

# **CANGREJOS GOLD-COPPER PROJECT, ECUADOR**

# NI 43-101 Technical Report



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# **TABLE OF CONTENTS**

1	Executiv	ve Summary	1-1
2	Introduc	ction	2-1
3	Relianc	e on Other Experts	3-1
4	Property	y Description and Location	4-1
	4.1 Locat	ion	4-1
	4.2 Land	Tenure	4-2
	4.3 Envir	onmental Regulations and Permitting	4-4
5	Accessi	bility, Climate, Infrastructure and Physiography	5-1
	5.1 Acces	ssibility	5-1
	5.2 Clima	ite	5-2
	5.3 Local	Resources and Infrastructure	5-2
	5.4 Physi	ography	5-2
6	History.		6-1
7	Geologi	cal Setting	7-1
	7.1 Regio	onal Geology	7-1
	7.2 Local	and Property Geology	7-2
	7.3 Geold	ogy of the Cangrejos Zone	7-3
8	Deposit	Types	8-1
9	Explora	tion	9-1
10	) Drillin	ıg	10-1
	10.1Newn	nont Drilling (1999–2000)	10-4
	10.20din	Drilling (2011–2012)	10-5
	10.30din	Drilling (2014–2015)	10-7
11	I Samp	oling Preparation, Analyses and Security	11-1
	11.1Newn	nont Drilling (1999–2000)	11-1
		Drilling (2011–2012)	
		Drilling (2014–2015)	
12	2 Data	Verification	12-1
	12.1Datab	pase Validation	12-1
	12.1.1	Collar Coordinate Validation	12-1
	12.1.2	Down-Hole Survey Validation	12-1
	12.1.3	Assay Verification	12-1
	12.2Geold	ogical Data Verification and Interpretation	12-1



12.3	3QA/QC Protocol	12-2
12.4	4Assay Database Verification	12-2
12.	5Conclusion	12-2
13	Mineral Processing and Metallurgical Testing	13-1
14	Mineral Resources	14-1
15	Mineral Reserves	15-1
16	Mining Methods	16-1
17	Recovery Methods	17-1
18	Project Infrastructure	18-1
19	Market Studies and Contracts	19-1
20	Environmental Studies, Permitting and Social or Community Impact	20-1
21	Capital and Operating Costs	21-1
22	Economic Analysis	22-1
23	Adjacent Properties	
24	Other Relevant Data	24-1
25	Interpretation and Conclusions	25-1
26	Recommendations	
27	References	27-1
28	Date and Signature Page	
	LIST OF FIGURES	
<b>-</b> :		4.4
•	e 4-1: Location Mape 4-2: Claim Map	
•	e 4-3: Surface Rights	
•	e 5-1: Access to Cangrejos Project	
-	e 7-1: Regional Geology	
Figure	e 7-2: Local Geology	7-2
Figure	e 7-3: Simplified Geology Plan of the Cangrejos Gold-Copper Zone	7-4
_	e 7-4: Simplified North-South Cross Section – Cangrejos Zone	
•	9-1: Soil Geochemistry - Gold	
•	9-2: Soil Geochemistry - Copper	
	e 9-3: Exploration Targets – Cangrejos Project, RTP Magnetics	
rigure	e 10-1: Drill Collar Plan Map – Cangrejos Project	10-2



# LIST OF TABLES

Table 4.1: Mining Concessions – Cangrejos Property	4-2
Table 4.2: Land Tenure – Surface Rights (Odin, 2016)	4-3
Table 6.1: Exploration History of the Cangrejos Project	6-1
Table 9.1: Exploration Targets – Cangrejos Project	9-4
Table 10.1: Drill Collar Locations – Cangrejos Project (1999–2015)	10-3
Table 10.2: Significant Intersections – Newmont – Cangrejos Zone	10-5
Table 10.3: Significant Intersections – Odin – Cangrejos and Casique Zones	10-6
Table 10.4: Significant Intersections – Cangrejos, El Capitan	10-7

September 16, 2016 Toc-iii



#### 1 EXECUTIVE SUMMARY

This Technical Report was written to provide an updated review of exploration work conducted at Odin Mining & Exploration Ltd.'s Cangrejos Gold-Copper Project in Ecuador. The report was written under the direction of Michel Rowland Brepsant, FAusIMM; Brepsant is a Qualified Person as defined by NI 43-101.

#### **Property Description and Location**

The Cangrejos Project is located in southern Ecuador (Figure 4-1), 30 km southeast of the port city of Machala. The UTM coordinates for the Cangrejos Zone are 9614300 North and 633200 East (geographic projection: Provisional South American 1956, Zone 17S). Access to the property is provided by paved and gravel roads. The Cangrejos Project consists of five mining concessions totalling 5,594 ha.

#### Ownership

The Cangrejos concessions are fully owned by Odin Mining & Exploration Ltd. through its 100% owned Ecuadorian subsidiary, Odin Mining del Ecuador S.A.

#### **History**

In 1992, Odin Mining and Exploration Ltd. (Odin) carried out a stream sediment sampling program to locate the source of the Biron alluvial gold deposit that Odin was mining (69,000 oz Au). They located a number of good gold stream sediment anomalies and staked mineral concessions over these areas. In 1994, Odin formed the El Joven Joint Venture with Newmont to explore the region. Newmont was the operator and carried out an airborne magnetic-radiometric survey and extensive soil and rock geochemical surveys. In 1999, it drill-tested a gold-copper anomaly in the Cangrejos area and discovered a zone of porphyrystyle gold-copper mineralization (Hole C99-14: 1.57 g/t Au, 0.19% Cu over 192 m). Further drilling outlined two sub-parallel northeasterly trending mineralized zones.

In 2001, Newmont withdrew from the joint venture after a risk and evaluation review of the project suggested that it would not meet corporate requirements. Odin retained the northern claims which covered the Cangrejos Zone and several other geochemical anomalies. Between 2004 and 2007, it carried out additional stream sediment and soil sampling. Between 2008 and 2009, the Ecuadorian government imposed a moratorium on exploration, so no work was done on the property.

In 2010, exploration work continued with additional soil sampling. In 2011 and 2012, drilling tested the extent of the Cangrejos Zone and a gold anomaly in the Casique area. In 2014, additional drilling at Cangrejos extended the lateral and depth extents of the zone.

#### Geology and Mineralization

The Cangrejos Project is underlain by a Miocene intrusion of dioritic to granodioritic composition. Several breccia zones and pipes occur within this intrusion and many have associated magnetic highs and gold +/- copper soil anomalies. The Cangrejos Zone is the



only one that has been drilled. A northeasterly trending zone of porphyry-style mineralization has been defined by widely spaced drill holes. It extends for approximately 450 m laterally, has widths up to 200 m and has been defined to a depth of at least 450 m. The zone is open along strike and at depth.

Mineralization is associated with finely disseminated chalcopyrite, pyrite and minor bornite and molybdenite hosted in a sequence of breccias and porphyritic diorite dikes. It exhibits strong silica-chlorite and patchy secondary biotite (potassic) alteration.

#### Conclusions and Recommendations

Exploration work on the Cangrejos Project defined a number of gold-copper geochemical anomalies (streams, soils, top of bedrock soils, rocks) associated with breccia zones hosted in a Miocene dioritic to granodioritic intrusion. Initial drilling has defined a large zone of porphyry-style gold-copper mineralization which has been called the Cangrejos Zone.

