OTHER RISKS AND ISSUES

Environmental, Safety, Weather, China, Shareholders

Trefis is in the process of updating the model to reflect the recent acquisitions of Mcmoran Exploration Co. & Plains Exploration Co

% of Stock Price | Revenue | Adjusted EBITDA | Free Cash Flow

— ANALYSIS —

Freeport's Indonesian Copper Shipments Analysis | **Indonesian Mines Division Overview**

by the Trefis Team

WHAT

Freeport's Indonesian Copper Shipments is the total copper quantity in millions of pounds sold from the Indonesian operations of Freeport McMoran.

HISTORICALS & FORECAST

Freeport's Indonesian Copper Shipments was 1.11 billion pounds in 2008. It increased to 1.40 billion pounds in 2009 due to growing demand from developing countries. As production at the Grasberg mine shifted towards the lower-grade section in 2010, the production fell to 1.21 billion pounds. It decreased further to 846 million in 2011 because of labor-related disruptions and the temporary suspension of milling operations due to damage to the concentrate and fuel pipelines. Going forward, we expect Freeport's Indonesian Copper Shipments to increase steadily and approach 1 billion pounds by the end of the Trefis forecast period.

FORECAST RATIONALE

Trefis considered following factors for its forecast:

Supporting:

1. **Problems at Grasberg mine to delay production increase**

— COMMUNITY —

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Models (Top 40)

$48.83 COMMUNITY AVERAGE | $31.70 MARKET PRICE | 5% bearish | 95% bullish

NAME	TITLE	FCX PRICE	FORECASTS / COMMENTS	
Mark Roberts	.	$43.84	10 / 0	View Model
Antoine Saab	CEO, Turbine Energy	$58.08	10 / 0	View Model
Robert Martin	manager, AT&T	$57.85	7 / 0	View Model
see 37 more				

Comments for Freeport's Indonesian Copper Shipments (8)

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1 of 1

Trefis Team on 9/7/2011 — Re: **Indonesian Mines > Freeport's Indonesian Copper Shipments** — 0 votes

Copper Prices Could Lift Freeport on Chinese Restocking and Indo Labor Issues

Freeport McMoran Copper's (NYSE:FCX) copper production may take a hit as the Grasberg mine in Indonesia faces a probable month long strike starting September 15th as labor-contract negotiations are in a deadlock. [1] This may lead to an increase in the copper price as the demand-supply gap could widen for the already under-supplied commodity. Freeport McMoran has

Accessed 11/1/12

- The firm said it plans to defer some output at its Grasberg mine in Indonesia. Citing safety reasons, Freeport will forego the mining of about 130 million pounds of copper through 2014.
- The company had significant labor issues in 2010 at the Grasberg mine which could have a lasting impact. We expect production to increase going forward but likely will not reach pre-2010 levels as production has been coming from lower-grade sections of the mine.

EXPLANATION OF HISTORICAL DATA

Reported in the company's SEC filings. We have considered data from the individual mine data.

SOURCES

Freeport ups copper output levels amid strong markets

Information sources include annual reports, quarterly filings, and quarterly earnings transcripts. Company filings are available from the SEC.

RELATED ARTICLES

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March 21st, 2013

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March 18th, 2013

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extensive copper mining and smelting operations in North and South America, Indonesia and Africa. The company competes with other miners such as Southern Copper (NYSE:PCU), Codelco and Newmont Mining (NYSE:NEM).
We currently have a Trefis price estimate of $57.60 for Freeport McMoran Copper's stock, which is about 30% above the current market price.
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Notes: Freeport Grasberg Workers Plan Strike Sept. 15, Bloomberg [...]

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Trefis Team on 8/16/2011

Re: **Indonesian Mines** > **Freeport's Indonesian Copper Shipments** 0 votes

Grasberg Production is Key for Freeport Hitting $57

Freeport McMoran Copper (NYSE:FCX) like its competitors Southern Copper (NYSE:PCU), Codelco and Newmont Mining (NYSE:NEM) is poised to benefit from the rising prices of metals such as copper and gold. The company recorded net income of $1.4 billion in Q2 at a growth rate of 110% year over year aided by high metal prices in the spot market as well from its extensive operations in North and South America, Indonesia and Africa. Freeport's Grasberg mine in Indonesia, which we estimate accounts for one-fourth of its stock value, will be a key driver for the company's continuing earnings growth. But the mine faces lingering concerns related to lower copper ore quality and more recently a 7-day labor strike for higher wages, temporarily disrupting the mine's operations. [1] If such events continue, this could impact Freeport's copper and gold production in the long-term.
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Notes: Strike at Freeport's Grasberg Mine Ends, WestP...
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Trefis Team on 7/31/2011

Freeport McMoran Copper (NYSE:FCX) released its Q2 earnings where earnings more than doubled as it produced and sold more copper and gold to take advantage of high metal prices in the spot market. Freeport McMoran Copper has extensive copper mining and smelting operations in North and South America, Indonesia and Africa. The company competes with other miners such as Southern Copper (NYSE:PCU), Codelco and Newmont Mining (NYSE:NEM).
Our analysis of the company leads us to believe that its copper business contributes to almost three-quarters of its total value, which we estimate at $57.60.
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Trefis Team on 7/4/2011

Re: **Indonesian Mines** > **Freeport's Indonesian Copper Shipments** 0 votes

Indonesian Mine Workers' Strike Surprises Freeport

Freeport McMoran Copper (NYSE:FCX) now faces a new problem related to its Indonesian mining operations. The mining giant received yet another setback from its crown-jewel, the Indonesian Glasberg mine, when 8,000 mine workers started a 7-day strike today. [1] The Grasberg mine is the world's largest copper and gold mine in terms of reserves and is the single biggest source of value for the company. The company is still dealing with the problem of low-quality ore from the mine, which forced the company to significantly reduce its copper production outlook for the year. The displeasure among workers at the mine will only

aggravate the situation further. Freeport competes with other miners such as the Southern Copper (NYSE:PCU), Codelco and Newmont Mining (NYSE:NEM).
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Notes: Thousands of Freeport Indonesia mine workers start 7-day strike, Reuters, Jul 3 2011 [...]

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Trefis Team on 6/6/2011

Re: **Indonesian Mines > Freeport's Indonesian Copper Shipments** 0 votes

Freeport's Impact from Copper Supply Issues and EM Demand

Freeport McMoran Copper (NYSE:FCX) has extensive copper mining and smelting operations in North and South America, Indonesia and Africa. Our analysis of the company leads us to believe that its copper business contributes to almost three-quarters of its total value, which we estimate at $55.58. Our price estimate is at a roughly 11% premium to market price. The company competes with other miners such as Southern Copper (NYSE:PCU), Codelco and Newmont Mining (NYSE:NEM).
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Trefis Team on 5/6/2011

Re: **Indonesian Mines > Freeport's Indonesian Copper Shipments** 0 votes

Rising Metal Prices Lift Freeport

Freeport McMoran Copper's (NYSE:FCX) performance for the first quarter of 2011 showed improved earnings across all divisions, primarily due to steadily increasing prices of the company's principal commodities – copper, gold and molybdenum. [1] Freeport has mining and smelting operations in North and South America, Indonesia and Africa, and operates the Grasberg mine located at Papua, Indonesia - the world's largest copper and gold mine in terms of reserves. Freeport competes with other miners such as Southern Copper (NYSE:PCU), Codelco and Newmont Mining (NYSE:NEM).
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Notes: Freeport McMoran First Quarter 2011 Results, Company Press Releases, April 20 2011 [...]

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Trefis Team on 4/8/2011

Re: **Indonesian Mines > Freeport's Indonesian Copper Shipments** 0 votes

Outlook for Freeport's Copper Sales from Grasberg Mines

Freeport's McMoran Copper's (NYSE:FCX) copper sales from its Indonesian mines at Grasberg are facing hurdles due to the lower quality of copper ore being mined. This has caused the company to lower its copper output guidance by 17% for this year. While other miners such as Southern Copper (NYSE:PCU), Codelco and Newmont Mining (NYSE:NEM) can profit from rising copper prices led by strong copper demand, the reduction in copper sales from Freeport's Indonesian mines can pressure the company's outlook (see Freeport Plagued by Lower Copper Ore Quality). According to our analysis, Freeport derives roughly 26% of its stock value from its Indonesian copper mines.
Read More »

No Replies | Post Reply

Trefis Team on 4/1/2011

Re: **Indonesian Mines > Freeport's Indonesian Copper Shipments** 0 votes

Freeport Plagued by Lower Copper Ore Quality

Freeport McMoran Copper (NYSE:FCX) is facing quality concerns. The company recently announced that it expects a 17% decline in copper output from its Glasberg mine in Indonesia due to lower quality of the copper ore being mined. [1] Unfortunately, there is not much the company can do in this regard. Freeport competes with other miners such as the Southern Copper (NYSE:PCU), Codelco and Newmont Mining (NYSE:NEM).

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Notes: Freeport Indonesia sees copper output down 17 pct this yr, Reuters, March 29 2011 [↩]

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The Jakarta Post

Islands in focus: Toxic gas kills miner

The Jakarta Post | Archipelago | Tue, January 22 2013, 10:33 AM

Paper Edition | Page: 5

JAYAPURA: A worker for a contractor of copper and gold producer PT Freeport Indonesia (FI) died on Saturday after inhaling allegedly poisonous gas. Three others were treated at Tembagapura Hospital in Mimika.

"The accident took place underground at PT FI's working area in Cross Cut 25 Amole," Sr. Comr. I Gede Sumerta Jaya of Papua Provincial Police told The Jakarta Post on Sunday.

The dead man was named as Donny Asmond. Awa Mardiana, Heri Purwanto and Pahma were still being treated at the hospital.

PT FI spokesman Ramdani Sirait said that there had been a drop in the oxygen level in the mine. The company is seeking the cause of the problem to prevent recurrence of problem.

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Thu, March 28, 2013

Political, Shareholder Woes Trip Up Mining Giant in Indonesia

John Mcbeth - Straits Times | January 15, 2013

An aerial view shows the site of the Grasberg mine, operated by the US-based Freeport McMoRan Copper & Gold in Indonesia's Papua province in this Nov. 4, 2010 file photo. (Reuters Photo/Muhammad Yamin)

Freeport-McMoRan Copper & Gold has been scrambling to reassure investors that its controversial diversification into oil and gas does not mean it is facing problems extending its four-decade-long control over Papua province's hugely profitable Grasberg copper and gold mine.

"Resource nationalism is always a concern when we operate in the countries we do," chief executive and president Richard Adkerson said in a conference call last month.

"But there is no development in Indonesia or Africa that is driving us to do this."

The world's fifth biggest mining company is battling political headwinds ahead of Indonesia's 2014 elections in efforts to negotiate a 20-year extension to its contract of work, which expires in 2021.

Freeport claims it is entitled to two 10-year extensions under wording in the existing 1991 contract. But the Indonesian government is insisting that it conforms with the 2009 Mining Law by converting the contract to a business license, which does not carry the same degree of certainty.

Adding to that uncertainty, the constitutional court is hearing a challenge to the mining law by the same nationalist lobby which recently won a decision forcing Jakarta to restructure how it regulates the oil and gas industry.

Freeport has to get things settled before it dives much deeper into a US$16 billion program which will convert the Grasberg from a vast open pit into the world's biggest underground operation, with electric rail and 900 km of tunnel.

The company is already in negotiations with the government, but given the political atmosphere, it is unlikely to reach any deal until after the 2014 elections — and then with an entirely different set of ministers.

Adkerson has sought to sweeten the pot by offering to list subsidiary Freeport Indonesia on the Indonesia Stock Exchange, correctly noting that it might help to put the company in a more positive light.

The contract extension aside, the Grasberg mine has other problems. Freeport was forced to halt operations for the last three months of 2011 in the face of an unprecedented strike involving 8,000 of its workers.

With the labor agreement coming up for its biennial review in March, Freeport is now bracing itself for another round of union demands that could cause further disruptions in production.

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A steady stream of foreign security experts have been advising on the best way to guard the mine, especially the 100 km road linking Grasberg to the lowland town of Timika which has been the target of frequent sniper attacks.

Because of its past association with the Suharto regime and environmental and human rights infractions, real, imagined and invented, Freeport has become the foreign company most Indonesians love to hate.

Now it is in trouble with its big shareholders as well. "This is one of the worst tele-conferences I've ever heard," snapped Evy Hambro, managing director of investment firm BlackRock, as executives sought to justify the planned acquisition of two oil exploration firms.

The uproar stems from an apparent conflict of interest in a $20 billion deal to buy McMoRan Exploration and Plains Exploration and Development, which will cost the Arizona-based mining giant about two-thirds of its market cap.

Because of the way it is structured, the deal did not need shareholder approval, an issue that infuriated BlackRock and other investors given management's financial interest in McMoRan Exploration and a 17 percent drop in the value of Freeport's stock.

McMoRan's shares plunged 35 percent last November because of problematic flow tests at its deepwater Davy Jones site in the Gulf of Mexico, which it claims has the potential of being the biggest oil discovery in a decade.

Adkerson, who is also co-chairman of McMoRan, talked about the "complexities" resulting from overlapping management, with six directors holding dual board membership in the two companies.

In essence, Freeport is going back to its roots. Co-founded by geologist James "Jim Bob" Moffett in 1969, McMoRan Oil merged with Freeport Minerals in 1981 and later sold off its oil and gas assets to help fund the development of the Grasberg mine.

New Orleans-based McMoRan was spun off in 1994, but the company continued to be run by the hard-charging Moffett, the concurrent chairman at Freeport and the guiding force behind the latest move.

Recounting the company's history of risk-taking in remote Papua, which stretches back to the late 1960s, Moffett basically asked shareholders to trust him. "We know how to swing for the fences," he rasped.

