



MINE DEVELOPMENT ASSOCIATES  
MINE ENGINEERING SERVICES

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*Technical Report on the Magistral Project – Resource Update  
Department of Ancash, Peru*



for  
**INCA PACIFIC RESOURCES INC.**



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### 1.0 SUMMARY

#### 1.1 Introduction

Inca Pacific Resources Inc (“Inca Pacific”) requested Mine Development Associates (“MDA”) and OreQuest Consultants Ltd (“OreQuest”) to prepare an updated technical report summarizing the exploration and engineering work completed in 2005 for the Magistral copper-molybdenum project. Knowledge of the Magistral deposit was advanced on many fronts in 2005 as a result of the following work:

- A 14,349-m infill core-drilling program;
- A new geological interpretation on cross sections and level plans;
- Compilation of a complete and comprehensive database;
- A new resource estimate incorporating all relevant data from all drill programs;
- Preliminary evaluations of pit shell sensitivities to metals prices and pit slope angles;
- Bench-scale metallurgical testwork performed on 250-kg bulk samples; and
- Environmental and social baseline studies.

The Magistral mining concessions are located in north-central Peru, in the northern part of the Department of Ancash. The property is 100% owned by Inca Pacific Resources Inc (“Inca Pacific”), through its Peruvian subsidiary Inca Pacific S.A. and the holding company Compañía Minera Ancash Cobre S.A. (“Ancash Cobre”). This report was prepared by Steven Ristorcelli, C.P.G. (Principal Geologist, MDA) and George Sivertz, P.Geo. (Senior Geologist, OreQuest), and places particular emphasis on work completed in 2005 and summarizes earlier work.

Ancash Cobre has an agreement with Empresa Minera del Centro del Perú S.A. (“Centromin”) to explore five mineral concessions (the “Magistral Concessions”), which cover an area of 250 hectares. Ancash Cobre also holds an additional 10 concessions (the “Ancash Concessions”) with a total area (as stated in the mineral titles registry) of 5,526.03 hectares. These surround and are contiguous to the Magistral Concessions. The Magistral copper-molybdenum deposit is within the Magistral Concessions. In total, the Magistral property comprises fifteen mining concessions covering a total area of 5,776.03 hectares, excluding an area held under concession by several small third parties that lies within the Magistral 12, 13 and 14 concessions.

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Base and precious metals in the Magistral region (Pasto Bueno mining district) have been mined on a relatively small scale since early Colonial times. At Magistral, a small mining and copper smelting complex was active between 1915 and 1919. Cerro de Pasco Corporation (“Cerro de Pasco”) explored Magistral between 1920 and 1950, and purchased the concessions in 1950. In 1969, Cerro de Pasco and a partner formed Compañía Minera Magistral S.A., which conducted a major underground exploration and diamond-drilling program between 1969 and 1973. Banco Minero de Peru acquired the property in 1991 and the mineral titles for the five Magistral mining concessions were transferred to Minero Perú S.A. in 1996. In 1999, Inca Pacific won the right to acquire the Magistral mineral titles from Minero Perú S.A. (now “Centromin”). Ancash Cobre was incorporated in 1999 as the holding company for the newly acquired Magistral mining concessions and the surrounding Ancash concessions. Anaconda Perú S.A. (“Anaconda”) entered into an agreement with Inca Pacific in 1999 to earn a 51% interest in Ancash Cobre by conducting drilling and other exploration and engineering work. In 2004, Inca Pacific purchased Antofagasta’s 51% interest in Ancash Cobre for US\$ 2,100,000, to hold a 100% undivided interest. Inca Pacific optioned the property to Quadra Mining Ltd in 2005 and on October 26, 2005, Quadra elected not to continue with the Magistral project. Consequently, Inca Pacific now holds a 100% interest in Ancash Cobre and in the Magistral property.

Since 1969, 48,261.58 m of diamond-core drilling (184 holes) have been completed at Magistral. This total includes 14 underground holes drilled between 1969 and 1973 (1287.8 m), 76 holes by Anaconda Peru (Anaconda) in 1999-2001 (24,639.58m), 34 holes by Inca Pacific in 2004 (7984.85m), and 60 holes by Ancash Cobre and Quadra Mining in 2005 (14,349.35m).

