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TAMPAKAN RESOURCE ESTIMATE UPGRADE

Indophil Resources NL (Indophil) has received from Project Manager Xstrata Copper a revised and upgraded mineral resource estimate (see attached) for the Tampakan Copper-Gold Project in which Indophil holds a 37.5% beneficial interest.

In summary, the total estimated mineral resources (Measured, Indicated and Inferred) for the Tampakan deposit has risen from 2.49 billion tonnes at 0.6% copper at a 0.3% copper cut-off grade to 2.94 billion tonnes at 0.51% copper at a 0.2% copper cut-off grade. This represents a tonnage increase of 18% over the previously reported October 2009 total resource estimates.

Xstrata Copper reports as a 'significant increase' the lift in the more-confident Measured and Indicated category, up from 1.69 billion tonnes (0.6%) to 2.27 billion tonnes (0.55%). This represents a 34% increase in tonnage in the Measured and Indicated category.

On the basis of the new information, estimated contained copper at Tampakan in total resources has risen from 13.9 million tonnes (Mt) to 15.0Mt while estimated contained gold has risen from 16.2 million ounces (Moz) to 17.9 Moz.

Raul R. Roco, the Competent Person for the Tampakan Statement, consents to the technical interpretation as provided in this announcement (above) and supporting documents (attached).

Commenting on the new estimates, Indophil's CEO Richard Laufmann said that even though the Tampakan deposit has already been acknowledged as world-class, the new information confirms its ranking as one of the most significant undeveloped copper-gold deposits in the world.

"The enhanced level of confidence provided in this upgraded resource estimate for Tampakan is encouraging. It is timely, and serves to restate the significance of this deposit to minerals development in the Philippines as the project partners work towards securing the range of approvals required to bring this important development to production," Mr Laufmann said.

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Tampakan Copper - Gold Project

Mineral Resource Statement

Introduction

This document summarizes the process and results of Mineral Resource Estimation for the Tampakan Project. It constitutes the "Competent Person" Report describing the project Mineral Resources as estimated at the end of December 2011 and follows the JORC (2004) guidelines for the reporting of Mineral Resource estimates.

This Mineral Resource estimate has been performed by a combined effort of the Tampakan Project Geology team and the Xstrata Copper Resource Evaluation team in Santiago de Chile.

The information presented here has been developed and compiled under direction of Raul R. Roco who is a full-time employee of Xstrata Copper and Member of the Australasian Institute of Mining and Metallurgy (AusIMM). Raul has been involved in all aspects of porphyry copper drilling, sampling analysis, database management, geological modelling, resource estimation, mining production and reconciliation. He has the necessary experience to be the Competent Person for the Tampakan resource estimate; he has been involved in the process of resource estimation of Tampakan since 2008 as a peer reviewer, and has visited the property the same year.

The Mineral Resource Estimate summarized here is that corresponding to the Tampakan project and includes the relevant mineral resources information to provide unambiguous proof of the mineral resource estimation and the validation process carried out by Xstrata Copper at December 2011.

After the project Feasibility study and Mineral Resource evaluation completed in 2009, an infill drilling campaign consisting of 54 new drill holes amounting 17.400 meters of drill core was completed in 2010 followed by an update of the deposit geology, block grade interpolation and new Mineral Resource estimate.

The new geological model now considers an improved definition of the high sulfidation zone based on seven discrete Alteration domains. Block grade interpolation results from the use of Ordinary Kriging in some cases combined with an Indicator Kriging approach that helps to better define the high grade zonation, particularly for the arsenic model.

Resource have been classified in Measured, Indicated and Inferred using similar criteria as per previous estimates regarding the amount of drill hole information required for the resource to fall within a particular category.

Mineral Resource is now reported using a 0.2% Copper cut off within a pit shell developed using Measured, Indicated and Inferred Resources. Differences in the Resource in relation to previous estimates is mainly due to the incorporation of the new drilling, enhanced definition of the Alteration zones and the change of cut off grade from 0.3 % Copper to current 0.2% Copper.

The main difference of this new estimate in relation to the previous 2009 estimate is the significant increase on Measured & Indicated Mineral Resources from 1,690 Mtn @ 0.6 %Cu to current 2,270 Mtn @ 0.55 %Cu. This is the consequence mainly of the change of cut off grade from 0.3 % Copper to current 0.2% Copper and the new drilling information focused on the definition of the high sulphidation zone which resulted in promoting high grade ores from Indicated and inferred to the Measured and Indicated category.

The economic pit envelope has also been updated for Tampakan to reflect the new block model. This pit is calculated using Measured, Indicated and Inferred resources and current economic modifying factors.

Mineral Resource Statement

The Measured & Indicated Resources at Tampakan deposit are estimated to be 2,270 Mt @ 0.55% Copper, 0.007 % Molybdenum and 0.21 g/t Gold at a copper cut-off grade of 0.2 % including mineral resources within high sulphidation and porphyry zones.

In addition, 670 Mt @ 0.4% Copper, 0.005 % Molybdenum and 0.1 g/t Gold of Inferred Resources were estimated at Tampakan deposit using a Copper cut-off grade of 0.2 %, details are provided in Tables 1, 2 and 3 below.

Table 1: Tampakan Mineral Resources at 0.20% Cu cut-off as at 31 Dec 2011.

				Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Resources		Inferred Mineral Resources		
Name of operation	Ownership	Mining method	Commodity	31.12.11	30.06.2010	31.12.11	30.06.2010	31.12.11	30.06.2010	31.12.11	30.06.2010	Competent person
Tampakan [t]	**63%**	OC	Ore (Mt)	980	780	1290	910	2,270	1,690	670	800	RR
	Xstrata		Cu (%)	0.69	0.71	0.45	0.55	0.55	0.62	0.4	0.4	
			Au (g/t)	0.28	0.28	0.16	0.19	0.21	0.23	0.1	0.2	
			Mo (%)	0.008	0.008	0.006	0.007	0.007	0.008	0.005	0.006	

Table 2: Tampakan Measured and Indicated Resource categories at several copper cut-offs as at the end of December 2011. These figures are constrained by topography and an economic pit calculated with Measured, Indicated and Inferred resources.

