

Glencairn Gold CORP  
Form 6-K  
December 21, 2006

**FORM 6-K**

UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
Washington, D.C. 20549

Report of Foreign Issuer

Pursuant to Rule 13a-16 or 15d-16 of  
the Securities Exchange Act of 1934

For the month of **December 2006**

Commission File Number **001-32412**

**GLENCAIRN GOLD CORPORATION**  
(Translation of registrant's name into English)

**500 6 Adelaide St. East**  
**Toronto, Ontario, Canada M5C 1H6**  
(Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover Form 20-F or Form 40-F

Form 20-F       Form 40-F

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(1):

**Note:** Regulation S-T Rule 101(b)(1) only permits the submission in paper of a Form 6-K if submitted solely to provide an attached annual report to security holders.

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Indicate by check mark whether by furnishing the information contained in this Form, the registrant is also thereby furnishing the information to the Commission pursuant to rule 12g3-2(b) under the Securities Exchange Act of 1934.

Yes  No

If Yes is marked, indicate below the file number assigned to the registrant in connection with Rule 12g3-2(b) 82

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**SIGNATURE**

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

**GLENCAIRN GOLD CORPORATION**

By: Lorna MacGillivray  
Lorna MacGillivray  
Corporate Secretary and General Counsel

Date: December 20, 2006

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**TECHNICAL REPORT ON LA LIBERTAD PROJECT, NICARAGUA**

**PREPARED FOR GLENCAIRN GOLD CORPORATION**

**Report for NI 43-101**

**Author:**

**Peter A. Lacroix, P.Eng.**

**October 31, 2006**

Scott Wilson RPA

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## 1 SUMMARY

### EXECUTIVE SUMMARY

Scott Wilson Roscoe Postle Associates Inc. (Scott Wilson RPA) was retained by Glencairn Gold Corporation (Glencairn) to prepare an independent Technical Report on La Libertad Gold Mine (La Libertad), also known as Cerro Mojón or Mojón, 32 km northeast of Juigalpa,

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Republic of Nicaragua. The primary purpose of this report is to document Scott Wilson RPA's recent mineral resource estimate for La Libertad, summarize previous work on the property, and report on the current status of the mine. On July 6, 2006, Glencairn purchased a 100% interest in Desarrollo Minero de Nicaragua (DESMINIC) from Yamana Gold Inc. Principal assets of the subject property, which is included in the purchase, are the exploitation and exploration concessions that contain the gold deposits, a 3,000 tpd open pit mining and heap leach operation, and associated equipment and infrastructure.

Scott Wilson RPA has estimated an indicated mineral resource for La Libertad of 16.3 Mt grading 1.52 g/t Au for a total metal content of 794 koz Au. An additional 4.3 Mt grading 1.68 g/t Au, or 230 koz Au, have been estimated in the inferred category. These estimates are based on a three-dimensional block model, with individual outlines of zones or lenses interpreted from an extensive geological database. The model is a percent model and only those portions of blocks within the interpreted outlines greater than or equal to 0.6 g/t Au remaining as at June 30, 2006 are reported. Silver content has not been estimated, nor has it been reported in previous estimates. The silver-gold ratio is typically 4.5:1.

The reporting cut-off of 0.6 g/t Au was calculated by Scott Wilson RPA based on the previous owner's forecast plan of operating costs and gold production combined with an assumed net realized price of US\$500 per ounce Au. The plan is achieved by a combination of higher mining productivity and feed throughput coupled with higher grades and higher metallurgical recovery than what has been experienced so far in 2006.

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The calculated cut-off may have to be revised, depending on future performance and the long term plans for the mine.

CIM definitions (December 2005) were followed for the classification of mineral resources. For the most part, that portion of the mineral resource classified as indicated coincides with the interior of the drilled area of La Libertad. The average drill spacing within this area is approximately 36 m in the plane of the structure. The inferred portion occupies the fringes of the deposit as well as areas where drilling is too widely spaced to predict grade and structural continuity with confidence.

The estimate is based on the results from 732 reverse circulation (RC) drill holes and 31 core (diamond) drill holes. Not all holes and/or sample intervals were used in the estimate. Some of the holes fall outside the reported zones and either serve to confine the estimates or reside outside the area of interest. A number of holes and/or intervals, deemed unreliable for use in modeling, were also excluded from the estimate.

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The extent of the deposit is reasonably well defined, except at depth, where further drilling is required. Since the estimate was confined to only those areas where interpreted outlines were available, the size of the inferred mineral resource is likely understated.

No mineral reserves have been estimated by Scott Wilson RPA. The resources upon which the previously reported reserves are based were estimated in 2002 and are now superseded by the Scott Wilson RPA resource estimate. For the first four months of 2006, the mine has been operating at a loss. Cash costs for that period were US\$805 per ounce Au produced. Glencairn is in the process of reviewing all aspects of the operation, including the operating plans. It is anticipated that a new reserve estimate will be produced as part of that review.

In Scott Wilson RPA's opinion, the drilling and geological database at La Libertad needs to be consolidated. For this estimate, Scott Wilson RPA has relied on a number of

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of different sources for information because there is not a complete database. This should be rectified as soon as possible.

The geological framework used to constrain the grade interpolation is overly complex and should be simplified. In addition, a number of the outlines comprising this framework could not be located. As well, because an interpretation for the oxide/sulphide interface was not provided, Scott Wilson RPA was not able to differentiate between oxide and sulphide resources in their estimate. It is Scott Wilson RPA's opinion that a complete rework of the interpretation is necessary. Although there have been several revisions of the grade model, the basic geological framework has not been updated since 1998. Over 8 Mt have been mined since the mine began operations and invaluable insight has been gained with respect to the various controls and distribution of mineralization within the deposit.

The last pit designs for La Libertad were completed in 2002. Given the differences in market conditions coupled with changes in operations, as well the character of the deposit as the operation moves to other mining areas, a complete revision of the mining plans and reserve base is warranted.

### **TECHNICAL SUMMARY**

La Libertad Mine is located approximately 110 km due east of Managua, the capital city of Nicaragua. The property is situated near the town of La Libertad in the La Libertad-Santo Domingo Region of the Department of Chontales in Central Nicaragua. Glencairn, through its wholly owned subsidiary, DESMINIC, holds one exploitation concession (La Libertad Exploitation Concession) covering 10,950 ha, granted in August 31, 1994 for the term of 40 years. DESMINIC also has one exploration concession, called La Buena Ventura I (2,350 ha), granted in July 2002 for a period of 25 years. The exploitation and exploration concessions form one contiguous block.

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Other than a suspension of operations during 2000 and part of 2001, mining activities for the current heap leach operation have been ongoing since 1997. Current infrastructure includes:

A 3,000 tpd heap leach operation including a crushing and stacking system, pads, ponds, an ADR (adsorption, desorption, recovery) plant, warehouses, dry facilities, and administration buildings;

Facilities providing basic infrastructure to the mine, including electric power generation, heat, water treatment and supply, and sewage treatment;

Mining infrastructure including roadways, ramps, maintenance shops, and mobile equipment fleet;

Access by gravel roads to the town of La Libertad and Juigalpa.

Since the last century, large companies, small local ventures, and individual miners have developed mines in the La Libertad-Santo Domingo area. Large scale mining operations in the Santo Domingo area first began in 1862 at the El Jabalí Mine and continued until the mid 1970s. Important mines developed during this period include El Jabalí, Monte Carmelo, and La Tranca. Larger scale mining operations have not existed in the Santo Domingo area for the last 20 years, but small miner activity and arrastra (small primitive mills) operations have continued.

On April 11, 1994, a Presidential Decree was issued authorizing the privatization of the La Libertad mining assets. Effective August 26, 1994, an agreement between Greenstone de Nicaragua S.A. (GRENICA), a wholly owned subsidiary of Greenstone Resources Canada Ltd., and Inversiones Mineras S.A. (IMISA), a company owned by the members of the mine workers' union, resulted in the formation of a new company called Minera Nicaragüence S.A. (MINISA). In September 1996, GRENICA acquired the minority interest from IMISA through the acquisition of all the shares of MINISA held by IMISA.

GRENICA suffered financial difficulties, and Leslie Coe, an individual investor, acquired MINISA by repaying GRENICA's debt to vendors. The name of the new company is Desarrollo Minero de Nicaragua, S.A. (DESMINIC). In February 2001,

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Leslie Coe sold 50 percent of DESMINIC to RNC Resources Limited and 40 percent to Auric Resources Corp. Leslie Coe retained a 10 percent interest in DESMINIC. In December 2003, RNC Gold Inc. became the owner of DESMINIC. Yamana Gold Inc. purchased a 100% interest in DESMINIC from RNC Gold Inc. in early 2006 and eventually sold it to Glencairn, effective July 6, 2006.

At La Libertad, epithermal gold-silver deposits are hosted by andesitic volcanic rocks of late Miocene age. Gold mineralization is associated with steeply dipping, structurally controlled quartz veins found within the andesitic rocks over an area of at least 12 sq.km. Alteration associated with the deposits is typical of a low sulphidation, adularia-sericite epithermal gold-silver deposit. Fracture controlled quartz veining and silicification is haloed by argillic and propylitic alteration zones within a thick sequence of andesitic volcanics.

Gold mineralization occurs as free particles up to 40 µm in diameter. Average grain sizes are 3 µm to 15 µm in diameter. Gold has a close affinity with pyrite and occurs as both a nucleus for pyrite crystallization and as a coating on pyrite crystals. Subsequent oxidation has destroyed the pyrite and freed the gold to depths of up to 150 m below surface. Mineralization also occurs as native silver and electrum, a gold-silver alloy.

The current resource estimate for La Libertad is based on a three-dimensional block model with individual outlines of zones or lenses interpreted from geological data derived from drill logs, trenches, and other geological information. Each of the 6.25 m x 6.25 m x 6 m high blocks was assigned with up to four rock codes and a percentage for each rock code based on the portion of the block that resides within each of the outlines interpreted from the geological data. Up to four grades were interpolated for each block by ordinary kriging, utilizing only those drill assay composites whose rock codes matched those of the block. An overall grade was then determined by weighting the individual interpolated grades, with the percentage and specific gravity of each rock type assigned to the block. The total block percentage is based on the sum of the individual percentages of each rock type. Table 1-1 provides a summary of the mineral resources for the indicated and

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inferred classifications as estimated by Scott Wilson RPA. No mineral reserves have been estimated by Scott Wilson RPA.

**TABLE 1-1 MINERAL RESOURCE ESTIMATES**

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**Glencairn Gold Corporation La Libertad**

Location	Indicated Resources			Inferred Resources		
	kt	g/t Au	koz Au	kt	g/t Au	koz Au
Mojón-Crimea	13,743	1.46	647	3,551	1.73	198
Esmeralda	1,363	1.23	54	417	1.13	15
Santa Mariá	1,188	2.45	94	280	1.90	17
<b>TOTAL</b>	<b>16,294</b>	<b>1.52</b>	<b>794</b>	<b>4,248</b>	<b>1.68</b>	<b>230</b>

**Notes:** 1. CIM definitions were followed for mineral resources.

2. Remaining mineral resources as at June 30, 2006.

3. Mineral resources are estimated at a block cut-off grade of 0.6 g/t Au.

4. Gold price of US\$500/oz and metallurgical recovery of 61%.

5. Numbers may not add up due to rounding.

Only those blocks within the interpreted grade envelope above 0.6 g/t Au are reported in this tabulation. Further detail, with respect to the distribution of grade within the block model, is provided under a separate heading. The estimate is based on the results from 732 RC drill holes and 31 core (diamond) drill holes. Not all holes and/or sample intervals were used in the estimate. Some of the holes fall outside the reported zones and either serve to confine the estimates or reside outside the area of interest. A number of holes and/or intervals, deemed unreliable for use in modeling, were also excluded from the estimate.

The drill composite spacing averages just under 36 m in the plane of structure, which, in Scott Wilson RPA's opinion, is sufficient to classify the majority of the resources as indicated, although much of the deposit would benefit from closer spaced drilling. The mineral resources classified as indicated are located within the core of the drilling, while the inferred mineral resources are located in areas of wider spaced drilling, around the periphery, and at depth. The extent of the deposit is reasonably well defined, except at depth, where further drilling is required. Since the estimate was confined to only those

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areas where interpreted outlines were available, the size of the inferred mineral resource is likely understated.

La Libertad is a conventional surface mining operation utilizing small to mid-size equipment to drill, blast, excavate, and remove ore and waste from several active open pits. Ore is hauled to the process area and stockpiled or dumped directly into a primary crusher as the first stage in a crushing and screening plant designed to reduce the ore to 80% passing 1.5 inches prior to agglomerating and placing the material on leach pads located adjacent to the plant. Drilling, blasting, and most support activities are accomplished with La Libertad's own equipment and personnel, while the load-haul-dump functions are currently performed by a contractor. From the start of production in mid-1997 to the end of May 2006, the mine produced 8.1 million tonnes of ore grading 1.77 g/t Au or 461,300 ounces of contained gold. During the same period, the mine moved 21.9 million tonnes of waste for an average strip ratio of 2.7 tonnes ore per tonne waste.

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The ore at La Libertad is processed by heap leaching. After leaving the secondary crushing system, the ore is agglomerated and placed on the leach pad cells via a transportation and stacking system. The cyanide solution is applied at a rate of 0.006 USgpm/ft.<sup>2</sup>, and the high-grade, or pregnant, solution containing the precious metals and cyanide from the heap drains to a pregnant solution pond where it is subsequently pumped to a carbon-in-leach (CIL) facility. Final gold recovery is effected by electro-winning where the precious metals are plated onto cathodes. The plated metals are removed from the loaded cathodes and dewatered in a filter press before smelting in a propane gas furnace. Finally, the resulting doré bars are sent to a refinery where they are further treated to remove any remaining impurities. Overall recovery since the implementation of a two-stage crushing system has been in the range of 64% of the contained gold delivered to the pads.

Until recently, leaching of crushed ore has taken place on a dedicated on/off pad consisting of eight cells. The current plan is to discontinue the on/off cycle and utilize

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the existing pad as a permanent single-use facility. According to mine staff, the existing pad has a capacity of approximately 1.7 million tonnes, however, this will have to be confirmed by further geotechnical studies and testing. Additional areas for pad construction have been identified, however, engineering and permitting must take place before construction can begin. Environmental staff indicate that permitting for the new pads, which would provide an additional four million tonnes capacity, could take six months to a year to complete. Construction of the existing pad required about a year after permitting. Given this timeline, efforts to secure the required permitting must proceed without delay.

La Libertad has been in operation for some time now. The current mine plans are based on pit designs developed in late 2002. These plans, as well as other operating and capital plans for La Libertad, are presently under review by the new owners. Scott Wilson RPA has reviewed operating reports for 2005 as well as those from January to April 2006. In addition, Scott Wilson RPA reviewed cost and production forecasts generated by the previous owner for the remainder of 2006. Cash costs in 2005 ranged from US\$400/ounce Au to over US\$600/ounce Au, with ore tonnes, grade, and stripping being the primary factors contributing to the variance.

Under the existing budget, which was revised by the previous owner in May 2006, the operation is forecast to produce 42,000 ounces Au at a cash cost of US\$521 per ounce Au. In the first four months of 2006, La Libertad produced 9,000 ounces at a total cash cost of US\$805 per ounce Au and is forecast to produce 33,000 ounces at US\$443 per ounce Au for the remainder of the year.

In addition to deferred stripping, the previous owner has projected capital expenditures in the range of US\$3.8 million, including US\$2.5 million for the plant and leach pads and US\$0.7 million for exploration. These expenditures have not yet been approved. Based on results to the end of April 2006, the mine is currently in a negative cash flow position before deduction of these unapproved items.

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As at March 31, 2006, there were 309 employees on the payroll, excluding the mining contractor.

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## **2 INTRODUCTION AND TERMS OF REFERENCE**

Scott Wilson Roscoe Postle Associates Inc. (Scott Wilson RPA) was retained by Mr. Michael Gareau, Vice President Exploration of Glencairn Gold Corporation (Glencairn), to prepare an independent Technical Report on La Libertad Gold Mine (La Libertad), also known as Cerro Mojón or Mojón, 32 km northeast of Juigalpa, Republic of Nicaragua. The primary purpose of this report is to document Scott Wilson RPA's recent mineral resource estimate for La Libertad, summarize previous work on the property, and report on the current status of the mine. This Technical Report conforms to National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101). Scott Wilson RPA visited the property in June 2006. The predecessor company to Scott Wilson RPA, Roscoe Postle Associates Inc., also visited the property in 1999 and 2002. In both cases, project reviews for third parties were prepared.

On July 6, 2006, Glencairn purchased a 100% interest in Desarrollo Minero de Nicaragua (DESMINIC), which includes the assets at La Libertad, from Yamana Gold Inc. (Yamana). Glencairn is a junior gold producer that, prior to the Yamana acquisitions, had two mines in Central America: the Limon Mine in Nicaragua and the Bellavista Mine in Costa Rica. DESMINIC holds one exploitation concession located near the town of La Libertad in the Department of Chontales, Republic of Nicaragua, comprising 10,950 ha covering the property area. DESMINIC also holds an exploration concession, called La Buena Ventura I, consisting of one block covering 2,350 ha.

Other than a suspension of operations during 2000 and part of 2001, mining activities for the current heap leach operation have been ongoing since 1997. There had been previous mining activity on the property. Currently, the major assets and facilities associated with the Project are:

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the Mojón-Crimea (includes Santa Elena), Esmeralda, and Santa Mariá gold deposits;

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a 3,000 tpd heap leach operation, including a crushing and stacking system, pads, ponds, an ADR (adsorption, desorption, recovery) plant, warehouses, administration buildings, and dry facilities;

facilities providing basic infrastructure to the mine, including electric power generation, heat, water treatment and supply, and sewage treatment;

mining infrastructure including roadways, ramps, maintenance shops, and mobile equipment fleet;

access by gravel roads to the town of La Libertad and Juigalpa.