## **1.2 Geology and Mineralization**

Magistral is a copper-molybdenum deposit located near the northeastern end of the Cordillera Blanca, a region underlain mainly by Cretaceous carbonate and clastic rocks. Magistral stratigraphy is dominated by limestone of the north-striking, west-dipping Cretaceous Jumasha Formation. In the late Tertiary, the Jumasha limestone was intruded by a quartz-monzonite stock. The intrusion has an irregular elliptical shape in plan with dimensions of about 600 m east-west by 400 m north-south, at about 100 m below the surface. The hanging wall or upper flank of the intrusion plunges at  $-50^{\circ}$  to  $-60^{\circ}$  to the west and west-northwest and has a well-developed envelope of skarn around its perimeter. The copper-molybdenum mineralization occurs in both the stock and the surrounding skarn, and is related to hydrothermal activity generated by the emplacement and cooling of the intrusion.

The Magistral intrusion has been subdivided into three facies, named the “San Ernesto”, “Sara”, and “H”. The facies are distinguished by important differences in the style and intensity of alteration, quartz-sulfide veining, and copper-molybdenum mineralization:

The skarn surrounding the Magistral intrusion has been subdivided into three categories. These are “distal skarn”, which occurs outside the main skarn-limestone contact, “skarn”, a proximal phase that contains no dykes or sills, and “Mixed Zone”, a skarn phase that is intruded by numerous dikes or sills and lies adjacent to the main intrusive contact.



The most important and abundant copper-molybdenum mineralization occurs in stockwork and sheeted zones of quartz-sulfide veins that are most common in the border zone of the Magistral stock and near the intrusion/skarn contact, especially in the Mixed Zone. The dominant sulfides are pyrite, chalcopyrite, and molybdenite. These minerals are also disseminated in the wall rocks, but where quartz-sulfide veins are absent, the copper and molybdenum grades are low. In the “porphyry-style” mineralization in the Magistral stock and the Mixed Zone, chalcopyrite and molybdenite occur together in quartz-sulfide veins and disseminated in wall rocks. Grades in two-meter core samples from the best-mineralized sections of the stock and the Mixed Zone can exceed 1.5% Cu and 0.15% Mo. The highest-grade copper mineralization in the deposit (ranging to over 5% Cu in individual two-meter core samples) forms *mantos* and lenses of semi-massive chalcopyrite and pyrite in skarn. Less commonly, molybdenite also occurs in high-grade *mantos* in skarn, where Mo grades can exceed 1% in individual samples. As a rule, the copper *mantos* contain very little molybdenite, and the molybdenite *mantos* have low copper grades.

The silver distribution is similar to that of copper. Arsenic minerals (orpiment and lesser realgar) are present in late fractures that cut the entire deposit, and are also found in narrow (2 m to 5 m) high-grade *mantos* in limestone outside the skarn/marble contact. Tetrahedrite-tennantite and stibnite occur with chalcopyrite and molybdenite in main-stage quartz veins, as well as in widespread late calcite veins.

Copper-molybdenum mineralization has been adequately explored to approximately 300 m below the surface in most parts of the Magistral stock and the adjacent skarn zones. Nevertheless, the section of the San Ernesto skarn zone above the valley level has not been adequately drilled. This is due to steep and rocky surface topography and the blocky landslide debris in this area, which have prevented construction of surface drilling platforms.

The deeper sections of the Magistral deposit are only partially explored by drilling. Since the first Anaconda drill program in 1999, the exploration approach by all operators has consistently confined the drilling to a pattern based on expected open-pit geometries. As a consequence, many holes were stopped short in copper-molybdenum mineralization, and in some cases this was in very good grade. The geological evidence provided by some drill holes in the western and northwestern sections of the deposit indicates that the Magistral mineralization, which at shallow depths is concentrated in the Mixed Zone and the outer shell of the Magistral stock, continues to depth to the west and northwest.

### 1.3 QA/QC, Check Sampling, and EDA

The quality assurance/quality control (“QA/QC”) program implemented for 2005 was designed to assess the accuracy and precision of sample analyses and to detect sample contamination that might have occurred during the preparation and analysis of drill-core samples. Split-core samples, coarse (reject) duplicates, three different copper/molybdenum standards, and coarse field blanks (barren) were inserted into the primary-sample stream at the rate of one of each type of QA/QC sample per laboratory batch of 50 samples. This resulted in the analysis of 9 or 10 QA/QC samples, including internal laboratory reference samples, in every laboratory batch. All the samples were analyzed for copper and molybdenum by two independent laboratories (ALS Peru S.A. and CIMM Peru S.A.), and the two sets



of analytical data were compared as soon as they were received in order to promptly identify and correct any problems.

