第Ⅲ部　結論及び提言

第1章　結論

今年度の調査の結果、次のようなことが明らかになった。

ビコール地域は、地質構造から、大きく北東帯、中央帯および南西帯の 3 帯に分けることができる。これらは、ビコール半島の伸長方向にほぼ平行に配列する。

北東帯および南西帯は、白亜系の基盤岩と第三紀の貫入岩の分布で特徴付けられる。中央帯は、鮮新世～現世の火山岩類で特徴付けられる。北東帯および南西帯は、鉱床胚胎レベルが露出し、既存鉱床・鉱徴地が分布する。期待される鉱床タイプは、ポーフィリー型銅・金鉱床、スカルン型鉱床、火山性塊状硫化物鉱床である。中央帯は、若い地質体が分布するため、削剥レベルは北西端側を除いて鉱床胚胎レベルまで達していないが、深部に浅熱水性金鉱床の賦存する可能性がある。

既存文献調査、画像解析、グランドトルース調査の結果および鉱区設定状況を考慮すると、次の地域が有望と考える。

北東帯では、Camarines Norte の Mt. Bagacay 地域、Larap－Exiban 地域、Caramoan 半島の東部地域を、中央帯では、Camarines Sur の Kilbay 地域、Camrines Sur と Albay の境界付近の Tiwi－Mt. Malinao 北西部地域、Albay と Sorsogon の境界付近の Bacon-Manito 西部地域、および Sorsogon 南部の Gate Mountains 地域を有望と考える。南西帯では、Tuba 地域が有望と考える。

第2章　第2年次調査への提言

第 2 年次は、前章の結論で述べた有望地域に対し、次のような調査を実施することが望まれる。

中央帯に分布する各地域では、浅熱水性金鉱床が地下深部に存在する可能性がある。したがって、これらの地域では、鉱床が存在する可能性のある場所、深度を推定できるような調査をする必要がある。例えば、浅熱水系の浅部示徴である変質岩の塩素含有量の分析は、深部熱水の上昇域を限定できる可能性がある。同時に、近くに存在する活地熱系の貯留層となっている断裂系を参考にして、同方向の断裂系分布域を詳細に調査する。さらに、変質帯の深度方向の変化、温度構造および鉱化作用の可能性の有無を調査するためのボーリング調査も検討されて良い。

北東帯および南西帯に分布する地域では、既存鉱徴地の周辺を詳細に調査する必要がある。

個々の地域の調査については次のような点に留意したい。

Mt. Bagacay地域

いくつかの鉄スカルン鉱床·鉱徴地が分布し、南側には鉱脈型金·ベースメタル鉱徴地が分布する。これらは、ポーフィリー型鉱床が存在する可能性を示唆するものである。既存鉱床·鉱徴地のスカルン鉱物、鉱石鉱物の組み合せあるいは流体包有物均質化温度を系統的に調査し、地域内の温度構造を把握することが重要である。また、貫入岩ストックを探し、その周囲を詳細に調査する。Tabas 地区の United Nations (1987)の調査では、変質鉱物として黒雲母、珪灰石及び紅柱石が認められ、うち二試料にはパイロフィライトが含まれる。これは、ポーフィリーシステム近傍に発達する酸性変質である。したがって、Tabas 地区も含めて調査することが望ましい。

Larap－Exiban地域

本地域は比較的広く、多くの鉱床及び鉱徴地が分布するため、調査すべき地域を絞ることが困難である。Philex 社や Altas 社などの探査が実施されてきているため、できるだけこれらの探査データを入手し、解析を加えることによってさらに絞り込みが可能になると考えられる。また、本地域には多数の貫入岩ストックが分布し、本地域の鉱床·鉱徴の大部分はこれらの貫入岩に関係して形成されたと考えられることから、貫入岩の分布を把握すること、その周辺の詳細な調査が望まれる。

Caramoan半島の東部地域

本地域は今年度のグランドトルースでは、鉱区およびアクセスの問題から現地調査を実施しなかった地域である。BMG　Region V からの最近の情報では、鉱区およびアクセスの問題は解消された模様である。本地域には緑色片岩·雲母片岩中に火山性塊状硫化鉱床型の鉱徴地が分布する。これらは、片岩の片理構造にほぼ平行に胚胎するという特徴を有する。したがって、既知鉱徴地においてその構造と胚胎する層準、岩相を明らかにし、その延長を推定することが必要と考える。

Tuba 地域は、既知鉱徴地で鉱脈、変質帯を調査し、Paracale 地域と同じタイプの鉱脈鉱床であるか、あるいは浅熱水性鉱床であるかを判断する必要がある。前者の場合ならば、第三紀と考えられている貫入岩周辺および既知鉱徴地周辺の同方向の断裂系を調査し、後者の場合、Nalesbitan 鉱床との位置関係から、両者に共通する断裂系を追跡することが望まれる。

Kilbay 地域は今年度のグランドトルースでは情報不足およびスケジュールの関係から現地調査を実施しなかった。しかし、分布する火山岩類が、角閃石安山岩であり鉱床形成に関係したマグマが他の火山岩地帯に比べ水を多く含有していたと推定され、大規模な熱水系が発達する可能性があることから有望と考えられるため、第 2 年次に調査することが望ましい。

Tiwi－Mt. Malinao北西部地域

今年度の調査で転石によって変質帯の存在が確認された。その分布状況から変質帯は、Santa Cruz River および Cayohoson Creek 沢上流に分布すると推定される。Tiwi 地熱地域の主たる地熱貯留層を形成しているのは Kagumihan fault, Tiwi fault, Naglagbong fault の NE-SW 系断層および NW-SE 系の Putsan-Bolo fault 等である。本地域にも NW－SE 系および NE-SW 系のリニアメントが発達する。これら二つのリニアメントの交差部に、Santa Cruz River および Cayohoson Creek 沢上流がほぼ一致することからも、これらの断裂系が分布する地域が重要と考える。

Bacon-Manito西部地域

Cawayan River から Calpi にかけての低比抵抗部分が Au のポテンシャルが比較的高いと推測される。Cawayan River の上流部は E-W 方向の Bac-Man Fault Zone 中に位置する。また、Calpi の蒸気加熱型変質帯の上面の傾斜は、現在の川の動水勾配とほぼ平行であることから、湧昇領域は Calpi 沢のより上流側にあると推定され、この上流側は Bac-Man Fault Zone に相当する。したがって、Bac-Man Fault Zone を中心に調査を実施する必要がある。

Gate Mountains地域

今回のグランドトルースによって、Mt. Sujac 北の Tugas 付近から南東側の Culasi にかけての地域では、熱水活動は NW－SE 方向の断裂にコントロールされたと推定されることから、同断裂に沿った調査が必要と考えられる。また、Gate Mountains 地域の南西部海岸沿いにも多数の珪化岩および変質岩の転石が確認されているものの、これらの変質作用をもたらした熱水系がどの断裂によってコントロールされたかは、今のところ明らかではない。従って、これらの転石の供給源となったと考えられる沢の上流側の調査が必要と考える。

上記 3 地域については、空中磁気探査の結果から、変質帯と推定される地域およびそれをとおる断裂線沿いの調査を行う。また、今年度の調査で十分明らかにできなかった火山岩の年代および変質･鉱化作用の年代を明らかにすることも重要と考えられる。

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巻末付録

contents of APPENDIX

Table 1-1 The literature and plans registered through this survey

No	REGISTERED ID	KEYWORD	TITLE	DATE	AUTHOR	SOURCE	LOCATION	NOTE	No
1	AL/SR-01	exploration, geology, geochemical, Au	Results of reconnaissance and follow-up geological and geochemical survey in Bacon-Manito geothermal reservation, Sorsogon and Albay.	1990	PNOC-EDC	PNOC-EDC Internal Report	p.13/Fig 1 13°00'-13°10'N, 123°48'-124°00'E	Result of geochemical survey(Au,Ag,As,Sb,Zn,Cu anomalies	1
2	AL/SR-02	exploration, geology, geochemistry, alteration	Geology of Bacon-Manito Geothermal Project.	1986	PNOC	PNOC internal report	Bacon-Manito geothermal area		2
3	AL/SR-03	mineral deposit, sulfur	Report of the sulphur deposit in Manito, Albay.	1951	Cruz, D.P.	Bureau of Mines and Geo-Sciences internal report	Manito, location map in 1:50,000	AL-74RA in MGB	3
4	AL/SR-04	geology, stream sediments geochemistry, Cu, Pb, Zn, Mn, regional survey	Reconnaissance geological and geochemical survey of Sorsogon province and Manito, Albay.	1979	Bandon, S.V.	Bureau of Mines and Geo-Sciences internal report	Sorsogon, Manito, regional	geochemical anomaly map in 1:250,000	4
5	AL/SR-05	Bacon-Manito, well PAL-10D, max Temp. 306°C, Pocdol Volcanics, silicified, alunitized	PAL-10D Geology Report	1984	R. C. GONZALEZ	PNOC-Energy Development Corporation internal report (Bacon-Manito Geothermal Project)	Palayang Bayan area, Sorsogon		5
6	AL/SR-06	Bacon-Manito, well MO-1, acid alteration zone	Petrology of well MO-1, Bacon-Manito Geothermal Field, southern Luzon, Philippines	n/a	H. G. ANGETO	PNOC-Energy Development Corporation internal report (Bacon-Manito Geothermal Project)	Malangto area (Bacon-Manito Geothermal Field)		6
7	AL/SR-07	Bacon-Manito, well MO-1, geology	MO-1 Geologic Report	1982	MATEO M. DE LEON	PNOC-Energy Development Corporation internal report (Bacon-Manito Geothermal Project)	Malangto area (Bacon-Manito Geothermal Field)		7
8	AL/SR-08	Bacon-Manito, drilling, Permeability, Gayong fault, Outflow Region, San Lorenzo Fault, Cawayan Intrusive Complex	Geology of PAL-8D	1984	A. C. LICUP, JR.	PNOC-Energy Development Corporation internal report (Bacon-Manito Geothermal Project)	Palayang Bayan area, Sorsogon		8
9	AL/SR-09	Bacman I, geothermal well, geology, reservoir Chemistry, Field Geophysics, Reservoir Engineering, Hydrogeological flow model, Reserve, Resistivity	A REVIEW OF THE 110 MWe BACMAN I DEVELOPMENT STRATEGY	1986	Geoscientific and Production Departments, Geothermal Division, PNOC-Energy Development Corporation	PNOC-Energy Development Corporation internal report (Bacon-Manito Geothermal Project)	Albay/Sorsogon		9
10	AL/SR-10	Bacman Geothermal Project, Resource Re-assessment	PNOC Energy Development Corporation-Bacon Manito Geothermal Project Resource Re-assessment	1985	KRTA Limited (New Zealand)	KRTA Limited Report by the request of PNOC-EDC	Albay/Sorsogon		10
11	AL-01	geology, volcanology, Mayon volcano	Lava-pyroclastic-epiclastic lithofacies associations of Mayon volcano: modern terrestrial sedimentation in a central-vent volcanic environment.	N/A	Ruelo, H.B. and Rodolf, K.S.	N/A	Mayon volcano		11
12	AL-02	gravity, Tiwi, fault structure	Report on the gravity survey of Tiwi, Albay.	1984	Tasoro, C.F.	Bureau of Mines and Geo-Sciences internal report	Tiwi area	bouguer map in 1:5,000, residual map in 1:5,000, AL-473 in MGB	12
13	AL-03	resistivity, Tiwi, alteration zone	The application of the resistivity method at Tiwi Hot Springs, Tiwi, Albay.	1965	Muriel, D.A. and Abergoz, O.E.	Bureau of Mines and Geo-Sciences internal report	Tiwi area, profile line map in 1:29,000	resistivity map in 1:5,000, AL-574 in MGB	13
14	AL-04	resistivity, Tiwi, hydrothermal layer	Report on the resistivity survey of Tiwi Hot Springs, Tiwi, Albay.	1964	Miranda, E. and Muriel, B.A.	Bureau of Mines and Geo-Sciences internal report	Tiwi area, station map	AL-494 in MGB	14
15	AL-05	exploration, gypsum, pyrite, dacite	Report on an investigation of a crystal deposit in Hagas and Cagnaburne, Cat, Albay.	1959	Cruz, A.	Bureau of Mines and Geo-Sciences internal report	Cagnaburne, geological map in 1:25,000	geological map in 1:25,000, AL-295 in MGB	15
16	AL-06	mineral deposit, sulfur, silicification, pyrite, kaolinite	Geological investigation of the sulfur deposits in Mt. Malinao, Tiwi, Albay.	1989	Jagolino, R.B. and Zapata, Z.C.	Bureau of Mines and Geo-Sciences internal report	Mt. Malinao, index map	geological map in 1:5,000, AL-432 in MGB	16
17	AL-07	exploration, hot spring, Tiwi	Report on the geological investigation of the Tiwi Hot Springs.	1950	Cruz, D.P. and Domingo, C.R.	Bureau of Mines and Geo-Sciences internal report	Tiwi	AL-74RA in MGB	17
18	AL-08	mineral deposit, clay, Tiwi	Preliminary report on some ceramic raw materials of Tiwi.	N/A	Belandres, C.	Bureau of Mines and Geo-Sciences internal report	Tiwi	AL-133RA in MGB	18
19	AL-09	Tiwi hot spring, sketch	N/A	N/A	N/A	Bureau of Mines and Geo-Sciences internal report	Tiwi hot spring	sketch plan in 1:2,500, AL-74 in MGB, map only	19
20	AL-10	mineral deposit, Hg	Geologic investigation of the reported mercury deposits in Buenavista, Legaspi city.	1968	Guzman, R.A.	Bureau of Mines and Geo-Sciences internal report	Legaspi city	AL-739 in MGB	20
21	AL-11	prospect, Cu, diorite, serpentinite, limestone, chalcopyrite, bornite	Examination of the copper property of Tolosa Mining Corporation in Ligao, Albay.	1951	Tupas, M.H.	Bureau of Mines and Geo-Sciences internal report	Ligao, index map	AL-609 in MGB	21
22	AL-12	geology, hot spring, Tiwi	Report on the geology of Tiwi Hot Springs, Tiwi, Albay.	1948	Cruz, D.P.	Bureau of Mines and Geo-Sciences internal report	Tiwi, index map	AL-84RA in MGB	22
23	AL-13	exploration, geothermal, gravity, magnetic, resistivity, short drilling	Geothermal exploration work in the Tiwi thermal area, Albay, Luzon.	1985	Palmason, G.	under the auspices of the united nations special fund	Tiwi	AL-566 in MGB	23
24	AL-14	ore deposit, volcanogenic sulfide	The BCI volcanogenic sulphide deposit at Rapu-Rapu island, Albay, Philippines.		Domingo, B.B.	Journal of the geological society of Philippines	Rapu-Rapu isl.		24
25	AL-15	core logging, tunnel project, X-ray	Petrographic report on the diamond drill core samples of the Lake Bato-Pantao Bay diversion channel/tunnel project.	1980	Faver, B.B.	Bureau of Mines and Geo-Sciences internal report	Lake Bato, Pantao Bay		25
26	AL-16	Tiwi geothermal field, NE-SW fault, silica-sinter	Development History of the Tiwi Geothermal Field, Philippines	1993	David T. Gambill, Domang B. Beraquit	Geothermics, Vol.22, No.5/6, pp.403-416	Albay province, northeastern flank of Mt.Malinao	Location and Geologic Map	26
27	AL-17	Tiwi geothermal field, calcite, anhydrite, illite, epidote, K-feldspar, wairakite, pyrite, wollastonite	Geochemical analysis of fluid-mineral relations in the Tiwi geothermal field, Philippines	1997	Carol J. Bruton, Joseph N. Moore, Thomas S. Powell	Twenty-second Workshop on Geothermal Reservoir Engineering, Stanford University, in press	Albay province, northeastern flank of Mt.Malinao	Map of the Tiwi geothermal system	27

Table 1-1 The literature and plans registered through this survey

No	REGISTERED ID	KEYWORD	TITLE	DATE	AUTHOR	SOURCE	LOCATION	NOTE	No
28	AL-16	Tiwi, hydrothermal alteration, fluid inclusion, 40Ar/39Ar of adularia, 0.37Ma, 0.25Ma	Hydrothermal Alteration and Fluid-Inclusion Systematics of the Reservoir Rocks in Matalibong-25, Tiwi, Philippines	1997	Joseph N. Moore, Thomas S. Powell, David I. Norman and Glenn W. Johnson	Twenty-second Workshop on Geothermal Reservoir Engineering, Stanford University, in press	Albay province, northeastern flank of Mt.Malinao	Map of the Tiwi geothermal system	28
29	AL-19	Tiwi, fracture, permeability	Fracture Permeability in the Matalibong-25 Corehole, Tiwi Geothermal Field, Philippines	1996	Dennis L. Nielson, Wilson C. Clemente, Joseph N. Moore and Thomas S. Powell	Proceedings, Twenty-First Workshop on Geothermal Reservoir Engineering, Stanford University	Albay province, northeastern flank of Mt.Malinao	Map of the Tiwi geothermal system	29
30	AL-20	Tiwi, geothermal power plant, PGI	Geothermal Energy		Philippine Geothermal, INC.	PGI pamphlet	Albay province, northeastern flank of Mt.Malinao		30
31	AL-21	Geology, Copper deposit, Rapu Rapu island, Albay	Geology of the Copper Deposits of the Hixbar Gold Mines Inc., Rapu Rapu Island, Albay	1956	Arthur J. Kinkel, Jr., Basilio Samaniego	Bureau of Mines Special Projects Series Publication no.9 Copper	Rapu-Rapu Island, Albay	Geologic Map in 1:5,000	31
32	AL-22	Geology, Coal resources, Batan Island, Albay	Geology and coal resources of Batan Island, Albay	1956	Oscar Crispin, J. Marvin weller, Jose F. Vergara	Bureau of Mines Special Projects Series Publication No.3 Coal	Batan Island, Albay	Geologic Map in 1:15000	32
33	BI-01	ore deposit, base metal	Base metals mineral resources of the Bicol region.	1982	Bureau of Mines and Geo-Sciences	Bureau of Mines and Geo-sciences	Bicol peninsula		33
34	BI-02	geology, highway	Report on the geological survey of Luzon southern Maharlika highway, Matnog, Sorsogon to Manila.	1987	Escalada, P.P.	report of the Bureau of Mines and Geo-sciences	Bicol peninsula	geological map in 1:1,000,000 SO-5001 in MGB	34
35	BI-03	mineral deposit, phosphate, pyrite	Preliminary report on phosphate and pyrite deposits of Camarines Sur, Catanduanes and Albay.	1960	Cruz, O.P., Cames, F.A., Domingo, C.R. and Fabiomad, Z.	Bureau of Mines and Geo-Sciences internal report	Camarines Sur, Catanduanes, Cagraray Isl., Rapu Rapu Isl., index map in 1:300,000	sketch maps, AL-4 in MGB	35
36	BI-04	geology, groundwater resources	Geology and groundwater resources of Region V	N/A	N/A	Bureau of Mines and Geo-Sciences internal report	Region V	5010 in MGB	36
37	BI-05	ceramic, raw materials	Report on ceramic raw materials ore reserves in Bicol region.	1985	Ronan, J.N. and Magpantay, A. Jr.	Bureau of Mines and Geo-Sciences internal report	Bicol peninsula	CS-5005 in MGB	37
38	BI-06	geology, groundwater resources	Ground water geology of Bicol peninsula	1973	Dumaop, P.T.	Bureau of Mines and Geo-Sciences internal report	Bicol peninsula	CS-1006 in MGB	38
39	BI-07	exploration, Au, quaternary volcanics, silicified, pyrite, alteration, kaolinite, chalcedonic quartz veinlet, chalcedonic	Preliminary report on the "gold in quaternary volcanic areas" in the Bicol region.	1989	Cartalla, E.J.M. and Sias, P.C.	DENR internal report	Cabanga-Tinaguan-Gos area, Butan-bravo area		39
40	CN-01	ore deposit, Fe	The Larap iron deposit.	(1949)	Kinsted, F.H.	(Philippine mining year book, A.J.M.E.)			40
41	CN-02	ore deposit, Cu, Mo	Verification of geologic reserves of the Bessemer pit area of Philippine iron mines, Inc., in Larap, J. Panganiban, Camarines Norte.	1974	Calixto, F.C.	Bureau of Mines Internal Report for Golden River Mining Corporation	122°38'00"E, 14°19'00"N	CN-1494 in MGB	41
42	CN-03	ore deposit, placer Au	Geological investigation and mineral verification of twelve(12) placer claims of Golden River Mining Corporation at Mangcal, Paracale, Camarines Norte.	1973	Ramos, C.V.	Bureau of Mines Internal Report for Golden River Mining Corporation	14°15'-14°16'N, 122°46'-122°48'E The watershed area of Malaguit River	CN-1307 in MGB	42
43	CN-04	exploration, geology, geophysics, Au, Cu, Te	Exploration of the Exciban gold-copper-tellurium vein system, Camarines Norte, Philippines.	1990	James, L.P. and Fuchs, W.A.	Journal of Geochemical Exploration, 35	p.364/Fig.1, Exciban		43
44	CN-05	ore deposit, high-sulfidation, Au, Nalesbitan	An acid-sulphate-type lode gold deposit at Nalesbitan, Luzon, Philippines.	1990	Sillitoe, R.H., Angeles, C.A., Comia G.M., Antioquia E.C. and Abeya R.B.	In: J.W. Hedenquist, N.C. White and G. Siddeley (Editors), Epithermal Gold Mineralization of the Circum-Pacific: Geology, Geochemistry, Origin and Exploration, I. J. Geochem. Explor., 35: 387-411	Nalesbitan		44
45	CN-06	geology, mineralization, Au	Geology and mineralization of Jose Panganiban Gold Rush Area, Camarines Norte.	1987	Juan, B.A., Cartalla, E.J.M. and Damasag, W.F.	In: GOLD '87 in the Philippine setting proceedings Vol.II	The Jose Panganiban Gold District		45
46	CN-07	geology, alteration, mineralization, Au, Nalesbitan	Geology and alteration-mineralization characteristics of the Nalesbitan gold deposit, Camarines Norte, Philippines.	1987	Angeles Jr, C.A, Antioquia, E.C. and Comia, G.M.	GOLD'87 in the Philippine setting proceedings vol.I, The Philippine Institute of Mining Metallurgy and Geology	Nalesbitan		46
47	CN-08	geology, geochemistry, ophiolite	Geology and geochemistry of the mafic rock series of the Camarines Norte Ophiolite Complex.	1996	Tamayo, R.A. Jr., Yumul, G.P. Jr. and Autenrieth, F.	Journal of Geological Society of the Philippines, Vol.LI, Nos.3&4, pp.131-152	p.133/Fig.1 the offshore island NE of Paracale		47
48	CN-09	ore deposit, geology, Au, Ag, Cu, Pb, Zn	Memorandum report on the geological verification of twenty four(24) mining claims applied for lease by Mr. Jovito Paredo in Paracale, Camarines Norte.	1976	Juan, R.A. and Nardo, V.P.	memorandum report in Bureau of Mines Region 5	14°17'18"-14°18'29"N, 122°46'11"-122°47'15"E, Paracale		48
49	CN-10	ore deposit, United Paracale, Au, Ag	The report on the mineral verification of mining claims applied for lease by United Paracale Mining Company.	1982	Nardo, V.P.	Bureau of Mines and Geo-Sciences internal report	14°16'30"-14°17'20"N, 122°46'40"-122°47'20"E, Paracale		49
50	CN-11	ore deposit, evaluation, Au, Ag	Report on the evaluation of Longos Gold Property of Metals Exploration Asia, Inc. located at Paracale, Camarines Norte.	1977	Fajardo, D.P. and Sumedca, A.F. Jr.	Bureau of Mines and Geo-Sciences internal report	14°15'-14°19'N, 122°45'-122°51'E, Paracale		50
51	CN-12	ore deposit, F/S, Au, Ag, Cu, Mo, Fe	Project feasibility study of the mines national apprenticeship school.	1983	Bureau Mines and Geosciences	Bureau Mines and Geosciences	Larap		51
52	CN-13	ore deposit, Nalesbitan, Au	Nalesbitan maps.					some plans	52
53	CN-14	ore deposits, United Paracale	Summary and detailed discussion of the exploration and development work made and schedule of Activities for placing the area into production. & Geologic Investigation Report of the area applied for lease.	1989	United Paracale Mining Company	Report From United Paracale Mining Co. to Bureau of Mines and Geo-Sciences	United Paracale	report submitted for MGB	53
54	CN-15	ore deposits, United Paracale	United Paracale Mining Company - Report of independent certified public accountants.	1980	United Paracale Mining Company	United Paracale Mining Company Annual Report	United Paracale	Annual report of United Paracale	54