"We're home-run hitters."

Described by Adkerson as the firm's "cornerstone asset", and by Moffett as "the best mine in the world", the high-altitude Grasberg mine contributes to 31 percent of Freeport's revenues — even if the strike did make 2012 an exceptionally bad year.

But that dependency is expected to drop to 23 percent as a result of a deal that Adkerson calls an "add-on and not a diversion", with 74 percent of future revenues expected to come from mining and 26 percent from what he says will be self-funding oil and gas operations.

The acquisitions create a resource conglomerate worth $60 billion, inclusive of debt, and mark a major shift in strategy for a company which used its Grasberg riches to gobble up Phelps Dodge, a firm much bigger than itself, in 2007.

With 10 operating mines in North and South America and Africa, the world's biggest copper producer and fifth biggest miner has been looking for opportunities outside its core business, worried about the lack of new world-class copper deposits.

Their eye firmly on the short term, many shareholders are clearly not convinced that getting back into oil and gas is the way to go.

Reprinted courtesy of The Straits Times

opinion

Seeking Alpha α

Freeport-McMoRan: Indonesia Mess May Sink Stock

Sep 25 2012, 16:17
by: Cris Frangold

| about: FCX, includes: ABX, BHP, GG, NEM, RIO

Disclosure: I have no positions in any stocks mentioned, and no plans to initiate any positions within the next 72 hours. **(More...)**

Freeport-McMoRan (FCX) is one miner that is hard to categorize. It is not a gold specialist like **Newmont Mining** (NEM) and **Goldcorp** (GG), but it is not a big diversified miner like **BHP Billiton** (BHP) and **Rio Tinto** (RIO) either. Like Newmont and **Barrick Gold** (ABX), Freeport depends heavily on one metal, namely copper, but it has some gold and molybdenum production as well. Yet, like Billiton and Rio Tinto, Freeport is heavily dependent on China.

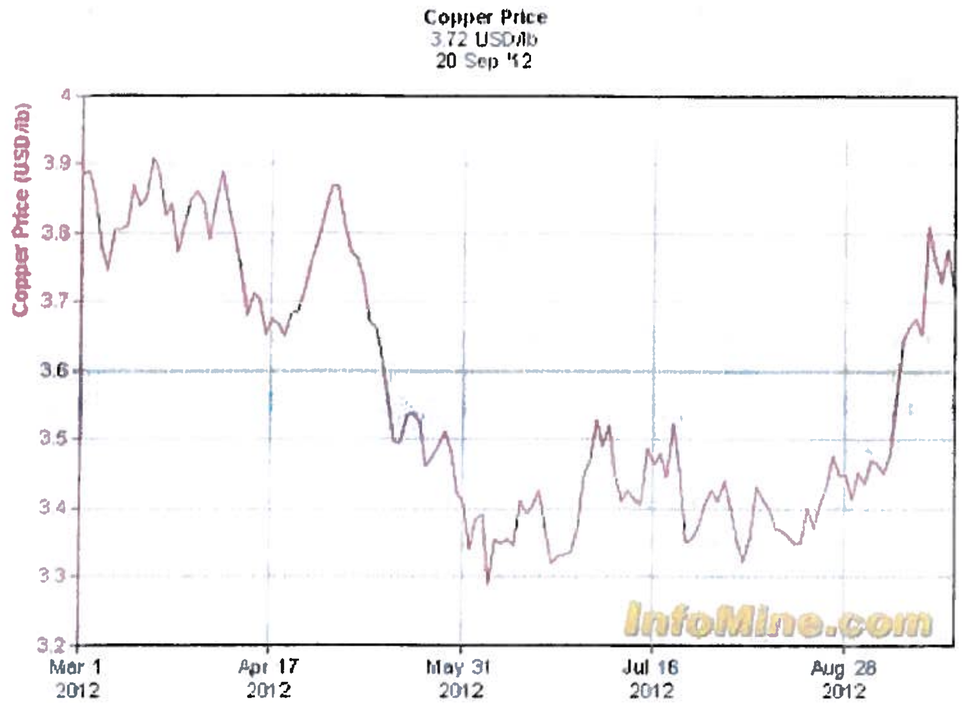
The dependence on China has not helped Freeport's share value that much this year as you can see from the chart. Freeport is still not doing as well as comparable companies such as Barrick and Newmont. Freeport closed at $40.65 per share on September 21st, while Barrick closed at $42.86 per share and Newmont at $56.31 per share. Goldcorp closed at $46.93 per share.

These charts indicate that gold specialists are benefiting from the higher gold prices over the summer. Gold actually hit a high price of $1,790 an ounce on September 21st because of rumors that Spain will be soon be begging for a bailout. The interesting thing is that all commodities seem to be benefiting from the increase in gold prices; copper prices were reportedly up by 3%. Yet Freeport's share prices were not helped by the higher commodity prices.

Indonesian Government wants a Bigger Cut of Freeport's Revenue

The reason Freeport is not benefiting from higher metals lies not in the commodities market, but in Indonesia, where its largest mine, the Grasberg, is located. The Indonesian government has decided to increase the royalties that Freeport and Vale SA (VALE) pay to 10%. The companies are currently only paying mineral royalties of 1% on gold and 3.5% in copper in that country.

That means Freeport's expenses on gold mined at Grasberg will increase by 9%, and expenses on copper mined there will increase by 6.5% if and when the new royalty goes into effect. The Indonesia government is currently reviewing the royalties, but the review won't be concluded until December 2013. Freeport's revenues could take a big hit from the royalties increase because the Grasberg accounted for 19% of the company's revenues in 2011.

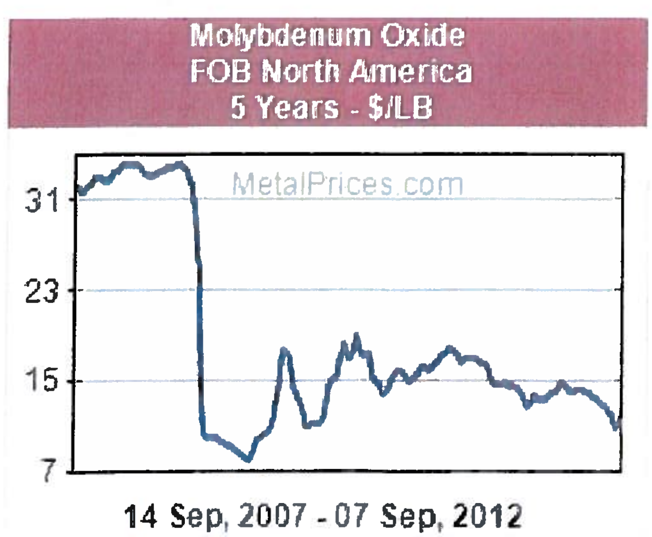


Freeport will be in even more trouble if copper prices take another tumble like the one they took this spring. As you can see, copper dropped by over 60¢ a pound between March and May and didn't rebound until August. If the same thing happens and the higher Indonesian royalties kick in, Freeport will be facing a big revenue loss.

This will reverse the trends at Freeport, because unlike Billiton and Rio Tinto, its percentage of income growth has actually been increasing. Freeport's income grew by 6.7% in the past year while its sales increased by 10%. At the same time, Billiton's income growth fell by 34.8% and Rio Tinto's income growth fell by 59.3%. That translated into a net profit margin of 21.98%. In other words, Freeport has actually been doing well despite an across-the-board downward trend among diversified miners. It boasts some other good figures, including a debt-to-equity ratio of .21% and an earnings per share ratio of $3.32.

Molybdenum Prices Low

So it is easy to see why so many value investors like Freeport. It has some very good numbers in a depressed mining industry, and part of the reason for this is that Freeport is not exposed to iron in the way that Billiton, Vale, and Rio Tinto are. Freeport is exposed to molybdenum, which is vital to steel production. Molybdenum prices have been falling for the past few years despite increased steel production in China and elsewhere.



This calls Freeport's decision to restart its Climax Molybdenum mine near Leadville, Colorado into question. The Climax had been mothballed for several years, but Freeport restarted it this summer. Yet it does not look like the moly prices seem to justify its reopening.

Indonesia Risk Undermines Freeport's Value

So is Freeport a value buy or not? Most likely, and not because its shares seem to be accurately priced. Despite the rise in copper prices, Freeport is heavily exposed to the situation in Indonesia where the company has to worry about violence as well as increasing royalties.

Interestingly enough, Freeport's man in Indonesia is now claiming that the media is unfairly reporting on violence around the Grasberg mine. Rozik B. Soetipto, the president director of Freeport Indonesia, complained about news reports about gunmen firing on Freeport and Indonesian military vehicles near Grasberg. Mr. Soetipto griped that his company is being unfairly targeted by reporters.

A cynic will have to ask why is Mr. Soetipto so worried about bad publicity if the violence reports are overblown? A more likely scenario is that security at the Grasberg might be breaking down and Freeport executives don't want to admit it. Obviously, Freeport won't be able to get mining done if gunmen start taking potshots at its people.

This means Freeport is not a good value buy because of the risks it faces. The situation in Indonesia makes this stock just too unstable to be a classic value buy.

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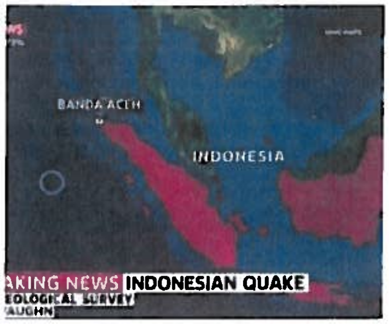
Massive quake in Indonesia triggers tsunami alert

Cecilia Jamasmie | April 11, 2012



An undersea 8.6 earthquake struck Indonesia this morning at 04:38 ET, announced the U.S. Geological survey (USGS). The movement, which triggered a tsunami alert across the Indian Ocean, has forced all mining companies in Indonesia to halt their operations until further notice.

The earthquake struck 308 miles southwest of the city of Banda Aceh, on the northern tip of Sumatra Island, at a depth of 20.5 miles. With a population of over 220,000, the island is located some 500 kilometers away from the epicentre.

Bruce Pressgrave, a geophysicist with the USGS, which documents quakes worldwide, told BBC that it was unlikely that a tsunami would be generated given that this type of earthquake, which involves horizontal movement of the earth's blocks, does not produce a column of water and hence a tsunami.

"There's always a hazard but with this kind of quake (a strike slip mechanism) it reduces the risk of a tsunami," BBC quoted Pressgrave as saying.

Freeport-McMoran Copper & Gold (NYSE:FCX), Newmont Mining Corp. (NYSE:NEM), 3D Resources Limited (ASX:DDD), Adavale Resources Limited (ASX:ADD) and Allied Indo Coal PT are some of the mining companies with a presence in Indonesia.

Initially reported as 8.9 magnitude, the earthquake was later revised down to 8.6 by the USGS.

(Photo and video from SkyNews)

Cecilia Jamasmie

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Cecilia Jamasmie is one of the news editors at MINING.com. With more than 12 years of experience in print media, TV, online media and public relations, Cecilia is now the Latin American news editor. She holds a Master of Journalism (MJ) from the University of British Columbia, Canada, and she is now developing a Spanish version of MINING.com to be launched soon.

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THE WALL STREET JOURNAL.
WSJ.com

December 14, 2011

As China Goes, So Go Commodities

The outlook for global prices depends heavily on whether the country maintains its voracious appetite for oil, copper and other products

By LIAM PLEVEN

You want to know where the global commodities markets are heading in the coming years? Then it's probably best that you remember a single word: China.

China has become a voracious consumer of industrial and agricultural commodities, and the outlook for global prices are linked to Chinese demand, Liam Pleven reports on Markets Hub. Photo: REUTERS

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As the biggest and one of the fastest-growing of the world's developing economies, China has become a voracious consumer of industrial and agricultural commodities. Its shifting needs are now the most important driver in the prices of many of those goods. Producers often base massive capital investments largely on their expectations for Chinese demand for their products. Investors often make similar calculations before buying or selling commodities contracts or related securities.

That's why no single factor is likely to have a more far-reaching impact on commodities markets over the next few years than how Chinese demand changes as the country's economy evolves. "That's the big question," says Richard Adkerson, chief executive of Freeport-McMoRan Copper & Gold Inc.

So what's the answer? Here are three possible economic scenarios, and what each would mean for global commodities markets.

Full Speed Ahead

If China's consumption of commodities continues to grow at the rate it has over the past 10 years, this is what the world would have to do to meet that demand in 2020, assuming that the rest of the world's collective appetite doesn't change at all:

- Pump almost as much additional crude oil as Saudi Arabia now provides per year.

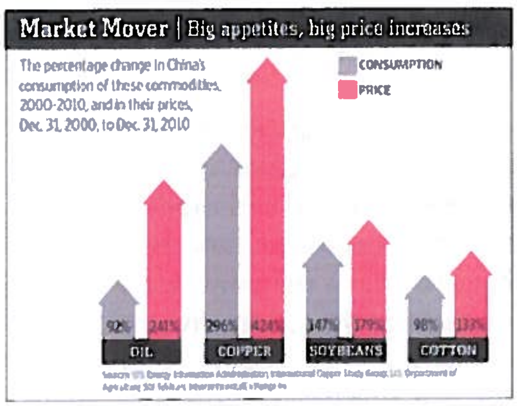
Craig Frazier

• Grow more than three times as many soybeans as currently come out of Iowa, which alone provides 5% of global output.

• Extract nearly three times as much new copper as the current annual production from Chile, which mines about four times as much as any other nation.

And that's just for starters. Vast increases in supply would be needed for all sorts of other commodities as well.

