ATNA RESOURCES LTD.
A STRATEGY FOR BECOMING
A GOLD MINING COMPANY

by

Bonnie L. Whelan

RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF BUSINESS ADMINISTRATION

In the
Faculty
of
Business Administration

SIMON FRASER UNIVERSITY

Summer 2007

APPROVAL

Name: **Bonnie L. Whelan**

Degree: **Master of Business Administration**

Title of Thesis: **Atna Resources Ltd. A Strategy For Becoming A Gold Mining Company**

Supervisory Committee:

Dr. Aidan Vining, Senior Supervisor
CNABS Professor of Business &
Government Relations

Dr. Mark Wexler, Second Reader
Professor

Date Approved: July 17, 2007

SIMON FRASER UNIVERSITY
THINKING OF THE WORLD

STATEMENT OF ETHICS APPROVAL

The author, whose name appears on the title page of this work, has obtained, for the research described in this work, either:

(a) Human research ethics approval from the Simon Fraser University Office of Research Ethics,

or

(b) Advance approval of the animal care protocol from the University Animal Care Committee of Simon Fraser University;

or has conducted the research

(c) as a co-investigator, in a research project approved in advance,

or

(d) as a member of a course approved in advance for minimal risk human research, by the Office of Research Ethics.

A copy of the approval letter has been filed at the Theses Office of the University Library at the time of submission of this thesis or project.

The original application for approval and letter of approval are filed with the relevant offices. Inquiries may be directed to those authorities.

Bennett Library
Simon Fraser University
Burnaby, BC, Canada

ABSTRACT

Atna Resources Ltd. ("Atna") is a development-stage exploration company, whose goal is to become a gold mining company. This project looks at strategies for Atna to achieve this goal. Through an analysis of the gold mining industry, it is determined that the time is right for a new entrant to enter the mining industry. Through an analysis of Atna's internal capabilities, it is determined that Atna is capable of becoming a mining company. An evaluation of strategic alternatives and Atna's corporate goals, reveals that the best alternative for Atna is to merge with a gold producing company. Time is of the essence, however, for Atna to realize its strategy of becoming a mining company.

Keywords: resource sector; gold mining; mining industry

DEDICATION

This dedication is made to Barry, my family and close friends, who encouraged me and gave me inspiration when I needed it most. Thank you for your unwavering support throughout the Program.

ACKNOWLEDGMENTS

I wish to acknowledge with thanks, my "XEMBA" team mates for their friendship and support throughout the Program. Thanks also to all my colleges at Atna Resources Ltd., especially, William Stanley and David Watkins, for sharing their knowledge and experience of the mining industry with me.

Special thanks to Aidan Vining for his advice and direction throughout the project process, and to Mark Wexler for his thorough scrutiny of this paper.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1: INTRODUCTION

Atna – an Exploration or Mining Company?

This is a strategic analysis of Atna Resources Ltd.'s ("Atna") capability to achieve its corporate strategy of advancing from a gold exploration and development company to a gold mining company. The purpose of Atna's strategy in becoming a gold mining company is to generate internal working capital. Internal working capital will eliminate Atna's dependence on equity markets for funding ongoing activities. Internal working capital will also provide Atna with financial independence and control over the future growth and activities of the company.

Exploration and mining are two distinct industries. Each industry requires different resources and skill sets. Without the required resources and skill sets, there is no assurance that an exploration company will make a successful transition into the mining industry.

This strategic analysis examines the current state of the gold mining industry (industry analysis) and Atna's internal characteristics (internal analysis) to answer the following questions:

- Should Atna become a mining company?
- Is Atna capable of becoming a mining company?

Following that, this strategic analysis presents Atna's corporate goals and the strategic alternatives available to Atna for achieve its strategy. An evaluation of these strategic alternatives and corporate goals reveals the best alternative for Atna to achieve its goal of becoming a gold mining company.

Atna – History and Overview

Atna is a development-stage junior exploration company incorporated in British Columbia in 1984. In 1996, Atna discovered the Wolverine zinc-copper-lead-silver-gold deposit located in the Yukon Territory. In 1997, Atna optioned a 60% interest in the property to Westmin Mining ("Westmin"). At the time of the option, Atna raised approximately $20 million in equity capital to finance ongoing corporate activities. In 1998, Westmin earned its 60% interest in Wolverine and Atna began to participate as a 40% contributing partner. Boliden Mining ("Boliden") subsequently acquired Westmin and later sold its interest to Expatriate Resources, an affiliated junior company. In 1997, the zinc market slid into a deep recession from which it did not recover until 2004. As a consequence of the recession, the Wolverine project was virtually inactive for several years.

Over this period, Atna pursued other exploration activities looking for deposits similar to Wolverine. After an unsuccessful search, in 2000, Atna was forced to reconsider its strategy. This change was necessary because of Atna's steadily decreasing treasury, its declining share price and its inactivity and lack of control over the Wolverine project. In addition, the investment community perceived that it would be too difficult to finance two separate junior exploration companies to jointly develop a high capital cost property like Wolverine. In 2000, the Atna Board of Directors ("Board") revitalized the company through a change in management and a change in focus. Under new management, Atna's focus shifted from exploration and development to becoming a mining company.

Atna's first attempt to forward integrate into the mining industry was unsuccessful. Atna's failure was a consequence of its inability to finance the acquisition of an operating copper project located in Chile. Investors were not interested in

investing in the project. The resource cycle was still depressed. After that experience Atna had limited working capital remaining. Consequently, Atna began looking for opportunities closer to its home base. It also began looking for a commodity considered easier for a junior company to develop. As a result, in 2002, Atna became an early entrant into the gold exploration market by acquiring five exploration properties in Nevada. Since there was little interest in the gold market at that time, Atna was able to acquire these early-stage gold exploration properties without competition. Over the period from 2002 to 2004, Atna entered into joint venture agreements on three of the properties and maintained the other two properties for its own exploration purposes.

In August 2004, Atna entered into an option agreement with Pinson Mining Company, a subsidiary of Barrick Gold Corporation ("Barrick"). The option permitted Atna to acquire a 70% working interest in the Pinson property. The Pinson property housed the Pinson gold mine, which was operated by Barrick from 1985 until 2000. In 2000, Barrick closed the mine and discontinued work on the property. Although the open pit mine was no longer economical, the property was believed, by Atna, to have underground mining potential.

To earn its interest in the Pinson property, Atna was required to spend US$12 million on exploration and development and deliver a pre-feasibility report to Barrick within a four-year period. Under the terms of the option, Barrick retained a "once-only" right to earn back a 70% interest in the property by spending the next $30 million on further development of the property.

Atna began drilling on the property in August 2004. In November 2005, Atna discovered a new zone of high-grade gold mineralization. Over a twenty-month period ending December 2006, Atna conducted a major surface and underground exploration and drilling program. The company spent in excess of US$13 million and defined a mineral resource of 1.8 million ounces of gold. In February 2006, Atna produced a pre-

feasibility study, which was given to Barrick. The report indicated favourable project economics. At that point, Atna had fulfilled its obligations under the terms of the option. In so doing, Atna earned a 70% vested interest the Pinson property.

Atna's "earn-in" triggered Barrick's 60-day "back-in" election period under the terms of the agreement. During that period, Barrick was required to elect from one of the following three options:

(i) to remain as a 30% joint venture partner with Atna at 70% and the operator of the property;

(ii) to assume operatorship of the property and expend the next US$30 million on further development of Pinson over a three-year period to "earn-back" a 40% working interest from Atna (thus increasing Barrick to 70% and reducing Atna's to 30%); or

(iii) to sell its 30% joint venture interest in Pinson to Atna for US$15 million, whereby Atna would own 100% of the property.

Atna was somewhat surprised and certainly disappointed when Barrick decided to earn-back on the property in April 2006. Barrick's "back-in" decision removed Atna as the operator of the property. Barrick's back-in decision eliminated Atna's near-term opportunity of becoming a gold mining company.

Atna – Ownership and Control

TSX Venture Exchange (known then as the Vancouver Stock Exchange) listed Atna as a public company in 1984. In 1996, Atna advanced to trade on the TSX (the Toronto Stock Exchange). Since becoming publicly listed, Atna has raised essentially all of its working capital through the issuance of shares. These shares have been issued through the facilities of the brokerage community. Over this twenty-three year period,

Atna has raised approximately $50 million through 12 private placement financings. As of June 27, 2007, Atna has issued 64 million shares. Atna has a much broader shareholder base than that of many closely controlled junior resource companies. This is because of the number of shares issued and the number of years that Atna has been publicly listed. Greater than fifty percent of Atna's shareholders are retail investors holding various-sized allotments of shares. Atna also has a number of institutional investors located in Canada, the United States and Europe. Atna does not have a controlling shareholder and only one shareholder holds more than 10% of the outstanding shares.

Atna's Corporate Strategy – To Become a Gold Producer

Atna's corporate strategy, as determined by the Board in 2000, is to become a gold mining company and generate positive cash flow from production. An internal source of working capital will eliminate Atna's dependence on equity markets for continued operations. It is through financial independence that Atna will gain control over the future activity and growth of the company.

Gold's Product-Customer Environment

As a gold mining company, Atna will produce only one major product: gold. Gold is seldom found in a pure state. Therefore, varying amounts of by-products, such as silver or copper, may be produced with the gold. In most instances, the volume and value of these by-products will be insignificant to the economics of a producing property.

Atna does not intend to sell its product directly to end-users. Atna will sell its production to intermediaries. If selling processed gold dore[1] bullion, the intermediaries will be refineries, such as Johnson Matthey, located in the United States, or the Canadian Mint. If selling raw ore, the intermediaries will be neighbouring gold producers operating gold mills. More information concerning end-users is provided in the next section.

Gold Supply and Demand

Since 2001, gold has been in a steady bull market. This is evidenced by the increase in the price of gold from a low of US$257 per ounce in 2001 to the current price of US$644 per ounce as of June 27, 2007 (Kitco, 2007a). The increase in the gold price is due to a number of factors. These factors include the increase in industrialization of India and China, the resurgence of the economies of the West, and gold as a hedge against inflation. The supply of gold comes from mine production, central bank sales and recycling. On the demand side, gold is required for jewellery fabrication, industrial and medical uses, investment purposes, producer hedging and monetary backing of some nations' currency. In the current boom cycle, the demand for gold is outstripping supply, resulting in the concurrent rise in price (see Table 1.1). The supply shortfall is expected to continue until global gold production is increased or there is a massive divestment of gold held by central banks.

[1] Low purity gold bars produced from gold mines' process ore. Dore bars contain by-products that are produced with the gold when it is mined. Dore bars are refined to 99.99% pure gold through the refining process. www.ansers.com/topic/dore-bar.

Supply

There are three main sources of gold supply in the world. These are mine production, recycled gold and central banks. These sources represent 62%, 23% and 15% of global supply, respectively (World Gold Council, 2005a).

Mine Production

As the largest source of gold supply, mine production is declining. Since 2001, mine supply has decreased. In 2004, 2.6 million tonnes of gold was produced through mining. In 2005, 2.5 million tonnes of gold was produced through mining.

Table 1.1. Gold Supply and Demand from 2001 to 2006 (forecast)

(Gold measured in tonnes)	2001	2002	2003	2004	2005	2006F
Global Gold Supply						
Mine Production	2621	2589	2593	2469	2522	2439
Central Bank Sales (Net)	527	545	617	470	659	284
Recycled	754	835	939	849	888	986
Total Global Supply	**3902**	**3969**	**4149**	**3788**	**4069**	**3709**
Global Gold Demand						
Jewellery	3016	2667	2477	2613	2709	2391
Industrial and Medical	474	480	401	487	613	625
Investment	261	264	310	397	412	385
Net Producer Hedging	151	412	270	427	86	418
Total Global Demand	**3902**	**3823**	**3458**	**3924**	**3820**	**3819**
Over Supply or (Shortfall)	0	146	691	(136)	249	(110)
Gold Price (US$/ounce)	271	310	363	410	444	605

Source: Adapted by author from Salman Partners (2007a)

This decline in production is due to declining ore grades, gold depletion, aging mines, higher operating costs and delays in getting new mines on stream.

The probability of discovering a gold mine is low. "For every 1,000 prospects with possible or probable mineralization, 100 may warrant further investigation, 10 may

justify a drilling program, and one may eventually become a mine" (Russell, 2006a). During that period, the demand for gold may increase or decline. Once a project begins production, however, it is difficult to alter the project's output. There are two reasons for this. The first is the need to maintain optimum plant operating capacities during the mine-life. The second is that the sunk costs (exploration and capital equipment) and the fixed costs (loan payments and taxes) are high, while the marginal operating costs are comparatively low. Once construction capital is committed, a project usually goes ahead even if only anticipated to be marginally profitable. Once mining commences, it will continue as long as revenue equals or surpasses marginal costs.

Over a twenty-year period from 1982 to 2002, there was little gold exploration conducted throughout the world. Gold exploration was not conducted because of a depressed gold price. As a consequence, there are a limited number of new gold projects under development. There are even fewer gold projects at the discovery stage. Even though the price of gold has doubled over the past five years, the World Gold Council anticipates that mine production will remain flat or possibly decline slightly over the next two years. This decline in production will continue until new mines come into production and the exploration effort replenishes the supply of projects (World Gold Council, 2005b).

Recycled Gold

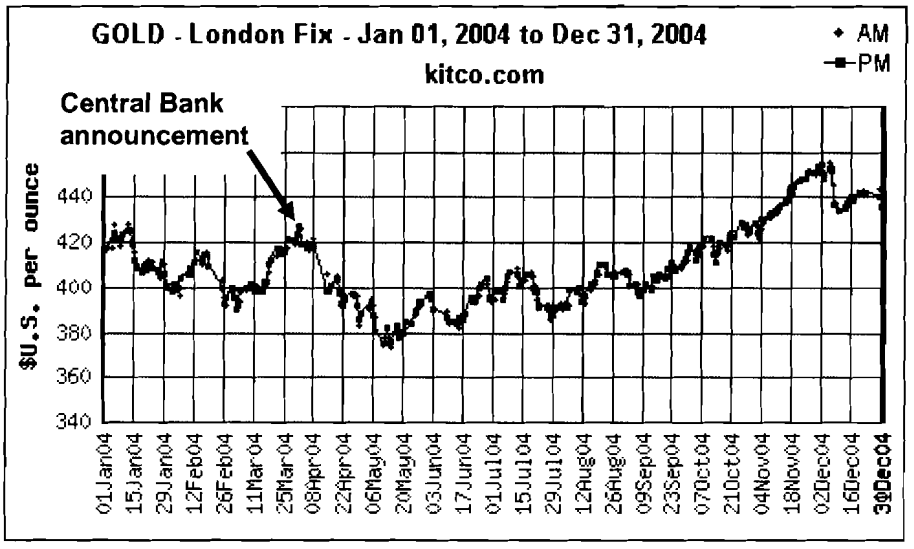
Gold is virtually indestructible. Gold can be melted down, re-refined and re-used. Most recycled gold comes from gold jewellery, while lesser amounts of gold come from electronic components, gold bars and coins. The supply of recycled gold is highly price-elastic, increasing and decreasing as the price of gold fluctuates. Over the past two years, the amount of recycled gold coming into the market has increased considerably.