Tampakan - Mineral Resources

COG Cu (%)	Tonnes (Mtons)	Cu (%)	Mo (ppm)	As (ppm)	Au (g/t)
0.2	2,270	0.55	69	81	0.21
0.3	1,820	0.63	74	95	0.24
0.4	1,430	0.71	79	112	0.26
0.5	1,080	0.79	82	134	0.29
0.6	780	0.89	86	162	0.32
0.7	560	0.99	91	196	0.35
0.8	400	1.09	96	236	0.39
0.9	280	1.19	100	279	0.42
1	210	1.29	103	326	0.46

Table 3: Tampakan Measured, Indicated and Inferred Resource categories at several copper cut-offs as at the end of December 2011. These figures are constrained by topography and an economic pit calculated with Measured, Indicated and Inferred resources.

Tampakan - Mineral Resources

COG Cu (%)	Tonnes (Mtons)	Cu (%)	Mo (ppm)	As (ppm)	Au (g/t)
0.2	2,940	0.51	65	69	0.19
0.3	2,160	0.61	72	87	0.22
0.4	1,630	0.69	77	106	0.25
0.5	1,190	0.78	81	130	0.28
0.6	850	0.88	86	162	0.31
0.7	600	0.98	91	198	0.35
0.8	410	1.09	97	242	0.38
0.9	290	1.19	101	289	0.42
1	210	1.29	104	338	0.46

Location and Tenure

The Tampakan copper-gold deposit is a major high-sulfidation epithermal deposit superimposed on a pre-existing low -to moderate- grade porphyry copper system. It is located on the island of Mindanao, approximately 45 km NNW of General Santos City, a major growth centre in the southern Philippines (Figure 1). The Tampakan deposit represents the largest undeveloped copper-gold deposit in Southeast Asia.

Title to the project is held under the Columbio Financial or Technical Assistance Agreement FTAA No. 02-95-X1. An FTAA is a Financial or Technical Assistance Agreement with the Philippine Government and the Columbio agreement was signed in March 1995 and then ratified by President Ramos and the Philippine Congress. The FTAA is held by Sagittarius Mines Inc. (“SMI”), a Philippine Corporation.
Xstrata Copper exercised its option to acquire 62.5% of the controlling interest in the Tampakan Project on 21 December 2006. On completion of the option, on 30 March 2007, Xstrata Copper assumed management control of the Tampakan Project through its Philippines based affiliate Sagittarius Mines, Inc. (SMI). Following the exercise of Xstrata Copper’s option, Indophil resources NL has progressively lifted its interest in the Tampakan project to 37.5% through a purchase agreement with former 3.27% project holder Alsons Corporation.

The non controlling shareholders of SMI, are the Tampakan Mining Corporation and the Southcot Mining Corporation, known as the Tampakan Group of Companies.

The Columbio FTAA was originally held by Western Mining Corporation Philippines (“WMCP”) subsidiary of Western Mining Corporation. WMCP sold the FTAA to Sagittarius and the Philippine Government approved the transfer in December 2001. The sale was challenged through the Philippine Courts by Lepanto Consolidated Mining Corporation (Lepanto). To date all legal challenges by Lepanto have been dismissed.

In January 2004 the Supreme Court of the Philippines declared FTAA's unconstitutional though they withheld judgement on the Columbio FTAA. This decision has since been overturned. Agreements are in place with the local municipalities and communities including the indigenous communities. These include royalty and compensation payments in addition to those mandated by the Government under the Mining Act.