Table 1-1 The literature and plans registered through this survey

No	REGISTERED ID	KEYWORD	TITLE	DATE	AUTHOR	SOURCE	LOCATION	NOTE	No
55	CN-16	United Paracale, operating agreement	Operating agreement between Metals Exploration Asia, Inc., United Paracale Mining Co., Inc., and Marsman & Co., Inc	1976		OPERATING AGREEMENT	Paracale		55
56	CN-17	annual report, Metals Exploration Asia, Inc.	Metals Exploration Asia, Inc., annual report 1979	1977		Annual Report of Metals Exploration Asia, Inc			56
57	CN-18	ore deposit, San Antonio, Au, Ag	Report on the geological verification of nine (9) mining claims applied for lease by Mr. Ernesto C. Vito located at San Antonio, Sta. Rosa Norte, Jose Panganiban, Camarines Norte.	1980	Manuel, E.M.	Bureau of Mines and Geo-Sciences internal report	14°17'35.422"-14°18'14.489"N, 122°47'04.660"-122°47'34.673"E, San Antonio, Sta. Rosa Norte, Jose Panganiban		57
58	CN-19	geology, marble, mine evaluation	Report on the geological verification of five(5) mining claims applied lease by Penafrancia mining and development corporation located at Igang, San Rafael, Jose Panganiban, Camarines Norte.	1983	Manuel, E.M.	Bureau of Mines and Geo-Sciences internal report	122°40'48.60"E-122°41'06.82"E, 14°13'46.97"N-14°14'16.20"N	CN-5015 in MGB	58
59	CN-20	ore deposit, Nalesbitan, Au, Ag	Report of verification of mineralization of six(6) mining claims of gold fields Philippines corporation in Nalesbitan, Labo, Camarines Norte.	1985	Ave, A.F.	Bureau of Mines and Geo-Sciences internal report	Nalesbitan cf. Fig 2	CN-5079 in MGB	59
60	CN-21	ore deposit, Au	Report on the mineral verification of mining claims applied claims for lease by United Paracale Mining Company.	1982	V. P. Nanca	Bureau of Mines and Geo-Sciences internal report	122°46'40"E-122°48'20"E, 14°15'20"N-14°17'20"N	CN-5011 in MGB	60
61	CN-22	ore deposit, Au, Ag	Report on the geological verification of twelve(12) mining claims applied lease by Manthan and company located at Malaguit, Paracale, Camarines Norte.	1983	Manuel, E.M.	Bureau of Mines and Geo-Sciences internal report	122°47'19.877"E-122°48'07.151"E, 14°15'26.283"N-14°16'13.533"N	CN-5015 in MGB	61
62	CN-23	ore deposit, United Paracale, Cu, Zn, Pb, Ag	Report on the valuation of the property of United Paracale Mining Company at Paracale, Camarines Norte.	1951	Abad, L.F., Quema, J.C. and Jongco, C.P.	Bureau of Mines and Geo-Sciences internal report	Paracale, cf. Plate2	CN-11 in MGB	62
63	CN-24	ore deposit, Calaburnay, Fe	Report on the valuation of the property of Calrun-Paracale Mining Company at Calaburnay, Paracale, Camarines Norte.	1951	Quema, J.C., Jongco, C.P., and Mateo A.L.	Bureau of Mines and Geo-Sciences internal report	in the barrio of Calaburnay, town of Paracale		63
64	CN-25	ore deposit, Paracale-Malaguit placer, Au	Report on the valuation of the Paracale-Malaguit placer property of the Coco Grove Mining Company, Paracale, Camarines Norte.	1951	Abad, L.F., Quema, J.C. and Jongco, C.P.	Bureau of Mines and Geo-Sciences internal report	Paracale, cf. Claims-map	CN-52RA in MGB	64
65	CN-26	exploration, radiometric survey, stream sediment	Preliminary Report on the Radiometric Survey in the Bulawan and Igang-Iyawan Area, Batobalane, Paracale, Camarines Norte.	1977	Pineda, O.M., Santiago, N.G., and Rovillos, P.B., Jr.	Bureau of Mines and Geo-Sciences internal report	14°11'-14°14'N, 122°41'-122°44'E in Bulawan and Igang-Iyawan area, Batobalane, Paracale, Camarines Norte	CN-110 in MGB	65
66	CN-27	ore deposit, Tigbinan, Mn	Geologic investigation of the manganese deposits in Baro, Tinambac, Camarines Sur and Tigbinan, Jaro, Camarines Norte.	1958	Ramos, C.B. and Puzon, E.N.	Bureau of Mines and Geo-Sciences internal report	Tigbinan, cf Fig 1	CN-272 in MGB	66
67	CN-28	mineral prospect, Kalbano, Cu, Sawata, Fe	Preliminary geological investigation of iron prospects in lamit bay area, Camarines Sur, manganese prospect and iron-titanium prospect in Albay and copper and iron prospects in Camarines Norte	1960	Crispin, O.A.	Bureau of Mines and Geo-Sciences internal report	Malilipot(Albay) Plate2, Lamit bay area(Camarines Sur) Plate3, Kalbano(Camarines Norte) Plate4	CN-318 in MGB	67
68	CN-29	mineral prospects, Tigbinan: Fe, Pinagbirayan: Fe	Report on the Geological Investigation of Iron Ore Prospects at Tigbinan, Labo, and at Pinagbirayan, Paracale, Camarines Norte.	1961	Crispin, O.A.	Bureau of Mines and Geo-Sciences internal report	Plate 1 & 2	CN-340 in MGB	68
69	CN-30	exploration, Fe	Memorandum report in the geological investigation of iron prospects in Calaburnay, Tabas, Napangasan-Pinagbirayan area and area incorporated (San Felipe Mines) in Paracale, Camarines Norte.	1961	Crispin, O.A. and Pilac, J.E.	Bureau of Mines and Geo-Sciences internal report	SE of Paradera, cf. Location map	CN-342 in MGB	69
70	CN-31	mineral prospect, Submakin, Cu, Pb, Zn, Fe, Mo, alteration	Geology of the Submakin prospect area, Paracale, Camarines Norte, Philippines.	1983	Bryner, L.	Bureau of Mines and Geo-Sciences internal report	Submakin, Paracale	CN-442 in MGB	70
71	CN-32	ore deposit, Paracale-Gumaus Mine, Au, Cu, Pb, Zn, Bleaching	Geology of the Paracale-Gumaus Mine 350-Level, Camarines Norte.	1963	Bryner, L.	Report by the Institute of Applied Geology in response to a request by the Philippine Bureau of Mines	Fig.3 Paracale-Gumaus Mine	CN-450 in MGB	71
72	CN-33	exploration, geophysics(magnetic), Fe	Geophysical survey of the iron prospects in Paracale, Camarines Norte.	n/a	Casim, P.C., Afarquez, O.E. and Mahalang, E.M.	Bureau of Mines and Geo-Sciences internal report	14°10'00"N-14°25'00"N, 122°45'00"E-122°50'00"E	CN-591 in MGB	72
73	CN-34	mineral deposit, flint clay, kaolinite, alunite, alteration, silica rubble	The geology of the flint clay deposits in Bulala, Capalonga, Camarines Norte.	1968	Zepeda, Z.C.	Bureau of Mines and Geo-Sciences internal report	122°25'00"E, 14°12'00"N, cf. attachment	CN-788 in MGB	73
74	CN-35	exploration, Malaque prospect, Fe, Cu	Geologic Investigation of Malaque Iron-Copper Prospect, Capalonga, Camarines Norte.	1970	Zarate, R.H. and Marcelo, M.P.	Bureau of Mines and Geo-Sciences internal report	Index Map and Geologic Map, Barrio Malaque, Municipality of Capalonga, Camarines Norte	CN-970 in MGB,	74
75	CN-36	exploration, Fe, Cu, diorite	Geological investigation and verification of lease survey of BAVS Group of Mining claims situated at Malaque, Capalonga, Camarines Norte.	1970	Caleon, P.C.	Bureau of Mines and Geo-Sciences internal report	14°12'00"N, 122°30'00"E, cf. Plate1	CN-1036 in MGB	75
76	CN-37	exploration, Fe, skarn	Geological investigation of "Luis" and "Pyting FR." mining claims of Mr. Pedro D. Lamadrid situated at Sitio Napagasan, Barrio Pinagbirayan, Paracale, Camarines Norte.	1970	Caleon, P.C.	Bureau of Mines and Geo-Sciences internal report	14°15'00"N, 122°50'00"E, cf. plate1	CN-1054 in MGB	76
77	CN-38	exploration, Cu, Fe	Geological Investigation of the Mining Property of Century Iron Mines Company, Incorporated Situated at Barrio Malaque, Capalonga, Camarines Norte.	1970	Caleon, P.C.	Bureau of Mines Internal Report for CENTURY IRON MINES COMPANY, Inc.	Geologic and Location Map Malaque, Capalonga, Camarines Norte	CN-1075 in MGB,	77
78	CN-39	exploration, vein-type, Cu, Fe, replacement	Geological investigation of the mineral claims of Armstrong Mining and Industrial Corporation situated at Barrio Malatu, Capalonga, Camarines Norte.	1971	Caleon, P.C.	Bureau of Mines and Geo-Sciences internal report	14°12'00"-14°13'00"N, 122°29'00"-122°30'00"E, cf plate1	CN-1091 in MGB	78
79	CN-40	exploration, Au, Cu, vein-type, granodiorite	Report on the geological investigations at the mineral properties of La Suerte Resources and Industries, Incorporated, Jose Panganiban, Camarines Norte.	1973	Caleon, P.C.	Bureau of Mines and Geo-Sciences internal report	14°16.5'-14°18'00"N, 122°42'00"-122°43'00"E, cf. Fig 3	CN-1412 in MGB	79
80	CN-41	exploration, Au, Ag, Cu, Pb, Zn	Mineral investigation and verification of twenty-two(22) lode claims applied for lease by Mr. Felix M. Ahlobo in Bo. Bulalacao, Jose Panganiban, Camarines Norte.	1973	Caleon, P.C.	Bureau of Mines and Geo-Sciences internal report	122°42'00"-122°43'00"E, 14°18'00"-14°19'00"N	CN-1421 in MGB	80
81	CN-42	mineral deposit, flint clay, kaolinite, alunite	Geologic reserves of the flint clay property of Firestone Ceramics, Inc. at Bulala, Capalonga, Camarines Norte.	1974	Caleon, P.C.	Bureau of Mines and Geo-Sciences internal report	122°25'00"-122°30'00"E, 14°11'00"-14°14'00"N, cf plate1	hydrothermal acid alteration, CN-1513 in MGB	81

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No	REGISTERED ID	KEYWORD	TITLE	DATE	AUTHOR	SOURCE	LOCATION	NOTE	No
82	CN-43	ore deposit, Golden Rock Mine, vein, Au, Ag, Cu, Pb, Zn	Geologic Investigation and Estimate of Geologic Reserves of the Mineral Property of Golden Rock Mines, Incorporated at Labng, Paracale, Camarines Norte.	1975	Caleon, P.C.	Bureau of Mines internal report for Golden Rock Mines, Inc.	14°15'-14°17'N, 122°46'-122°51'E at Labng, Paracale, Camarines Norte	CN-1529 in MGB.	82
83	CN-44	exploration, dacite plug, Hg, S, kaolinite	Report on the Investigation of the Reported Mercury and Sulphur Occurrence in Barrio Colasi, Mercedes, Camarines Norte	1975	Balce, G.R.	Bureau of Mines and Geo-Sciences internal Report	13°55'30"N, 123°04'00"E Barrio Colasi, Mercedes, Camarines Norte	CN-1607 in MGB	83
84	CN-45	core logging, radiometric, U	Radiometric logging of the diamond drill cores in the Bureau of Mines uranium exploration project, Larap, J. Panganiban, Camarines Norte.	1976	Almogela, D.H. and Samonte, C.S.	report of the Bureau of Mines and Geo-sciences	18,000E-18,200E, 14,300N-14,500N, cf. attachment	CN-1851 in MGB	84
85	CN-46	exploration, radiometrics, stream sediments, U	Geologic and radiometric survey of Paracale-Nacional area	1977	Paraiso, B.M.	Bureau of Mines and Geo-Sciences internal report	122°47'00"-122°45'00"E, 14°16'00"-12°15'00"N, cf. attachment	CN-1794 in MGB	85
86	CN-47	exploration, vein, Au, Ag, Cu, Pb, Zn	Memorandum report on the geological verification of twenty four(24) mining claims applied for lease by Mr Jovito Palado in Paracale, Camarines Norte	1978	Avan, R.A. and Nendo, V.P.	Bureau of Mines and Geo-Sciences internal report	14°17'58"-14°18'29"N, 122°46'11"-122°47'15"E Barrio Parang, Paracale, Camarines Norte	CN-1875 in MGB	86
87	CN-48	exploration, placer, Au	Mineral investigation and verification of eleven (11) placer mineral claims applied for lease by River Bed Mining Exploration, Inc., at Labo, C., Norte.	1973	Caleon, P.C	Bureau of Mines and Geo-Sciences internal report	14°07'-14°12'N, 122°38'-122°46'E (plate 1) at Labo, Camarines Norte	CN-5000 in MGB	87
88	CN-49	exploration, placer, Au, vein	Geologic report of nine(9) lead claims applied for lease by Mr.Jose Robles.	1961	Sendon, B.V.	Bureau of Mines and Geo-Sciences internal report	14°11'30"-14°13'00"N, 122°38'00"-122°39'30"E with in the jurisdiction of Bo. Exciban, Labo, Camarines Norte		88
89	CN-50	ore deposit, Golden River Mine, placer, vein, Au	Report on the geology of the mining property of the Golden River Mining Corporation in Paracale, Camarines Norte	1977	Cruz, M.P.	Bureau of Mines and Geo-Sciences internal report	14°16'N, 122°46'E at the barrios of Batobalani, Tawig, Tabugon, Pinagbirayan, etc.	CN-5005 in MGB	89
90	CN-51	exploration, vein, Au, Ag, Cu, Pb, Zn	Report on the geological verification of twelve(12) mining claims applied for lease by Republica Perez located at San Antonio, Sta Rosa Norte, Jose Panganiban, Camarines Norte.	1983	Manuel, E.M.	Bureau of Mines and Geo-Sciences internal report	14°17'53"-14°17'56"N, 122°41'16.92"-122°42'18.20"E, at about half a kilometer NE of the town proper of Jose Panganiban		90
91	CN-52	exploration, Au, Ar/Ar, fluid inclusion	Strengthening the government capacity in gold exploration.	1987	United Nations	p.43	Camarines Norte		91
92	CN-53	fluid inclusion, quartz vein, Au, Olecram Mine	Temperatures of gold-quartz vein formation at Olecram Mining Corporation, Jose Panganiban, Camarines Norte as indicated by fluid inclusions.	1985	Comsti, E.C., Jesus, C.V.D. and Marcelo, T.R.	The Philippine Geologist, pp.26-47.	Olecram Mine, Camarines Norte		92
93	CN-54	exploration, Au, vein, Exciban gold deposit	Report on verification of mineralization of three(3) mining claims upon request of Mr. Pablo P. Gallego, consultant/geologist of Golden Star Mineral Corporation.	1987	Antonio, L.R.	Bureau of Mines and Geo-Sciences internal report	Exciban, 14°12'30"N, 122°40'00"E	CN-5023 in MGB, geologic map	93
94	CN-56	exploration, Fe, hematite, magnetite, diorite, pyrite, chalcopyrite	Report on the evaluation of the iron property of Yolanda Vidal at Pinagbabayan Malatu, Paracale, Camarines Norte.	1978	Escandor, B.B.	Bureau of Mines and Geo-Sciences internal report	Paracale, 14°14'00"-14°14'30"N, 122°47'30.00"-122°48'00.00"E	CN-6601 in MGB, geological map in 1:50,000	94
95	CN-56	exploration, limestone	Mineral investigation and verification of three (3) mineral claims applied for lease by Mr. Vincente S. Reference in Sitio Namakahan, Barrio Dagus, Labo, Camarines Norte.	1973	Caleon, P.C.	Bureau of Mines and Geo-Sciences internal report	Barrio Dagus, Paracale, 14°11'N, 122°41'E	CN-1319 in MGB, geological map in 1:4,000	95
96	CN-57	exploration, dolomite	Mineral investigation and verification of eighteen (18) placer mineral claims applied for lease by Minerals Processing and Supply (Phil.) Inc, situated at Basud, Camarines Norte.	1973	Caleon, P.C.	Bureau of Mines and Geo-Sciences internal report	Basud, 13°58'00"-14°02'00"N, 122°57'00.00"-123°00'00.00"E	CN-1320 in MGB, geological map in 1:20,000	96
97	CN-58	exploration, Fe, skarn, alteration	Geological investigation of the mineral properties of Peninsula Natural Resources Corporation (PENARCO) situated in Jose Panganiban and Paracale, province of Camarines Norte.	1974	Caleon, P.C	Bureau of Mines and Geo-Sciences internal report	Jose Panganiban, cf. location map in 1:50,000	CN-1441 in MGB, geological map in 1:50,000	97
98	CN-59	ore deposit, Larap Mine, skarn, Fe, Cu, Mo, U, Pb	Verification of geologic reserves of the Bessemer Pit Area of Philippine Iron Mines, Inc., in Larap, J. Panganiban, Camarines Norte.	1974	Caleon, P.C.	Bureau of Mines and Geo-Sciences internal report	Bessemer Pit Area, Larap, 14°15'N, 122°39'E	CN-1494 in MGB, idealized section, plan of tunnel 3, geological map of Larap pen	98
99	CN-60	exploration, Au, quartz vein, ore reserves	Geological investigation and estimate of geologic reserves of the mineral properties of Metals Exploration Area, Incorporated situated in the municipalities of Paracale and Jose Panganiban, Province of Camarines Norte.	1974	Caleon, P.C.	Bureau of Mines and Geo-Sciences internal report	Jose Panganiban, Paracale, 14°15'-14°20'N, 122°40'-122°50'E	CN-1526 in MGB, geological plan map in 1:5,000	99
100	CN-61	ore deposit, La Suerte Gold, Au, Ag, Cu, Pb, Zn	Report on the evaluation of geologic reserves of La Suerte Gold Mining Corporation in Sta. Rosa Norte, Jose Panganiban, Camarines Norte.	1976	Pineda, O.M.	Bureau of Mines and Geo-Sciences internal report	Jose Panganiban, 14°15'30"-14°18'35"N, 122°40'30"-122°45'10"E	CN-1637 in MGB, route map in 1:2,000, plan map of the mine	100
101	CN-62	exploration, Au, geology, geochemical, Au in soil, geophysical survey, IP	Geological investigation of the gold prospect of Maramco Mineral Corporation Paracale, Camarines Norte.	1976	Ferrer, H.P.	Bureau of Mines and Geo-Sciences internal report	Paracale, 14°18'N, 122°45'E	CN-1874 in MGB, geochemical anomaly map, geological map in 1:5,000	101
102	CN-63	exploration, Au, vein	Geological investigation of the UPMC's Tagos Group of Mining claims at Bo. Tagos, Paracale, Camarines Norte.	1981	Ferrer, N.	Bureau of Mines and Geo-Sciences internal report	Tagos, 14°16'20"N, 122°46'45"E	CN-7133 in MGB, detailed geological map	102
103	CN-64	exploration, Au, geology, radiometric, geochemical, Paracale Nacional	Geologic and radiometric investigation of Paracale Nacional, Jose Panganiban, Camarines Norte.	1977	Rosa, S. Jr.	Bureau of Mines and Geo-Sciences internal report	Paracale Nacional, 14°15'N, 122°43'E	CN-1723 in MGB, route map, geochemical map in 1:5,000	103
104	CN-65	exploration, geology, radiometric	Geologic and radiometric survey of Paracale-Nacional area.	1977	Punzalan, L.E.	Bureau of Mines and Geo-Sciences internal report	Paracale Nacional, 14°15'N, 122°43'E	CN-1790 in MGB, route map in 1:5,000	104
105	CN-66	exploration, Au, geothermal	Memorandum report on the geological verification of six (6) mining claims applied for lease by Golden ... Mining Co., Inc. situated in Sitio Binol, Barrio of Malogon, Labo, Camarines Norte.	1980	Samson, B.B.	Bureau of Mines and Geo-Sciences internal report	Labo, 14°08'00"-14°09'00"N, 122°46'00"-122°47'30"E	CN-2012 in MGB, geological map	105
106	CN-67	exploration, Cu, Mo, Fe, porphyry type mineralization, Larap, diorite, skarn, geochemical, IP	Base metal exploration in Larap, Jose Panganiban and vicinity.	1972	Uriarte, H.M.	Jour. geol. soc. Philippines, 26, p.37-49.	Larap	geochemical anomaly map, IP anomaly map	106
107	CN-68	F/S, Philippine Iron Mine, U	Technical feasibility study on the possible re-opening of the CPMI project of PIM (mining aspect) and the exploration program (uranium project) at Larap, Jose Panganiban, Camarines Norte.	1978	Bureau of Mines and Geosciences	Bureau of Mines and Geo-Sciences internal report	Larap	history	107
108	CN-69	exploration, radiometric survey, Bulawan, Igang-Iyawan	Preliminary report on the radiometric survey in the Bulawan and Igang-Iyawan area Baldbalina, Paracale, Camarines Norte.	1977	Pineda, O.M., Santiago, N.G. and Rovillos, P.B. Jr.	Bureau of Mines and Geo-Sciences internal report	Bulawan, Igang-Iyawan	CN-5013 in MGB	108