This increase in recycled gold is expected to continue as long as the gold price remains strong.

Central Banks

In 1999, the Central Bank Agreement on Gold ("CBAG") was established to permit central banks to sell gold. Since the implementation of the CBAG, central banks have been net suppliers of gold to the market. Central banks have been sellers of gold because of the abolishment of the gold standard and growing financial pressures felt by most of the countries holding gold in reserve. Prior to the CBAG central banks had a neutral effect on the price of gold. However, the emergence of central banks as net sellers has put downward pressure on the gold price. In 2004, European Central Banks established a second agreement, the European Central Bank Gold Agreement ("ECBGA"). The ECBGA places a "ceiling" on the annual sale of gold by central banks at a higher level than that of the CBGA ceiling. The ECBGA increases the ceiling on the sale of gold by central banks from 400 tonnes to 500 tonnes per annum. During the first year of the ECBGA, from September 2004 to September 2005, net gold sales have been significantly less than 500 tonnes. While central banks within the ECBGA have been net sellers of gold, central banks outside of the agreement (China, India, Japan and Russia) have become net purchasers. To illustrate the impact that Central Bank sales can have on the short-term price of gold, consider the influence the ECBGA announcement in 2004 had on the gold market over the next 45 days. On April 1, 2004, prior to the ECBA announcement, the price of gold was $427.25 per ounce. Within a 45-day period following the announcement, the price of gold dropped to a low of $375.00 per ounce on May 10, 2004 (see Figure 1.1).

Figure 1.1. Central Banks' Impact on the Price of Gold



Source: Kitco (2007b). Used with permission

Demand

The demand for gold comes from four main sources: jewellery fabrication, investment, industrial and medical uses, and producer de-hedging. These sources represent 70%, 12%, 11% and 7% of demand, respectively.

Jewellery Fabrication

Jewellery fabrication is by far the largest category of demand. India represents the largest jewellery market by volume. The United States represents the second largest market by volume. However, the United States represents the largest market in terms of retail value, at approximately US$16 billion (World Gold Council, 2005c). The value of jewellery demand in regards to the 2005 annual average gold price is approximately US$40 billion (World Gold Council, 2005c). Although the price elasticity of gold jewellery and gold products is generally high, jewellery producers globally are making a concerted effort to market gold products and promote occasions appropriate for gold giving. These occasions include weddings, anniversaries, birthdays, Valentine's Day, Diwali, Christmas and Chinese New Year. The rapid growth of the middle class in

China and India, and the resurgence of gold consumers in the western world is increasing global demand. In 2005, the global demand for gold increased by 5% in terms of volume and 14% in terms of value. This increase is despite the fact that the gold price reached a 20-year high in 2005 (World Gold Council, 2005c).

Investment

The investment in gold as a "safe haven" and store of monetary assets has been common practice for centuries. In the Middle East and Asia, gold jewellery is a very common form of investment and savings, as is gold bullion. In the western world, gold investment takes many forms, i.e., gold coins and bullion, gold-backed securities, investment in mining equities and investment funds, and gold-based warrants, futures and options. Overall investment demand over the past five years has increased four-fold to 12% of total demand, or approximately US$10.5 billion (World Gold Council, 2005d).

A renewed interest in gold investment has come about for five of reasons. First, gold is used as a hedge against inflationary factors. Inflationary factors include increased oil and commodities prices and the US trade deficit. This puts upward pressure on the gold price. Second, gold is used as a hedge against fiscal mismanagement by governments, such as that of the United States. An increase in the United States' national debt from US$5.9 trillion in 2002 to US$8.7 trillion at the beginning of 2007 has put downward pressure on the value of the US dollar (United States Department of the Treasury, 2007). Gold is bought and sold in US dollars. Consequently, as the value of the US dollar declines, the price of gold (in US dollars) increases. Third, gold is referred to as the "crisis commodity" (Blanchard Economic Research Unit, 2007). This is because gold has a tendency to increase in value as global economic and political tensions mount. At these times, people acquire gold as a "safe haven". Fourth, gold always maintains some inherent value even though the price

of gold fluctuates. Gold's value is never completely destroyed in an accounting scandal or in a market collapse, as can the value of paper money or securities. Lastly, gold is used as a diversification tool, so that portfolio investments are not closely related to one another. Therefore, risk is reduced in the overall portfolio.

Producer De-Hedging

Gold hedging takes place when gold producers lock in a gold price to be paid to them for future gold production. Hedging was implemented as a mechanism to protect producer cash flows in the event of declining gold prices. When gold hedging commenced in the 1980s, it was common for producing companies to hedge 10% of their annual production. Into the 1990s, producers hedged an even higher percentage of their production. Gold producers were betting that gold would continue to decline. The contractual arrangement of gold hedging requires the sale and delivery of gold at hedged prices, regardless of whether the price of gold increases or decreases. In the current gold bull market where gold prices have doubled over the past five years, gold producers have started to de-hedge by buying gold or buying back their contracted hedge positions. The gold demand for de-hedging purposes has fluctuated over the past five years. However, in 2006, with a gold price in excess of US$600 per ounce, 373 tonnes of gold was required for de-hedging purposes (GFMS, 2007a).

Industrial and Medical

Electronic components comprise sixty-seven percent of the gold required for industrial purposes (GFMS, 2007b). Trends drive demand in the electronics industry. Therefore, in the short-term, gold is price-inelastic. Gold is widely used in electronics because of its high thermal and electrical conductivity, its resistance to corrosion, and its malleability. The ongoing demand for gold in electronics is expected to grow in the

future as demand for electronic components increases (World Gold Council, 2005e). Industry also uses gold for gold-plating, artistic and decorative purposes.

The medical field uses gold because of its biocompatibility, resistance to corrosion and malleability, all of which make it suitable for use within the human body. Although gold has a number of other medical purposes, it is used most notably in dentistry. Dentistry accounts for approximately 2% of gold use (World Gold Council, 2005e).

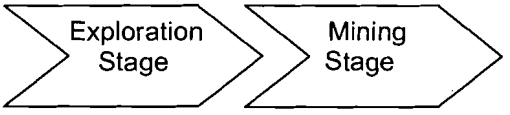
New uses of gold include its use in fuel cells, in nanotechnology relating to mobile phones and laptop computers, and in the coating of superconductors. As with the electronics industry, new medical uses of gold will likely continue to increase the overall use of gold for industrial applications well into the future.

CHAPTER 2: THE MINING INDUSTRY AND COMPETITIVE ANALYSIS

Defining the Exploration and Mining Industries

An understanding of the gold mining industry is essential to understanding Atna's desire to become a gold producer. In a broad definition, mining is one segment of the economy referred to as the "mineral resource sector". Companies in the mineral resource sector develop, produce, process, refine and market precious and base metals. The mineral resource sector has two industry stages: exploration and mining (see Figure 2.1).

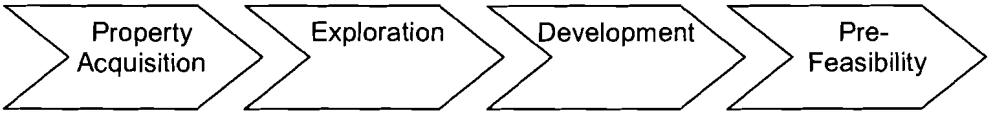
Figure 2.1. The Mineral Resource Sector – Industry Stages



Source: Author

Activities in the exploration and mining stage advance in a step-progression (supply chain). Steps in the exploration supply chain include property acquisition, exploration, development and pre-feasibility (see Figure 2.2). Brief descriptions of the steps in the exploration supply chain are as follows:

Figure 2.2. The Exploration Stage Supply Chain



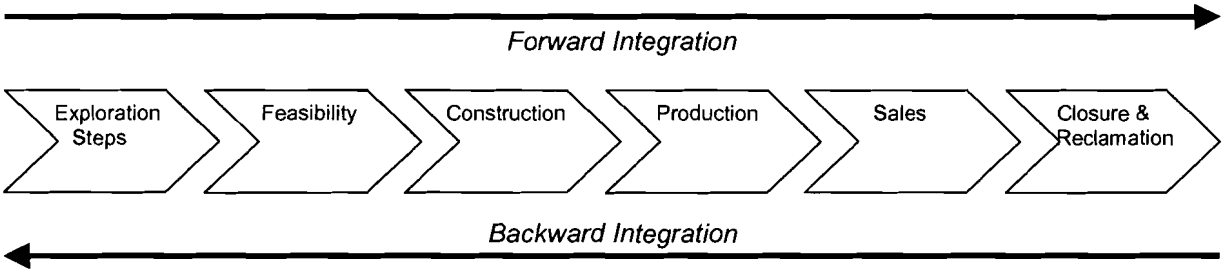
Source: Author

As a first step, mineral properties are acquired through one of three methods. These are: (i) staking or leasing of mineral claims on unexplored ground, (ii) optioning a property from another company, such as the option acquired by Atna from Barrick on the Pinson property, and (iii) joint venturing with other companies. Both optioning and joint venturing are means by which property owners can share the cost and risk of exploring their properties with other entities. Owners assign partners an agreed-upon working interest in properties. This working interest is assigned in exchange for one or both of the following (i) specified expenditures being made on properties, and (ii) for the technical advancement of properties to a particular exploration or development stage (i.e., advancing projects through bankable feasibility). As a second step, exploration is the process by which properties are examined geologically. Exploration commences at a grassroots level and progresses through to drilling to determine the mineral potential of properties. The third step, development, is the process by which properties are evaluated more rigorously to identify preliminary mineral resources. The fourth step is pre-feasibility, through which early-stage economic evaluations of mineral resources are calculated.

The steps in the mining supply chain include all of the steps in the exploration supply chain, plus: feasibility, construction, production, sales, and mine closure and reclamation (see Figure 2.3). The mining supply chain illustrates the forward and backward integration between the exploration and mining stages of the mineral resource sector.

Forward and backward integration, from property acquisition through to mine closure and reclamation, is constantly ongoing. Forward and backward integration takes place because of the depleting nature of mine production. All ore bodies contain a finite amount of gold. Therefore, all gold ore bodies are eventually depleted through production.

Figure 2.3. The Mine Stage Supply Chain



Source: Author

If mining companies do not replace depleted reserves with new reserves, they eventually run out of ore to mine. If this happens, these companies cease to exist as mining companies. Consequently, mining companies are required to continuously acquire, or explore and develop, new reserves to provide ore for ongoing operations.

The mining stage consists of a number of interlocking steps. The initial step is feasibility. Feasibility is a continuation of the pre-feasibility process. Feasibility is a much more detailed engineering and economic study of deposits. It is the step that determines whether properties are economically viable. If economically viable, properties are put into production. If not economically viable, properties are allowed to lapse, are put into care and maintenance, or are otherwise relinquished. When the results of the feasibility are favourable, construction commences. In this step, mine infrastructure and milling facilities are constructed and mine equipment purchased. As the third step, the mine commences production and processing. Following that, the gold ore or gold metal is sold. The final step in the mining stage is reclamation and mine closure. In this step, the mine area is reclaimed to a natural state after a mine's resources are depleted.

The gold mining industry is a mature industry. Gold mining is market-based. This market is driven by the price of gold and by the commodity's unique place as a store of wealth and hedge against inflation. Gold is usually refined to 99.999% purity before

being sold to the end user. Consequently, there is no distinction between one producer's product and the next. Competition between gold mining companies lies in a company's ability to produce a greater return on investment through lower operating and capital costs than may be achieved by a competing company. The following quote captures the fundamental nature of the mining industry: "In an industry where technology is stable, prices are generally beyond the control of the producer, where the geology dictates the location, and where the products themselves are homogeneous, there is little within the control of the firm besides cost" (Russell, 2006b).

There are three strategic gold-producer groups in the gold mining industry: senior, intermediate and junior producers. "The strategic groups paradigm has emerged as a major building block in the theory of strategic management, describing and explaining the diversity of strategic capabilities and competencies that industry firms use to complete" (Fiegenbaum et al., 2001). Strategic groups in the mining industry are defined by market capitalization, cash flow and physical size (number of operations), and graduate accordingly (see Table 2.1).

Table 2.1. The Three Strategic Gold-Producer Groups

Producer Category	Market Capitalization ($)	Number of Producing Mines	Annual Production (ounces)	Annual Revenue ($)	Number of Employees
Senior Producer	>US$5 billion	>12	>2 million	Hundreds of millions	>10,000
Intermediate Producer	US$2 billion to US$5 billion	2 to 12	200,000 to 2,000,000	Tens to hundreds of millions	1,000 to 10,000
Junior Producer	US$500 million to US$ 2 billion	1 to 2	Up to 220,000	Tens of millions	Up to 1,000

Source: Adapted by author from Salman Partners (2007b)

The three strategic gold-producer groups compete in terms of their net asset value (NAV). Intermediate producers have higher NAV multiples than senior producers

because of intermediate producers' merger and acquisition potential and, in some cases, their relative low-cost production ability. Junior producers have lower NAV multiples than senior producers. This is because of the junior producers' "reduced ability to generate cash flows (which gives rise to financing risk) and generally weaker market visibility (given that juniors tend to have more limited analyst coverage and often represent market capitalizations that prevent many institutional investors from considering substantial positions)" (Salman Partners, 2006a). In addition to the foregoing, junior and intermediate producers have the potential for much greater share appreciation resulting from a new gold discovery. For example, a billion-dollar discovery has minimal impact on a multi-billion-dollar company. It, however, has a huge proportionate impact on a billion- or multi-million-dollar company. The smaller the company, the larger the relative affect of a discovery on its NAV.

Barrick, Newmont Resources Ltd. and Goldcorp Inc. are examples of senior gold producers. Agnico-Eagle Mines Ltd., Yamana Gold Inc. and IAMGOLD Corp. are examples of intermediate gold producers. Alamos Gold Inc., Northgate Minerals Corp. and High River Gold Corp. are examples of junior gold producers.