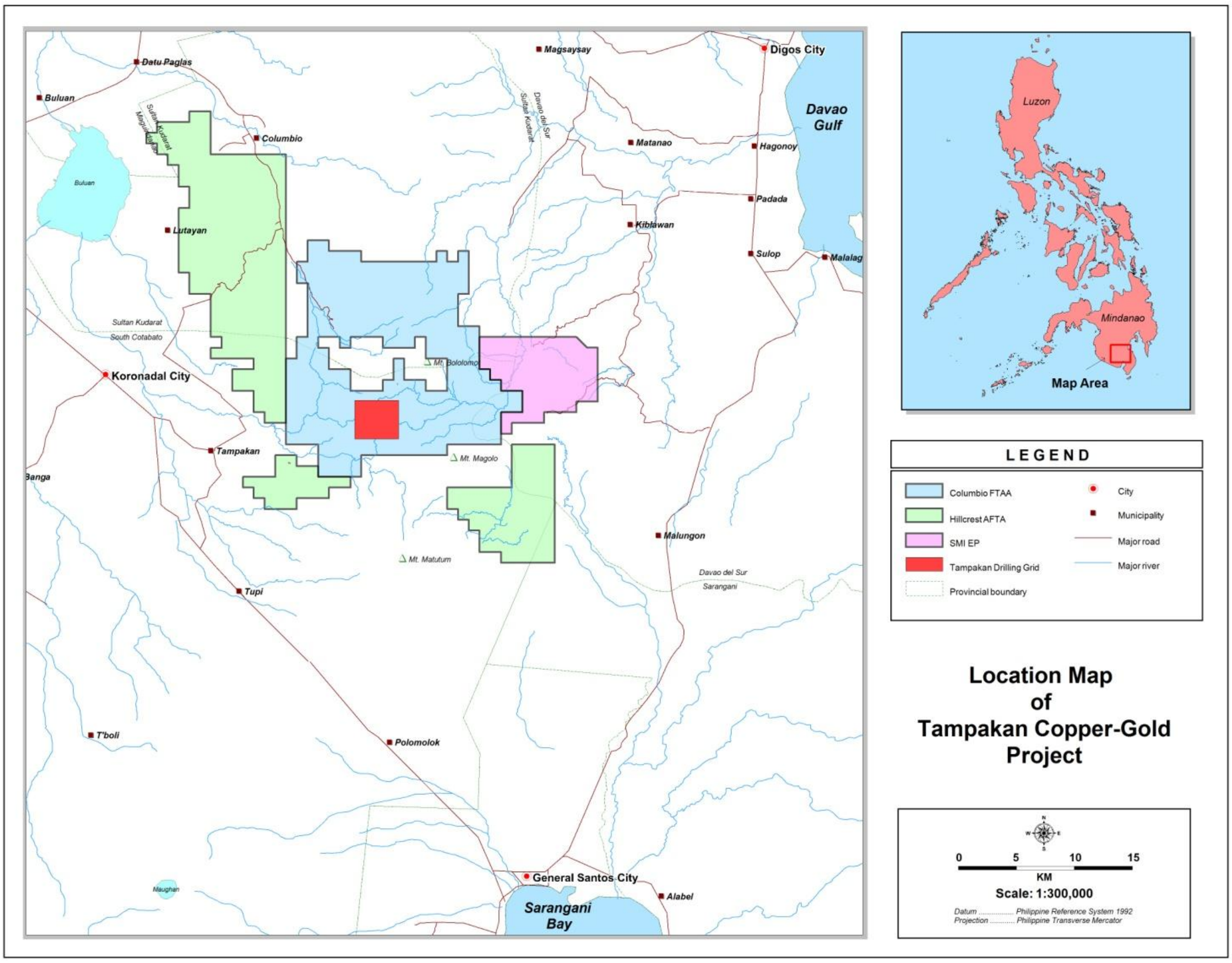

Figure 1. **Location of Tampakan Copper-Gold Project.**

Geology

The deposit, a copper gold porphyry with a high sulphidation overprint, is hosted by a sequence of subaerial andesitic flows and fragmentals related to a highly eroded andesitic statavolcanic complex of probable Pliocene Age. This complex is interpreted to lie on the northern extension of the Sangihe volcanic arc extending from Northern Sulawesi in Indonesia. The Tampakan district is located within a complex tectonic setting dominated by WNW trending wrench faults that form part of the trans-Mindanao Cotabato Fault Zone.

The Tampakan deposit is located near the intersection of one of these WNW trending structures with a prominent NNE trending dilatational structure, one of many that transect the host volcanic complex. High-sulphidation style copper-gold mineralisation is broadly associated with a flat lying tabular body of pervasive silica and silica-clay alteration developed within a district scale lithocap of advanced-argillic and argillic hydrothermal alteration that extends over an area of 90 square kilometres within the volcanic complex.

The geology model has been developed from a systematic program of diamond drilling that have most holes ending in lower grade (0.1-0.3% Cu) porphyry copper style mineralisation at depths of 400-500 meters. Superimposed high-sulphidation mineralisation and associated alteration passes transitionally to porphyry copper style mineralisation and alteration at depth. The interface between these styles of mineralisation can be quite irregular as a result of structural control on hydrothermal fluids. Relatively narrow dykes of andesitic composition have intruded this sequence both contemporaneously and post mineralisation. At an approximate 0.5% copper contour, the deposit comprises a flat lying to gently dipping tabular body of mineralisation extending over an area of 2km by 1.6km and ranging in thickness from 200-400 meters.

High-sulphidation epithermal mineralisation and alteration is strongly influenced by the interplay of stratigraphic and structural controls, in particular NNE trending dilatant faults. This style of mineralisation is typically associated with a silica and silica-clay (pyrophyllite-dickite-alunite) hydrothermal alteration assemblages that have usually obliterated original textures and mineralogy. Zones of silica alteration often display multi-phase brecciation and vuggy porosity resulting from intense acid leaching. Sulphide mineralisation typically comprises the high copper species digenite-bornite-enargite-chalcocite and to a lesser extent covellite and usually occurs as fracture, vein and vug fill. Pyrite is usually present throughout and enargite distribution appears to be preferentially associated with late-stage structures.

At depth, porphyry copper style mineralisation comprises disseminated chalcopyrite-bornite-pyrite associated with variably developed quartz-stockwork veining. This mineralization style is usually associated with sericite-chlorite +/- anhydrite alteration of host andesite and high level hornblende diorite stocks possible representing the outer shell of a porphyry system. Structural zones within the porphyry are preferentially upgraded by high sulphidation overprinting events resulting in a change of sulphide mineralogy and progressive alteration of the host sequence. The mineralised sequence is unconformably overlain by Pleistocene Logdeck Andesite in the south west quadrant of the deposit.

Data Density

The geology work included geologic mapping, logging of diamond drill holes, preparation and shipping of samples, laboratory sample analyses and data interpretation.

WMC started exploration in early 1991. The initial area of exploration covered only the areas under the optioned claims of the Palermo Group of Companies (Tampakan Mining Corp., SMI, Southcot Mining Corp). The reconnaissance exploration involved: regional targeting using available data such as aeromagnetics, aerial photos and Landsat imagery; stream sediment sampling (a total of 314 stream sediments collected during this phase); geological mapping and rock sampling. Following this work, grid based detailed exploration was conducted, initially over the highly anomalous catchment areas of Pula Bato, Lawit and Danlag Rivers. Soil sampling, mapping, ground magnetics and Induced Polarization and resistivity surveys were conducted in the initial grid area of about 2 X 2 kilometers. Drilling started in November 1992.

During the whole duration of WMC exploration, the following samples and their total number were collected:

- 200 mesh soils – 1,010 samples analyzed for Cu, Au, Ag, As, Mo, Pb, Zn
- 80 mesh stream sediment (covering the FTAA) - 1099 samples, analyzed for Cu, Au, Ag, Mo, As, Pb, Zn
- Several rock chip samples for assay, petrographic/mineragraphic analysis (including XRD) age dating etc. PIMA studies were also conducted.

Other exploration surveys conducted by WMC over the mineralisation included:

- Airborne (helicopter) geophysics which included magnetics, radiometrics, and EM. Flown by AERODAT in 1995 and 1996
- Ground electromagnetics
- Initial water geochemistry
- 1:25,000 and 1:10,000 scale aerial photography

The stream sediment data show anomalies in the Pula Bato, Lawit and Danlag Rivers. Anomalous soils occur over the outcropping portions of the Gintong Bato (Tampakan) Orebody.