MDA and Sivertz conclude that:

- Sampling and sub-sampling variances were generally within acceptable limits for atomic absorption (“AA”) analyses on Mo and Cu (AA values used in the Cu and Mo mineral resource estimations), although the Mo sampling variance was relatively high;
- Assay accuracy and precision of the CIMM Peru and ALS Peru analytical laboratories for Cu and Mo were within acceptable limits;
- No significant contamination took place during sample preparation or analysis; and
- 2005 Cu and Mo analyses are considered to be sufficiently precise and accurate to be used for resource estimation purposes.

#### **1.4 2005 Metallurgical Testwork.**

The metallurgical testwork undertaken by Quadra Mining Ltd in 2005 yielded positive results. The locked-cycle bench-scale flotation test program indicated excellent copper and molybdenum recoveries (96%) for the Porphyry sample, and good copper recoveries (91%) for the Skarn and Mixed Zone samples. Molybdenum recoveries for the Skarn and Mixed Zone samples were in the 73% range. The bulk concentrates produced by the locked cycle tests had copper grades of 28% to 29%. Predicted copper recoveries to a 29% copper concentrate are 91% for Skarn and Mixed Zone samples, and 95.8% for Porphyry. Predicted molybdenum recoveries to a 52% molybdenum concentrate are 57.7% for Skarn, 59.1% for Mixed Zone, and 76.3% for Porphyry. Both the copper and the molybdenum concentrates from the 2005 testwork contained antimony and arsenic in sufficient quantities to attract modest smelter penalties. No other deleterious elements were detected in the concentrates. The metallurgical reports by Mr. Tucker and G&T Metallurgical Services Ltd make recommendations for further studies of the mineralogy and the metallurgical behaviour of arsenic and antimony minerals. In addition, G&T Metallurgical Services Ltd mentions additional work to assess the reduction the buildup of deleterious minerals in mill flotation circuits.

#### **1.5 2005 Mineral Resource Estimate**

New NI 43-101-compliant resource models were completed. The work was prompted by the 2005 drilling. Resource models were completed for rock density, copper, molybdenum, arsenic, and silver; an antimony model was partially completed.

The geologic model on which the resource models were based was built by Mr. Pedro Ramos, chief geologist for Ancash Cobre. In the preparation of the resource model, the interpretations of country rock, skarn, porphyry, and alluvium contacts and their geometries and orientations were honored in almost all cases except when the interfingering of skarn and porphyry was too complex, in which case some simplifications were made. Each resource model was made using similar procedures:

1. Statistical evaluation the sample assays;
2. Developed the mineral domain model on cross sections and coded the assays to those domains;
3. Statistical evaluation the sample assays by domain;





4. Capped samples, composited the capped samples, calculated geostatistics;
5. Took the cross-sectional model to level plan, refined and digitized on plan;
6. Digitized and used the plans to code block model;
7. Estimated grades into the block model; and
8. Tabulated resources and performed validation.

Estimation in all cases included a nearest neighbor, Krige, and inverse-distance interpolations, but in all cases the inverse-distance model was selected as the final and reported model. MDA utilized mineral domains defined by grade and geology to control the estimation. Estimation parameters were chosen to be appropriate for the drill spacing, geologic complexity, sample locations, and parameters defined by point validation and correlograms. In an attempt to maintain consistency with historic estimates, MDA used similar resource-modeling methodology unless compelling reasons were found not to do so.

The 2005 estimated mineral resources are listed in Table 1.1. Differences between resource estimates from this work and those reported in 2004 are the result of MDA’s stricter adherence to geologic and mineral-zone controls and to some extent by the use of lower bulk specific-gravity values for the skarn. These differences are especially apparent in the Inferred tonnes above the reported cutoff grade. The copper equivalent grade calculation (CuEq) used in Table 1.1 is based on historic average copper and molybdenum metal prices to arrive at a ratio of 5 to 1. Copper equivalent calculations reflect gross metal content and have not been adjusted for metallurgical recoveries or relative processing and smelting costs.