Prices that rocketed to record heights in recent years on Chinese buying could fly even higher. That would be good news for companies that produce those commodities and investors who have placed bets on them—unless high prices abruptly choke off demand or spur the Chinese and other buyers of commodities to seek alternative goods.



Materials in tight supply or at risk of significant constraint, like crude oil, copper and palladium, could be vulnerable to sharp price increases. Their prices shot up 50%, 106% and 207%, respectively, in the five years through 2010. By contrast, aluminum is plentiful, cotton production is rising sharply and nickel output is climbing—at least for the moment—which can make them less vulnerable. It's also easier to produce some commodities in greater quantity when needed, which can limit price shocks. It takes less time, for example, to grow more corn than it does to find new oil beneath the ocean floor.

Many analysts consider the fast-growth scenario improbable. The consensus is that China is headed for slower economic growth than it experienced from 2001 to 2010, when its annual rate of expansion ranged from 8.3% to 14.2% and reached double digits six times, according to the World Bank. If the consensus is right, the question becomes how much China's growth will slow.

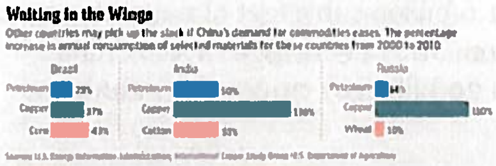
The Hard Landing

A growth rate of 4% to 6% would be a big leap forward for the U.S. economy and plenty of others. But not for China.

That's the range of growth expected for the Chinese economy by around 2013 or 2014 by Roubini Global Economics LLC, a New York-based research and consulting firm. Shelley Goldberg, the firm's director of global resources and commodity strategy, calls that a "hard landing" after the far more rapid expansion of the past decade. "Obviously, it doesn't bode well for commodities," Ms. Goldberg says.

Meanwhile, Other Emerging Nations Bear Watching

Demand for steel, copper and other industrial metals could drop significantly if China does stall, because those materials are heavily used in construction—which would be at risk from weakness in the Chinese real-estate



China is the key to the outlook for commodities markets, but it isn't the only factor. Commodities prices could face upward pressure over the next 10 years if other countries start to consume anything like China did over the past decade.

Take India. Compared with China, India consumes a small fraction of the world's commodities—for instance, 3% of the copper, compared with China's 37%, according to Barclays Capital—despite having nearly as many citizens. But that could change, because India is less developed than China, meaning it still has a vast amount of work to do on improving its infrastructure, particularly upgrading its power grid.

It also wants to boost manufacturing, says Deepak Lalwani, director for India at Lalcap Ltd., a London-based consulting firm. He expects India's gross domestic product to increase fourfold by 2020.

The list is long of other, smaller countries that consume fewer raw materials per capita than the developed world, leaving lots of room for global demand to grow. While some have been ratcheting up consumption, they haven't been doing so as fast as China, suggesting their appetites could get even bigger.

For instance, between 2000 and 2010, copper consumption in Brazil, Indonesia, Russia and Turkey increased between 36% in Brazil and 172% in Indonesia, according to data from the International Copper Study Group, an intergovernmental organization. Over the same period, China's consumption nearly quadrupled.

"The one trend that's clear to me is that people in undeveloped countries around the world want to live a better life," says Richard Adkerson, chief executive of Freeport-McMoRan Copper & Gold Inc. "The longer-term growth story goes beyond China, and hasn't really been scratched yet."

Liam Pleven

market—and because China often accounts for some 40% of global demand for those materials. Coal demand could also tumble, she says, because the fuel is heavily used in China to generate power.

Some commodities could take a hit not because China uses more of them than anyone else but because it has been providing much of the growth in their markets. For instance, while China accounts for just 11% of global oil demand, according to Barclays Capital, it provides 60% of the growth in that demand.

Similarly, a hard landing might hurt the soybean market more than the corn market, because China is a huge importer of soybeans but produces almost all the corn it needs at home, says Kevin Norrish, managing director for commodities research at Barclays Capital.

Slower but Steady

For many China watchers, including Barclays, the most probable scenario is an economy that keeps expanding strongly but at a less blistering pace, with annual GDP growth rates in the high single digits. That would mean continued upward pressure on most commodities prices, with some possibly rising substantially, but in most cases not the soaring prices that a red-hot economy would produce.

"We still see loads of reasons why growth is going to continue, but the rate of growth is going to slow over time," says Jim Lennon, who specializes in Chinese commodity markets as an analyst at Macquarie Group Ltd., one of the leading financiers for commodities producers. The first half of the current decade will see more rapid growth than the second half, in Mr. Lennon's view, as the main engine of the Chinese economy over time switches from massive infrastructure projects to consumer demand for durable goods.

The result will be a tamer increase in consumption of base metals and other commodities, he says. Between 2000 and 2010, Chinese consumption of copper, aluminum, zinc, nickel and lead grew at compound annual rates ranging from 13.9% to 24.4%, according to a presentation Mr. Lennon delivered in October. For 2010 to 2020, the projected growth range is 5.3% to 9.3%, the presentation said.

Even in a slower-but-steady world, demand—and prices—could shoot up for some commodities. For instance, China uses less natural gas per capita than many other countries, notes Neil Beveridge, a Hong Kong-based senior oil analyst for investment bank Sanford C. Bernstein. That will change, he says, as more people use the fuel to heat or cool their homes and greater volumes are consumed by industry. In 2010, China imported about 1.6 billion cubic feet of natural gas per day, according to the U.S. Energy Information Administration. Mr. Beveridge expects China's imports to grow to 10 billion cubic feet per day by 2015 and 20 billion by 2020, more than any other nation's at that point.

Meanwhile, demand is likely to continue growing for some food commodities but shrink for others, says Scott Rozelle, a professor at Stanford University who studies Chinese agriculture. As China's growing middle class consumes more meat, animal feed such as soybeans and corn will continue to be in increasing demand, he says. But "the demand for wheat and rice will fall" as diets continue to evolve, Mr. Rozelle says, and China may occasionally even export some of those less-coveted staples, as it has over the past 10 years.

One thing to keep in mind is that China is such a big market now that any increase in consumption —even in a slower but steady economic expansion—can create a big chunk of fresh demand, and push prices up accordingly. As Ms. Goldberg notes, "They still are 1.3 billion people."

Mr. Pleven is a staff reporter in The Wall Street Journal's New York bureau. He can be reached at liam.pleven@wsj.com.

Copper sinks after Fed predicts 'weak outlook'

Andrew Topf | October 19, 2011

Call in the numbers people

The markets hammered copper on Wednesday after the Federal Reserve said in its Beige Book survey that economic prospects in the United States appear to be dimming.

The red metal — widely considered a barometer of future economic growth, slipped 4% on Wednesday — the biggest one-day plunge in three weeks as investors fled equity markets. The North American indexes were a sea of red, with the S&P 500 index down over 1% and the TSX Composite off 1.69%.

"Overall economic activity continued to expand in September, although many districts described the pace of growth as 'modest' or 'slight' and contacts generally noted weaker or less certain outlooks for business conditions," Reuters reported, quoting the findings compiled by the Fed Bank of Chicago.

LME three-month copper slumped 3.2% to end at $7,210, while the December COMEX contract finished at $3.25 per pound, a 10-cent drop. Reuters notes copper has lost more than 6% of its value so far this week, with a credit rating downgrade of Spain on Wednesday and a report of weakening growth in China in the third quarter contributing to investor worries.

It appears the market for copper has yet to price in supply disruptions from two strikes at mines owned by No. 1-listed copper producer Freeport McMorran (NYSE:FCX) — one at its huge Grasberg mine in Indonesia and another at its Cerro Verde mine in Peru.

The US company threatened to declare force majeure at Grasberg after the strike turned violent earlier this week, and has lowered its 2012 guidance from 4 billion pounds to 3.9 billion.

Andrew Topf

Email: atopf@mining.com

Andrew Topf on

Andrew Topf is an editor at MINING.com. With a background in newspaper and trade magazine reporting, Andrew specializes in writing about mining and commodities. He has written for the Black Press newspaper chain in British Columbia, Business in Vancouver, and Baum Publications.

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Outlook for copper murky at best

Erik Els | July 6, 2011

Copper prices fell on Wednesday after China raised interest rates and Portugal's debt joined the junk ranks but the longer term outlook for the metal remains murky.

Arguments on both sides make sense: Bulls point to labour unrest at Freeport and Codelco and the vagueries of weather while the more bearish highlight Japanese smelter outages and Chinese destocking.

Three-month copper on the London Metal Exchange closed at $9,521 a tonne on Wednesday, from a close at $9,540 a tonne on Tuesday after hitting two-months highs of $9,565 intra-day.

Reuters reports how the Freeport strike and threatened labour action at Codelco highlight fragile copper supply:

> Freeport's Grasberg mine holds the world's biggest gold reserves and is one of the largest copper producers, and the strike, which was in its third day, highlights the rising labour costs for businesses in booming emerging markets.
>
> Workers at Codelco in Chile, the world's top copper producer, are set to strike for 24 hours next Monday to protest against an overhaul of the country's giant state mining company.

The Financial Post argues other factors could have a bigger impact on the copper price:

> Chinese de-stocking is the single most important dynamic in the refined copper market. The country's imports slumped in the first part of this year.
>
> The bulls are adamant that they will recover in the second part.

Frik Els

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Frik is editor and writer for MINING.com. Frik has developed content for a variety of consumer and business titles in Canada and Southern Africa covering autos, technology, entrepreneurs, travel

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Grasberg's Copper Quality Could Cost Freeport A Few Pennies

Trefis Team, Contributor

Freeport's massive Grasberg mine

Freeport's McMoran Copper's copper sales from its Indonesian Grasberg mine are facing hurdles due to the lower quality of copper ore being mined. This has caused the company to lower its copper output guidance by 17% for this year. While other miners such as Southern Copper, Codelco and Newmont Mining can profit from rising copper prices led by strong copper demand, the reduction in copper sales from Freeport's Indonesian mines can pressure the company's outlook.

One worthy question, however, is whether the current high copper prices sustainable. If the price keeps increasing, manufacturers may choose to substitute copper with aluminum to cut costs, thereby impacting Freeport's copper sales. While we anticipate Freeport's annual copper sales from Indonesia will rise to 1.3 billion pounds by the end of our forecast period, Trefis members predict that sales could cross 1.4 billion.

We currently have a price estimate of $63.42 for Freeport McMoran Copper's stock, roughly 10% ahead of market price.

Importance of Grasberg Mine to Freeport

The Grasberg Mine in Indonesia is one of the largest copper and gold mines in the world. Freeport owns around 90% of PT Freeport Indonesia, which operates the Grasberg mine, while the Indonesian government owns the remainder. The mine currently has a production capacity of 80,000 metric tons of ore per day, and could reach 90,000 metric tons per day by 2012 and 240,000 metric tons by 2016. Despite having diversified operations in North America, South America and Africa, the Grasberg mine remains a key asset for Freeport.

The Grasberg mine, however, has experienced severe political and social strife over the past several years. The rebels in the eastern province of Papua, where the Grasberg mine is located, view the mine as a symbol of government exploitation of the area's natural resources. [1] Regular attacks around the mine, in a politically volatile environment, could weigh on Freeport.

Aluminum as a Copper Substitute Could Hurt Freeport Sales

While Freeport is benefiting from rising copper prices due to increased demand from countries like China, this questions the sustainability of high copper prices in the long term. Aluminum is seen as a more cost-effective and feasible substitute for copper if the price of copper crosses the $3.5 per pound mark.

In the last five years, aluminum has already substituted 2-3% of the copper market, and this number will likely increase. Alcoa, the world's leading aluminum producer, predicts that if copper prices continue to rise at the current pace, then aluminum could potentially substitute 20% of the global annual refined copper market. (see: Long-Term Concerns for Freeport on High Copper Prices)

Trefis Community Forecast

Trefis members forecast that Freeport's copper sales from Indonesian mines could grow from 1.2 billion in 2010 to 1.4 billion by the end of our forecast period, compared to the baseline Trefis estimate of an increase to 1.3 billion during the same period. The member estimates imply a slight upside to our $63.42 price estimate for Freeport's stock.

See our complete analysis for Freeport McMoran Copper's stock here

Notes:

1. Freeport: Mine operations normal after fatal attacks, azcentral.com, July 14, 2009 [↩]

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This article is available online at:
http://www.forbes.com/sites/greatspeculations/2011/04/11/grasbergs-copper-quality-could-

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BUYS, HOLDS, AND HOPES

INVESTING | 4/06/2011 @ 2:29PM | 1,292 views

Freeport Bit By Grasberg Pit Low-Down Copper Ore Blues

Trefis Team, Contributor

Freeport McMoran Copper is facing quality concerns. The company recently announced that it expects a 17% decline in copper output from its Grasberg mine in Indonesia due to lower quality of the copper ore being mined. [1] Unfortunately, there is not much the company can do in this regard. Freeport competes with other miners such as the Southern Copper, Codelco and Newmont Mining.

Grasberg isn't givig up the good copper

Freeport is involved in the mining, smelting and refining of copper, gold and molybdenum. The company runs its mining and smelting operations in North and South America, Indonesia and Africa.

Our $63.42 base price estimate for Freeport's stock is at a roughly 15% premium to market price.

Freeport's Indonesian Mine Is Its Crown Jewel

The Grasberg mine located at Papua, Indonesia, is the world's largest copper and gold mine in terms of reserves. The company's annual report for the year 2010 states that, as of December 31, 2010, the mine had about 33 billion pounds of recoverable copper reserves and roughly 34 million ounces of recoverable gold reserves.

The mine currently has a production capacity of 80,000 metric tons of ore per day, and could reach 90,000 metric tons per day by 2012 and 240,000 metric tons by 2016.

