200.00	200.00	200.00	200.00	200.00
Ag oz x 1000	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Revenues: Au @ $350/	$70,000.00	$70,000.00	$70,000.00	$70,000.00	$70,000.00
Ag @ $5.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00	$10,000.00
Total Revenue	$80,000.00	$80,000.00	$80,000.00	$80,000.00	$80,000.00
Less: Exploration					
Capital Expend			(10,000.00)		
Less: Govt Royalty @	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Operating Cost	30,000.00	30,000.00	30,000.00	30,000.00	30,000.00
Operating Profit	48,000.00	48,000.00	38,000.00	48,000.00	48,000.00
Less Amortization/De					
-Allowable Capital E	40,000.00	40,000.00	0.00	2,000.00	2,000.00
-Exploration Expendi	2,400.00	2,400.00	0.00	0.00	0.00
-Plant (Earth Moving	0.00	0.00			
-Accelerated Deducti	0.00	0.00	0.00	0.00	0.00
Taxable Revenues	5,600.00	5,600.00	38,000.00	46,000.00	46,000.00
Less: Income tax @35	1,960.00	1,960.00	13,300.00	16,100.00	16,100.00
Net Income	3,640.00	3,640.00	24,700.00	29,900.00	29,900.00
Plus: Sum Amortizati	42,400.00	42,400.00	0.00	2,000.00	2,000.00
Net Cash Flow (NCF)	46,040.00	46,040.00	24,700.00	31,900.00	31,900.00
NCF Accumulated					
at 20% Accumulation	(153,954.16)	(138,704.99)	(141,745.99)	(138,195.19)	(133,934.23)
Income Subject to Ad					
Tax (APT): Accumulat	0.00	0.00	0.00	0.00	0.00
APT @ 35%	0.00	0.00	0.00	0.00	0.00
NCF After APT	46,040.00	46,040.00	24,700.00	31,900.00	31,900.00
Government Revenues:					
-Royalties @ 2.50% N	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
-Income Tax @ 35%	1,960.00	1,960.00	13,300.00	16,100.00	16,100.00
-Dividend Withholdin	245.70	245.70	1,667.25	2,018.25	2,018.25
-APT @ 35%	0.00	0.00	0.00	0.00	0.00
Total	4,205.70	4,205.70	16,967.25	20,118.25	20,118.25

Model 16.
Misima Project.
(1) Hybrid Tax Regim
(2) Au @ $350/oz, Au

YEAR	13	14	15	16-20
Output: Au oz x 1000	200.00	200.00	200.00	
Ag oz x 1000	2,000.00	2,000.00	2,000.00	
Revenues: Au @ $350/	$70,000.00	$70,000.00	$70,000.00	
Ag @ $5.00	$10,000.00	$10,000.00	$10,000.00	
Total Revenue	$80,000.00	$80,000.00	$80,000.00	
Less: Exploration				
Capital Expend			(10,000.00)	
Less: Govt Royalty @	2,000.00	2,000.00	2,000.00	
Operating Cost	30,000.00	30,000.00	30,000.00	
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Operating Profit	48,000.00	48,000.00	38,000.00	
Less Amortization/De				
-Allowable Capital E	2,000.00	2,000.00	2,000.00	
-Exploration Expendi	0.00	0.00	0.00	
-Plant (Earth Moving				
-Accelerated Deducti	0.00	0.00	0.00	
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Taxable Revenues	46,000.00	46,000.00	36,000.00	
Less: Income tax @35	16,100.00	16,100.00	12,600.00	
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Net Income	29,900.00	29,900.00	23,400.00	
Plus: Sum Amortizati	2,000.00	2,000.00	2,000.00	
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Net Cash Flow (NCF)	31,900.00	31,900.00	25,400.00	89,502.54 (NPV yr 16-20)
NCF Accumulated				
at 20% Accumulation	(128,821.07)	(122,685.29)	(121,822.34)	
Income Subject to Ad				
Tax (APT): Accumulat	0.00	0.00	0.00	
APT @ 35%	0.00	0.00	0.00	
NCF After APT	31,900.00	31,900.00	25,400.00	89,502.54 (NPV yr 16-20)
Government Revenues:				
-Royalties @ 2.50% N	2,000.00	2,000.00	2,000.00	
-Income Tax @ 35%	16,100.00	16,100.00	12,600.00	
-Dividend Withholdin	2,018.25	2,018.25	1,579.50	
-APT @ 35%	0.00	0.00	0.00	0.00
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Total	20,118.25	20,118.25	16,179.50	57,295.87 (NPV yr 16-20)