Profitability and Cyclicity of the Gold Mining Industry

To understand the profitability of the gold mining industry, it is useful to understand the cyclicity of the gold market. Prior to 1971, gold was restricted from trading because it was the backing for fiat currencies (the "gold standard"). In 1971, the gold standard was abolished and gold began trading as a commodity. Since that time, gold has experienced a number of "boom" and "bust" cycles. These cycles are similar to those of all other commodities such as oil and gas, base metals, and grains. During these cycles, gold mining companies achieve greater or lesser profitability.

The most recent bust cycle lasted for twenty years, from 1982 to 2001. During this period, the price of gold decreased from historical highs of US$800 per ounce in 1982, to a low of US$257 per ounce in 2001 (Kitco, 2007c; see Figure 2.4). This decrease in the gold price led to a decline in gold production and profitability. Marginal operations stopped producing. These properties were placed on "care and maintenance", awaiting a more favourable environment. Near-production properties were allowed to lapse.

Figure 2.4. The Price of Gold from 1975 to Present

Source: Kitco (2007c). Used with permission

In 2002, the bust cycle ended and the current boom cycle commenced. With the price of gold more than doubling over the past five years, profitability in the mining sector has recovered. Projected growth in the mining sector is illustrated by the cash flow and earnings multiples forecasts found in Table 2.2.

Table 2.2. Producer Cash Flow and Earnings Multiples (2006F, 2007F and 2008F)

Producer Group	Cash Flow Multiples			Earning Multiples		
	2006F	2007F	2008F	2006F	2007F	2008F
Senior Producer	12.7	15.4	13.4	21.4	22.8	19.2
Intermediate Producer	18.0	14.9	11.4	38.9	23.5	17.2
Junior Producer	11.0	17.4	9.7	28.8	30.0	18.1

Source: Adapted by author from Salman Partners (2006b and 2007c)

Gold mining currently has high profitability compared to that of other industry sectors (see Table 2.3). This profitability and growth is expected to continue, at least in the short-term (Salman Partners, 2007a).

Table 2.3. Price to Earnings Ratios by Sector and Industry

Sector/ Industry	Price/Earnings Ratio	P/E – High Last 5 Years	P/E – Low Last 5 Years
Basic materials/ Gold and Silver	27.5	77.0	19.61
Technology/ Communications	28.0	55.0	17.0
Financial/ Regional Banks	15.28	28.06	11.4
Energy/ Oil and Gas	14.3	30.46	10.53

Source: Adapted by author from Reuters (2007a)

Although the information provided in Table 2.4 is not specific to gold mining, it does provide evidence of the growth in the resource sector, which includes gold mining. As illustrated, there has been a dramatic increase in the amount of equity capital raised globally by companies in the resource sector over the past six years. Additionally, in 2006, the top-performing index of the S&P/TSX (the "Standard & Poor's/Toronto Stock Exchange") was the Metals & Mining Index. This index achieved a 70% return on investment (Kaiser, 2006). This is significant because this level of return keeps

investors in the market in the long-term. Retaining investors in the long-term promotes growth in the sector.

Table 2.4. Global Equity Capital Raised For Use In the Resource Sector, 2001 to 2006

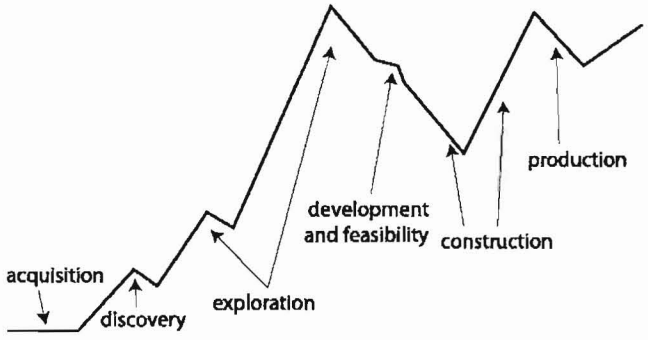
Year	2001	2002	2003	2004	2005	2006
Equity raised in US$ billions	3.5	8.4	9.6	10.8	9.7	26.5

Source: Adapted by author from Kaiser (2006)

The Resource Sector Investment Life-Cycle

The resource sector has a well-defined investment life cycle that relates directly to the first six steps in the supply chain. Figure 2.5 depicts the life cycle and the expected fluctuations in a mining company's share price as the company proceeds from exploration and development to production. As illustrated in the life-cycle figure, the highest returns to investors occur at two steps of the life cycle. The first is at the top end of the exploration step. This is the point where an economic ore body has been discovered. The second is at the step where a property commences production. After that, the company's performance, as a production company, will dictate returns on investment.

Figure 2.5. The Resource Sector Investment Life Cycle



Source: Dartnell (2005). Used with permission from *Resource Magazine*

Forces that Impact the Mining Industry

The following industry analysis is based on Michael Porter's Five Forces Model (Porter, 1980). The model provides a method to analyze the economic and competitive factors existing in an industry. The result of the analysis determines the ease or difficulty in achieving success within the industry. In so doing, it determines the overall attractiveness of the industry. In some industries, such as in the gold mining industry, a sixth factor is present. This sixth factor, which influences the economic viability and attractiveness of the industry, is government influence (Weimer and Vining, 2005). Consequently, six factors are evaluated to determine the attractiveness of the gold mining industry. These factors include barriers to entry, power of suppliers, power of buyers, threat of substitutes, government influences, and competition from existing firms.

It is usual for a company within an industry to conduct an industry analysis to assess its position within the industry in terms of competition and profitability. It is unusual for a company outside of the industry to conduct an industry analysis. This is the case, unless, like Atna, the company anticipates becoming a new entrant in the industry. In this instance, it is crucial for the company to have a full and complete evaluation of the industry prior to entry. This will aid in determining the likelihood of success.

Barriers to Entry in the Gold Mining Industry

The barriers to entry are not normally the first factor to be evaluated when conducting an industry analysis. For a firm in the industry, competition from existing firms is the most critical factor. Therefore, competition from existing firms is usually the first factor to be considered. However, given that Atna is considering becoming a new entrant into the gold mining industry, the barriers to entry are considered first. If the barriers to entry are too formidable, Atna may wish to reconsider its strategy.

The analysis of the barriers to entry identifies four components relevant to the analysis. Three of the components, cost of entry, access to distribution channels, and brand equity, are weak barriers to entry. The fourth component, access to capital, is a strong barrier to entry.

Cost of Entry

Mining is an activity generally undertaken by large companies because of its capital intensity. Mining generally requires access to large capital pools for the construction of capital equipment, infrastructure, processing and marketing facilities. Relatively speaking, however, gold mining is different. Gold mining is accessible to small companies because of the relative low cost of entry. A number of factors facilitate industry entry. The first is that gold operations can be small and still be profitable. Secondly, ore processing is commonly uncomplicated, thus requiring less capital. Thirdly, the marketing of gold is simple and straightforward because gold is a homogeneous product and end-users are well defined.

Gold has a very high unit value, substantially reducing the need for complex infrastructure such as transportation and large-scale, capital intensive operations. The value of gold ore is measured in ounces per ton with the current price being US$644 per ounce. Copper ore, in contrast, is measured in pounds per ton and has a current price of US$3.50 per ton as of June 27, 2007 (Kitco, 2007d). Therefore, copper deposits must be much larger and contain more metal to obtain operational economies and produce the same revenue as can be achieved from a small gold operation. Consequently, the barriers of the cost of entry into the gold mining industry are comparatively low.

Access to Distribution Channels

Most gold mining companies sell a standard purity product directly to a narrow, well-defined group of refiners or gold mill operators. Access to distribution channels, therefore, does not affect gold companies' competitive advantage. Thus, access to distribution channels is a weak barrier to entry.

Brand Equity

At the end of the gold mining process, all companies produce the same quality of gold purity. Therefore, there is no distinction between one company's product and the next. As a result, brand equity for gold mining companies does not exist in terms of product quality as it does in other industries. Brand equity for gold mining companies exists in terms of the investors' perspective. Barrick is the world's largest gold producer and is therefore a benchmark. Goldcorp is one of the world's lowest cost producers and may have different investor appeal. Other producers may gain a reputation, or brand equity, for growth through successful mergers or exploration successes. Depending on investors' objectives, investing in companies with brand equity (of the types mentioned) may be more desirable than companies without. Companies with brand equity often have an advantage over those without when it comes to attracting capital, personnel, services and equipment, and gold properties. Although brand equity can be an asset, it is not generally a barrier to entry into the industry.

Access to Working Capital

Although the capital required to enter the gold mining industry is relatively low, it is the greatest barrier to entry. Raising working capital for acquiring, building and operating a gold mining property is difficult for small companies without assets to offer as security for debt capital. Raising working capital is also difficult and more expensive for

companies without a track-record of operating experience. The inability to raise working capital through equity and/or debt financing or cash flow can severely restrict or even prevent a company's ability to enter the gold mining industry. An example of the inability to finance a project was previously presented. In that example Atna was unable to enter the copper mining business due to Atna's inability to raise working capital in a depressed market. As illustrated in that example, access to working capital is a strong barrier to entry.

Gold Mining Industry Inputs

In conducting the analysis on gold mining industry inputs, four inputs are identified. These are the suppliers of personnel; services and equipment; capital and gold properties. For each of these suppliers, the bargaining power is strong in the current robust gold market environment.

Suppliers of Personnel

Currently, there is an extreme shortage of human resources in the mining industry. The skills shortage results from a twenty-year hiatus in the industry from 1982 to 2002. The hiatus was initiated by low metal prices, non-investment in the industry, and consolidation amongst companies. As a consequence, this hiatus has led to a reduction in experienced personnel and an aging work force.

There are two categories of personnel in the mining industry. They are technical and non-technical personnel. Technical personnel include geoscientists, mining engineers, metallurgists, process engineers, and equipment and machinery operators. The skills of technical personnel are highly specific to the industry and therefore the labour pool is limited.

Non-technical personnel include management and administrative personnel. The skills of non-technical personnel are transferable from other industries to the mining industry. Consequently, the shortage of non-technical personnel is not as crucial as that of technical personnel.

There are two methods by which technical personnel can be sourced. One is to hire experienced technical personnel from competitor companies. This is currently a very common practice in the industry. In fact, for companies with adequate financial resources, this is the most efficient way to hire qualified personnel. The second option is to hire university graduates with little or no practical experience and train them on the job. This option is not very satisfactory for two reasons. First, few students have entered the geosciences and mining engineering disciplines over the past decade. Thereby, this is a limited source of supply. The second reason is that it normally takes from three to five years of industry experience for university graduates to become competent in their work.

This shortage of personnel has led skilled talent to seek lucrative compensation packages. Small companies with few financial resources are less able to entice and retain qualified personnel than those companies with greater financial resources.

Small companies do have some advantages, however. They are generally more flexible and less bureaucratic than larger organizations. This type of structure is often attractive to people with entrepreneurial skills. The structure is also attractive to people who are motivated to make valuable contributions to companies in achieving their objectives. Additionally, small companies are often able to offer rapid career growth and opportunities for greater financial gain should the companies be successful in their endeavours.

The Suppliers of Service and Equipment

The same challenges exist with the supply of services and equipment that exist with the supply of qualified personnel. During the twenty-year downturn, many supply and equipment companies, specializing in the mining industry, ceased operations or otherwise left the industry. The consequence of this exodus is that the current market is in short supply of all types of mine services and equipment. To exacerbate the situation, China and India are growing quickly and competing on the world market for supplies and equipment. This shortage of services, supplies and equipment has lead to increased costs and significant delays in delivery times.

The shortage of tires for mine equipment is a prime example of the impact of the shortage of supply. "Used tires for mining rigs, which could be bought for $5,000 a year ago, now sell for $20,000 and up, and there are reports of new machinery being shipped to buyers without tires" (Jaman, 2005). Steel, cement and other construction materials are also in short supply and price increases in excess of 100% have resulted.

Mining companies operating in this market have little option other than to pay the price for supplies and wait their turn for equipment. The outcome is that these delays and inflated costs have a significant impact on operating costs. Small companies in the business are even more disadvantaged as the economies of scale play against them. Service and equipment providers satisfy their large customers before servicing small customers. This results in increased opportunity costs to companies that can least afford them.

The Suppliers of Working Capital

For a junior gold mining company with little or no cash flow, the funding of ongoing and new operations can come from two sources: equity or debt financing. Although both sources of working capital are readily available in the current market,

each has its own influence on the profitability of a company. Each also has its own influence on the return on investment to shareholders.

The issuance of equity shares, while not directly affecting a company's profitability, does have a dilutive effect on the issued shares of the company. This dilution decreases the return to investors on a per-share basis. Additionally, the costs associated with conducting equity financings are considerable. Brokerage firms (in accordance with regulatory policy) generally dictate the commission rate paid to them. Commissions generally include a cash payment and agent's warrants based a percentage of the gross proceeds raised through the placement. Additionally, companies seeking equity financing must pay regulatory filing fees. They must also complete a rigorous filing and approval process with stock exchanges and securities commissions. The private placement process from beginning to end takes a minimum of three months and often longer to complete. The time required to complete a financing is contingent on the complexity of the transaction. The total cost of a placement may be as much as 20% of the gross proceeds of the financing when considering the cost of commissions, filing fees and professional fees.

The second option is debt capital. This option generally requires security and preferential repayment of debt from cash flow. Repayment of debt can be onerous for a junior producer with limited cash flow. Canadian chartered banks seldom entertain loans to junior producers for a number of reasons. These reasons include the high risk associated with a single mine entity, risks associated with the lack of security, and restrictive Canadian regulations for offshore lending. Loans may be obtained from "second tier" banks such as Macquarie Bank of Australia, Rand Merchant Bank of South Africa, Société General of France, or Standard Bank of London, which specialize in high-risk "mezzanine" financing.

Financing through a second-tier bank is a costly undertaking due to the risk premium placed on the transaction. The cost of a loan is dependent on the technical assessment of the project and the value of the security placed against the loan. The expected rate of return ("ROR") on investment to a mezzanine lender is approximately 20%. The ROR is comprised of interest, fees, and warrants or other convertible features. A project loan subject to security and completion guarantees may be available for LIBOR ("London Inter-Bank Offer Rate"), currently at 5.45% (as of June 27, 2007; Bankrate.com, 2007), plus a premium of 2–3%. Lenders may also require a certain amount of product hedging to underwrite a loan. Although mezzanine financing is costly, second-tier banks do provide junior mining companies with an alternative method of financing that they would not otherwise have.