## **SOURCES OF INFORMATION**

A site visit and detailed examination of the property was carried out by Peter A. Lacroix, P.Eng., Associate Mining Engineer with Scott Wilson RPA, on June 20 to June 21, 2006. Discussions were held with project geologists, engineers, and various employees and contractors of DESMINIC. Mr. Michael Gareau, Vice President of Exploration for Glencairn, was in attendance. During the site visit, sufficient opportunity was available to examine logging and sample preparation procedures, data acquisition, and drill cuttings from the various drilling programs, as well as to obtain a general overview of the property, including mining and processing operations. Mining at both the Mojón and Esmeralda pits was underway at the time of the visit. Several representative samples were taken by Mr. Lacroix from grade control trenches in the active mining areas.

Based on the review of the site and available data, Scott Wilson RPA is of the opinion that the exploration and delineation programs have been conducted in a professional manner and the quality of the data and information produced meets or exceeds acceptable industry standards. It is believed that, for the most part, the work encompassing these programs has been directed or supervised by individuals who would fit the definition of a Qualified Person in their particular areas of responsibility as set out by the NI 43-101.

The Scott Wilson RPA mineral resource estimates are based on geologic interpretations by project personnel coupled with other data and reports provided by Glencairn, DESMINIC, and their consultants. Much of the data, including the drill

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assay and geological database, upon which the estimates are based, has undergone thorough scrutiny by project staff as well as certain data verification procedures by the author.

Much of the background information for this report, including land tenure, geological descriptions and interpretations, was derived from a previous NI 43-101 Technical Report by Chlumsky, Armbrust and Meyer, LLC (2003). The documentation reviewed, and other sources of information, are listed at the end of this report in Item 21 References.

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***LIST OF ABBREVIATIONS***

Units of measurement used in this report conform to the SI (metric) system. All currency in this report is US dollars (US\$) unless otherwise noted.

List of Abbreviations:

m	micron	km <sup>2</sup>	square kilometre
°C	degree Celsius	kPa	kilopascal
°F	degree Fahrenheit	kVA	kilovolt-amperes
mg	microgram	kW	kilowatt

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A	ampere	kWh	kilowatt-hour
a	annum	L	litre
m <sup>3</sup> /h	cubic metres per hour	L/s	litres per second
cfm	cubic metres per minute	m	metre
Bbl	barrels	M	mega (million)
Btu	British thermal units	m <sup>2</sup>	square metre
C\$	Canadian dollars	m <sup>3</sup>	cubic metre
cal	calorie	min	minute
cm	centimetre	MASL	metres above sea level
cm <sup>2</sup>	square centimetre	mm	millimetre
d	day	mph	miles per hour
dia.	diameter	MVA	megavolt-amperes
dmt	dry metric tonne	MW	Megawatt
dwt	dead-weight ton	MWh	megawatt-hour
ft	foot	m <sup>3</sup> /h	cubic metres per hour
ft/s	foot per second	opt, oz/st	ounce per short ton
ft <sup>2</sup>	square foot	oz	Troy ounce (31.1035g)
ft <sup>3</sup>	cubic foot	oz/dmt	ounce per dry metric tonne
g	gram	ppm	part per million
G	giga (billion)	psia	pound per square inch absolute
Gal	Imperial gallon	psig	pound per square inch gauge
g/L	gram per litre	RL	relative elevation
g/t	gram per tonne	s	second
gpm	Imperial gallons per minute	st	short ton
gr/ft <sup>3</sup>	grain per cubic foot	stpa	short ton per year
gr/m <sup>3</sup>	grain per cubic metre	stpd	short ton per day
hr	hour	t	metric tonne
ha	hectare	tpa	metric tonne per year
hp	horsepower	tpd	metric tonne per day
in	inch	US\$	United States dollar
in <sup>2</sup>	square inch	USg	United States gallon
J	joule	USgpm	US gallon per minute
k	kilo (thousand)	V	Volt
kcal	kilocalorie	W	Watt
kg	kilogram	wmt	wet metric tonne
km	kilometre	yd <sup>3</sup>	cubic yard
km/h	kilometre per hour	yr	year

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### 3 RELIANCE ON OTHER EXPERTS

This report has been prepared by Scott Wilson Roscoe Postle Associates Inc. (Scott Wilson RPA) for Glencairn Gold Corporation (Glencairn). The information, conclusions, opinions, and estimates contained herein are based on:

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Information available to Scott Wilson RPA at the time of preparation of this report,

Assumptions, conditions, and qualifications as set forth in this report, and

Data, reports, and other information supplied by Glencairn and other third party sources.

For the purpose of this report, Scott Wilson RPA has relied on ownership information provided by Glencairn. Scott Wilson RPA has not researched property title or mineral rights for La Libertad and expresses no legal opinion as to the ownership status of the property.

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### **4 PROPERTY DESCRIPTION AND LOCATION**

La Libertad is located approximately 110 km due east of Managua, the capital city of Nicaragua. The property is situated in the La Libertad-Santo Domingo Region of the Department of Chontales in Central Nicaragua. The geographic coordinates of the project are approximately 12° 13' N latitude, 85° 10' W longitude. A map showing the location of the project is presented in Figure 4-1.

#### **LAND TENURE**

Glencairn, through its wholly owned subsidiary DESMINIC, holds one exploitation concession located near the town of La Libertad in the Department of Chontales, Republic of Nicaragua, covering the property area (10,950 ha) granted in August 31, 1994 for the term of 40 years pursuant to Ministerial Decree No. 032-RN-MC/94. This concession was granted and is regulated under the old, pre-2001 mining law. The location of the concession, called the La Libertad Exploitation Concession, is shown in Figure 4-2. The principal obligations under the Ministerial Accord include the payment annually of surface taxes (a cost of US\$87,600 in 2006), and a net 3.0 percent royalty on gross production revenues.

A royalty interest was granted to a corporation formed by the La Libertad workers (IMISA). The Royalty Contract dated September 25, 1996 (Public Deed No. 23) grants a royalty on Net Smelter Returns equal to 2.0 percent of the total production of gold and silver from the La Libertad Exploitation Concession to IMISA.

DESMINIC has one exploration concession, called La Buena Ventura I (2,350 ha), granted under the new mining code enacted in 2001. The Buena Ventura I concession was granted in July 2002 for a period of 25 years pursuant to Ministerial Decree No. 200-RN-MC/2002. Annual fee payments escalate from US\$0.25 per hectare to US\$8.00 per hectare over the first 10 years, and are US\$12.00 per hectare thereafter. Annual fees for

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2006 are approximately US\$5,300. The exploitation and exploration concessions form one contiguous block.

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**FIGURE 4-1 LOCATION MAP**

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**FIGURE 4-2 LOCATION OF CONCESSIONS**

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## **5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

### **ACCESSIBILITY**

Access to the property is by paved road from Managua to Juigalpa (138 km), the capital city of the Department of Chontales. From Juigalpa, an unsurfaced road leads northeast for 32 km to the town of La Libertad. Access to the mine site is along a five kilometre, secondary unsurfaced road that originates at the entrance to the town of La Libertad. Driving time from Managua to the project is between 2.5 to 3.0 hours.

### **CLIMATE**

The most salient climatic characteristic of the region is a pronounced wet and dry season. The wet season occurs in May through to November, with the highest precipitation occurring usually in September and October. Average monthly rainfall during these months is approximately 270 mm. The driest months are generally in February and March, with average monthly rainfalls of approximately 23 mm. According to government statistical records, the Department of Chontales has an average annual rainfall of 1,695 mm. At the La Libertad weather station, the average annual precipitation recorded over a 16-year period (1972 to 1987) was 1,687 mm.

Temperature variation in Nicaragua is mainly a function of altitude. Nationally, temperature varies between 21°C in the upper parts of the central mountain ranges to 29°C in the Pacific coastal regions. Average temperatures recorded in Chontales region range from 24°C in December to 27°C in May. The average daily temperature is fairly constant at 25°C during the rest of the year.

Statistical records indicate an annual average rate of evaporation of approximately 2,050 mm, higher than the average annual precipitation of approximately 1,695 mm. The highest monthly evaporation rates of approximately 235 mm coincide with the driest and hottest months (March and April).

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## **LOCAL RESOURCES**

Most of the non-professional staff at La Libertad come from the surrounding towns in the area. The town of La Libertad, some five kilometres by an unsurfaced secondary road, has a local population just over 2,000. Several other small towns are located within close proximity of the mine. The area has a long history of mining and ranching, and a local labour force skilled in small-scale mining is available. Many of the higher-skilled jobs, such as supervisory and professional designations, are filled by expatriates. Most machinery and equipment required at the mine is imported. The transportation network is well established.

## **INFRASTRUCTURE**

La Libertad gold mine is an active mining operation. The mine and process facilities operate year round. Road access to the mine provides for overland movement of all required supplies and materials. The mine generates its own electrical power using four on-site diesel generators and has a distribution system, both of which are adequate for current operating needs. The mine uses a local water supply.

Currently, open pit mining of both ore and waste is undertaken by an independent mining contractor using the contractor's equipment fleet. Drilling and blasting for mining is handled directly by La Libertad. There is a crushing plant, a heap leach pad, and an ADR plant on site and all are currently in operation. The mine operation maintains a local road system to service the operations needs.

Glencairn, as the new owner, is in the process of reviewing all aspects of the operation with the objective of improving the operation wherever it can.

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## **PHYSIOGRAPHY**

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The area is characterized by hilly terrain ranging in elevation from 400 m to 835 m above sea level. Many of the old workings in the region are located on hills and ridges. Gold mineralization is associated with quartz veins that support these topographic highs. Cerro El Chamorro, located five kilometres northeast of the town of La Libertad, is the highest point on the concession at 835.2 m above sea level.

La Libertad is situated in the western end of the exploitation concession, approximately four kilometres northwest of the town of La Libertad. The vein outcrops along the Cerro Mojón ridge. It is the highest point in the immediate area at approximately 630 m above sea level. The surrounding topography is characterized by gently sloping terrain, reaching a low of approximately 500 m above sea level. Vegetative cover is primarily second growth shrubs, small trees, and grasses.

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## **6 HISTORY**

The description of the mining history is summarized from Section 2.8 of the Feasibility Study for the Cerro Mojón Project, prepared by Minera Nicaragua S.A. (MINISA) in 1998.

Mining and ranching have been the main economic activities in the area. Prosperity has to a large extent been tied to the fortunes of the local gold mining industry.

Prior to the Sandinista period, Nicaragua was an important contributor in the Central American gold market. In November 1979, the Sandinista government nullified all mining concessions issued by the previous administration and nationalized all mining companies operating in the country. As a result, average annual gold production for the period 1975 through 1979 dropped to an estimated 69,400 troy ounces.

Throughout the 1980s, the Sandinista government sought assistance for the mining sector in both Western and Eastern Europe. The United Kingdom, the Soviet Union, Sweden, and Bulgaria all provided institutional support to the Nicaraguan mining industry. However, most facilities had to make do with old and substandard equipment, as capital was unavailable for new machinery.

In 1991, the Chamorro Administration began its efforts to privatize Nicaraguan mining enterprises as part of an overall plan for economic stabilization and structural reform. It was hoped that foreign investment would boost mining production and provide employment and stability in regions dependent on mining. The Chamorro Administration agreed to privatize 25 percent of the national mineral resources to the Nicaraguan mine workers. This resulted in the formation of Inversiones Mineras S.A. (IMISA), a profit-oriented company privately held by the Nicaraguan

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mine workers. Technical and administrative assistance for IMISA is contracted from former INMINE (Instituto Nicaragüense de la Minería) officials. The remaining interest in select facilities was put out to international tender.

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La Libertad went out to tender in 1992. On April 11, 1994, a Presidential Decree was issued authorizing the privatization of the La Libertad mining assets. Effective August 26, 1994, an agreement between Greenstone de Nicaragua S.A. (GRENICA), a wholly owned subsidiary of Greenstone Resources Canada Ltd., and IMISA resulted in the formation of a new company called Minera Nicaragüense S.A. (MINISA). The new company was formed with the purpose of developing a large-scale gold mining operation out of the small La Libertad operation. On September 8, 1994, CORNAP (the Nicaraguan Privatization Agency) issued Resolution CCLXIX-1 approving the privatization of the La Libertad mine assets. CORNAP then sold the mine assets to MINISA pursuant to Public Deed #12 of September 30, 1994.

MINISA was originally owned 75% (51,450 shares) by GRENICA and 25% (17,150 shares) by IMISA (68,600 total shares). IMISA vested in its 25% of MINISA by virtue of contributing the existing assets at La Libertad including the exploitation and exploration concessions. These assets were conveyed to IMISA by the Nicaraguan government and the IMISA shares were pledged to the Nicaraguan government until such time that IMISA paid US\$1,715,000 to the government. GRENICA became vested once it had contributed a total of US\$5.325 million to the project and issued 468,100 Greenstone Common Shares.

As a requisite of privatization, MINISA was required to complete a feasibility study for an operation producing greater than 50,000 ounces of gold per year. Compliance was met with the submittal of a feasibility study in October 1995. GRENICA was required to fund the feasibility as well as any cash losses from the existing operation. It was also required to fund a limited rehabilitation program of the existing operation. At December 31, 1995, GRENICA had met all vesting conditions for the 75% interest by spending the required US\$5.325 million and through the issuance of the required 468,100 Greenstone Common Shares at an ascribed value of US\$772,000.

Following a decision by the MINISA board to accept the feasibility study, GRENICA was required to pay IMISA US\$200,000. A second payment of US\$300,000 was made

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less than a year later, of which 50%, or US\$150,000, was payable in Greenstone shares. GRENICA also met its obligation to provide financing for the project.

In September 1996, GRENICA acquired the remaining 25% minority interest from IMISA through the acquisition of all the shares of MINISA held by IMISA. The purchase price consisted of:

a cash payment of US\$13,125,000, directed by IMISA to be paid to its individual shareholders;

a cash payment of approximately US\$350,000 in satisfaction of existing obligations to IMISA in connection with GRENICA's and IMISA's shareholdings in MINISA; and

a 2% net smelter royalty in favour of IMISA on future production from areas within the La Libertad mining area.

GRENICA suffered financial difficulties, and Leslie Coe, an individual investor acquired MINISA by repaying GRENICA's debt to vendors. The name of the new company was Desarrollo Minero de Nicaragua S.A. (DESMINIC). In February 2001, Leslie Coe sold 50% of DESMINIC to RNC Resources Limited and 40% to Auric Resources Corp. Leslie Coe retained a 10% interest in DESMINIC.

In July 2003, RNC Resources Limited, a private international business incorporated in Belize in March 2001, acquired Auric Resources Corp.'s interest and, in September 2003, Leslie Coe's remaining 10% interest, thereby earning 100% ownership of DESMINIC. RNC Gold Inc., a publicly traded Canadian company, became the owner of all the assets of RNC Resources Limited, including DESMINIC, in December 2003 as a result of a reverse take-over of Tango Mineral Resources Inc. by RNC Resources Limited and a name change of Tango Mineral Resources Inc. to RNC Gold Inc.

In February 2006, Yamana Gold Inc. acquired DESMINIC along with all the other assets of RNC Gold Inc. as a result of a merger between the two companies.

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On July 6, 2006, Glencairn Gold Corporation purchased a 100% interest in La Libertad from Yamana Gold Inc., along with a 60% interest in the Cerro Quema Gold Project in Panama. The total consideration for the above two acquisitions was 32 million Glencairn common shares.

## **LOCAL MINING HISTORY**

Since the last century, large companies, small local ventures, and individual miners have developed mines in the La Libertad-Santo Domingo area. Individually, the local miners and prospectors are known as güiriseros, or small miners. In the past, both large and small mine operations typically employed stamp mills and arrastras (small primitive mills) for processing ore, and mercury amalgamation techniques to recover the gold. In the mid 1950s, larger scale mining companies located near La Libertad began to use more conventional milling and gravity separation techniques and cyanide to recover the gold. When MINISA arrived on the site in 1994, the small miners were still processing their gold using arrastras and mercury amalgamation.

Large-scale mining operations in the Santo Domingo area first began in 1862 at the El Jabalí Mine and continued until the mid 1970s. Important mines developed during this period include: El Jabalí, which belonged to Compañía Anónima de El Jabalí Monte Carmelo, owned by Victoria Salinas; and La Tranca, owned by the Pellas and Company. Larger scale mining operations have not existed in the Santo Domingo area for the last 20 years, but small miner activity and arrastra operations have continued.

Larger scale mining operations at La Libertad started in the middle of the last century at the San Juan and Babilonia areas. From 1900 to 1935, British companies extracted mineral resources from the Santa Elena, Crimea, Santa Mariá, San Juan, Tres Amigos, Zopilote, and Azul areas (Figure 6-1). Approximately 200,000 tonnes of ore, with an average grade of 15 g/t Au, was mined during this time. The ore was processed at a rate of 20 tpd to 40 tpd using a stamp mill. Gold was recovered by mercury amalgamation techniques.

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From 1943 to 1945, the Neptune Mining Company conducted geological exploration in the Santa Elena and Santa Mariá areas. No mining took place. From 1956 to 1979, an American company, Lemans Resource, mined the Santa Elena-Crimea deposit. The ore was processed in a mill at a rate of 40 stpd. Gold was recovered through flotation and cyanidation of the concentrate.

Large-scale mining operations in the area were suspended in November 1979 until the mining industry was nationalized in 1981. In 1982, mining of the Santa Elena deposit resumed under INMINE. From 1984 to 1989, a crushing and grinding facility was installed and the capacity of the mill increased from 40 stpd to 120 stpd, using the same flotation/cyanidation technology for gold recovery. Tailings were being dumped directly into the Río El Tigre until a tailings dam was constructed northeast of the mill in 1988. Mining operations at Santa Elena were suspended in 1991 and the San Juan vein became the main source of ore.