Table 1-1 The literature and plans registered through this survey

No	REGISTERED ID	KEYWORD	TITLE	DATE	AUTHOR	SOURCE	LOCATION	NOTE	No
109	CN-70	verification claims	Report on the field survey verification of approved and published nine (9) mineral claims applied for lease by E.G. Vito located at San Antonio, Jose Panganiban, Camarines Norte.	1963	Acofa, F.S	Bureau of Mines and Geo-Sciences internal report	San Antonio, Jose Panganiban	CN-5018 in MGB	109
110	CN-71	exploration, Au, vein	Mineral investigation of the mining claims of Golden River Mining Corporation in Paracale, Camarines Norte.	1966	Escobedo, P.P.	Bureau of Mines and Geo-Sciences internal report	Paracale, 14°19'20"N, 122°44'55"-122°47'30"E	CN-5024 in MGB, geological map at 1:50,000, pictures	110
111	CN-72	exploration, alteration, kaoline, silicification	Geological investigation of "RDRF NR No. I mineral claim", LLA 4005-D of Rufino Cortez, situated in Poblacion, Jose Panganiban, C. Norte.	1966	Cabem, P.C.	Bureau of Mines and Geo-Sciences internal report	Poblacion, 1.5km north of Jose Panganiban	CN-560 in MGB, plan sketch map	111
112	CN-73	ore deposit, evaluation	Report on the valuation of the property of San Mauricio Mining Company at Jose Panganiban, Camarines Norte.	1951	Abad, L.F., Ocampo, J.C. and Jorgos, C.F.	Bureau of Mines and Geo-Sciences internal report	north of Jose Panganiban	CN-63RA in MGB	112
113	CN-75	exploration, alteration, kaoline, silicification, pyrite, alunite	Geological investigation of the 13 mining claims (PLA-4812-D to PLA-4824-D) in Barrio Butas, Capalonga, Camarines Norte for Firestone Ceramic Incorporated.	1971	Llave, O.A.	Bureau of Mines and Geo-Sciences internal report	Barrio Butas, Capalonga,	CN-1112 in MGB, geological map in 1:50,000	113
114	CN-76	hydrogeology	Assessment of possible adverse effect of Benguet Corporation Mining activities on Pafic Watershed, Jose Panganiban, Camarines Norte.	1987	Cruz, E.C.	Bureau of Mines and Geo-Sciences internal report	Pafic Watershed, Jose Panganiban	CN-5027 in MGB, hydro-geomorphological map in 1:4,000	114
115	CN-76	exploration	title: Geologic map of mining claims applied for lease by United Paracale, scale 1:4,000.		Nando, V.P.	Bureau of Mines and Geo-Sciences internal report	Paracale	CN-5010 in MGB, geological map, map only	115
116	CN-77	exploration, Au	Report on the geological verification of two (2) mining claims applied for lease by Mr. Agustin C. Jimenez located in Tugos, Paracale, Camarines Norte.	1987	Salas, F.C. and Jun, A.F.	Bureau of Mines and Geo-Sciences internal report	Tugos, Paracale, 14°16'00"-14°17'00"N, 122°46'30"-122°47'00"E	CN-5021 in MGB, pictures, geologic map at 1:4,000	116
117	CN-78	exploration, Au, quartz vein	Report on the geological verification on twelve (12) mining claims applied for lease by Mr. Jovita Palado located ast Bo. Parang, Paracale, Camarines Norte.	1984	Domang, W.F.	Bureau of Mines and Geo-Sciences internal report	Bo. Parang, 1km north of Paracale	CN-5019 in MGB, sample map in 1:4,000	117
118	CN-79	exploration, Au, vein, galena, sphalerite, chalcopyrite, pyrite	Report on the geological investigation of the copper-lead prospect at Barrio Parang, Paracale, Camarines Norte.	1970	Cabem, F.C.	Bureau of Mines and Geo-Sciences internal report	Bo. Parang, 1km north of Paracale, 14°17'00"-14°18'00"N, 122°46'00"-122°47'00"E	CN-1014 in MGB, geologic map in 1:50,000	118
119	CN-80	exploration, Au, quartz vein	Mineral verification of three lode mining claims on Barrio Malacrang, Paracale, Camarines Norte.	1976	Llave, O.A.	Bureau of Mines and Geo-Sciences internal report	Bo. Malacrang, 14°13'N, 122°46'00"-122°47'05"E	CN-1560 in MGB, geological map in 1:12,500	119
120	CN-81	exploration, clay, kaoline	Memorandum report on the geological investigation of clay prospects in Barrio Dagat, Labo, Camarines Norte.	1966	Llave, O.A. and Tabonda, J.P.	Bureau of Mines and Geo-Sciences internal report	Bo. Dagat, Labo	CN-5003 in MGB, no plan	120
121	CN-82	exploration, sulfur, silicification, pyrite dissemination	Report on the geological investigation of "WP-PI-II and WP-PI-I" mining claims applied for Mr. Spencer K.C. Liu located at Cutao, Mercedes, Camarines Norte.	1990	Jun, A.F.	Bureau of Mines and Geo-Sciences internal report	Cutao, Mercedes, 13°58'00"-13°58'30"N, 123°02'30"-123°03'30"E	geological map	121
122	CN-83	exploration, Fe, lateritization	Preliminary report on the assessment of hematite resources for Pig Iron in the Bicol region.	1992	Dusa, D.R.	DENR, Mines and Geo-Sciences Development Service	14°12'30"-14°17'00"N, 122°40'00"-122°47'00"E, cf location map	geological sheet	122
123	CN-84	exploration, Cu, prospect, replacement, hematite, magnetite, chalcopyrite	Geologic investigation of Malaque copper prospect Capalonga, Camarines Norte.	1970	Zarda, R.A. and P...cete, M.	Bureau of Mines and Geo-Sciences internal report	Bo. Malaque, Capalonga		123
124	CN-85	exploration, ophiolite, W(ua)	Preliminary report on the geology and mineral resources of Mount Cadig.	1987	Manuel, R.M.	Bureau of Mines and Geo-Sciences internal report	Mt. Cadig, cf. location map	theoretical ophiolite suite sequence	124
125	CN-86	Ore deposit, La Suerte Mine, Luna Palang vein	Alteration and Mineralization in La Suerte Mine, Camarines Norte, Philippines	1989	E.J. Marmol-Ovejar, K. Tomita, E.G. Domingo, A.C. Ouray, F. Jabel, R.A. Juan, E.C. Lacsamana, G.M.F. Pangue	The Reports of the Faculty of Science, Kagoshima University No 22	14°15'-14°18'N, 122°44'-122°45'E Barrio Sta. Rosa Norte, about a kilometer from the town of Panganiban, Camarines Norte	Study of alteration minerals associated with the gold mineralization	125
126	CN-87	Exploration, Geochemical Survey, Stream Sediment, Mt Bagacay, Cu, Zn, Pb, Fe	Reconnaissance geological and geochemical survey of part of Mt.Bagacay, Labo, Camarines Norte	1980	Graciano A. Castro, Danilo P. Sadac, Lauro D. Pabalan (Geology Student Trainees'80)	Bureau of Mines and Geo-Sciences Region V internal report	14°11'15"N-14°15'45"N, 122°48'30"E-122°51'15"E Mt Bagacay	geological map in 1:25,000 Geochemical Anomaly Map	126
127	CN-88	Geology, Labo, Fe, diorite	Geology of the Labo Iron Prospect, Labo, Camarines Norte	1965	unknown	Bureau of Mines and Geo-Sciences internal report	unknown	illegible print	127
128	CN-88	Tugga Prospect, Qz vein, Au, Ag, Pb, Cu, Zn, Contact zone of Od & Serpentine	Tugga Prospect, Paracale, Camarines Norte	unknown	JOHN V. PABANA	unknown	Tugga, 1 km east of Paracale	brief report	128
129	CN-90	Exploration, Geochemical Survey, Stream Sediment, heavy minerals, Cu, Mo, silicification, Pyritization, sericite, diorite, Porphyry-Cu	Detailed Geological, Geochemical and Radiometric Survey of Submakin and Igang-Iyeyan areas, Paracale, Camarines Norte	1979	Geology Student Trainees '79	Bureau of Mines and Geo-Sciences internal report (PIM-Radioactive Mineral Development Project, Larap, Jose Panganiban, Camarines Norte)	14°15'N, 122°47'E Batobalani, Paracale,Camarines Norte	geological, geochemical (Cu,Pb,Zn) and radiometric anomaly map at 1:10,000	129
130	CN-91	Geochemical Survey, Radiometric Survey, Diorite, hydrothermal biotite, sericite, Cu, Fe, Mo, Au	Geochemical, Radiometric and Radon Gas Anomalies at Paracale-Nacional, Sta Rosa Sur, Jose Panganiban, Camarines Norte	1977	HERMES P. FERRER	Bureau of Mines and Geo-Sciences internal report	14°16'N, 122°38'E Sta. Rosa Sur, Jose Panganiban, Camarines Norte	Grid Geochemical Soil Survey Map,Grid-Radiometric Survey Map at 1:3,000	130
131	CN-92	Fe prospect	Report on the geological-geological canvassing of the iron deposit of Camarines Norte	1966	unknown	Bureau of Mines and Geo-Sciences internal report	Paracale,Panganiban,Capalonga,Labo	[illegible]	131
132	CN-93	Ore deposit, evaluation of ore reserves, Cu, Mo, Fe	Re-evaluation of the Ore Reserves at the Dewatan Drilling Area	1978	Reynulfo A. Juan, Hermes P. Ferrer, Balasanto O. Belen	Bureau of Mines and Geo-Sciences internal report	Dewatan and Macasinao drilling area, the vicinity of Larap, Jose Panganiban, Camarines Norte	Location Map of Diamond Drill Holes in 1:1,200 and 1:1,500	132
133	CN-94	Fe, Mn, stockpile	Evaluation of Iron-Manganese Ore Stockpile in Barrio Submakin-Batobalani, Paracale, Camarines Norte	1980	Jose Z. Teknos, JR., Suspicio B. Bernardo III	Bureau of Mines and Geo-Sciences Region V internal report	14°17'30"N-14°17'00"N, 122°43'30"E-122°44'00"E Barrio Submakin and Barrio Batobalani in the municipality of Paracale		133
134	CN-95	Larap, Core-Logging	Progress Activity Report on Drill Core Logging in Connection with the Bureau of Mines Uranium Project in Larap, Jose Panganiban, Camarines Norte	1978	Clemente L. Bagulas, Pedro Revilalos, JR., Emmanuel M. Mataliang	Bureau of Mines and Geo-Sciences internal report	in Larap, Jose Panganiban, Camarines Norte,	Location Map of Diamond Drill Holes at 1:1,200	134
135	CN-96	Mt Labo Geothermal Project, Resource assessment, multiple magmatic intrusions, low resistivity	Mt Labo geothermal project resources assessment update (draft report)	1995	M.C. Zaide-Delfin, P.P.Garcia, O.B Layugan, O.O Maturgo, D.O.Padua, C.C Panem, J.B Rosell, N.D.Salonga	PNOC Energy Development Corporation Report	Mt.Labo	Resource Assessment Report	135

Table 1-1 The literature and plans registered through this survey

No	REGISTERED ID	KEYWORD	TITLE	DATE	AUTHOR	SOURCE	LOCATION	NOTE	No
136	CN-97	Mineral prospect, Ranking system	Mineral Prospects in Camarines Norte' Ranking System (Paper presented during the Mining Summit held at Wiltan Hotel, Daet, Camarines Norte on December 6, 1996)	1996	Valentin P. Nando	Paper presented for the Mining Summit	Camarines Norte		136
137	CS-01	geology, geochemistry, geochronology, ophiolite	Geology, geochemistry, geochronology and structures of the ophiolites in southern Luzon, Philippines.	1996	David Jr, S.D., Stephan, J., Delteil, J., Bellon, H. and Sajona, F.G.	J. Geol. Soc. Philippines	Bicol peninsula		137
138	CS-02	exploration, geology, Au	Geologic investigation of the gold property of Rayer Lately Mining company at Gata, Caramoan, Camarines Sur.	1978	-	-	123°46'30"E-125°49'30"E, 13°54'30"N		138
139	CS-03	exploration, Central Caramoan Copper Belt, radiometric survey	A report on the radiometric survey at Magna Rosa Project of Copper Belt Mining Corporation in Central Caramoan peninsula, Camarines Sur.	1977	Tangaman, M.F.	Copper Belt Mining Corporation internal report	Lagonoy, Camarines Sur	radiometric survey	139
140	CS-04	exploration, mineral, kaoline	Memorandum report on the investigation of ceramic raw materials in Camarines Sur and Camarines Norte.	1956	Cruz, J.R.D.	Bureau of Mines and Geo-Sciences internal report	Siruma peninsula, 123°58'00"E, 13°57'00"N	CS-1262 in MGB	140
141	CS-05	exploration, white clay, kaoline, quartz veinlet	Memorandum report on the geological investigation of a portion of the white clay mineral reservation (proclamation No.583) as surveyed for Marcelo Steel Corp. (BM PLAN No. BSM73) in Bo. Bahao, Siruma, Camarines Sur.	1971	Llave, G.A.	Bureau of Mines and Geo-Sciences internal report	Siruma peninsula, map in 1:50,000	CS-1172 in MGB, geological map in 1:50,000	141
142	CS-06	exploration, gypsum, bleaching pyrite, limestone, andesite, diorite	Mineral investigation and verification of eleven(11) mining claims applied for lease by Dr. & Mrs. Jose Abulas in Buta and Balatan, Camarines Sur.	1971	Caleon, P.C.	Bureau of Mines and Geo-Sciences internal report	Balatan-Buta area, 13°22'00"N, 123°13'00"E	CS-1167 in MGB, geological map in 1:50,000	142
143	CS-07	exploration, Cu, pyritization, silicification, chalcopyrite massive lenses	Geological investigation and verification of six(6) lode mining claims applied for lease by Mrs. Teresita D. Ong in Bo. Patag-Belen, Caramoan, Camarines Sur.	1971	Caleon, P.C.	Bureau of Mines and Geo-Sciences internal report	Caramoan peninsula, 123°48'E, 13°46'N, geological map at 1:50,000	CS-1146 in MGB, geological map in 1:50,000	143
144	CS-08	exploration, white clay, quartz veinlet	Geological investigation of a portion of the Siruma white clay mineral reservation applied for ...	1971	Caleon, P.C.	Bureau of Mines and Geo-Sciences internal report	Siruma, 125°20'E, 14°00'N, location map in 1:50,000	CS-1140 in MGB, location map of white clay deposit	144
145	CS-09	exploration, Cu, andesite, diorite, limestone	Geological investigation of copper prospects at Barrio Tinalmud, Pasacao, Camarines Sur.	1970	Marcelo, M.P.	Bureau of Mines and Geo-Sciences internal report	Pasacao copper prospect, 13°33'00"-13°26'00"N, 123°50'00"-125°7'N	CS-991 in MGB, geological map in 1:25,000	145
146	CS-10	exploration, white clay, short drilling		1956	Cruz, J.R.D.	Bureau of Mines and Geo-Sciences internal report	Siruma, 123°20'00"E, 14°01'00"N, map in 1:4,000	CS-182 in MGB, plan map and cross section in 1:4,000	146
147	CS-11	exploration, white clay, tonnage estimates	Preliminary report on the geology of white clay deposits of Hapa and Fundao, Siruma and Sugsugon, Sugutan, and San Vicente, Tinambac, Camarines Sur.	n/a	Cruz, A.	Bureau of Mines and Geo-Sciences internal report	Siruma	CS-180 in MGB, plan map in 1:4,000 (3 portions)	147
148	CS-12	exploration, gypsum, andesite, limestone, diorite	The gypsum deposits of southwestern Albay and Camarines Sur.	n/a	Cruz, D.P. and Domingo, C.R.	Bureau of Mines and Geo-Sciences internal report	Oas, Nabua	CS-48RA in MGB, geological maps in 1:50,000	148
149	CS-13	exploration, white clay	Report on the mineral character of the land areas applied for by Vicente S. Tuason and Crisco Chuneco on Siruma, Camarines Sur.	1950	Cruz, D.P. and Domingo, C.R.	Bureau of Mines and Geo-Sciences internal report	Siruma, location map in 1:50,000	CS-48RA in MGB	149
150	CS-14	geology, contact relationship	Contact relationship of different rock types in Caramoan Peninsula, Camarines Sur.	1981	Presbitero, C.B.	Bureau of Mines and Geo-Sciences internal report	Caramoan peninsula	CS-360 in MGB, reconnaissance geological map in 1:250,000	150
151	CS-15	exploration, gypsum, limestone, andesite, porphyry, anhydrite	A geological investigation of gypsum claims in Balatan, Camarines Sur.	1953	Cruz, A.J.	Bureau of Mines and Geo-Sciences internal report	Balatan, 13°20'N, 123°25'E	CS-348 in MGB, reconnaissance geological map in 1:50,000	151
152	CS-16	exploration, clay	Mineral verification of clay deposit within "LANDICHO" mining claim in Tabon Nunn, Del Gallego, Camarines Sur.	1982	Samson, R.K.	Bureau of Mines and Geo-Sciences internal report	Bo. Tabon Nunn, 13°57'00-13°57'30N, 123°30'00"-123°30'30"E		152
153	CS-17	exploration, clay				Bureau of Mines and Geo-Sciences internal report	Eastern Del Gallego, 13°57'30"N, 122°40'00"E, geological map in 1:25,000	CS-5001 in MGB, geological map in 1:25,000	153
154	CS-18	mineralogy, clay, Siruma, silica, kaolinite, sericite	Mineralogical study of clay in the Siruma silica deposit from Siruma peninsula, Camarines Sur, Philippines.	1982	Nabore, T.V., Tenite, A.R., Martinez, E.R., Calzada, C.V., Ocaman, A.A., Bautista, B.A. and Shimosaka, K.	Journal of the geological society of Philippines, vol. 38, no.3, pp.1-16	Siruma		154
155	CS-19	geochemical map, stream sediment, soil, lithology, Cu	title: reconnaissance geochemical map of the Nabua Forest Reserve, Balatan, Camarines Sur. (in 1:10,000).	1970	Balce, G.R. and Reyes, F.T.	Bureau of Mines and Geo-Sciences internal report	Balatan	CS-1057 in MGB, treated geochemical survey	155
156	CS-20	exploration, Cr, ultramafic rocks	Report on the geologic investigation of chromite-laterite prospect, Lagonoy, Camarines Sur.	1970	Zarate, R.R. and Memoling, E.M.	Bureau of Mines and Geo-Sciences internal report	Barrio Himagtoton, 13°47'00"-13°51'00"N, 123°27'00"-123°31'00"E	CS-1056 in MGB, geological map in 1:50,000	156
157	CS-21	exploration, Cr, Ni, ultramafic rocks	Report on the "geologic verification of chromite-nickel prospect of three(3) mining claims in Bo. Himagtoton, Lagonoy, Camarines Sur.	1979	Tabios, J.Z. Jr. and Escandor, B.B.	Bureau of Mines and Geo-Sciences internal report	Barrio Himagtokan, 13°46'30"-13°47'00"N, 123°29'30.00"-123°30'00.00"E	CS-1914 in MGB, geological map in 1:5000	157
158	CS-22	exploration, clay, map;another place, perlite	Geological investigation of the clay deposits in sitios bambanon and luquiron, Barrio Libon, Ragay, Camarines Sur.	1973	Velasquez, C.A.	Bureau of Mines and Geo-Sciences internal report	Bambanon, Luquiron	CS-1290 in MGB, geological map in 1:50,000	158
159	CS-23	exploration, clay, kaolinite, cristobalite, smectite	Mineral verification of Victoria mining claim applied for lease by Mr.Fausto Contreras in Bo. Tabon Nunn, Del Gallego, Camarines Sur.	1987	Nanda, V.P.	Bureau of Mines and Geo-Sciences internal report	Del Gallego, location map in 1:4,000	CS-6808 in MGB	159
160	CS-24	exploration, Cr, Ni	Report on the geologic investigation of chromite and nickel prospect in Sitios Banguel and Tigbao, Barrio Himagtocon, Lagoy, Camarines Sur for Lagonoy Consolidated Mines, Inc.	1971	Cruz, J.R.	Bureau of Mines and Geo-Sciences internal report	Himagtocon	CS-5004 in MGB, geological map in 1:25,000	160
161	CS-25	exploration, white clay, quartz veinlet	Report on the geological investigation of white clay deposit of one(1) mining claim applied for lease by Mr. Jose C. Francisco at Siruma peninsula, Camarines Sur.	1987	Sendon, S.V.	Bureau of Mines and Geo-Sciences internal report	Siruma, 13°58'30"-13°58'00"N, 123°18'00.00"-123°18'30.00"E	CS-2182 in MGB, pictures	161
162	CS-26	geology, geochemical survey, stream sediment, soil, Cu	Geological-geochemical survey of Caramoan peninsula, Camarines Sur.	n/a	Miranda, F.E.	Bureau of Mines and Geo-Sciences internal report	Caramoan peninsula	CS-1630 in MGB	162