Initial metallurgical testwork has indicated that the mineralization can be processed by conventional methods. A flotation concentrate can be produced with grades of 22% Cu, 109 g/t Au, 59 g/t Ag and 0.53% Mo. Recoveries for this are 83% for copper, 69% for gold, 57% for silver, and 72% for molybdenum. Cyanidation of gravity concentrates and flotation cleaner tails can increase gold recovery to 83%.

The following work is recommended for this project:

- Phase 1: Additional drilling (4,000 m) is recommended to provide enough data to calculate a mineral resource for the Cangrejos Zone. In conjunction with this, additional metallurgical work is also recommended. The budget for this work is estimated at US\$1.7 million.
- Phase 2: Drill testing of other exploration targets on the project (2,000 m) is recommended. The budget for this work is estimated at US\$800,000.

#### Cautionary Note Regarding Forward-looking Information and Statements

Information and statements contained in this technical report that are not historical facts are "forward-looking information" or "forward-looking statements" within the meaning of Canadian securities legislation and the *U.S. Private Securities Litigation Reform Act of 1995* (hereinafter collectively referred to as "forward-looking statements") that involve risks and uncertainties. Examples of forward-looking statements in this technical report include information and statements with respect to: Odin's plans and expectations for the Cangrejos Project, plans to continue the exploration drilling program, and possible related discoveries or extensions of new mineralization; the metallurgical testing program in connection with Cangrejos Project and plans to conduct further comprehensive engineering, and metallurgical studies; and budgets for recommended work programs.

In certain cases, forward-looking statements can be identified by the use of words such as "plans", "budget", "estimates", or "believes", or variations of such words and phrases or state



that certain actions, events or results "may", "would", or "occur". These forward-looking statements are based, in part, on assumptions and factors that may change, thus causing actual results or achievements to differ materially from those expressed or implied by the forward-looking statements. Such factors and assumptions include, but are not limited to, assumptions concerning copper, base metal and precious metal prices; cut-off grades; reliability of sampling and assay data; representativeness of mineralization; accuracy of metallurgical testwork and timely receipt of regulatory approvals.

Forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of Odin to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. Such risks and other factors include, among others, fluctuation in the price of copper, base and precious metals; expropriation risks; currency fluctuations; requirements for additional capital; government regulation of mining operations; environmental, safety and regulatory risks; unanticipated reclamation expenses; title disputes or claims; limitations on insurance coverage; changes in project parameters as plans continue to be refined; failure of plant, equipment or processes to operate as anticipated; accidents, labour disputes and other risks of the mining industry; competition inherent in the mining exploration industry; delays in obtaining governmental approvals or financing or in the completion of exploration, development or construction activities, as well as those factors discussed in the sections entitled "Risks and Uncertainties" in Odin's annual MD&A. Although Odin and the author of this technical report have attempted to identify important factors that could affect Odin and may cause actual actions, events or results to differ, perhaps materially, from those described in forward-looking statements, there may be other factors that cause actions, events or results not to be as anticipated, estimated or intended.

There can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking statements. The forward-looking statements in this technical report are based on beliefs, expectations and opinions as of the effective date of this technical report. Odin and the author of this technical report do not undertake any obligation to update any forward-looking information and statements included herein, except in accordance with applicable securities laws.



#### 2 INTRODUCTION

Odin Mining and Exploration Ltd. (Odin) commissioned Michel Rowland Brepsant, FAusIMM to provide an updated review of exploration completed on the Cangrejos Gold-Copper Project. Michel Rowland Brepsant, FAusIMM is an independent "qualified person", within the meaning of National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101). He is responsible for the preparation of this technical report on the Cangrejos Project (the Technical Report) which has been prepared in accordance with NI 43-101 and Form 43-101F1.

Michel Rowland Brepsant visited the site from September 14–15, 2016. He inspected drill core from numerous holes and visited a number of drill sites on the property.

In preparing this Technical Report, the author relied on geological reports, maps and miscellaneous technical papers listed in Section 27 (References) of this Technical Report. This report is based on information known to the qualified person as of September 16, 2016.

All measurement units used in this report are metric, and currency is expressed in US dollars unless stated otherwise. The currency used in Ecuador is the US dollar.



#### 3 RELIANCE ON OTHER EXPERTS

The report was prepared by Michel Rowland Brepsant, FAusIMM. Brepsant is a Qualified Person for the purposes of NI 43-101, and he fulfills the requirements of an "Independent Qualified Person". The information, conclusions, and recommendations contained herein are based on:

- The qualified person's field observations.
- Data, reports and other information supplied by Odin Mining and Exploration Ltd. and other third parties.

For the purpose of this report, Michel Rowland Brepsant has relied on the ownership data (mineral, surface and access rights) and information provided by Odin and believes that such data and information are essentially complete and correct to the best of his knowledge, and that no information has been intentionally withheld that would affect the conclusions made herein. Michel Rowland Brepsant has not researched the property title or mineral rights for the Cangrejos Project and expresses no legal opinion as to the ownership status of the property.



#### 4 PROPERTY DESCRIPTION AND LOCATION

#### 4.1 Location

The Cangrejos Project is located in southern Ecuador (Figure 4-1), 30 km southeast of the port city of Machala. Access to the property is provided by paved and gravel roads. The UTM coordinates for the Cangrejos Zone are 9614300 North and 633200 East (geographic projection: Provisional South American 1956, UTM Zone 17S).



Figure 4-1: Location Map

Source: Odin, 2016.



#### 4.2 Land Tenure

The Cangrejos Property consists of five contiguous mining concessions. Concessions are described in Table 4.1 and shown in Figure 4-2.

	File Number	Concession Name	Date of Concession	Date of Registration	Area (ha)	Phase	Expiration Date
1	2847	Los Cangrejos	6/8/2001	21/8/2001	4,781	Small Mining	21/08/2022 *
2	300972	Cangrejos 10	2/7/2004	1/7/2004	70	Advanced Exploration	1/11/2028*
3	300971	Cangrejos 11	2/7/2004	1/7/2004	21	Advanced Exploration	2/11/2028*
4	5114	Casique	17/10/2001	7/11/2001	342	Small Mining	20/12/2022*
5	2649.1	Las Canarias	11/10/2001	5/11/2001	380	Small Mining	12/5/2022*

**Table 4.1: Mining Concessions – Cangrejos Property** 

Also, each mining concession has its own Environmental Impact License, which is required for exploration on the concessions.

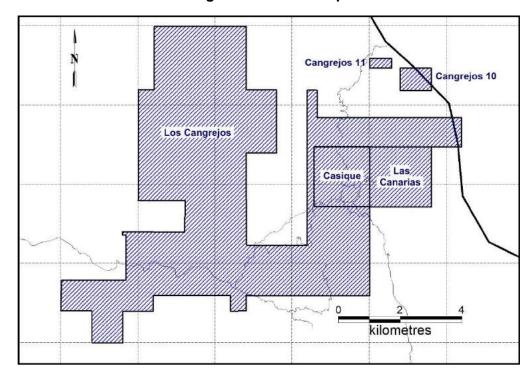


Figure 4-2: Claim Map

Source: Odin, 2016.

<sup>\*</sup> The mining title is valid for 25 years from the date of registration, and it can be renewed for an additional 25 years.



The maintenance of each mining concession requires an annual payment that is due before March 31<sup>st</sup> each year. For 2016, this is US\$41,947.26 for the five mining concessions. The 2016 fees have been paid and all concessions are in good standing.

Odin also owns the following surface rights shown in Table 4.2 and Figure 4-3.