Model 17. Misima Project
(1) Hybrid Tax Regime. Dollars amounts are constant US dollars (x 1000).
(2) Au @ $400/oz, Au @ $5.25/oz

YEAR	1-3	4	5	6	7
Output: Au oz x 1000			400.00	200.00	200.00
Ag oz x 1000			2,600.00	2,000.00	2,000.00
Revenues: Au @ $400/oz			$160,000.00	$80,000.00	$80,000.00
Ag @ $5.25/oz			$13,650.00	$10,500.00	$10,500.00
Total Revenue			$173,650.00	$90,500.00	$90,500.00
Less: Exploration	(12,000.00)				
Capital Expenditure	(50,000.00)	(150,000.00)			
Less: Govt Royalty @ 2.50%			4,341.25	2,262.50	2,262.50
Operating Costs			44,000.00	30,000.00	30,000.00
Operating Profit	(62,000.00)	(150,000.00)	125,308.75	58,237.50	58,237.50
Less Amortization/Depreciation:					
-Allowable Capital Expenditure			40,000.00	40,000.00	40,000.00
-Exploration Expenditure			2,400.00	2,400.00	2,400.00
-Plant (Earth Moving Equip)			0.00	0.00	0.00
-Accelerated Deduction: Capital Expenditure			0.00	0.00	0.00
Taxable Revenues			82,908.75	15,837.50	15,837.50
Less: Income tax @35%			29,018.06	5,543.13	5,543.13
Net Income			53,890.69	10,294.38	10,294.38
Plus: Sum Amortization/Depreciation			42,400.00	42,400.00	42,400.00
Net Cash Flow (NCF)	(62,000.00)	(150,000.00)	96,290.69	52,694.38	52,694.38
NCF Accumulated at 20% Accumulation Rate:	(62,000.00)	(224,400.00)	(172,989.31)	(154,892.80)	(133,176.98)
Income Subject to Additional Profits Tax: Accumulated NCF > 0			0.00	0.00	0.00
APT @ 35%			0.00	0.00	0.00
NCF After APT	(62,000.00)	(150,000.00)	96,290.69	52,694.38	52,694.38
Government Revenues:					
-Royalties @ 2.50% NSR			4,341.25	2,262.50	2,262.50
-Income Tax @ 35%			29,018.06	5,543.13	5,543.13
-Dividend Withholding @ 15%			3,637.62	694.87	694.87
-APT @ 35%			0.00	0.00	0.00
Total			36,996.93	8,500.50	8,500.50

Total Govt Revenues (Yr 5-20)	$439,945.39	APT	$107,492.73
Net Present Value (NPV) @ 10%	$176,938.38	NPV of APT @10%	$29,872.99
Investor Rate of Return (No APT)	23.98%	Investor NPV @10% (No Apt)	$132,467.15
Investor Rate of Return (After A	22.77%	Investor NPV @10% (After APT)	$107,778.73