Table 1-1 The literature and plans registered through this survey

No	REGISTERED No.	KEYWORD	TITLE	DATE	AUTHOR	SOURCE	LOCATION	NOTE	No
163	CS-27	mineral prospect, sulfur	Report of investigation of the sulphur prospect in Mt. Isarog, Goa, Camarines Sur.	1961	Fernandez, N.S.	Bureau of Mines and Geo-Sciences internal report	Mt. Isarog	CS-360 in MGB	163
164	CS-28	exploration, Au, vein, quartz, pyrite, galena, chalcopyrite	Geological verification of Rayah Lahuy Mining Company property at Lahuy island, Caramoan, Camarines Sur.	1977	Cabanlog, A.V.	Bureau of Mines and Geo-Sciences internal report	Lahuy island	CS-1749 in MGB, geological map in 1:12,500	164
165	CS-29	ore deposit, Cr, Lagonoy Consolidated Mine	Report on the activities of Lagonoy Consolidated Mines on its chromite deposit in Lagonoy, Camarines Sur.	1976	Cinco, O.A.	Bureau of Mines and Geo-Sciences internal report	Lagonoy, 13°47'00"-13°49'00"N, 123°27'45.00"-123°30'00.00"E	CS-1858 in MGB, geological map in 1:25,000	165
166	CS-30	geology, geochemical, Cu, limestone, diorite, meta-andesite, propylitic alteration, silicified, quartz vein, chalcopyrite, bornite	Geological and geochemical investigation of copper prospects in the Hatsus Forest Reserve, Camarines Sur.	1970	Reyes, F.T. and Balce, O.R.	Bureau of Mines and Geo-Sciences internal report	13°20'N, 123°15'E		166
167	CS-31	exploration, Au, vein	Geologic investigation of the gold prospect of Rayah Lahuy Mining Company at Gata, Caramoan, Camarines Sur.	n/a	Tortin, M.A.	Bureau of Mines and Geo-Sciences internal report	Lahuy island, 13°34'30"N, 123°48'30.00"-123°34'30.00"E	CS-5082 in MGB, sketch	167
168	CS-32	geology, mineral resources, stream sediment, soil, geochemical, Cu	The geology and mineral resources of Caramoan peninsula, Camarines Sur, Philippines.	1976	Miranda, F.E.	Jour. geol. soc. Philippines, 30, pp.18-54	Caramoan peninsula	regional geochemical map, geological map, mineral distribution map	168
169	CS-33	exploration, Cr, Ni	Mineral verification of twelve (12) chromite-nickel lode claims in Bo. Himagtocon, Lagonoy, Camarines Sur.	1978	Manalang, B.M.	Bureau of Mines and Geo-Sciences internal report	Bo. Himagtocon, Lagonoy, 13°49'15"-13°50'08"N, 123°29'15"-123°29'45"E	geological map	169
170	CS-34	exploration, Cr	The chromite deposits in Camarines Sur.	1969	Javier, F.G.	Bureau of Mines and Geo-Sciences internal report	Northern Himagtocon, Lagonoy, 13°45'00"-13°55'00"N, 123°27'30"-123°37'30"E	geological map of the area	170
171	CS-35	exploration, pyritization, silicification, porphyry, Cu, Au, hydrothermal	Report on the preliminary geological investigation and evaluation of the mineral claims "Ernesto-1", "Ernesto-2" and "Ernesto-3" of Ernest B. Alarma, located in the Barrio of Bulalacao, Municipality of Panucan, Province of Camarines Sur.	1960	Bautista, R.H.	Bureau of Mines and Geo-Sciences internal report	Bo. Bulalacao, Panucan, 13°42'00"-13°43'00"N, 123°46'00"-123°47'00"E	geological map	171
172	CS-36	exploration, Cr	Preliminary report on ofite orientation geochemical survey for chromite exploration in the Bicol region	1997	Camacho, E.J.	Bureau of Mines and Geo-Sciences internal report	Himagtocon, Lagonoy, 13°48'36"-13°48'08"N, 123°27'36"-123°29'27"E		172
173	CS-37	geology, middle miocene diorite, lower miocene lime stone	Accomplishment report on the geological survey of northwestern part of Pasacao, Camarines Sur.	1972	Castaneda, G.C.	Bureau of Mines and Geo-Sciences internal report	Naga city, 13°31'-13°50'N, 122°45'-123°00'E		173
174	CS-38	geology, copper prospect, silicification, argillization, Qz prospect, Qz vein, clay prospect	Progress report on the regional geology and mineral canvassing of Ragay-Del Gallego, Camarines Sur.	1972	Castaneda, G.C. and Encina, G.C.	Bureau of Mines and Geo-Sciences internal report	Ragay-Del Gallego		174
175	CS-39	geology	Progress report on the Mandao and Libmanan quadrangle.	1972	Castaneda, G.C. and Encina, G.C.	Bureau of Mines and Geo-Sciences internal report	Mandao, Libmanan		175
176	CS-40	geology	Progress report on the Daet-Mercedes quadrangle.	1972	Castaneda, G.C.	Bureau of Mines and Geo-Sciences internal report	Daet, Mercedes		176
177	CS-41	Exploration, Cr, Ni	Geologic Verification of Chromite-Nickel Prospect of Three(3) Mining Claims in Bo. Himagtocon, Lagonoy, Camarines Sur	1979	Jose Z. Tabios, JR., Benjamin B. Escandor	Bureau of Mines and Geo-Sciences internal report	13°46'30"N-13°47'00"N, 123°28'30"E-123°30'00"E Barrio Himagtocon, Municipality of Lagonoy, Camarines Sur.	Geologic Map in 1:5,000	177
178	CS-42	geology, Caramoan Peninsula, Olistostrome	The Tabgon Flysch and Kagas Point Olistostrome in the Caramoan Peninsula: nature, age, structures and their tectonic implications	1994	Savilio D. David Jr., Jean-Francois Stephan, Jean Delteil, Carla Muller, Jacques Butterlin	Journal of the Geological Society of the Philippines,1994	Caramoan Peninsula	Simplified geological map	178
179	CS-43	geology, iron prospect, Copper prospect, Clay deposit	General Geology of Northwestern Camarines Sur	1972	Castaneda, G.C.	Bureau of Mines and Geo-Sciences internal report	Northwestern Camarines Sur		179
180	CS-44	Geology, Mineral Resources, Camarines Sur	Geology and Mineral Resources of Camarines Sur	1981	Bureau of Mines and Geo-sciences	Bureau of Mines and Geo-sciences Report of Investigation No.105	Camarines Sur	Geology and Mineral Resources Map of Camarines Sur 1:250,000	180
181	CS-45	Geology, Geochemistry, Caramoan Peninsula, Camarines Sur	Geological-Geochemical Survey of Caramoan Peninsula, Camarines Sur	1977	Bureau of Mines	Bureau of Mines Report of Investigation No.86	Caramoan Peninsula	Geological Map and Sections in 1:250,000	181
182	CT-01	exploration, geology, geochemistry, drilling, Au, Cu	フィリピン共和国カタンドゥアネス地域資源開発協力基礎調査 総合解析説明書 [Report on the cooperative mineral exploration in the Catanduanes area, the Republic of the Philippines, in Japanese]	1998	JICA/MMAJ		Catanduanes island		182
183	PH-01	geology, Philippines	Geology and mineral resources of the Philippines vol.1.	1986	Bureau of Mines and Geo-sciences		Philippines		183
184	PH-02	ore deposit, Philippines	Mineral resources assessment of the Philippines.	1994	Clark, A.L.	Asian Development Bank Mineral Sector Study T. A. No.1884-PHI	Philippines		184
185	PH-03	epithermal Au, geological feature	Geological features of some epithermal gold systems, Philippines.	1990	Mitchell, A.H.G. and Balce, O.R.	J.Geochem Explor., 35, p.241-296			185
186	PH-04	exploration, ophiolite, Cr, Ni, PGM, massive sulfide	Ophiolites and ophiolitic complex in the Philippines as viable exploration targets.	1993	Yumul, Jr., G.P., Balce, O.R. and Datuin, R.T.	J. Geol. Soc. Phil., v.48, nos.1-2, 36-54	Philippines		186
187	PH-05	ore deposit, geology setting, tectonic setting, Cu, Cr	Geology and tectonic setting of copper and chromite deposits of the Philippines.	1984	Zanoria, A.S., Domingo, E.G. Bacuta, G.C. and Almeda, A.L.	Geol Soc.Japan Report, No.263, p.209-230			187
188	PH-06	ore deposit, porphyry Cu, tectonic setting	フィリピンのポーフィリーカッパー鉱床－その構造的背景と開発の現状－ [Porphyry copper deposits in the Philippines -their tectonic setting and present status of their development-, in Japanese]	1977	茂木 睦 [Mogi, M]	鉱山地質 [Resource Geology], 27, 221-230	Philippines		188
189	PH-07	geology, Philippines, metamorphic belt	フィリピン群島の地質構造発達史 [Evolution of geology of Philippine Island, in Japanese]		鈴木尉元 [Suzuki, Y]	地質ニュース [Chishitsu NEWS]	Philippines		189

Table 1-1 The literature and plans registered through this survey

NO	REGISTERED ID	KEYWORD	TITLE	DATE	AUTHOR	SOURCE	LOCATION	NOTE	NO
190	PH-04	mineral resources, Philippines	Geology and mineral resources of the Philippines vol 2	1986	Bureau of Mines and Geosciences	Bureau of Mines and Geo-Sciences internal report	Philippines		190
191	PH-08	geology, economic geology, Philippines	The Philippines -A Prospectus for the International Mining Industry.	1992	the Philippines Mines and Geosciences Bureau and the United Nations Department of Technical Cooperation for Development(UNDTCD)	the prospectus for the Industrial Mining Industry, which was prepared by The Mining Journal Ltd	Philippines		191
192	PH-10	geology, economic geology, Philippines	平成2年度地質解析委員会報告書-東南アジア・オセアニア島嶼地域-金、銅、モリブデン- [Report of the committee for geological analysis -South East Asia and Oceania archipelago region-gold, copper, molybdenum-, in Japanese]	1991	MRIC	Report of The Committee for Geological Analyses	Philippines		192
193	PH-11	tectonic, geology, Philippines	The Philippine Mobile Belt, a complex plate boundary.	1991	Rangin, C.	Journal of Southeast Asian Earth Sciences, vol.6 No.3/4,pp.209-220,1991	Philippines		193
194	PH-12	tectonic, geology, Philippine Fault	The Philippine Fault in the Late Cenozoic tectonic evolution of the Bondoc-Masbate-N. Leyte area, Central Philippines.	1991	Aurelio, M.A., Barrier, E., Rangin, C. and Muller, C.	Journal of Southeast Asian Earth Sciences, vol.6 No.3/4,pp.221-238,1991	Philippines		194
195	PH-13	tectonics, Mindanao, collision	The Mindanao Collision Zone: soft collision event within a continuous Neogene strike-slip setting.	1991	Pubellier, M., Quebral, R., Rangin, C., Deffontaines, B., Muller, C., Butterlin, J. and Manzano, J.	Journal of Southeast Asian Earth Sciences, vol 6 No.3/4,pp.239-248,1991	Mindanao		195
196	PH-14	ore deposit	Ore deposits of the Philippines mobile belt.	1971	Gervasio, F.C.	Jour. geol. soc. Philippines, 25, no.3, pp.1-24	Philippines	regional data	196
197	PH-15	data compilation, Landsat data	フィリピン共和国鉱物資源基本図調査報告書 [The mineral exploration - Mineral deposits and tectonic of two contrasting geologic environment, in Japanese]	1985	JICA/MMAJ	p.27	Philippines		197
198	PH-16	data compilation	フィリピン共和国鉱物資源基本図調査報告書 [The mineral exploration - Mineral deposits and tectonic of two contrasting geologic environment, in Japanese]	1985	JICA/MMAJ	p.174	Philippines	geological map, aeromagnetic survey index, gravity anomaly map	198
199	PH-17	Mining Philippines 97, Nalesbitan Gold Project	MINING PHILIPPINES 97 (about Nalesbitan, title Nalesbitan Gold Project-Camarines Norte)	1997	MINING PHILIPPINES 97 Committee (about Nalesbitan: Mr. Robert McLennan, Mr. Manuel Acenas-Geological Exploration mining Services Philippines, Inc.)	MINING PHILIPPINES 97	Philippines including Nalesbitan		199
200	PH-18	Geology of the Philippines, vol 1, 1996Edition, draft	Geology and mineral resources of the Philippines vol 1 1996 edition	1996	LGD GOP editorial team	Geology and mineral resources of the Philippines vol 1 1996 edition first draft	Philippines		200
201	PH-19	Copper deposit,Philippines	Copper deposits of the Philippines	1956	Arthur /. Kaibal, Jr., Juan m. Santos-Yñigo, Sacramento Samaniego, Oscar Crispin	Bureau of mines special projects series publication no.16 copper	Philippines		201
202	PH-20	Philippines, mining, mineral resource development	フィリピンの資源開発環境 [The Environment of development for mineral resource in the Philippines, in Japanese]	1997	Metal Mining Agency of Japan	Report of MMAJ	Philippines		202
203	PH-21	Philippines, epithermal gold, metallogenesis, geology, geothermal systems	epithermal gold in the philippines' island arc metallogenesis, geothermal systems and geology.	1991	Mitchell, A.H.G. and Leach, T.M.	Academic Press, p.457	Philippines		203
204	R-01	exploration, Far Southeast	Exploration and discovery of base- and precious-metal deposits in the circum-pacific region during the last 25 years.	1995	Sillitoe, R.H.	MMAJ	Far Southeast		204
205	R-02	ore deposit, mineralogy, fluid inclusion, Au, Ag	Gold-silver quartz vein-type deposits of Japan and the Philippines: a comparative study of their geology, ore mineralogy and fluid inclusions	1982	Domingo, E.G.	Department of Mineral Resources Development Engineering Graduate School of Engineering, Hokkaido University, Sapporo, Japan.	-		205
206	R-03	structure, alteration, mineralization, Au, Cu	SW Pacific rim Au/Cu systems: structure, Alteration and mineralization	1995	Corbett, G.J. and Leach, T.M.	Exploration Workshop "SW Pacific rim Au/Cu systems: structure, Alteration and mineralization"	-		206
207	R-04	epithermal Au, geochemistry	Southwest Pacific epithermal gold: a rock-geochemical perspective.	1990	Clarke, D.S. and Govett, G.J.S.	In: J.W. Hedenquist, N.C. White and G. Siddeley (Editors), Epithermal Gold Mineralization of the Circum-Pacific: Geology, Geochemistry, Origin and Exploration, I. J. Geochem. Explor., 35: 225-240	-		207
208	R-05	exploration, guidelines, epithermal Au	Epithermal environments and styles of mineralization: variations and their causes, and guidelines for exploration.	1990	White, N.C. and Hedenquist, J.W.	In: J.W. Hedenquist, N.C. White and G. Siddeley (Editors), Epithermal Gold Mineralization of the Circum-Pacific: Geology, Geochemistry, Origin and Exploration, J. Geochem. Explor., 36, 445-474	-		208
209	SR-01	exploration, geology, geochemistry, Au	Preliminary technical report on the follow-up detailed geological-geochemical survey of Bulan area, Sorsogon province.	1997	Carranza, E.J.M.	Bureau of Mines and Geo-Sciences internal report	12°42'17"N-12°43'23"N, 123°56'E-123°57'E, Bulan		209
210	SR-02	exploration, geology, Au	Preliminary report on the detailed geological investigation of the gold prospect in Bulan, Sorsogon.	1991	Ras, M.R.M	Bureau of Mines and Geo-Sciences internal report	123°56'25"E-123°57'00"E, 12°41'13"N-12°42'56"N, Bulan		210
211	SR-03	exploration, microscopic, Au	Microscopic analyses of vein mineral samples in Monte Calvario-Pagmas areas, Bulan, Sorsogon.	1993	Ras, M.R.M	DENR, Mines and Geo-Sciences Development Service	12°41'13"N-12°42'54"N, 123°56'25"E-123°57'00"E, Bulan		211
212	SR-04	geothermal exploration, geology, geophysics	Evaluation summary of the Mt. Bulusan geothermal exploration.	1988	Delfin, F.G., Fragata, J.J., Layugan, D.B., Panem, C.C. and Villasenor, L.B.	PNOC-Energy Development Corporation internal report	Mt. Bulusan		212
213	SR-05	geothermal exploration, geochemistry	Geothermal Report: Mt. Bulusan Geothermal Prospect.	1988	Villasenor, L.B.	PNOC-Energy Development Corporation internal report	Mt. Bulusan		213
214	SR-06	mineral deposit, sulfur, limestone, chemical analysis	Report on the sulphur and limestone deposits at sorsogon and Bacon Rawis province of sorsogon.	1962	Priso, J.R.	Bureau of Mines and Geo-Sciences internal report	map in 1:50,000 attached	SO-376 in MGB	214
215	SR-07	exploration, hydrogeologic, water resource	Memorandum report on the hydrogeologic investigation of Palhi Spring Resort, Capuy, Sorsogon, Sorsogon.	1985	Sandoval, M.P. and Samaniego, S.L.	Bureau of Mines and Geo-Sciences internal report	map in 1:25,000 attached	SO-518 in MGB	215
216	SR-08	geology, landslide	Report on the investigation of the landslides in Bulan and Matnog, Sorsogon.	1957	Fernandez, N.S. and Samaniego, S.L.	Bureau of Mines and Geo-Sciences internal report	map in 1:50,000 attached	SO-236 in MGB	216

Table 1-1 The literature and plans registered through this survey

No	REGISTERED ID	KEYWORD	TITLE	DATE	AUTHOR	SOURCE	LOCATION	NOTE	No
217	SR-09	geology, Sorsogon province	Geology of Sorsogon province.	1974	Trevagile, C. and Bass, A.F.	report of Soil and Land Resources Appraisal and Training Project, UNDP	Sorsogon province, index map	geological map at 1:100,000, SO-5000 in MGB	217
218	SR-10	mineral deposit, sulfur	A report on the sulphur deposits in northern Sorsogon, Barrio Rizal, Sorsogon.	1963	Besos, E.M.	Bureau of Mines and Geo-Sciences internal report	index map at 1:200,000	location map of sulfur deposit at 1:15,000, SO-115 in MGB	218
219	SR-11	geology, mineral deposit	Report on the geology and mineral resources of Sorsogon.	1968	Carver, L.M. and Gatdula, A.R.	report of Soil and Land Resources Appraisal and Training Project, UNDP	Sorsogon province	geology and inventory map at 1:100,000, SO-5032 in MGB	219
220	SR-12	exploration, sulfur, white clay	Reports on the preliminary investigation of sulfur and white clay prospects in Bacon and Sorsogon.	1958	Llave, O.A.	Bureau of Mines and Geo-Sciences internal report	Sorsogon, Bacon, index map	sketch map of prospects, geological map at 1:50,000, SO-1779 in MGB	220
221	SR-13	geology, mineral resources	Geology and mineral resources of Sorsogon province.	1973	project team of MGB	Bureau of Mines and Geo-Sciences internal report	Sorsogon province		221
222	SR-14	clay deposit, Bulusan, Gabao, pyrite	Geologic report on the field verification of clay deposit found in the vicinity of "seccrated" claims in Bulusan and Gabao, Irosin, Sorsogon.	1983	Samson, B.B.	Bureau of Mines and Geo-Sciences internal report	Irosin, index map at 1,000,000	geological map at 1:10,000	222
223	SR-15	mineral prospect	Index map of Sorsogon showing the distribution of principal mineral and nonmetallic commodities.	n/a	n/a	Bureau of Mines and Geo-Sciences internal report	Sorsogon province	SO-818 in MGB, map only	223
224	SR-16	Geology, Mineral Resources, Sorsogon	Geology and mineral resources of Sorsogon Province	1974	Bureau of Mines	Bureau of Mines. Report of Investigation No.75	Sorsogon province	Geology and mineral resources map at 1:250,000	224

Table 1-2 The mines, prospects, and occurrences of mineral resources in the Bicol Area registered through this survey

Resource ID	Prospect	Location	Main commodities	Type of ore deposit	Settings and features	Form and dimension	Ore minerals	Gangue minerals
cn1			Fe					
cn2			Fe					
cn3	Villa Aurora	Upper Del Pilar River	Fe					
cn4		Upper Pulang River, Tigbinan	Mn					
cn5	Matako prospect	Barrio Matako, Capalonga, 14°12'N to 14°13'N and 122°29'E to 122°30'E	Cu,Fe	vein type controlled by faults / replacement type localized within fault and shear zone	the mineralization is confined along northwest and northeast faults, contact between basalt and diorite is characterized by slickensided and gougy materials	vein or tabular	pyrite, chalcopyrite, hematite, magnetite, chalcocite, covellite	
cn6		Upper Del Pilar River, Kanapawan	Cu,Fe					
cn7		Upper Santo River	Ni					
cn8		Upper Bosigon River, Mount Cadig	Mn					
cn9		Upper Bosigon River, Mount Bulalao	Fe					
cn10		near junction of Upper Bosigon River and Sandiguan Creek	Cu					
cn11		Upper Bosigon River, Mount Nalimbitan	Au					
cn12		Upper Macogon River No 1	Au					
cn13	Mayon Mine (Exciban, Labo)	Macogon River No 1, NW of Dagul	Au,Cu	a sulfide-quartz vein system, mineralized breccia body, locally with banded texture, open-space filling and high gold grades	mineralization system occurs along and near NNE normal faults 1km west of the Tamisan diorite intrusion, locally comprising the contact between andesites and volcanic siltstones		pyrite, pyrrhotite, chalcopyrite, trolite, arsenopyrite, native gold, Bismuth telluride	quartz, calcite, dolomite, kaolinite, smectite, anatase
cn14	Larap: Philippine Mine (PIM-CPM deposit)	Larap, Jose Panganiban (122°39'00"E, 14°17'45"N)	Fe,Cu	Contact metasomatic type, occurs as pockets, patches, lenses and dissemination within the hostrock	ENE faults, Iron Ore with Copper localized within the altered sediments and at their contact with the Larap Volcanics		magnetite, pyrite, chalcopyrite, molybdenite. Zoning a) magnetite b) chalcopyrite, c) low temperature gold - quartz - calcite vein zone	quartz, calcite
cn15	Larap: Mecalinec Mine	S of Larap, NW of Santa Elena	Fe					
cn16		Santa Elena	U					
cn17	Capacuan	Tumbaga, S of Jose Panganiban	Fe					
cn18		near Tumbaga, Upper Pacuabay River	Au					
cn19		Upper Malaguit River, N of Dagul	Cu					
cn20		Upper Malaguit River, NE of Dagul	Fe					
cn21		Calinac, Upper Malaguit River	Fe					
cn22	(Batobalani pit ?)	Bend, Upper Pacuabay River	Fe					
cn23		Near Tinampo, Upper Malaguit River	Au					
cn24	Pulot Mine	Near Cohagahagan, NE of Dagul	Fe					
cn25		Dagang	Fe					
cn26		Talubatib beside Malactong River	Fe					
cn27		near Pinagapuan, N of Jose Panganiban	Ni					
cn28		near Fabrica, N of Jose Panganiban	Au					
cn29	Barbara Mine	Sta. Barbara, barangay Luklukan Sur, near Gumaus NE of Jose Panganiban (14°18'15"N, 122°41'54"E)	Au	vein-type	northern most part of the Sta. Ana Vein System, trending NE dipping SE deeply	Sta. Ana Vein System is more than 500m long with average 1.4m in thickness	sphalerite, galena, chalcopyrite	Some portions of the vein are massive, but other portions exhibit vuggy texture
cn30	Paracale-Gumaus Mine	Gumaus	Au	vein type, mesothermal?	veins are along with northnortheast faults	few feet wide in outcrop but thin in depth	sphalerite, galena	
cn31		Gumaus	Au					
cn32		Pulandaga, NNW of Paracale	Zn					
cn33		Cagas, E of Jose Panganiban	Au					
cn34	Maremco	Upper Malaoinato River, approximately 5km west of Paracale, 14°18'N and 122°45'E	Au,Cu	vein type in primary and secondary enrichment might occur near surface	controlled by faults and the cooling joints trending N10W to N30E		sphalerite, galena, pyrite, chalcopyrite and minor covellite, bornite	quartz, base metal sulphide
cn35	Parang gold-silver base metal prospect, within the former Tinggo Prospect	Parang, near Paracale, beside Malaoinato River (14°17'18"-14°18'29"N, 122°46'41"-122°47'15"E)	Au,Ag,Cu,Pb,Zn	Vein-type. Space filling deposition of low temperature (epithermal) gold-silver-copper-lead-zinc veins.	Faults that have been occupied by Qz veins (N15°-19°E with vertical dip)	Veins are generally NE trend and max. of thickness is 50cm consisting of a 15cm galena, sphalerite	Galena, sphalerite, chalcopyrite, malachite, bornite	quartz, pyrite
cn36		approximately 1km northwest of Paracale, between Dalaliyabay Creek and Casalaugan River	Au	vein type	a vein contains low grade of gold trends northwest	width is limited and varies suddenly		qurtz and minor pyrite
cn37	Longos	Longos, E of Paracale (14°17'N, 122°45'E)	Au	Vein-type	Several northeasterly trending fractures cut the granodiorite		chalcopyrite, bornite, galena, gold	Qz vein (sugary, vuggy with Py dissemination)
cn38	Malaguit	S of Paracale, W of Calaburnay, beside Malaguit River (14°15'N, 122°47'E)	Au	Vein type	Several northeasterly trending fractures cut the granodiorite		chalcopyrite, bornite, galena, gold	Qz vein (sugary, vuggy with Py dissemination)
cn39	Calburnay, Tabas	SSW of Paracale, beside Malaguit River	Fe					
cn40		Magkadugyong, NE of Santa Rosa Sur	Au					
cn41		Caging, SW of Paracale, beside Malaguit River	Au					
cn42	Aguson Mine	Inagnayon, S of Paracale, WNW of Mt. Bagacay	Fe					
cn43		Inagnayon, S of Paracale, W of Mt. Bagacay	Au					
cn44	Labnig, Golden Rock Mine	Calaburnay, SE of Paracale	Au					
cn45	Napalgasan-Pinagbanayan	Tabas	Fe					
cn46	Calaburnan, Paracale	S of Tabas, Mt. Bagacay	Fe					
cn47	Malacbang, Paracale	headwaters of Malacbang river, west-southwest flank of Mt. Bagacay, 14°13'02.58"N and 122°47'5.61"E	Au	vein type, hydrothermal deposit	mineralization indicated by silicification and pyritization situated in shear zones while those show no prefered orientation	filling fracture, up to 1m wide		quartz, pyrite, chalcopyrite, other sulphides
cn48		S of Dagul, Upper Macabebale Creek	Fe					
cn49	Dalas, Labo	Labo, beside Labo River	Fe					
cn50	Mabilo, Labo	S of Tulay na Lupa, N of Mt. Labo	Fe					
cn51	Aguit-it Sabang Indan	Del Carmen, E of Vinzons	Fe					
cn52		ENE of Talisay, beside Talisay River	Fe					
cn53	Talisay-Vinzon	San Jose, beside Talisay River	Fe					
cn54		Mambulaga, Mercedes	Fe					
cn55	Culasi, Mercedes	Culasi, W of Culasi Peak	Hg					
cn56		Mt. Nalesbitan, Upper Bosigon River	Au					
cn57	San Vicente	Bagong Silang, Upper Madagat Creek, N of Tagkawayan	Cu					
cn58		Upper Ramban River, Mt. Nalesbitan, S of 364m peak	Pb					
cn101		Minasag, Upper Patalan River	Fd					
cn102	Bulala	Barrio Stala, Capalonga, Camarines Norte, 14°13'N to 14°14'N and 122°25'E to 122°26'E	Fcly	hydrothermal acid alteration	permeability control the zone of alteration		kaolinite	
cn103		Upper Tigbi River, S of Larap	Fd					
cn104	Dagut, Labo	Dagut	Ls					
cn105		San Isidro, Upper Balabalona River, S of Jose Panganiban	Mbl					
cn106		Gumaus, NW of Paracale	Wcly					
cn107		Mt. Pulantuna, Eastern Mt. Labo	Da					
cn108	Basud	Upper Bartas River, SSE of Basud	Da					
cn109		Mt. Culasi	S					
cn110		Culasi, E of Culasi Peak	Fcly					
cn111		Upper Kabibihan River, S of Mt. Cadig	Grp					
cn112		Mt. Tuba	Py					
cn113	Sta. Cecilia, Tagkawayan	Tagkawayan	S					
cn114	Abo	W of Tagkawayan	S					
cn115		San Rafael, N of Del Gallego, Upper Cabatobato River	Wcly					
cn201	LA SUERTE Copper Prospect	Santa Rosa, Jose Panganiban, 122°43'E 14°16'30"N	Cu,Pb,Au	Vein type, mineralization occurs as fracture filling within the hostrocks	Deposition structurally controlled by NW trending thrust fault and high angle tensional fault varying from N10°E to N30°W		sphalerite, galena, pyrite, chalcopyrite, bornite, covellite	
cn202	The Bessemer Pit Area	south of the Bussar area of the iron mining operations within Larap Peninsula (122°39'E, 14°15'N)	Cu,Mo	pyrometasomatic type, deposits are partly lithologic and partly structural tending to localize at the contact between the meta-volcanic and meta-sedimentary rocks. The copper and molybdenum minerals occur as pockets, patches, lenticular beds and as disseminated particles in the host rock.	fault, trending east northeast, transects Larap Peninsula. Bedding in the sedimentary trend NW and dips northeast. Ore zones are concentrated in the skarn formations following the bedding horizons		chalcopyrite, molybdenite, magnetite, pyrite, ulexite (concentrated in molybdenite)	garnet, epidote, apatite
cn203	Tamisan Mine (Exciban, Labo)	Macogon River No 2, N of Dagul	Au	a sulfide-quartz vein system, mineralized breccia body, locally with banded texture, open-space filling and high gold grades	mineralization system occures along and near NNE normal faults 1km west of the Tamisan diorite intrusion, locally comprising the contact between andesites and volcanic siltstones		pyrite, pyrrhotite, chalcopyrite, trolite, arsenopyrite, native gold, Bismuth telluride	quartz, calcite, dolomite, kaolinite, smectite, anatase
cn204	Nalesbitan lode Au deposit	Upper Palali River No 1, Nalesbitan, Dumagmang, Labo, 14°06'08"N, 122°38'04"E	Au	acid-sulphate-type (high sulphidation type), porphyry type?	linear bodies of hydrothermal breccias, steep, north-west-striking fault zone, most of the andesite porphyry dikes follow the northwest direction	Hydrothermal breccia dykes and Qz-limonite stockworks are common, 1300m-long body of Au-bearing rock ranging from 12 to 145m wide	hypogene mineralization is typified by a high pyrite content and high sulphidation Cu and Cu-Fe sulphide (chalcocite, bornite, covellite, chalcopyrite, enargite), free gold and possibly Au-Ag tellurides	chalcedonic quartz and pyrite
cn205	Parenal, Luklukan Norte	within the military reservation under the Philippine Air Force, 3km via an asphalt road from Panganiban town, of a moderate topography which rises to 220m (14°18'27"N, 122°43'30"E)	Au	vein type	NW trending thrust (SW dip) occur between the contact of the ultramafic with the Paracale Granodiorite, Joint system in the Paracale Granodiorite is ENE trend, major fractures healed by quartz are N-NNE trend	The Sta. Inez vein, N-trend Qz vein with 0.3-0.5m thickness, more than 150m. The Sta. Monica veins, N10-30°E trending, more than 500m	sphalerite, galena, pyrite, chalcopyrite	quartz (grayish color)
cn206	Sta. Elena	Sta. Elena, 2km SW of Larap, near Tigbe River mouth (14°16'36"N, 122°39'23"E)	Au	vein type	the main vein trends N60°E and dips 53°SE	the main vein measures from 45cm to 70cm	galena, sphalerite, chalcopyrite	quartz with pyrite and calcite; quartz vein is generally massive with occasional vuggy portions
cn207	Tidi	Tidi, Sta. Rosa Sur, is situated on two hills rising to an elevation of 40-50	Au	vein type	the most prominent quartz veins trends N40°W and dips 30°SW, barite locally attains thickness of 1m and it is found on footwall side of main quartz veins. Breccia texture	Qz veins 0.5 to 5m in thickness and forms a ridge on the Tidi Hill for more than 200m	barite, pyrite, chalcopyrite, galena, sphalerite	quartz vein is massive, with occasional vugs, barite, pyrite, chalcopyrite, galena, sphalerite. pale yellow gold was shown in the concentrate of pyrite grains and cubes and fine galena crystals)
cn208	Sitio Maligaya, San Isidro	39m southeast of Sta. Elena, 2km SW of Larap, near Tigbe River mouth (14°16'24"N, 122°38'52"E)	Au	vein type	the main vein trends N70°E and dips 75°SE	the main vein measures from 15cm to 30cm and traceable from 50 to 130m	pyrite and galena with minor chalcopyrite and sphalerite	
cn209	San Antonio	Sitio San Antonio, Sta. Rosa Norte, Jose Panganiban (14°17'35"-14°18'14"N, 122°42'05"-122°42'35"E)	Au,Ag	vein type	the major veins have a NNE and NE strikes and steep dips; Sta. Ana vein	the veins vary in thickness from 0.25-2.00m and pinch out and swell along the strike	chalcopyrite, galena, sphalerite	quartz, limonite iron oxide
cn210	Malaguit	Malaguit, Paracale (14°15'26.26"-14°16'13.53"N, 122°47'13.7"-122°48'07"E), western part of cn-38	Au,Ag	the primary vein-type deposit, the secondary placer-type or residually weathered deposit of oxidized zone	the trend of the major quartz veins are disposed in a NNE to NE pattern, these NNE to NE trending veins are the main loci of mineralization	main veins vary in thickness from few centimeters to 5 meters	pyrite, chalcopyrite and some minute specks of gold that occur in iron oxides	
cn211	Calaburnay	Calaburnay, east of Malaguit river	Fe		magnetite lens		magnetite, hematite	
cn212	Mt. Magkarating	Southern Mt. Magkarating, Upper Calaburnay Na Malabi Creek, south of the boundary of Aguson Iron Mines	Fe		magnetite lens		magnetite, hematite	
cn213	Tigbinan Manganese Deposit	Dagsol, Tigbinan, Labo	Mn	concentrations of manganese oxides in residual soil formed on top of slightly altered porphyritic andesites			manganese oxides	