Several drilling campaigns using diamond drill sled-mounted rig have been carried out since 1992 to the present.

Drilling depths averaged 360 meters (661 meters maximum depth). Drilling was undertaken with triple-tube core barrels that typically commenced with PQ (85 millimeter-core diameter) size, then HQ (64 millimetercore diameter) and, finally, NQ (48 millimeter-core diameter). Triple-tube core drilling offered the most effective form of diamond drilling in terms of maximizing core recovery. Coring started from the surface. A total of 327 diamond drill holes were completed over an area of 4.2 by 5.5 kilometers.

The area of greatest drilling density covered approximately 1.7 by 2.0 kilometers. WMC drilled 92 holes (34 698 meters) and SMI drilled a further 235 holes. Drill holes were distributed in a grid pattern along 28 East – West drilling sections. Drill holes were ~80 meters apart in the middle of the deposit, decreasing on the resource margins to a spacing of 320 meters apart or greater. An additional 50 regional drill holes were bored mostly to the east and north, and a few to the south of the main drilling area.

2010 latest drilling campaign carried out by SMI, comprise 54 drillholes with 9071 samples (17, 330 meters) drilled mainly in the mineralized area.

The majority of the drill holes were oriented east-west drilling cross-sections: 86 were vertical, 10 were oriented to the north-northeast, 9 south-southeast, 4 southwest and 1 northwest. The 24 holes oriented obliquely from the cross-sections were drilled for geotechnical purposes and to confirm geological continuity between drilling sections. There were 327 drill holes with largely completed assays in the main drilling area.

A sample preparation laboratory is available on General Santos City (less than 1 hour from the project), where the samples preparation is carried out under the supervision of McPhar laboratory services, Manila, where the chemical analysis is ultimately carried out. Sample preparation and chemical analysis procedures are fully documented in the Feasibility Study report (2010).

A total of 430 holes comprising 136,400 m of diamond drilling contributed to define the boundaries of the main ore and waste types in a real 3D geological model. Table 4 summarizes the details of all drilling campaigns performed in the property at Tampakan project. Measured and indicated categories of mineral resources were constrained to the main zone of drilling using around 300 drillholes. In general, the grid size in the central area is 80 x 80 meters with almost 150 drillholes and in the surrounding area the grid size is around 160 x 160 meters.

Table 4: Summary of the drilling Campaigns at Tampakan Project.

Company	Purpose	Number of Drillholes	Total Drill Depth
SMI	conversion	7	3,272
SMI	Exploration	1	447
SMI	Geotech	349	33,338
SMI	In-fill	102	38,259
SMI	Limestone	5	395
SMI	Metallurgy	60	19,067
SMI	Sterilisation	67	19,185
SMI	Water Bore	13	1,712
WMC	Exploration	14	5,431
WMC	Main deposit	85	31,479
TOTAL		**703**	**152,585**

Drill Sample Recovery

Virtually the entire mineralised resource, apart from high-silica zones, is characterised by broken core with very poor rock quality ("RQD"). This suggests potential for loss of fracture-related and friable ore minerals. The high grade copper mineralisation is associated with variable degrees of vuggy and permeable and porous silica and silica clay alteration zones. This style of alteration will allow soft clay minerals and sooty or fine grained crumbly copper sulphide minerals to be washed out in the drilling process. Core recovery by alteration type indicates that the silica, clay, high sulphidation alteration has the lowest core recovery at around 90% on average with average recoveries increasing up to 96% for propylitic and potassic alteration.

The recovery data from WMC drilling (holes TMPD01-96) average 94% which is similar to the results from mineralisation (ie Cu > 0.2%). Six drill holes as well as some other drill hole intervals have missing recovery information. Available recovery data indicates that there are no substantial ore grade intervals represented by poor recovery. There is a high number of intervals with 100% core recovery which appears inconsistent with the broken nature of the core. There is no obvious relationship of core recovery with copper though the accuracy of the WMC core recovery measurements makes it difficult to draw definite conclusions.

The recovery data from SMI drilling (holes TMPD97-548) average 92% (41,994 intervals) which is also similar to the results from mineralisation (ie Cu > 0.2%). Higher core recoveries tend to be associated with higher copper and gold grades suggesting that low core recoveries may have resulted in a preferential loss of mineralisation. Sludge sampling is available for SMI drill holes, where water return was available.

This limited data shows that holes with zones of poor recovery have higher copper and gold grades in sludge samples compared to the corresponding core and this effect extends outside the intervals of poor recovery. SMI is continuing to sample sludge in order to assess and quantify any loss of mineralisation during drilling. A consideration of the core recoveries and the limited sludge sampling data suggests, on balance, that loss of Cu and Au has occurred during drilling though the magnitude of this loss, at this stage, is difficult to quantify. Reverse circulation drilling has been trialled onsite with a view to possibly pairing diamond holes but without success.

Logging and Quality of Data Description

SMI has developed logging and sampling procedures that have been continuously improved and have been subject to external audits (Golder 2010), which have confirmed that the processes implemented and their results have a high level of certainty. All relevant geology features having control over spatial distribution of ore and its quality is gathered systematically.

Drill hole logging at Tampakan follows the SMI protocol SOP001 – Geological Core Logging, which details the safety regulations, the procedures and the responsibility in relation to core logging. Together with the protocol SOP001, the on-site geologists were also provided with two other documents: the TableSOP – Clay Alteration Mineralogy and the SMI Geological Logging Guide. The TableSOP – Clay Alteration Mineralogy contains detailed descriptions and sample photos for different alteration clay minerals at Tampakan, and the SMI Geological Logging Guide provides all the logging codes and their description.

All DDH core is photographed before any logging or sampling. SMI protocol SOP002 – Core Photography detailed the safety regulations, the procedures and the responsibility in relation to core photography.

Logging has been performed on full drill core using conventional methods (use of geologist's lenses, harness pens, magnets, etc.), contacts, lithologies, alterations, and mineralization were identified, and ore zones were characterized (high sulfidation and porphyry).