Table 4.2: Land Tenure – Surface Rights (Odin, 2016)

No.	Previous Owner	Hectares	Location	Date Registered
1	Víctor Manuel Ramírez Román	54	Santa Rosa	10-Apr-07
2	Manuel Abad Ruiz	66.38	Atahualpa	21-Sep-07
3	Carlos Porfirio Tituana	81.2	Santa Rosa	27-Dec-07
4	Juan Antonio Tituana Torres	76	Atahualpa	02-Apr-08
5	Víctor Manuel Ramírez Román	58.75	Santa Rosa	23-May-08
6	Juan Eduardo Venegas / Francisco Soria Venegas	95	Atahualpa	In progress
7	Francisco Castro Sanchez	46.5	Santa Rosa	In progress
8	Francisco Castro Sanchez	122	Atahualpa	22-Aug-16
	Total Purchased	599.83		

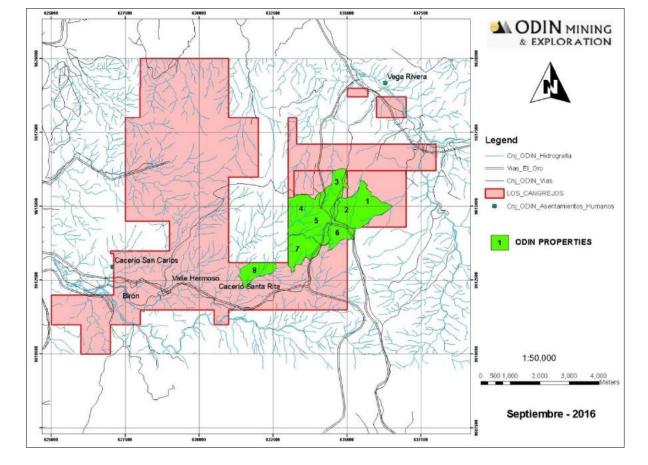


Figure 4-3: Surface Rights

Source: Odin, 2016.

The "Cangrejos Project", Land and Mining concessions have no royalties, back-in rights or any other encumbrances that could affect access and title. There are also no other impediments that may affect the ability of perform work on the property. There are no significant risks affecting the normal course of business and exploration efforts at the Project.

# 4.3 Environmental Regulations and Permitting

The Cangrejos Project holds all the environmental regulatory permits required by law and is in compliance with its obligations under the Ecuadorian Constitution and Environmental Management Law. In 2011, Odin was granted the environmental license for advanced exploration for metallic minerals on the Cangrejos concessions. This is based on and supported by the Environmental Impact Study (EIA) and the Environmental Management Plan (PMA). Documentation demonstrating compliance with PMA must be filed biannually with the Ministry of the Environment. Odin is up to date on its filings.



Furthermore, in keeping with Article 53 of the Environmental Regulatory Code, Odin has regularly submitted the corresponding environmental audits for the Cangrejos Project. The 2012–2014 audit has been delivered and is under review, awaiting approval from the Ministry of Environment. In addition to the EIA and PMA, Odin also files an application for industrial and domestic water use for exploratory activities, and the Water Authority has provided a license for such use.

There are two other permits required to continue exploration activities: the "Certificate of Intersection" for the "National System for Protected Areas, Protective Forests and Forest Heritage" and the "Labor Hygiene, Health and Safety Regulations". Both permits are in good standing. In the first case, Cangrejos is not located within any national forests, protected areas or national parks, and, in the latter, Odin has obtained updated permits for the project and is in compliance with regulations for health, safety and hygiene administered by the Labor Ministry.

The five mining concessions comply with all Ecuadorian environmental laws and regulations. Odin has also implemented an effective monitoring system aimed at the detection of unauthorized mining activities on their concessions. This has resulted in the filing of criminal actions and administrative protective measures, all of which have been resolved in Odin's favour. Odin Mining del Ecuador S.A. has no material environmental liabilities as a consequence of these irregular mining activities.



# 5 ACCESSIBILITY, CLIMATE, INFRASTRUCTURE AND PHYSIOGRAPHY

# 5.1 Accessibility

The Cangrejos Project is located in southern Ecuador, approximately 30 km southeast of the port city of Machala. Access is provided by paved and gravel roads (Figure 5-1). Driving time from Machala to the Cangrejos camp via the town of Santa Rosa and the road to Piñas is typically three hours. A trail from the camp to the village of Valle Hermosa is a more direct route, but this is currently only a foot trail.

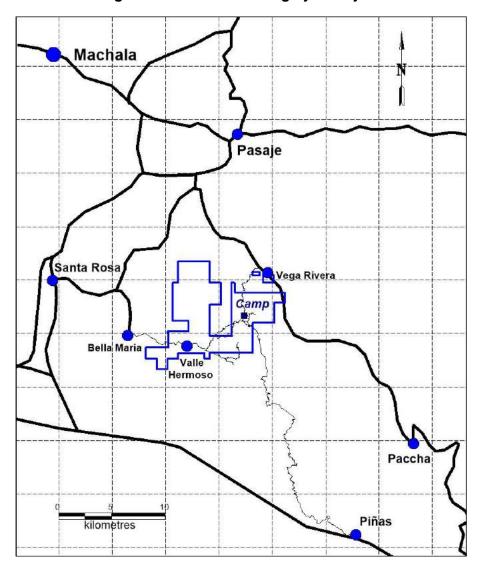


Figure 5-1: Access to Cangrejos Project

Note: Cangrejos Project is outlined in blue.

Source: Odin 2016.



#### 5.2 Climate

The climate varies from tropical at lower elevations to temperate at higher elevations. The average temperature varies from 21°C to 24°C. The average annual rainfall ranges from 700 mm to 1,400 mm, and there is a distinct rainy season lasting from October to April. However, exploration can be carried out year round.

#### 5.3 Local Resources and Infrastructure

The city of Machala (population ~250,000) is the closest major centre in Ecuador. It can provide basic goods and services for the early stages of exploration and mining. It is located along the Pan-American Highway linking Guayaquil, Ecuador with Lima, Peru. Regular daily flights from Quito arrive at Machala's new airport located near the town of Santa Rosa. Puerto Bolivar, located 9 km to the west of Machala, is a major deep-water port used mainly to export bananas.

A field camp and core logging and storage facility are located on the property. Power at the camp is supplied from the national grid. Internet and phone service to the camp are provided by satellite.

#### 5.4 Physiography

The Cangrejos Project is located in the southeastern hills of the coastal plain. Elevations range between 100 m and 1,385 m above sea level. The topographic relief on the property is moderate. A prominent northwest-trending ridge, Cerro Azul, forms a watershed between Rio Caluguro and Rio San Agustin.

Most of the property is forested with local pastures for farm animals. Away from the mineralized areas, there is minor agricultural activity at lower elevations (cacao, coffee and maize).



#### 6 HISTORY

Previous exploration and disclosure of prior ownership and changes in ownership at the Cangrejos Project are summarized in Table 6.1 and discussed in greater detail in Potter (2004, 2010). Results of the drill programs are provided in Section 10 (Drilling) of this Technical Report. No production has occurred at the Cangrejos Project.