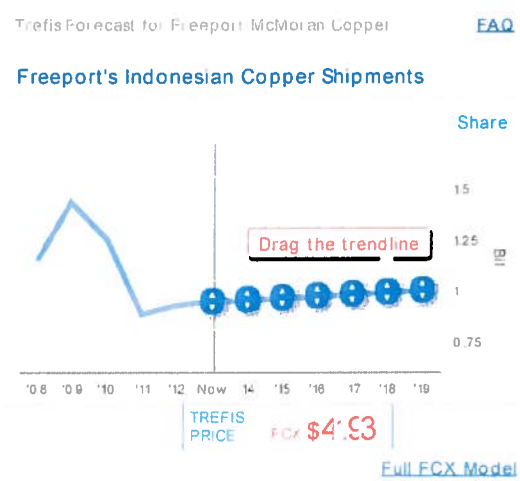
Jewel Might Have Lost Some Shine

Freeport's mining during 2011 will take place primarily at a lower-grade section of the mine, which is why estimated sales for the year are around 1 billion pounds of copper. In comparison, the mine sold 1.4 billion pounds of copper in 2009 and 1.2 billion pounds of copper in 2010.

Freeport's Stock Value Could Take a Hit as a Result

All major copper mining companies are currently ramping up production to cash-in on rising copper prices. This is evident from the quarterly increase in quantity of copper sold. [2] The reduction in copper sales for Freeport at such an inopportune time will likely weigh on the company.

The exact impact on the company's stock price can be inferred by dragging the trend line in our modifiable forecast chart for Freeport's quantity of copper sold from the Indonesian mine.



We currently forecast that annual copper sales from the Indonesian mine will increase gradually towards 1.3 billion pounds by the end of our forecast period. But if Freeport does not ramp up production quick enough to compensate for the lower quality of copper ore, it may end up producing only 1 billion pounds of copper each year during this period. This scenario would imply 5% downside to our $63.42 price estimate for Freeport stock, leaving our number just above $60.

See our full analysis and $63.42 price estimate for Freeport McMoran

Notes:

1. Freeport Indonesia sees copper output down 17 pct this yr, Reuters, March 29 2011 [↩]
2. World copper output rises in 3 quarters, The Citizen, March 8 2011 [↩]

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This article is available online at:
http://www.forbes.com/sites/greatspeculations/2011/04/06/freeport-bit-by-grasberg-pit-low-down-copper-ore-blues/

Thousands stranded after landslide, but mine still operational: Freeport McMorran

MINING.com Editor | March 7, 2011

A landslide Saturday near Freeport McMorran's Grasberg mine left thousands of workers stranded, but was not expected to impact operations at the world's largest copper mine, a company spokesperson told Reuters:

A weekend landslide buried a key road access tunnel to Freeport-McMoRan Copper & Gold Inc's Grasberg mine in Papua, Indonesia, leaving thousands of workers stranded, but a company spokesman said operations were continuing as normal.

Freeport is the world's largest publicly traded copper miner, while Grasberg has the world's largest recoverable reserves of copper and the largest gold reserves.

Saturday's landslide prevented thousands of workers from reaching the mine, situated in the highlands of eastern Papua province, but a helicopter was seen ferrying some staff before cloud and mist descended.

About 60 buses used to transport workers were parked in the lowlands, below the blocked tunnel.

"There was ground failure at Hannekam Tunnel on March 5. The tunnel is currently closed while work is completed to address the failure," spokesman PT Freeport Indonesia spokesman Ramdani Sirait said in an emailed statement.

"This ground failure occurred outside PT Freeport Indonesia's mining area and production continues normally," he added.

1 comment

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Pramod Rajmeny ·

We wish a very quick and safe clearance of the tunnel blockage onway to the mine site. The terrain leading to the mine site is full of steep ridges of Mahalaxmi ranges and the mine management is succesfully keeping the road protected against such land slides.

We wish all success. I happen to visit the mine last year with my colleagues Mr. Khator & Mr. Vinod. We all are mining engineers.

Regards,

Dr. Rajmeny

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INTERNATIONAL BUSINESS

INTERNATIONAL BUSINESS;U.S. Cancels Indonesian Mine's Insurance

By ROBERT BRYCE
Published: November 2, 1995

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The Overseas Private Investment Corporation has canceled $100 million in political risk insurance for a huge gold mining project in Indonesia that is operated by Freeport-McMoran Copper and Gold Inc.

The Federal agency, which provides insurance and financing to American companies doing business overseas, canceled the company's insurance, effective at midnight on Tuesday. Political-risk insurance is intended to compensate a company if it loses assets because of terrorism, sabotage, a coup or other political volatility.

The cancellation, which had been rumored for nearly two weeks, was confirmed yesterday by Allison Rosen, a spokeswoman for the Overseas Private Investment Corporation, which is known as OPIC. "I can't talk about the grounds of the termination," she said. Ruth R. Harkin, the agency's president and chief executive, has been out of the country this week, and Ms. Rosen said it was unlikely that Ms. Harkin would comment on the cancellation in any event.

ed in New Orleans
isturbed by the
he coverage," he s
ll operate on that
pending a resolution of the dispute, which has been submitted to arbitration, as pro
by our contract with OPIC."

People who have been following the issue say the insurance was canceled because of environmental problems at the Grasberg Mine, which contains the world's largest known gold deposit, an estimated 22 million ounces. The body of ore, in the mountains in the Indonesian province of Irian Jaya, on the western half of the island of New Guinea, also contains an estimated 15 billion pounds of copper and 37 million ounces of silver. The total value of the deposits is estimated at $50 billion.

In recent years, Freeport McMoran has pumped more than $2 billion into the mine, which employs about 17,000 people. Freeport McMoran is the largest single American investor in Indonesia.

Environmental groups in Indonesia and the United States that oppose Freeport's operation in the region say that the company has done little to contain tailings below the mine site and that runoff from the tailings has killed fish in nearby rivers. They also contend that local villagers can no longer drink water from the river. Freeport McMoran officials deny that the mine tailings are toxic.

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The cancellation comes despite an intensive lobbying effort in Washington by Freeport McMoran directors and officials, including former Secretary of State Henry A. Kissinger, who sits on Freeport's board. The insurance issue was also reported to have been raised by President Suharto of Indonesia during a meeting with President Clinton last week at the White House.

The mine has been under increased scrutiny in recent months as a result of two reports contending that there had been several dozen instances of human-rights violations in and around the mine site. In April, the Australian Council for Overseas Aid reported that 22 civilians and 15 guerrillas had been killed or had disappeared in the region. The report also accused Freeport security personnel of having taken part in several of the killings.

Then, in August, the Roman Catholic church of Jayapura reported that it had found evidence to support many of the allegations in the Australian report. The church's report also included accusations of torture.

The company has repeatedly denied any involvement in the reported rights abuses.

The Overseas Private Investment Corporation would not comment on the allegations of rights abuses or whether the incidents led to the cancellation of the insurance.

Freeport McMoran executives have said that the company provides food, transportation and shelter to Indonesian military personnel at the mine. But the company said it did not "provide transportation or other assistance to military personnel involved in combat operations."

Steve Feld, an anthropologist and opponent of the Freeport operation who has spent two decades studying indigenous music and culture in neighboring Papua New Guinea, said the decision to cancel the company's insurance "confirms what many people have known and talked about for a long time." He added, "This is extremely important because OPIC's scientists are internationally recognized."

The decision appeared to have been guided by a 1979 executive order, which provides environmental guidelines for projects that OPIC insures or finances. The purpose of the order is to "insure that all significant environmental effects of its actions outside the United States are considered by OPIC in its review of proposed insurance and finance projects."

Neither the agency nor the company would comment on when arbitration might begin.

Map of Irian Jaya showing location of the Grasberg Mine.

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Below a Mountain of Wealth, a River of Waste

By Jane Perlez and Raymond Bonner The New York Times
Tuesday December 27, 2005

JAKARTA, Indonesia - The closest most people will ever get to remote Papua, or the operations of Freeport-McMoRan, is a computer tour using Google Earth to swoop down over the rain forests and glacier-capped mountains where the American company mines the world's largest gold reserve.

With a few taps on a keyboard, satellite images quickly reveal the deepening spiral that Freeport has bored out of its Grasberg mine as it pursues a virtually bottomless store of gold hidden inside. They also show a spreading soot-colored bruise of almost a billion tons of mine waste that the New Orleans-based company has dumped directly into a jungle river of what had been one of the world's last untouched landscapes.

What is far harder to discern is the intricate web of political and military ties that have helped shield Freeport from the rising pressures that other gold miners have faced to clean up their practices. Only lightly touched by a scant regulatory regime, and cloaked in the protection of the military, Freeport has managed to maintain a nearly impenetrable redoubt on the easternmost Indonesian province as it taps one of the country's richest assets.

Months of investigation by *The New York Times* revealed a level of contacts and financial support to the military not fully disclosed by Freeport, despite years of requests by shareholders concerned about potential violations of American laws and the company's relations with a military whose human rights record is so blighted that the United States severed ties for a dozen years until November.

Company records obtained by *The Times* show that from 1998 through 2004, Freeport gave military and police generals, colonels, majors and captains, and military units, nearly $20 million. Individual commanders received tens of thousands of dollars, in one case up to $150,000, according to the documents. They were provided by an individual close to Freeport and confirmed as authentic by current and former employees.

Freeport said in a written response to *The Times* that it had "taken appropriate steps" in accordance with American and Indonesian laws to provide a secure working environment for its more than 18,000 employees and contract workers.

"There is no alternative to our reliance on the Indonesian military and police in this regard," the company said. "The need for this security, the support provided for such security, and the procedures governing such support, as well as decisions regarding our relationships with the Indonesian government and its security institutions, are ordinary business activities."

While mining and natural resource companies sometimes contribute to the costs to foreign governments in securing their operations, payments to individual officers raise questions of bribes, said several people interviewed by *The Times*, including a former Indonesian attorney general, who said it was illegal under Indonesian law for officers to accept direct payments.

The Times's investigation also found that, according to one current and two former company officials who helped set up a covert program, Freeport intercepted e-mail messages to spy on its environmental opponents. Freeport declined to comment.

More than 30 current and former Freeport employees and consultants were interviewed over the past several months for this article. Very few would speak for attribution, saying they feared the company's retribution.

Freeport's support of the military is one measure of its extraordinary working environment. In the 1960's, when Freeport entered Papua, its explorers were among the very first outsiders ever encountered by local tribesmen swathed only in penis gourds and armed with bows and arrows.

Since then, Freeport has built what amounts to an entirely new society and economy, all of its own making. Where nary a road

Letters and other documents provided to *The Times* by government officials showed that the Environment Ministry repeatedly warned the company since 1997 that Freeport was breaching environmental laws. They also reveal the ministry's deep frustration.

At one point last year, a ministry scientist wrote that the mine's production was so huge, and regulatory tools so weak, that it was like "painting on clouds" to persuade Freeport to comply with the ministry's requests to reduce environmental damage.

That frustration stems from an operation that, by Freeport's own estimates, will generate an estimated six billion tons of waste before it is through - more than twice as much earth as was excavated for the Panama Canal.

Much of that waste has already been dumped in the mountains surrounding the mine or down a system of rivers that descends steeply onto the island's low-lying wetlands, close to Lorentz National Park, a pristine rain forest that has been granted special status by the United Nations.

existed, Freeport, with the help of the San Francisco-based construction company Bechtel, built virtually every stitch of infrastructure over impossible terrain in engineering feats that it boasts are unparalleled on the planet.

That history, Papua's extreme remoteness and the company's long ties to the Indonesian government have given Freeport exceptional sway over a 21st-century version of the old company town, built on a scale unique even by the standards of modern mega-mining.

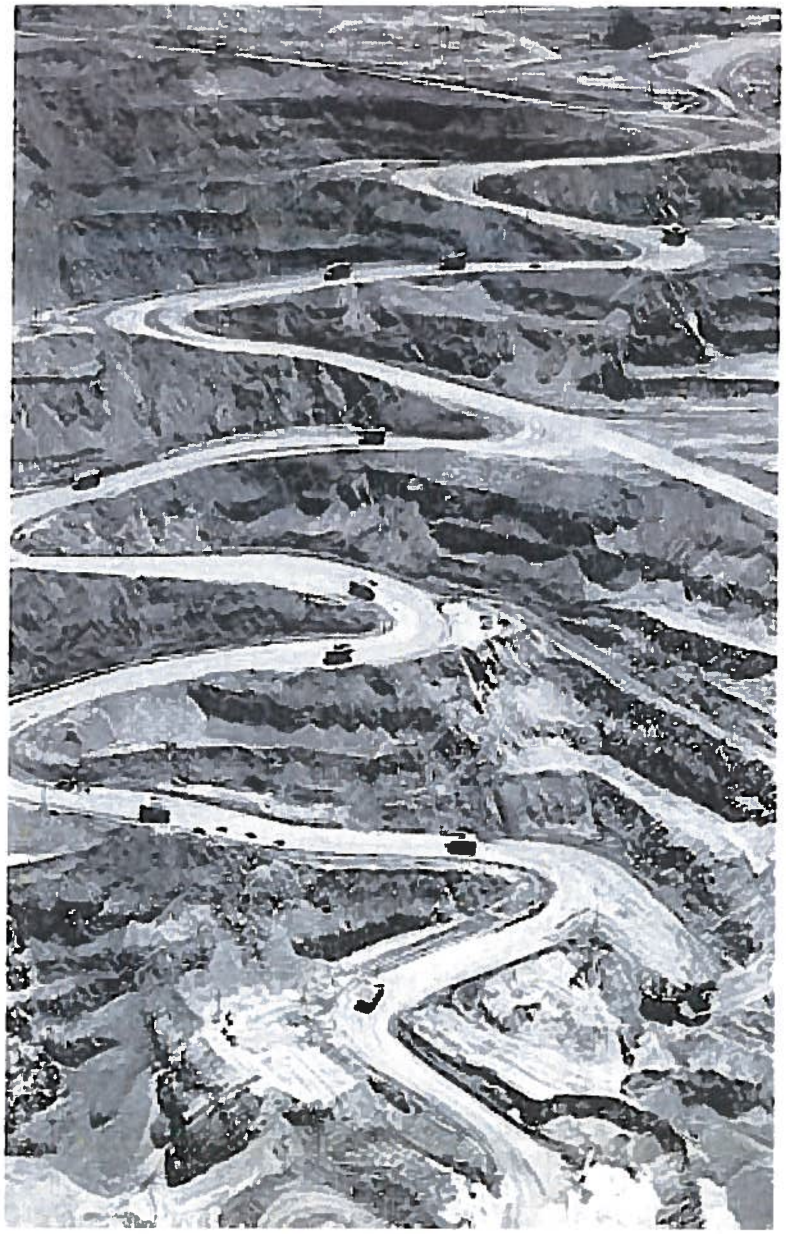
"If any operation like this was put forward now, it wouldn't be allowed," said Witoro Soelarno, a senior investigator at the Department of Energy and Mineral Resources, who has visited the mine many times. "But now the operation exists, and many people depend on it."