On August 26, 1994, GRENICA was appointed operator of La Libertad by MINISA and assumed operation of the mine and mill. The operations inherited by MINISA were based at the La Libertad mine, where gold ore was extracted by surface mining. Orebodies being exploited were the San Juan, Los Angeles, and El Tigre zones.

Under MINISA, the La Libertad mine site was rehabilitated and operations continued until October 1996 when MINISA shut down the operation to prepare for the heap leach operation. By 1999, GRENICA was suffering financial difficulties and all mining and exploration activities at La Libertad ceased. In early 2001, DESMINIC, the current operator, rehabilitated the heap leach operation at La Libertad. Operations since then have been mostly continuous, with some temporary shutdowns reported as being for maintenance purposes. Mine production has been largely from a series of pits along the main Mojón-Crimea structure. During the past year, there has been significant production also from the Esmeralda structure located parallel to and immediately south of the Mojón pits.

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**FIGURE 6-1 MINERALIZED VEIN STRUCTURES AND VEIN SYSTEMS IN THE LA LIBERTAD DISTRICT**

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## **7 GEOLOGICAL SETTING**

The following description of the regional and property geology is summarized from the Geology Section (Section 4.0) in the Feasibility Study (Minera Nicaragua S.A., 1998), and from information gathered during the Scott Wilson RPA site visit.

### **REGIONAL GEOLOGY**

The La Libertad mining district covers an area of approximately 150 sq.km, and lies within a broad belt of Tertiary volcanic rocks that have been differentiated into two major units called the Matagalpa and the Coyol Groups (McBirney and Williams, 1965; Pearsons, 1972). Oligocene to Miocene in age, the Matagalpa Group is the oldest unit and consists of intermediate to felsic pyroclastic rocks. Unconformably overlying the Matagalpa Group are Miocene-aged mafic lavas of the Lower Coyol unit. The rocks of the Lower Coyol unit host the gold-bearing quartz veins in the La Libertad district.

Pliocene-aged mafic lavas and ignimbrites, belonging to the 400 m to 600 m thick Upper Coyol unit, form mesa-like erosional remnants in the region (Darce, 1990). Several small felsic to mafic intrusive bodies of similar Tertiary age are also located in the district and distributed along northeast-southwest structural trends.

A stratigraphic column and a simplified geologic map for the district are shown in Figure 7-1 and Figure 7-2, respectively.

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**FIGURE 7-1 GENERAL STRATIGRAPHIC COLUMN FOR CENTRAL NICARAGUA**

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**FIGURE 7-2 REGIONAL GEOLOGY OF THE LA LIBERTAD MINING DISTRICT**

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**LOCAL AND PROPERTY GEOLOGY**

At La Libertad, epithermal gold-silver deposits are hosted by andesitic volcanic rocks of late Miocene age. Gold mineralization is associated with steeply dipping, structurally controlled quartz veins found within the andesitic rocks over an area of at least 12 sq.km.

**LITHOLOGY**

The host rocks for the epithermal gold-silver veins are a sequence of andesitic lava flows in excess of 500 m in thickness. These andesitic rocks are believed to be part of the Lower Coyo Group. For the most part, the sequence of rocks that make up the andesite pile consists of individual flows ranging in thickness from two metres to five metres to much larger flows 22 m to 50 m in thickness. Flow breccias and conglomerate

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debris flows from 3 m to 40 m in thickness commonly separate the coherent flows.

The andesitic rocks are locally intruded by fine-grained, andesitic dikes. Variably altered, the dikes are cross cut by quartz veins and thought to be pre-mineral. The dikes probably intruded along pre-existing fault structures in a manner similar to that of the quartz veins in the district.

A younger sequence of basaltic andesite dikes and probable sills, one plug-like intrusion, and various flow rocks, locally intrude and overlie the older mineralized andesitic package in the La Libertad area. These rocks are commonly fresh, dense rocks that are locally weathered but not hydrothermally altered. The basaltic andesite flow rocks were apparently deposited on an erosional surface having a paleotopography similar to that of the present day relief.

A one-metre to five-metre thick layer of colluvium and soil covers the Cerro Mojón ridge area. This cover is derived from the weathering and erosion of the Mojón and Esmeralda ridges. The ridges themselves are supported by the gold-bearing quartz veins and the colluvium is, therefore, locally gold bearing, with values of up to 50 g/t Au reported from the drilling program.

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## **STRUCTURE**

Although the overall strike length continuity of the quartz veins in the La Libertad district suggests emplacement along a regionally extensive fault system, it is difficult to recognize individual pre-mineral structures that have not been filled by quartz veins. The only clearly demonstrable fault planes in the district observed to date are faults in the Mojón, Zopilote, Crimea, Los Angeles, and San Juan pits. The faults appear to be pre-mineral structures occupied by quartz veins that have since experienced post mineral movement.

Individual northeast trending fracture-controlled ridges can be traced for more than five kilometres and host a number of targets including: Mojón SW, Mojón, Zopilote, Babilonia, Crimea, Santa Elena, Esmeralda, Santa Mariá and Chamarro. Five parallel and similar structures occur within the La Libertad district. These structures from northwest to southeast are: Mojón SW to Chamarro; Esmeralda to Santa Mariá to Santa Evangelina; San Francisco to Los Angeles; San Juan to Calvario; and El Pulpito (Figure 6-1).

The analyses of the lineaments evident on Radarsat and aerial photographs show a dominance of NE and NW trending fractures. NW trending faults parallel the subduction zone along the Pacific Coast of Nicaragua, and possibly represent low angle faults originating as a result of this zone of tectonics. The NE trending vein structures form strike ridges throughout the local area and are thought to represent extensional fractures

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parallel to the principal NE stress direction. These fractures have acted as the major fluid conduits for the hydrothermal system.

Contemporaneous with NE and NW trending structures are ENE and NNE trending conjugate fractures which appear to have demonstrated strike slip movement. Some of these conjugate fractures were dilatant and acted as fluid pathways during mineralization whilst others remained closed. It is postulated that during the mineralizing event, these conjugate fractures were open to gold-bearing fluids and formed an en-echelon series of dilational zones (or gash fractures) within the main NE trending fracture/vein zones.

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Fracturing and quartz veining is clearly multiphase throughout the Mojón-Esmeralda corridor and brought about by repeated tectonic movement followed by fluid injection, sealing, refracturing, and more fluid injection. The quartz veins thus produced would experience brittle deformation and should react differently to local stresses in comparison to the more ductile andesite host. Each time the fractures are reactivated, they would do so at slightly different orientations.

The andesites host epithermal quartz as quartz veins, quartz stockworks, sheeted veining, and massive banded quartz veins along the NE trending fracture zones. Minor stockwork zones and quartz veins one metre to two metres in width are found within the hanging wall of the main vein structures. Hanging wall veins appear to occupy fractures that are conjugate to the main vein. These also acted as fluid conduits during the mineralizing event and commonly contain high gold grades.

## **ALTERATION AND GANGUE MINERALOGY**

Alteration associated with the deposits is typical of a low sulphidation, adularia-sericite epithermal gold-silver deposit. Fracture controlled quartz veining and silicification is haloed by argillic and propylitic alteration zones within a thick sequence of andesitic volcanics.

Alteration aureoles around the individual veins extend for two to ten times the width of the respective veins (Darce, 1990). Alteration mineralogy gradually changes with distance as one moves away from the veins as follows:

quartz vein->adularia/quartz/illite->kaolinite/illite/Qtz->kaolinite/quartz->chlorite/carbonate

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Quartz veins consist of milky white, sugary textured quartz, with varying amounts of chalcedonic, laminated/banded, cocks comb and vuggy quartz. Vuggy quartz appears to be pseudomorphing platy calcite in places, which may be indicative of boiling of the hydrothermal fluid (Corbett and Leach, 1997). Fresh sulphides are rare due to the strong

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oxidation of the vein structures via meteoric water. Where present, the sulphide is generally disseminated pyrite.

Manganiferous oxides are ubiquitous and observed to be very strong throughout the vuggy textured quartz, as linings and coatings on open spaces. Goethite, limonite, and jarosite are invariably present in moderate to strong amounts, as coatings and linings to open spaces and fractures. Minor massive goethite-limonite occurs within the massive vein zone, usually as thin (one centimetre to five centimetres thick) veinlets. These presumably represent the oxidation product of sulphide-rich veinlets.

Silicification is often intense within the vein zones. Partial silica replacement/rimming of breccia clasts is widespread throughout the veins and can extend into both the hanging wall and footwall. A zone of intense silica replacement and brecciation up to several metres in width is often observed within the zone immediately footwall to the main vein structure at La Libertad.

Meteoric weathering and alteration has formed a clay rich blanket throughout the La Libertad area. Weathering profiles tend to mimic topography and, where drilled, have been observed to extend from surface to depths of up to 50 m. Darce (1990) describes an illite-kaolinite cap in the near surface levels of quartz veins. He proposes that this alteration zone was formed during the waning stages of the geothermal field. The illite-kaolinite cap is observed by Darce to change to chlorite-adularia-illite at depth, reflecting palaeotemperature and chemical gradients in the hydrothermal system. This kaolinite/illite cap can be observed in the Mojón open pit, and has been noted from deep drilling to become very narrow or absent with depth.

The distinction between hypogene and supergene clay alteration at or near surface can be difficult to distinguish. The presence of finely disseminated, cubic pyrite is generally accepted as indicative of hypogene alteration.

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The boundary between oxidized and unoxidized (propylitic) rock is very sharp along the footwall contact of the Mojón mineralized zone. Goethite and jarosite, which were derived from the oxidization of pyrite, are present in various ratios throughout the mineralized structural zone and are seen as brown, brownish-yellow, yellowish-brown to yellow colors in clay-altered hanging wall rock and fracture coatings within the quartz veins.

A typical cross section of the Mojón structure is shown in Figure 7-3.

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**FIGURE 7-3 MOJON GEOLOGIC CROSS SECTION**

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## 8 DEPOSIT TYPES

The deposit at La Libertad is best classified as a low sulphidation, adularia-sericite epithermal, fissure-vein type of deposit. Salient features recognized at La Libertad which support the model include:

- Back arc tectonic setting;
- Lack of an associated intrusive source;
- Presence of phreatic breccias;
- Banded fissure veins structural control;
- Quartz, adularia and quartz pseudomorphing platy calcite;
- Advanced argillic, argillic and sub-propylitic alteration zonation;
- Low salinity (meteoric) fluid inclusions;
- Regional alteration cell up to 10 km in diameter; and
- Presence of distal intrusives as a heat source.

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## 9 MINERALIZATION

Gold mineralization occurs in vein sets along two parallel trends separated by approximately 500 m, the Mojón-Crimea Trend and the Santa Mariá-Esmeralda Trend. The locations of the veins are shown in Figure 6-1.

The Mojón-Crimea Trend is over 3,500 m long, strikes N60°E and dips -80 degrees to the SE. The massive quartz veins and adjacent mineralized stockwork zones average 25 m in width, narrowing to 15 m at depth.

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The Santa Mariá-Esmeralda Trend is discontinuous, with the Santa Mariá and Esmeralda veins separated by approximately 1,000 m. The Esmeralda Vein, located at the SW end of the trend, is approximately 20 m wide near surface and pinching to less than 10 m at depth, and is over 1,600 m long. The Santa Mariá vein, located at the NE end of the trend, averages 10 m wide and is approximately 525 m long. Both of these veins are near vertical, and they do not have strong stockwork halos.

Gold mineralization is hosted by epithermal quartz and occurs as free particles up to 40 µm in diameter. Average grain sizes are 3 µm to 15 µm in diameter. Gold has a close affinity with pyrite and occurs as both a nucleus for pyrite crystallization and as a coating on pyrite crystals. Subsequent oxidation has destroyed the pyrite and freed the gold to depths of up to 150 m below surface. Polished section work has shown that a small portion (<5%) of the gold is silica encapsulated (Morales et al., 1989). Mineralization also occurs as native silver and electrum, a gold-silver alloy.

Fluid inclusion studies conducted on samples collected from within the district suggest a multi-phase origin for the formation of the quartz veins. The studies also reveal that there were variations in the fluid temperature from 172° ? to 316° C during the mineralizing events.

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Apart from limonite and hematite, minerals associated with the gold include chalcocopyrite, galena, sphalerite, and native silver. The gold to silver ratio is approximately 1:4.5. The abundance of manganese oxides within the veins is also worthy of note. Halenius (1983) postulates that the manganese oxides were added to the system towards the end of mineralizing event. They may be the oxidation products of manganiferous carbonates associated with mineralization.

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## 10 EXPLORATION

The resource estimates for La Libertad are based on the drill hole database initially prepared by MINISA. MINISA also prepared a feasibility study for the Cerro Mojon Project in 1998.

### TOPOGRAPHIC SURVEYS

The block model uses topographic data generated in 1997 by Eagle Mapping of Vancouver, British Columbia, Canada. These topographic data are combined with MINISA survey data gathered in those areas of the Mojón and Esmeralda pits where mining has since changed the relief. MINISA reported that qualified survey engineers using modern electronic survey equipment collected the MINISA data.

The La Libertad area was flown for MINISA in April and May 1997. Ortho-corrected air photos and topographic maps with two-metre contour intervals were completed by Eagle Mapping. The topography coverage is centred on La Libertad and covers approximately 15 km<sup>2</sup>.

Only one ground panel point had been prepared before the flight. To complete the job, Eagle Mapping requested that 13 additional control points be identified on the air photos and surveyed in the field. This task was completed in August and September 1997. Using the control point data, the air photos were orthorectified and the topographic maps completed in November 1997. The data is all in local mine grid coordinates.

Prior to being reflown by MINISA in 1997, the only topographic data available outside of the immediate La Libertad area were 1:50,000 government topographic maps (published in 1989) with 20 m contours. Early site layout design at La Libertad had to rely on digitizing the 1:50,000 government maps. All areas incorporated into the site layout were subsequently resurveyed by MINISA prior to construction activities.

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### TRENCHING AND MAPPING

MINISA began exploration of the La Libertad concession with the excavation of trenches using a D8 dozer along the Mojón ridge during November and December 1994. Fourteen large trenches (TRM-06 to 19) were cut perpendicular to the strike of the Mojón ridge to crosscut the

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vein system observed on surface. The trenches were spaced at approximately 50 m intervals. The length of the trenches ranged from approximately 30 m to 150 m. Trenches were cut two metres to four metres in depth. Trench geology was mapped at a scale of 1:200.

The floor of each trench was prepared for sampling by cleaning a channel approximately 25 cm wide and 5 cm deep. From this channel, a continuous chip sample was collected across the zone. All samples were three metres in length, except at locations where samples were terminated by geologic contacts.

Prior to the acquisition of La Libertad by MINISA, five trenches (TRM-01 to 05) had been similarly excavated in the Mojón ridge area by GRENICA during its due diligence program.

Data from both La Libertad trenching programs were incorporated into the 1995 resource model. Although the data still exist in the database, they were not used in the 1998, 2002, and the current Scott Wilson RPA mineral resource estimates due to concerns over the surveyed locations of the trenches.

Eighteen other trenches were also excavated in late 1994 in areas outside of La Libertad proper (i.e., TRZP-01 & 02 at Zopilote; TRSM-01 to 04 at Santa Mariá TRMSW-01 to 04 at Mojón SW; TRE-01 to 06 at Esmeralda, and TRC-01 & 02 at Crimea). These results were never used in the 1995 block model since they were outside of the limits of that model. Again, these trench results are still in the database but not used in the 1998, 2002, and the current Scott Wilson RPA mineral resource estimates due to concerns over the surveyed locations of the trenches.

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The geologic data obtained from all of the trenches were combined with drill hole data to define zone boundaries when constructing the geologic model.

### **SAMPLING FROM ADITS AND SHAFTS**

In 1995, sampling was performed in an existing adit (AD-001) located near the west end of the project area. The adit was collared in the Mojón hanging wall at the 600 m elevation and driven north 50 m. The workings stopped at the hanging wall contact of the mineralized vein zone where narrow veins were exposed by a short crosscut drift. Twenty continuous chip samples were taken along the west rib, with each sample being three metres in length. Three samples were collected from the veins exposed in the crosscut drift.

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The adit sampling (AD-001 series) was used in the 1995 resource estimation, but has been omitted from the modeling since 1998 due to concerns about the actual surveyed locations of the samples.

Three vertical shafts were excavated as part of the bulk sampling program for the metallurgical testing. The shafts were channel sampled.

A metallurgical adit (AD-002) excavated in 1995 was channel sampled (20 samples) on three-metre intervals. The entire width of the quartz vein zone was sampled. The samples were also omitted from the 1998, 2002, and 2006 modeling due to concerns over the actual surveyed locations of these samples, but geologic data were used for all adits and shafts to define zone boundaries when constructing the geologic model.

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## 11 DRILLING

The assays generated from exploration drilling (includes reverse circulation (RC) and diamond drilling, but not blast hole drilling) are derived from 763 drill holes (133,579 m - 78,937 assays). The vast majority of the exploration drilling data was generated from RC drilling programs. RC drilling (PCR-001 to PCR-731, one hole redrilled) accounts for 732 holes (128,311 m - 75,574 assays). Diamond drilling (STD-001 - 028 and PQ-1, 2, and 3) accounts for 31 holes (5,268 m - 3,363 assays). Except for those samples deemed unreliable for modeling, all RC and core sample assays are included in the resource/reserve estimations. Unreliable samples included those with suspected survey errors, strong down-the-hole deviations, or suspected contamination. A total of 3,938 samples from drill holes, trenches, and adits were deemed to be unreliable and excluded from the model.

Scott Wilson RPA was provided with a blast hole assay databases that contained over 85,000 samples in total. The blast hole samples were taken for grade control purposes during the course of mining the Mojón and Esmeralda pits. The database was by no means complete, however, it provided invaluable insight into the grade distribution and spatial continuity at La Libertad. While used to develop variogram models and calibrate grade interpolation logic, blast hole sample assays are not included in the resource estimation.