**Table 6.1: Exploration History of the Cangrejos Project** 

Year	Company	Description
1992	Odin	Regional stream sediment and geological mapping program to locate the source of the Biron alluvial gold (1987–1995: production, 69,000 oz).
1994	Odin/Newmont	Formation of "El Joven Joint Venture" to explore stream anomalies. The Cangrejos Project is located in the northern part of the joint venture area.
1994–2001	Odin/Newmont	Airborne magnetics, radiometrics, soil and rock geochemistry, geological mapping, 13 diamond drill holes (3,585.94 m) on the Cangrejos Project.
2001	Odin/Newmont	Newmont withdrew from the Joint Venture, and the original 7 concessions were returned to Odin. Odin also acquired Newmont's drill core and exploration data for the Cangrejos Project.
2004	Odin	Acquired an additional 4 concessions (3,043 ha).
2007	Odin	Top of bedrock soil sampling, additional stream sediment sampling.
2008–2009	Odin	The Government of Ecuador imposed a moratorium on exploration; no work done on project.
2010	Odin	Top of bedrock, ridge and spur soil sampling.
2011–2012	Odin	Diamond drill testing of gold soil anomalies at Casique (13 holes, 3,296.2 m) and extent of mineralization at Cangrejos (4 holes, 1,402 m).
2014– 2015	Odin	Diamond drilling to test strike and depth extent of the Cangrejos Zone (8 holes, 3,188.5 m) and a Cu-Mo-Au soil anomaly at El Capitan (1 hole, 319.65 m).



#### 7 GEOLOGICAL SETTING

## 7.1 Regional Geology

The general geology of southern Ecuador is shown in Figure 7-1. There are several north-south trending domains of volcanics and sediments which accreted onto the Amazon Craton from Late Jurassic to Eccene. These terranes are cut by younger magmatic intrusions which locally host porphyry copper/gold and epithermal gold deposits (shown as black stars in Figure 7-1).

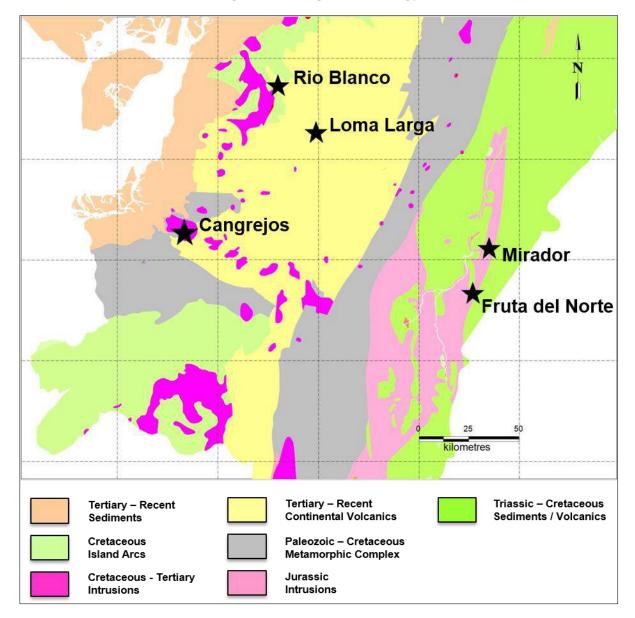


Figure 7-1: Regional Geology

Source: DINAGE, 2001; Odin, 2016.



#### 7.2 Local and Property Geology

A more detailed picture of the geology in the vicinity of the Cangrejos Project is shown in Figure 7-2. Quaternary sediments occur to the northwest in the coastal areas around Machala. Oligocene continental volcanics occur to the east. These two domains are separated by the Late Cretaceous-Paleozoic El Oro metamorphic complex which consists of phyllites, schists, amphibolites, granites and serpentinites.

The Cangrejos Project is largely underlain by dioritic to granodioritic intrusions which occur along a west-northwesterly trend (Figure 7-1). These intrusions are Miocene based on K-Ar dates of 16.89 Ma and 19.92 Ma (Potter, 2010). Gold showings occur within the Miocene intrusion and adjacent volcanic and metamorphic rocks.

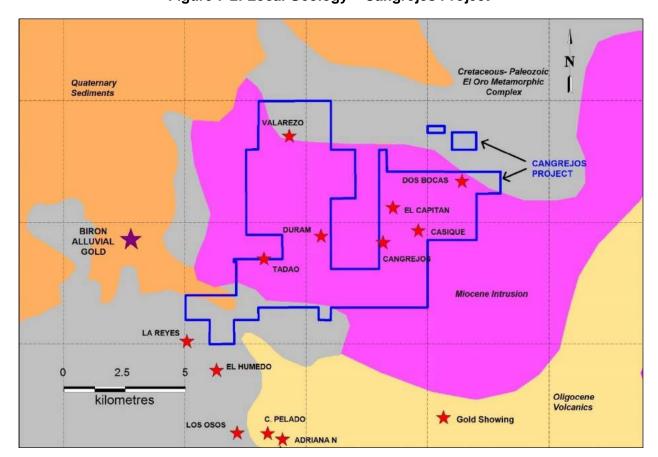


Figure 7-2: Local Geology - Cangrejos Project

Source: CODIGEM/BGS, 1993; Newmont, 2001; Odin, 2016.



#### 7.3 Geology of the Cangrejos Zone

The surface geology of the Cangrejos Zone is poorly understood due to poor exposures. The simplified geological map and section shown in Figures 7-3 and 7-4 are based primarily on drill hole logs and assays.

Drilling has defined a C-shaped, northeasterly trending zone of gold-copper porphyry-style mineralization at Cangrejos. The mineralization consists of two steeply dipping zones that occur peripheral to a barren core. The zone has a lateral extent of at least 450 m, with widths up to 200 m. The zone is open to the northeast. Hole C14-50 confirmed that the mineralization extends to a depth of at least 450 m.

There are three main lithologies:

- **Wallrock Granitoid Intrusion**. This unit is medium- to coarse-grained, unaltered and unmineralized granodiorite and diorite.
- *Mineralized Zone*. This unit is quite heterolithic and consists of hydrothermal breccias, fine- to medium-grained porphyritic quartz diorite and diorite dikes. These zones are steeply dipping and have a northeasterly trend.
- **Barren Quartz Diorite "Dome"**. This unit is unmineralized and separates the two mineralized zones. This unit is interpreted to be older than the mineralized breccias.

A variety of alteration styles is associated with the mineralized zones. Strong pervasive chlorite-silica and patchy potassic (biotite) alteration is common. Albite, quartz-tourmaline veins and carbonate alteration occur locally within the zone.

Mineralization consists of finely disseminated chalcopyrite-pyrite. Bornite and molybdenite are locally present. Overall sulphide content is low: generally less than 5%.



Mineralized -Zone 53 **Unmineralized Quartz-Diorite Dome** 32 100 200 meters > 0.20g/t Au

Figure 7-3: Simplified Geology Plan of the Cangrejos Gold-Copper Zone

Note: Newmont (red dots), Odin 2011–2012 (blue dots), Odin 2014–2015 (green dots), North-South Section (Figure 7-4) (blue line).

Source: Odin, 2016.



9,614,000 m N 9,614,100 m N 9,614,200 m N 9,614,300 m N 9,614,400 m N 9,613,900 m 1,700 m el C14.50 Wallrock Granitoids 1,600 m el+ 0.32 g/t Au Wallrock / 112.00m 0.53 g/t Au Granitoids + /74.00m C14-52 216.55m 0.25 g/t Au / 66.00m Mineralized Zone 0.78 g/t Au C99-21 0.21% Cu / C14-54 431.9m 432.05m 270.55m 1,200 m el Unmineralized Quartz-200 100 Diorite Dome meters 1,190 m el C14-50 539.55m > 0.20g/t Au

Figure 7-4: Simplified North-South Cross Section - Cangrejos Zone

Note: Assays are over core lengths and not true thicknesses. Additional infill drilling will be required to confirm the orientation of the mineralized zones.

Source: Odin 2016.