The Suppliers of Gold Properties

With the demand for gold production that exists in the market, there is currently a strong demand for gold exploration and development properties. The greatest demand for gold properties comes from existing producers. These producers must replace depleted gold reserves in order to maintain or increase production levels and profitability. New entrants into the gold mining industry put added pressure on demand. However, this added demand from new entrants is of little consequence.

There are three sources of gold properties. The first, and by far the largest supply, is through in-house exploration and development of potential gold properties. Exploration is the means by which "new" inventory may be discovered and supplied to the mining sector. Large producers seldom carry out sufficient exploration to replace their depleting reserves. They must, therefore, look to junior exploration and development companies to supplement their supply. It is this requirement to replace reserves that drives the exploration sector. The requirement to replace reserves has the

ability to turn gold discoveries, made by junior exploration companies, into bidding wars by intermediate and senior gold producers. Barrick, who produced 8 million ounces of gold in 2006, is a good example of the depletion problem (Salman Partners, 2007b). Barrick must discover 8 million ounces of gold in a year just to replace one year's depleted reserves. Barrick must, therefore, discover more than 8 million ounces of gold in a year if it intends to increase production. It takes approximately ten years to develop a new gold project from discovery to production. Consequently, Barrick is challenged to replace its reserves internally. Barrick replaces reserves by: (i) exploring and developing reserves at existing operations, (ii) exploring on a worldwide basis and (iii) looking for exploration-stage acquisition targets in the market place. Such is the case with most gold producers.

A second avenue for the supply of gold properties is through the merger and acquisition process. A significant number of large merger and acquisition transactions were completed in 2006. These transactions took place between producing companies and/or advanced-stage exploration companies. The shareholders of the acquired companies earned an average of 28% above the market price for their shares through these transactions (Salman Partners, 2007d). Although this is a relatively fast way to acquire production, it is dilutive to the shareholders of both companies and may be costly to acquiring companies if investment capital is required to complete the transactions.

The third avenue for supply of gold properties is to acquire a property when vendors no longer wish to keep them in inventory. Reasons for "spinning-off" properties are that they no longer fit vendors' core objectives with respect to size, profitability, commodity type and/or location. The Pinson property is an example of a property that was spun-off to Atna because it did not fit Barrick's size objective. At the time that the Pinson property was optioned by Atna, the property was considered by Barrick to be too

small to meet its the minimum size threshold. As a result of the development work completed by Atna, however, the property has since become of interest to Barrick. This is evidenced by Barrick's election to back-in on the property.

A large part of the problem in trying to acquire gold properties is locating one that is available for acquisition. Information on available gold properties is not consolidated in one place, and is consequently, difficult to obtain. Potential buyers and sellers are often connected by means of word of mouth and industry networking. Outside of that, research must be conducted to identify properties or companies that fit purchasers' objectives. This avenue of acquisition may not be successful if targeted companies are not amenable to the sale of projects or to mergers. If purchasers are insistent upon making the acquisition and an amicable transaction cannot be negotiated, purchasing companies can initiate a "hostile takeover"[2] in the market to acquire desired companies and their assets. Two recent examples of this took place in 2006. One is Barrick's failed attempt to acquire NovaGold. The other is Barrick's successful acquisition of Placer Dome. Companies with prior mining successes (brand equity) are more likely to be the first to be offered projects than are companies with no track record and no cash flow.

The acquisition of gold properties through any of the avenues discussed above is generally made through a combination of cash, debt and equity. A potential purchaser must have the ability to offer some or all of these financial alternatives. They must also be prepared to pay the price to out-bid the competition. In this market, it is especially difficult for small companies with limited resources to compete for properties of merit.

---

[2] A hostile takeover occurs when a company attempts to buy out another whether they like it or not. A hostile takeover can occur only through publicly traded shares, as it requires the acquirer to bypass the board of directors and purchase the shares from other sources. This is difficult unless the shares of the target company are widely available and easily purchased (ie, they have high liquidity). www.ventureline.com/glossary_H.asp

Power of Gold Buyers

Gold is seldom sold by the producer directly to end-users (i.e., jewellery fabricators, industrial and medical enterprises, and de-hedgers). Gold producers generally have two markets for the sale of gold depending on its form. Gold mining companies without their own gold mills will sell gold ore to neighbouring gold mills for processing into dore bars. Refineries, as the second market, buy dore bars for processing into 99.999% pure gold.

The price received by gold producers, whether from mills or refineries, is based on the world gold price at the time the product is sold. The price paid to producers, however, is adjusted in accordance with the ore grade, gold recovery rates, the value of any other contained minerals, and penalties accrued for impurities. With the exception made for these adjustments, gold producers are market-takers. Consequently, the bargaining power of gold buyers is neutral.

Threat of Substitutes

In analyzing the threat of substitutes, two aspects are considered. One is the substitute for gold. The power of this substitute is weak. The second is the substitute for gold equities. The power of this substitute is strong.

Substitutes for Gold

There are no substitutes for gold because of its unique properties as a metal and because of its unique monetary characteristics. Gold's unique qualities as a metal are extensive. "It is durable and is chemically inert. It can be divided into small pieces without losing or decreasing in value. It is not fixed in place — as is real estate, for example — it can be moved from place to place. It is consistent in its grade – pure gold

is 24-carats. Gold is malleable, ductile, does not tarnish, has a high conductivity of both heat and electricity, is non-corrosive, and is highly reflective to light" (Casey, 2005).

As the price of gold increases, businesses that use gold in their enterprises are motivated to find lower cost substitutes. In some applications, switching to substitutes may be an option as substitutes are identified. In other applications, most notably in medical applications, gold is often the only option available because of one or more of gold's many unique qualities. Some businesses are innovating to find substitutes for gold. Others through innovation are finding new uses for gold. In the future, there may be substitutes for gold for specific applications. However, a general substitute for gold is not considered a threat at this time.

For jewellery purposes, silver may be a substitute for gold during high gold price periods. Jewellery fabrication represents 70% of the end-use consumption of gold; therefore, switching to silver jewellery fabrication would significantly affect the gold demand. There are, however, two counter considerations. Firstly, there is no substitute for the intrinsic beauty of gold. Secondly, high-priced gold jewellery could have status appeal, similar to that of diamonds. As consequence of these counter considerations, silver, as a substitute for gold, is considered to be neutral.

Gold's unique monetary characteristics are discussed in a previous section, entitled "Investment Demand". The points made in that section of this strategic analysis will not be reiterated here. However, it is sufficient to say that there is no replacement for gold as a monetary asset.

Substitutes for Investment in Gold Equities

Substitutes for the investment in gold equities are strong. Firstly, there are hundreds mining- and resource-related companies from which an investor may choose when making an investment in the gold market. For those people who invest in the gold

market, many prefer to invest in large- and medium-sized gold companies that can demonstrate economic value and cash flow. Investments in large- and medium-sized gold companies present lower levels of risk than investments in junior gold companies. For investors who choose not to invest in the resource sector, there are numerous alternatives for investment. These include investments in equities in different sectors of the economy, bonds, real estate, art, and gems, to name a few.

Government Influences

Three factors are identified in conducting the analysis on the influence of government influences on the mining industry. They include regulatory policies, permitting requirements and country risk. The influence of each of these factors is strong.

Regulatory Policies

Over the past decade, regulatory policies have been legislated that have had a significant impact on the mining industry. These policies include (i) National Instrument 43-101 ("NI 43-101") legislated in Canada in 1998, and (ii) the Sarbanes-Oxley Act ("SOX") legislated in the United States in 2002. NI 43-101 standardizes the reporting of mineral reserves and resources by a verified, technically "qualified person" appointed by companies or engaged as independent experts. Under SOX, public company directors are held more accountable to their shareholders. Also under SOX, financial disclosure is more transparent, auditors are independent of the companies they audit, and corporate governance standards are augmented. These two regulatory policies have resulted in significant increases in the cost, complexity, knowledge required and time required to fulfil regulatory obligations. This is especially true for small companies that do not have

the human and financial resources to dedicate to these onerous regulatory requirements.

Permitting Requirements

Over the past twenty years, governments have placed stringent permitting requirements on companies in the exploration and mining industries. With each value chain step, from exploration through to production and mine closure, resource companies are met with numerous federal, provincial and municipal department regulations. These regulations encompass policies regarding environmental, cultural, social, and economic issues. In recent years, the influence of non-governmental organizations ("NGOs") is making the permitting task even more onerous. These NGOs, or special interest groups, have an ever-increasing number of causes and issues that must be addressed by mining companies.

Meeting the requirements of the array of stakeholders is having a marked influence on the length of time and the costs required to develop a property from grassroots through to production. The following quote from a financial newsletter indicates that permitting and NGOs is a problem for mining companies and investors alike: "Community relations is one speciality we don't think many investors — or companies, for that matter — fully understand or take seriously enough. Today in almost any part of the world, local communities have the power to tie up mining projects for years, or stop them dead in their tracks" (Casey, 2007). Government forces may be more or less demanding, depending on the jurisdiction. However, in these times of environmental and social awareness, government forces and NGOs have a very strong impact on the economic viability and attractiveness of the mining industry.

Country Risk

Because of government influences in North America, some mining companies choose to take their business offshore. This is because offshore there are more streamlined mining and exploration permitting processes and less NGO involvement. In offshore situations, however, the reduction of influences of one nature is sometimes offset by influences of another. These other influences, referred to as "country risk", can have huge economic consequences to companies invested in the region. Country risk is most prominent in less stable countries of the world. Examples of country risk include such actions as the nationalization of the mining industry in Bolivia, and a change in the tax code for mine production in Mongolia. Other risks include bribery and other unethical dealings that are not anticipated or tolerated in advanced countries. Other countries where political risks are considered to be high are Venezuela, Ecuador, China and Romania. Country risk creates an unfavourable environment for mining companies, investors and lenders alike.

Competition from Existing Firms

The last and most critical factor in the external analysis of the gold mining industry is competition from existing firms. Competitors in the industry are other gold mining companies competing for qualified personnel, services and equipment, investors, gold properties and capital. This analysis confirms that the competition between rivals for all of these inputs, is strong. The outcome of this analysis is of particular importance to new entrants, such as Atna. It is through this analysis that an assessment must be made as to whether new entrants are able to compete effectively and profitably in a strong competitive environment.

Mining is essential component for the production of base and precious metals. Mined commodities are the first source of materials required for manufacturing and

construction of everything from automobiles to computers and from jewellery to medical stents. Mining is also economically important. It provides employment, returns on investment in the form of share appreciation and dividends to shareholders, and it pays taxes that support communities and public facilities.

Every continent in the world, except Antarctica, produces gold. The ten most prolific gold-producing countries in the world are presented in Table 2.5.

Table 2.5. Top Ten Gold Producing Countries

Rank		Country	Production in Tonnes*	
2005	**2006**		**2005**	**2006**
1	1	South Africa	315.1	291.8
2	3	United States	262.3	251.8
3	4	China	229.8	247.2
4	2	Australia	263.0	244.5
5	5	Peru	207.8	203.3
6	6	Russia	175.4	172.8
7	7	Indonesia	166.6	114.1
8	8	Canada	119.5	104.0
9	0	Uzbekistan	79.3	78.5
10	11	Ghana	62.5	70.2
		Rest of the World	929.57	795.86
		World Total	**2,550.5**	**2,471.1**

Source: Adapted by author, GFMS (2007c)

* 1 tonne = 29,167 ounces

There are 243 producing gold mining companies (on record) (Infomine, 2007). These companies produced 2,550.5 tonnes of gold in 2005 and 2,471.1 tonnes of gold in 2006 (GFMS, 2007d). The value of the gold produced in 2005, based on an average

gold price of US$444.45 per ounce, was US$36 billion. The value of the gold produced in 2006, based on an average gold price of US$603.77, was US$48 billion. Compared to other industries, such as auto manufacturing, the global gold industry is relatively small. General Motors, only one company in the auto manufacturing industry, generated revenues of US$195 billion in 2005 and US$207 billion in 2006 (Reuters, 2007b).

There are three strategic groups within the gold mining industry. These strategic groups (as previously discussed) are senior, intermediate, and junior producers (see Table 2.1. The Three Strategic Gold-Producer Groups).

A considerable amount of movement across strategic groups is currently taking place in the industry. During 2006, nine mergers took place between intermediate producers. In part, the mergers took place to take advantage of the economies of scale, the acquisition of gold reserves; increased production; increased operating capital and/or increased geographical diversification.

An example of such a merger is the one that took place in 2006 between two intermediate producers, Kinross Gold Corp. and Bema Gold Corp. Prior to the merger, the market capitalization of each company was approximately US$3.9 billion and US$2.7 billion, respectively (Reuters, 2007c). After the merger, the market capitalization of the merged company was in excess of US$7.2 billion (Reuters, 2007c). This market capitalization advanced the merged company into the senior producer group. Advantages to the merged company were anticipated to be: (i) it would be well positioned to compete with other senior producers in terms of the size of gold reserves; (ii) production was expected to grow by approximately 56%; (ii) on a proforma basis, the combined revenues for the previous year were US$782 million. These revenues would enable the merged company to finance development projects and expand growth potential; and, (iv) the merged company would have greater geographical diversification.

It would have revenue-generating operations in North America, South America and Russia (Bema Gold Corporation, 2006).

Gold is a not as strategic a commodity as most industrial commodities. However, as previously discussed in the "Supply and Demand" section of this strategic analysis, gold has qualities and characteristics that make it a unique commodity. The greatest driver for growth in the gold mining industry is the steady increase in the price of gold. In 2006, the price for one ounce of gold averaged US$603.77 per ounce. This is the second-highest gold price ever achieved after reaching an average price of $614.50 per ounce in the 1980s (GFMS, 2007e). The increase in the gold price has fuelled interest in gold production from the mining industry (see Table 2.6).

Table 2.6. Senior Gold Producers – Production 2005 and 2006

Rank		Company	Country	Production(tonnes)	
2006	2005			2005	2006
1	3	Barrick Gold Corp.	Canada	169.8	268.8
2	1	Newmont Mining Corp.	USA	199.7	184.9
3	2	AngloGold Ashanti Ltd.	South Africa	191.8	175.3
4	4	Gold Fields Limited	South Africa	130.6	126.3
5	6	Harmony Gold Mining Co. Ltd.	South Africa	80.5	72.9

Source: Adapted by author from GFMS (2007c)

Over the past five years, gold mining companies have been responsive to current conditions. They have been quick to expand operations and increase production to make up for the lean years of the 1980s and 1990s. In so doing, revenues have increased considerably, particularly amongst senior producers, as illustrated in Table 2.7.