Sample assays generated by drilling other than for production purposes were collected from the following programs:

- MINISA s 1998 diamond drilling program;
- MINISA s 1996-1998 RC drilling program;

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MINISA s 1995 RC drilling program and;  
Pre-MINISA drill programs.

A drill hole location map for all holes in the Mojón-Crimea and Esmeralda-Santa Mariá trend is provided in Figure 11-1.

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Data from all the drill programs were used for resource estimations with the exception of the pre-MINISA drill data. All drill programs are discussed in detail in the Feasibility Study (Minera Nicaragua S.A., 1998).

## **CORE DRILLING PROGRAMS**

The core rigs drilled 31 core holes (STD-001 to 028 & PQ-1, 2, 3) in 1997 and 1998 for a total of 5,268 m. The objective of the program was to provide additional information about the geology, metallurgy, and specific gravity of the various ore domains. The core holes assisted the geologists in their interpretation of the RC drill chips and provided them with additional assay and geological data which they could check against the RC drilling results.

All core holes were oriented N30°W, with the exception of six holes that were drilled due north. All holes were inclined at -45° from the horizontal, with the exception of the three metallurgical PQ-series holes (two drilled at 70°, one at 80°).

The core rigs drilled HQ (reducing to NQ) diameter core holes on holes STD-001 to STD-028. The three metallurgical core holes (PQ-1, 2, and 3) were drilled using PQ diameter equipment.

A summary of the core hole drilling program is shown in Table 11-1.

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**TABLE 11-1 DIAMOND DRILLING SUMMARY**  
**Glencairn Gold Corporation La Libertad**

<b>Program/Area</b>	<b>Number of Holes</b>	<b>Metres Drilled</b>
<b>1996-1998 Diamond Drill Program</b>		
Mojón proper (in-fill drilling)	19	3,745.00
Mojón extensions	1	103.85
<b>Total Mojón-Crimea</b>	<b>20</b>	<b>3,848.85</b>
Esmeralda	1	109.70
Santa Mariá	1	161.35
Other Prospects	9	1,148.45
<b>Total Diamond Drilling</b>	<b>31</b>	<b>5,268.35</b>

**Notes:**

1. Mojón proper refers to the original Mojón area of 1995 and includes Mojón, Trés Amigos, and part of Mojón SW.
2. Mojón extensions refer to all structures in the Mojón-Crimea trend less the original Mojón proper area.
3. Mojón-Crimea refers to the entire structure and includes Mojón proper and the Mojón extensions.

**REVERSE CIRCULATION DRILLING PROGRAMS**

MINISA commenced an RC drilling program in January 1995. The objective of the program was to define the down dip extension of the surface mineralization found in the trenches and to delineate a gold reserve large enough to justify an open pit, heap leach operation. Subsequent RC drilling programs through April 1998 defined sufficient resources for the 1998 Feasibility Study. A summary of the RC drilling programs is shown in Table 11-2.

The 1996-98 drill program expanded the original Mojón deposit (i.e., Mojón proper) along strike in both directions. An additional one kilometre of strike length was added to Mojón in a southwest direction (to Mojón West) and approximately 1.75 kilometres were added to the northeast (to Crimea). The entire zone became the Mojón-Crimea trend and includes all the structures of the original Mojón proper area and the new strike

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extensions. The total strike length of the Mojón-Crimea trend is now approximately 3.75 km.

**TABLE 11-2 RC DRILLING SUMMARY**  
**Glencairn Gold Corporation La Libertad**

<b>Program/Area</b>	<b>Number of Holes</b>	<b>Metres Drilled</b>
<b>1996-1998 RC Drill Program</b>		
Mojón proper <sup>1</sup> (in-fill drilling)	89	16,119.11
Mojón extensions <sup>2</sup>	267	52,128.97
<b>Total Mojón-Crimea</b>	<b>356</b>	<b>68,248.08</b>
Esmeralda	101	17,163.75
Santa Mariá	77	13,321.47
Other Prospects	114	19,841.23
Condemnation	27	3,915.40
<b>Total - Other than Mojón-Crimea</b>	<b>319</b>	<b>54,241.85</b>
<b>Total 1996-98 RC Drilling - All Areas</b>	<b>675</b>	<b>122,489.93</b>
<b>1995 RC Drill Program</b>		
Mojón proper	46	4,846.32
Other Prospects	11	974.76
<b>Total 1995 RC Drilling All Areas</b>	<b>57</b>	<b>5,821.08</b>
<b>Total RC Drilling Both Programs</b>		
Mojón-Crimea	402	73,094.40
Esmeralda	101	17,163.75
Santa Mariá	77	13,321.47
Condemnation	27	3,915.40
Other Prospects	125	20,815.99
<b>Total RC Drilling - All Areas &amp; Programs</b>	<b>732</b>	<b>128,311.01</b>

**Notes:**

1. Mojón proper refers to the original Mojón area of 1995 and includes Mojón, Trés Amigos, and part of Mojón SW.
2. Mojón extensions refer to all structures in the Mojón-Crimea trend less the Mojón proper area.
3. Mojón-Crimea refers to the entire structure and includes Mojón proper and the Mojón extensions.

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Step out drilling expanded the known deposit at depth to between 250 m and 300 m below surface along most of the strike length of Mojón-Crimea. In-fill drilling at Mojón reduced the drill spacing from approximately 50 m (used initially in 1995) to about 25 m centres in the high-grade zones of the deposit. The new zones were drilled at 15 m to 50 m (average of approximately 25 m) centres depending on the area. In order to test the geologic model, a number of holes were also collared northwest of the Mojón-Crimea trend and drilled in a southeast direction directly into the Mojón footwall.

The 1996-98 drilling program defined new mineralization along various structures running parallel to Mojón. The area is referred to as the Esmeralda-Santa Mariá trend. Esmeralda, located approximately 400 m to 700 m south of Mojón, is defined over a one-kilometre strike length. Santa Mariá, located 1.2 km northeast and along the strike of Esmeralda, is defined over a 500 m strike length. Drilling on these structures is more or less on 50 m centres.

The drill holes are generally oriented at a bearing of N30°W, with the exception of those few holes drilled at S30°E directly into the Mojón footwall. Most holes were drilled at an inclination of -45° from the horizontal.

## **PRE-MINISA DRILLING PROGRAM**

Prior to MINISA's involvement in the La Libertad district, numerous targets had been explored and mined by other groups. During the 1980s, over 20,000 m of core in approximately 220 holes (Lehmann & Associates in 1982 and Swedish Geological Group in 1984-90) had been drilled in the area. In addition, the Swedish Geological Group explored numerous targets by excavating hand-dug trenches, preparing topographic maps, geologic mapping and sampling of surface outcrops, trenches and available underground workings in an effort to compile a database for the entire district. Their work defined numerous targets within the district.



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Data collected by the Swedish Geological Group for the La Libertad area include geologic logs and assays from 67 core holes. Geologic and assay cross sections based on core hole and trench data are also available.

MINISA's review of the Swedish core drilling program revealed that the recoveries within the mineralized zones were very poor and averaged less than 50 percent. Furthermore, the accuracy of the assay values reported for their drill holes was considered to be questionable. Consequently, the assay data generated from the Swedish core drilling programs has not been used in the resource models. The geologic data were useful in identifying targets during the early stages of MINISA's exploration.

## **GEOLOGICAL AND GEOTECHNICAL LOGGING**

The geologic logs were designed to contain the main geologic criteria used to delineate the model zones. Logging sheets were maintained for both reverse circulation and core hole samples. A numeric coding system was developed to expedite the entry of the various geological parameters into the SURPAC™ program.

A summary of all the geological parameters entered into the database and used in one way or another to differentiate the model zones are presented in Table 11-3.

All drill holes from PCR-001 to PCR-731, and core holes STD-001 to STD-028, were logged (relogged where necessary). Geological parameters were then entered into the database. Sectional interpretation continued throughout the logging process.

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**TABLE 11-3 LOGGING PARAMETERS**

**Glencairn Gold Corporation La Libertad**

<b>Parameter</b>	<b>Description</b>
<b>Geology</b>	
Rock type	type of andesite, quartz vein or overburden
Rock modifier	type of quartz, or breccia, fault zone, fault gouge, etc
Colour	colour of sample
Quartz %	estimate of total quartz content
Silicic alteration	both presence and intensity noted
Argillic alteration	both presence and intensity noted
Propylitic alteration	both presence and intensity noted
Oxidation state	oxide, sulphide or mixed zone
Hematite	both presence and intensity noted
Limonites	both presence and intensity noted
Pyrite %	estimate of total pyrite content
Manganiferous oxides	both presence and intensity noted
Weathering profile	saprolite, saprock or bedrock
<b>Physical</b>	
Wet or Dry Sample	collected from above/below water table, water injection
Sample Quality	possible, potential or obvious contamination

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**FIGURE 11-1 DRILL HOLE LOCATION MAP SHOWN WITH 477M LEVEL GEOLOGY**

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## **12 SAMPLING METHOD AND APPROACH**

The majority of the drilling at La Libertad was RC, supplemented in part by limited core drilling. Most holes were drilled toward the northwest at a dip of -45°. The mineralized structure generally dips toward the southeast at -75°, although flatter and/or steeper sections exist locally. The deposit is drilled to between 250 m and 300 m depth along the 3.75 km strike length of the Mojón-Crimea trend. Drilling along the Esmeralda and Santa Mariá areas covers strike lengths of 1,000 m and 500 m, respectively. Drill spacing ranges from approximately 15 m to over 50 m. An analysis of composite data by Scott Wilson RPA indicates an average drill hole spacing in the plane of the structure of approximately 35 m for Mojón-Crimea, 47 m for Esmeralda, and 37 m for Santa Mariá. This analysis computes the average distance between any particular composite and the nearest on up to four surrounding drill holes.

Sample intervals for RC drilling were usually 1.5 m in length, while for core drilling the interval depended on lithology, generally ranging between one metre and three metres in length. All core was photographed and cut in half lengthways with a diamond saw. One half of the core was submitted for analysis, while the remainder was stored on site. Specific gravity measurements were also conducted on some of the core. Except for one PQ hole, the core had already been cut prior to the measurements. The storage facility for core has since been vandalized and the core lost or rendered unusable for reference.

The RC cuttings were collected from the cyclone discharge on the drill in five-gallon plastic buckets. The volume of sample collected in the buckets was measured and drill recoveries estimated from the volume filled per 1.5 m interval. A rotary wet splitter was used when groundwater was encountered. In August 1997, beginning with hole PCR-281, the collection method was modified to allow better settling and retention of fines when drilling wet. The new method utilized three buckets in series, with the overflow from each bucket discharging into the next.

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Each sample was passed through a Gilson splitter and reduced to two samples of about five kilograms each. The primary, or A, sample was sent to Barringer Labs in Reno, Nevada, USA, for analysis of gold and silver content. The remainder, sample D, was retained in storage on site. Additional samples, known as B and C, were also collected every 15 minutes and retained on site for future check or duplicate analysis.

Given the change in collection procedures in 1997, it is likely that spillage and loss of fines may have been an issue before then. It is not known what the impact of the losses was; however, in Scott Wilson RPA's opinion, the fines would likely have been underrepresented in any laboratory analysis. As well, it is understood that the RC holes were logged using chip trays rather than the entire sample. Such an approach, coupled with the above noted losses, would almost certainly lead to underrepresentation of fines.

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## **13 SAMPLE PREPARATION, ANALYSES AND SECURITY**

### **SAMPLE PREPARATION**

Initially, the primary five kilogram sample splits from the RC rig were shipped directly to the assay laboratory – either Chemex Labs (Chemex) in Mississauga, Ontario, Canada, or Barringer Labs (Barringer) in Reno, Nevada, USA. Commencing with hole PCR-215 in May 1997, the primary sample (A) was dried on site and shipped to Barringer's preparation facility in Managua, and a 300 g subsample was forwarded to Barringer's labs in Reno, Nevada. Since any physical processing and sample size reduction occurred offsite at Barringer's facilities, it is Scott Wilson RPA's opinion that other than for the initial collection procedures the potential for any sample bias during onsite preparation was minimal.

All of the initial exploration samples, including those from trenches and primary samples from RC holes PCR-001 through PCR-057, were sent unprepared in their entirety to Chemex in Mississauga. Rejects were stored at Chemex. Commencing with hole PCR-058 in January 1997, primary samples were sent to Barringer's facility in Reno. All samples were analyzed for gold and silver by fire assay methods with an atomic absorption spectroscopy (AAS) finish using a one-assay-ton (29.2 g) sample. Results were reported in grams per tonne. In areas thought to be barren, samples were sometimes assayed for gold only.

### **QUALITY ASSURANCE / QUALITY CONTROL**

The mine has maintained a quality assurance/quality control (QA/QC) program since 1995. A detailed review of this work is provided in Chlumsky, Armbrust and Meyer, LLC's audit report of 2003 (CAM).

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### **1995 QA/QC PROGRAM**

Two separate check assay or duplicate programs were conducted on samples from RC holes PCR-001 through PCR-057 in 1995. The first program (referred to as Program #2) involved collection of 152 duplicate samples (one every 30.5 m). According to CAM, duplicate pairs correlate very well with the original assays. After the 1995 drilling program, 101 library samples (the D samples referred to in Item 12 of this report) taken at the same time as the primary samples were selected and split for assay four times at three different labs. The samples were segmented into different grade ranges and the results analyzed. Results are summarized in Table 13-1. CAM indicated good correlation between the four duplicates; however, there is an overall decrease in gold grade of 8% from the original Chemex assays. Since both the primary ( A ) and the reference, or library ( D ), samples originate from the buckets used to collect the sample from the drill, and the check assays from the four labs (including Chemex) had good agreement, it is Scott Wilson RPA's opinion that a bias was likely introduced during the reduction and splitting of the sample at the drill. Whether the issues regarding fines discussed in Item 12 had any impact on these results is unknown; however, there was likely some contribution.

**TABLE 13-1 RESULTS OF CHECK ASSAY PROGRAM #3**  
**Glencairn Gold Corporation La Libertad**

<b>Grade Range</b>	<b>% Difference</b>
<b>(g/t Au)</b>	<b>(Originals -Avg. of Checks)-</b>
<1.0	-11
1.0 to <2.0	-2
2.0 to <3.0	+10
>3.0	+14
<b>All Samples</b>	<b>+8</b>

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**1996-1998 QA/QC PROGRAM**

During and after the 1996-1998 RC drilling programs, a series of samples were selected from both the coarse rejects and pulps of the primary samples. As well, cuttings from various duplicates taken at the RC drill were assayed. Finally, the rejects and pulps of selected duplicate samples were reassayed. The results of the 1996-1998 program were analyzed by Mine Development Associates (MDA) of Reno, Nevada, which reported that the mean values were generally close for most data sets and the data appear, on average, to be reproducible and without bias.

Scott Wilson RPA was provided with the check/duplicate assay database, which contained analytical results for duplicates from the drilling as well as checks and rechecks of pulps from the labs. Scott Wilson RPA reviewed analytical results for both the B and D duplicate samples from the RC drills. Since documentation was unclear as to which lab (Barringer or American) ran the duplicates and which lab checked the pulps from the duplicates, the B and D analytical results from both labs were analyzed. While results for the high grade fraction (>3g/t Au) were mixed, the original results were consistently lower by 4% to 11% in the low grade fraction (<1g/t Au) and 9% to 14% higher in the medium grade fraction (1g/t Au to <3g/t Au). Table 13-2 summarizes the differences.

**TABLE 13-2 ANALYSIS OF DUPLICATES, DIFFERENCES IN MEANS**  
**Glencairn Gold Corporation La Libertad**

g/t Au	American B		American D		Barringer B		Barringer D	
	Count	A-B	Count	A-D	Count	A-B	Count	A-D
<1	180	-10.2%	179	-7.4%	180	-4.3%	180	-10.6%
1 to <3	28	+13.9%	30	+10.8%	28	+14.3%	28	+9.3%
≥3	14	+12.7%	14	+3.0%	14	-6.9%	14	-25.6%
<b>All</b>	<b>222</b>	<b>+6.2%</b>	<b>223</b>	<b>+1.6%</b>	<b>222</b>	<b>-1.8%</b>	<b>222</b>	<b>-13.9%</b>

**Note:** A is original, B and D are Duplicates and Checks of Duplicates

The paired samples were also analyzed through use of the Student *t* Test for paired samples. Where the *t* statistic exceeds the critical value for a 5% level of significance, the difference is said to be statistically significant at that level (i.e., there is at least a 95%

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probability that the difference is significant). Those with high  $t$  statistics indicate a higher probability of statistically different means. The above-stated differences for the low and medium-grade assays were found to be statistically significant at a 95% confidence interval, suggesting that, from a statistical viewpoint, the original and duplicate samples are different and that a bias exists.

**TABLE TABLE 13-3 ANALYSIS OF DUPLICATES,  $t$  Statistics****Glencairn Gold Corporation La Libertad**

g/t Au	American B		American D		Barringer B		Barringer D	
	$t$ Stat	$t$ Critical	$t$ Stat	$t$ Critical	$t$ Stat	$t$ Critical	$t$ Stat	$t$ Critical
<1	2.56	1.65	1.93	1.65	1.11	1.65	2.74	1.65
1 to <3	2.57	1.70	2.11	1.70	2.66	1.70	1.84	1.70
$\geq 3$	0.94	1.77	0.45	1.77	1.08	1.77	1.26	1.77
<b>All</b>	<b>0.89</b>	<b>1.65</b>	<b>0.45</b>	<b>1.65</b>	<b>0.49</b>	<b>1.65</b>	<b>1.35</b>	<b>1.65</b>

**Note:** A is original, B and D are Duplicates and Checks of Duplicates

Scott Wilson RPA also reviewed checks of pulps from the original (primary A) samples and found generally good agreement in all grade ranges except the low-grade range, where differences and  $t$  statistics were similar to those found for the duplicates. This fact, coupled with the observed differences in the paired duplicates, suggests that the differences in grade may be due to both laboratory and sampling bias; however, the latter is likely the largest contributor to the differences in the medium-grade range. Sample segregation and loss of fines during the initial collection and splitting of the sample may be contributing factors.