Sampling Techniques

All cores have been logged to geological boundaries and/or drill runs using both quantitative and qualitative descriptions. Core photography was compiled for most drill holes (from TMPD 13 onwards). Procedures for core logging followed SMI standard operating procedures. The preparation and processing of drill cores included:

- Core cleaning
- Core photography
- Geological logging
- Geotechnical logging
- Structural logging
- Magnetic susceptibility (discontinued for SMI holes)
- Core sawing, sampling, and sample preparation

After the logging procedure, half of the drill core is selected and then crushing, pulverizing and splitting to obtain 250 grams per sample. These samples are packed and send back to SMI offices.

The remaining half HQ (64 millimeter-core diameter) or NQ core (48 millimeter-core diameter) and three-quarter PQ cores (85 millimeter-core diameter) were used for further duplicate sampling; petrographical, mineralogical and fluid inclusion samples; metallurgical samples; geotechnical samples; PIMA readings; and density determinations.

Finally, the Half HQ or NQ and three quarter PQ core was returned to the core boxes and stored in core sheds at the Liberty core farm in Tampakan site project. Coarse and fine rejects returned from sample preparation were also stored at this core farm facility in covered drums or air-conditioned 40-foot container van.

Assay Procedures

Assaying for eight elements (copper, gold, arsenic, silver, molybdenum, mercury, lead, and zinc) has been carried out up to drillhole TMPD 096. From drilhole TMPD 097 onwards mercury was discontinued. From drillhole TMPD 186 onwards, sulfur, calcium, and magnesium have been analyzed.

All analyses have been undertaken by McPhar Laboratory Services, Manila, with check assaying by ALS Chemex, Brisbane. McPhar has been operational in the Philippines since 1971, providing sample preparation, base metal and precious metal assaying, and geochemical analysis at their Makati laboratory. McPhar sample preparation facilities also exist in General Santos City where the Tampakan samples are prepared.

Available analytical methods included inductively coupled plasma multielement analysis, as well as atomic absorption spectrometry, fire assay, and classical methods. McPhar Laboratory Services in Manila are ISO 9001:2000 and ISO 17025 accredited. Assay methodology used for Tampakan samples are listed in Tables 5 and 6.

Table 5: Summary of Analytical Methods used at Tampakan Deposit (WMC Assays Methods and Detection Limits TMPD 1 to 96).

Element	Detection Limit (ppm)	Assay Method
Cu	5	AAS- 3 Acid HCl_HNO3_HClO4
Au	0.01	30 g Fire Assay
As	1	VGA on acid leach
Ag	0.5	AAS- 3 Acid HCl_HNO3_HClO4
Mo	2	Colorimetry
Hg	0.05	Flameless AAS
Pb	5	AAS- 3 Acid HCl_HNO3_HClO4
Zn	5	AAS- 3 Acid HCl_HNO3_HClO4

SMI has used the methodology listed in Table 6 since starting drilling in 2003. Detection limits for AAS (copper, molybdenum, lead, and zinc) were adjusted from 5 ppm to 10 ppm by McPhar post TMPD 160.

Table 6: Summary of Analytical Methods used at Tampakan Deposit (SMI Assay Methods and Detection Limits TMPD 97 Onwards).

Element	Detection Limit (ppm)	Method	Digestion
Cu	10	AA1	HClO4-HCl-HNO3, 1 : 2.5 : 2.5
Pb	10	AA1	HClO4-HCl-HNO3, 1 : 2.5 : 2.5
Zn	10	AA1	HClO4-HCl-HNO3, 1 : 2.5 : 2.5
Au	0.005	PM5	FA, 30gms
Ag	0.5	AA1	HClO4-HCl-HNO3, 1 : 2.5 : 2.5
Mo	10	AA1	HClO4-HCl-HNO3, 1 : 2.5 : 2.5
As	1	VG2	HClO4-HCl-HNO3, 1 : 2.5 : 2.5
As1	100	AA1	HClO4-HCl-HNO3, 1 : 2.5 : 2.5
Ca	0.01	ICP2	HClO4-HCl-HNO3, 1 : 2.5 : 2.5

Mg	0.01	ICP2	HClO4-HCl-HNO3, 1 : 2.5 : 2.5
S	0.01	ICP2	HClO4-HCl-HNO3, 1 : 2.5 : 2.5

Assay reports from McPhar Laboratories, Manila, were imported using an automated MS Access import tool written by Hellman and Schofield. The tool read laboratory report data and imported it as temporary Access tables into the main Access database. This process featured restricted security privileges and was usually undertaken by the database administrator. The assay import tool made append and update queries to prepare and forward the assay report (temporary Access tables) to the main assay tables.

The queries were written so that the temporary Access table's fields must match the main assay tables, thereby ensuring that the data is imported to the correct fields. Assay report header data, including filename, date, number of samples, elements reported, and detection levels, were also recorded and imported. This served both for validating and auditing the assay data.

All drill assay data were stored in one master Access assay database table, which included regular samples, re-assays, blanks, and standards. These were linked to geology and sampling tables. Once all logging validation and all available assays were loaded, the database administrator ran a DHPlot routine, which exported key parts of the database for analysis and external use.

Quality of Assay Data

SMI has instigated a detailed QAQC program. Dummy samples composed of drill cores from the cemented collar block are inserted into the sample suite on a routine basis at the beginning and end of each batch and approximately one in twenty samples. These samples were subjected to routine sample preparation procedures and returned to SMI as pulps. On receipt, SMI swapped the cement samples with certified blank material or standard reference material. A cement sample was left one each at beginning and end of each batch. The sample suite was then returned to McPhar for shipment to Manila Chemical Laboratory and assaying. These data provided a measure of the cleanliness of sample preparation and accuracy and cleanliness of the assaying process.

In addition, duplicate samples were submitted for the same sample interval at a frequency of one in twenty five. These data provides information on the suitability of sample size and method and cleanliness of sample preparation. A useful data set has been established where the cement over core sample returned assays in excess of 10 percent of a notional cutoff grade. In these cases, the cement core and surrounding core samples were resampled and assayed. Duplicate samples also provided information about sampling and sample preparation techniques.