Table 2.7. Senior Gold Producers – Revenues 2002 to 2006

Company	Revenues in Million of U.S. Dollars				
	2006	2005	2004	2003	2002
Barrick Gold Corp.	5,636	2,350	1,932	2,035	1,967
Newmont Mining Corp.	4,987	4,352	4,326	3,059	2,622
AngloGold Ashanti Ltd.	2,964	2,629	2,151	1,670	1,799
Gold Fields Limited	2,282	1,893	1,706	1,324	1,041
Harmony Gold Mining Co. Ltd.	1,263	1,265	1,240	782	675

Source: Adapted by author from Reuters (2007b)

There is a very significant increase in Barrick's gold production and revenues from 2005 to 2006. This is as a result of the merger in 2006 between Barrick and Placer Dome Inc., two senior gold producers. Prior to the merger, Newmont Mining Corp. was the world's largest gold producer and Placer Dome was the world's fifth largest gold producer. The merger has put Barrick firmly in the number one position in both production and revenue categories.

The increase in growth in the industry has not been without cost. Global production costs on an annual, average basis rose by US$45 per ounce in one year. This resulted in a global, average operating cost of US$401 per ounce (GFMS, 2007f). Cost increases are most significant in Canada and the United States. Costs have escalated by US$66 per ounce in Canada and US$80 per ounce in the United States; (see Table 2.8; GFMS, 2007f).

The marked shortage of inputs such as labour, infrastructure, energy, supplies and equipment has led to increases in operating costs in the industry. One of the highest cost inputs is labour. The demand for contractors and experienced mine workers is significantly increasing hiring and retention costs. Additionally, there is "an expectation that employees should share in the excellent profits..." (PriceWaterhouse-

Table 2.8. Gold Production Costs by Region

	Gold Production Costs (US$/ounce)	
Country	**2005**	**2006**
Canada	258	323
United States	278	357
South Africa	363	381
Australia	282	327

Source: Adapted by author from GFMS (2007f)

Coopers, 2007). These demands, plus share incentives (i.e., stock options) have increased labour costs by approximately 9% in 2006 over that of 2005 (PriceWaterhouseCoopers, 2007). No companies have been exempt from increased operating costs. This includes the top five senior gold producers, whose operating costs are presented in Table 2.9.

Table 2.9. Senior Gold Producers - Operating Costs 2002 to 2006

Company	Operating Costs in Million of US Dollars				
	2006	**2005**	**2004**	**2003**	**2002**
Barrick Gold Corp.	4,044	1,912	1,897	1,806	1,756
Newmont Mining Corp.	3,716	3,478	3,263	2,303	2,359
AngloGold Ashanti Ltd.	2,702	2,696	2,176	1,329	1,369
Gold Fields Limited	2,011	2,179	1,623	974	698
Harmony Gold Mining Co. Ltd.	1,300	1,688	1,300	803	593

Source: Adapted by author from Reuters (2007b)

It is again noted that the sharp increase in Barrick's operating costs from 2005 to 2006 result from the merger of Barrick and Placer Dome. A similar, sharp increase in Barrick's operating revenues, also results from the merger.

The shortage of supplies has led to delays in delivery times for mine equipment as illustrated in Table 2.10.

Table 2.10. Mine Equipment Delivery Times

	Delivery Time in Months	
Equipment	**Normal**	**Current**
Tires	4	24
Large haul trucks	3	25
Shovels	10	24
Draglines	16	35
Power generators	12	24
Crushers	16	25
Grinders	19	46

Source: Adapted by author from PriceWaterhouseCoopers (2007)

A key consideration concerning costs "is that companies need strategies to address their cost position. The relentless focus on cost reduction and efficiency in the 1990s has eased in recent years as maximizing production has become paramount. Those companies that effectively manage variable [costs] and minimize fixed costs will be well placed for any future downturn" (PriceWaterhouseCoopers, 2007).

In addition to increased operating costs and delays in delivery times on equipment and supplies, there is a strong demand for gold properties to replace the depleting reserves of gold producers. Gold producers unable to generate adequate reserves internally must acquire them externally. The demand for gold reserves has escalated the purchase price of gold properties that are available through exploration, merger and acquisition. The following quotes emphasize the shortage of properties and the consequent result: "...the only way out [to replace reserves] is to go after the high quality junior companies with promising assets on the verge of discovery" (Hommelberg,

2004). "The race to replace reserves is about to begin. It will take the form of takeovers of small producers with long reserve lives and high quality junior mining companies with large in ground reserves that can be mined economically." (Hommelberg, 2004). This demand for properties will continue to limit supply and push prices up. As with the other operating costs and delays, high property costs will make it more difficult for small companies trying to compete in the business.

Despite the continued rise in operating costs, global profit margins have increased by an average of 17% from 2005 to 2006 (PriceWaterhouseCoopers, 2007). The US experienced the highest cash margin increase of all gold producing nations at 48% (GFMS, 2007g). This is because the US dollar gold price has increased by twice as much as operating costs. For the most part, the top five gold producers generated respectable profit margins over the five-year period from 2002 to 2006 (see Table 2.11). This is with the exception of Harmony Gold, who reports negative margins.

Table 2.11. Senior Gold Producers - Operating Margins 2002 to 2006

Company	Operating Margins in U.S. Dollars				
	2006	2005	2004	2003	2002
Barrick Gold Corp.	1,592	438	35	229	211
Newmont Mining Corp.	1,271	874	1,063	756	263
AngloGold Ashanti Ltd.	262	(67)	(25)	341	430
Gold Fields Limited	272	(286)	83	350	343
Harmony Gold Mining Co. Ltd.	(37)	(422)	(60)	(22)	104

Source: Adapted by author from Reuters (2007b)

Since 2002, significant amounts of equity and debt capital are available to the industry because of its resurgence (see Table 2.4 Global Equity Capital Raised for Use in the Resource Sector, 2001 to 2006). At the same time, however, many mining

companies listed on stock markets around the world are competing for that capital. To attract shareholders, companies must be able to demonstrate their ability to increase shareholder value through appreciating share prices. Success in gold mining and the appreciation of share prices are directly related to the opportunity for discovery and the resultant huge balloon in NAV for companies in the exploration stage and for junior and intermediate producers. Investment in producing companies is predicated on buyers' views of future metal price trends and the cost of production more than on the size of the company (although size reduces risk).

Brand equity does not always work in investors' favours when making a decision on which stocks to purchase. This is because a premium may be paid for shares of companies with brand equity. Low-cost producers, no matter how large or small, will achieve higher profits and greater returns on investment than companies that produce more gold but at a higher cost. If shareholders are not satisfied with the returns achieved on investments with one company, it is easy to switch to another. Additionally, if shareholders are not satisfied with how certain companies are being operated, shareholders have the power to remove the Board and replace management.

In the current market, capital is available to all three strategic groups. Investment in one group over another is dependent upon investors' tolerance for risk and their investment strategies. Even with renewed interest in the mining industry, the amount of investment in the industry is small compared to that of other business sectors (GFMS, 2007h). Comparatively speaking, there appears to be considerably less competition between rivals for equity capital than there is for other inputs.

The sustainability of new entrants in a number of different industries is dependent on many variables related to the industry (Russell, 2006c). These variables (not specific to the mining industry) include but are not limited to: firm size, corporate direction, research and development, and human capital (Russell, 2006c). The sustainability of

companies in the mining industry over a thirty-year period is dependent upon "owning a number of valuable assets, in the form of deposits and mines" (Russell, 2006d). However, "a tangible mining asset is not sufficient to reduce the chances of failure without the accompanying intangible assets of the skills and capabilities to bring the asset into production..." (Russell, 2006d). In other words, sustainability in the mining industry is dependent upon mining companies having adequate numbers of gold properties, as well as, the human resources and operating skills to successfully produce the properties.

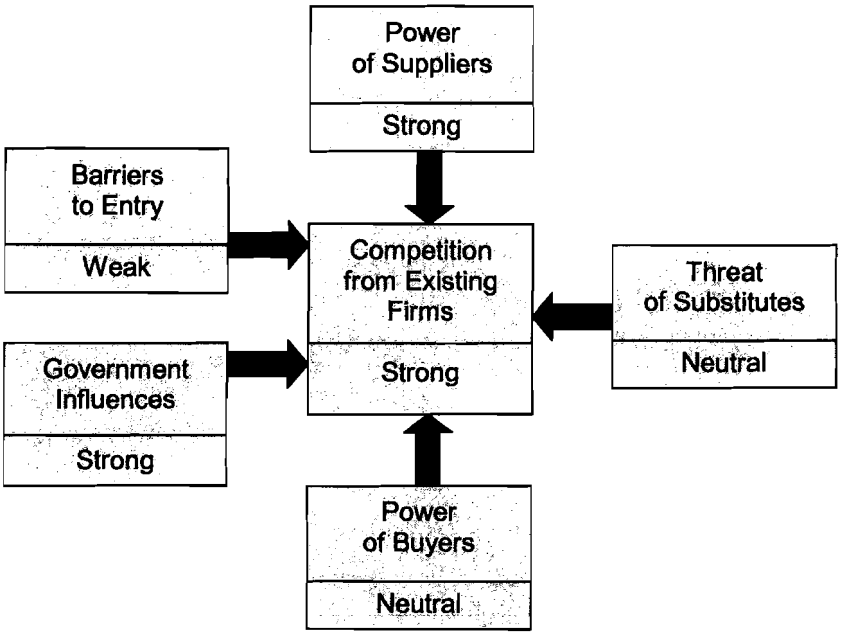
The outlook for the price of gold, which drives the gold industry, is the last item to be examined in this analysis of competition from existing firms. "GFMS' view is that an investor led rally into at least the mid-US$700s is probable over the next year or so" (GFMS, 2007e). The outlook for higher gold prices remains optimistic because of the relatively low level of participation by investors in the industry. "...we are reasonably confident that sufficient new money will enter the market over the next 12 months to drive prices to make, at the least, a new nominal high..." (GFMS, 2007e).

Summary of the Forces that Impact the Mining Industry

Upon review of the forces that impact the mining industry, entrance into the gold mining industry appears to be unfavourable for new entrants (see Figure 2.6).

Although a number of industry factors are unattractive, the barriers to entry for new entrants are not insurmountable. In fact, the cost of entry into the gold mining industry, relative to that of other commodities, is low. However, the ability to raise sufficient working capital required to enter the industry is a strong barrier. This is particularly so for new entrants without sufficient assets to qualify for debt capital. Lack of working capital, raised through equity or debt, can severely restrict or prevent companies from entering into the industry as a gold producer.

Figure 2.6. Six Forces Model



Source: Adapted by author from Porter (1980); Weimer and Vining (2005)

As a consequence of the increasing price of gold over the past five years, the level of activity in the industry is high. The gold price and increased production levels are driving revenues higher. Coupled with higher revenues, however, comes higher operating costs as the demand for inputs increases. Inputs of all kinds, including personnel, supplies and equipment, and gold properties are strained. An acute shortage of supply has resulted in strong competition between competitors in the industry. This is causing a negative impact on all businesses, especially small businesses.

Although investor interest in the industry is high, there are many companies, large and small, competing to attract both equity and debt capital. The sentiment of some, however, is that the gold price will continue to increase in the near term, thereby attracting investors to the gold market.

Except for a very few positive factors, i.e., the relative low cost of entry and investor interest, the mining industry has a number of economic barriers. These barriers

are especially strong for emerging companies. Thus, the overall attractiveness of the gold mining industry is weak.

Key Success Factors

The following is a summary of the industry key success factors that have been identified through the foregoing analysis of the mining industry. Some additional key success factors, not identified through the industry analysis, but believed to be critical to Atna's success in the industry, are also included in this summary. These additional key success factors include speed and focus.

Ability to Raise Working Capital

The ability to raise working capital is a key success factor for new entrants in the mining industry. This is particularly true for Atna, who will require working capital in order to achieve its strategy of becoming a mining company. In light of this, however, Atna has a good reputation in the brokerage and financial communities, which are supportive of Atna's decision to become a gold producer. Atna has been in consultation with the investment community and lending institutions since the Pinson property's development potential was discovered. While the availability of capital will be dependent upon the merits of the asset to be acquired, Atna does not anticipate having difficulty in raising working capital at such a time as it is required.

Ability to Hire and Retain Qualified Personnel

To be successful in the mining industry, companies must have the ability to hire and retain qualified personnel. In order to do so, companies must have the ability to provide a lucrative compensation package or have some other advantage over competitors. Although Atna does not have the financial resources to provide the most

lucrative compensation package, Atna has other advantages. These advantages include having the ability to offer potential employees an entrepreneurial work environment, the opportunity for professional growth and a share in the company's future successes.

Ability to Secure Supplies and Equipment

The ability to secure supplies and equipment is vital to production companies, large or small. Large companies have the advantage when sourcing supplies and equipment because suppliers will satisfy more lucrative contracts first. Additionally, large companies have the advantage of the economies of scope and scale in terms of supplies and equipment purchases. Atna has no such options available to it in securing supplies and equipment. Atna must pay the going price and wait in turn for supplies and equipment when needed.

Ability to Acquire Gold Properties

There is a great deal of competition for gold properties whether they are new discoveries or properties obtained through acquisition or merger. The difficulty in purchasing a property is trying to identify one that is available and one that meets the objectives of the company in regard to size, cost and production capacity. Companies successful in the mining industry will often be first to be offered properties over those companies unknown in the industry.

Atna knows from experience how difficult it is to acquire a gold property. It has accelerated its evaluations of projects and companies since early 2006, when Barrick announced its back-in decision on the Pinson property. Since that time, Atna has evaluated a number opportunities for potential acquisition or merger. Unfortunately, all of these have been dismissed as being uneconomic or otherwise unsuitable for Atna's

purpose. The ability for Atna to achieve its strategy of becoming a gold producer is dependent upon identifying the right opportunity. In the meantime, Atna continues to explore its own properties with the intent of developing an economic resource. This source of production, however, is a long-term option.

Time is of the Essence

Speed is a key success factor required for Atna's success in the industry. Since 2002, the mining industry has been in a boom cycle. However, no one knows how long the cycle will last. For this reason, it is imperative that Atna become a gold producer as quickly as possible in order to take advantage of the current market for as long as possible. Establishing a firm footing as a producer in the current market will stand Atna in good stead for long-term sustainability at such a time as the gold cycle takes a turn.