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**DENSITY MEASUREMENTS**

During 1998, pieces of core from 1 PQ and 28 HQ size holes were subjected to specific gravity testing. The HQ core had already been sawn in half prior to the testing. A total of 741 pieces of core from a selection of various geological units, including both mineralized and unmineralized rock, were tested. Results were grouped into similar geological units and averaged. Results are summarized in Table 13-4.

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**TABLE 13-4 SPECIFIC GRAVITY MEASUREMENTS**  
**Glencairn Gold Corporation La Libertad**

Rock Codes	Area	Average SG Above/Below	
		Above	Below
1,11,51,61	Mojón SW, Santa Mariá	2.31	2.32
1,11	Mojón	2.25	2.25
1,11	Mojón-Crimea	2.33	2.34
2,12,22,42,52,62	Mojón SW, Santa Mariá, Esmeralda	2.11	2.29
2,12	Mojón	2.11	2.41
2,12	Mojón-Crimea	2.11	2.28
3,23,43,53,63	Mojón SW, Santa Mariá, Esmeralda	2.05	2.23
13	Mojón SW	2.05	? 2.29
3,13	Mojón	2.05	2.33
3,13	Mojón-Crimea	2.05	2.26
4	All	1.79	2.03
8	All	1.70	n/a
9	All	1.75	2.30

Density values were calculated by dividing the weight in air by the difference of the weight in air and the weight in water (i.e., weight in air/(weight in air - weight in water)). Samples were dried in an oven for two hours then wrapped in plastic tape to prevent water from entering or being adsorbed in the sample. Although care was taken not to bias the sample selection in favour of intact specimens, some bias will exist due to the difficulty in measuring the most crumbly, vuggy samples. This bias may lead to

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overestimates of densities, particularly for the more weathered material. Because insufficient data was available for rock codes ending in 2 and 3 above the saprolite/bedrock contact, values were extrapolated from data for codes ending in 1 (massive quartz) and 4 (argillic, low silica). Values for all rock codes in the Esmeralda and Santa Mariá areas were extrapolated from the Mojón SW area. Colluvium (code 8) was determined through bulk measurements from the edge of the Mojón ridge.

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In Scott Wilson RPA's opinion, the small variation in density values from area to area for similar rock types does not warrant the use of different values for each area. Since the mine has been operating for some time, actual bulk densities for mineralized material should be determined from available mine survey data and weightometer measurements.

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## **14 DATA VERIFICATION**

The audit by CAM provides a detailed discussion on some of the verification work completed by mine staff, the previous owners, and their consultants. According to CAM, verification of geologic data included:

- relogging to improve the consistency and quality of all geologic data;
- identification of RC sample contamination;
- identification of errors and inconsistencies in the geologic model;
- identification of data errors in the geologic database; and
- identification of RC assay biases.

In all, 3,938 samples from drill holes, trenches, and adits representing 6,900 m of sample were determined to be unreliable and flagged by a unique code indicating the type of inconsistency or problem. Included in these totals are 3,221 sample intervals from 97 drill holes. Of these holes, 91 had sample intervals with suspected or confirmed contamination. All trench and adit data were deemed unreliable and flagged accordingly. None of the flagged data was used by Scott Wilson RPA for resource estimates. Table 14-1 summarizes the suspect data.

All RC holes were relogged in 1997 and 1998 by experienced geological personnel. The digital database was verified. Inconsistencies or limitations identified in the geologic model include estimations of quartz and clay content. Logging is based primarily on drill chips that had been screened and washed prior to logging. Detailed mud logs of the original sample were not kept until sometime in 1998. Consequently, it is recognized that the quartz content is most probably overstated and the amount of clay understated. Inconsistencies in these estimates were also noted by Scott Wilson RPA during inspection of sample trays.

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In their review of the data, CAM also noted that composite grades for RC holes were consistently higher than those for core. According to CAM, the magnitude of the problem is in the range of  $\pm 10\%$  and the relationship is more pronounced in the lower grade areas.

**TABLE 14-1 SUSPECT DATA**  
**Glencairn Gold Corporation La Libertad**

Item	Flag Code	# Holes	# Samples	Length (m)
<b>Contamination</b>				
Part Holes	3	85	1,716	2,602.01
Entire Holes	3	6	945	1,435.01
<b>Subtotal Contamination</b>		<b>91</b>	<b>2,661</b>	<b>4,037.02</b>
<b>Survey Problems</b>				
Holes strongly deviated	5/6	3	158	240.79
Holes with Survey Errors	5/6	3	402	622.85
<b>Subtotal Survey</b>		<b>6</b>	<b>560</b>	<b>863.64</b>
<b>Total Drilling</b>				
Adit Samples	7	2	43	158.25
Trench Samples	7	39	674	1,841.32
<b>Total</b>		<b>138</b>	<b>3,938</b>	<b>6,900.23</b>

**Notes:** Includes 18 intervals where Au is undefined.  
Excludes PCR-252, which was never entered in database.

In Scott Wilson RPA's opinion, the drilling and geological database at La Libertad needs to be consolidated. In their data acquisition efforts, Scott Wilson RPA has resorted to a number of different sources for information; however, the database is not complete. This should be rectified as soon as possible.

It is understood that initially, all assay data were entered manually from printed assay certificates. Starting in February 1998, data were transferred and entered digitally to minimize data entry errors. Digital copies of previous data were also forwarded by both

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Chemex and Barringer around that time. According to the audit by CAM (2003), approximately 80% of the database has been verified against the original assay certificates, including all assays over 0.35 g/t Au. A few errors were discovered and corrected.

Assay data were initially provided to Scott Wilson RPA by Glencairn in ASCII format containing collar and survey information, assay interval data, and a single geological code for each interval. Scott Wilson RPA was not able to verify the source or content of the assay data. Subsequently, a complete drill hole database, including assays and other geological information, was procured from Bikerman Engineering & Technology, Inc. (Bikerman), the consultant who authored the 2002 mineral resource estimate. A spot check of assay data was conducted by Scott Wilson RPA, comparing assays in the database with those from the original 1996 and 1997 PRN and Excel™ files from the labs. While no errors were found, all values for gold had been truncated to two decimal places (rather than rounded). This database was used by Scott Wilson RPA for the final resource estimates.

After completing the analysis of assay data, capping anomalous values, and compositing the data for resource modeling, Scott Wilson RPA received another database in Access™ from a computer hard drive that had been stored at the mine. A few spot checks were also conducted on this database. No errors or truncation of values were noted, but values reported as 0 had been entered as 0.015. Scott Wilson RPA did not view the effort required to verify, extract, load, and reprocess the data in order to use this database to be warranted, although future efforts should utilize the untruncated assay values, provided the database can be verified. Scott Wilson RPA does not consider the differences that would be imparted by using the untruncated assays material to the estimates.

Scott Wilson RPA also inspected a selection of chip trays used for logging the drill cuttings from several RC holes used in the resource estimate. As well, Scott Wilson RPA took several samples from grade control trenches within the active mining areas. No core

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was available for inspection. While not generally indicative of the average grade or meant to serve as duplicates, the results do confirm the presence of gold/silver mineralization. Four chip samples were taken by Scott Wilson RPA and sent to Assayers Canada of Vancouver (Certificate 6V1168RA). Scott Wilson RPA maintained chain of custody from the project site to the lab. The samples were supposed to represent a cross section of typical mineral occurrences within the area of interest, with higher grades generally from areas of higher quartz content. Results, including those for the mine's own samples, are summarized in Table 14-2. Results from the mine represent continuous channel samples for each of the trench intervals from which the Scott Wilson RPA chip sample was taken. Note that a direct comparison should not be made, as the intervals for the samples taken by the author were much shorter and were generally from rock outcrops within the two-metre trench intervals.

**Table 14-2 Analytical Results, Independent Samples  
 Glencairn Gold Corporation La Libertad**

Sample ID	Location / Bench	Type	Scott Wilson RPA		Mine	
			g/t Au	g/t Ag	g/t Au	g/t Ag
540-71	Mojón East / 540	Massive	0.92	49.4	0.24	NA
540-72	Mojón East / 540	Stockwork	0.65	7.0	0.38	NA
480-282	Esmeralda Central / 480	Massive?	1.05	8.5	0.05	NA
468-53	Esmeralda West / 468	Stockwork	0.11	1.2	0.60	NA

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**Scott Wilson RPA****15 ADJACENT PROPERTIES**

In the CAM audit, the authors stated that no geological or exploration information was available on any adjacent properties that would have any impact on the resource estimates for La Libertad. Scott Wilson RPA has been unable to verify the existence of any material information pertaining to adjacent properties.

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## 16 MINERAL PROCESSING AND METALLURGICAL TESTING

La Libertad has been in operation for some time. Therefore, much of the initial testing has been superseded by actual operating results, which are discussed in Item 18. The current process flow sheet includes both primary and secondary crushing, which was initially not deemed necessary based on pre-production test work. The target product size is currently 80% passing 1.5 in.; however, testing has shown benefits from further size production. The mine routinely conducts bottle roll and column leach tests on active and planned production areas. Table 16-1 summarizes some of the recent results for column testing done in parallel with the active cells being leached. Results for actual cells can be found in Table 18-2.

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**TABLE 16-1 RESULTS OF COLUMN TESTING, PRODUCTION AREAS  
Glencairn Gold Corporation La Libertad**

Area	Product Size	Grade (g/t Au)	Days under Leach	Recovery (%)
91%Esm.C/9% Zopilote (Mojon East)	87%<1.5	2.28	108	36.3

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70%Esm.E/ 29%Esm.W/1%Zopilote Caracol	77%<1.5	1.95	91	46.6
40%Esm.E/55%Esm.W/4% Esm.C	78%<1.5	1.61	101	44.8
90%Esm.W/ 9.2%Esm. E/ 0.8%Esm.C	86%<1.5	1.49	96	50.2
86%Esm.W/ 7.8%Zopilote/ 5.4%Esm.E.	73%<1.5	1.39	115	48.7
92.5%Esm.W/ 7.5%Esm.C	89%<1.5	1.34	67	39.1
95.1%Esm.C/ 4.9% Spent Cell # 8	93%<1.5	1.27	61	46.9
67.1%Esm.W/17.8%Spent Cell# 8/9.3%Mojon E./5.8% Esm.C	92%<1.5	1.18	61	43.9
29.6% Esm.W/ 28.6%Esm.C/ 24.5%Mojon E/17.3%Spent Cell# 8	88%<1.5	1.26	53	36.2
Esmeralda W	84%<1 5	1.26	32	41.3
Esmeralda W	84%<1 5	1.26	33	45.4
Esmeralda W	84%<1 5	1.26	32	42.4
Esmeralda W	100%<1	1.2	36	48.3
Esmeralda W	100%<1	1.18	35	46.2
Esmeralda W	100%<1	1.04	31	48.1

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## 17 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

### MINERAL RESOURCES

#### SUMMARY

The current resource estimate for La Libertad is based on a three-dimensional block model, with individual outlines of zones or lenses interpreted from geological data derived from drill logs, trenches, and other geological information. Each of the 6.25 m x 6.25 m x 6 m high blocks was assigned with up to four rock codes and a percentage for each rock code was based on the portion of the block that resides within each of the outlines interpreted from the geological data. Up to four grades were interpolated for each block by ordinary kriging, utilizing only those drill assay composites whose rock codes matched those of the block. An overall grade was then determined by weighting the individual interpolated grades with the percentage and specific gravity of each rock type assigned to the block. The total block percentage is based on the sum of the individual percentages of each rock type. Table 17-1 provides a summary of the mineral resources for the indicated and inferred classifications as estimated by Scott Wilson RPA. Further details on the estimates can be found in the following sections of this report.

#### TABLE 17-1 MINERAL RESOURCE ESTIMATES Glencairn Gold Corporation La Libertad

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Location	Indicated Resources			Inferred Resources		
	kt	g/t Au	koz Au	kt	g/t Au	koz Au
Mojón-Crimea	13,743	1.46	647	3,551	1.73	198
Esmeralda	1,363	1.23	54	417	1.13	15
Santa Mariá	1,188	2.45	94	280	1.90	17
<b>TOTAL</b>	<b>16,294</b>	<b>1.52</b>	<b>794</b>	<b>4,248</b>	<b>1.68</b>	<b>230</b>

- Notes: 1. CIM definitions were followed for mineral resources.  
2. Remaining as at June 30, 2006.  
3. Mineral resources are estimated at a block cut-off grade of 0.60 g/t Au.  
4. Gold price of US\$500/oz and metallurgical recovery of 61%  
5. Numbers may not add up due to rounding.

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Only those blocks within the interpreted grade envelope above 0.6 g/t Au are reported in this tabulation. Further detail, with respect to the distribution of grade within the block model, is provided under a separate heading. The estimate is based on the results from 732 RC drill holes and 31 core (diamond) drill holes. Not all holes and/or sample intervals were used in the estimate. Some of the holes fall outside the reported zones and either serve to confine the estimates or reside outside the area of interest. A number of holes and/or intervals, deemed unreliable for use in modeling, were also excluded from the estimate.

The drill composite spacing averages just under 36 m in the plane of structure, which, in Scott Wilson RPA's opinion, is sufficient to classify the majority of the resources as indicated, although much of the deposit would benefit from closer spaced drilling. The mineral resources classified as indicated are located within the core of the drilling, while the inferred mineral resources are located in areas of wider spaced drilling, around the periphery, and at depth. The extent of the deposit is reasonably well defined, except at depth, where further drilling is required. Since the estimate was confined to only those areas where interpreted outlines were available, the size of the inferred mineral resource is likely understated.

## **DATABASE GENERAL DESCRIPTION**

The mineral resource estimates for La Libertad are based primarily on information from surface drilling, supplemented in part by surface mapping and trenching to assist in the interpretation. The collar database provided to Scott Wilson RPA contains 641 RC drill holes, 28 core

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holes, and 38 trenches. Drilling on La Libertad covers an approximate area of 1.2 km by 3.9 km. Holes range from 21 m to 360 m in length and most are drilled at 45 degrees to the northwest. A large number of blast holes from production were also provided, although these were only used to assist in validating the model.

Further detail on drilling can be found in Item 11 of this report.

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## ASSAYS

The assay database provided to Scott Wilson RPA for La Libertad contains almost 80,000 assay intervals, of which approximately 64,600 contain gold values greater than zero. The holes were also assayed for silver in most intervals; however, the mineral resource estimate includes gold only. Approximately 15,300 non-zero intervals are located within the interpreted mineralized zones of primary interest. Most intervals are 1.5 m in length. Brief statistical summaries of gold for the six major rock types are provided in Table 17-2.

**TABLE 17-2 GOLD ASSAY STATISTICS**  
**Glencairn Gold Corporation La Libertad**

Rock Type	Count	Grade (g/t Au)		Average	Std. Dev.
		Min	Max		
1 Massive	1,802	0.01	448.00	4.57	17.75
2 Stockwork	7,926	0.01	101.71	0.70	2.37
3 Stringer	4,205	0.01	25.47	0.25	0.73
4 Argillic	1,402	0.01	7.68	0.19	0.36
<b>Subtotal 1-4</b>	<b>15,335</b>	<b>0.01</b>	<b>448.00</b>	<b>0.98</b>	<b>6.47</b>
8 Colluvium	844	0.01	55.84	0.97	2.61
9 Bedrock	48,394	0.01	549.73	0.12	2.62
<b>Total</b>	<b>64,573</b>	<b>0.01</b>	<b>549.73</b>	<b>0.34</b>	<b>3.91</b>

**Notes:** Only those intervals  $\geq 0.01$  g/t Au with rock codes are reported.  
Includes flagged intervals discussed in Item 14

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Rock types 1-4 are the major zones of interest.

## GEOLOGICAL MODEL

For the purpose of resource estimates, La Libertad had been modeled as four major (code suffix 1-4) and two minor (suffix 8 and 9) rock types or zones in three areas (Mojón-Crimea, Esmeralda, and Santa Mariá) for a total of 22 rock codes. A series of outlines for each of the 22 rock codes were provided to Scott Wilson RPA for use in modeling. These outlines, which were based primarily on the geological data from drilling, were drawn in plan, spaced at six-metre intervals, with elevations coinciding with the block model bench midpoints. Each assay interval in the drill hole database was

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assigned a corresponding rock code. The rock types and codes used in the geological model are described below:

**Massive Vein Type 1:** Zones of massive, polyphase quartz veining and strong to intense silicification and brecciation. Gold grades are typically high (>3 g/t Au), particularly where vuggy quartz textures occur.

**Stockwork Vein Zone Type 2:** Zones of moderate to strong quartz veining and associated moderate to strong silicification and argillic alteration of the wall rock. Minor quartz vein breccias. The stockwork zones generally encompasses or haloes massive quartz veins, but with less intensely developed quartz veining and silicification. Gold grades are typically moderate to high grade (0.5 g/t Au to 4 g/t Au).

**Stringer Zone Type 3:** Zones of spotty quartz veining with associated weak to moderate silicification and moderate to strong argillization that form smaller and less intense alteration haloes around massive veins and stockwork zones. Grades here are generally low (0.1 g/t Au to 0.5 g/t Au).

**Strong Argillic Zone Type 4:** Zones of strong argillic alteration with minor quartz veining and rare, weak silicification forming broad zones within and surrounding the margins of vein structures. Grades are invariably sub-economic (0 g/t Au to 0.2 g/t Au).

**Saprolite Type 7:** Weathered bedrock profile, extending from surface to the saprolite saprock boundary. The thickness varies from 1 m to 100 m, averaging 30 m-50 m below surface. The zone generally thickens with proximity to vein structures and faults. This was only used to model the interface between bedrock and saprolite (the bedrock surface).