For years, to secure Freeport's domain, James R. Moffett, a Louisiana-born geologist who is the company chairman, assiduously courted Indonesia's longtime dictator, President Suharto, and his cronies, having Freeport pay for their vacations and some of their children's college education, and cutting them in on deals that made them rich, current and former employees said.

It was a marriage of mutual convenience. As Freeport prospered into a company with $2.3 billion in revenues, it also became among the biggest - in some years the biggest - source of revenue for the government. It remains so.

Freeport says that it provided Indonesia with $33 billion in direct and indirect benefits from 1992 to 2004, almost 2 percent of the country's gross domestic product. With gold prices hitting a 25-year high of $540 an ounce this month, the company estimates it will pay the government $1 billion this year.

With Suharto's ouster in 1998, after 30 years of unchallenged power, Freeport's special place was left vulnerable. But its importance to Indonesia's treasury and its carefully cultivated cocoon of support have helped secure it against challenges from local people, environmental groups, and even the country's own Environment Ministry.



A multimillion-dollar 2002 study by an American consulting company, Parametrix, paid for by Freeport and its joint venture partner, Rio Tinto, and not previously made public, noted that the rivers upstream and the wetlands inundated with waste were now "unsuitable for aquatic life." The report was made available to *The Times* by the Environment Ministry.

Freeport says it strives to mitigate the environmental effect of its mine, while also maximizing the benefits to its shareholders. *The Times* made repeated requests to Freeport and to the Indonesian government to visit the mine and its surrounding area, which requires special permission for journalists. All were turned down.

Freeport refused to make any official available for an interview and would respond to questions only in writing. A cover letter signed by its legal counsel, Stanley S. Arkin, said that Grasberg is a copper mine, with the gold retrieved as a byproduct, and that many journalists had visited the mine before the government tightened its rules in the 1990's. "Freeport has nothing to hide," Mr. Arkin wrote.

Indeed, at Grasberg, Freeport-McMoRan Copper & Gold mines the world's third-largest copper deposit. The mine also has proven reserves of 46 million ounces of gold, according to the company's 2004 annual report. This year, Mining International, a trade journal, called Freeport's gold mine the biggest in the world.

Social Tensions Erupt

Since Suharto's ouster, Freeport employees say, Mr. Moffett's motto has been "no tall trees," a call to keep as low a profile as possible, for a company that operates on an almost unimaginable scale.

But even before then, the new world that Freeport created was growing smaller. By the mid-1990's, with production in full swing, and the expanding impact of Grasberg's operations ever more apparent, Freeport was beset on all sides.

Environmental groups, able to coordinate more effectively with the Internet, made Freeport a target. Local tribes were more and more restless at seeing little benefit for themselves as vast riches were extracted from their lands. And some military commanders in Papua saw Grasberg's increasing value as ripe for the plucking.

To fortify itself, Freeport, working hand in hand with Indonesian military intelligence officers, began monitoring the e-mail messages and telephone conversations of its environmental opponents, said an employee who worked on the program and read the e-mail messages.

The company also set up its own system to intercept e-mail messages, according to former and current employees, by establishing a bogus environmental group of its own, which asked people to register online with a password. As is often the case, many who registered used the same password for their own messages, which then allowed the company to tap in.

Freeport's lawyers were nervous, a person who was at the company at the time said, but decided that nothing prohibited the company legally from reading e-mail messages abroad.

Social tensions around the mine, meanwhile, were fast growing, as was Papua's population. Papua, mostly animist and Christian after long years of missionary work, is distinct in many ways from the rest of Indonesia, the world's largest Muslim country.

Almost from Indonesia's independence, the province had rumblings of a separatist movement. Throughout Indonesia the military, a deeply nationalist institution, finances itself by setting up legal enterprises like shopping centers and hotels, or illicit ones, like logging. In Papua, the Grasberg mine became a chance for the military not only to profit but also to deepen its presence in a province where it had barely a toehold before Freeport arrived.

For many years Freeport maintained its own security force, while the Indonesian military battled a weak, low-level insurgency. But slowly their security needs became entwined.

"Where Freeport really took it on the chin is the military who came in had no vehicles, and they would commandeer a Freeport bus or a Freeport driver," said the Rev. David B. Lowry, an Episcopal minister hired by Mr. Moffett to oversee social programs. "We had no policies at that time."

No investigation directly linked Freeport to human rights violations, but increasingly Papuans associated it with the abuses of Indonesian military units, in some cases using company facilities.

An Australian anthropologist, Chris Ballard, who worked for Freeport, and Abigail Abrash, an American human rights campaigner, estimated that 160 people had been killed by the military between

1975 and 1997 in the mine area and its surroundings.

Finally, in March 1996, long-simmering anger at the company erupted in rioting when anti-mine sentiment among different groups coalesced into what was perhaps the biggest threat to the company to this day.

The mine and its mill were shut down for three days. Rioters destroyed $3 million of equipment and ransacked offices.

The company intercepted e-mail messages that, according to two persons who read them at the time, suggested that certain military units, the community and environmental groups were working together.

One e-mail exchange, between a community leader and the head of an environmental group, was filled with tactical military intelligence, according to a person who read the messages. In another exchange, an environmental leader urged the group's members to pull out because the demonstrations had turned violent.

Freeport told *The Times* that local leaders later met with company officials and said "they had provoked the disturbances as a means of expressing their aspiration to receive greater benefits from our operations."

In recent interviews, current and former Freeport officials recalled how they were stunned when, among those rioting, they saw men with military haircuts, combat boots and walkie-talkies. They seemed to be directing the rioters, at one point, to a Freeport laboratory, which they ransacked.

It was not long before a worried Mr. Moffett flew out to Indonesia in the company jet.

Freeport refused to comment on the meeting that followed. But a company official who was there recounted that Mr. Moffett met with a group of senior Indonesian military officers at the Sheraton Hotel in the lowland town of Timika, near the mine. The all-powerful Gen. Prabowo Subianto, son-in-law of President Suharto and commander of the Indonesian Special Forces, presided.

"Mr. Moffett, to protect you, to protect your company, you have to help the military here," General Prabowo began, according to the company employee who was present.

Mr. Moffett is said to have replied: "Just tell me what I need to do."

The Cost of Security

Each military service drew up its wish list, current and former company employees said.

In short order, Freeport spent $35 million on military infrastructure - barracks, headquarters, mess halls, roads - and it also gave the commanders 70 Land Rovers and Land Cruisers, which were replaced every few years. Everybody got something, even the Navy and Air Force.

The company had already hired a former CIA operative, and on his recommendation, it now approached a military attaché at the American Embassy in Jakarta, and persuaded him to join the company, according to former and current employees. Two more former American military officers were hired, and a special department, called the Emergency Planning Operation, was set up to handle the company's new relationship with the Indonesian military.

The new department began making direct monthly payments to Indonesian military commanders, while the Security Risk Management office handled the payments to the police, according to company documents and current and former employees.

"They signed a pact with the devil," said an American who was part of Freeport's security operations at the time, and who agreed with the company's decision.

Freeport gave the military and the police in Papua at least $20 million from 1998 to May 2004, according to company documents. In interviews, current and former employees said that at least an additional $10 million was also paid during those years.

Seven years of accounting records were provided to *The Times* by an individual close to the company. Additional records for three years were provided by Global Witness, a nongovernment organization, and which released a report last July, "Paying for Protection," about Freeport's relations with the Indonesian military.

Diarmid O'Sullivan, who works for Global Witness in London, criticized the payments. It may be necessary for a company to help governments with security, he said, but "they should give the money through the proper channels, in a transparent way."

Freeport told The Times, "Our books and records are transparent and accurately reflect the support that we provide."

That support, the company said in its responses, included "mitigating living costs," as well as "infrastructure, catered food and dining hall costs, housing, fuel, travel, vehicle repairs, allowances to cover incidental and administrative costs, and community assistance programs conducted by the military and police."

The company said all of its expenditures were subject to a budget review process.

The records received by The Times showed payments to individual military officers listed under things like "food cost," "administrative services" and "monthly supplement."

Current and former employees said the accounting categories did not reflect what the money was actually used for, and that it was likely that much of the money went into the officers' pockets. The commanders who received the money did not have to sign receipts, current and former employees said.

Asked if there was a reason Freeport would give money directly to military officers, Father Lowry, who retired in March 2004, but remained a consultant to Freeport until June, said, "I can't think of a good one."

The records show that the largest recipient was the commander of the troops in the Freeport area, Lt. Col. Togap F. Gultom.

During six months in 2001, he was given just under $100,000 for "food costs," according to the company records, and more than $150,000 the following year. Freeport gave at least 10 other commanders a total of more than $350,000 for "food costs" in 2002, according to the records.

Colonel Gultom declined to be interviewed.

Those payments were made to individual officers, current and former employees said, even though since the riots Freeport had allowed soldiers to eat in the company's mess and had trucked food to more distant military kitchens. "Three meals a day, seven days a week," a former official said.

Freeport also gave commanders commercial airplane tickets for themselves and their wives and children. Generals flew first or business class and lower ranking officers flew economy, said Brig. Gen. Ramizan Tarigan, who received $14,000 worth of tickets in 2002 for himself and his family.

General Tarigan, who held a senior police post, said that police officers were allowed to accept airplane tickets because their pay was so low - as a general, his base salary was roughly $400 a month - but that it was in violation of police regulations to receive cash payments.

In April 2002, the company gave the senior commander of forces in Papua, Maj. Gen. Mahidin Simbolon, more than $64,000, for what was described in Freeport's books as "fund for military project plan 2002." Eight months later, in December, he was given more than $67,000 for a "humanitarian civic action project." The payments were first reported by Global Witness.

General Simbolon, who is now inspector general of the Indonesian Army, declined requests to be interviewed.

A former Freeport employee who was involved in making those payments said the company could not be certain how much of the money General Simbolon actually spent on those projects.

Unsolved Killings

By 2003, following the Enron scandal and passage of the Sarbanes-Oxley Act, which imposed more rigid accounting practices on companies, Freeport began making payments to military and police units instead of individual officers, according to records and current and former employees.

The company paid police units in Papua slightly under $1 million in 2003, according to the records, listed under items like "monthly supplement payment," "administrative costs" and "administrative support."

Freeport told *The Times* that "company policies take into account the potential for human rights abuses in determining what types of assistance to provide."

According to the records received by The Times, the police Mobile Brigade, a paramilitary force often cited by the State Department for its brutality, received more than $200,000 in 2003.

In its 2003 annual human rights report, the State Department said soldiers from the Mobile Brigade "continued to commit numerous serious human rights violations, including extrajudicial killings, torture, rape, and arbitrary detention." It cited no specific incidents from Papua.

There was another reason for extra care by the company.

In August 2002, three teachers employed by Freeport, including two Americans, were killed in an ambush on a company road patrolled by the military that Freeport had paid to protect its employees. Three years later, the F.B.I. is still investigating and the reasons for the killings have not been determined. Freeport said that it could not comment on the investigation.

The United States indicted a Papuan, Anthonius Wamang, in 2004. But it has yet to receive the full cooperation of the military, several American officials said.

Freeport employees and American officials said the killings could have been part of a turf war between the military and the police, each of which wanted access to Freeport payments.

An initial report by the Indonesian police pointed to the Indonesia military, and some Freeport and Bush administration officials have said they suspect some level of military involvement.

The police report suggested that the motivation was that Freeport was threatening to cut its support to soldiers. Soldiers assigned to Papua have "high expectations," the report said, but recently, "their perks, such as vehicles, telephones, etc., were reduced."

Questions of Accountability

Freeport has resisted nearly any detailed disclosure of its payments to the military, saying they are legal and even required under Indonesian law.

Marsillam Simanjuntak, who was minister of justice and later attorney general in one of the first governments after the fall of President Suharto, said it was a violation of Indonesian law for soldiers or police officers to accept payments from a company. "Of course, it's illegal," he said.

But many companies do it, he said. The better question to ask, he said, was, "Is it allowed by the laws of the United States?"

This year, the New York City pension funds submitted a shareholder resolution asking Freeport to review its policy on paying the police and military. They argued that it could violate the Foreign Corrupt Practices Act, which forbids American companies from paying bribes to foreign officials. Freeport opposed the resolution.

In 2002, the funds submitted a similar resolution demanding that Freeport disclose how much it was paying to the military. Freeport kept it off the ballot.