#### **8 DEPOSIT TYPES**

The Cangrejos deposit is a gold-copper, silica-saturated, alkalic porphyry-style deposit. This type of deposit is found along paleo-subduction margins (Carter, 1981; Cox et al., 1987). Other deposits of note within this family include Cadia, Australia; Bingham Canyon, USA; Andacollo, Chile; and Red Chris, Canada. All of these deposits have the following similar chemical affinities and host-rock provenance:

- They are associated with porphyry intrusive rocks that intrude volcanic and sedimentary packages as stocks, plugs, dikes, and dike swarms.
- Mineralization results from late-stage hydrothermal activity driven by remnant heat
  from the porphyry intrusion. Thermal gradients within these systems give rise to
  broadly concentric, although often complexly intermingled, zones of alteration and
  mineralization. Mineralization is generally low grade and consists of disseminated,
  fracture, veinlet and quartz stockwork-controlled sulphide mineralization. Deposit
  boundaries are determined by economic factors that outline the ore zones.
- The distribution of alteration and mineral facies are largely influenced by breccias, dikes, veins, and fracture systems which concentrate and control fluid flow.
- Weathering from percolation of meteoric water can result in the oxidation of the hypogene sulphide mineralization in a portion of the deposit to chalcocite and native copper.



# 9 EXPLORATION

Potter (2010) provides a detailed review of the work done by the Newmont-Odin Joint Venture, and only significant highlights will be discussed in this report.

The property has seen extensive geochemical surveys (streams, soils, top of bedrock soils and rocks). Well-defined gold and/or copper anomalies have been defined and are shown in Figures 9-1 and 9-2. The best defined geochemical anomaly is associated with the Cangrejos mineralized zone, and this is where most of the drilling has been done.

Other than the drilling completed in 2011–2012 and 2014–2015, and described in Section 10, no other exploration work as been done on the project since 2010.

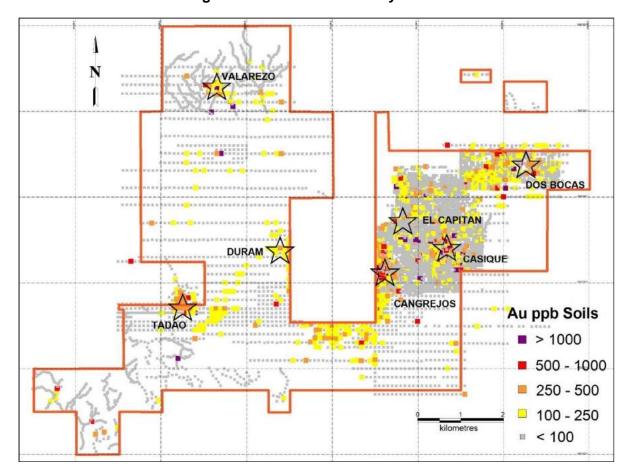


Figure 9-1: Soil Geochemistry - Gold

Source: Odin, 2016.



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CANGREJOS

Cu ppm Soils

Cangrejos

Cu ppm Soils

100 - 250

100 - 250

Figure 9-2: Soil Geochemistry - Copper

Source: Odin, 2016.



The airborne magnetic survey was used to help define structures. In addition, small circular magnetic highs are interpreted as breccia pipes. Several of these have gold geochemical anomalies. The location of these exploration targets are shown in Figure 9-3 and described in Table 9.1.

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TADAO

CANGREJOS

TADAO

Figure 9-3: Exploration Targets - Cangrejos Project, RTP Magnetics

Source: Encom, 2007.



**Table 9.1: Exploration Targets – Cangrejos Project** 

Target	Geochemistry	Magnetics	Geology
Tadao	Anomalous gold:	Circular magnetic highs	Breccia pipes
	rocks, soils and local streams		
Duram	Anomalous gold, copper:	North-trending series	Breccia pipes
Duram	rocks, soils	of magnetic highs	breccia pipes
Dos Bocas	Anomalous gold, copper:	Several magnetic highs	unknown
DOS BOCAS	streams, soils, rocks	and lows	ulikilowii
		Weak to moderate	
Valarezo	Anomalous gold, copper, arsenic:	magnetic anomaly	unknown
Valarezo	rocks, soils	South of the	ulikilowii
		geochemical anomaly	



#### 10 DRILLING

Potter (2004, 2010) provides a detailed review of the drilling completed by the Newmont-Odin Joint Venture in 1999 and early 2000. This program discovered porphyry-style gold-copper mineralization associated with the Cangrejos Zone.

In 2011–2012, Odin completed a 17-hole (3,698.13 m) program that tested the extent of the Cangrejos Zone and a gold soil anomaly located to the northeast of Cangrejos in an area called Casique.

In 2014–2015, Odin completed another eight holes (3,188.5 m) on the Cangrejos Zone. This program was designed to test the down-dip and lateral extent of the mineralization and confirm the work previously done by Newmont. One hole (319.65 m) tested a copper-molybdenum soil anomaly at El Capitan.

All drill core from the Cangrejos Project is stored in a dry, secure building at Odin's field camp.

Drilling completed on the project is shown in Figure 10-1. Collar information, mineralized zone and operator are shown in Table 10.1. Holes have been located using handheld GPS units.



9,815,500 mN

Camp

9,815,500 mN

Camp

Camp

20

31

Casique

20

250

metres

Figure 10-1: Drill Collar Plan Map - Cangrejos Project

Note: Newmont (red dots), Odin 2011–2012 (blue dots), Odin 2014–2015 (green dots), drill roads (brown lines). Source: Odin, 2016.



Table 10.1: Drill Collar Locations - Cangrejos Project (1999-2015)

Hole	EAST_PSAD56	NORTH_PSAD56	Elevation	RL	DIP	Azimuth	Depth	Company	Zone
C99-01	633,230	9,614,360	1746	873	-50	270	221.59	Newmont	Cangrejos
C99-02	633,200	9,614,200	1676	838	-65	270	221.59	Newmont	Cangrejos
C99-03	633,220	9,614,000	1630	815	-60	270	249.02	Newmont	Cangrejos
C99-13	633,050	9,614,358	1648	824	-50	270	171.60	Newmont	Cangrejos
C99-14	633,220	9,614,000	1630	815	-50	330	221.59	Newmont	Cangrejos
C99-15	633,020	9,614,050	1550	775	-50	153	322.17	Newmont	Cangrejos
C99-17	633,200	9,614,200	1676	838	-45	150	300.84	Newmont	Cangrejos
C99-18	633,200	9,614,450	1704	852	-45	270	249.02	Newmont	Cangrejos
C99-20	633,070	9,614,275	1620	810	-50	270	331.32	Newmont	Cangrejos
C99-21	633,110	9,614,000	1576	788	-45	330	431.90	Newmont	Cangrejos
C00-27	633,175	9,614,400	1680	840	-45	330	284.40	Newmont	Cangrejos
C00-28	633,425	9,614,260	1860	930	-45	330	286.90	Newmont	Cangrejos
C00-29	634,875	9,614,500	2490	1245	-45	360	294.00	Newmont	Casique
C11-30	633,102	9,614,150	1630	815	-50	150	154.00	Odin	Cangrejos
C11-31	633,105	9,614,152	1632	816	-50.3	150	406.00	Odin	Cangrejos
C11-32	633,337	9,614,216	1790	895	-50	150	427.00	Odin	Cangrejos
C11-33	633,262	9,614,412	1764	882	-50	330	415.00	Odin	Cangrejos
C11-34	634,801	9,614,483	2516	1258	-45	360	401.80	Odin	Casique
C11-35	634,950	9,614,572	2442	1221	-65	180	108.70	Odin	Casique
C11-36	634,950	9,614,574	2430	1215	-45	360	247.70	Odin	Casique
C12-37	635,065	9,614,642	2308	1154	-45	360	351.13	Odin	Casique
C12-38	634,909	9,614,681	2412	1206	-45	270	200.60	Odin	Casique
C12-39	634,909	9,614,681	2412	1206	-70	270	252.50	Odin	Casique
C12-40	634,909	9,614,681	2412	1206	-85	270	200.00	Odin	Casique
C12-41	634,541	9,614,409	2414	1207	-45	360	283.00	Odin	Casique
C12-42	634,350	9,614,705	2410	1205	-45	90	252.40	Odin	Casique
C12-43	634,679	9,614,795	2350	1175	-45	90	254.50	Odin	Casique
C12-44	634,667	9,614,944	2286	1143	-45	90	352.00	Odin	Casique
C12-45	634,450	9,614,380	2380	1190	-45	360	241.80	Odin	Casique
C12-46	634,325	9,614,125	2240	1120	-45	90	150.00	Odin	Casique
C14-47	633,105	9,614,152	1628	814	-55	110	415.10	Odin	Cangrejos
C14-48	633,243	9,614,449	1720	860	-70	360	351.00	Odin	Cangrejos
C14-49	633,345	9,614,473	1774	887	-60	360	407.75	Odin	Cangrejos
C14-50	633,108	9,614,160	1628	814	-70	180	539.55	Odin	Cangrejos
C14-51	633,310	9,614,011	1658	829	-60	360	389.55	Odin	Cangrejos
C14-52	633,145	9,614,207	1664	832	-50	360	216.55	Odin	Cangrejos
C14-53	633,462	9,614,352	1914	957	-55	360	438.05	Odin	Cangrejos
C14-54	633,114	9,614,320	1658	829	-65	360	432.05	Odin	Cangrejos
C15-55	633,840	9,615,260	2594	1297	-60	360	350.15	Odin	El Capitan