**Table 1.1 Magistral Mineral Resource Estimate**

Cutoff %CuEq	Tonnes	Grade %CuEq	Grade %Cu	Tonnes Cu	Pounds Cu	Grade %Mo	Tonnes Mo	Pounds Mo	Grade g Ag/t	Ounces Ag
					<b>Measured</b>					
0.40	103,158,000	0.79	0.52	532,800	1,174,600,000	0.06	57,400	126,446,000	2.5	8,270,000
					<b>Indicated</b>					
0.40	85,890,000	0.75	0.51	437,500	964,600,000	0.05	40,500	89,186,000	2.6	7,130,000
					<b>Measured and Indicated</b>					
0.40	189,048,000	0.77	0.51	970,300	2,139,200,000	0.05	97,900	215,632,000	2.5	15,400,000
					<b>Inferred</b>					
0.40	55,979,000	0.68	0.56	312,000	687,800,000	0.02	13,400	29,618,000	1.8	3,252,000

MDA optimized pit cones on the 2005 mineral resource model at different metal prices and at different pit slope angles to assess the sensitivity of the pit shells. The results (Table 1.2) clearly demonstrate that the Magistral deposit is very sensitive to metal prices and to changes in pit slope angles. Although not examined explicitly in this work, other studies have demonstrated Magistral to be very sensitive to mining costs and production rates as well.



**Table 1.2 Magistral Floating Cones - Sensitivity to Metal Prices and Pit Slopes  
Measured and Indicated Only**

	Price per pound		Tonnes (ore; 000s)	Cu (%)	Copper (tonnes)	Mo (%)	Molybdenum (tonnes)	Tonnes Waste	Tonnes Total	Strip
	Cu	Mo								
\$	1.10	\$ 6.00	83,674	0.560	468,658	0.056	47,108	215,599	299,273	2.58
\$	1.20	\$ 6.00	91,348	0.542	495,472	0.054	49,693	231,626	322,974	2.54
\$	1.30	\$ 6.00	101,089	0.532	537,389	0.053	53,779	272,337	373,426	2.69
\$	1.10	\$ 8.00	99,925	0.531	530,702	0.054	54,259	270,368	370,293	2.71
\$	1.20	\$ 8.00	110,730	0.517	572,696	0.053	58,355	310,026	420,756	2.80
\$	1.30	\$ 8.00	119,752	0.507	607,262	0.052	61,912	349,115	468,867	2.92
<b>Summary</b>										
	Cu \$1.10	Mo \$6.00	Tonnes (ore; 000s)	Cu (%)	Copper (tonnes)	Mo (%)	Molybdenum (tonnes)	Tonnes Waste	Tonnes Total	Strip
Overall		base 40-45	83,674	0.560	468,658	0.056	47,108	215,599	299,273	2.58
Slope		47°	101,955	0.551	562,180	0.056	56,789	209,542	311,497	2.06
Angle		50°	114,124	0.542	619,009	0.055	62,768	207,636	321,760	1.82
		52°	124,478	0.537	667,949	0.055	68,214	218,851	343,329	1.76

## 1.6 Recommendations

Magistral is a property of merit and further work is warranted. A number of Phase I recommendations are proposed for project development leading to completion of a prefeasibility study on the Magistral copper-molybdenum deposit. Recommendations for Phase II focus on the completion of a full feasibility study, which are provided in a provisional sense, as the nature, scope, and cost of the work programs needed to complete a full feasibility study will be entirely dependent on the outcome of the Phase I work.

Phase I recommendations for work programs leading to the completion of a prefeasibility study include studies of pit design (especially pit-slope angles), mining rates, and capital costs, evaluations of potential underground development addressing both stand-alone and combined open-pit/underground strategies, and petrographic and mineralogical studies of drill core and metallurgical concentrates. The estimated total cost for the Phase I work programs is US\$475,000.

It would be premature to attempt to provide the details and estimated costs of Phase II work programs, because these are strictly contingent upon the outcome of the recommended Phase I program. If the Phase I studies prove favorable (*i.e.*, if the recommended prefeasibility work demonstrates economic viability), a full feasibility study would be warranted. Estimated costs for a feasibility study, including permitting and continuing environmental and social base-line studies, could be over three million dollars.