Standards. Standard reference material was first introduced in the routine sample dispatch protocol by SMI in 2004 from TMPD 109 onwards; the frequency of standard samples in the sample batch is one in every 20 samples. Prior to this, no standard reference materials were used routinely. This is described in the Indophil Resources PFS Report.

Blanks. Standard reference blank material was introduced routinely from TMPD 109 onwards. Half or quartered cement drill core was inserted into the sample stream as dummy samples. After sample preparation, pulps were retrieved and standards and fine blanks were substituted.

Two types of blanks were used, known within SMI as "coarse" and "fine" blanks. One of each type was inserted near the beginning and end of each batch. The fine blank was certified reference material (OREAS 22P) from Ore Research and Exploration Pty Ltd. The coarse blank was cut cement drill core

drilled after cementing a hole collar. This usually had some country rock caught within the matrix and so had low background levels of metal.
Where coarse blanks have returned over 200 ppm copper, the surrounding sample suite has been resampled from core and re-submitted for assay.

Resampling and Duplicates. Where the coarse blank returned assays over 200 ppm copper, the resampled data set represented a good measure of the reproducibility of the sampling and sample preparation processes. The means of the difference between original and resampled assays were indistinguishable from zero at 95 percent confidence levels. This indicated that core could be sampled twice and prepared on different dates and on average the same result will be achieved.

The same was true for duplicate samples. In an attempt to check for sampling and sample preparation bias, SMI has submitted both halves (and two quarters) of same drilled interval for approximately one in twenty five samples. The means of the difference between original and re-sampled assays for all copper, gold, molybdenum and arsenic are indistinguishable from zero at 95 percent confidence levels.

In general, the results of the historic QAQC programs show an acceptable accuracy and precision based on the standard samples analysis. In the same way, the analysis of blanks shows no bias or contamination trends over the historic database and the duplicates database have high correlation with the original database which is an indicator of confidence in the historical data of the Tampakan project.

Historic QAQC Results are fully described in 2010 Feasibility Report, section 10 Geology and Mineral Resource.

Point location data

All drill holes used for resource estimation have been surveyed with either a total station or EDM theodolite. WMC holes were surveyed by a contract surveyor using a Topcon and EDM. SMI holes are surveyed by either a staff or contract surveyor using a total station device. Topographic relief is extreme and there has been an issue with surface DTMs derived from aerial photography which have effectively mapped the vegetation canopy surface. A ground theodolite survey of the main area of drilling with new base stations has been completed. This has provided a reliable surface DTM which also includes the re-survey of all available drill collars. Topographic surface control outside the main area of drilling has also been updated with an additional ground theodolite survey. Outside this area and up to the extents of the block model, topography from aerial photography is used.

A surface generated from recent aerial photography in 2009 has again varied from the ground theodolite surface in steep terrain covered by forest. Check surveying using GPS and theodolite traverses has confirmed the location of base stations, drill hole collars where re-surveyed, and demonstrated that the theodolite survey is a better model of topography in these areas. Variation in the re-traverse compared to steep areas of the original theodolite surface occurs in small areas and is not considered material.

SMI has set up an internal protocol, SOP010-Drill Hole Location, Confirmation and Survey, for the management of correctly locating the collar survey of the drill hole. The surveyed collar position has to be received by the Project Geology Section Head before drilling commences.

Before 2004, WMC used a single shot downhole camera for the measurement of downhole survey. Since 2004, SMI uses Reflex Ez – Shot Camera to measure downhole survey and measurements are taken every 50 m. Both methods are considered appropriate for this type of deposit. All data are reviewed, and measurements with azimuth deviation more than 10 degrees over 50 m is flagged as suspicious and usually not used.

Geological Interpretation and Modelling Methodology

Based on the 2010 drilling campaign, Tampakan geological team has undertaken an update of the geological interpretation considering alteration, lithology, PIMA re-sampling data, Si/Clays ratio, and copper, gold, arsenic, molybdenum, and sulfur grades; the distribution of the high sulfidation overprint; and underlying porphyry copper mineralization.
As result of this detailed geological re-interpretation, alterations domains were re-defined and provided the basis for the definition of 2011 estimation domains and are broadly described below;

- Propylitic (PRO), Regional alteration outside mineralization.
- Argillic (AR), Uppermost alteration of the high sulfidation zone.
- Advanced Argillic (HS1 – HS2), Main alteration of the high sulfidation zone, that is divided in two types according the Si/Clay ratio (HS1, more than 50% Silica and HS2 more than 50% Clays)
- Phyllic (PHY), Alteration at or near the interface between the advanced-argillic and intermediate argillic zones.
- Intermediate Argillic (IAR), Alteration related to the earlier porphyry-style mineralization event.
- Potassic (POT), Minor intervals of relict porphyry-related potassic alteration have been intersected near the margins of host hornblende diorites in some deeper drillholes.

There is no clear relationship between mineralization and lithology due to the superimposition of a variety of styles of alteration upon a volcanic sequence of andesitic flows and underlying diorite stocks; however, there is a clear relationship between metal zonation and discrete alteration domains, allowing the division of the deposit in 7 estimation domains with a well-defined grades behavior (stationary domains).

Some volcanic lithologies are clearly emplaced either after mineralization or late in the mineralizing history and are consequently either barren or weakly mineralized. These include some andesite dykes greater than 10 meters horizontal thickness and Logdeck Andesite. These are modeled based on drillhole intersections and excluded in the resource estimation process.

In comparison with previous geological interpretation, the implementation of the alteration domains, as a basis for resource estimation, undoubtedly, produced local changes to the Mineral Resource model, as the increase of the accuracy in the definition of high and low grades zones in the main mineralized area; however these changes do not have a negative effect on global reported resources.
On the other hand, in deeper areas where the drilling information is scarce (inferred Resources), the use of the new geological interpretation, mainly the new boundary of Propylitic alteration, provide a powerful tool to constraint the interpolation of high grades in areas where geology suggest is not reasonable to do, especially at the bottom of the deposit.