Table 1-2 The mines, prospects, and occurrences of mineral resources in the Bicol Area registered through this survey

Registered ID	Prospect	Geology (host rocks and related igneous rocks)	Dating data	Alteration	Geochemical data	Historical circumstances	Owner	Note	References
cn1									MGB
cn2									MGB
cn3	Villa Aurora								PH-16 MGB
cn4									PH-16 MGB
cn5	Malobi prospect	basaltic volcanic rocks probably Miocene and diorite			samples taken from outcrops show values varied from 0.06% to 20.25% copper		21 claims of K-NGS group, 25 claims of STARS group, 72 claims of ICE group		PH-16 MGB CN-30
cn6									PH-16
cn7									MGB
cn8									PH-16
cn9									PH-16 MGB
cn10									PH-16 MGB
cn11									PH-16 MGB
cn12									PH-16 MGB
cn13	Mayon Mine(Exciban Labo)	Universal Formation(calcareous siltstone, andesite tuff-breccia), diorite						The presence of daughter minerals in fluid inclusions suggests relatively high salinity fluids of probable magmatic origin deposited the ores	PH-16 CN-4
cn14	Larap Philippine Mine (PIM-CPM deposit)	Calcareous Sandstone (Universal Formation)		argillization, calcification, silicification	Fe 10.9%, Cu 0.25%				PH-16 MGB BI-1, CN-67, CN-68
cn15	Larap Macalinao Mine								PH-16 MGB
cn16									PH-16 MGB
cn17	Capacuan								PH-16 MGB
cn18									PH-16 MGB
cn19									PH-16
cn20									PH-16
cn21									PH-16
cn22	Batobalani pit ?								PH-16
cn23									PH-16 MGB
cn24	Pabol Mine								PH-16 MGB
cn25									PH-16
cn26									PH-16
cn27									MGB
cn28									MGB
cn29	Barbara Mine	Paracale Granodiorite(gneissose body W-NW trend pre-cretaceous), Ultramafic rocks(serpentinized harzburgite, in thrust with the Paracale granodiorite, cretaceous), schists(talc-chlorite schist)			Assay of 2 samples, 9-25g/t Au, 14-36g/t Ag, 0.53% Cu, 0.34% Pb, 1.62% Zn			small scale miners	PH-16 MGB CN-6 CN-32
cn30	Paracale-Gumaus Mine	Bi-granodiorite, aplite, trap peridotite		bleaching, pyrite disseminations and veinlets	best gold value occur where sphalerite and galena are abundant *				PH-16 MGB CN-32
cn31									PH-16 MGB
cn32									PH-16 MGB
cn33									PH-16 MGB
cn34	Maranco	Granodiorite in contact with ultra mafic rocks			the best result of soil and rock chip samples is 2.52g/t gold, 1.40g/t silver, 0.18% copper, 2.18% lead, 5.34% zinc		Maranco Mineral Corporation in 1976		PH-16 MGB, CN-62
cn35	Parang gold-silver base metal prospect, within the former Tinggo Prospect	Granodiorite in contact with serpentinized peridotite		silicification, argillization, pyritization	channel samples across and along the veins in Tunnel 1 & 2: 0.5-32g/t Au, 9-530g/t Ag, 0.13-9.5% Cu, 0.36-2.52% Pb, 0.55-8.56% Zn	This area was known as Tinggo Prospect(Pb) in pre-war time; geological investigation survey of Tunnel 1&2 in 1970	Mr. Jovito Palado in Paracale		MGB BI-1,CN-9, CN-47, CN-79, CN-89
cn36		granodiorite and ultramafic rocks nearby			rock and soil samples contain up to 1.3g/t gold and up to 1.0g/t silver		Mr. Jovito Palado in 1984		PH-16 MGB, CN-79
cn37	Longos	Granodiorite in contact with serpentinized peridotite		silicification	Longos vein & Western Torres vein (167,537t, 10.46g/t Au), ACR vein (37,258t, 12.79g/t Au), Contact vein (52,312t, 9.75g/t Au), Bakante (230,500t, 12.53g/t Au), average grade of Longos Area is 14.13-15.26 g/t Au and 23.15-23.17 g/t Ag	established in 1970, merger of United Asia Resources and geothermal Corp. and Abcar Paragon Mining Corp. in 1990	United Paragon Mining Corporation (United Paracale Mining Company → Metals Exploration Asia, Inc.)		MGB,PH-20,CN-10,CN-11, CN-60
cn38	Malaguit	Granodiorite in contact with serpentinized peridotite		silicification	quartz vein in Sta. Martha claim (7.5g/t Au, 10g/t Ag), quartz vein in Jupiter Ft. Claim (1g/t Au, 2g/t Ag), quartz vein in Tulisan claim (1g/t Au, 2g/t Ag), quartz vein in Wyoming claim (31.5g/t Au, 37.5g/t Ag)	established in 1970, merger of United Asia Resources and geothermal Corp. and Abcar Paragon Mining Corp. in 1990	United Paragon Mining Corporation (United Paracale Mining Company)		PH-16 MGB CN-10
cn39	Calburnay, Tabas								PH-16
cn40									PH-16 MGB
cn41									PH-16 MGB
cn42	Aguisan Mine								PH-16 MGB
cn43									PH-16 MGB
cn44	Labnig, Golden Rock Mine								PH-16 MGB
cn45	Napaigaran-Pinagbirayan								PH-16
cn46	Calaborman, Paracale								PH-16
cn47	Malacbang, Paracale	meta volcanic rocks		silicification	3 samples taken from JC trench show value ranging from 9.5g/t to 21.5g/t gold				PH-16, CN-80
cn48									MGB
cn49	Daina, Labo								PH-16
cn50	Mabilo, Labo								PH-16
cn51	Apuli-Sabang Indan								PH-16
cn52									MGB
cn53	Talisay-Vinzon								PH-16 MGB
cn54									PH-16 MGB
cn55	Culasi, Mercedes								PH-16
cn56									PH-16 MGB
cn57	San Vicente								PH-16
cn58									PH-16 MGB
cn101									PH-16 MGB
cn102	Bulala	lava and pyroclastic rocks with interbeds of tuffaceous sediments consisting of shale, sandstone, conglomerate and small lenses of limestone		pyritized silicified rock, limonitization, alunite			Firestone Ceramics, Inc.	silica sinter, spring deposit	PH-16 MGB, CN-34, CN-42, CN-74
cn103									PH-16 MGB
cn104	Dagult, Labo								PH-16
cn105									PH-16 MGB
cn106									MGB
cn107									PH-16 MGB
cn108	Basod								PH-16
cn109									MGB
cn110									MGB
cn111									PH-16 MGB
cn112									PH-16 MGB
cn113	Sta. Cecilia, Tagkawayan								PH-16
cn114	Abi								PH-16
cn115									MGB
cn201	LA BUERTE Copper Prospect	Granodiorite that is in contact with a serpentinized peridotite		silicification and argilization	Ore assay: 1.34%Cu, 1.71%Pb, 9.0-18.0g/t Au, 22g/t Ag				BI-1
cn202	The Bessemer Pit Area	metamorphosed sedimentary (Universal formation) and volcanic rocks(Larap Volcanics), and intrusive dikes and sills of diorite		skarnization and silicification	mineable reserve in property is 24.5 million dry metric tons of ores; average grade is 0.38%Cu, 0.034%Mo, 12.0%Fe. Spot-check samples: 0.12-1.44%Cu, 0.002-0.042%Mo		Philippine Iron Mines, Inc.		CN-2
cn203	Tamisan Mine (Exciban, Labo)	Universal Formation(calcareous siltstone, andesite tuff-breccia), diorite							CN-4
cn204	Nalesbitan lode Au deposit	Pliocene andesitic volcanic rocks transected by a northwest striking, steeply west dipping, sinistral strike-slip fault zone, oldest to youngest: marine sediment, dacitic agglomerate, basaltic andesite, andesitic agglomerate and tuff(gold mineralization occurs), feldspar crystal tuff(post silicification and mineralization)(CN-20)		advanced argillic alteration (quartz, kaolinite, alunite, sericite, diaspore, illite), trending NW-SE	5 million tonnes averaging 5.5ppm Au is estimated ; Au,As,Cu,Mo,Sb anomaly in soil samples; assay results of rock samples taken from mineralized exposures: 0.401-4.427 g/t Au, wall rock: 0.412-1.329 g/t Au	Gold Fields Asia Limited first recognized Nalesbitan's bulk-mineable Au potential in 1975 and from 1985 detailed survey were undertaken	Gold Fields Asia Limited	containing a minimum of about 15 tonnes of Au; fluid inclusion temperature 223-255℃	CN-5,CN-7,CN-20
cn205	Paramal, Luklukan Norte	Paracale Granodiorite(gneissose body, W-NW trend pre-cretaceous), Ultramafic rocks(serpentinized harzburgite, in thrust with the Paracale granodiorite, cretaceous), schists(talc-chlorite schist)		alteration away from the quartz veins are narrow. Quartz, calcite, illite, plagioclase				small scale miner	CN-6
cn206	Sta. Elena	Universal Formation(massive gritty wackes), dacitic porphyry		silicification, chlorite, pyrite, smectite, smectite–illite layered and mixed chlorite–illite	a sample shows 154.5g/t Au, 14g/t Ag, 0.11% Pb, 1.77% Zn, 0.08% Cu			small scale miner	CN-6
cn207	Tigi	Universal Formation(interbedded wackes, siltstone, mudstone), dacitic porphyry, andesite porphyry/diorite		the vein material is quartz with associated barite, illite, chlorite	assay values showed 0.25-1.15g/t Au, and 2-26g/t Ag			small scale miner	CN-6
cn208	Sitio Maligaya, San Isidro	Universal Formation(tuffyite rock unit), dacitic porphyry		alteration is confined within a few meters of the fracture system, quartz, K-feldspar and illite	assay values showed 7.54g/t Au, and 5-14g/t Ag, trace unit of Cu and Pb and minor Zn(0.95%)			small scale miner	CN-6
cn209	San Antonio	Granodiorite that is in contact with a serpentinized peridotite		silicification, argillization(white clay minerals)	assay results, trace-0.343 g/t Au, 1.714-3.377 g/t Ag		Mr. Basilio G. Villo	CN-51 is describing the prospect adjacent to	CN-18, CN-5, CN-70
cn210	Malaguit	the granodiorite and the serpentinized peridotite		argillization and silicification in the granodiorite, serpentinization and chloritization in the peridotite	assay results, 0.343-6.857 g/t Au, 0.343-85.718 g/t Ag	1934-1941 drilling, tunneling, cross-cuts by Marsman & Company, United Paracale Mining Company; 1953-1953 rehabilitation, development; 1970-1973 partial rehabilitation of mine workings; 1975 operating agreement between United Paracale Mining Company and Metals Exploration Asia; 1980-1981 pre-production activities by Philippine Eagle Mines, Inc.	Marsman & Company, United Paracale Mining Company		CN-22
cn211	Calaburnay	metamorphosed sedimentary, metavolcanics and hornblende diorite. the ore bodies all occur in the metamorphosed sediments and volcanics			assay results, 56.27-67.12% of iron contents		Calbun-Paracale Mining Company		CN-24
cn212	Mt. Magkasing	metamorphosed sedimentary, metavolcanics and hornblende diorite. the ore bodies all occur in the metamorphosed sediments and volcanics			assay results, 56.27-67.12% of iron contents		Calbun Paracale Mining Company		CN-24
cn213	Tigbinan Manganese Deposit						Fary Miners Company, Inc.		CN-27

Table 1-2 The mines, prospects, and occurrences of mineral resources in the Bicol Area registered through this survey