In later filings with the Securities and Exchange Commission, Freeport reported that it had paid the military a total of $4.7 million in 2001, and $5.6 million in 2002. The company did not indicate whether the money was paid into commanders' personal accounts, or what the money was used for.

Freeport, in its responses, said it was complying with the Voluntary Principles on Security and Human Rights, a set of guidelines drawn up by the State Department. They recognize that natural resource companies "may be required or expected to contribute to, or otherwise reimburse, the costs of protecting company facilities."

The principles do not address the question of direct payments to individual officers. Nor do they require companies to account for the payments.

Freeport has also said that the payments were required under its Contract of Work, its basic agreement with the government of Indonesia, first signed in 1967 and updated in 1991.

The company declined to provide a copy of the contracts to The Times. A copy of each was provided by Denise Leith, author of "The Politics of Power: Freeport in Suharto's Indonesia." They contained no language requiring payments to the military.

S. Prakash Sethi, head of the International Center for Corporate Accountability, which recently concluded a report on Freeport's development policies in Papua, said that the company had told him that it made "in-kind" contributions to the military, for housing and food, but that he had not been given access to accounting records.

Any direct payments to military officers would be illegal, said Mr. Sethi, an expert on business ethics and corporate social responsibility and a professor at Baruch College. "It's corruption," he said. "It's bribery."

Mine Waste in the Rivers

All the while Freeport sealed its relations with the military, the country's fledgling environment ministry could do little but watch as waste from the mine piled up.

This year Freeport told the Indonesian government that the waste rock in the highlands, 900 feet deep in places, now covers about three square miles.

Down below, nearly 90 square miles of wetlands, once one of the richest freshwater habitats in the world, are virtually buried in mine waste, called tailings, with levels of copper and sediment so high that almost all fish have disappeared, according to environment ministry documents.

The waste, the consistency and color of wet cement, belts down the rivers, and inundates and smothers all in its path, said Russell Dodt, an Australian civil engineer who managed the waste on the wetlands for 10 years until 2004 for Freeport.

About a third of the waste has moved into the coastal estuary, an essential breeding ground for fish, and much of that "was ripped out to sea by the falling tide that acted like a big vacuum cleaner," he said.

But no government, even in Indonesia's new democratic era, has dared encroach on Freeport's prerogatives. The strongest challenge came in 2000, when a feisty politician, Sonny Keraf, who was sympathetic to the Papuans, was appointed environment minister.

Again, Mr. Moffett flew out to Jakarta.

Mr. Keraf initially refused to see the Freeport boss, but eventually agreed, and on the day kept him waiting for an hour and a half. "He came in so arrogant," Mr. Keraf recalled of the meeting in a recent interview, "sitting with his legs crossed."

Freeport refused to comment on the meeting. The American ambassador to Indonesia at the time, Robert Gelbard, said in an interview: "It was a terrible meeting."

Mr. Keraf said that Mr. Moffett had said that his company had never polluted. "I told him that he should spend the money he spent on paying off people not to talk about the mine to properly dispose of the waste," Mr. Keraf said.

Behind the scenes, Mr. Keraf kept up the pressure, angered that the company was using the rivers, forest and wetlands for its mine waste, a process allowed during the Suharto years.

An internal ministry memorandum from 2000 said the mine waste had killed all life in the rivers, and said that this violated the criminal section of the 1997 environmental law.

In January 2001, Mr. Keraf wrote to the coordinating minister for economic affairs, arguing that Freeport should be forced to pay compensation for the rivers, forests and fish that its operations had destroyed.

Six months later, one of his deputies, Masnellyarti Hilman, wrote to Freeport, saying a special environmental commission had recommended that the company stop using the river as a waste chute, and instead build a system of pipes.

She also told Freeport to build sturdier dam-like walls to replace the less solid levees that it used to contain the waste on the wetlands. That practice has continued.

Freeport says that local and regional governments have approved its waste management plans, and that the central government has approved its environmental impact statement and other monitoring plans.

But in a blistering July 2001 letter, Mr. Keraf took the governor of Papua to task for granting Freeport a permit in 1996 to use the rivers for its waste. The governor, Mr. Keraf said, had no authority to grant permits more lenient than the provisions of national laws.

Despite all these efforts, nothing happened. Mr. Keraf was unable to secure the support of other government agencies or his superiors in the cabinet.

In August 2001, a new government came to power, and a less aggressive minister, Nabiel Makarim, replaced Mr. Keraf. At first, he, too, talked publicly of setting stricter limits on Freeport. Soon his efforts petered out.

The Environment Ministry has begun trying to put teeth into its rules where it can. It brought a criminal suit against the world's largest gold company, Newmont Mining Corporation, for alleged pollution, including a charge of not having a permit for disposing of mine waste into the sea. Newmont has fought the charges vigorously.

But in the case of Freeport, the ministry has had no traction. Freeport still does not hold a permit from the national government to dispose of mine waste, as required by the 1999 hazardous waste regulations, according to Rasio Ridho Sani, assistant deputy for toxic waste management at the ministry. Mr. Arkin, Freeport's counsel, said that the company cooperated well with the environment ministry and that Freeport would not otherwise comment.

"Freeport says their waste is not hazardous waste," Mr. Rasio said. "We cannot say it is not hazardous waste." He said his division and Freeport were now in negotiations on how to resolve the permit question.

'A Massive Die-Off'

The environment ministry was not the first to challenge Freeport over how it has disposed of its waste in Papua.

The Overseas Private Investment Corporation, a United States government agency that insures American corporations for political risk in uncertain corners of the world, revoked Freeport's insurance policy in October 1995.

It was a landmark decision, the first time that the agency had cut off insurance to any American company for environmental or human rights concerns.

In doing so, two environmental experts, Harvey Himberg, an official at the agency, and David Nelson, a consultant, after visiting the mine for several days, issued a report critical of Freeport's operations, especially the huge amounts of waste it had sent into rivers, something that would not be allowed in the United States.

The company went to court to block the report from being made public, and only a redacted version was later released. A person who thought it should be made public provided an uncensored copy to The Times.

Freeport says the report reached "inaccurate conclusions." The company says it has considered a full range of alternatives for managing and disposing of its waste, instead of using the river, and settled on the best one.

A storage area would not be large enough and would require a tall dam in a region of heavy rainfalls and earthquakes, it said. A waste pipeline, rather than the river, would be too costly, prone to landslides and floods.

To the American auditors, such arguments were not convincing.

Freeport "characterizes engineered alternatives as having the highest potential for catastrophic failure when the project otherwise takes credit for legendary feats," the audit noted, like the pipelines more than 60 miles long down the mountains to carry fuel and copper and gold slurry.

At the time, the waste was jumping the riverbanks, "resulting in a massive die-off of vegetation," the report said.

The company threatened to take the agency to court over the cancellation of its insurance. After protracted negotiations, the policy was reinstated for a few months, as a face-saving gesture to Mr. Moffett, according to the head of the agency then, Ruth Harkin. It was not renewed.

Today, many of the same problems persist, but on a much larger scale. A perpetual worry is where to put all the mine's waste - accumulating at a rate of some 700,000 tons a day.

The danger is that the waste rock atop the mountain will trickle out acids into the honeycomb of caverns and caves beneath the mine in a wet climate that gets up to 12 feet of rain a year, say environmental experts who have worked at the mine.

Stuart Miller, an Australian geochemist who manages Freeport's waste rock, said at a mining conference in 2003 that the first acid runoffs began in 1993.

The company can curb much of it today, he said, by blending in the mountain's abundant limestone with the potentially acid producing rock, which is also plentiful. Freeport also says that the company collects the acid runoff and neutralizes it.

But before 2004, the report obtained by The Times by Parametrix, the consulting company who did the study for Freeport, said that the mine had "an excess of acid-generating material."

A geologist who worked at the mine, who declined to be identified because of fear of jeopardizing future employment, said acids were already flowing into the groundwater. Bright green-colored springs could be seen spouting several miles away, he said, a tell-tale sign that the acids had leached out copper. "That meant the acid water traveled a long way," he said.

Freeport says that the springs are "located several miles from our operations in the Lorentz World Heritage site and are not associated with our operations."

The geologist agreed that the springs probably were in the Lorentz park, and said this showed that acids and copper from the mine were affecting the park, considered a world treasure for its ecological diversity.

In the lowlands, the levees needed to contain the waste will eventually reach more than 70 feet high in some places, the company says.

Freeport says that the tailings are not toxic and that the river it uses for its waste meets Indonesian and American drinking water standards for dissolved metals. The coastal estuary, it says, is a "functioning ecosystem."

The Parametrix report shows copper levels in surface waters high enough to kill sensitive aquatic life in a short time, said Ann Maest, a geochemist who consults on mining issues. The report showed that nearly half of the sediment samples in parts of the coastal estuary were toxic to the sensitive aquatic organisms at the bottom of the food chain, she said.

The amount of sediment presents another problem. Too many suspended solids in water can smother aquatic life. Indonesian law says they should not exceed 400 milligrams per liter.

Freeport's waste contained 37,500 milligrams as the river entered the lowlands, according to an environment ministry's field report in 2004, and 7,500 milligrams as the river entered the Arafura Sea.

Freeport would not comment on the measurements. The company says it spent $30 million on environmental programs in 2004, and planted 50,000 mangrove seedlings last year as part of its reclamation efforts. It says cash crops can be grown on the waste with the addition of nutrients, and has begun demonstration projects.

An Uneasy Coexistence

If the accumulating waste is the despair of critics, for Freeport it signals expanding production. To keep its mine running, the company has increasingly had to play caretaker for the world that it has created.

After the 1996 riots, Freeport began dedicating 1 percent of revenues annually to a development fund for Papua to pay for schools, medical services, roads - whatever the people wanted.

The company built clinics and two hospitals. Other services include programs to control malaria and AIDS and a "recognition" fund for the Kamoro and Amungme tribes of several million dollars which, among other things, gives them shares in the company as part of a compensation package for the lands Freeport is using.

By the end of 2004, Freeport had spent $152 million on the community development fund, the company said.

Mr. Sethi, of the Center for Corporate Accountability, commended Freeport for commissioning the report on the company's development programs, saying that it was the first mining company to do so.

The report, which was released in October, concluded that the company had successfully introduced a human rights training program for its employees and had doubled the number of Papuan employees by 2001. The company was poised to double the number of Papuans in the work force again by 2006, the audit said.

Still, Thom Beanal, the Amungme tribal leader, says the combined weight of the Indonesian government and Freeport has left his people in bad shape. Yes, he said, the company had provided electricity, schools and hospitals, but the infrastructure was built mainly for the benefit of Freeport.

Mr. Beanal, 57, a vocal supporter of independence for Papua, has fought the company from outside and inside. In 2000, he decided that harmony was the better path, and joined the company's advisory board.

In November, he and other Amungme and Komoro tribesmen met with Mr. Moffett at the Sheraton Hotel in Timika. In an interview in Jakarta not long afterward, Mr. Beanal said he told Mr. Moffett that the flood of money from the community fund was ruining people's lives.

When the company arrived, he noted, there were several hundred people in the lowland village of Timika. Now it is home to more than 100,000 in a Wild West atmosphere of too much alcohol, shootouts between soldiers and the police, AIDS and prostitution, protected by the military.

Still more soldiers are on the way. Having negotiated an end to a separatist insurrection this year in another province, Aceh, the government is redeploying soldiers to Papua in a move to defeat the growing enthusiasm for independence, once and for all, and to watch over the province with the world's biggest gold mine. Freeport says its gold ore has 35 years to go.

Mr. Beanal said he was increasingly impatient with the presence of the soldiers and the mine. "We never feel secure there," he said. "What are they guarding? We don't know. Ask Moffett, it's his company."

Evelyn Rusli contributed reporting for this article.

Full story available from The New York Times

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THE COST OF GOLD | THE HIDDEN PAYROLL

Below a Mountain of Wealth, a River of Waste

By JANE PERLEZ and RAYMOND BONNER
Published: December 27, 2005

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JAKARTA, Indonesia - The closest most people will ever get to remote Papua, or the operations of Freeport-McMoRan, is a computer tour using Google Earth to swoop down over the rain forests and glacier-capped mountains where the American company mines the world's largest gold reserve.

Enlarge This Image

Alexandra Boulat/VII, via Associated Press

A view of lowland area where Freeport has sent its mine waste, taken in 2000. By today, almost one billion tons of waste have been sent down the river from the copper and gold mine.

With a few taps on a keyboard, satellite images quickly reveal the deepening spiral that Freeport has bored out of its Grasberg mine as it pursues a virtually bottomless store of gold hidden inside. They also show a spreading soot-colored bruise of almost a billion tons of mine waste that the New Orleans-based company has dumped directly into a jungle river of what had been one of the world's last untouched landscapes.

What is far harder to discern is the intricate web of political and military ties that have helped shield Freeport from the rising pressures that other gold miners have faced to clean up their practices. Only lightly touched by a scant regulatory regime, and cloaked in the

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The Cost of Gold: Treasure of Yanacocha

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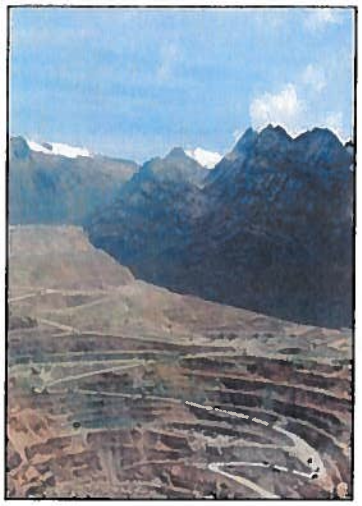
protection of the military, Freeport has managed to maintain a nearly impenetrable redoubt on the easternmost Indonesian province as it taps one of the country's richest assets.