With the aim to reproduce the new geological interpretation done by the Tampakan geologists, it was decided to use Implicit Modelling (IM), which is a technique that allows combining the geological information, with the radial base function method. This methodology allows generate solids that honoring the geological boundaries and are highly controlled by the trends identified at the stage of geological interpretation.

For the Tampakan deposit the specific geological information used to control the solids generation was:

- East – west geological cross section of alteration units (every 80 meters),
- Geological surface mapping,
- Dykes interpretation and
- Geological trends of the alteration units defined by the geological team of Tampakan.

Implicit Modelling is a technique where drill log information is interpolated and extrapolated in 3 dimensions using the radial base function method (Cowan et al, 2003) and controlled by geological information. Implicit modelling is used preferentially in areas with lots of data with complex spatial distributions, as volumes that honour the data can be generated relatively quickly and easily, with good control over the general shape and trend of the volume. The software used in this process was Leapfrog.

Alteration and mineral zones (ore types) were constructed using Leapfrog solids techniques. These modelled solids were then used to attribute the block model and provide the necessary inputs for the exploratory data analysis and determination of estimation domains. The resulting 3D geological model has the necessary accuracy to provide a reasonable basis for resource estimation. Most of the geological domains have a greater than 90% correspondence between the input data and the modelled solids.

The final geological block model generated from the modelled solids employed a 20 x 20 x 15 meters parent block size and variable subcells of 5 x 5 x 5 meters as the minimum size for geological and estimation purposes.

Quality Controls

A detailed validation is made of the quality of the geologic modeling measured and its capacity to honor the input data, where the alteration and mineral zones "mapped" versus the alterations modeled are tabulated. These latter are obtained by marking solids interpreted from the alteration database in a field used for that purpose.

The level of match for the alteration types of relevance are always higher than 90%, which for this type of deposit, estimation method and the future level of selectivity of the mine is viewed as being adequate.

Resource Estimation approach

A mineral inventory (block model) was estimated using established geostatistical techniques following comprehensive statistical and exploratory data analysis (EDA).

Dedicated estimation domains have been defined for each element at each deposit based on the "as modeled" alteration domains. Depending on the element and deposit, the estimation domains are defined from combining some of the alterations where it was considered appropriate.

In general, the HS1, HS2, AR, IAR and PHY have been preserved as separated estimation domains and treated with hard boundaries; the Potassic (POT) and Propylitic (PRO) were modelled and estimated together due to geological similarities and the scarce number of samples of POT.

These were interpolated using spatial declustered statistics calculated on both the routine sample set and the final drill hole composite set. 6 metres length, downhole composites truncated at estimation domains have been calculated separately for each estimated element. A minimum of 3.0 metres in length was required for a composite to participate in the interpolation process.

Declustered statistics were generated from nearest neighbour models obtained for each estimated element and also checked against the cell declustering approach. Experimental variogram models were generated with Supervisor software and interpolation variograms were evaluated and modeled using three rotation axes. Declustered statistics were generated from nearest neighbour models obtained for each estimated element and also checked against the kriging declustering approach.

The estimated elements are copper, gold, arsenic, molybdenum, specific gravity and sulphur (sulphur content was estimated only within secondary ore type). Block grade interpolation was carried out using three-pass ordinary block kriging of 20m by 20m by 15m blocks. Each pass reflected the various ranges established by the variogram models for each element and estimation domain using the Ordinary Kriging (OK) algorithm for most of the domains. The kriged block dimension is identical to that to be employed in future mine planning and is currently envisaged as the selective-mining unit (SMU) for the projected operation.

Indicator Kriging (IK) approach were used for Arsenic estimation within HS1 and HS2 alteration domains, with the aim to reproduce the erratic As behaviour in these alteration domains, i.e. 80% of the data have less than 100 ppm of As and the remaining 20% have extreme Arsenic values, that can reach more than 1000 ppm of arsenic (less than 3% of the data).

No direct grade capping was done; the extended influence of the high grade outlier composites was restricted in the kriging plans where necessary. The impact of this restriction was assessed by interpolating auxiliary block models without restrictions to the outliers and also by close visual inspection of the results. The nearest neighbour reference models were also obtained with and without the restriction to outliers and served as reference for checking the presence of bias at the global scale.

Tonnage Factors

SMI used three density determination methods: coarse reject, tray, and wax or stick. Procedures for all three methods are documented 2010 Feasibility study. The coarse reject method was undertaken on all assayed samples and was used in resource calculations. The other two methods were used to provide supporting data.

Coarse Reject Method. Specific gravity (SG) was measured on coarse reject samples using water displacement method performed in graduated cylinders. A logged porosity estimate was factored in, based on the logged interval, which equates to the sampled interval. The measured SG was factored by the logged porosity value according to SG/(1+porosity)= SG porosity. Average porosity was less than 2 percent, but this was variable within the deposit. Data from this methodology were used for resource estimation. The inherent weakness in this method, the subjective estimation of porosity, was a relatively small factor.

Wax Method. The wax method used wax to cover the sample using minimum wax coating thickness. SG was measured using a water displacement method performed in plastic pail. (This method used by both SMI and McPhar laboratories). There is less than 5 percent difference between this method and Coarse Reject Method.

Tray Method. The tray method involved a measurement on a whole tray (core box) of core. The core tray with core was weighed after sun drying. An average callipered core diameter and length was measured enabling a volume calculation. The weight of the tray itself was subtracted and a SG was calculated. There is less than 3 percent difference between this method and Coarse Reject Method.

For the preparation of the resource estimates, Specific gravity (SG) was estimated using Ordinary Kriging method and when the number of samples was scarce Inverse distant Weight (IDW) method was applied and only the values lying within a confidence interval of ± 2 standard deviations were considered in the estimation process.

Taking into account that all blocks must have a specific gravity value, it was necessary to give a value to the blocks that were not estimated in the interpolation process. The methodology applied in this case consisted of assigning the mean value obtained from the interpolation process for estimation domain.