Model 17. Mis
(1) Hybrid Tax Regim
(2) Au @ $400/oz, Au

YEAR	8	9	10	11	12
Output: Au oz x 1000	200.00	200.00	200.00	200.00	200.00
Ag oz x 1000	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Revenues: Au @ $400/	$80,000.00	$80,000.00	$80,000.00	$80,000.00	$80,000.00
Ag @ $5.25	$10,500.00	$10,500.00	$10,500.00	$10,500.00	$10,500.00
Total Revenue	$90,500.00	$90,500.00	$90,500.00	$90,500.00	$90,500.00
Less: Exploration					
Capital Expend			(10,000.00)		
Less: Govt Royalty @	2,262.50	2,262.50	2,262.50	2,262.50	2,262.50
Operating Cost	30,000.00	30,000.00	30,000.00	30,000.00	30,000.00
Operating Profit	58,237.50	58,237.50	48,237.50	58,237.50	58,237.50
Less Amortization/De					
-Allowable Capital E	40,000.00	40,000.00	0.00	2,000.00	2,000.00
-Exploration Expendi	2,400.00	2,400.00	0.00	0.00	0.00
-Plant (Earth Moving	0.00	0.00			
-Accelerated Deducti	0.00	0.00	0.00	0.00	0.00
Taxable Revenues	15,837.50	15,837.50	48,237.50	56,237.50	56,237.50
Less: Income tax @35	5,543.13	5,543.13	16,883.13	19,683.13	19,683.13
Net Income	10,294.38	10,294.38	31,354.38	36,554.38	36,554.38
Plus: Sum Amortizati	42,400.00	42,400.00	0.00	2,000.00	2,000.00
Net Cash Flow (NCF)	52,694.38	52,694.38	31,354.38	38,554.38	38,554.38
NCF Accumulated					
at 20% Accumulation	(107,118.01)	(75,847.23)	(59,662.31)	(33,040.39)	(1,094.09)
Income Subject to Ad					
Tax: Accumulated NCF	0.00	0.00	0.00	0.00	0.00
APT @ 35%	0.00	0.00	0.00	0.00	0.00
NCF After APT	52,694.38	52,694.38	31,354.38	38,554.38	38,554.38
Government Revenues:					
-Royalties @ 2.50% N	2,262.50	2,262.50	2,262.50	2,262.50	2,262.50
-Income Tax @ 35%	5,543.13	5,543.13	16,883.13	19,683.13	19,683.13
-Dividend Withholdin	694.87	694.87	2,116.42	2,467.42	2,467.42
-APT @ 35%	0.00	0.00	0.00	0.00	0.00
Total	8,500.50	8,500.50	21,262.05	24,413.05	24,413.05

Model 17. Mis
(1) Hybrid Tax Regim
(2) Au @ $400/oz, Au

YEAR	13	14	15	16-20
Output: Au oz x 1000	200.00	200.00	200.00	
Ag oz x 1000	2,000.00	2,000.00	2,000.00	
Revenues: Au @ $400/	$80,000.00	$80,000.00	$80,000.00	
Ag @ $5.25	$10,500.00	$10,500.00	$10,500.00	
Total Revenue	$90,500.00	$90,500.00	$90,500.00	
Less: Exploration				
Capital Expend			(10,000.00)	
Less: Govt Royalty @	2,262.50	2,262.50	2,262.50	
Operating Cost	30,000.00	30,000.00	30,000.00	
Operating Profit	58,237.50	58,237.50	48,237.50	
Less Amortization/De				
-Allowable Capital E	2,000.00	2,000.00	2,000.00	
-Exploration Expendi	0.00	0.00	0.00	
-Plant (Earth Moving				
-Accelerated Deducti	0.00	0.00	0.00	
Taxable Revenues	56,237.50	56,237.50	46,237.50	
Less: Income tax @35	19,683.13	19,683.13	16,183.13	
Net Income	36,554.38	36,554.38	30,054.38	
Plus: Sum Amortizati	2,000.00	2,000.00	2,000.00	
Net Cash Flow (NCF)	38,554.38	38,554.38	32,054.38	129,240.24 (NPV yr 16-20)
NCF Accumulated				
at 20% Accumulation	37,241.46	38,554.38	38,554.38	
Income Subject to Ad				
Tax: Accumulated NCF	37,241.46	38,554.38	38,554.38	
APT @ 35%	13,034.51	13,494.03	13,494.03	
NCF After APT	25,519.86	25,060.34	18,560.34	84,006.16 (NPV yr 16-20)
Government Revenues:				
-Royalties @ 2.50% N	2,262.50	2,262.50	2,262.50	
-Income Tax @ 35%	19,683.13	19,683.13	16,183.13	
-Dividend Withholdin	2,467.42	2,467.42	2,028.67	
-APT @ 35%	13,034.51	13,494.03	13,494.03	45,234.09
Total	37,447.56	37,907.08	33,968.33	127,070.40 (NPV yr 16-20)

Model 18. Misima Project

(1) Hybrid Tax Regime. Dollars amounts are constant US dollars (x 1000).