Focus

Atna has been pursuing the strategy of becoming a mining company since 2000. However, to date Atna has been unsuccessful. Atna's failure to achieve its strategy is not due of a lack of effort on its behalf. It is due to circumstances beyond Atna's control in the case of the Chilean and Pinson properties. Each of these situations is evidence of the uncertainties of the mining industry and business in general. It is important that the Atna maintain its focus, utilizing its resources to the best of its ability in order to achieve its strategy.

Should Atna Becoming a Mining Company?

One of the two questions asked in the introduction of this paper is, "Should Atna become a mining company?" From the outcome of the industry analysis conducted above, which ranks the economic barriers and the overall attractiveness of the industry

as unfavourable, the answer to the question appears to be, "no". However, with the exception of government influences, the economic barriers of the gold mining industry are the result of the current boom cycle taking place in the industry.

Ironically, it is precisely in this boom-cycle environment that junior mining companies are most apt to be successful in the gold mining industry. Although the current demand for inputs is high (pushing costs up), so too is the price of gold (which is increasing revenues). Concurrently, the level of interest from the investment and financial communities is high, thereby making equity and debt capital readily available. Consequently, junior companies have a greater chance of success in the current environment than they will have in an environment where the cost of inputs is low, the level of investor interest is low, and less equity and debt capital is available to the industry. For these reasons, Atna should take advantage of the current boom-cycle and become a gold mining company now.

CHAPTER 3: ATNA'S INTERNAL ASSETS

This section examines Atna's internal resources from the perspective of transforming an exploration company to a gold mining company. An assessment of the strengths and weaknesses of these resources is used to determine Atna's capability of becoming a mining company.

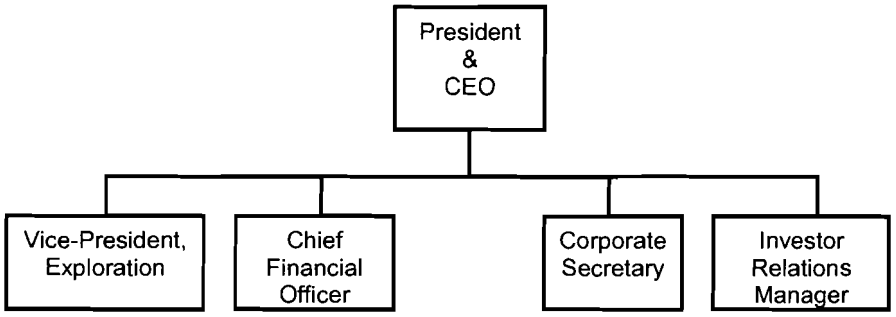
This analysis takes an in-depth look at the resources developed by Atna over a twenty-three year period by which Atna is able to make the transition from a resource company to that of a mining company. This analysis considers the resources required for Atna to operate effectively as a mining company. Through this analysis of Atna's corporate structure, physical assets, human resources, intangible assets and financial resources, a determination is made of Atna's capability of becoming a mining company.

Corporate Structure

Atna is a very small company with a flat corporate structure. It has four full-time employees and one part-time employee. Atna's employees fill the positions of President and Chief Executive Officer, Vice-President-Exploration, Corporate Secretary, Investor Relations Manager and Chief Financial Officer (part-time) (see Figure 3.1). Atna has a wholly owned subsidiary, Atna Resources Inc., located in Reno, Nevada, managed by Atna's Vice-President. Atna's Board comprises four independent Directors and the President. One of the Directors is a senior geologist and the president of a junior exploration company. A second Director is a mining engineer with extensive mine operation planning, financing expertise and is president of a small producing company. A third Director is a retired resource investor, entrepreneur and business executive. The fourth Director is a retired senior corporate finance executive and financial analyst.

Atna's structure is decentralized. The Vancouver head office is responsible for capital raising, investor relations and administrative functions that include corporate governance, regulatory compliance, financial and accounting functions. The technical aspects of the business are conducted through the US subsidiary.

Figure 3.1. Atna's Corporate Structure



Source: Author

Human Resources

The size of Atna's staff increases and decreases in accordance with the type and level of activity in the company. The company out-sources many aspects of its work to experienced professionals with expertise in the specific fields required. During peak periods of exploration and development activity, as many as fifty people have been contracted by Atna.

Regardless of the level of exploration activity in the company, there are a number of functions that must be performed. These functions include fundraising, investor relations, regulatory compliance and financial reporting. Atna's head-office staff conducts these functions. Since the technical aspect of the business drives the company, technical personnel are also key components of the organization.

This section on human resources looks at the people behind the company as it currently exists and those required when it becomes a mining company.

Technical Management Team

Atna's technical management team is comprised of the President and the Vice-President, both of whom are professional geologists. Together these two individuals are responsible for the discovery or acquisition of seventeen mineral properties that were developed to become producing mines. Atna's President has forty years' international experience in exploration and development, mergers and acquisitions, and mining operations of mid- to large-sized exploration and mining companies. In his career, the President has been employed to perform a full range of technical and managerial activities ranging from managing and conducting large exploration projects to becoming President and CEO of a medium-sized mining company.

Atna's Vice-President, in addition to being a professional geologist, attained his MBA in 2002. He has over twenty-nine years' experience in the mining industry, the majority in exploration in the western United States. His career includes experience and responsibility in technical program planning and implementation, contract and agreement negotiation, budget and financial analysis, merger and acquisition integration, and team building and development for major mining companies.

Prior to joining Atna, neither the President nor the Vice-President had direct, hands-on experience in a small company environment or operation. While many of the skills acquired from large companies are transferable, a somewhat different skill set is required for a small company. These skills revolve around raising capital, and shareholder and brokerage community relations. In addition, there is a need to be flexible in role and function in order to adapt to the needs of a small company with limited resources.

While the technical team is very skilful in the geological aspects of exploration, development and mining, it is not qualified to manage an operating mine. At such a time as the company has a producing property, it will be necessary to hire a mine manager.

The suitable candidate must have a strong mining engineering background and the ability to manage mining activities. Although finding someone for this position is not a concern for Atna at this time, the company is aware that it may be a difficult position to fill when needed. At that time, Atna will be required to enter the market place to attract the right person to the position, as the company will not be able to operate a mine without engineering input.

Raising Working Capital

Throughout Atna's evolution, raising working capital has been integral to the ongoing survival of the company. As discussed in a following section of this paper entitled, "Financial Resources", although Atna has adequate working capital for its current level of activity, this will not be the case when it acquires a mining property. At that time, Atna will be required to raise a combination of equity and/or debt capital to finance the mine development.

The President of the company is responsible for raising capital. Although he did not have a great deal of experience in this capacity before joining Atna, he has made interacting with brokers, managers and other financiers in the investment and financial communities a critical component of his responsibilities. These communities are supportive of Atna's focus on becoming a mining company. They have indicated an interest in participating at such a time as equity or debt capital is required. Consequently, it is anticipated that when the right opportunity is identified, Atna will not have difficulty in raising the capital required to move forward.

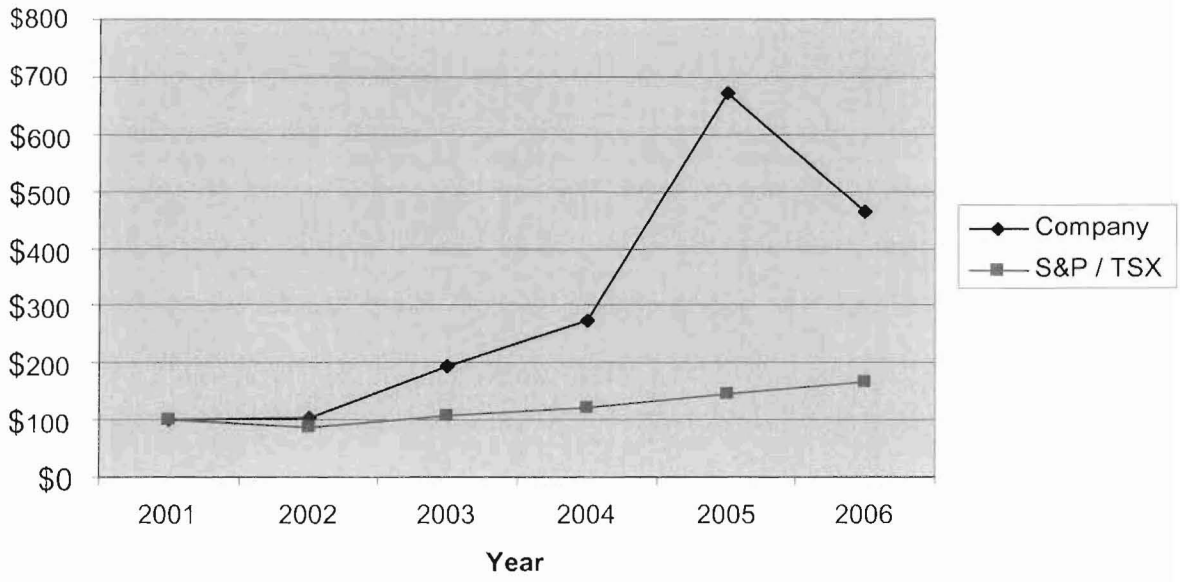
Investor Relations

The investor relations ("IR") function is an important one for Atna and is performed by the Investor Relations Manager and the President. It is the responsibility

of the IR department to keep the public informed of activities and developments in Atna that that can affect the value of Atna's shares. It is through increasing shareholder value that Atna is able to acquire and the retain shareholders who are the source of the equity capital raised by the company.

Atna's success in creating shareholder value is measured by its share price and market capitalization. These are driven by the results of exploration activities and the performance of management. Figure 3.2 and Table 3.1 compare the change in the cumulative total shareholder return of an initial investment of $100 in Atna's stock as compared to a $100 investment in the S&P/TSX Composite Index over a five-year period from 2001 to 2006.

Figure 3.2. Atna Performance Graph – Cumulative Value of a $100 Investment



Source: Atna Resources Ltd. (2007)

Table 3.1. Comparison of Cumulative Total Return

	Dec 31, 2001	Dec 31, 2002	Dec 31, 2003	Dec 31, 2004	Dec 31, 2005	Dec 31, 2006
Atna	$100.00	103.45	193.10	272.41	672.41	465.52
S&P/TSX Composite	$100.00	86.03	106.93	120.27	146.61	167.89

Source: Atna Resources Ltd. (2007)

Atna's share price has experienced sharp downward pressure since Barrick's back-in decision was announced in April 2006. The share price has dropped from a high of $2.40 per share to $1.45 per share (as of June 27, 2007). Atna's current share price is reflective of the market's response to Barrick's back-in decision, a lack of newsworthy activity and new corporate developments within Atna, and the volatility in the price of gold.

Administration

The Corporate Secretary and Chief Financial Officer conduct the administrative and accounting functions of the company.

The Corporate Secretary has worked in a number of capacities in the resource sector for the past twenty years. Her career includes experience in regulatory administration, accounting, human resources, operations, budget and finance, and investor relations. Additionally, the Corporate Secretary is currently completing an MBA. The Corporate Secretary is responsible for the regulatory and corporate governance functions of the company, as well as overseeing the bookkeeping function, which is conducted by a consultant.

The Chief Financial Officer is a Chartered Account with more than thirty years' experience, many of them in the resource sector. The Chief Financial Officer is responsible for the financial reporting of the company to the Board.

The administrative and accounting systems currently in place in Atna, although adequate at this time, will not be sufficient when Atna becomes a gold producing

company. At such a time, a more sophisticated accounting and reporting system will be required, as will additional accounting and administrative staff to meet the expanded needs of the company. A sufficiently robust and sophisticated system was developed during the active phase of development of the lead project.

As Atna grows in profitability and complexity, it will be required to meet more stringent regulatory controls. It will also be required to establish more rigorous corporate governance and public reporting regimes. This would be particularly so if Atna decides to increase liquidity by listing on a US exchange, which will require full SOX compliance. As Atna grows, it will be necessary to bring additional professional expertise in house, particularly in the fields of legal and accounting. Full-time attention will be required in those fields to ensure complete compliance in all regulatory jurisdictions and environments. It is not anticipated that Atna will have difficulty employing additional administrative and accounting personnel when required due to the transferability of these skills from one sector to another.

Contract Personnel

Until such a time as Atna moves from an exploration company to a production company, it does not intend to hire any additional full-time employees. It will hire required personnel, primarily technical personnel, on a contractual basis as needed. The benefit of hiring contractors is that it provides a high level of expertise in a broad range of fields with a high degree of specialization. Contracting provides top expertise at minimal cost and yields a high degree of organizational flexibility to deal with the changing demands of the company. Atna has been able meet its contract personnel needs through a network of people who have previous connections with the employees of the company. While this network is working effectively now, that may not always be

the case. In the future, the company will face the challenge of finding and hiring personnel from the general labour pool.

Physical Assets

Atna's physical assets comprise six exploration properties located in Nevada, two in Canada and two in Chile. Of the six Nevada properties, three have been joint ventured to other exploration companies and the company has retained two for its own exploration purposes. The sixth property, Pinson, is currently operated by Barrick.

Much of Atna's corporate history was focused on the discovery of base-metal prospects. Base metal (copper, lead and zinc) prices were, however, at historically low levels for a number of years. Until 2004, financing was not available for base metals projects, and the barriers to entry into the base metals industry were high. Therefore, Atna deliberately changed its focus to gold exploration in 2002, where there was a glimmer of investor interest and the company's expertise was readily transferable. The State of Nevada was selected to focus the company's efforts because it is one of the world's most richly mineralized gold regions, producing more gold per unit area than any other region alone (Nevada Bureau of Mines and Geology, 2005a). Nevada's gold production in 2005 was valued at US$3 billion, 84% of the United States total, making the United States the second largest gold producing country in the world. Nevada accounted for 9% of global gold production in 2005 (Nevada Bureau of Mines and Geology, 2005b).

In addition to its favourable geology, Nevada has a number of other attractions as a location to explore for gold. These include: security of land title; a stable permitting and regulatory environment; well-developed mining infrastructure; a relatively large skilled labour pool; progressive mining policies and investor interest in the location. Atna's close proximity to readily available mine infrastructure provides access to

technical expertise. It also provides the opportunity of taking advantage of lower capital and operating costs. Atna's Nevada focus affords it greater potential for the discovery and low-cost production of gold than it would have in many other, less prolific locations. Successful exploration results by Atna or one of its joint venture partners could result in the potential for cash flow and increased shareholder value.