Permit ID	Prospect	Location	Main commodities	Type of ore deposit	Settings and features	Form and dimension	Ore minerals	Gangue minerals
cn214	Sureta	North of Malaguit, Jose Panganiban	Fe	a gangue in altered volcanic rock	limonite-coating ranges in from half centimeters to 10 centimeters		limonite	
cn215	Kabiano	North of Malaguit, Jose Panganiban	Cu	copper bearing silicified lagoons along a fault zone	the fault trends N50W		chalcopyrite and pyrite	
cn216	Tigbinan Group	Upper Tigbinan river	Fe	lenticular and granular hematite ore bodies		lenticular, irregular range in width from 0.20 to 1.0 meters	specular hematite with small amounts of magnetite and pyrite	
cn217	Nagangasan Group	4 km south of Paracale	Fe		a limonite body in one meter wide trends N50E dips about 70SE		limonite, magnetite	
cn218	Calabumay prospect, Tico Fe	Calabumay, east of Malaguit river	Fe	oxidation of pyrite and magnetite	many veins are parallel and trending N45E dipping steeply to SE	vein or veinlet	limonite, magnetite, pyrite	
cn219	Tabas prospect	Tabas hill, upper of Tabas river	Fe			one ore body is one meter in width	limonite, magnetite	
cn220	Nagangasan/Pinagtunggalan prospect	near bank of Nagangasan creek, south of Paracale	Fe	replaced wall rock material	N50E, vertical	the ore body is about 20 meters wide	magnetite	
cn221	San Felipe Mines	about 4 km south of Paracale	Fe	replaced andesite/dacite fairy wall rock	trends N40E, and dips 30SE which is parallel to the bedding of the wall rock	tabular, 10 meters thick and exposed for about 20 meters nearly along the strike	magnetite	
cn222	Sibmalio prospect (Sian prospect, Era Prospect)	two and half kilometers south southeast of the village of Binit Labo, 14°12'30"N to 14°13'30"N and 122°40'30"E to 122°44'30"E	Cu, Pb, Zn, Fe, Mo, Mn	not mentioned but vein type?			chalcopyrite, sphalerite, quartz, limonite, associated with grossular pyrite	
cn223	Malaguit prospect	Barrio Malaguit, Municipality of Capalonga, 14°12'N, 122°30'E	Fe, Cu	pyrometasomatic replacement type	controlled by a series of north northwest trending faults	one outcrop is followed for 300 meters along its strike	hematite, magnetite, pyrite, chalcopyrite with minor bornite, chalcocite, specular hematite	
cn224	Luis and Pulang Fe mining claims	WNW slope of Mt. Bagacay, 14°15'N, 122°50'	Fe	pyrometasomatic replacement type	controlled by tension fractures trend N-S	lenses or tabular, the largest exposure measures 1.0 meter wide, trends N10E and dips 50 NW	hematite, magnetite, pyrite, pyrrhotite	
cn225	La Suerte Mine	1.5 km east of Jose Panganiban, 14°18.5'N to 14°18'N and 122°42'E to 122°43'E within the area 14°15'30"N to 14°18'35"N and 122°40'30"E to 122°45'10"E	Au, Cu	vein type	trend north to northeasterly and dip steeply	vein	pyrite, chalcopyrite, galena, sphalerite, covellite and gold and silver as fine disseminations	quartz with hematite and limonite
cn226	Labing prospect	Labing, Paracale, 14°16'N to 14°17'N and 122°46'E to 122°51'E	Au, Ag, Cu, Pb, Zn	vein type	mineralization is controlled by north to northeast trending faults	vein	pyrite, galena, sphalerite	quartz
cn227	Culasi	Barrio Cass, Mercedes, 13°55'22"N and 123°04'30"E accessible through the logging trail to Mananapo Creek	S, Kao (Hg?)	hydrothermal alteration	sulphur bearing mass stands out as a narrow NW trending spur and is approximately 1,000 meters length and 100 meters width	disseminations		
cn228	Exciban lode mineral claim	Barrio Exciban, Labo, 14°11'30"N to 14°13'00"N and 122°38'30"E to 122°39'30"E	Au, Ag	vein type, hydrothermal	tension fractures show no preferred orientation while numerous fault could be observed running in NW and NE	vein, up to several tens centimeters wide		quartz, pyrite
cn229	Golden (including Gem)	Malaguit River, 3 km south of Paracale bounded by approximately 14°15'20"N and 122°44'55"E to 122°47'30"E	Au	vein and placer		vein		
cn230	Oleum Mine	northwestern part of the Paracale Jose Panganiban Mining District	Au	mesothermal and epithermal gold deposit	northeast trend	vein		quartz, pyrite, quartz-sphalerite-chalcopyrite-galena
cn231		Pinc Nemulanan, Barrio Dagult, Labo, 14°11'N and 122°41'E	Ls					
cn232	Mangkol deposit	within the mineral claims bounded by 13°59'N to 14°02'N and 122°57'E to 123°30'E	Dia					
cn233	Bobod deposit	within the mineral claims bounded by 13°59'N to 14°02'N and 122°57'E to 123°30'E	Dia					
cn234	Mocong deposit	within the mineral claims bounded by 13°59'N to 14°02'N and 122°57'E to 123°30'E	Dia					
cn235	Mempil deposit	within the mineral claims bounded by 13°59'N to 14°02'N and 122°57'E to 123°30'E	Dia					
cn236	Panusukan deposit	within the mineral claims bounded by 13°59'N to 14°02'N and 122°57'E to 123°30'E	Dia					
cn237	Dawayan area, Dawahan (Panaroo Mine?)	14°16.5'N, 122°40.5'E, 14°15'30"N to 14°17'00"N and 122°40'00"E to 122°41'30"E	Cu, Fe, Mo	pyrometasomatic replacement type	controlled partly by lithology and partly by structure			
cn238	Capacuan area	14°15'N, 122°42'E, 14°15'00"N to 14°15'30"N and 122°42'30"E to 122°43'30"E	Fe	pyrometasomatic replacement type			hematite with minor magnetite	
cn239	Pinagbirayan area	14°14.5'N, 122°46'E 14°13'00"N to 14°14'00"N and 122°46'15"E to 122°47'00"E	Fe	pyrometasomatic replacement type	controlled partly by lithology and partly by structure			
cn240	Bessemer Pit Mine	immediately south of the main pit (BUSSAR), Larap, Jose Panganiban	Fe, Cu	pyrometasomatic replacement type	controlled partly by calcareous lithology and partly by structure such as faults, folds and shear joints, and concentration of values are present along the contact between the meta-volcanic and meta-sedimentary rocks	tabular, horizontal along bedding, 1,500 feet extent in strike with 500 feet thick	chalcopyrite, molybdenite with subordinate amounts of magnetite, pyrite and probably gold	
cn241	Togue group of claims	Bo. Togue, 1km west southwest of Paracale town proper, 14°18'20"N, 122°46'45"E	Au	vein type	controlled by high tensional fractures, angle faults and shear zones	vein, 250m long and 1.5m wide at surface		quartz
cn242	Gervacio prospect	headwaters of Masay Creek, 5km west southwest of Labo town, bounded by 14°05'N to 14°05'N and 122°46'E to 122°47'30"E	Au	might be stem related to intrusion of diorite				
cn243	RDRLNR No.1 mineral claim	approximately 1.5 kilometers north of Jose Panganiban town proper	Kao	might be supergene of hydrothermal mineralization				quartz & Cu pyrite [illegible] galena and sphalerite possibly
cn244	WPIPI	approximately 3 km west of Barrio Culasi, Mercedes, 13°56'05"N and 123°03'10"E	S		occurs as crystalline in filling in the rock fractures and as absorbed grains on the andesite		crystalline native sulphur	
cn245	Tuaca	5km east of Barrio Tuaca, which in turn is 15km south of Basud	Cly			stratiform, 30cm of white clay, 150m long along the strike		
cn246	Malanlang		Cu	porphyry copper				
cn247	Pangona North		Au	vein				
cn248	Ipong Mine		Cu	porphyry copper				
cn249	Bulawan Creek Mine		Au	vein				
cn250	Mayoncayan Mine		Cu	porphyry copper				
cn252	Taglunaran	Barrio Santa Cecilia and Mahinta, Tagkawayan, 13°58'30"N to 13°59'30"N and 122°31'00"E to 122°32'30"E	S, (bull quartz)	late injection of hot silicate melt squeezed from a solidifying magma	quartz veins in diorite lack banding	vein		
cs1		Cauyan, near 305m peak, ESE of Tinalmud	Au					
cs2	Tinalmud, Pasacao	Bolleya, W of Mt. Cagubang, ESE of Tinalmud, 13°34'30"N, 122°54'00"E	Cu	vein-type, boxwork type, disseminated type	shear zone trending N50°W with steep dips, N25°E fault localizes a vein. And also within conjugate system of shears and fractures	Outcrop of quartz vein in shear zone, 5m wide and 50m long. N25°E quartz vein 2m wide, 7m high and 21m long	quartz vein contains pyrite(marcasite) with chalcopyrite, limonite staining, stains of malachite	quartz, calcite
cs3		Hamurao, beside Segadile River, N of Baleten	Cu					
cs4	Nabua, St-1	Camagahan, Baleten (13°20'N, 123°15'E)	Cu	vein-type, stockwork type and disseminated type	Numerous faults with right lateral displacements NE and NW. Specifically N40°W, 50°NE		chalcopyrite, bornite, malachite	quartz, kaolinite
cs5		Sagnay	Fe					
cs6		San Miguel, N of Sagnay	Fe					
cs7	Malabugao	Eastern Mt. Isarog, W of Tigaon	Mn					
cs8	Guilbon, Siruma	Southern Siruma Bay, W of Sursan	Mn					
cs9	Bani	E of Bani, N of Looc River	Mn					
cs10		Cafnogan, W of Looc River	Mn					
cs11	Pantat	Upper Cogonan Creek, NW of Cogonan	Fe					
cs12	Mapid	SW of Cogonan	Fe					
cs13		SW of Cogonan	Fe					
cs14	San Vicente, Maslog	Upper Sayang River, E of Kalilog	Cu					
cs15		Upper Sayang River, E of Buenavista	Mn					
cs16	Tinambac	N of Tinambac, Upper Apagon River, E of Union	Fe					
cs17		Upper Guinalagan River, near junction of Tibgas Creek, S of Mt. Sugutan	Cr					
cs18		Upper Guinalagan River, near junction of Tibgas Creek, S of Mt. Sugutan	Ni					
cs19		Western Mt. Pulaney	Fe(Ni)					
cs20	Mayon Mine	Upper Casilaonan River, Calinigan Mountain, Mayon Mine	Cr					
cs21	Mt. Pulaney	Mt. Pulaney	Cr					
cs22		Upper Guinalagan River, eastern Mt. Pulaney	Cr					
cs23		Upper Spaco River, Southern Mt. Pulaney	Mn					
cs24		Upper Spaco River, [illegible]	Cu					
cs25	Cagnosan	NE of Lagonoy, beside Dalhogan Creek	Mn					
cs26		Upper Spaco River, on the central mountain chain of Caramoan Peninsula near 702m peak	Pb					
cs27		Upper Dalhogan Creek	Ag					
cs28	Del Pilar	S of Bahi, Upper Bahi River, on the central mountain chain of Caramoan Peninsula near 563m peak	Mn					
cs29		On the watershed of Dalhogan Creek and Salog River between 573m peak and 452m peak	Au					
cs30	Maugnes	Maugnes	Cu					
cs31	Magne Loma	Upper Salog River, S of Garchitorena	Pb					
cs32		Upper Panasoan Creek on the central mountain chain of Caramoan Peninsula	Cu					
cs33		Eastern Calinigan Mountains near 722m peak, on the central mountain chain of Caramoan Peninsula, Upper Pili River	Cu					
cs34	Naiba Cupriferous Pyrite Deposit	Sitio Naiba, San Jose, Caramoan, E of Poloan, Upper Tabgon River(123°47'30"E, 13°47'30"N)	Cu	Mineralization occurs as veins localized along a fault	Fault trending N70°W, 30° to 70° dips	Zone of mineralization 3 to 20 ft wide, far over one km long	pyrite, chalcopyrite, Zoning - from surface characterized - highly limonitic gossan to massive hard fine-grained pyrite to chalcopyrites	quartz, limonitic gossan characterize the surface
cs35		Upper Tabgon River, S of Poloan, on the central mountain chain of Caramoan Peninsula, near 468m peak	Zn					
cs36	Putiag-Belen	Upper Oroocsoc River, S of Poloan, on the central mountain chain of Caramoan Peninsula, S of 466m peak	Cu					
cs37	Pili-Pagsangahan, Panibuan	[illegible]	Cu					
cs38	Mataibo	Upper Manapot River, NE of Triple Peak	Cu					
cs39	Pandanan	Upper Manapot River, W of Salvacion	Fe					
cs40	Panimon	Oroc-Oroc, S of Bikal	Mn					
cs41	Salvacion, Caramoan	Minas, W of Guijalo	Mn					
cs42	Lahuy Is.	Lahuy Island, S of Gaogan	Au					
cs43		Lahuy Island, N of Gata	Ag					
cs44	Pagao Lahuy, Treasure island	Gata, Lahuy Island, Caramoan, 13°54'50"N to 13°56'00"N and 123°48'30"E to 123°49'30"E	Au		some parallel veins within the bedding plane of sedimentary rock trend N40W and dip steeping to the southwest, and the other one in silicified andesite trends northwest - southwest and dips 40 to 30 to the north			quartz, chalcopyrite, pyrite, amethyst
cs101		San Juan, E of Del Gallego	Bnt					
cs102		Sinuknipan, E of Del Gallego	Bnt					
cs103	Libobo, Pagay	Cali, S of Pagay	Cly					
cs104		Casay, N of Del Rosario	Cly					
cs105		Sabgon, S of Bango	Grp					
cs106		Bangon, SE of Bango	Grp					
cs107		Lubigan, SW of Sipocot	Grp					
cs108	Sigamot, Libmanan	Bumbod, S of Sipocot	Grp					
cs109	Bical, Libmanan	Canaluang, S of Sipocot	LS					
cs110		NE of Mambalo, E of Parandanan	Grp					
cs111	Pay-gay, Libmanan	SW of Palong, S of Sipocot	Grp					

Table 1-2 The mines, prospects, and occurrences of mineral resources in the Bicol Area registered through this survey

Prospect ID	Prospect	Geology (host rocks and related igneous rocks)	Dating data	Alteration	Geochemical data	Historical circumstances	Owner	Note	References
cn214	Sorda				ore coating contains 40.75% iron				CN 28
cn215	Kili-ala	andesite			a sample contains 4.97% of copper, trace of gold and 22.0g/t of silver				CN 28
cn216	Tigbinan Group	meta volcanic rocks and intercalated with meta sedimentary rocks and these are overlain by shale			a sample from outcrop contains 84.40% of iron				CN 29
cn217	Nagaganan Group	intercalated meta volcanic rocks and meta sedimentary rocks and a skarn phase of the rocks is observed			a sample from outcrop contains 47.30% of iron				CN 29
cn218	Calambayungan prospect, Tres Fe				a sample taken from piles contains 51.14% iron and a limonite rich sample taken from test pit contains 43.30% iron				CN 30
cn219	Talisay prospect				chip samples contain from 51.01% to 56.51% iron				CN 30
cn220	Nag-angkan Pinagbayan prospect				chip samples contain up to 59.18% iron and 14.35% sulphur				CN 30, CN 55
cn221	San Felipe Mines	altered metasedimentary rock			one grab sample contains 52.83% iron and 1.96% sulphur		Ores Inc.		CN 30
cn222	Sabitan prospect (Star prospect, Era Prospect)	andesite and dacite as tuff		pyritization and argillic alteration and possible sericitic alteration	not sufficient in grade		Philippine Iron Mining Inc		CN 31, CN 83, CN 94
cn223	Malaque prospect	volcanic rocks, most probably altered andesite, and dacite			the samples taken from one outcrop show assay values varying from 3.3% to 5% of copper, some samples show value varies from 0.11% to 0.50%		the parts of the prospect are owned by Century Iron Mines Company Inc.		CN 35, CN 36, CN 38, CN 84
cn224	Cue and Paring Fe mining claim	metavolcanic-metasedimentary rock		argillic alteration	up to 15.5 oz/t of gold				CN 37
cn225	La Suerte Mine	granodiorite and/or the contact with the ultramafic rocks			15 rock chip samples show the value ranging between trace and 33.50g/t gold and between under detection limit and 64.30g/t silver	La Suerte Resources and Industries, Inc. and the company executed an Assignment of Operating Agreement with Capani Consolidated Mining Company around 1976	Benguet Corporation in 1969		CN 40, CN 81, CN 55
cn226	Labnig prospect	granodiorite		alteration minerals in one quartz vein consist of quartz, mica, feldspars and kaolinite with minor amounts of dolomite, calcite, gypsum, anhydrite and mixed-layer clay minerals	ten samples taken from old working show value varies from 0.5 to 8.0 g/t of gold		Golden Rock Mines, Inc. in 1975		CN 43
cn227	Cubai	altered biotite dacite domes are situated near the prospect			the value of altered rocks varies from 0.68% to 33.29% sulphur, from 24 to 45ppm of copper, from 48 to 73ppm of zinc and is under the detection limit of mercury			Hg mineralization was formerly reported but it never found and it believed to be oxidized and hydration of pyritic material	CN 44
cn216	Escober lode mineral claim	volcanic rocks that consist of andesite flows intercalated with basalt and tuff adjacent to intrusive bodies of diorite		pyritization and silicification	samples taken from old working and outcrops show value up to 15g/t of gold and 29.0g/t of silver		Mr. Jose Robles in 1981		CN 49, CN 54
cn229	Golden (Sulfiding Dam)	granodiorite (Paracale granodiorite)			57,588,330 cubic meters of reserve is estimated		Golden River Mines, Inc. in 1977		CN-50
cn230	Clecram Mine	granodiorite stock (Paracale granodiorite)					Clecram Mining Corporation	homogenization temperatures to fluids inclusions in quartz indicate deposition troughout the vein systems in the range 190°C to 230°C	CN-53
cn231							Mr. Vincente S. Raneses in 1973		CN-56
cn232	Mangilal deposit								CN-57
cn233	Bolbol deposit								CN-57
cn234	Mocong deposit								CN-57
cn235	Mampili deposit								CN-57
cn236	Pamolotan deposit								CN-57
cn237	Cawayan area, Dewahan (Panarco Mine?)	sedimentary rock, volcanic rock, diorite			geologic ore reserves of 4,572,445 metric tons are averaging 0.23% copper, 0.02% molybden and 17.35% of iron in study in 1978		Peninsula Natural Resources Corporation in 1976, Philippine Iron Mining, Inc. in 1979		CN-58, CN-83
cn238	Capacuan area	sedimentary rock, volcanic rock, diorite			iron ore reserves of 2,300,000 metric tons averaging 48% Fe was estimated based on DDHs		Peninsula Natural Resources Corporation in 1976, Philippine Iron Mining, Inc. in 1979		CN-58, CN-83, CN-93
cn239	Pinagbinayan area	sedimentary rock, volcanic rock, diorite					Peninsula Natural Resources Corporation in 1976, Philippine Iron Mining, Inc. in 1979		CN-58, CN-83
cn240	Bessemer Pit Area	meta-sedimentary rocks		hydrothermal alteration	approximately 96.5 million metric tons, averaging 0.135% copper and 0.0206% molybdenum were calculated as the geologic reserve		The Philippine Iron Mines, Inc.		CN-59
cn241	Togas group of claims	granodiorite within ultra basic rocks			up to 2.5g/t gold and up to 7.5g/t silver for 8 rock chip samples, up to 82g/t gold and up to 463g/t silver for 11 samples for another survey				CN-63, CN-73
cn242	Genacio prospect	lower Miocene sedimentary sequence consist of conglomerates, sandstones, shale and limestones and diorites are distributed			selected soil and rock chip samples contain gold up to 20.57g/t				CN-66
cn243	ROPENR No.1 mineral claim	pyroxene peridotite, serpentinite, chlorite schist and granodiorite		silicification, kaolinization, pyritization and chloritization, quartz veinning					CN-72
cn244	WPPI	the area is underlain by the andesite portion of the Labo Volcanics and possibly basement might be exposed somewhere		argillization with minor silicification and pyritization	approximately 20,231 tons of ore	Yellow Resources Mining Company exploited the area when they were still operating in the area			CN-62
cn245	Tuaca	underlain by 50cm of carbonaceous shale							CS-4
cn246	Matanlang	andesite							UN
cn247	Pangono North								UN
cn248	Igang Mine								UN
cn249	Bulawan Creek Mine								UN
cn250	Maycawayan Mine								UN
cn252	Tagkawayan	quartz diorite			very high amount of silica, around 96%, and low amount of alumina and iron oxide		Bespena Mining Co.		CS-38
cs1									MGB
cs2	Tinalmud, Pasacao	Altered porphyritic andesitic volcanic rocks intruded by hornblende diorite		silicification, pyritization	0.47% copper				PH-16,MGB BI-1, CS-09, CS-43
cs3									MGB
cs4	Nabua, BI-1	Diorite and metamorphosed andesite		silicification, kaolinization, propylitization	0.93%Cu(N40°W 50°N Vein, 0.20m wide and 40m along its strike)				PH-16
cs5									PH-16 MGB
cs6									PH-16,MGB
cs7	Malaligno								PH-16
cs8	Guilaon, Sirama								PH-16
cs9	Baro								PH-16
cs10									PH-16 MGB
cs11	Pantal								PH-16
cs12	Mapid								PH-16
cs13									MGB
cs14	San Vicente, Maslog								PH-16
cs15									PH-16,MGB
cs16	Tinambac								PH-16 MGB
cs17									PH-16
cs18									PH-16
cs19									PH-16
cs20	Mayon Mine								PH-16
cs21	Mt. Pulaney								PH-16
cs22									MGB
cs23									PH-16 MGB
cs24									PH-16,MGB
cs25	Cagacan								PH-16
cs26									PH-16,MGB
cs27									PH-16,MGB
cs28	Del Pilar								PH-16 MGB
cs29									PH-16 MGB
cs30	Maogmas								PH-16
cs31	Magna Lima								PH-16 MGB
cs32									MGB
cs33									PH-16,MGB
cs34	Nalbo Cupriferous Pyrite Deposit	Sandstone in the gangue rock associated with pyrite and chalcopyrite		Silicification	Cu 6-10.48%				MGB, BI-I
cs35									PH-16,MGB
cs36	Polog-Balen								PH-16
cs37	Pili-Pagsangahan, Panubcan								PH-16
cs38	Malaiba								PH-16
cs39	Pandanan								PH-16
cs40	Paniman								PH-16
cs41	Salvacion, Caramoan								PH-16
cs42	Lahuy Is.								PH-16
cs43									PH-16 MGB
cs44	Rajah Lahuy, Treasure island	andesitic volcanic flows, sedimentary rocks		silicification, pyritization	up to 26.53g/t of gold and up to 37.00g/t of silver		Rajah Lahuy Mining Company		MGB, CS-28, CS-31
cs101									PH-16,MGB
cs102									PH-16 MGB
cs103	Libobo, Pagay								PH-16 MGB
cs104									PH-16 MGB
cs105									MGB
cs106									PH-16
cs107									MGB
cs108	Sagrada, Libmanan								PH-16
cs109	Bical, Libmanan								PH-16,MGB
cs110									PH-16 MGB
cs111	Pag-gay, Libmanan								PH-16 MGB

Table 1-2 The mines, prospects, and occurrences of mineral resources in the Bicol Area registered through this survey

Registered ID	Project	Location	Main commodities	Type of ore deposit	Geological features	Form and dimension	Ore minerals	Gangue minerals
cs112		E of Sabingan, NW of Mt. Bernacia	Ls					
cs113		Northern Mt. Bernacia	Grp					
cs114		Tagbac, SW of Mt. Bernacia	Ls					
cs115		Caliguan, Eastern Mt. Caguiling, E of Tinambac	Grp					
cs116		Sumacabang, near Tarasan	Ls					
cs117		Manao, beside Caramoan River, NW of Pasacao	Grp					
cs118		Alupang, beside Caramoan River, NW of Pasacao	Grp					
cs119		SW of Pili	Grp					
cs120		Magadap, SW of Pili	Grp					
cs121		NW of Sabingan, E of Pasacao	Ls					
cs122	Caraan	Carrol Balan, SSW of Pili	Gyp		fine grained massive lense and the stringer trends N40-50W and dips 45-70 NE		gypsum	pyrite
cs123	Balatan Bula	Buribod, beside Tagnon River, N of Balatan, 13°22'N and 123°13'E	Gyp					
cs124		Causawan, N of Balatan	Ls					
cs125	Arayo Agdangan Bula	Arayan, SE of Pili	Ls					
cs126		E of Baao	Per					
cs127		Western Mt. Vizcaya, N of Iriga City	Per					
cs128		Western Mt. Vizcaya, N of Iriga City	Per					
cs129		South western Mt. Vizcaya, NW of Iriga City	Per					
cs130	Sibobo	Tigman, beside Tigman River, S of Sagnay	Cly					
cs131	Pursima-San Vicente	Barrio Pursima, Siruma and San Vicente, Tinambac, Upper Buang Creek, S of Tandoc	Wcly	replacement by acid hydrothermal water	along west - northwest direction controlled by structural control		fine quartz and clay	
cs132	Bahac-Pundado	Upper Daloh River, between Barrios Bahac and Pundado	Wcly		along a N10E direction	10m wide, 22m long, 1/2 to 2m thick		
cs133	Vito	Upper Colibio River, 4.5 kilometers northeast of Vito	Wcly (Pyrophyllite)					
cs134		Manamoc, beside Lagonoy River	Mbl					
cs135	Lagonoy	N of Omalo, S of 569m peak, W of BURABID	Mbl					
cs136		N of Maagnas, Southern Calinigan Mountains	Mbl					
cs137	Bigtos	Upper Gupangbang River	Py					
cs138	Malan	Calinigan Mountains, Upper Gupangbang River	Py					
cs139		Southwestern Calinigan Mountains, N of Agnao	Mbl					
cs140		NE of Paracan, Upper Pili River	Mbl					
cs141		SW of Bifuf	Grp					
cs142	San Sebastian-Bulalacao	Gujalo	Mbl					
cs143	Linang Panman	ENE of Caramoan	Ls					
cs144	Panman	E of Caramoan	Grp					
cs145		NE of Gujalo	Ls					
cs146		Palog, W of Cabaugnan	Fcly					
cs147		SW of Cabaugnan	Fcly					
cs148		Lahuy Island, S of Gaogan	S					
cs149		Lahuy Island, Oring						
cs150	Mt. Isarog Goa	Upper Malicon River, northeastern slope of Mt. Isarog, west of Goa, 13°41'N and 123°24'E	S	sublimation deposit	filly cracks and/or crevages of rocks			
cs200	Bani Manganese Deposit	Malobago-Mayacan, Bani, Tinambac	Mn		tabular bodies made up mostly of psilomelane and some pyrolusite lying within a sequence of metavolcanic and meta-tuffbreccias sedimentary rocks with associated chert	horizontal along the strata		
cs201	(Northern Palog-Belen)	Barrio Palog-Belen, 7 kilometers west of Caramoan town proper, 13°48'N and 123°48'E	Cu	massive sulphide, replacement	the outcrops contain unreplaced host rock, strikes N50W and dips 45NE, and defined by sharp wall rocks	massive lense, 2.0 meters thick	chalcopyrite	
cs202		between Barrios Pundad and San Vicente, Siruma and Tinambac respectively, 14°30'N and 123°20'E	Wcly		the outcrops have quartz veinlets			
cs203	Tinalmud I	Barrio Tinalmud, 30km south of Naga city	Cu		[illegible]		chalcopyrite?	sulphides
cs204	Tinalmud II	Barrio Tinalmud, 30km south of Naga city	Cu		[illegible]		chalcopyrite?	sulphides
cs205	Tinalmud III	Barrio Tinalmud, 30km south of Naga city	Cu		[illegible]			sulphides
cs206	Tinalmud IV	Barrio Tinalmud, 30km south of Naga city	Cu		[illegible]			sulphides
cs207	Sinamag deposit, and so on	southwest of Cabanbanan barrio site, Balatan	Gyp	supergene or mixing of carbonate rich-ground water and sulfurous water related to hot spring activity	fissure filling of faults and joints trend generally N45W and dip steeply but irregular	fissure filling, from few inches to 2 feet width of vein	gypsum	pyrite, anhydrite
cs208	Caorasan deposit	Barrio Caorasan, Nabua	Gyp	supergene	trending N10E and dipping 15-30NW	fissure filling, 3 feet wide zone of ore and 10 meters wide zone of mineralization		pyrite
cs209	Landicho	Barrio Tabion Munti, western base of Mt. Labo, 7km northeast of del Gallego, 13°57'N to 13°57.5'N and 122°38'E to 122°38.5'E	Cly	hydrothermal		lenticular		
cs210	Lagunoy (Lagonoy), Himagtucon (Himagtocon)	Barrio Himagtukon, Lagunoy, the area is bounded in the north by Tinablan River and at the south by headwaters of Tambang River	Cr, Ni	magmatic, secondary enrichment	Ni is in lateritic soil		chromite	
cs211	Bambanon	Sitio Bambanon, Barrio Liboro, Ragay, south base of Mt. Labo	Cly	sedimentary ?	parallel beds striking N55W and dipping 15NE, narrow lenses that wedge out along periphery of the basin	stratiform, approximately 5 meters thick		
cs212	Kuquinon	Sitio Kuquinon, Barrio Liboro, Ragay, south base of Mt. Labo	Cly	sedimentary ?	narrow lenses that wedge out along periphery of the basin	stratiform		
cs213	Victoria (Sta. Rita)	Barrio Sinuknipan, western base of Mt. Labo, 7km northeast of del Gallego, 13°56'30"N to 13°57'00"N and 122°38'45"E to 122°39'15"E	Cly	hydrothermal and weathering			kaolinite, crystobalite and smectite	
cs214		one hour walk from San Vicente, Siruma area, 13°58'30"N to 13°59'00"N and 123°18'00"E to 123°18'30"E	Wcly		bull-quartz occurs as vein fillings in the country rock		siliceous white clay	
cs215	Ernesto S. Altamira	Barrio Bulalacao, southern portion of Caramoan Peninsula fronting Lagonoy Gulf, 13°42'00"N to 13°43'00"N and 123°46'30"E to 123°47'00"E	Cu, Au	porphyry Cu-Au?			copper oxide, copper sulphide	
cs216	Rawigo	east of Barrio Maquiqway and north of Barrio Bagong Silang, Del Gallego, 13°58'00"N to 14°00'00"N and 122°38'30"E to 122°44'00"E	Cu, Au	hydrothermal vein, hot spring	mineralized quartz veins is trending generally NE with steep dips and some are situated in shear zone	quartz vein occurs up to 10cm thick while alteration zone pyrite disseminated occurs up to 20m wide	chalcopyrite, bornite, marcasite	quartz
cs218	Omon	Sitio Tailong Pareng, Omon, Ragay, seashore about 13.5km west of Ragay town proper	Fe	vein	N25E, 70SE and N15W, 50SW and those are oblique to the general trend of schistosity and the shear zones	vein, 1.5m thick	specular hematite	
al1		NE of Macabugos, Upper Macabugos River	Cu					
al2		Cagumaos, N of Panbac	Cr					
al3		Canaman, SW of Manito	Fe					
al4		Rapu Rapu Island, S of Morocborocan	Ni					
al5		Rapu Rapu Island, E of RAPU-RAPU, Western Mount Rapu Rapu	Ag					
al6	Dupont-Champion	Rapu Rapu Island, Agogo-Buenavista	Cu					
al7		Rapu Rapu Island, WNW of Sinosawan, SW of Tallsay Point	Au					
al8	BCI volcanogenic sulphide deposit	Rapu Rapu Island, Sinosawan, barrio Pagcolbon, N of barrio Malobago (124°12'27"E, 13°10'40"N)	Cu, Au, Ag, Zn, Pb	Besshi type (bedded cupriferous iron sulfide deposit)	large anticline or anticlinorium with crenulations of drag-fold nature, within these subordinate crenulations where the sulphide deposits occur, the foliation of the schists strikes N40W	stratiform, BCI orebody is thin, 10-20m wide, about 150m from the top to bottom, and exposed 300m in the tunnel	Pyrite, Chalcopyrite, Covellite, Tetrahedrite, Bornite, Sphalerite	
al9	Hixbar Mine	Rapu Rapu Island, N of Karogkug, Eastern Mount Rapu Rapu	Cu	Besshi type, secondary copper enrichment	the ore occurs along fairly-plunging drag folds near the footwall of a band of quartz-sericite schist	stratiform, 60 meters in thickness	primary copper sulphide and oxide copper	pyrite
al101		E of Apud, NE of Nagas, Upper Rawis River	Grp					
al102	Nagas, Cas	E of Nagas, Upper Nagas River	Grp					
al103		Tabgon, W of San Vicente	Gyp					
al104		SW of Guinobatan	Grp					
al105		NE of Jovellar, beside Taladong River	Ls					
al106		ESE of Guinobatan, beside Tagaytay River	Ls					
al107	Baao	S of Legaspi City, E of Jamagon	Per					
al108		S of Legaspi City, W of Maslog	Pum					
al109	Legaspi	Pora, S of Legaspi City	Per					
al110		Sogod, NW of Tiwi	Wcly					
al111		Putsan, Say bay, Puchara, Solo, N of Tiwi	Ccly	Weathering of andesite				
al112		Eastern Mt. Malinao, SW of Tiwi	S		The major fault line is trending northeast		native sulfur associated with pyrite and hydrothermal clay	
al113		Upper watershed area of Malinao River, W of Malinao, Eastern Mt. Malinao	S		The major fault line is trending northeast		native sulfur associated with pyrite and hydrothermal clay	
al114		Northern Cagraray Island, W of Tambilagao	Grp					
al115		Western Batan Island, E of Tinukawan	Grp					
al116		Western Batan Island, Upper Hungo River	Coal					
al117		Western Batan Island, W of Caracaran	Grp					
al118		Central Batan Island, Mount Sibao	Coal					
al119		Central Batan Island, Mount Vizcaya	Coal					
al120		Eastern Batan Island, E of Kalanaga	Coal					
al121		Eastern Batan Island, NE of Batan	Coal					
al201	Calp Au Anomaly	Western Bacon-Manito, Albay	Au	Epi-thermal Gold Deposit	Near Sec Man Fault Zone(E-W strike), 2 sets of dominant fault orientation(N-W trend and NW-SE trend)	"bull" quartz body striking east-west and dipping 55 degrees north	chalcopyrite	"bull" quartz body, quartz silicified rock vein with limonite stain, chalcopyrite-bearing
al202	Apad Cu prospect	Apad, E of Maligan, Albay	Cu			an irregular body of "bull" quartz, three feet thick, which trends northwest southeast	chalcopyrite, bornite	quartz body (chalcopyrite, bornite contained)
al203	Kapulak Cu prospect	Kapulak, E of Macnon, Albay	Cu			2 feet quartz-chalcopyrite vein, which strikes north 60 degrees west and dips 50 degrees northeast	chalcopyrite(spotty)	
al204	Banilad Cu prospect	Sitio Banilad, N of Macnon, Albay	Cu					
al205	Tapil deposit	Sitio Tapil, Oas	Gyp	supergene	information of various occurrences sugests that it is trending north-south	lenticular and mass in pyritic altered zone	gypsum	pyrite
so1	Donsol	Donsol	Fe					
so2		SW of Mantalbong, beside Mantalbong Creek, E of Sawanga	Ag					
so3	Santa Fe Prospect	N of San Bartolome, N of Sta. Magdalena	Fe					
so101		Banuangurang, N of Donsol	Ls					
so102	Pilar-Donsol	W of Abas, N of Pilar, Upper Ogod River	Ls					