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**Overburden or Colluvium Type 8:** Zones of relatively unconsolidated surficial material extending down to between 10 m and 15 m below surface. Outlines here encompass and constrain the extent of potentially economic mineralization thought to be a combined result of mechanical and supergene processes.

**Bedrock Type 9:** Unweathered bedrock profile commonly pervasively propylitic altered. May contain isolated quartz stringers that occasionally contain low to moderate gold grades. These veinlets often cannot be traced up dip or along strike and modeled as rock type 9 to limit their influence and extent. Type 9 can be any combination of types 1 through 4.

**Underground Workings Type 99:** Subsurface cavities encountered during drilling, interpreted to be historic underground workings. These voids were modeled.

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As indicated previously, there are three main areas: Mojón-Crimea, Esmeralda, and Santa Mariá. The zones or rock types described above were each assigned a prefix to denote which area the zones or rock types are located. These are described below.

<b>Mojón main structures:</b>	No Prefix, Rock Codes 1, 2, 3
<b>Mojón-Crimea splay structures:</b>	Prefix 1, Rock Codes 11, 12, 13
<b>Mojón SW splay structures:</b>	Prefix 3, Rock Codes 31, 32, 33
<b>Esmeralda main structures:</b>	Prefix 2, Rock Codes 22, 23
<b>Esmeralda splay structures:</b>	Prefix 4, Rock Codes 42, 43
<b>Santa Mariá main structures:</b>	Prefix 5, Rock Codes 51, 52, 53
<b>Santa Mariá splay structures:</b>	Prefix 6, Rock Codes 61, 62, 63
<b>All areas:</b>	No prefix, Rock Codes 4, 8, 9

Rock types 4, 8, and 9 were not assigned prefixes and were not necessarily confined to any one area. Grades were interpolated into blocks containing any of the 22 rock codes provided that matching composite codes could be found within the prescribed search distance. Figure 7-3 shows a typical cross section with the various rock types.

As a final note, it is obvious that a great deal of effort was put into defining the 22 sets of bench outlines. Since the zones are quite narrow and there is a fair degree of variability in strike and dip, interpolation runs must be segregated into areas of common geometry, requiring a large number of interpolations (12 structural domains, 22 rock types). Even doing so does not guarantee that search directions will be optimal for every block. Inevitably, searches will be biased toward the hanging wall or footwall composites in some areas, placing undue weighting emphasis on certain data.

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Complicating matters further, a number of zone outlines were missing from the data supplied to Scott Wilson RPA. Despite numerous attempts by Scott Wilson RPA and the new owners to procure a complete set of the interpreted outlines, those for plan elevations 459 through 597 were not complete. As an alternative, Scott Wilson RPA coded portions of the new model by transferring block codes from a previous model that had been coded

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with the entire set of outlines. Because the previous model was coded on a whole-block basis, no percentages were available (100% was used). In addition, the zone prefix was not incorporated in the coding, making it impossible to differentiate between the main structure and parallel splay structures. Codes for Esmeralda and Santa Mariá had been simplified further, with only one code used for all zones and rock types. Because the missing outlines were confined to those areas modeled above the bedrock/saprolite contact, the total volume remaining below the current mining surface is not large.

The interpretation of the oxide/sulphide contact also could not be located. As a consequence, the distribution of resources between oxide and sulphide or oxide and mixed oxide/sulphide was not modeled.

In Scott Wilson RPA's opinion, the geological framework could be simplified into three zones with main and splay structures and modeled utilizing a gridded seam or two-dimensional model, with thickness as well as grade interpolated into each block. Because a two-dimensional model unfolds the structure, projecting the pierce points onto a vertical plane, the variability in strike and dip do not impact on the search strategy and interpolation. The two-dimensional model is then converted into a three-dimensional block model for mine planning. Future modeling efforts should investigate this option. Given the above-mentioned problems with the missing zone outlines and oxide boundary, it is Scott Wilson RPA's opinion that a complete rework of the interpretation is necessary in any event.

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**ASSAY CAPPING (CUTTING)**

In order to reduce the influence of statistically anomalous sample data on resource estimations, a number of higher grade assay values are often capped prior to compositing at levels determined by various means, including examination of probability distribution data. Scott Wilson RPA produced a series of lognormal probability curves for gold, including one for each of the six rock types discussed above. These distribution curves, which can be viewed in Item 24 (Appendix 1), exhibited unique breaks or inflection points for each rock type. These breaks often indicate the existence of several distinct populations within the grouped data, with upper values representing a very small fraction of the total population. Break points were selected for each rock type and all data capped at these levels prior to compositing. In total, 61 gold assay intervals were capped. These intervals represent approximately 0.1% of the total number of non-zero assays. The net impact of the capping was to reduce the average gold assay grades within the interpreted zones by 11.8%. This is a sizeable decrease, however, the pre-capped average includes a few very high assays which contribute disproportionately to the mean grade. Table 17-3 provides a summary of capping levels applied to the Libertad data. All data above these levels were set back to the specified cap prior to compositing.

**TABLE 17-3 ASSAY CAPPING LEVELS**  
**Glencairn Gold Corporation La Libertad**

Rock Type	g/t Au			#	g/t Au		
	Cap	SD	s		Population Maximum	Capped	Avg. Before
1 Massive	40.0	2.3		448.00	17	4.57	3.59
2 Stockwork	25.0	10.5		101.71	10	0.70	0.67
3 Stringer	5.0	6.8		25.47	11	0.25	0.23
4 Argillic	2.5	7.0		7.68	4	0.19	0.18
<b>Subtotal 1-4</b>				<b>448.00</b>	<b>42</b>	<b>0.98</b>	<b>0.85</b>
8 Colluvium	7.0	2.7		55.84	10	0.97	0.85
9 Bedrock	25.0	9.5		549.73	9	0.12	0.11
<b>Total</b>				<b>549.73</b>	<b>61</b>	<b>0.34</b>	<b>0.30</b>

**Note:** Values =0.01 g/t Au only. Includes flagged intervals discussed in Item 14

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## COMPOSITES

Assay intervals have been composited down the hole from collar to final depth in length-weighted averages, each representing three metres of continuous sample. Other composite lengths were examined; however, the selected length is believed to represent the best compromise between shorter lengths, where variability was too high to expect reasonable prediction of grade at a distance, and longer composites, which can result in excessive smoothing of values to impart a reasonable degree of block model resolution. The three-metre composite length was deemed most suitable, as it was an exact multiple of the assay sample interval of 1.5 m, while being an appropriate length for modeling grade in the six-metre high-grade blocks. The former provided relatively discrete composite values that did not straddle the assay intervals, while, for modeling, the number of composites used for grade estimates could be limited to three or four per drill hole and still provide sufficient sample coverage for each interpolated block.

Assays in each of the above-mentioned zones and lithological domains have been composited separately, starting at the contact for each zone, continuing until the hole leaves the zone. Inevitably, the final composite in each zone will be shorter than the fixed composite length unless the zone intercept is an exact multiple of the selected length. These short composites, known as orphans, were added to the previous composite if they were less than 1.5 m in length.

Composites for each zone or lithological feature have been assigned unique numeric codes to differentiate them from the surrounding material. As indicated earlier, each code's prefix denotes the area or zone while the suffix indicates the rock type. A summary of composite statistics by rock type is provided in Table 17-4.

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## TABLE 17-4 GOLD COMPOSITE STATISTICS Glencairn Gold Corporation - La Libertad

Grade (g/t Au)

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Rock Type	Count	Uncapped		Capped	
		Grade	Std.Dev.	Grade	Std.Dev.
1 Massive	921	4.58	17.23	3.61	5.27
2 Stockwork	4,176	0.70	1.93	0.68	1.47
3 Stringer	2,226	0.24	0.57	0.23	0.30
4 Argillic	726	0.18	0.30	0.18	0.25
<b>Subtotal 1-4</b>	<b>8,049</b>	<b>0.97</b>	<b>6.14</b>	<b>0.84</b>	<b>2.32</b>
8 Colluvium	499	0.93	1.99	0.81	1.11
9 Bedrock	24,981	0.07	1.84	0.06	0.35
<b>Total</b>	<b>33,529</b>	<b>0.30</b>	<b>3.43</b>	<b>0.26</b>	<b>1.23</b>

**Notes:** Only those intervals  $\geq 0.01$  g/t Au with rock codes are reported. Includes flagged intervals discussed in Item 14.

Rock types 1-4 are the major zones of interest.

## BLOCK MODEL AND GRADE ESTIMATION PROCEDURES

The current mineral resource estimate for La Libertad is based on a 3D block model with individual block dimensions of 6.25 m EW, 6.25 m NS, and 6 m high. Each block located at least partially within an interpreted zone contains a zone code, percent within the zone, and potentially an interpolated grade. Where a block straddles more than one zone and/or rock type (i.e., massive and stockwork), the type and percentage of each was also stored. The model allows for up to four different codes, percentages, and estimated grades. While rare, where two or more zones of similar rock type are encountered within the same block (i.e., all massive, but belonging to different zones), the block receives the code for the largest zone within the block together with the combined percentage of all zones of the same rock type. Grades were estimated for only those blocks falling at least partially within one of 22 zones and/or rock types. For reporting purposes, the estimated grades are weighted by their corresponding percentages and densities and a combined grade, percentage, and density is calculated. An overall code is also assigned to each block based on the majority code. Table 17-5 summarizes the coding logic for the block model.

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**TABLE 17-5 BLOCK MODEL CODING**  
**Glencairn Gold Corporation La Libertad**

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Rock Type	Codes Allowed	Variables
Massive	1,11,31,51,61	ZONE1,PCT1,AU1
Stockwork	2,12,22,32,42,52,62	ZONE2,PCT2,AU2
Stringer or Argillic	3,13,23,33,43,53,63,4	ZONE3,PCT3,AU3
Colluvium or Bedrock	8,9	ZONE4,PCT4,AU4
Combined, All Types	Majority Code	ZONE,PCT,AU

Ordinary kriging was utilized to interpolate grades into each block. The minimum and maximum number of composites was set at 1 and 24, respectively, while the maximum number of composites per hole was set at four. The latter guaranteed that a maximum of six holes was used in the grade estimates for each block. The search area was also divided into split quadrants (four above and four below the main search plane), with no more than four composites (the closest) allowed in each of the split quadrants.

Separate variogram models were developed for each of the three main zones (Mojón-Crimea, Esmeralda, and Santa Mariá). As well, each zone was subdivided into areas representing common structural (vein) orientations. In all, 12 separate orientations were modeled, but, in general, the major and minor axes were orientated along a plane striking N60° E and dipping -75° SW. Although ranges for Mojón-Crimea varied from as low as 15 m and as high as 50 m in the plane of the structure, they were in the order of 30 m on average. Cross-structure ranges were invariably shorter at 9 m to 15 m. Generalized models for each zone are depicted in Table 17-6. Sample variogram models for Au are shown in Figure 17-1.

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**TABLE 17-6 TYPICAL AU VARIOGRAM MODELS**  
**Glencairn Gold Corporation La Libertad**

Area	Model Type	(C <sub>0</sub> )	(C <sub>1</sub> )	(C <sub>2</sub> )	R <sub>1</sub> y / x / z	R <sub>2</sub> y / x / z
Mojón-Crimea	Exponential	0.30	0.70	-	30 / 30 / 9	-
Esmeralda	Exponential	0.30	0.47	0.23	12 / 12 / 6	120 / 80 / 12
Santa Mariá	Exponential	0.30	0.70	-	24 / 15 / 6	-

**Notes:** Exponential model ranges are based on 95% of the sill value.  
Sill value = C<sub>0</sub>+C<sub>1</sub>+C<sub>2</sub>. Total Range=R<sub>1</sub>+R<sub>2</sub>.

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The database used for variogram modeling contains over 121,000 records, including all RC, core, and blast samples. Other than for the downhole orientation, very few sample pairs were available from RC and core drilling for lag distances less than 25 m. This is primarily due to the regular drill spacing within the deposit, which rarely falls below 25 m in the plane of the structure. This posed some difficulty in developing models in which the sloped portions of the curves contained sufficient data to determine ranges with a high degree of confidence. However, with the inclusion of blast hole samples, reasonable models were developed albeit ranges are heavily weighted toward production data (the upper portion of the deposit). Only rock types 1 through 4 were used in the analysis. No production data was available for Santa Mariá so models for this area are the least reliable. More drilling within the core of the deposit would aid in refining these models as well as help in ongoing planning efforts.

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### **FIGURE 17-1 SAMPLE VARIOGRAM MODELS, MOJÓN CENTRAL**

insert graph

The search strategy employed by Scott Wilson RPA was based on a single pass with a maximum search distance of 60 m x 60 m x 20 m. The maximum 3D distance, which accounts for the anisotropic relationship, was set at 60 m. The searches were orientated along the rotated major (y), minor (x), and vertical (z) axes of the variograms modeled for each area. Because some zones were relatively narrow, the minimum number of composites and drill holes required to estimate a grade for a block was set at 1. Grades were estimated for each of the rock types discussed above, provided a code existed within the block.

A number of preliminary runs using the majority block code were also completed for comparison purposes. The number of composites and drill holes, and anisotropic distance to the closest composite were stored for each estimate during this run. These

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stored values were later used to assist in resource classification. Interpolation results from this initial model were compared to production data in order to fine tune composite selection. The best agreement utilized a search strategy where block rock types 1 (massive) were interpolated using composite rock types 1 and 2 and block rock type 2 used composite rock types 2 only. Rock types 3 and 4 were interpolated together, using both composite rock types. Colluvium and bedrock were interpolated using only matching codes. This is a departure from previous modeling efforts, where block rock types 1 and 2 were modeled together. Scott Wilson RPA found that if types 1 and 2 composites were used to estimate type 2 blocks, interpolated grades were higher than the blast hole grades for cut-off values below 1 g/t Au. In Scott Wilson RPA's opinion, the likely cause is smearing of high-grade values from massive veins into the surrounding stockwork zones. Composite selection logic used during grade interpolation is summarized in Table 17-7.

**TABLE 17-7 COMPOSITE SELECTION  
Glencairn Gold Corporation La Libertad**

<b>Block Code</b>	<b>Composite Codes Used to Interpolate Au</b>
Massive 1,11,31,51,61	Massive/Stockwork 1,2,11,12,31,32,51,52,61,62
Stockwork 2,12,22,32,42,52,62	Stockwork 2,12,22,32,42,52,62
Stringer/Argillic 3,13,23,33,43,53,63,4	Stringer/Argillic 3,13,23,33,43,53,63,4
Colluvium 8	Colluvium 8
Bedrock 9	Bedrock 9

**Note:** Zone codes (prefix) must match.

Finally, after completing interpolations of grades AU1 through AU4, the combined grade (AU), percent (PCT), and density (SG) were calculated based on the contributions from the individual rock types. Densities were based on values reported in Item 13 of this report, although simplified somewhat. Table 17-8 provides a list of densities used in calculations.

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**TABLE 17-8 SG VALUES FOR RESOURCE ESTIMATE  
Glencairn Gold Corporation La Libertad**

**SG Above/Below**

Rock Types	Saprolite/Bedrock Contact	
	Above	Below
1 Massive	2.25	2.31
2 Stockwork	2.11	2.28
3 Stringer	2.05	2.23
4 Argillic	1.79	2.03
8 Colluvium	1.70	N/A
9 Bedrock	1.75	2.30

Application of the methodology described above resulted in the resource estimate as set out in Table 17-9. A breakdown by zone and rock code is provided in Table 17-10 while Table 17-11 reports the total resources at increasing cut-offs. The classification system is discussed under a separate heading. The quantities and grades reported are based on a percent model, where the block volume is multiplied by the percentage and SG to arrive at the reported tonnage. Since the grade is a blend of the grades of the four rock types weighted according to their individual percentage contribution, it is inevitable that some rock types will be lower in grade than others. Consequently, while the blended grade reported will meet or exceed the 0.6 g/t Au cut-off, individual components may or may not. When compared to tabulations based on individual grades and percentages reported at the prescribed cut-off, grades are approximately 5% lower and the tonnage 5% higher, implying an internal dilution of approximately 5%. Further dilution may be experienced during mining. As indicated above, the stated resource tonnage is calculated by multiplying the cumulative percentage of all four rock within any given block by the whole-block volume and the blended SG value. If the cumulative percentage is less than 100%, then the remainder is assumed to be waste. By comparing the whole-block tonnage (which includes the waste) with the percentage-weighted quantities reported in Table 17-9, Scott Wilson RPA estimates that mining dilution could be as high as 30%.

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**TABLE 17-9 MINERAL RESOURCE ESTIMATES**  
**Glencairn Gold Corporation La Libertad**

Location	Indicated Resources			Inferred Resources		
	kt	g/t Au	koz Au	kt	g/t Au	koz Au
Mojón-Crimea	13,743	1.46	647	3,551	1.73	198
Esmeralda	1,363	1.23	54	417	1.13	15
Santa Mariá	1,188	2.45	94	280	1.90	17
<b>TOTAL</b>	<b>16,294</b>	<b>1.52</b>	<b>794</b>	<b>4,248</b>	<b>1.68</b>	<b>230</b>

- Notes: 1. CIM definitions were followed for mineral resources.  
2. Remaining as at June 30, 2006.  
3. Mineral resources are estimated at a block cut-off grade of 0.6 g/t Au.

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4. Gold price of US\$500/oz and metallurgical recovery of 61%.