Management and Operational Structure

The Board is responsible for Atna's decision-making processes. The Board is responsible for approving decisions concerning material changes in Atna's strategy and focus, contractual arrangements and material expenditures prior to their implementation. Since Atna is a small company, it is relatively easy to assemble the Board at short notice. Consequently, the company can be quick to act when time is of the essence. This ability to act quickly represents a competitive advantage over larger companies whose bureaucratic policies and lengthy decision-making processes make it difficult to react quickly.

Over the past two years, Atna has implemented a number of new operational processes and policies. These policies were implemented in response to meeting corporate governance requirements. They govern activities such as the delegation of authority on expenditures, financial reporting controls, corporate public disclosure policies, internal control policies and executive compensation policies. These polices are suitable for the level of activity and exposure of the company at this time. However, they will require expansion as the company grows and/or becomes cash flow positive.

A weakness in Atna's management process is that due to its size, a significant amount of the President and Vice-President's time is spent conducting administrative duties rather than engaging in more productive activities that lead to the company becoming a mining company. Because of the current demand and competition for gold

producing properties, time would be better spent researching potential companies and properties for merger and acquisition. These administrative activities must still be performed and cannot be completed by someone else without increasing overall corporate overhead expenses.

Intangible Assets

Reputation

Atna's greatest intangible asset is its reputation in the industry, which it has developed since the change in its management in 2000. Atna's reputation has been developed through demonstrating its serious intention and its competency in becoming a gold mining company. This is evidenced by the rapid development and successful outcome achieved on the Pinson project.

Corporate Culture

Atna's corporate culture, while not unique in the industry, is attractive to people with entrepreneurial tendencies. Atna's employees work autonomously and with little supervision. The working environment is flexible with few corporate rules and regulations. There is little hierarchy, bureaucracy or politics within the organization. The President and all of the staff have an open-door policy and input is welcome. Employees do not have a rigid job description, although they are responsible for conducting specific tasks related to their position. Employees work hard to get the job done and enjoy their work, level of responsibility and the ability to make a significant contribution to the organization.

While the culture works well at the present time, it is anticipated that it will become more structured when Atna becomes a producer. Changes required will include the implementation of more structured employment and human resources practices so

that operational processes are consistent throughout the organization and not conducted on an ad hoc basis, as is the current situation. Atna's current culture is not seen as an impediment to achieving its objective. However, management will be required to make a determination as to when it will be pertinent to implement a more formal structure. At such a time as less flexible policies and procedures are implemented, it may be difficult for some employees, who thrive in an autonomous environment, to adjust to a more stringent, bureaucratic style.

Financial Resources

Atna has four financial assets available to conduct its business. These are cash, equities, a working interest in the Pinson property and a royalty in the Wolverine property. These assets are discussed more fully below.

Balance Sheet Analysis

The company has approximately $11.6 million in working capital in the form of cash and short-term investments. These funds are available for general and administrative expenses, exploration and the acquisition of gold properties. In 2006, the company spent a total of $1.3 million on general and administrative costs and spent $12 million on exploration and development. The majority of the $12 million expenditure was made on the Pinson property. A minimal expenditure was made on the company's Jarbidge property. In 2007, general and administrative expenditures are budgeted to be similar to 2006, while exploration expenditures are budgeted to be a modest $2.3 million. The substantial reduction in exploration expenditure is because the company's Jarbidge property is at an early stage of exploration and a large expenditure is not required at this stage. Since overhead is relatively constant, the company's financial sustainability is dependent upon the amount of exploration expenditure made each year. At current

levels of overhead and exploration expenditure, the company's $11.6 million working capital will sustain it for approximately three to four years.

Equities

The company holds equities in a number of junior exploration companies. These equities were acquired as part of the consideration paid to the company by joint venture or option partners who are exploring some of Atna's properties. At March 31 2007, these equities had a market value of $495,000. The company sells shares to raise working capital when the market is favourable. Currently, a number of the equities are illiquid and trading at low prices. These shares are not a practical source of working capital for the company.

Interest in the Pinson Property

Atna's 70% interest in the Pinson property is by far Atna's largest financial asset. The NAV of Atna's interest in Pinson (whether it be a 70% or 30% interest) provides Atna with a significant asset to use as security for a bank loan to place the property into production. Depending on the cost of capital, the company may also finance production capital requirements by issuing equity. Pinson is a key asset that will drive cash flow, either with Atna as the operator, or as a minority participant, with Barrick as operator.

Net Smelter Return Royalty on the Wolverine Property

Because of its discovery and development of the Wolverine property, Atna holds a net smelter return royalty ("royalty") on the Wolverine deposit. The royalty, which will be paid on the production of precious metals, is indexed to the price of silver. The royalty is 4% when the price of silver is US$5.00 per ounce and 10% when the price of silver is at US$7.50 per ounce or above ($12.50 per ounce on July 27, 2007; Kitco

2007e). A positive feasibility study has been completed on Wolverine and the owner of the property has engaged a financier to raise capital for production financing. The royalty could begin paying out in approximately 2 years if production financing is secured.

Summary of Internal Analysis

A number of strengths and weaknesses have been identified through Atna's internal analysis.

Atna's foremost strength is its skilled and experienced technical and administrative management team. The technical management team, which comprises the President and Vice-President, has many years' experience in all aspects of the management and technical operations of the mining industry. Their experience lays the technical foundation for Atna to become a mining company. In addition, Atna's administrative and investor relations personnel are experienced and well equipped to implement more sophisticated accounting and financial procedures as required. They are also capable and ready to adopt more stringent corporate governance and reporting procedures as the company grows.

The foundation of Atna's strength is the Pinson property in Nevada. The Pinson property is a valuable, measurable asset providing a sound basis for the pursuit of acquisition/merger opportunities. The Wolverine royalty, although dependent upon mine production, may provide the company with cash flow in the future.

Several weaknesses are apparent within Atna. The major weakness in Atna is the uncertainty surrounding whether or not it will be the operator of the Pinson property and what its final interest will be (i.e., 70% or 30. This has an effect on all areas of planning, financing, and corporate and business development opportunities. Atna is currently weak in the human resources required to specifically conduct mining

operations. Engineering and mine operations personnel will be required when the company becomes a producing company. Other weaknesses relate primarily to administrative and operational polices and procedures. However, these weaknesses correspond with the current size and level of activity of the company. Growth will be manageable through the addition of administrative and professional staff to create and implement more stringent polices and procedures, required with increased levels of activity. Also, it is anticipated that the company's corporate culture will be required to mature as policies are implemented to establish more structured employment and human resources practices.

Is Atna Capable of Becoming a Mining Company?

The second question asked in this strategy analysis is, "Is Atna capable of becoming a gold mining company?" Based on the analysis of Atna's internal capabilities, the answer is, "yes". Atna is capable of becoming a mining company. The most significant criterion supporting this conclusion are Atna's strong technical management team and the capital raising capabilities that exist as a consequence of the value of the Pinson asset.

Atna's Competitive Strategy

Atna's competitive strategy is that of focus and differentiation.

In terms of focus, Atna's competitive strategy is observed through the following: (i) focus on discovering gold in Nevada; (ii) focus on becoming a gold mining company; and, (iii) focus on achieving near-term cash flow.

In terms of differentiation, Atna's competitive advantages over other junior companies include: (i) the Pinson property's defined high-grade gold resource, plus its near-term production and cash flow probability; (ii) potential cash flow from Wolverine

with no further capital required from Atna; (iii) the ability to raise working capital; and (iv) a successful, experienced Board and management.

Although the company has not yet achieved its strategy of becoming a gold mining company, its shareholders and the investment community are well informed of the company's focus and are supportive. The company's focused and differentiated competitive strategy attracts different styles of investors. These investors are ones who invest on fundamentals. It also attracts a different calibre of investor. Namely, institutional investors, whose investment criteria are strictly defined and adhered to. Atna's competitive strategy provides it with more status and credibility in the industry, and differentiates it from being "just" a junior exploration company.

CHAPTER 4: ATNA'S FUTURE AS AN EXPLORATION COMPANY

Atna is a prime example of a company that has been through the cycle of raising and spending working capital numerous times during its twenty-three year history. Over this period, Atna has raised close to $50 million. Until Atna's participation in the Pinson property, it had little to show for its exploration effort, having never generated any revenues or cash flow.

The exploration sector has been likened to the game theory phenomenon of probability called "Gambler's Ruin". "Essentially, Gambler's Ruin says that, if you play long enough, you will go bankrupt, and have to quit. 'Long enough' may be a very long time. It mainly depends on how much money you start with, how much you bet, and the odds of the game. Even with better than even odds, you will eventually go bankrupt, and have to quit, but this may take a long time, indeed" (Loy, 1999). There is a strong analogy between this quote and the exploration sector. With the odds of discovering an economic ore body at 1,000 to 1, a resource company must be both very competent and lucky to be successful.

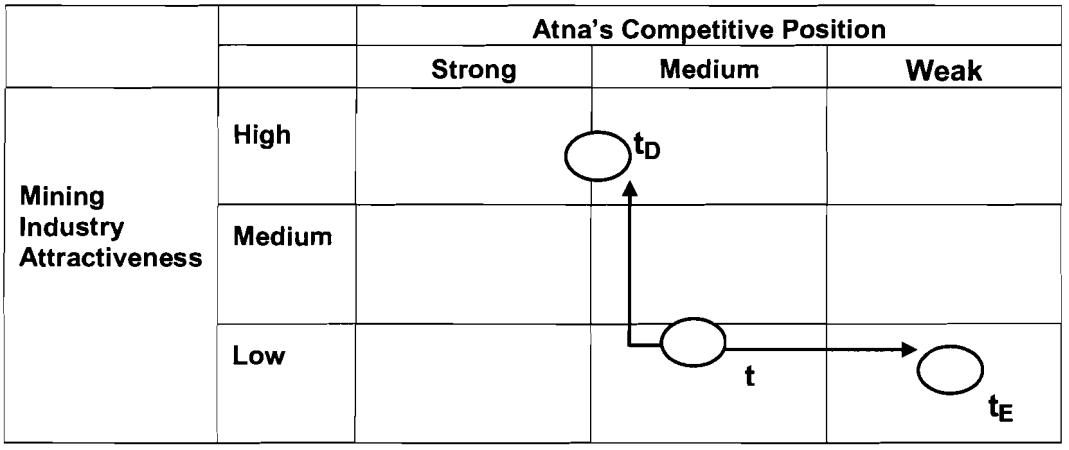
Those companies who are not successful find themselves in an endless cycle of raising and spending working capital with nothing to show for their efforts. During boom times, fundraising is relatively easy and shareholder returns can be considerable. During market downturns, however, it is difficult to attract the equity capital required to sustain a company as shareholders leave the sector to invest where returns are more favourable. This cycle can continue until a company can no longer continue to attract investors or raise working capital. At this stage, a company may be re-organized or may fail to meet the regulatory requirements for maintaining its public listing and is delisted.

Once delisted, the company loses its source for raising working capital and eventually ceases to exist.

In 2000, the new management of Atna made a deliberate decision not to continue down the path of Gambler's Ruin. The decision was made to become a company that will sustain itself through generating cash flow from production.

Figure 4.1 illustrates Atna's current position in the mining industry, its expected position if it is not successful at becoming a mining company, and its position should it successfully become a mining company.

Figure 4.1. Assessment of Atna's Performance in the Mining Industry



Source: Author

t = Atna's current position
t_E = Atna's position if unsuccessful at becoming a mining company
t_D = Atna's position as a successful mining company

CHAPTER 5: HOW CAN ATNA ACHIEVE ITS STRATEGY?

This section of the strategic analysis assesses the alternatives available to Atna to achieve its strategy of becoming a gold mining company. This analysis identifies Atna's strategic alternatives and establishes corporate goals. Through this analysis an evaluation of the alternatives and goals is undertaken to determine the best strategic alternative for Atna to achieve its strategy.

Strategic Alternatives

There are three strategic alternatives available to Atna to become a mining company. The alternatives are to: (i) maintain the status quo, (ii) acquire a producing property, or, (iii) merge with a producing company or one on the verge of producing.

Maintain the Status Quo

If Atna maintains the status quo, it will continue to explore the two exploration properties it retains for its own exploration purposes. Atna will also continue to evaluate new exploration opportunities to add to its project portfolio. Atna will continue exploration activities on its two properties until an economic ore body is discovered or until it is determined that the properties have no economic value. Projects terminated due to a lack of economic value will be replaced by newly acquired, early-stage exploration projects to fill the active project queue.

The advantages of this alternative are that (i) there are no acquisition costs because the company owns the properties its exoloring, (ii) there is no shareholder dilution, and (iii) no due diligence is required.

The disadvantages of this alternative are that (i) even if the properties produce positive exploration results, it will be several years before they are advanced enough to make a production decision, (ii) if, and when a production decision is made, the permitting process will take a number of years to complete before production is achieved, (iii) infrastructure and human resources will be required; and (iv) cash flow is several years in the future.

Acquire a Producing Property

The second alternative for Atna to become a mining company is to acquire a producing property (a mine) from another company. In this alternative, Atna will be required to perform thorough due diligence. Due diligence will be conducted to examine the profitability of the property, the environmental liabilities attached to the operation and the mine's exploration potential. If the property is not profitable, Atna must assess whether it is the property itself and/or operational efficiencies that are influencing profitability. If the property has sufficient potential, Atna must assess its ability to increase marginal revenues to produce positive rents. Atna must also assess its ability to make new discoveries on the property to extend the mine-life or increase the mine's annual metal production.

The advantages of this alternative are that (i) permitting, infrastructure and human resources are already in place, and (ii) cash flow is immediate once the transaction is concluded.

The disadvantages of this alternative are that (i) shareholder dilution is a likely outcome of conducting the transaction, and (ii) time is required to conduct the due diligence necessary to evaluate the property.

A producing property is generally acquired through outright purchase. A purchase may be completed using a combination of cash, equity and/or debt.

Merge with a Producing Company

The third option available to Atna to become a mining company is to merge with a company that is already a gold producing company or one that is on the verge of becoming a producer. When two companies merge, one company "absorbs" the other so that only one company exists when the transaction is completed. Normally, the company with the highest NAV will remain as the "surviving" company. The company with the lowest NAV ceases to exist. A merger transaction can become quite complicated, depending on the number and value of the assets held in the merging companies.

The advantages of this alternative are that (i) permitting, infrastructure and human resources are already in place, (ii) cash flow is immediate once the transaction is concluded, (iii) opportunity for continued growth is greater because of combining assets, and (iv) long-term sustainability through size, human resources and operating capability is greater.

The disadvantages of this alternative are that (i) shareholder dilution may result as a consequence of the transaction, and (ii) a lengthy period of time is required to conduct the due diligence necessary to evaluate the merging company and its assets.