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Printed ID	Project	Geology (host rocks and related igneous rocks)	[illegible]	Alteration	Geochemical data	Historical circumstances	Owner	Note	References
cs112									PH-16 MGB
cs113									PH-16 MGB
cs114									PH-16 MGB
cs115									PH-16 MGB
cs116									PH-16 MGB
cs117									MGB
cs118									PH-16
cs119									PH-16 MGB
cs120									PH-16 MGB
cs121									PH-16 MGB
cs122	Cararan								PH-16 MGB
cs123	Balatan Bula	bleached and fractured andesite porphyry while the area underlain by limestone, andesite porphyry quartz due to partly consolidated sediments							PH-16 MGB CS-8
cs124									PH-16 MGB
cs125	Aragan Agtagnan Bula								PH-16
cs126									PH-16
cs127									PH-16 MGB
cs128									MGB
cs129									PH-16 MGB
cs130	Sabe								PH-16
cs131	Purivine-San Vicente	clay deposit area is underline by schist							PH-16 MGB CS-10 CS-11
cs132	Bahao-Fundado	metamorphics consist of quartz sericite and talc-chlorite schists		veinlets, but quartz kaolinization pyritization			Marcelo Steel Corporation in 1971		PH-16 MGB CS-5
cs133	Vilo						Mr. Salva in 1956		PH-16 MGB
cs134									PH-16
cs135	Lagnoy								PH-16 MGB
cs136									PH-16 MGB
cs137	Bugton								PH-16
cs138	Mabon								PH-16
cs139									PH-16 MGB
cs140									PH-16 MGB
cs141									MGB
cs142	San Sebastian-Bulaleuao								PH-16 MGB
cs143	Linang, Panman								PH-16 MGB
cs144	Panman								PH-16 MGB
cs145									PH-16 MGB
cs146									PH-16 MGB
cs147									PH-16 MGB
cs148									PH-16 MGB
cs149									PH-16 MGB
cs150	Mt Isarog, Goa	andesitic volcanic rocks							PH-16, CS-27
cs200	Ben Manganese Deposit	metavolcanic and sedimentary rock							CH-27
cs201	(Northern Palag-Belen)	low-grade chlorite schists and sedimentary rocks		pyritization, silicification			Mrs. Teresita D. Ong in 1971		CS-7
cs202							Pacific Ceramic Manufacturing Company in 1971		CS-8
cs203	Tinalmud I	altered andesitic volcanic rocks		pyritization					CS-9
cs204	Tinalmud II	altered andesitic volcanic rocks		pyritization					CS-9
cs205	Tinalmud III	altered andesitic volcanic rocks		pyritization					CS-9
cs206	Tinalmud IV	altered andesitic volcanic rocks		pyritization					CS-9
cs207	Sirmag deposit and so on	fractured limestone, andesite porphyry, pre-Tertiary meta-volcanics, mainly andesite, intrude by diorite and used be overline by Pliocene limestone, andesite porphyry is the host rock		pyritization		operation of the Sirmag deposit started in 1950 under Gypsum Mining and Manufacturing Company but the mine was no longer in operation in 1951			CS-12, CS-15
cs208	Caunsan deposit	pre-Tertiary meta-volcanics, mainly andesite, intrude by diorite and used be overline by limestone		pyritization		operation started in 1937 under management of Guzman, Flores and Company but terminated at the war			CS-12
cs209	Landicho	quartz diorite dated as Paleogene, meta-sedimentary rocks dated as lower to middle Miocene, tuffaceous sediments, hydrothermally altered Pliocene to Quaternary pyroclastics		silicified, glassy, conoidal, flinty and argilized					CS-16, CS-17
cs210	Lagunoy (Lagancy), Hinagtucon (Hinagtocon)	the area is underline by schist, metavolcanics and metasediments, ultramafic complex, gabbro and andesite			around 50% of chromic oxide, up to 0.21% of Nickel		Delamar Minig Co. Inc. in 1970, Lagunoy Consolidated Mines in 1976, CAN-META Minerals, Inc. in 1978		CS-20, CS-21, CS-24, CS-29, CS-33, CS-41
cs211	Bambanon	biotite andesite, hornblende andesite, graywacke sandstone							CS-22
cs212	Kuqunon	biotite andesite, hornblende andesite, graywacke sandstone			carbonaceous clay				CS-22
cs213	Victoria (Sta. Rita)	the area is underline by shale sandstone, conglomerate, lenses of chert, carbonaceous-clay sedimentary rocks dated Eocene to Miocene and pyroclastics of Mt. Labo		hydrothermal argilization and silicification, and weathering		the operation was terminated in 1984			CS-23, CS-38, CS-43
cs214		the area is generally underline by chlorite schist							CS-25
cs215	Ernesto S. Altamira	the area is underline by cretaceous sedimentary-volcanic sequence intruded by andesite-diorite porphyry supposed to be Eocene to Oligocene		pyritization, silicification, sericitization	sample from oxidized diorite porphyry show the value varies trace to 0.72% copper and 0.1 to 1.2g/t gold				CS-35
cs216	Alawijao	altered andesite pyroclastics, porphyritic andesite		silicification, argilization, pyritization, chloritization (propylitic)	up to 0.11% copper, up to 2.6% Zn	private mining company was exploring the area in 1972			CS-38, CS-43
cs218	Cmon	the area is underline by altered schist intruded by hornblende dike		silicification, chloritization, epidotization					CS-43
al1									PH-16 MGB
al2									PH-16 MGB
al3									PH-16 MGB
al4									MGB
al5									MGB
al6	Dupont-Champion								PH-16 MGB
al7									MGB
al8	BCI volcanogenic sulphide deposit	Mesozoic or older strongly foliated metamorphosed schists, Cretaceous peridotite, Miocene limestone and sandy calcareous tuffs				1961- Exploration(Benguet Co. & Ungay Malobago Mine) 1994- Exploration(Benguet Co. & TVI)	Benguet Corporation	Upper body: 1,850,300t(Cu 1.85%, Au 3.03g/t, Ag 41.46g/t) Lower body: 1,020,300t(Cu 2.93%, Au 3.45g/t, Ag 40.03g/t)	PH-15, PH-20, AL-14, AL-21
al9	Hober Mine	quartz sericite schist			8% of copper from surface to 30m below, and ore reserves were estimated at 729,400 metric ton averaging 2.4% copper and 30% sulphur	the mine was been rehabilitating and developing in 1955 after the operation was interrupted by WWII	Hober Gold Mines, Inc.		PH-16, AL-21
al101									PH-16 MGB
al102	Nagas, Cas								PH-16 MGB
al103									PH-16 MGB
al104									PH-16 MGB
al105									PH-16 MGB
al106									PH-16 MGB
al107	Baao								PH-16 MGB
al108									MGB
al109	Lagonoy								PH-16 MGB
al110									PH-16 MGB
al111		Volcanic flow rocks with some aggromeratic phases		Weathering of andesite					PH-16 MGB AL-8
al112		porphyritic andesite flow and the talus and gravel deposits emplaced in a characteristic alluvial fan							MGB AL-8
al113		porphyritic andesite flow and the talus and gravel deposits emplaced in a characteristic alluvial fan			S 6.38 ~ 10.45%				PH-16 AL-8
al114									PH-16 MGB
al115									PH-16 MGB
al116									PH-16 MGB
al117									PH-16 MGB
al118									PH-16 MGB
al119									PH-16 MGB
al120									PH-16 MGB
al121									PH-16 MGB
al201	Calpi Au Anomaly	the San Lorenzo sedimentary sequence, Pocdol Volcanics and diorite porphyry which is referred to as the Kangas Intrusives		advance argillic alteration, silicification, argillic alteration (alunite-kaolinite-silica-sulfur)	Au 0.15ppm and 0.23ppm from panned soil		PNOC Geothermal Development Area		AL/SR-1
al202	Apad Cu prospect	a variety of basic rocks and metamorphics intruded by later diorite (serpentinite, chlorite, pyroxenite, quartzite, diorite, dioritic metamorphics) and Lower Eocene limestone					Tolosa Mining Corporation		AL-11
al203	Kagulak Cu prospect	a variety of basic rocks and metamorphics intruded by later diorite (serpentinite, chlorite, pyroxenite, quartzite, diorite, dioritic metamorphics) and Lower Eocene limestone			Cu 15.83% and 26.48%(picked samples)		Tolosa Mining Corporation		AL-11
al204	Banlad Cu prospect	a variety of basic rocks and metamorphics intruded by later diorite (serpentinite, chlorite, pyroxenite, quartzite, diorite, dioritic metamorphics) and Lower Eocene limestone					Tolosa Mining Corporation		AL-11
al205	Tapil deposit	pre-Tertiary meta-volcanics, mainly basalt, intrude by diorite and used be overline by limestone				was operated by the Panafrance Gypsum Mining Company before WWII			CS-12
so1	Consol								PH-16 MGB
so2									MGB
so3	Santa Fe Prospect								PH-16 MGB
so101									MGB, SR-13
so102	Pilar-Consol								PH-16, SR-13

Table 1-2 The mines, prospects, and occurrences of mineral resources in the Bicol Area registered through this survey

Registered ID	Prospect	Location	Main commodities	Type of ore deposit	Settings and features	Form and dimension	Ore minerals	Gangue minerals
sc103	Pilar, Sorsogon	Sacla, W of Pilar	Ls					
sc104		Upper Calungan River, W of Pilar	Grp					
sc105		N of Sacat, Jan, beside Putiao River	Grp					
sc106		N of Marigondon Bay, SE of Pilar	Ls					
sc107		N of Villaya, W of Castilla	Pum					
sc108		Marabe, SW of Castilla	Pum					
sc109	Pulang Bato, Northern Sorsogon	Pulang Bato, [illegible]	S	fumaroles and hot spring deposits				
sc110	Calgay	Pulang Bato, Upper Bical River, N of Capuy, 13°02'30"N and 123°58'30"E	Cly (Kao)					
sc111	Curtagon	Upper Cawayan River, N of Sumlaga, Sorsogon, 13°01'30"N and 123°57'20"E	S	fumaroles and hot spring deposits		7m wide and 50m long		
sc112	Osiao	near the peak of "Bud can Asupre", Pangas Crater, SW of Barrio Osiao, Bacon, 13°03'15"N and 123°57'30"E	S	fumaroles				
sc113	Bacon	Pulang, S of Osiao	Fdy					
sc114	Sorsogon	Northwestern coastal strip, Sorsogon	Ls					
sc115		Buenavista, N of Gatbo	Coal					
sc116	Gatbo	E of Gatbo, Upper Magang River	Moly, Coal					
sc117	Gatbo, Bacon	Upper Salbang River, NW of Gatbo	Coal					
sc118	Casiguran	San Antonio, SE of Casiguran	Per					
sc119		Cogon, SE of Casiguran	Pum					
sc120		SW of PA, Upper Cadiman River, E of Magallanes	Per					
sc121		Northern Mount Bintacan, SE of Magallanes	Per					
sc122		Colomagon, N of Bulan	S					
sc123	Calpi & Dolos, Bulan	Bulan	Si					
sc124		Mount Sugac, W of Matnog	Grp					
sc201	Osiao Au Anomaly	Osiao, Little Osiao River, North Eastern Bacon Manito	Au	Epi-thermal Gold Deposit	Near Bac Man Fault Zone(E-W strike), 2 sets of dominant fault orientation(N-W trend and NW-SE trend)			
sc202	Upper Little Osiao River Au Anomaly	W of Palayang Bayan, Upper Little Osiao River, Bacon Manito	Au	Epi-thermal Gold Deposit	Near Bac Man Fault Zone(E-W strike), 2 sets of dominant fault orientation(N-W trend and NW-SE trend)			
sc203	Mesulog Cu Anomaly	Mesulog, Bacon Manito	Cu		Near Bac Man Fault Zone(E-W strike), 2 sets of dominant fault orientation(N-W trend and NW-SE trend)			
sc204	Socorro's Claim	Barrio Bulawan, Gabao, 12°42'30"N to 12°43'30"N and 123°57'30"E to 123°58'00"E	Kao	shallow hydrothermal alteration of andesite				
sc205	Dalipay	Dapay Creek, Upper Cawayan River, Barrio Osiao, Bacon	Cly (Kao)			7 meters wide and 50 meters wide		
sc206	Maurice Yellow Mercedes claims	Upper Cauayan (Cawayan) River, Basud, Sorsogon	S	fumaroles and hot spring deposits	in filling fractures of volcanic rocks			
sc207		13°05'30"N and 123°58'30"E	Cly (Kao)					
sc208		12°44'30"N and 124°04'30"E	Cly (Kao)					
sc209	Monte Calvario - Dagames	12°41'10"N to 12°42'54"N and 123°56'00"E to 123°57'00"E	Au	advanced argillic alteration			pyrite, hematite	quartz, alunite, smectite

note: *1, MGB's internal report unpublished

Table 1-2 The mines, prospects, and occurrences of mineral resources in the Bicol Area registered through this survey

Registered ID	Prospect	Geology (host rocks and related igneous rocks)	Dating data	Alteration	Geochemical data	Historical circumstances	Owner	Note	References
so103	Pian Sorsogon								PH16 SR13
so104									MGB
so105									PH16 MGB
so106									MGB SR13
so107									MGB
so108									MGB
so109	Pulang Bato Northern Sorsogon	Pucana volcanic formation (basaltic andesite), thick flows of andesite and dacitic rocks			Texture in Sang ore shows 40.75% sulphur and disseminated ore shows 10.36%		Sanogon Mining Association		PH16 AUSR3 SR13 SR10
so110	Dalipay	hornblende andesitic volcanic rocks							PH16 SR13
so111	Guinayon	recent volcanic rocks			10.46% S				PH16 SR13
so112	Crusa	porphyritic hornblende andesite flows overlain by beds of conglomerate, sandstone and shale							PH16 SR13 SR12
so113	Bacon								PH16
so114	Sawanga								PH16 SR13 SR8
so115									MGB
so116	Gatbo								PH16 MGB
so117	Gatbo Bacon								PH16 MGB
so118	Cangurian								PH16
so119									MGB
so120									PH16 MGB
so121									PH16 MGB
so122									MGB
so123	Calo & Dukal Bulan								PH16
so124									PH16 MGB
so201	Calao Au Anomaly	the San Lorenzo sedimentary sequence, Pocdol Volcanics and diorite porphyry which is referred to as the Ranges Intrusives		advance argillic alteration, silicification, argillic alteration (alunite-kaolinite-silica-sulfur)	Au 0.77ppm from stream sediment		PNOC Geothermal Development Area		AUSR1
so202	Upper Little Calao River Au Anomaly	the San Lorenzo sedimentary sequence, Pocdol Volcanics and diorite porphyry which is referred to as the Ranges Intrusives		advance argillic alteration, silicification, argillic alteration (alunite-kaolinite-silica-sulfur)	Au 0.25ppm from stream sediment		PNOC Geothermal Development Area		AUSR1
so203	Masulog Cu Anomaly	the San Lorenzo sedimentary sequence, Pocdol Volcanics and diorite porphyry which is referred to as the Ranges Intrusives		silica-clay-pyrite alteration	Cu 570ppm from hydrothermally altered rock		PNOC Geothermal Development Area		AUSR1
so204	Socorro Claim	volcanic breccias, interrelated porphyritic andesite and amygdaloidal basalt and pyroclastic rocks		argillic, vein-like silicified structure, pyritization					SR14
so205	Dalgay	hornblende andesitic volcanic rocks overlain by beds of sandstone and shale					Jose Cordova in 1956		SR12
so206	Mauricio Yellow Mercedes sulfur				10.46% sulphur		Manuel Cordova in 1962		SR12 SR8
so207									SR11
so208									SR11
so209	Monte Calvario, Caganas	basaltic to andesitic volcanic rocks		silicified, argillized, propylitic					SR1 SR2 SR3