5. Numbers may not add up due to rounding.

In Scott Wilson RPA's opinion, a 0.6 g/t Au cut-off would be appropriate for the reporting of the estimate from the perspective of both grade continuity and economic cut-off. Actual year-to-date ore and waste costs at Libertad are reported to be at US\$9.82/t and US\$1.09/t, respectively. Actual gold recovery was in the range of 47%. The previous owner has forecast costs at US\$7.31/t and US\$1.09/t for ore and waste, respectively, for the remainder of the year, while anticipated recovery is approximately 61%. Assuming that the forecast costs and recovery are achievable and a net realized gold price is US\$500/oz, this would equate to a cut-off value of approximately 0.6 g/t Au on a fully diluted basis. Note that the cut-off calculations assume that the rock is already broken and the choice is to either crush and stack it on the heap or truck it to the waste dump.

$$\begin{aligned} \text{Economic Cut-off} &= (\text{Ore Cost } \$/\text{t} - \text{Waste Cost } \$/\text{t}) / (\text{Net Value/g Au} \times \text{Process Recovery}) \\ &= (\text{US}\$7.31/\text{t} - \text{US}\$1.09/\text{t}) / (\text{US}\$500/\text{oz} / 31.1 \text{ g/oz} \times 61\% \text{ recovery}) \\ &= 0.63 \text{ g/t Au} \end{aligned}$$

The calculated cut-off may have to be revised, depending on future performance and the long-term outlook for the mine.

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## **CLASSIFICATION**

CIM definitions (December 2005) were followed for the classification of the mineral resources. The classification system developed by Scott Wilson RPA for indicated mineral resources at La Libertad was based on a 60 m x 60 m x 20 m (rotated major, minor, vertical axes) search ellipse with a maximum distance to the closest composite of 30 m and a minimum of two holes within the search area. In some circumstances, this pure mathematical derivation can result in clusters of blocks between drill holes classified as indicated; however, blocks within close proximity of the holes do not meet the two-hole minimum and, therefore, are classified as inferred. This generally occurs when the drill spacing exceeds the maximum search distance, but blocks between the holes are close enough to the holes to meet the distance threshold and the two-hole minimum.

In order to mitigate this problem, Scott Wilson RPA developed 3D distance shells based on the 30 m maximum and two-hole minimum. The shells were displayed graphically along with the drill holes and only those shells that were pierced by at least two holes were selected. All interpolated blocks contained within these shells were coded with a CLASS value of 2, representing the indicated category. All other interpolated blocks within the search received an inferred classification (CLASS 3).

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These criteria were based on Au variography developed by Scott Wilson RPA for the deposit, which suggested maximum short-structure ranges of 30 m to 50 m along the major and minor axes and 9 m to 15 m cross-structure. For the most part, that portion of the mineral resource classified as indicated coincides with the interior of the drilled area of La Libertad. The average drill spacing within this area is just under 36 m. The inferred portion occupies the fringes and portions of the deposit where the drilling is too widely spaced to produce reliable grade estimates.

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**TABLE 17-10 MINERAL RESOURCE ESTIMATES, DETAILS**  
**Glencairn Gold Corporation La Libertad**

Zone/Area	Code/Rock Type	Indicated Resources			Inferred Resources		
		kt	g/t Au	koz Au	kt	g/t Au	koz Au
<b>Mojón-Crimea</b>	1 Massive	3,501.9	2.17	244.4	298.5	3.25	31.2
	2 Stockwork	5,729.0	1.03	189.0	1,603.0	1.32	67.8
	3 Stringer	746.6	0.95	22.8	211.6	0.95	6.4
	4 Argillic	269.6	0.91	7.9	48.3	1.04	1.6
	8 Colluvium	521.3	1.10	18.5	118.6	0.96	3.7
	9 Undifferentiated - Bedrock	97.4	0.90	2.8	17.1	1.00	0.6
	11 Massive Splay	210.0	2.22	15.0	102.6	2.17	7.1
	12 Stockwork Splay	2,368.7	1.78	135.9	991.1	2.30	73.2
	13 Stringer Splay	132.8	1.06	4.5	105.4	1.27	4.3
	32 Stockwork Splay	165.4	1.13	6.0	49.4	1.08	1.7
	33 Stringer Splay	0.4	0.61	0.0	5.3	0.84	0.1
		<b>Subtotal Mojón-Crimea</b>	<b>13,743</b>	<b>1.46</b>	<b>647</b>	<b>3,551</b>	<b>1.73</b>
<b>Esmeralda</b>	8 Colluvium	102.1	1.29	4.2	27.4	1.93	1.7
	9 Undifferentiated - Bedrock	1.5	0.93	0.0	-	-	-
	20 Undifferentiated - Saprolite	121.7	1.14	4.5	56.7	1.30	2.4
	22 Stockwork	1,021.2	1.28	41.9	313.5	1.03	10.4
	23 Stringer	109.1	0.85	3.0	16.2	1.05	0.5
	42 Stockwork Splay	7.1	1.27	0.3	3.0	0.92	0.1
	<b>Subtotal Esmeralda</b>	<b>1,363</b>	<b>1.23</b>	<b>54</b>	<b>417</b>	<b>1.13</b>	<b>15</b>
<b>Santa Mariá</b>	4 Argillic	0.9	1.93	0.1	-	-	-
	8 Colluvium	64.2	1.41	2.9	16.8	1.15	0.6
	50 Undifferentiated - Saprolite	88.8	2.74	7.8	31.7	2.68	2.7
	51 Massive	211.9	4.78	32.5	22.0	2.73	1.9

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52 Stockwork	548.1	2.10	37.1	164.8	1.75	9.3
53 Stringer	133.1	1.29	5.5	21.9	1.95	1.4
61 Massive - Splay	3.7	4.11	0.5	-	-	-
62 Stockwork - Splay -	72.4	2.02	4.7	16.4	1.80	0.9
63 Stringer - Splay	64.9	1.20	2.5	6.4	1.12	0.2
<b>Subtotal Santa Mariá</b>	<b>1,188</b>	<b>2.45</b>	<b>94</b>	<b>280</b>	<b>1.90</b>	<b>17</b>
<b>TOTAL Resources</b>	<b>16,294</b>	<b>1.52</b>	<b>794</b>	<b>4,248</b>	<b>1.68</b>	<b>230</b>

Notes: 1. CIM definitions were followed for mineral resources.

2. Remaining as at June 30, 2006.

3. Mineral resources are estimated at a block cut-off grade of 0.60 g/t Au

4. Gold price of US\$500/oz and metallurgical recovery of 61%.

5. Numbers may not add up due to rounding.

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**TABLE 17-11 MINERAL RESOURCE ESTIMATES, CUT-OFF TABLE**  
**Glencairn Gold Corporation La Libertad**

Cut-off g/t Au	Indicated Resources			Inferred Resources		
	kt	g/t Au	koz	kt	g/t Au	koz
0.00	61,143	0.57	1,117	22,977	0.45	335
0.10	51,060	0.67	1,098	16,110	0.63	324
0.20	38,102	0.85	1,039	10,655	0.87	299
0.30	29,327	1.03	971	7,739	1.11	277
0.40	23,497	1.20	907	6,045	1.33	258
0.50	19,404	1.36	848	5,049	1.50	244
<b>0.60</b>	<b>16,294</b>	<b>1.52</b>	<b>794</b>	<b>4,248</b>	<b>1.68</b>	<b>230</b>
0.70	13,744	1.68	741	3,640	1.86	217
0.80	11,703	1.84	693	3,212	2.01	207
0.90	10,149	1.99	651	2,839	2.16	197
1.00	8,914	2.14	613	2,403	2.38	184
1.10	7,883	2.28	579	2,147	2.54	175
1.20	6,971	2.43	545	1,925	2.70	167
1.30	6,239	2.57	516	1,702	2.89	158
1.40	5,577	2.72	487	1,501	3.10	150

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1.50	4,982	2.87	460	1,352	3.29	143
1.60	4,491	3.01	435	1,220	3.47	136
1.70	4,067	3.16	413	1,110	3.65	130
1.80	3,708	3.29	393	1,005	3.85	125
1.90	3,405	3.42	375	912	4.06	119
2.00	3,143	3.55	358	791	4.38	111

Notes: 1. CIM definitions were followed for mineral resources.

2. Remaining as at June 30, 2006.

3. Mineral resources are estimated at a block cut-off grade of 0.6 g/t Au.

4. Gold price of US\$500/oz and metallurgical recovery of 61%.

5. Numbers may not add up due to rounding.

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## **MINERAL RESERVES**

No mineral reserves have been estimated by Scott Wilson RPA. Previously reported reserves are outdated. All aspects of La Libertad are currently under review by the new owners, including mining and production plans.

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## 18 OTHER RELEVANT DATA AND INFORMATION

### MINING OPERATIONS

La Libertad is a conventional surface mining operation utilizing small to mid size equipment to drill, blast, excavate, and remove ore and waste from several active open pits. Ore is hauled to the process area and stockpiled or dumped directly into a primary crusher as the first stage in a crushing and screening plant designed to reduce the ore to 80% passing 1.5 inches prior to agglomerating and placing the material on leach pads located adjacent to the plant. Waste is stacked in 5 m lifts on dumps located within close proximity of the pits. The average distances for the ore and waste hauls are 2 km and 0.8 km, respectively.

The mine design calls for bench heights of six metres, with multiple benches mined concurrently in places, depending on the location, material mined, and the equipment available. The wall and berm configurations are based on overall design slopes of 41 degrees on the footwall and 45 degrees on the hanging wall. The ramp and road design width and maximum gradient are 16 m and 10 %, respectively.

Drilling, blasting, and most support activities are accomplished with La Libertad's own equipment and personnel, while the load-haul-dump functions are currently performed by a contractor. Blastholes are 4.5 in. diameter with a 0.6 m to 1.0 m sub-drill. Holes are drilled by Ingersoll-Rand ECM-590 track-mounted hydraulic drills and generally loaded with ANFO plus an emulsion booster. Wet holes are loaded with emulsion explosives.

The contractor uses a variety of equipment including Caterpillar 320CL, 322CL and 350LME hydraulic excavators, Caterpillar 966F and 988F wheel loaders, Caterpillar D250E (25st) and D400 (40st) articulated dump trucks, and Caterpillar 769D (35st) off-highway trucks. Support is provided by Caterpillar D8N and D9R track dozers and

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Caterpillar 140G graders. The articulated trucks are required to negotiate the slick driving conditions encountered in the pits during the wet season due to the high clay/saprolite content in the rock. Dewatering is effected by a combination of in-pit sumps and ex-pit diversion ditches.

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From the start of production in mid-1997 to the end of May 2006, the mine produced 8.1 million tonnes of ore grading 1.77 g/t Au, or 461,300 ounces of contained gold. During the same period, the mine moved 21.9 million tonnes of waste for an average strip ratio of 2.7 tonnes ore per tonne waste. Details regarding production during individual years are provided in Table 18-1.

**Table 18-1 Historic Mine Production**  
**Glencairn Gold Corporation La Libertad**

<b>Year</b>	<b>Ore (Mt)</b>	<b>(g/t Au)</b>	<b>(koz Au)</b>	<b>Waste (Mt)</b>	<b>Strip Ratio</b>
1997	0.56	1.89	34.1	1.42	2.53
1998	1.44	1.88	86.9	2.89	2.01
1999	1.02	2.15	70.7	1.83	1.78
2000*	-	-	-	-	-
2001*	0.62	1.78	35.3	1.47	2.38
2002	0.94	1.72	51.9	2.10	2.24
2003	0.97	1.44	44.8	2.23	2.30
2004	1.08	1.73	60.3	3.12	2.87
2005	0.97	1.79	56.1	3.55	3.64
2006**	0.50	1.32	21.2	3.29	6.59
<b>Total</b>	<b>8.10</b>	<b>1.77</b>	<b>461.3</b>	<b>21.90</b>	<b>2.70</b>

Notes: \*Operations were suspended during 2000 and part of 2001

\*\*Production to end of May 2006

The current mine plans are based on pit designs developed in late 2002. These plans, as well as other operating and capital plans for La Libertad, are presently under review by the new owners. Under the previous owner's budget, which was revised in May 2006,

the mine is forecast to produce 1.59 million tonnes grading 1.49 g/t Au, or 76,200 contained ounces Au (42,000 recoverable), in 2006. The stripping ratio during this period is expected to be in the range of 4.9:1 for a total of 7.76 million tonnes of waste. The mine has been faced with increased stripping requirements as it moves forward with the current plan. An additional mining contractor has been engaged to assist in this effort. Based on the existing pit designs, the overall stripping ratio is anticipated to be in the range of 6.1:1 over the life of mine. In the first five months of 2006, the mine produced 499,300 tonnes of ore grading 1.32 g/t Au (21,200 oz Au) at an average strip ratio of 6.6:1.



## MINERAL PROCESSING

The ore at La Libertad is processed by heap leaching. Until recently, leaching of crushed ore has taken place on a dedicated on/off pad consisting of eight cells. The current plan is to discontinue the on/off cycle and utilize the existing pad as a permanent single-use facility. According to mine staff, the existing pad has a capacity of approximately 1.7 million tonnes; however, this will have to be confirmed by further geotechnical studies and testing. Additional areas for pad construction have been identified, however, engineering and permitting must take place before construction can begin. Environmental staff indicate that permitting for the new pads, which would provide an additional 4 million tonnes capacity, could take six months to a year to complete. Construction of the existing pad required about a year after permitting. Given this timeline, efforts to secure the required permitting must proceed without delay.

The current process flow sheet is depicted in Figure 18-1. Run-of-mine (ROM) ore is stockpiled or dumped directly into a 100 t dump pocket where it is fed directly to a 42 in. x 48 in. primary jaw crusher by means of an apron feeder. The primary crusher is operated in open circuit followed by a secondary crushing system consisting of two 41/4 foot standard cone crushers run in parallel closed circuits. The ore passes over a 4 in. grizzly prior to entering the crushing system and the undersize is fed directly to the secondary circuit where it is recombined with the primary crusher product and crushed to

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produce a final product targeted at 80% passing 1.5 in. The primary crusher at La Libertad has only been in operation since 2000 and the secondary circuit was added in 2003. Prior to 2000, an MMD 500 mineral sizer was used for size reduction; however, it is reported to have been relatively ineffective and unreliable. During Scott Wilson RPA's site visit, one of the two secondary crushers was not in operation and the observed product size was much larger than 1.5 in. This was, in part, due to the siliceous nature of the ore being mined at the time; however, higher grade is often associated with higher silica content. This is of concern since recent studies have indicated that heap recovery is size dependent, particularly if gold particles are encapsulated in silica or the material is relatively impervious.

After leaving the secondary crushing system, the ore is agglomerated at a rate of 10 kg/t Portland Type I cement and sprayed with cyanide solution. The ore is then placed on the leach pad cells via a transportation and stacking system consisting of 17 individual belt conveyors. Each cell is approximately 80 m wide by 200 m long and holds approximately 125,000 tonnes in each seven metres to eight metres high lift. Circulating solutions are contained within the pad using a 1.5 mm thick HDPE geomembrane that was installed with a one metre thick protective layer of rock and/or sand prior to placement of ore. Drainage of the heap is effected by means of a system of perforated pipes placed at the interface of the membrane and the protective layer. The cyanide solution is applied at a rate of 0.006 USgpm/ft.<sup>2</sup>, with a total application rate of 1,200 USgpm to 1,500 USgpm. The on/off cycle consists of approximately 60 days of barren solution application followed by 30 days of intermediate solution application and another 30 days of rinsing/detoxification.

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The high-grade or pregnant solution containing the precious metals and cyanide from the heap drains to a pregnant solution pond where it is subsequently pumped to a carbon-in-leach (CIL) facility, which consists of two parallel trains of six 1.5-ton carbon columns. Activated carbon is circulated counter-current to the solution flow, and the precious metals adsorb onto the carbon. The loaded carbon is transferred, after acid washing to remove mineral contaminants, to the elution column where gold/silver is

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stripped out using a concentrated sodium cyanide/sodium hydroxide solution at elevated temperature and pressure. The carbon is heated to very high temperatures so it can be reused back at the CIL circuit, while the resulting solution is passed to three electro-winning cells where the precious metals are plated onto cathodes. The plated metals are removed from the loaded cathodes and dewatered in a filter press before smelting in a propane gas furnace. Finally, the resulting doré bars are sent to a refinery where they are further treated to remove any remaining impurities.

### **RECOVERABILITY**

In Table 18 2 total process recoveries are summarized by individual cells to completion. As indicated above, primary crushing was introduced in 2000 while a secondary circuit was added in 2003. Prior to this, size reduction was accomplished by means of a mineral sizer, which had minimal impact on the ROM ore.

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**TABLE 18 2 PROCESS RECOVERY BY CELL**  
**Glencairn Gold Corporation La Libertad**

Cell/Date	Size %		Ore		Recovery	
	<1.5	(kt)	(g/t Au)	(koz Au)	(koz Au)	%
1F	N/A	97	1.45	4.53	3.05	67.4
2G/Dec02?	60.5	94	1.29	3.89	1.54	39.5
3G	42.1	97	1.49	4.65	2.60	56.0
4F	81.6	88	1.46	4.10	2.70	65.8
5G	76.2	99	1.31	4.14	2.22	53.6
1G	75.9	113	1.31	4.78	2.30	48.1
2H	76.3	120	1.39	5.35	2.65	49.5
3H	73.8	118	1.52	5.79	3.64	62.8
4G	70.8	120	1.56	6.01	4.17	69.4
5H/Dec03?	69.3	108	1.33	4.60	2.65	57.5
1H	71.7	116	1.60	5.94	3.80	63.9
2I	76.9	112	1.77	6.37	3.66	57.4
3I	77.7	102	2.12	6.91	6.05	87.5
4H	77.8	101	1.83	5.94	4.57	76.9
5I	84.3	98	1.88	5.94	4.93	83.0
1I	80.2	105	1.52	5.14	3.54	69.0
2J	77.6	83	1.32	3.51	3.25	92.5
3J	75.7	106	1.52	5.20	3.60	69.3
4I/Oct04	68.0	111	1.97	7.00	3.67	52.4
5J/Nov04	69.4	106	2.06	6.99	4.65	66.6
1J/Dec04	69.8	114	1.93	7.11	5.08	71.5
2K/Jan05	67.3	107	1.44	4.95	2.78	56.2
3K/Feb05	71.1	109	1.53	5.34	3.11	58.2
4J/Mar05	79.5	108	1.27	4.41	3.14	71.2
5K/May05	85.8	103	1.73	5.74	3.02	52.7
<b>Total</b>	<b>73.3</b>	<b>2,633</b>	<b>1.59</b>	<b>134.33</b>	<b>86.36</b>	<b>64.3</b>

Note: Completed Cells Only.