#### 10.1 Newmont Drilling (1999–2000)

In 1999–2000, Newmont used Connors Perforaciones S.A. to drill 29 HQ holes totalling 7,508 m in the northern part of the El Joven Joint Venture area (Potter, 2004). Drills were mobilized by helicopter and moved between sites by large crews of local workers. Fourteen holes (3,314 m) were drilled on the Cangrejos Project: 13 of these holes tested the Cangrejos Zone and one tested a gold soil anomaly at Casique.

A Tropari was used to provide down-hole deviation data. This was available for the 1999 drill program but not in 2000.

Hole C99-14 intersected a wide zone of porphyry-style gold-copper mineralization associated with the soil anomalies. Additional drilling delineated two sub-parallel northeasterly trending zones: Trinchera (southern zone) and Paloma (northern zone). These zones have a steep-to-subvertical dip. The Newmont drilling indicated that the mineralized zones have a lateral extent of 350 m, horizontal width of approximately 100 m, and extend to a depth of at least 150 m.

Significant results from Newmont's drilling are shown in Table 10.2.



Table 10.2: Significant Intersections - Newmont - Cangrejos Zone

Hole	From (m)	To (m)	Interval (m)	Au (g/t)	Cu (%)
C99-1	50.00	98.00	48.00	1.16	0.17
C99-2	114.00	122.00	8.00	1.18	0.07
C99-3	174.00	248.00	74.00	1.03	0.12
C99-13	18.29	44.00	25.71	0.86	0.08
C99-14	14.00	206.00	192.00	1.57	0.19
(Including)	120.00	166.00	46.00	3.05	0.31
C99-15	118.00	218.00	100.00	0.84	0.33
C99-17	30.00	178.00	148.00	0.78	0.10
C99-18	130.00	249.00	119.00	1.19	0.11
C99-20	34.00	108.00	74.00	0.57	0.05
C99-21	38.00	84.00	46.00	0.98	0.10
C00-27	12.19	30.00	17.81	0.66	
C00-28	186.00	196.00	10.00	1.43	0.39
C00-29	130.00	152.00	22.00	2.56	0.24

Note: Assays are over core lengths and not true thicknesses. Additional infill drilling will be required to confirm the orientation of the mineralized zones.

# 10.2 Odin Drilling (2011–2012)

In 2011 and 2012, Odin used Terranova Drilling S.A.C. to drill 17 holes on the Cangrejos Project. A Hydracore 2000 drill was used and drill moves were completed using a small tractor. A Reflex EZ-SHOT™ was used to provide down-hole deviation data.

Four holes (1,402 m) tested the extent of the Cangrejos Zone, and the remaining 13 holes (3,296.13 m) tested a gold soil anomaly in the Casique area. The mineralization at Casique is confined to relatively narrow, discontinuous zones related to faults or fracture zones in silicified diorite and breccias.

Significant results from this drill program have been included in several press releases (Odin; January 2012, April 2012, June 2012) and are summarized in Table 10.3.



Table 10.3: Significant Intersections – Odin – Cangrejos and Casique Zones

Hole	From (m)	To (m)	Interval (m)	Au (g/t)	Cu (%)
C11-30	14.50	151.80	137.30	1.27	0.11
(Including)	14.50	46.00	31.50	2.23	0.13
C11-31	14.50	352.00	337.50	0.68	0.12
(Including)	14.50	132.00	117.50	1.10	0.09
C11-32	22.00	128.00	106.00	0.27	0.08
(Including)	86.00	94.00	8.00	1.00	0.14
C11-33	10.00	374.00	364.00	0.59	0.08
(Including)	70.00	140.00	70.00	1.06	0.11
C11-34	80.00	82.00	2.00	0.30	0.05
C11-35	22.20	30.00	7.80	0.55	0.03
(Including)	26.00	28.00	2.00	1.02	0.04
C12-36	26.50	34.00	7.50	1.10	0.03
C12-37	276.00	282.00	6.00	8.96	0.23
(Including)	278.00	280.00	2.00	14.80	0.60
C12-38	48.00	56.00	8.00	0.63	0.05
(Including)	50.00	52.00	2.00	1.05	0.07
C12-39	62.00	80.00	18.00	2.55	0.18
(Including)	68.00	70.00	2.00	5.66	0.33
C12-40	64.00	88.00	24.00	1.65	0.08
(Including)	76.00	78.00	2.00	4.17	0.19
C12-41	100.00	118.00	18.00	0.96	0.02
(Including)	108.00	110.00	2.00	2.00	0.07
C12-42	204.30	208.00	3.70	1.74	0.02
C12-43	20.00	28.00	8.00	2.64	0.01
C12-44	32.00	52.00	20.00	0.82	0.03
(Including)	46.00	50.00	4.00	1.80	0.02
C12-45	218.00	220.00	2.00	14.20	0.24
C12-46	106.00	108.00	2.00	4.50	0.02

Note: Assays are over core lengths and not true thicknesses. Additional infill drilling will be required to confirm the orientation of the mineralized zones.



#### 10.3 Odin Drilling (2014–2015)

In 2014 and early 2015, Odin used Hubbard Perforaciones S.A. to complete nine HTW (HQ) drill holes (3,508.15 m) on the Cangrejos property. A Hydracore 2000 drill was used and drill moves were completed using a small tractor. A Reflex EZ-Shot™ was used to provide downhole orientation data at 50 m intervals.

The purpose of the program was to confirm the grade of the Cangrejos mineralized zone as previously defined by Newmont, and to test the lateral and down-dip extent of the zone. In addition, one hole tested the El Capitan copper-molybdenum soil anomaly.

Significant results from this drill program have been included in a press release (Odin, March 2015) and these are summarized in Table 10.4.