(2) Au @ $450/oz, Au @ $5.75/oz

YEAR	1-3	4	5	6	7
Output: Au oz x 1000			400.00	200.00	200.00
Ag oz x 1000			2,600.00	2,000.00	2,000.00
Revenues: Au @ $450/oz			$180,000.00	$90,000.00	$90,000.00
Ag @ $5.75/oz			$14,950.00	$11,500.00	$11,500.00
Total Revenue			$194,950.00	$101,500.00	$101,500.00
Less: Exploration	(12,000.00)				
Capital Expenditure	(50,000.00)	(150,000.00)			
Less: Govt Royalty @ 2.50%			4,873.75	2,537.50	2,537.50
Operating Costs			44,000.00	30,000.00	30,000.00
Operating Profit	(62,000.00)	(150,000.00)	146,076.25	68,962.50	68,962.50
Less Amortization/Depreciation:					
-Allowable Capital Expenditure			40,000.00	40,000.00	40,000.00
-Exploration Expenditure			2,400.00	2,400.00	2,400.00
-Plant (Earth Moving Equip)			0.00	0.00	0.00
-Accelerated Deduction: Capital Expenditure			0.00	0.00	0.00
Taxable Revenues			103,676.25	26,562.50	26,562.50
Less: Income tax @35%			36,286.69	9,296.88	9,296.88
Net Income			67,389.56	17,265.63	17,265.63
Plus: Sum Amortization/Depreciation			42,400.00	42,400.00	42,400.00
Net Cash Flow (NCF)	(62,000.00)	(150,000.00)	109,789.56	59,665.63	59,665.63
NCF Accumulated at 20% Accumulation Rate:	(62,000.00)	(224,400.00)	(159,490.44)	(131,722.90)	(98,401.86)
Income Subject to Additional Profits Tax (APT): Accumulated NCF > 0			0.00	0.00	0.00
APT @ 35%			0.00	0.00	0.00
NCF After APT	(62,000.00)	(150,000.00)	109,789.56	59,665.63	59,665.63
Government Revenues:					
-Royalties @ 2.50% NSR			4,873.75	2,537.50	2,537.50
-Income Tax @ 35%			36,286.69	9,296.88	9,296.88
-Dividend Withholding @ 15%			4,548.80	1,165.43	1,165.43
-APT @ 35%			0.00	0.00	0.00
Total			45,709.23	12,999.80	12,999.80

Total Govt Revenues (Yr 5-20)	$577,025.87	APT	$168,371.27
Net Present Value (NPV) @ 10%	$241,137.06	NPV of APT @10%	$39,193.60
Investor Rate of Return (No APT)	28.45%	Investor NPV @10% (No Apt)	$179,638.09
Investor Rate of Return (After A	26.17%	Investor NPV @10% (After APT)	$133,181.34