Analysis of Strategic Alternatives

A multi-goal analysis is conducted to evaluate the strategic alternatives available to Atna. The goals identified by Atna's in achieving its strategy are: (i) maximum growth potential, (ii) minimum shareholder dilution and (iii) minimum time to cash flow.

Maximum Growth Potential

The first goal in Atna's strategy is maximum growth potential. This is selected as the primary goal for two reasons. The first reason is that through maximum growth, Atna

will be more able to sustain itself as a viable company in the future. The second reason is that through future growth, Atna will be more able to increase share appreciation and deliver greater shareholder value.

Minimum Shareholder Dilution

Minimization of shareholder dilution to maximize shareholder value is Atna's edict. Shareholder dilution is the consequence of the company raising equity capital through the issuance of shares from treasury. Shareholder dilution diminishes shareholder value. Consequently, Atna strives to minimize shareholder dilution in an effort to maximize shareholder value in all of its business undertakings.

Minimum Time to Cash Flow

The last goal in Atna's strategy is to minimize the time to cash flow. It is through the generation of cash flow that Atna believes it will have greater control over the direction and growth of the Company. The sooner Atna generates cash flow, the sooner it unlocks the shareholder value that is used to drive growth. The sooner Atna generates cash flow, the sooner it reduces the need to conduct equity financings that cause shareholder dilution.

Evaluation of Strategic Alternatives

There are a number of steps involved in evaluating the strategic alternatives. First, each goal is weighted according to its importance. Table 5.1 summarizes the goals and the weights assigned to them.

Table 5.1. Evaluation Goals and Relative Weights

Goal	Relative Weight %
Maximum growth potential	45
Minimum shareholder dilution	35
Minimum time to cash flow	20
Total	100

Source: Author

Second, an evaluation of each of the three strategic alternatives is performed to determine how favourable each goal is in achieving the company's strategy. Under each alternative, each goal is ranked as high, medium or low. A high ranking indicates the goal is most favourable for achieving the company's strategy. A low ranking indicates that the goal is least favourable. Each ranking is assigned a value: high=5, medium=3, and low=1. Table 5.2 illustrates the ranking of each goal under each alternative.

Table 5.2. Ranking of Goals with Alternatives

Goal	Alternative #1 Status Quo	Alternative #2 Acquire Producing Property	Alternative #3 Merge With Producing Company
Maximum growth potential	L	L	H
Minimum shareholder dilution	H	M	L
Minimum time to cash flow	L	H	H

Source: Author

Maximum Growth Potential

The status quo and acquiring a producing property alternatives rank unfavourably for maximum growth potential. This is because a single property's growth potential, whether developed internally or acquired, is limited to the size and profitability of that one property. Although a property's reserves may be expanded through exploration

conducted simultaneously with production, the potential growth of the company is still limited to the potential of the property itself. The merger alternative ranks high for maximum growth potential. This is because the combined assets of the merged company provide it with the potential for greater cash flow from multiple sources, greater economies of scale, and more resources from which to grow and sustain the company in the future.

Minimum Shareholder Dilution

The status quo alternative ranks most favourably for minimizing shareholder dilution. With this alternative no shares are issued to acquire a property because Atna already owns the properties it is exploring. Consequently, there is no shareholder dilution. Acquiring a producing property ranks as moderate. This is because some dilution will result from the equity capital or shares that are required as payment to acquire a producing property. The merger alternative ranks least favourably because a considerable amount of dilution will result in the case of a merger. In a merger, Atna's shares will be pooled with the shares of the merging company. The amount of dilution is dependent upon the ratio of Atna's NAV to that of the merging company. The greater Atna's NAV in relation to that of the merging company, the lower the dilution will be to Atna's shareholders. The NAV of the Pinson asset is especially beneficial in increasing Atna's NAV. This will limit the level of shareholder dilution resulting from a merger.

Minimum Time to Cash Flow

The status quo alternative ranks least favourably for minimizing time to cash flow. This is because Atna's properties are at an early exploration stage. Consequently, cash flow, if an economic ore deposit is discovered, is many years away. The alternatives of acquiring a producing property and merger rank highly. These alternatives produce

cash flow as soon as each transaction is completed. The acquisition of a producing property will require technical due diligence, financing, stock exchange approval and possibly shareholder approval, in order to complete the transaction. A relatively straightforward acquisition transaction will take from two to three months to complete. A merger will require more time to complete because of the complexity of a merger. To complete a merger, the following conditions must be met: (i) technical and legal due diligence conducted, (ii) assets must be evaluated by an independent agency, (iii) shareholder and stock exchange approvals must be granted, and (iv) equity or loan capital must be arranged. To fulfil these conditions takes from six to eight months to complete. Although it takes longer to complete a merger than a property acquisition, over the life of the property, this time difference is not considered to be significant.

Analyzing the Alternatives

In the analysis of the alternatives, the value of the relative weight of the evaluation goals is multiplied by the value of the ranking of the goals with the three alternatives. The product of that calculation produces a weighed score for each of strategic alternatives available to Atna in achieving its strategy. The highest weighed score is considered the best alternative.

CHAPTER 6: WHERE DOES ATNA GO FROM HERE?

Evaluation of Strategic Alternatives

The result of the evaluation of the strategic alternatives indicates that the best alternative for Atna to become a mining company is to merge with a producing company. This is followed by the alternative of acquiring a producing property. The least favourable alternative is maintaining the status quo (see Table 6.1).

Table 6.1. Evaluation of the Alternatives

		Alternative #1 Status Quo		Alternative #2 Acquire Producing Property		Alternative #3 Merge With Producing Company	
Goal	**Weight**	**Ranking**	**Weighted Rating**	**Ranking**	**Weighted Rating**	**Ranking**	**Weighted Rating**
Maximum growth potential	45	1	45	1	45	5	225
Minimum shareholder dilution	35	5	175	3	105	1	35
Minimum time to cash flow	20	1	20	5	100	5	100
Weighted Score	100		240		250		**360**

Source: Author

The alternative to merge with a producing company is a realistic outcome and one that the company is already considering. This alternative produces economies of scale, the potential for greater profitability, and appreciated shareholder value. Most importantly, the merger alternative provides the opportunity for greater sustainability of the company over the long-term. Additionally, a merger provides the human, financial

and physical resources, the operating and management policies and procedures required to conduct business at the production level. A negative outcome of the merger alternative is that Atna's personnel may be redundant when the two companies merge. However, because Atna's staff is small, it may be absorbed by the surviving company.

The weighted scores for the alternatives of maintaining the status quo and acquiring a producing property are virtually the same, scoring 240 and 250, respectively. These two alternatives score the same in terms of maximum growth potential because of the limitations surrounding a single property. The status quo alternative scores higher for minimum shareholder dilution than does the alternative of acquiring a producing property (175 versus 105). This is because with the status quo alternative, no shares must be issued to acquire a property. Minimum time to cash flow scores considerably higher for the alternative to acquire a producing property than that of the status quo alternative (100 versus 20). This is because acquiring a producing property will immediately produce cash flow.

The alternatives of acquiring a producing property and merger both create cash flow. The merger alternative, however, provides additional benefits (i.e., increased economies of scale, and financial and physical resources) that the alternative to acquire a producing property does not have.

Recommendations and Conclusions

Time is of the essence in taking advantage of current gold cycle. Consequently, it is recommended that Atna make a concerted effort to focus its resources on identifying candidates suitable for a merger opportunity. After which, Atna must act on the opportunity as quickly as possible to take advantage of the current gold cycle.

REFERENCE LIST

Atna Resources Ltd. (2007). Notice of Annual and Special Meeting of Shareholders and Management Information Circular. Atna Resources Ltd. pp 13.

Bankrate.com. (2007). LIBOR, other interest rate indexes. [Web Page] URL www.bankrate.com/brm/ratewatch/other-indices.asp. [June 17, 2007].

Bema Gold Corporation. (2006). Notice of Management Proxy Circular for Special Meeting of Shareholders. Bema Gold Corporation. pp 19.

Blanchard Research Unit. (2007). Why Own Gold. [Web Page] URL www.blanchardonline.com/beru/why-own-gold.php. [May 29, 2007].

Casey, D. (2005). What Most People Don't Know About Gold. [Web Page] URL www.KitcoCasey.com. [May 27, 2007].

Casey, D. (2007). The New Realities of Mining. Doug Casey International Spectator, vol. XXVIII, is. 6. pp 8.

Dartnell, J. (2005). Timing is Everything. Resource Magazine, Summer 2006. pp 32.

Fiegenbaum, A., Thomas, H., and Tang, M. (2001). Linking hypercompetition and strategic group theories: Strategic Manoeuvring in the US Insurance Industry. Managerial and Decision Economics, 22. pp 265–279.

GFMS Limited. (2007a). Producer De-Hedging. Gold Survey 2007. pp 52.

GFMS Limited. (2007b). Electronics. Gold Survey 2007. pp 102.

GFMS Limited. (2007c). Mine Production. Gold Survey 2007. pp 37.

GFMS Limited. (2007d). Corporate Activity in 2006. Gold Survey 2007. pp 36.

GFMS Limited. (2007e). Summary and Price Outlook. Gold Survey 2007. pp 7.

GFMS Limited. (2007f). Production Costs. Gold Survey 2007. pp 47.

GFMS Limited. (2007g). Cash Margins. Gold Survey 2007. pp 49.

GFMS Limited. (2007h). Investment in Commodities. Gold Survey 2007. pp 24.

Hommelberg, E. (2004). Declining Gold Reserves Benefit Juniors. [Web Page] URL www.gold-eagle.com/editorials_04/hommelberg091904.html. [May 22, 2007].

InfoMine. (2007). Mining – Mining Companies. URL www.infomine.com/companies-properties/DisplaydbResultpublic.asp. [June 21, 2007].

Jaman, M. (2005). The Big-Tire Shortage Big-Time Concern. [Web Page] URL www.azcentral.com/arizonapublic/business/articles/ 0617tires17.html. [June 18, 2007].

Kaiser, D. (2006). A Global Resource for Capital. Toronto Stock Exchange and TSX Venture Exchange. [Web Page] URL www.tsx.com/en/pdf/TSXMining.pdf. [May 6, 2007].

Kitco Inc. (2007a). New York Spot Price – Gold. [Web Page] URL www.kitco.com. [June 27, 2007].

Kitco Inc. (2007b). Historical Gold Stock Chart Jan 01, 2004 to Dec 31, 2004 [Web Page] URL www.kitco.com/charts/historicalgold.html. [June 21, 2007].

Kitco Inc. (2007c). Historical Gold Stock Chart 1975 to Present [Web Page] URL www.kitco.com/charts/historicalgold.html. [May 15, 2007].

Kitco Inc. (2007d) Live Spot Prices – Copper. [Web Page] URL www.kitcometals.com. [June 27, 2007].

Kitco Inc. (2007e) Silver and PGMs. [Web Page] URL www.kitco.com. [June 27, 2007].

Loy, J. (1999). Gambler's Ruin. [Web Page] URL www.jimloy.com/gambling/ruin.html. [June 21, 2007].

Nevada Bureau of Mines and Geology. (2005a). The Nevada Mineral Industry – 2005. University of Nevada. Reno. pp 3.

Nevada Bureau of Mines and Geology. (2005b). The Nevada Mineral Industry – 2005. University of Nevada. Reno. pp 5.

Porter, M.E. (1980). Competitive Strategy: Techniques for Analysing Industries and Competitors. New York: The Free Press. Chapter 1.

PriceWaterhouseCoopers. (2007). Mine. Riding the Wave. Metals and Mining. Review of global trends in the mining industry – 2007. PriceWaterhouseCoopers. pp 19.

Reuters. (2007a). Industry Overview. [Web Page]. URL www.investor.us.reuters.com/industrycenter.aspx. [June 21, 2007].

Reuters (2007b) Income Statement. [Web Page]. URL http.//stocks.us.reuters.com/stocks/incomestatement.aspx. [June 21, 2007].

Reuters (2007c) Stock Quote. [Web Page]. URL http.//stocks.us.reuters.com/stocks/overview.asp. [June 21, 2007].

Russell, B. I. (2006a). Three Perspectives on Canadian Mining: Evolutionary; Resources-Based, and Strategic. Simon Fraser University. pp 6.

Russell, B. I. (2006b). Three Perspectives on Canadian Mining: Evolutionary; Resources-Based, and Strategic. Simon Fraser University. pp 7.

Russell, B. I. (2006c). Three Perspectives on Canadian Mining: Evolutionary; Resources-Based, and Strategic. Simon Fraser University. pp 58.

Russell, B. I. (2006d). Three Perspectives on Canadian Mining: Evolutionary; Resources-Based, and Strategic. Simon Fraser University. pp 85.

Salman Partners. (2006a). The Blue Book Review 2006. Salman Partners, Volume 1 Metals and Minerals. pp 10.

Salman Partners. (2006b). The Blue Book Review 2006. Salman Partners, Volume 1 Metals and Minerals. pp 16-17.

Salman Partners. (2007a). the Blue Book Review 2007. Salman Partners, Volume 1 Metals and Minerals. pp 7.

Salman Partners. (2007b). The Blue Book Review 2007. Salman Partners, Volume 1 Metals and Minerals. pp 14.

Salman Partners. (2007c). The Blue Book Review 2007. Salman Partners, Volume 1 Metals and Minerals. pp 16-17.

Salman Partners. (2007d). The Blue Book Review 2007. Salman Partners, Volume 1 Metals and Minerals. pp 12.

United States Department of the Treasury. (2007). [Web Page] The National Debt. URL www.treas.gov/education/faq/markets/national-debt.shtml. [May 20, 2007].

Weimer, D.L. and Vining, A.R. (2005). Policy Analysis Concepts and Practices. Pearson Prentice Hall.

World Gold Council. (2005a). Supply and Demand. [Web Page] URL www.gold.org/value/markets/supply_demand/index.html. [May 15, 2007].

World Gold Council. (2005b). Mine Production. [Web Page] URL www.gold.org/value/markets/mine_production/index.html. [May 15, 2007].

World Gold Council. (2005c). Jewellery. [Web Page] URL www.gold.org/value/markets/jewellery/index.html. [May 15, 2007].

World Gold Council. (2005d). Investment. [Web Page] URL www.gold.org/value/markets/investment/index.html. [May 15, 2007].

World Gold Council. (2005e). Industry and Medical. [Web Page] URL www.gold.org/value/markets/Industrialt/index.html. [May 15, 2007].