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## FIGURE 18-1 PROCESS FLOW SHEET

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## ENVIRONMENTAL CONSIDERATIONS

All aspects of environmental permitting, regulations, and monitoring are overseen by the Ministerio del Ambiente y los Recursos Naturales de Nicaragua (MARENA). The basic operating permit for La Libertad covering the mining operation at Mojón, the heap leach facility, and plant was issued in 1997. In 2001 and 2002, mining permits were issued for additional mining operations in the Mojón trend. In 2005, operating permits were also issued for the Esmeralda, Santa Mariá, and Mojón-Crimea areas. According to mine staff, there are no material issues or violations related to these permits that are outstanding.

As part of the requirements imposed by MARENA, an annual operating plan is prepared by the mine based on the approved Environmental Management Plan. Key issues covered include:

- Hydrocarbons Management (finally disposed of through authorized dealer);
- Waste disposal;
- Monitoring: daily monitoring in several places for Ph, CN and Cl, samples taken in places determined in the base line; rain fall and solution pond levels;
- Topographic control in zones prone to land slides (every 15 days to 30 days);
- Surface and underground water: bimonthly monitoring in sites around the mine;
- Hydrobiological monitoring twice annually (dry season - rainy season);
- Noises;
- Sediments management, sediment control ponds;
- Revegetation plan achieved.

Permits under which the mine operates include:

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MARENA Administrative resolution No 17-2005 Expansion of Cerro Mojon operation

MARENA Environmental Permit, no number, dated July 1996

Ministry of Industries and Commerce, Ministerial Agreement No. 200-RN-MC/2002 - Mining Concession extension , exploitation

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Ministry of Economy and Development, Ministerial Agreement No.032-RN-MC/94 - Mining concession, exploitation,

The mine will be required to produce an environmental impact statement (EIS) and acquire permits for its plans to convert existing heap leach operations to permanent pads and build additional pads to accommodate ongoing leach operations. According to mine personnel, existing pads have sufficient capacity for about one more year of operations (as at June 2006). The permitting process is expected to take up to one year. Previous pad construction also took about one year to complete. In addition, the mine does not hold the surface rights for all areas planned for pad construction, although alternative sites have been identified within the property boundaries. Given the long lead time required to design and build the additional capacity, the permitting and land acquisition (if necessary) must proceed without delay.

Rehabilitation and revegetation of disturbed areas is ongoing at La Libertad. Waste dumps are designed to conform to slope requirements set out by MARENA for reclamation. There are no specific requirements to reslope or rehabilitate to open pits; however, discharge of any drainage from the pits must be co-ordinated with MARENA. There are no formal closure plans for La Libertad, and no bonding requirements, but guidelines regarding closure exist within the environmental regulations to address this. All areas that were initially wooded must be reforested and heaps will have to be resloped and revegetated. The new EIS for the permanent pads will address reclamation requirements there.

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**CAPITAL AND OPERATING COST ESTIMATES**

La Libertad has been in operation for some time now. As indicated previously, the current mine plans are based on pit designs developed in late 2002. These plans, as well as other operating and capital plans for La Libertad, are presently under review by the new owners. Scott Wilson RPA has reviewed operating reports for 2005 as well as those from January to April 2006. In addition, Scott Wilson RPA reviewed cost and production forecasts for the remainder of 2006. Cash costs in 2005 ranged from \$400/ounce Au to over US\$600/ounce Au, with ore tonnes, grade, and stripping being the primary factors contributing to the variance. Under the existing budget, which was revised in May 2006 by the previous owners, the operation is forecast to produce 42,000 ounces Au at a cash cost of US\$521 per ounce Au. In the first four months of 2006, La Libertad produced 9,000 ounces at a total cash cost of US\$805 per ounce Au and is forecast to produce 33,000 ounces Au at US\$443 per ounce Au for the remainder of the year. Table 18-3 provides a summary of actual and forecast unit costs for 2006, while Table 18-4 and Table 18-5 provide details for mining, process, and administration.

**TABLE 18-3 2006 PROPERTY UNIT COSTS**  
**Glencairn Gold Corporation - La Libertad**

	<b>Jan-Apr</b>	<b>May-Dec</b>	<b>Full Year</b>
<b>Item</b>	<b>(Actual)</b>	<b>(Forecast)</b>	<b>(Act+Fcst)</b>
Mine	10.32	6.50	7.45
Plant	5.22	4.38	4.69
Administration	2.20	1.24	1.53
<b>Total Cash Cost US\$/t Ore</b>	<b>17.74</b>	<b>12.12</b>	<b>13.67</b>
less Stripping & Past Work	(7.92)	(4.81)	(5.58)
<b>Unit Cost US\$/t Ore</b>	<b>9.82</b>	<b>7.31</b>	<b>8.08</b>
Cut-off g/t Au	1.1	0.6	0.7
In-Pit Cut-off g/t Au	1.0	0.5	0.6

**Notes:**

1. Based on budget/forecast produced by previous owner in May 2006.
2. Cut-offs calculated by Scott Wilson RPA.
3. Based on US\$500/oz Au and actual/forecast recoveries for period.
4. In-pit cut-off is based on Unit ore cost less unit waste cost of US\$1.09/t.
5. Numbers may not add due to rounding.

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**TABLE 18 4 2006 MINING FORECAST**  
**Glencairn Gold Corporation La Libertad**

<b>Item</b>	<b>Jan-Apr</b>	<b>May-Dec</b>	<b>Full Year</b>
	<b>(Actual)</b>	<b>(Forecast)</b>	<b>(Act+Fcst)</b>
<b>Mining</b>			
Ore kt	394	1,196	1,590
Cell 8 kt	25	96	121
Waste kt	2,463	5,298	7,761
Total kt	2,883	6,590	9,473
Stripping Ratio t/t	6.25	4.43	4.88
Ore Grade g/t Au	1.29	1.56	1.49
Contained koz Au	16	60	76
Offloading Spent Ore kt	405	-	405
<b>Costs</b>			
	<b>US\$/t</b>	<b>US\$/t</b>	<b>US\$/t</b>
Ore	1.10	1.32	1.27
Waste	6.78	4.81	5.30
Offloading	0.72	-	0.18
Mine Supervision	0.26	0.09	0.13
Technical Services	0.12	0.08	0.09
Additional Charges	0.19	0.20	0.20
Past Work Not Recorded	1.14	-	0.28
<b>Total Mining Cost</b>	<b>10.31</b>	<b>6.50</b>	<b>7.45</b>
Cost before Past Work	9.18	6.50	7.17
Stripping Unit Cost	1.09	1.09	1.09
Ore Unit Cost	2.40	1.69	1.87

**Notes:**

1. Based on budget/forecast produced by previous owner in May 2006
2. Offloading Discontinued in April 2006.
3. Cell 8 is being used to leach spent ore with recoverable metals.
4. Numbers may not add due to rounding.

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**TABLE 18 5 2006 PROCESS AND ADMINISTRATION FORECAST**  
**Glencairn Gold Corporation La Libertad**

<b>Item</b>	<b>Jan-Apr (Actual)</b>	<b>May-Dec (Forecast)</b>	<b>Full Year (Act+Fcst)</b>
<b>Crushing and Stacking:</b>			
Ore to pad kt	427	1,196	1,623
Grade g/t Au	1.28	1.56	1.48
Contained g Au	548	1,862	2,409
Contained koz Au	17.6	59.9	77.5
Recoverable koz Au	8.3	36.4	44.7
Change in Inventory koz Au	-0.7	3.6	3.0
Production koz Au	9.0	32.8	41.7
Ultimate Recovery	47.2%	60.8%	57.7%
Cumulative 2006 Recovery	51.0%	54.7%	53.9%
<b>Costs</b>			
	<b>US\$/t ore</b>	<b>US\$/t ore</b>	<b>US\$/t ore</b>
Crushing & Stacking	2.76	2.18	2.33
ADR Plant	2.33	2.10	2.16
Laboratory	0.13	0.10	0.11
<b>Total Processing</b>	<b>5.22</b>	<b>4.38</b>	<b>4.60</b>
Environmental	0.09	0.11	0.11
Administration	0.78	0.44	0.53
Human Resources	0.06	0.04	0.05
Warehouse & Transportation	0.33	0.13	0.18
General Services	0.00	0.00	0.00
Loss Control	0.36	0.24	0.28
Managua Office	0.10	0.07	0.08
Property Management	0.48	0.20	0.27
Refining , transport & royalties	0.14	0.09	0.11
Silver Credit	-0.13	-0.09	-0.10
<b>Total Administration</b>	<b>2.20</b>	<b>1.24</b>	<b>1.50</b>
<b>Total Process &amp; Admin</b>	<b>7.42</b>	<b>5.62</b>	<b>6.10</b>

**Note:** Based on budget/forecast produced by previous owner in May 2006



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## REVENUE AND CASH FLOW

No long-term plans for the mine were made available for Scott Wilson RPA to review. Scott Wilson RPA has been advised that only annual plans are produced at this time and that these plans are based on pit designs completed in 2002. Table 18 6 provides a summary of actual and forecast costs, revenue and cash flow for 2006 produced by the previous owner in May 2006. All plans for the mine are currently under review by the new owners.

In addition to the deferred stripping listed in the Table 18 6, the mine has projected capital expenditures in the range of US\$3.8 million, including US\$2.5 million for the plant and leach pads and US\$0.7 million for exploration. These expenditures have not yet been approved. Based on results to the end of April, the mine is currently in a negative cash flow position before deduction of these unapproved items.

As at March 31, 2006, there were 309 employees on the payroll, excluding the mining contractor.

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**TABLE 18 6 2006 REVENUE AND CASH FLOW FORECAST**  
**Glencairn Gold Corporation La Libertad**

<b>Jan-Apr</b>	<b>May-Dec</b>	<b>Full Year</b>
<b>(Actual)</b>	<b>(Forecast)</b>	<b>(Act+Fcst)</b>

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<b>Item</b>			
Production oz Au	9.0	32.8	41.7
Sales oz Au	8.3	32.8	41.0
<b>Revenue (US\$x1,000)</b>			
Revenue US\$/oz Au	544	613	599
Revenue	4,511	20,067	24,578
Less Royalties 5%	(222)	(1,003)	(1,226)
Net sales	4,288	19,064	23,352
<b>Costs (US\$x1,000)</b>			
Mine	4,069	7,777	11,846
Plant	2,227	5,237	7,464
Administration	940	1,487	2,427
Total Cash Cost	7,236	14,501	21,737
Cash Cost US\$/oz Au	805	443	521
less Deferred Cost	(863)	89	(774)
Total Net Cash Cost	6,372	14,590	20,963
Net Cash Cost US\$/oz Au	709	445	502
<b>Cash Flow (US\$x1,000)</b>			
Cash Flow From Operation	(2,084)	4,474	2,389
Cash Flow US\$/oz Au	(232)	137	57
<b>Capital</b>			
Mine Development (Deferred Stripping)	863	(89)	774
Plant	0	0	0
Administration	0	0	0
Total Capital Expenditures	863	(89)	774
<b>Net Cash Flow</b>	<b>(2,948)</b>	<b>4,563</b>	<b>1,615</b>
<b>Net Cash US\$/oz Au</b>	<b>(328)</b>	<b>139</b>	<b>39</b>

**Note:** Based on budget/forecast produced by previous owner in May 2006.

## 19 INTERPRETATION AND CONCLUSIONS

The following interpretation and conclusions are made regarding mineral resource estimates and other issues relevant to the mine.

1. Scott Wilson RPA has estimated an indicated mineral resource for La Libertad as at June 30, 2006 of 16.3 Mt grading 1.52 g/t Au for a total metal content of 794 koz Au. An additional 4.3 Mt grading 1.7 g/t Au, or 230 koz Au, have been estimated for the inferred category. These estimates are based on a three-dimensional block model, with individual outlines of zones or lenses interpreted from an extensive geological database. The model is a percent model and only those portions of blocks within the interpreted outlines greater than or equal to 0.6 g/t Au are reported. Silver content has not been estimated, nor has it been reported in previous estimates. The silver-gold ratio is typically 4.5:1.
2. The reporting cut-off of 0.6 g/t Au was calculated by Scott Wilson RPA based on the mine's forecast plan of operating costs and gold production combined with an assumed net realized price of US\$500 per ounce Au. The plan is achieved by a combination of higher mining productivity and feed throughput coupled with higher grades and higher metallurgical recovery than what has been experienced so far in 2006. The calculated cut-off may have to be revised, depending on future performance and the long term plans for the mine.
3. CIM definitions (December 2005) were followed for the classification of mineral resources. For the most part, that portion of the mineral resource classified as indicated coincides with the interior of the drilled area of La Libertad. The average drill spacing within this area is approximately 36 m in the plane of the structure. The inferred portion occupies the fringes of the deposit as well as areas where drilling is too widely spaced to predict grade and structural continuity with confidence.
4. The estimate is based on the results from 732 RC drill holes and 31 core (diamond) drill holes. Not all holes and/or sample intervals were used in the estimate. Some of the holes fall outside the reported zones and either serve to confine the estimates or reside outside the area of interest. A number of holes and/or intervals, deemed unreliable for use in modeling, were also excluded from the estimate.
5. The extent of the deposit is reasonably well defined, except at depth, where further drilling is required. Since the estimate was confined to only those areas where interpreted outlines were available, the size of the inferred mineral resource is likely understated.

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6. No mineral reserves have been estimated by Scott Wilson RPA. The resources upon which the previously reported reserves are based were estimated in 2002 and are now superseded by the Scott Wilson RPA resource estimate. For the first four months of 2006, the

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mine has been operating at a loss. Cash costs for that period were US\$805 per ounce Au produced. Glencairn is in the process of reviewing all aspects of the operation, including the operating plans. It is anticipated that a new reserve estimate will be produced as part of the review.

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## **20 RECOMMENDATIONS**

The following recommendations are made:

1. In Scott Wilson RPA's opinion, the drilling and geological database at La Libertad needs to be consolidated. For this estimate, Scott Wilson RPA has relied on a number of different sources for information because there is not a complete database. This should be rectified as soon as possible.
2. In Scott Wilson RPA's opinion, the geological framework used to constrain the grade interpolation is overly complex and should be simplified. In addition, a number of the outlines comprising this framework could not be located, despite exhaustive efforts to do so. It is Scott Wilson RPA's opinion that a complete rework of the interpretation is necessary. Although there have been several revisions of the grade model, the basic geological framework has not been updated since 1998. Over 8 Mt have been mined since the mine began operations and invaluable insight has been gained with respect to the various controls and distribution of mineralization within the deposit.
3. The last pit designs for La Libertad were completed in 2002. Given the differences in market conditions coupled with changes in operations, as well the character of the deposit as the operation moves to other mining areas, a complete revision of the mining plans and reserve base is warranted.

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## 22 SIGNATURE PAGE

This report titled Technical Report on La Libertad Project, Nicaragua , with an effective date of June 30, 2006, prepared for Glencairn Gold Corporation and dated October 31, 2006, was prepared and signed by the following author:

**(Signed & Sealed)**

Dated at Vancouver, BC  
October 31, 2006

Peter A. Lacroix, P.Eng.  
Associate Mining Engineer  
Scott Wilson RPA

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## 23 CERTIFICATE OF QUALIFICATIONS

### PETER A. LACROIX

I, Peter A. Lacroix, P.Eng., as an author of this report entitled Technical Report on La Libertad Project, Nicaragua prepared for Glencairn Gold Corporation and dated October 31, 2006, do hereby certify that:

1. I am an Associate Mining Engineer with Scott Wilson Roscoe Postle Associates Inc. of Suite 304, 595 Howe Street, Vancouver, BC, V6C 2T5 and Principal, Lacroix & Associates, 1931 128 Street, Surrey, BC, V4A 3V5.
2. I am a graduate of the University of Alberta, Edmonton, Alberta, Canada in 1983 with a Bachelor of Science degree in Mining Engineering with Distinction.
3. I am registered as a Professional Engineer in the Province of British Columbia (Reg.# 1168). I have worked as a mining engineer for a total of 23 years since my graduation. My relevant experience for the purpose of the Technical Report is:

Mineral Resource and Reserve estimation, mine planning, feasibility studies, economic analysis, due diligence, independent review and audit on numerous mining projects and operations world wide  
Various engineering and mining-related positions at three Canadian mines

Various senior positions at the corporate offices of a middle tier base metal and gold producer including Manager Engineering, Manager Operations and Manager Acquisitions & Project Development  
Principal Mining Consultant for two international consulting firms

Associate Mining Consultant for various mining consulting firms on numerous mining projects and operations world wide

Principal, Lacroix & Associates, an independent wholly-owned mining consulting firm providing mining consulting services since 1997.

4. I have read the definition of qualified person set out in National Instrument 43-101 ( NI43-101 ) and certify that by reason of my education, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfill the requirements to be a qualified person for the purposes of NI43-101.
5. I visited La Libertad Project on June 20-21, 2006.
6. I am responsible for overall preparation of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.4 of National Instrument 43-101.

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8. I have had no prior involvement with the property that is the subject of the Technical Report.

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9. I have read National Instrument 43-101, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.

10. To the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.

11. I consent to the filing of this Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of this Technical Report.

Dated this 31<sup>st</sup> day of October, 2006.

**(Signed & Sealed)**

Peter A. Lacroix, P. Eng



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**24 APPENDIX 1**

**PROBABILITY PLOTS**

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**25 APPENDIX 2**

**BLOCK MODEL PLANS**

- 25-1 La Libertad North Central Plan Level 357
- 25-2 La Libertad North East Plan Level 357
- 25-3 Esmeralda Plan Level 435
- 25-4 Santa Maria Plan Level 435

25-1

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