Months of investigation by The New York Times revealed a level of contacts and financial support to the military not fully disclosed by Freeport, despite years of requests by shareholders concerned about potential violations of American laws and the company's relations with a military whose human rights record is so blighted that the United States severed ties for a dozen years until November.

Company records obtained by The Times show that from 1998 through 2004, Freeport gave military and police generals, colonels, majors and captains, and military units, nearly $20 million. Individual commanders received tens of thousands of dollars, in one case up to $150,000, according to the documents. They were provided by an individual close to Freeport and confirmed as authentic by current and former employees.

Freeport said in a written response to The Times that it had "taken appropriate steps" in accordance with American and Indonesian laws to provide a secure working environment for its more than 18,000 employees and contract workers.



Freeport-McMoRan Copper and Gold, an American company, operates this mine in the easternmost province of Indonesia, on the island of New Guinea.

Muchtar Zakaria/Associated Press
James R. Moffett, the chairman of Freeport McMoRan, in 1998.

Timur Angin/Imaji, for The New York Times
Thom Beanal is the Amungme tribal leader.

"There is no alternative to our reliance on the Indonesian military and police in this regard," the company said. "The need for this security, the support provided for such security, and the procedures governing such support, as well as decisions regarding our relationships with the Indonesian government and its security institutions, are ordinary business activities."

While mining and natural resource companies sometimes contribute to the costs to foreign governments in securing their operations, payments to individual officers raise questions of bribes, said several people interviewed by The Times, including a former Indonesian attorney general, who said it was illegal under Indonesian law for officers to accept direct payments.

The Times's investigation also found that, according to one current and two former company officials who helped set up a covert program, Freeport intercepted e-mail messages to spy on its environmental opponents. Freeport declined to comment.

More than 30 current and former Freeport employees and consultants were interviewed over the past several months for this article. Very few would speak for attribution, saying they feared the company's retribution.

Freeport's support of the military is one measure of its extraordinary working environment. In the 1960's, when Freeport entered Papua, its explorers were among the very first outsiders ever encountered by local tribesmen swathed only in penis gourds and armed with bows and arrows.

Since then, Freeport has built what amounts to an entirely new society and economy, all of its own making. Where nary a road existed, Freeport, with the help of the San Francisco-based construction company Bechtel, built virtually every stitch of infrastructure over impossible terrain in engineering feats that it boasts are unparalleled on the planet.

That history, Papua's extreme remoteness and the company's long ties to the Indonesian government have given Freeport exceptional sway over a 21st-century version of the old company town, built on a scale unique even by the standards of modern mega-mining.

"If any operation like this was put forward now, it wouldn't be allowed," said Witoro Soelarno, a senior investigator at the Department of Energy and Mineral Resources, who has visited the mine many times. "But now the operation exists, and many people depend on it."

For years, to secure Freeport's domain, James R. Moffett, a Louisiana-born geologist who is the company chairman, assiduously courted Indonesia's longtime dictator, President Suharto, and his cronies, having Freeport pay for their vacations and some of their children's college education, and cutting them in on deals that made them rich, current and former employees said.

It was a marriage of mutual convenience. As Freeport prospered into a company with $2.3 billion in revenues, it also became among the biggest - in some years the biggest - source of revenue for the government. It remains so.

Freeport says that it provided Indonesia with $33 billion in direct and indirect benefits from 1992 to 2004, almost 2 percent of the country's gross domestic product. With gold prices hitting a 25-year high of $540 an ounce this month, the company estimates it will pay the government $1 billion this year.

With Suharto's ouster in 1998, after 30 years of unchallenged power, Freeport's special place was left vulnerable. But its importance to Indonesia's treasury and its carefully cultivated cocoon of support have helped secure it against challenges from local people, environmental groups, and even the country's own Environment Ministry.

Letters and other documents provided to The Times by government officials showed that the Environment Ministry repeatedly warned the company since 1997 that Freeport was breaching environmental laws. They also reveal the ministry's deep frustration.

At one point last year, a ministry scientist wrote that the mine's production was so huge, and regulatory tools so weak, that it was like "painting on clouds" to persuade Freeport to comply with the ministry's requests to reduce environmental damage.

That frustration stems from an operation that, by Freeport's own estimates, will generate an estimated six billion tons of waste before it is through - more than twice as much earth as was excavated for the Panama Canal.

Much of that waste has already been dumped in the mountains surrounding the mine or down a system of rivers that descends steeply onto the island's low-lying wetlands, close to Lorentz National Park, a pristine rain forest that has been granted special status by the United Nations.

A multimillion-dollar 2002 study by an American consulting company, Parametrix, paid for by Freeport and its joint venture partner, Rio Tinto, and not previously made public, noted that the rivers upstream and the wetlands inundated with waste were now "unsuitable for aquatic life." The report was made available to The Times by the Environment Ministry.

Freeport says it strives to mitigate the environmental effect of its mine, while also maximizing the benefits to its shareholders. The Times made repeated requests to Freeport and to the Indonesian government to visit the mine and its surrounding area, which requires special permission for journalists. All were turned down.

Freeport refused to make any official available for an interview and would respond to questions only in writing. A cover letter signed by its legal counsel, Stanley S. Arkin, said that Grasberg is a copper mine, with the gold retrieved as a byproduct, and that many journalists had visited the mine before the government tightened its rules in the 1990's. "Freeport has nothing to hide," Mr. Arkin wrote.

Indeed, at Grasberg, Freeport-McMoRan Copper & Gold mines the world's third-largest copper deposit. The mine also has proven reserves of 46 million ounces of gold, according to the company's 2004 annual report. This year, Mining International, a trade journal, called Freeport's gold mine the biggest in the world.

Social Tensions Erupt

Since Suharto's ouster, Freeport employees say, Mr. Moffett's motto has been "no tall trees," a call to keep as low a profile as possible, for a company that operates on an almost unimaginable scale.

But even before then, the new world that Freeport created was growing smaller. By the mid-1990's, with production in full swing, and the expanding impact of Grasberg's operations ever more apparent, Freeport was beset on all sides.

Environmental groups, able to coordinate more effectively with the Internet, made Freeport a target. Local tribes were more and more restless at seeing little benefit for themselves as vast riches were extracted from their lands. And some military commanders in Papua saw Grasberg's increasing value as ripe for the plucking.

To fortify itself, Freeport, working hand in hand with Indonesian military intelligence officers, began monitoring the e-mail messages and telephone conversations of its environmental opponents, said an employee who worked on the program and read the e-mail messages.

The company also set up its own system to intercept e-mail messages, according to former and current employees, by establishing a bogus environmental group of its own, which asked people to register online with a password. As is often the case, many who registered used the same password for their own messages, which then allowed the company to tap in.

Freeport's lawyers were nervous, a person who was at the company at the time said, but decided that nothing prohibited the company legally from reading e-mail messages abroad.

Social tensions around the mine, meanwhile, were fast growing, as was Papua's population. Papua, mostly animist and Christian after long years of missionary work, is distinct in many ways from the rest of Indonesia, the world's largest Muslim country.

Almost from Indonesia's independence, the province had rumblings of a separatist movement. Throughout Indonesia the military, a deeply nationalist institution, finances itself by setting up legal enterprises like shopping centers and hotels, or illicit ones, like logging. In Papua, the Grasberg mine became a chance for the military not only to profit but also to deepen its presence in a province where it had barely a toehold before Freeport arrived.

For many years Freeport maintained its own security force, while the Indonesian military battled a weak, low-level insurgency. But slowly their security needs became entwined.

"Where Freeport really took it on the chin is the military who came in had no vehicles, and they would commandeer a Freeport bus or a Freeport driver," said the Rev. David B. Lowry, an Episcopalminister hired by Mr. Moffett to oversee social programs. "We had no policies at that time."

No investigation directly linked Freeport to human rights violations, but increasingly Papuans associated it with the abuses of Indonesian military units, in some cases using company facilities.

An Australian anthropologist, Chris Ballard, who worked for Freeport, and Abigail Abrash, an American human rights campaigner, estimated that 160 people had been killed by the military between 1975 and 1997 in the mine area and its surroundings.

Finally, in March 1996, long-simmering anger at the company erupted in rioting when anti-mine sentiment among different groups coalesced into what was perhaps the biggest threat to the company to this day.

The mine and its mill were shut down for three days. Rioters destroyed $3 million of equipment and ransacked offices.

The company intercepted e-mail messages that, according to two persons who read them at the time, suggested that certain military units, the community and environmental groups were working together.

One e-mail exchange, between a community leader and the head of an environmental group, was filled with tactical military intelligence, according to a person who read the messages. In another exchange, an environmental leader urged the group's members to pull out because the demonstrations had turned violent.

Freeport told The Times that local leaders later met with company officials and said "they had provoked the disturbances as a means of expressing their aspiration to receive greater benefits from our operations."

In recent interviews, current and former Freeport officials recalled how they were stunned when, among those rioting, they saw men with military haircuts, combat boots and walkie-talkies. They seemed to be directing the rioters, at one point, to a Freeport laboratory, which they ransacked.

It was not long before a worried Mr. Moffett flew out to Indonesia in the company jet.

Freeport refused to comment on the meeting that followed. But a company official who was there recounted that Mr. Moffett met with a group of senior Indonesian military officers at the Sheraton Hotel in the lowland town of Timika, near the mine. The all-powerful Gen. Prabowo Subianto, son-in-law of President Suharto and commander of the Indonesian Special Forces, presided.

"Mr. Moffett, to protect you, to protect your company, you have to help the military here," General Prabowo began, according to the company employee who was present.

Mr. Moffett is said to have replied: "Just tell me what I need to do."

The Cost of Security

Each military service drew up its wish list, current and former company employees said.

In short order, Freeport spent $35 million on military infrastructure - barracks, headquarters, mess halls, roads - and it also gave the commanders 70 Land Rovers and Land Cruisers, which were replaced every few years. Everybody got something, even the Navy and Air Force.

The company had already hired a former C.I.A. operative, and on his recommendation, it now approached a military attaché at the American Embassy in Jakarta, and persuaded him to join the company, according to former and current employees. Two more former American military officers were hired, and a special department, called the Emergency Planning Operation, was set up to handle the company's new relationship with the Indonesian military.

The new department began making direct monthly payments to Indonesian military commanders, while the Security Risk Management office handled the payments to the police, according to company documents and current and former employees.

"They signed a pact with the devil," said an American who was part of Freeport's security operations at the time, and who agreed with the company's decision.

Freeport gave the military and the police in Papua at least $20 million from 1998 to May 2004, according to company documents. In interviews, current and former employees said that at least an additional $10 million was also paid during those years.

Seven years of accounting records were provided to The Times by an individual close to the company. Additional records for three years were provided by Global Witness, a nongovernment organization, which released a report last July, "Paying for Protection," about Freeport's relations with the Indonesian military.

Diarmid O'Sullivan, who works for Global Witness in London, criticized the payments. It may be necessary for a company to help governments with security, he said, but "they should give the money through the proper channels, in a transparent way."

Freeport told The Times, "Our books and records are transparent and accurately reflect the support that we provide."

That support, the company said in its responses, included "mitigating living costs," as well as "infrastructure, catered food and dining hall costs, housing, fuel, travel, vehicle repairs, allowances to cover incidental and administrative costs, and community assistance programs conducted by the military and police."

The company said all of its expenditures were subject to a budget review process.

The records received by The Times showed payments to individual military officers listed under things like "food cost," "administrative services" and "monthly supplement."

Current and former employees said the accounting categories did not reflect what the money was actually used for, and that it was likely that much of the money went into the officers' pockets. The commanders who received the money did not have to sign receipts, current and former employees said.

Asked if there was a reason Freeport would give money directly to military officers, Father Lowry, who retired in March 2004, but remained a consultant to Freeport until June, said, "I can't think of a good one."

The records show that the largest recipient was the commander of the troops in the Freeport area, Lt. Col. Togap F. Gultom.

During six months in 2001, he was given just under $100,000 for "food costs," according to the company records, and more than $150,000 the following year. Freeport gave at least 10 other commanders a total of more than $350,000 for "food costs" in 2002, according to the records.

Colonel Gultom declined to be interviewed.

Those payments were made to individual officers, current and former employees said, even though since the riots Freeport had allowed soldiers to eat in the company's mess and had trucked food to more distant military kitchens. "Three meals a day, seven days a week," a former official said.

Freeport also gave commanders commercial airplane tickets for themselves and their wives and children. Generals flew first or business class and lower ranking officers flew economy, said Brig. Gen. Ramizan Tarigan, who received $14,000 worth of tickets in 2002 for himself and his family.

General Tarigan, who held a senior police post, said that police officers were allowed to accept airplane tickets because their pay was so low - as a general, his base salary was roughly $400 a month - but that it was in violation of police regulations to receive cash payments.

In April 2002, the company gave the senior commander of forces in Papua, Maj. Gen. Mahidin Simbolon, more than $64,000, for what was described in Freeport's books as "fund for military project plan 2002." Eight months later, in December, he was given more than $67,000 for a "humanitarian civic action project." The payments were first reported by Global Witness.

General Simbolon, who is now inspector general of the Indonesian Army, declined requests to be interviewed.

A former Freeport employee who was involved in making those payments said the company could not be certain how much of the money General Simbolon actually spent on those projects.

Unsolved Killings

By 2003, following the Enron scandal and passage of the Sarbanes-Oxley Act, which imposed more rigid accounting practices on companies, Freeport began making payments to military and police units instead of individual officers, according to records and current and former employees.

The company paid police units in Papua slightly under $1 million in 2003, according to the records, listed under items like "monthly supplement payment," "administrative costs" and "administrative support."

Freeport told The Times that "company policies take into account the potential for human rights abuses in determining what types of assistance to provide."