Model 18. Mis
(1) Hybrid Tax Regim
(2) Au @ $450/oz, Au

YEAR	8	9	10	11	12
Output: Au oz x 1000	200.00	200.00	200.00	200.00	200.00
Ag oz x 1000	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00
Revenues: Au @ $450/	$90,000.00	$90,000.00	$90,000.00	$90,000.00	$90,000.00
Ag @ $5.75	$11,500.00	$11,500.00	$11,500.00	$11,500.00	$11,500.00
Total Revenue	$101,500.00	$101,500.00	$101,500.00	$101,500.00	$101,500.00
Less: Exploration					
Capital Expend			(10,000.00)		
Less: Govt Royalty @	2,537.50	2,537.50	2,537.50	2,537.50	2,537.50
Operating Cost	30,000.00	30,000.00	30,000.00	30,000.00	30,000.00
Operating Profit	68,962.50	68,962.50	58,962.50	68,962.50	68,962.50
Less Amortization/De					
-Allowable Capital E	40,000.00	40,000.00	0.00	2,000.00	2,000.00
-Exploration Expendi	2,400.00	2,400.00	0.00	0.00	0.00
-Plant (Earth Moving	0.00	0.00	0.00	0.00	0.00
-Accelerated Deducti	0.00	0.00	0.00	0.00	0.00
Taxable Revenues	26,562.50	26,562.50	58,962.50	66,962.50	66,962.50
Less: Income tax @35	9,296.88	9,296.88	20,636.88	23,436.88	23,436.88
Net Income	17,265.63	17,265.63	38,325.63	43,525.63	43,525.63
Plus: Sum Amortizati	42,400.00	42,400.00	0.00	2,000.00	2,000.00
Net Cash Flow (NCF)	59,665.63	59,665.63	38,325.63	45,525.63	45,525.63
NCF Accumulated					
at 20% Accumulation	(58,416.60)	(10,434.30)	25,804.47	45,525.63	45,525.63
Income Subject to Ad					
Tax (APT): Accumulat	0.00	0.00	25,804.47	45,525.63	45,525.63
APT @ 35%	0.00	0.00	9,031.56	15,933.97	15,933.97
NCF After APT	59,665.63	59,665.63	29,294.06	29,591.65	29,591.65
Government Revenues:					
-Royalties @ 2.50% N	2,537.50	2,537.50	2,537.50	2,537.50	2,537.50
-Income Tax @ 35%	9,296.88	9,296.88	20,636.88	23,436.88	23,436.88
-Dividend Withholdin	1,165.43	1,165.43	2,586.98	2,937.98	2,937.98
-APT @ 35%	0.00	0.00	9,031.56	15,933.97	15,933.97
Total	12,999.80	12,999.80	34,792.92	44,846.33	44,846.33

Model 18. Mis
(1) Hybrid Tax Regim
(2) Au @ $450/oz, Au

YEAR	13	14	15	16-20
Output: Au oz x 1000	200.00	200.00	200.00	
Ag oz x 1000	2,000.00	2,000.00	2,000.00	
Revenues: Au @ $450/	$90,000.00	$90,000.00	$90,000.00	
Ag @ $5.75	$11,500.00	$11,500.00	$11,500.00	
Total Revenue	$101,500.00	$101,500.00	$101,500.00	
Less: Exploration				
Capital Expend			(10,000.00)	
Less: Govt Royalty @	2,537.50	2,537.50	2,537.50	
Operating Cost	30,000.00	30,000.00	30,000.00	
Operating Profit	68,962.50	68,962.50	58,962.50	
Less Amortization/De				
-Allowable Capital E	2,000.00	2,000.00	2,000.00	
-Exploration Expendi	0.00	0.00	0.00	
-Plant (Earth Moving	0.00	0.00	0.00	
-Accelerated Deducti	0.00	0.00	0.00	
Taxable Revenues	66,962.50	66,962.50	56,962.50	
Less: Income tax @35	23,436.88	23,436.88	19,936.88	
Net Income	43,525.63	43,525.63	37,025.63	
Plus: Sum Amortizati	2,000.00	2,000.00	2,000.00	
Net Cash Flow (NCF)	45,525.63	45,525.63	39,025.63	147,643.78 (NPV yr 16-20)
NCF Accumulated				
at 20% Accumulation	45,525.63	45,525.63	39,025.63	
Income Subject to Ad				
Tax (APT): Accumulat	45,525.63	45,525.63	45,525.63	
APT @ 35%	15,933.97	15,933.97	15,933.97	
NCF After APT	29,591.65	29,591.65	23,091.65	94,230.64 (NPV yr 16-20)
Government Revenues:				
-Royalties @ 2.50% N	2,537.50	2,537.50	2,537.50	
-Income Tax @ 35%	23,436.88	23,436.88	19,936.88	
-Dividend Withholdin	2,937.98	2,937.98	2,499.23	
-APT @ 35%	15,933.97	15,933.97	15,933.97	
Total	44,846.33	44,846.33	40,907.58	150,331.84 (NPV yr 16-20)