Resource Classification

For the Tampakan project, the criteria implemented for resource classification accounts for the deposit type (copper gold porphyry with a high sulphidation overprint), the perceived spatial variability and the amount and quality of information –drill hole data density- available for the assessment of the relevant geological boundaries that have control over copper grade distribution.

For the sake of simplicity, transparency and reproducibility, a method that is purely based on the assessment of how well informed the blocks are was implemented; well informed are blocks that have more data and that data is closer to the block location.

The thresholds in between categories are established based on the same parameters as defined in the 2010 feasibility study resource estimate.

The classification of resources into Measured, Indicated and Inferred based on drill hole spacing and/or drill hole density is transparent, understandable and easy to track and reproduce.

At Tampakan, a significant amount of work has been done by intensively drilling out the orebody in preparation for the resource estimated and classified here. The quality of the drill hole data gathering process is guaranteed by the thorough QA/QC program put in place; external review that have also contributed to maintain industry standard data quality (External Review of Feasibility Level Mineral Resources, Golder, 2010).

The implementation of the resource classification exercise is executed using a Vulcan scripts in which all the parameters and assumptions are easy to track.

Criteria used to classify resources at the Tampakan project are described below and table 7 summarized the parameters used in the resources classification.

Measured. An interpolation plan is set up specifically to assess the level of information of the block model in relation to the location and density of drill holes. In general, the drilling grid size for measured resources is 80 x 80 meters.

Indicated. The approach for flagging "indicated" resources is the same as per "measured" allowing blocks that have less data associated to their interpolation but still providing relative confidence on the quality of the results. For this category a single interpolation step was set up.
Search distances used are 150 x 120 x 60 m. A minimum of 6 samples and maximum of 16 with a maximum of 6 samples per drill hole was set to allow a block to be included as part of this category. Distances to the block centroid were stored for all samples involved.

Inferred. A third subsequent interpolation run was set for the "Inferred" category, the parameters used are now more relaxed to allow more influence from holes, particularly at the bottom of them. The propylitic alteration has been little explored yet as there are no real deep holes as part of the delineation of the deposit. This prevented to evaluate with confidence the spatial continuity of the relatively low grade propylitic alteration.
Search distances used are 220 x 220 x 100 ms with maximum 6 samples per drill hole. A minimum of 6 composites and maximum of 16 was set to allow a block to be included as part of this category. Distances to the block centroid were stored for all samples involved.

Table 7: Summary of Resource Classification Parameters used at Tampakan deposit.

Ore Category	Search distance radious	Maxim um theoretical grid	Max dist used 1st drillhole	Min/Max Sam ples	MaxSam ples by drillhole	Min Num drillholes	Sm oothing
Measured	100/80/40	140/110/60	80	8/16	4	2	
Indicated	150/120/60	210/170/85	100	6/16	6	1	50/50/17
Inferred	220/220/100	310/310/140	-	6/16	6	1	

Post-processing for Smoothing Out Resource Classification Results.

The approach described above is useful to identify on a block by block basis the level of information associated to the block model within the interpolation neighbourhood. However in some cases this result in areas were there coexist blocks of different categories resulting on a "salt & pepper" pattern that is not ideal for mine planning purposes. The concept of classifying resources must always be related to a minimum tonnage or volume not block by block, as the latest may mislead results when doing mine planning sequences.

Thus, in order solve this situation a smoothing algorithm was set up to reduce the "mixing blocks" situation to a reasonable level. The algorithm works by calculating on block by block basis, a moving window which counts the number of blocks of each category within that window and finally assigning the final category to the majority. The final window size chosen is 20 x 20 x 15 m; this size was selected empirically by implementing various runs until the level of smoothing was considered adequate. This window size involves one surrounding block on each block face.

All details of the implementation of this classification exercise are summarized on the Vulcan script. Every step can be tracked down with its data input and results by re-running the script.

Metallurgical Factors

The historic mineralogical characterization of the Tampakan deposit has been interpreted as two main ore types; secondary ore that is predominantly chalcocite and primary ore that is predominantly chalcopyrite. These broadly represent high sulfidation and porphyry mineralization respectively. The secondary chalcocite ore has been further subdivided into high, medium, and low, dependant on the sulfur content.

These ore types have been defined as:

- **Primary,** which features the predominant valuable mineral chalcopyrite
- **Secondary (High),** which features the predominant valuable minerals chalcocite and a sulfur content of greater than 5 percent
- **Secondary (Medium),** which features the predominant valuable mineral chalcocite and sulfur content of 2.5 to 5 percent
- **Secondary (Low),** which features the predominant valuable mineral chalcocite, sulfur content less than 2.5 percent

The final ore type assignation within the block model was performed taking into account the sulphur content and the presence of minerals such as **chalcopyrite and bornite.Cut-off Grades**

Tampakan Mineral Resource is now reported using a 0.2% Copper cut off within a pit shell developed using Measured, Indicated and Inferred Resources and long term metal prices of according to current Xstrata Copper assumptions.

Audits of the Tampakan Resource Estimation

Golder Associates Pty Ltd (Golder) was commissioned by Sagittarius Mines Inc. (SMI) to carry out a comprehensive due diligence audit of the Mineral Resources at the Tampakan copper gold (Cu-Au) deposit in south Philippines. The work comprised an audit of data inputs, interpretations, inferences, independent grade estimation modelling, resource classification and reporting.

As part of the audit, Dr Sia Khos rowshahi of Golder visited the site from 10 to 12 November 2009. During the site visit, Dr. Khosrows hahi interviewed personnel and gathered information required to evaluate the appropriateness of the data and methodology used to estimate the resources and reserves.

The study comprises a review of the Extended Pre-Feasibility Study (November 2008) report in conjunction with the release statement document published on 20 October 2009. All other documentations were also made available to Golder.

Acording with Golder, "The estimates of the resources provided to Golder were expected to conform to JORC (2004) code for reporting mineral resources. No exceptions were found to this requirement".

Conclusions are fully documented and presented in the "External Review of Feasibility Level Mineral Resources" report available in the Sagittarius Mines Inc offices.

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