According to the records received by The Times, the police Mobile Brigade, a paramilitary force often cited by the State

Department for its brutality, received more than $200,000 in 2003.

In its 2003 annual human rights report, the State Department said soldiers from the Mobile Brigade "continued to commit numerous serious human rights violations, including extrajudicial killings, torture, rape, and arbitrary detention." It cited no specific incidents from Papua.

There was another reason for extra care by the company.

In August 2002, three teachers employed by Freeport, including two Americans, were killed in an ambush on a company road patrolled by the military that Freeport had paid to protect its employees. Three years later, the F.B.I. is still investigating and the reasons for the killings have not been determined. Freeport said that it could not comment on the investigation.

The United States indicted a Papuan, Anthonius Wamang, in 2004. But it has yet to receive the full cooperation of the military, several American officials said.

Freeport employees and American officials said the killings could have been part of a turf war between the military and the police, each of which wanted access to Freeport payments.

An initial report by the Indonesian police pointed to the Indonesia military, and some Freeport and Bush administration officials have said they suspect some level of military involvement.

The police report suggested that the motivation was that Freeport was threatening to cut its support to soldiers. Soldiers assigned to Papua have "high expectations," the report said, but recently, "their perks, such as vehicles, telephones, etc., were reduced."

Questions of Accountability

Freeport has resisted nearly any detailed disclosure of its payments to the military, saying they are legal and even required under Indonesian law.

Marsillam Simanjuntak, who was minister of justice and later attorney general in one of the first governments after the fall of President Suharto, said it was a violation of Indonesian law for soldiers or police officers to accept payments from a company. "Of course, it's illegal," he said.

But many companies do it, he said. The better question to ask, he said, was, "Is it allowed by the laws of the United States?"

This year, the New York City pension funds submitted a shareholder resolution asking Freeport to review its policy on paying the police and military. They argued that it could violate the Foreign Corrupt Practices Act, which forbids American companies from paying bribes to foreign officials. Freeport opposed the resolution.

In 2002, the funds submitted a similar resolution demanding that Freeport disclose how much it was paying to the military. Freeport kept it off the ballot.

In later filings with the Securities and Exchange Commission, Freeport reported that it had paid the military a total of $4.7 million in 2001, and $5.6 million in 2002. The company did not indicate whether the money was paid into commanders' personal accounts, or what the money was used for.

Freeport, in its responses, said it was complying with the Voluntary Principles on Security and Human Rights, a set of guidelines drawn up by the State Department. They recognize that natural resource companies "may be required or expected to contribute to, or otherwise reimburse, the costs of protecting company facilities."

The principles do not address the question of direct payments to individual officers. Nor do they require companies to account for the payments.

Freeport has also said that the payments were required under its Contract of Work, its basic agreement with the government of Indonesia, first signed in 1967 and updated in 1991.

The company declined to provide a copy of the contracts to The Times. A copy of each was provided by Denise Leith, author of "The Politics of Power: Freeport in Suharto's Indonesia." They contained no language requiring payments to the military.

S. Prakash Sethi, head of the International Center for Corporate Accountability, which recently concluded a report on Freeport's development policies in Papua, said that the company had told him that it made "in-kind" contributions to the military, for housing and food, but that he had not been given access to accounting records.

Any direct payments to military officers would be illegal, said Mr. Sethi, an expert on business ethics and corporate social responsibility and a professor at Baruch College. "It's corruption," he said. "It's bribery."

Mine Waste in the Rivers

All the while Freeport sealed its relations with the military, the country's fledgling environment ministry could do little but watch as waste from the mine piled up.

This year Freeport told the Indonesian government that the waste rock in the highlands, 900 feet deep in places, now covers about three square miles.

Down below, nearly 90 square miles of wetlands, once one of the richest freshwater habitats in the world, are virtually buried in mine waste, called tailings, with levels of copper and sediment so high that almost all fish have disappeared, according to environment ministry documents.

The waste, the consistency and color of wet cement, belts down the rivers, and inundates and smothers all in its path, said Russell Dodt, an Australian civil engineer who managed the waste on the wetlands for 10 years until 2004 for Freeport.

About a third of the waste has moved into the coastal estuary, an essential breeding ground for fish, and much of that "was ripped out to sea by the falling tide that acted like a big vacuum cleaner," he said.

But no government, even in Indonesia's new democratic era, has dared encroach on Freeport's prerogatives. The strongest challenge came in 2000, when a feisty politician, Sonny Keraf, who was sympathetic to the Papuans, was appointed environment minister.

Again, Mr. Moffett flew out to Jakarta.

Mr. Keraf initially refused to see the Freeport boss, but eventually agreed, and on the day kept him waiting for an hour and a half. "He came in so arrogant," Mr. Keraf recalled of the meeting in a recent interview, "sitting with his legs crossed."

Freeport refused to comment on the meeting. The American ambassador to Indonesia at the time, Robert Gelbard, said in an interview: "It was a terrible meeting."

Mr. Keraf said that Mr. Moffett had said that his company had never polluted. "I told him that he should spend the money he spent on paying off people not to talk about the mine to properly dispose of the waste," Mr. Keraf said.

Behind the scenes, Mr. Keraf kept up the pressure, angered that the company was using the rivers, forest and wetlands for its mine waste, a process allowed during the Suharto years.

An internal ministry memorandum from 2000 said the mine waste had killed all life in the rivers, and said that this violated the criminal section of the 1997 environmental law.

In January 2001, Mr. Keraf wrote to the coordinating minister for economic affairs, arguing that Freeport should be forced to pay compensation for the rivers, forests and fish that its operations had destroyed.

Six months later, one of his deputies, Masnellyarti Hilman, wrote to Freeport, saying a special environmental commission had recommended that the company stop using the river as a waste chute, and instead build a system of pipes.

She also told Freeport to build sturdier dam-like walls to replace the less solid levees that it used to contain the waste on the wetlands. That practice has continued.

Freeport says that local and regional governments have approved its waste management plans, and that the central government has approved its environmental impact statement and other monitoring plans.

But in a blistering July 2001 letter, Mr. Keraf took the governor of Papua to task for granting Freeport a permit in 1996 to use the rivers for its waste. The governor, Mr. Keraf said, had no authority to grant permits more lenient than the provisions of national laws.

Despite all these efforts, nothing happened. Mr. Keraf was unable to secure the support of other government agencies or his superiors in the cabinet.

In August 2001, a new government came to power, and a less aggressive minister, Nabiel Makarim, replaced Mr. Keraf. At first, he, too, talked publicly of setting stricter limits on Freeport. Soon his efforts petered out.

The Environment Ministry has begun trying to put teeth into its rules where it can. It brought a criminal suit against the world's largest gold company, Newmont Mining Corporation, for alleged pollution, including a charge of not having a permit for disposing of mine waste into the sea. Newmont has fought the charges vigorously.

But in the case of Freeport, the ministry has had no traction. Freeport still does not hold a permit from the national government to dispose of mine waste, as required by the 1999 hazardous waste regulations, according to Rasio Ridho Sani, assistant deputy for toxic waste management at the ministry. Mr. Arkin, Freeport's counsel, said that the company cooperated well with the environment ministry and that Freeport would not otherwise comment.

"Freeport says their waste is not hazardous waste," Mr. Rasio said. "We cannot say it is not hazardous waste." He said his division and Freeport were now in negotiations on how to resolve the permit question.

'A Massive Die-Off'

The environment ministry was not the first to challenge Freeport over how it has disposed of its waste in Papua.

The Overseas Private Investment Corporation, a United States government agency that insures American corporations for political risk in uncertain corners of the world, revoked Freeport's insurance policy in October 1995.

It was a landmark decision, the first time that the agency had cut off insurance to any American company for environmental or human rights concerns.

In doing so, two environmental experts, Harvey Himberg, an official at the agency, and David Nelson, a consultant, after visiting the mine for several days, issued a report critical of Freeport's operations, especially the huge amounts of waste it had sent into rivers, something that would not be allowed in the United States.

The company went to court to block the report from being made public, and only a redacted version was later released. A person who thought it should be made public provided an uncensored copy to The Times.

Freeport says the report reached "inaccurate conclusions." The company says it has considered a full range of alternatives for managing and disposing of its waste, instead of using the river, and settled on the best one.

A storage area would not be large enough and would require a tall dam in a region of heavy rainfalls and earthquakes, it said. A waste pipeline, rather than the river, would be too costly, prone to landslides and floods.

To the American auditors, such arguments were not convincing.

Freeport "characterizes engineered alternatives as having the highest potential for catastrophic failure when the project otherwise takes credit for legendary feats," the audit noted, like the pipelines more than 60 miles long down the mountains to carry fuel and copper and gold slurry.

At the time, the waste was jumping the riverbanks, "resulting in a massive die-off of vegetation," the report said.

The company threatened to take the agency to court over the cancellation of its insurance. After protracted negotiations, the policy was reinstated for a few months, as a face-saving gesture to Mr. Moffett, according to the head of the agency then, Ruth Harkin. It was not renewed.

Today, many of the same problems persist, but on a much larger scale. A perpetual worry is where to put all the mine's waste - accumulating at a rate of some 700,000 tons a day.

The danger is that the waste rock atop the mountain will trickle out acids into the honeycomb of caverns and caves beneath the mine in a wet climate that gets up to 12 feet of rain a year, say environmental experts who have worked at the mine.

Stuart Miller, an Australian geochemist who manages Freeport's waste rock, said at a mining conference in 2003 that the first acid runoffs began in 1993.

The company can curb much of it today, he said, by blending in the mountain's abundant limestone with the potentially acid producing rock, which is also plentiful. Freeport also says that the company collects the acid runoff and neutralizes it.

But before 2004, the report obtained by The Times by Parametrix, the consulting company who did the study for Freeport, said that the mine had "an excess of acid-generating material."

A geologist who worked at the mine, who declined to be identified because of fear of jeopardizing future employment, said acids were already flowing into the groundwater. Bright green-colored springs could be seen spouting several miles away, he said, a tell-tale sign that the acids had leached out copper. "That meant the acid water traveled a long way," he said.

Freeport says that the springs are "located several miles from our operations in the Lorentz World Heritage site and are not associated with our operations."

The geologist agreed that the springs probably were in the Lorentz park, and said this showed that acids and copper from the mine were affecting the park, considered a world treasure for its ecological diversity.

In the lowlands, the levees needed to contain the waste will eventually reach more than 70 feet high in some places, the company says.

Freeport says that the tailings are not toxic and that the river it uses for its waste meets Indonesian and American drinking water standards for dissolved metals. The coastal estuary, it says, is a "functioning ecosystem."

The Parametrix report shows copper levels in surface waters high enough to kill sensitive aquatic life in a short time, said Ann Maest, a geochemist who consults on mining issues. The report showed that nearly half of the sediment samples in parts of the coastal estuary were toxic to the sensitive aquatic organisms at the bottom of the food chain, she said.

The amount of sediment presents another problem. Too many suspended solids in water can smother aquatic life. Indonesian law says they should not exceed 400 milligrams per liter.

Freeport's waste contained 37,500 milligrams as the river entered the lowlands, according to an environment ministry's field report in 2004, and 7,500 milligrams as the river entered the Arafura Sea.

Freeport would not comment on the measurements. The company says it spent $30 million on environmental programs in 2004, and planted 50,000 mangrove seedlings last year as part of its reclamation efforts. It says cash crops can be grown on the waste with the addition of nutrients, and has begun demonstration projects.

An Uneasy Coexistence

If the accumulating waste is the despair of critics, for Freeport it signals expanding production. To keep its mine running, the company has increasingly had to play caretaker for the world that it has created.

After the 1996 riots, Freeport began dedicating 1 percent of revenues annually to a development fund for Papua to pay for schools, medical services, roads - whatever the people wanted.

The company built clinics and two hospitals. Other services include programs to control malaria and AIDS and a "recognition" fund for the Kamoro and Amungme tribes of several million dollars which, among other things, gives them shares in the company as part of a compensation package for the lands Freeport is using.

By the end of 2004, Freeport had spent $152 million on the community development fund, the company said.

Mr. Sethi, of the Center for Corporate Accountability, commended Freeport for commissioning the report on the company's development programs, saying that it was the first mining company to do so.

The report, which was released in October, concluded that the company had successfully introduced a human rights training program for its employees and had doubled the number of Papuan employees by 2001. The company was poised to double the number of Papuans in the work force again by 2006, the audit said.

Still, Thom Beanal, the Amungme tribal leader, says the combined weight of the Indonesian government and Freeport has left his people in bad shape. Yes, he said, the company had provided electricity, schools and hospitals, but the infrastructure was built mainly for the benefit of Freeport.

Mr. Beanal, 57, a vocal supporter of independence for Papua, has fought the company from outside and inside. In 2000, he decided that harmony was the better path, and joined the company's advisory board.

In November, he and other Amungme and Komoro tribesmen met with Mr. Moffett at the Sheraton Hotel in Timika. In an interview in Jakarta not long afterward, Mr. Beanal said he told Mr. Moffett that the flood of money from the community fund was ruining people's lives.

When the company arrived, he noted, there were several hundred people in the lowland village of Timika. Now it is home to more than 100,000 in a Wild West atmosphere of too much alcohol, shootouts between soldiers and the police, AIDS and prostitution, protected by the military.

Still more soldiers are on the way. Having negotiated an end to a separatist insurrection this year in another province, Aceh, the government is redeploying soldiers to Papua in a move to defeat the growing enthusiasm for independence, once and for all, and to watch over the province with the world's biggest gold mine. Freeport says its gold ore has 35 years to go.

Mr. Beanal said he was increasingly impatient with the presence of the soldiers and the mine. "We never feel secure there," he said. "What are they guarding? We don't know. Ask Moffett, it's his company."

Evelyn Rusli contributed reporting for this article.

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