Table 10.4: Significant Intersections – Cangrejos, El Capitan

Hole	From (m)	To (m)	Interval (m)	Au (g/t)	Cu (%)	
C14-47	0.00	405.10	405.10	0.66	0.09	
(Including)	73.10	131.10	58.00	1.63	0.16	
C14-48	0.00	351.00	351.00	0.51	0.08	
(Including)	0.00	19.00	19.00	1.65	0.17	
(Including)	291.00	351.00	60.00	1.08	0.09	
C14-49	0.00	336.00	336.00	0.44	0.11	
(Including)	6.80	68.00	61.20	1.01	0.10	
(Including)	134.00	176.00	42.00	0.72	0.35	
C14-50	11.00	177.00	166.00	0.47	0.10	
	269.00	539.55	270.55	0.78	0.21	
(Including)	337.00	417.00	80.00	1.45	0.18	
C14-51	0.00	344.40	344.40	0.67	0.09	
(Including)	66.40	114.40	48.00	1.52	0.10	
C14-52	0.00	112.00	112.00	0.32	0.07	
C14-53	122.00	202.00	80.00	0.38	0.10	
C14-54	0.00	19.00	19.00	0.48	0.09	
	53.00	193.00	140.00	0.24	0.02	
C15-55	No Significant Values					

Note: Assays are over core lengths and not true thicknesses. Additional infill drilling will be required to confirm the orientation of the mineralized zones.

In the author's opinion, the core handling, logging, sampling and core storage protocols in place on the Cangrejos Project meet or exceed common industry standards, and the author is not aware of any drilling, sampling or recovery factors that could materially impact the accuracy and reliability of the results.



# 11 SAMPLING PREPARATION, ANALYSES AND SECURITY

## 11.1 Newmont Drilling (1999–2000)

Mayor and Soria (2000) and Potter (2004, 2010) describe the sampling procedures employed by Newmont. The core was cut in half using a diamond saw and 2 m samples were sent to Bondar Clegg (now ALS Chemex) for sample preparation in Quito and analysis in Vancouver, Canada. Pulps were analyzed for gold using a fire assay procedure with an atomic absorption finish on a 30 g charge. Samples with Au > 0.5 g/t were analyzed for copper, lead, zinc, molybdenum and silver after a 4-acid digestion. Newmont also selected some samples for "blaster" gold analysis. This method is similar to conducting a screen metallic gold assay where the coarse (+150 mesh) and fine (-150 mesh) fractions are analysed for gold. This method tests for coarse gold. The results from the fire assay and "blaster" analyses are similar, which suggests that a standard fire assay gold analysis is adequate for Cangrejos.

There is no record of any special measures taken to monitor the security of the samples during their transportation to the preparation lab in Quito.

Newmont inserted its own standards every 25 samples to control the analytical quality.

#### 11.2 Odin Drilling (2011–2012)

See Section 11.3 Odin Drilling (2014–2015); it describes procedures that were similar to those used during Odin's 2011–2012 drill program.

Samples were prepared at LAC y Asociados Cia. Ltda. (Acme Labs' preparation lab in Cuenca, Ecuador), and the samples were analyzed at Acme Labs in Vancouver. All samples were analyzed for gold using a fire assay technique on a 30 g charge. In addition, a 35-element ICP analysis was done using a 4-acid digestion.

QA/QC samples were inserted on a random basis, but, generally, insertion averaged every 10 samples. These included six certified standards, a blank, and duplicate samples.

During this drill program, 2,563 samples were analyzed: 83 were blanks, 75 were certified reference material, 74 were duplicates, and 2,331 were core samples.

# 11.3 Odin Drilling (2014–2015)

Odin used the following procedures for its 2014–2015 drill program:

The drillers place the HQ drill core in plastic boxes (four rows; total approximately 2.5 m per box). Wooden tags marked with the down-hole depth are placed in the box. Lids are placed on the box and taped shut. The core is then transported by tractor to the nearest road and then trucked to Odin's core facility. Upon receipt, Odin field assistants check the depth and record the "from-to" intervals on the outside of the box. Photos are taken of both dry and wet core. Odin geologists then examine the core and prepare geotechnical and geological logs. The geotechnical log includes: RQD, core recovery, fracture and vein quantity, and vein



angles. Point-load tests are taken at 10 m intervals and density measurements are taken at 5 m intervals. This information is entered directly into an Excel® spreadsheet for each hole.

The core is cut in half using a diamond saw. For each 2 m sample, half the core is put into a plastic bag, and the other half is returned to the plastic box and stored on site. Bar-coded sample tags are included in each sample bag, and a duplicate sample tag is stapled into the box. Sample bags are secured with a tamper-proof plastic tag and put into larger mesh sacks which are also tied with a tamper-proof nylon tie. When a sample batch is ready for shipment, a representative from LAC y Asociados Cia. Ltda. (Acme Labs' preparation lab in Cuenca, Ecuador) picks up the samples at the Odin camp. The samples are then crushed and pulverized. For each sample, approximately 250 g of pulverized material is placed in a paper craft bag and shipped to Acme Labs, in Vancouver, Canada for analysis. Certified reference standards, purchased from CDN Resource Laboratories Ltd., are hand-delivered to Acme's lab and inserted into each sample batch. All samples are analyzed for gold using a fire assay technique on a 30 g charge. In addition, a 35-element ICP analysis is done using a 4-acid digestion.

QA/QC samples are inserted after every eight core samples. These include three certified standards (high, medium and low gold grades), a blank, a coarse duplicate and a fine duplicate.

During this fall/winter drill program, 2,139 samples were analyzed: 60 were blanks, 60 were certified reference material, 60 were coarse duplicates, 59 were fine duplicates, and the remaining 1,900 samples were drill core.

In the author's opinion, the analytical procedures are appropriate and consistent with common industry practice. The laboratories are recognized, accredited commercial assayers. The sampling has been carried out by trained technical staff under the supervision of a QP and in a manner that meets or exceeds common industry standards. Samples are properly identified and were transported in a secure manner from site to the lab.



#### 12 DATA VERIFICATION

#### 12.1 Database Validation

#### 12.1.1 Collar Coordinate Validation

Collar elevation data were validated by comparing GPS field survey elevations with the satellite photo's digital elevation model (DEM). Most elevation differences in the collars were less than one metre.

#### 12.1.2 Down-Hole Survey Validation

The down-hole survey data were validated by identifying any large discrepancies between sequential dip and azimuth readings. No significant discrepancies were found.

## 12.1.3 Assay Verification

All the collars, surveys, geology and assays were exported from Excel® files into MineSight® software. No identical sample identifications exist; all FROM\_TO data are zero or a positive value; and no interval can exceed the total depth of its hole.

To validate the data, the following checks were confirmed:

- The maximum depth of samples was checked against hole depth.
- The less-than-the-detection-limit values were converted into a positive number equal to one-half the detection limit.
- The highest gold and copper values, and at least one random value from each drill hole, were checked against the original assay certificate.

Core recovery averaged just over 91%. There is no indication that grade is related to core recovery.

## 12.2 Geological Data Verification and Interpretation

Several geological variables were captured during core logging. The geological data were verified by confirming that the geological designations were correct in each sample interval. This process included the following:

- Examining "FROM TO intervals for gaps, overlaps and duplicated intervals;
- Looking for collar and sample identification mismatches; and
- Verifying correct geological codes.

A geological legend was provided and it was used to compare the values logged in the database. The geological model was found to be reasonable and adequate for use.

September 16, 2016 12-1



#### 12.3 QA/QC Protocol

A review of the QA/QC protocols was conducted prior to drilling and formalized in a detailed QA/QC manual developed by Odin. Each drilling phase was reviewed by a Qualified Person who was on site during the drill program. The procedures for core processing and the insertion of blanks and standards were examined. The QA/QC program was conducted in accordance with industry best practice as described in Section 11 of this Technical Report. During the 2014 fall/winter drill program, 2,139 samples were analyzed: 60 were blanks, 60 were certified reference material, 60 were coarse duplicates, 59 were fine duplicates, and the remaining 1,900 samples were drill core. After each batch of analytical results came in, the QA/QC samples were reviewed by an Odin geologist. Odin's QA/QC consultant also reviewed these data on a regular basis.

QA/QC monitoring of the gold assays from Odin's 2014–2105 drill program indicated that the gold assays were not acceptable. Based on Odin's QA/QC consultant's recommendation, any sample with > 0.1 g/t Au was reassayed at a second lab. This resulted in 1,215 samples being re-assayed at the ALS Chemex laboratory in Santiago, Chile. No quality control issues were discovered with the Odin (2011–2012) and Newmont (1999–2000) drill programs.

#### 12.4 Assay Database Verification

The assay data from five randomly selected drill holes, representing approximately 14% of the database, was dumped from the MineSight® software system and manually compared to the original assay certificates.

#### 12.5 Conclusion

A sample bias in the gold assays was identified by the QPs during the review of the drill data and assays for the 2014–2015 drill program. This bias was corrected. Observation of the drill core during the site visits and inspection and validation of the collected data indicate that the drill data are adequate for interpretation.

In the author's opinion, the database management, validation and assay QA/QC protocols are consistent with common industry practices. The database is acceptable for use in this report.

September 16, 2016 12-2



#### 13 MINERAL PROCESSING AND METALLURGICAL TESTING

In 2015, Odin carried out an initial metallurgical testing program at Cangrejos on a representative suite of 2014 drill core samples. The testwork was conducted at C.H. Plenge & Cia. S.A. in Lima, Peru and was performed on four individual composites and a Master Composite (Plenge, 2015). The four individual composites were prepared using 870 kg of halved drill core collected from seven different drill holes from various spatial locations in the Cangrejos deposit. These composites are representative of high-grade and low-grade mineralized materials from the Cangrejos deposit.

The Master Composite contained 0.13% Cu, 0.8 g/t Au, 0.5 g/t Ag, and 37 ppm Mo. The copper-gold concentrate produced from the Master Composite contained 83% of the copper, 69% of the gold, 57% of the silver and 72% of the molybdenum. The concentrate assayed 22% Cu, 109 g/t Au, 59 g/t Ag, and 0.53% Mo. Deleterious elements identified in the concentrate were below penalty levels, except for fluorine which may be at the penalty level for some smelters. Molybdenum levels in the concentrate were high enough to warrant future testing to determine if a separate molybdenum concentrate can be produced.

Flotation, combined with gravity and cyanidation, can be used to recover 83% of the gold. Flotation produces a saleable copper-gold concentrate with recovery of 83% of the copper and 69% of the gold. Cyanidation of gravity concentrates and flotation cleaner scavenger tails recovered in doré increases gold recovery by 14%, resulting in a total gold recovery of 83%. Alternatively, whole-ore cyanidation can be used to process the mineralized materials and recover 92% of the gold and 36% of the silver in doré, but no base metals are recovered.

Test results demonstrate that the mineralized material can be processed by conventional industrial techniques.

September 16, 2016 13-1



# 14 MINERAL RESOURCES

At present, there are no mineral resource estimates for the Cangrejos Project.

September 16, 2016 14-1



# 15 MINERAL RESERVES

At present, there are no mineral reserve estimates for the Cangrejos Project.

September 16, 2016 15-1



# **16 MINING METHODS**

This section is not applicable.

September 16, 2016 16-1



# 17 RECOVERY METHODS

This section is not applicable.

September 16, 2016 17-1



# 18 PROJECT INFRASTRUCTURE

This section is not applicable.

September 16, 2016 18-1



# 19 MARKET STUDIES AND CONTRACTS

This section is not applicable.

September 16, 2016 19-1



# 20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

Odin has the necessary permits to conduct the drill programs. Baseline environmental studies are ongoing, and discussions have been initiated with the local communities and government agencies. Refer to Section 4.3 (Environmental Regulations and Permitting) of this Technical Report for additional information,

September 16, 2016 20-1



# 21 CAPITAL AND OPERATING COSTS

This section is not applicable.

September 16, 2016 21-1



# 22 ECONOMIC ANALYSIS

This section is not applicable.

September 16, 2016 22-1



# 23 ADJACENT PROPERTIES

Although there are several gold showings and small mines in the area, none have any published reserves.

September 16, 2016 23-1



# 24 OTHER RELEVANT DATA

There is no other relevant data or information.

September 16, 2016 24-1



#### 25 INTERPRETATION AND CONCLUSIONS

Exploration work on the Cangrejos Project defined a number of gold-copper geochemical anomalies (streams, soils, top of bedrock soils, rocks) associated with breccia zones hosted in a Miocene dioritic to granodioritic intrusion. Initial drilling has defined a large zone of porphyry-style gold-copper mineralization which has been called the Cangrejos Zone.

Initial metallurgical testwork has indicated that the mineralization can be processed using conventional methods. A flotation concentrate can be produced with grades of 22% Cu, 109 g/t Au, 59 g/t Ag, and 0.53% Mo. Recoveries for this are 83% for copper, 69% for gold, 57% for silver, and 72% for molybdenum. Cyanidation of gravity concentrates and flotation cleaner tails can increase gold recoveries to 83%.

September 16, 2016 25-1



## **26 RECOMMENDATIONS**

The following work is recommended for this project:

- **Phase 1**: Additional drilling (4,000 m) is recommended to provide enough data to calculate a mineral resource for the Cangrejos Zone. In conjunction with this, additional metallurgical work is also recommended. The budget for this Phase 1 program is estimated at US\$1.7 million.
- **Phase 2**: Drill testing of other exploration targets on the project (2,000 m) is recommended. The budget for this work is estimated at US\$800,000.

September 16, 2016 26-1



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September 16, 2016 27-1



## 28 DATE AND SIGNATURE PAGE

#### CERTIFICATE of AUTHOR

- I, Michel Rowland Brepsant, FAusIMM, do hereby certify that:
  - 1. I am an independent consultant with an address at av. Brasil 1125 3<sup>rd</sup> floor, Quito, Ecuador.
  - 2. I graduated with a DES degree from the University of Dijon in France in 1964.
  - 3. I am a fellow of the Australasian Institute of Mining and Metallurgy, Registration Number 225364.
  - 4. I have practiced my profession continuously for 50 years and have been involved in over 10 studies, mineral resource and reserve estimations and feasibility studies on numerous underground and open pit base metal and gold deposits in Ecuador and Colombia.
  - 5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
  - 6. I am responsible for the preparation of the technical report titled "Cangrejos Gold-Copper Project, Ecuador, NI 43-101 Technical Report" dated September 16, 2016, with an effective date of September 16, 2016 (the "Technical Report").
  - 7. I personally visited the property on September 14<sup>th</sup> and 15<sup>th</sup>, 2016.
  - 8. I am independent of Odin Mining and Exploration Ltd. applying all of the tests in Section 1.5 of NI 43-101.
  - 9. I have had no prior involvement with the Cangrejos Gold-Copper Project
  - 10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
  - 11. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to make the Technical Report not misleading.

'original signed and sealed"	
Michel Rowland Brepsant, FAusIMM	

September 16, 2016 28-1