note *1: MGB's internal report unpublished

Table 2-1 Sample description sheet

ID	sample	prospect	coordination lat.	coordination long.	rock type	description	instrumental analyses TS	PS	XR	CA	CA	WA	FI	KAO	others	remarks
101	KY05	Pio Duran-Kagulaki			quartz-vein	white smoky colored massive Qtz-vein within silicified diorite adjacent to ultramafic rock				x						
102	KY06	Pio Duran-Kagulaki	13 02393	123 23532	micro diorite	micro dior to occur as dike in 2m width within strongly white colored altered foliated ultramafic rock	x				x					
103	KY08	Pio Duran-Kagulaki	13 02321	123 23450	diorite	weak greenish dark gray colored medium grained diorite having Ep-Chl	x				x					
104	KY10	Pili anomaly	13 00232	123 50265	andesite	gray colored platy jointed lava flow of medium grained Hbl-Px-Pl andesite	x									
105	KY11a	Pili anomaly			quartz-vein	smoky white colored Qtz vein in 2cm width lenticular Qtz-vein having gray colored lenticular thin layer				x						
106	KY11b	Pili anomaly			altered andesite, float	white colored acidic(?) altered andesite, that is host rock of KY11a			x							
107	KY12	Pili anomaly	13 00298	123 50307	silicified andesite, float	weak pale gray colored moderate silicified andesite with hardness scale chalcedonic Qtz-veinlet veinlet					x					
108	KY13	Pili anomaly	13 00423	123 50317	silicified rock, float	dark gray colored silicified rock having muggy patch partly and very fine grained Py dissemination		x	x	x						
109	KY14	Pili anomaly			silicified rock, float	reddish colored strongly silicified rock Qtz-network occurs				x						
110	KY15	Pili anomaly			silicified andesite, float	dark gray to white colored silicified andesite with very fine grained Py dissemination and white patch			x		x					
111	KY16	Pili anomaly	13 00414	123 50295	least altered andesite	gray colored weak argillic andesite with white patch (Kln?) originally from Pl			x		x					
112	KY18	Pili anomaly	13 00409	123 50254	silicified rock	silicified rock with very fine grained Py dissemination, remains of andesite texture and Pl into yellowish green Bmc					x					
113	KY20	Pili anomaly	13 00276	123 50222	silicified argillic rock	white gray colored silicified and argillized with supergene Kln?			x		x					
114	KY21	Pili anomaly	13 00245	123 50185	quartz-vein	weak brownish gray colored opaline massive Qtz-vein in white gray silicified argillic rock in 1 to 7cm width per 10 to 20cm spacing				x						
115	KY22	Cawayan river	13 03255	123 51111	andesite	black green gray colored andesite with Chl from Px-a	x				x					
116	KY23	Cawayan river			argillic rock	gray colored strong argillic altered rock it's clays are almost 5m while moderate Py dissemination					x					
117	KY24	Cawayan river	13 03115	123 51126	argillic rock	gray colored moderate argillic altered rock with Py dissemination originally recent(?) Lahar deposit			x		x					
118	KY26a	Cawayan river			veinlike quartz-pyrite	white to dark gray complicated colored veinlike Qtz-Py in 3m width, trending N80W and dipping 80W, within argillic rock (KY26b)				x						
119	KY26b	Cawayan river			argillic rock	gray colored strong argillic altered, Py dissemination, host rock of KY26a			x		x					
120	KY27	Cawayan river	13 03067	123 50583	argillic rock	weak greenish gray colored weak argillic rock, originally from two-Px andesite volcanic breccia overlain by propylitic andesite lava resemble KY22			x		x					
121	KY28a	Pio Duran-Kagulaki			diorite	weathered medium to coarse grained diorite					x					
122	KY28b	Pio Duran-Kagulaki			diorite	diorite having mica mineral with copper oxide and Go stain				x						
123	KY29	Pio Duran-Kagulaki			diorite	deep greenish gray colored altered coarse grained diorite	x				x	x				
124	KY30a	Pio Duran-Kagulaki			quartz-vein	white not clear Qtz-vein, network or sometimes thin layer, 2cm to 1mm wide per about 20cm space				x			x			
125	KY30b	Pio Duran-Kagulaki			diorite	deep greenish gray colored diorite hosting Qtz-veins (KY30b), immediately beside of the vein										
126	KY30c	Pio Duran-Kagulaki			diorite	deep greenish gray colored diorite hosting Qtz-veins (KY30b), far from the vein	x									
127	KY31	Bulawan, Gabao			argillic rock	pale greenish gray colored moderate argillic rock originally from andesite with 20% of Py dissemination and remain of Pl			x		x					
128	KY32	Bulawan, Gabao			basalt or andesite	blackish gray colored compact least altered lava of basalt to andesite	x									
129	KY33	Bulawan, Gabao			argillic rock	pale gray colored moderate argillic altered rock originally probably from pumice tuff			x		x					
130	KY34	Bulawan, Gabao			silicified rock	white gray colored silica seam in weak silicified rock originally from tuff				x						
131	KY35	Bulawan, Gabao			altered pumice tuff	pale gray colored argillic very coarse grained pumice tuff, matrix is rather strongly argillized with Py dissemination	x				x					
132	KY36	Bulawan, Gabao			argillic rock	pale gray colored strong argillic rock with much Py dissemination			x		x					
133	KY37	Bulawan, Gabao			least altered pumice tuff	yellowish brownish colored weathered and weak argillic rock originally from pumiceous tuff					x					
134	KY38	Kowa, Gabao	12 44410	123 55452	non welded pyroclastic flow deposit	Hbl-Bi-andesitic to dacitic containg fragments of pale green gray colored altered Bi-Hbl-andesite or tuff										
135	KY39	Kowa, Gabao	12 44177	123 55335	andesite	deep green colored least altered compact lava flow of andesite with Chl from mafic minerals trending N80E and dipping from 60 to flat	x				x					
136	KY40	Matnog-Cutaisi	12 34395	124 04232	silicified rock float	pale gray colored opaline silicified rock, maybe originally from lapilli tuff, with 15% dissemination of Py					x					
137	KY41	Matnog-Cutaisi			argillic rock	highly weathered argillic altered tuff breccia			x		x					
138	KY42	Matnog-Cutaisi			silicified rock float	gray colored silicified rock with Py dissemination					x					
139	KY43	Matnog-Cutaisi			silicified rock float	gray colored silicified rock with Py dissemination and silica seam or veinlet having margin to Py layer			x		x					
140	KY44	Matnog-Cutaisi			argillic/silicified rock	argillic and/or silicified rock maybe from lapilli tuff its matrix altered					x					
141	KY45	Southern Irosin			basalt or andesite	weak greenish dark gray colored weak altered dike or lava of basalt or andesite with limonite Py stain along the fracture	x				x					
142	KY46	Southern Irosin			argillic rock float	whitish gray colored moderate argillic rock with limonite network and without dissemination of Py					x					
143	KY47	Southern Irosin			argillic rock	pale gray colored moderate argillic altered rock with 2 to 5 percent of dissemination of Py			x		x					
144	KY48	Southern Irosin			argillic rock	weak bluish gray weak to moderate altered andesitic tuff breccia			x		x					
145	KY49	Southern Irosin			andesite	very weak altered andesite lava underline by tuff breccia (KY48)	x									
146	KY53	Iriga-Baao	13 29220	123 24236	andesite	weak weathered light grey colored lava flow(?) of Hbl-Bi bearing Px-andesite with mafic groundmass	x									
147	KY56	Iriga-Baao	13 29283	123 23557	basaltic andesite	blackish gray colored basaltic andesite brecciated lava flow	x									
148	KY57a	Eastern Panascas	13 29403	123 04210	andesite	dark brownish colored medium to weak weathered andesite breccia	x									
149	KY57b	Eastern Panascas	13 29403	123 04210	argillic rock	yellowish brownish colored weathered and argillic altered andesite same as KY57a			x		x					
150	KY57c	Eastern Panascas	13 29403	123 04210	quartz-vein	white Qtz-vein of 1cm wide easily out easily within the altered andesite					x		x			

Table 2-1 Sample description sheet

sheet No. 2/7

ID	sample	prospect	coordination lat.	coordination long	rock type	description	TS	PS	XI	CA	CA	WA	FI	KAr	others	remarks
151	KY57d	Eastern Pasacao	13.29103	123.04210	silica vein	white gray colored pinched silica vein of 1 to 3cm wide					x					
152	KY58a	Eastern Pasacao			silicified rock float	brownish gray colored strong silicified rock with copper oxide stained Cp-Qtz network				x						
153	KY58b	Eastern Pasacao			silicified rock float	partly blackish, brownish gray colored strong silicified rock with copper oxide stain and Cp(?)-Qtz vein network of 4mm wide per 2cm spacing		x		x						
154	KY58c	Eastern Pasacao			silicified rock float	blackish brown colored strong silicified rock with Qtz-veinlet, Cu-ox stain and quite minor Py		x		x						
155	KY59a	Eastern Pasacao	13.29212	123.04382	silicified boulder sized float	blackish brown colored strong silicified rock with quite weak oxidation		x			x					
156	KY59b	Eastern Pasacao	13.29212	123.04382	silicified rock float	weak silicified rock										
157	KY59c	Eastern Pasacao	13.29212	123.04382	quartz vein float	white non-clear Qtz vein having vuggy silicified rock fragment occurring as irregular form and wedging out in part				x			x			
158	KY59d	Eastern Pasacao	13.29212	123.04382	diorite float	blackish weak to medium silicified diorite(?) as host rock(?)	x				x					
159	KY60a	Eastern Pasacao			quartz vein	Qtz-vein or network of 1cm wide in 1m spacing				x			x			
160	KY60b	Eastern Pasacao			argillic rock	yellowish colored weathered argillic rock with Cu-ox satin hosting KY60a			x		x					
161	KY61	Eastern Pasacao			schist	layering of green and white colored schist with quite few amount of dissemination of Py					x					
162	KY62	Eastern Pasacao	13.29150	123.04414	schist	intercarating of green part and white part with minor foldings	x									
163	KY63a	Southern Balatan			diorite float	deep greenish gray colored popyritic altered diorite with minor dissemination of Py										
164	KY63b	Southern Balatan			basalt float	weak greenish black colored basalt (or andesite) with Chl from Pl										
165	KY63c	Southern Balatan			altered rock float	greenish colored strong altered rock with Py(-Po?) dissemination		x								
166	KY65a	Southern Balatan			diorite float	weak greenish colored altered Bt-Hbl-diorite	x									
167	KY65b	Southern Balatan			andesite float	weak brownish green colored porphyritic andesite	x									
168	KY65c	Southern Balatan			altered andesite float	dark green colored medium altered andesite with minor dissemination of Py-Cp	x				x					
169	KY65d	Southern Balatan			andesite float	propyritic altered andesite (or basalt)	x									
170	KY66a	Western Goa	13.44541	123.26249	quartz vein	white colored non-clear massive homogeneous Qtz vein of 1 to 0.3m in width and trending N30E, dipping vertically				x						
171	KY66b	Western Goa	13.44541	123.26249	quartz vein	taken from wall side part of KY66a and showing gray colored and having weak dissemination of Py		x		x			x			
172	KY66c	Western Goa	13.44541	123.26249	mica schist	mica schist host rock just beside Qtz-vein KY66b	x									
173	KY67a	Western Goa			quartz vein	smoky white colored Qtz-vein in center of clay band				x						
174	KY67b	Western Goa			clay	white to yellowish colored clay resemble to fault gauge with Smectite			x							
175	KY67c	Western Goa			argillic mica schist	whitish gray colored medium argillic altered mica schist			x		x					
176	KY68	Bulala			"flint clay"	"flint clay" representative samples; greenish to white colored half transparent compact clay										
177	KY68a	Bulala	14.11494	122.26580	altered andesite	reddish brown colored moderate argillic altered andesite with Kln from Pl			x							
178	KY68b	Bulala	14.11494	122.26580	argillic rock	strong argillic rock with much dissemination of Py				x						
179	KY69	Bulala			sandstone	pale gray colored massive weak silicified and weak argillized medium grained sandstone with Gt-Hem stain or film										
180	KY70	Bulala			green schist and aplite	green schist injected by mica-aplite										
181	KY71	Bulala	14.12082	122.26558	argillic altered andesite	reddish brown colored weak argillic altered andesite with Kln										
182	KY72	Bulala	14.12213	122.26486	argillic altered andesite	argillic altered andesite with strong stain of Lm and dissemination of Kln and Py			x		x					
183	KY73	Bulala			argillic altered andesite	dark gray colored altered andesite with white colored patch of Kln										
184	KY74	Bulala	14.12262	122.26358	argillic altered andesite	pale gray colored moderate silicified and weak argillic altered andesite with fine grained dissemination of Py, Lm-film and precipitation of Kln			x		x					
185	KY75	Bulala			argillic altered andesite	whitish colored argillic altered andesite with Lm-veinlet, Kln, Gt and Smc										
186	KY76a	Paracale			quartz vein	very coarse grained crystalline umbiguas Qtz-vein with Lm-stain										
187	KY76b	Paracale			argillic altered rock	pale white colored clay beside Qtz-vein KY76a										
188	KY77a	Paracale			argillic altered rock	pale white colored clay beside Qtz-vein				x						
189	KY77b	Paracale			argillic altered diorite or granodiorite	white colored argillic altered granodiorite	x									
190	KY77c	Paracale			quartz vein	Qtz-vein or silica vein with dissemination of Py				x						
191	KY78a1	Paracale			quartz vein	intersection between 112.10 and 112.20m of SADH-13, white colored non-clear partly clear and druse Qtz-vein with Cp-Ga-Py				x			x			
192	KY78a2	Paracale			quartz vein	intersection between 112.90 and 113.00m of SADH-13, white colored non-clear Qtz-vein with pale white argillic altered fragment										
193	KY78b	Paracale			altered granodiorite	intersection between 122.80 and 122.95m of SADH-13, moderate altered granodiorite with Qtz-Cp-Py-veinlet							x			
194	KY78c	Paracale			altered granodiorite	intersection between 134.00 and 134.30m of SADH-13, weak altered granodiorite with Chl from Bt and Hbl(?)	x									
195	KY78d	Paracale			quartz vein and clay	intersection at 250.0m of SADH-2, Qtz-thin veinlet with pale white colored clay			x					x		
196	KY79	Paracale			Sp-Ga-Cp ore	Sp-Ga-Cp ore with greenish colored matrix showing foliated fabric		x					x			
301	SM01	Masalog			clay altered rock	black to gray colored steam heated argillic altered rock with Smc, from Kawayan Crater										
302	SM02	Pantao-Nagaas-Cabarian	13.10484	123.19041	diorite	dark gray to gray colored diorite partly gabbroic many Hbl cryst at 5mm in diameter, Bt at 2 to 3mm in diameter, from Bariqua	x					x		x		
303	SM03	Pantao-Nagaas-Cabarian	13.09565	123.18439	diorite	diorite with aplite vein, pegmatitic Pl at 1 to 2cm in diameter, Hbl at 2 to 3cm in diameter aggregates of Hbl, from Talin Talin	x					x				
304	SM04	Pantao-Nagaas-Cabarian	13.09409	123.18370	intrusive rock	strongly weathered fine grained andesite or micro diorite, orange to brown colored, from Tapel	x					x				

Table 2-1 Sample description sheet

ID	sample	prospect	coordination lat.	coordination long.	rock type	description	instrumental analyses: TS	PS	XL	CA	EA	WA	FI	KV	others	remarks
305	SM05	Pantao-Nagas-Cabarian	13 04545	123 13092	sulfur ore	Opl ore with Py zone, host rock is gray to dark gray clay altered (Kln?) diorite or gabbro, from Taga					x					
306	SM06	Pantao-Nagas-Cabarian			sulfur ore	Opl ore with Py zone, host rock is gray to greenish gray clay altered diorite or gabbro, from stock pile at Taga										
307	SM07	Pantao-Nagas-Cabarian	13 01133	123 19190	diorite	copper occurrence, diorite with Qtz-vein (3 to 8cm), Qtz-vein, orange colored Limonite, Cu-oxide and Cu sulphate, host rock: diorite, gabbro, mixing block, partly silicified, from Cabarian		x		x			x			
308	SM08	Pantao-Nagas-Cabarian	13 01159	123 30498	diorite or gabbro	diorite or gabbro with silicified clay vein and Cp and Qtz-veinlet, andesite intrusive, from Cabarian										
309	SM09	Masulog			altered andesite	silicified and/or gray clay altered rock, having Py-Ep, yellow greenish yellow clay alteration (320 degrees C), intersection of PAL-30 between 2040 and 2080m										
310	SM10	Masulog			porphyritic andesite	strong silicified rock, porphyritic andesite or diorite, intersection between 2104 and 2106m of PAL-80										
311	SM11	Masulog			porphyritic andesite	green or greenish gray altered rock, weak silicified, Chl-Ep, intersection between 2104 and 2106m of PAL-80										
312	SM12	Masulog			andesite lava	host rock: Qtz-Chl-Py-Anh-Clay, Kfs, vein: Anh-Qtz-Py, intersection between 1255.7 and 1258.5m of MJ-1										
313	SM13	Masulog			altered volcanic rock	light greenish colored, hard, highly altered, without discernible texture, alteration mineral assemblage: Qtz-Ep-Chl-Py-Anh-Kfs-Cu sulphide, vein: Anh-Py-Chl, intersection between										
314	SM14	Masulog			altered volcanic rock	intersection at 1545m of OP-50										
315	SM15	Masulog			silicified rock	white argillic and/or medium silicified rock, from Masulog			x		x					
316	SM16	Masulog			altered volcanic rock	dark gray colored altered rock, weakly Smc-argillic, Py dissemination, from Masulog										
317	SM17	Masulog			altered volcanic rock	reddish colored argillic and/or weakly silicified rock, from Masulog			x		x					
318	SM18	Masulog			altered volcanic rock	gray colored altered rock with Smc clay and Py dissemination, from Masulog										
319	SM19	Masulog			altered volcanic rock float	gray colored altered rock with Smc clay and Py dissemination, from Masulog										
320	SM20	Cawayan river	13 03400	123 30420	altered volcanic rock	weakly to medium Smc-argillic rock, Py dissemination										
321	SM21	Cawayan river	13 03310	123 31038	altered volcanic rock	strongly silicified rock with Alu(?), Cp(?), and Py dissemination			x		x					
322	SM22a	Cawayan river	13 03304	123 31093	altered volcanic rock	strongly silicified rock, reddish colored alteration, without Py dissemination			x		x					
323	SM22b	Cawayan river	13 03304	123 31093	altered volcanic rock	strongly silicified rock, gray colored alteration, with Py dissemination			x							
324	SM23	Cawayan river			altered volcanic rock float	strongly to medium silicified rock, Py-veinlet or -film, Alu(?)			x		x					
325	SM24	Cawayan river			altered volcanic rock	white clay (Smc?), weakly to medium silicified rock, with Fe-oxide										
326	SM25	Cawayan river	13 03421	123 30519	altered volcanic rock float	big float of dark gray to black colored alteration, medium to weakly silicified with white clay (Kln?)			x		x					
327	SM26	Cawayan river			altered volcanic rock float	big float of dark gray colored alteration, Alu(?)-veinlet, Py dissemination										
328	SM27	Twi			silica sinter	until quite recently active hot spring with geizer, Carangan					x					
329	SM28	Twi			dacite	dacite dome, Ep-Hbl-dacite, dated as 3.2Ma, Pugtan	x					x		x		
330	SM29	Twi			least altered andesite	hard, massive, dark green to gray andesite, Cal-Ep-Qtz, intersection at 7804ft of MAT-25			x		x					
331	SM30	Twi			quartz vein within altered andesite breccia	andesite breccia with Qtz-vein, partly strongly silicified zone with Cal-Ep(?), host rock: propylitic altered, Ep-Ca-Sp-Alu-Ca-Py-Chl, intersection at 6906ft of MAT-25		x	x		x		x			
332	SM31	Twi			altered andesite breccia	gray to greenish gray massive andesite breccia, propylitic alteration with Qtz-Calcite-veinlet, weakly silicified, Chl-Ca-Qtz-Py, intersection at 5047ft of MAT-25			x		x		x			
333	SM32	Twi			altered andesite	host rock: propylitic alteration, Ep-Chl-Ca-Qtz-Py, vein: Ca-Qtz-Ep-Py-Chl, intersection at 5093ft of MAT-25			x		x		x			
334	SM33	Twi			altered andesite breccia	weakly to medium propylitic altered andesite breccia / Ca-Chl-Ep-Hem, intersection at 3922ft of MAT-25										
335	SM34	Twi			altered andesite	weakly to medium propylitic altered andesite breccia / Ca-Chl-Qtz-Py-Hem, intersection at 2360ft of MAT-25			x		x		x			
336	SM35	Twi	13 24453	123 39075	altered rock float	strongly silicified rock with Kln and sulphur, partly orange to reddish color, (Fe-oxide stain), Mt. Mariveo			x		x					
337	SM36	Saigon			older andesite float	gray color Px-andesite, porphyritic, Salvacion										
338	SM38	Saigon			altered rock float	Floats of white/red color Kln argillic, medium to strongly silicified rock with Py dissemination			x		x					
339	SM39	Saigon			pyroxene andesite	Px-andesite, porphyritic, many Px-phenocryst, Px at 5mm in diameter, Casini-Saigon	x					x		x		
340	SM40	Saigon			brecciated pyroxene andesite	Px-rich andesite, brecciated, Casini-Saigon										
341	SM41	Saigon			altered rock float	strongly silicified reddish to orange color altered rock with Py dissemination, others: Hbl-dacite, N-S Creek at Casini-Saigon			x		x					
342	SM42	Saigon			altered rock float	moderately silicified, strong Fe-oxide stain, red to orange color altered rock, Bacolod			x		x					
343	SM43	Saigon			hornblende bearing pyroxene andesite float	Floats of Qtz-bg Hbl-Px-andesite or dacite, gray to light gray, porous, San Roque	x					x				
344	SM44	San Roque-Mt. Malobago			altered rock float	moderately silicified, Kln argillic, white color rock with Fe-oxide stain, San Roque			x		x					
345	SM45	San Roque-Mt. Malobago			altered andesite float	quite a few, strongly silicified rock with orange to reddish purple color Fe-oxide stain, San Roque										
346	SM46	San Roque-Mt. Malobago			dacite	gray to light gray porous dacite dome, Qtz-Pl-Bt-Hbl, San Roque	x					x		x		
347	SM47	San Roque-Mt. Malobago			altered andesite float	red to orange color strongly silicified rock with dissemination of Py, partly gray colored, strong Fe-oxide stain, San Roque			x		x					
348	SM48	San Roque-Mt. Malobago			altered rock float	quite a few, weakly to moderately silicified gray color altered rock with Py dissemination, San Roque										
349	SM49	San Roque-Mt. Malobago			dacite	light gray to white color Bt-Px-dacite or dacitic tuff, porous, Qtz at 5mm in diameter at the most	x				x					
350	SM50	Masnog-Culasi	12 35281	124 04452	altered tuff breccia	yellow to reddish white clay altered tuff breccia, Smc-argillic			x		x					
351	SM51	Masnog-Culasi			clast in pumice tuff breccia	hornblende? Many Hbl phenocryst in the clast in pumiceous tuff breccia or sandy tuff, Manhuyland	x									
352	SM52	Masnog-Culasi			pumice tuff	weak to very weak white to yellow white argillic (Kln) pumice tuff, the clasts are andesite, Busing										
353	SM53	Masnog-Culasi			altered tuff breccia or volcanic breccia	reddish argillic (Kln) weakly silicified altered tuff breccia or volcanic breccia with weakly silicified zone (Qtz, Sil), Calipi				x	x					
354	SM54	Masnog-Culasi			altered andesite float	white to reddish colored argillic (Kln), strongly to moderate silicified rock, Alu?, Calipi										

Table 2-1 Sample description sheet

sheet No. 4/7

ID	sample	prospect	coordination lat	coordination long	rock type	description	instrumental analyses TS	PS	XD	CA	CA	KA	FI	KM	others	remarks
355	SM55	Matnog-Sulat			altered rock float	sp'se few amount of floats of weakly silicified, white Kln argillic, partly Fe-oxide stain, Balocaue			x		x					
356	SM56	Matnog-Sulat	12 36545	124 03091	altered tuff breccia	weakly reddish to white or yellowish white argillic (Kln) tuff breccia, Bolo										
357	SM57	Matnog-Sulat	12 36182	124 01199	altered andesite	reddish to white colored weakly to moderately argillic (Kln) andesite with Lm stain, Pango			x							
358	SM58	Butag-Sua			least altered pumice tuff	pumice tuff, pumice at 5cm in dia notice at the most, rounded or subrounded, Sua										
359	SM59	Butag-Sua			olivine basalt or pyroxine andesite	Sua	x					x				
360	SM60	Butag-Sua			altered rock float	strongly or moderately silicified and Kln argillic altered rock, partly Qtz charcedny, Fe-oxide stain, Py, Sua			x		x					
361	SM61	Butag-Sua			altered rock float	white Kln argillic, moderately to strongly silicified rock, Fe-oxide stain, Py, Tagkangpant			x		x					
362	SM62	Butag-Sua			olivine pyroxine andesite or basalt	lava flow of Ol-bearing Px andesite or basalt, joint partly filled with Smc, partly yellow to orange altered, Sagrada										
363	SM63	Butag-Sua			basalt	least altered basalt with Fe-oxide stain and Smc-veinlet or network, Sagrada										
364	SM64	Butag-Sua			altered rock float	white to orange colored Kln-argillic, weakly to moderately silicified, Aguinaldo										
365	SM65	Butag-Sua			altered tuff breccia	white to reddish argillic (Kln), strongly to moderately silicified tuff breccia, partly strongly Fe-oxide stained, Aguinaldo										
366	SM66	Butag-Sua			altered rock	white Kln argillic, weakly to moderately silicified rock, partly Lm-stain, Marinab			x		x					
367	SM67	Bacolod			hot spring deposit	clay alteration, weak to moderate silicification, Banga hot spring			x		x					
368	SM68	Lake Buhi			pyroxine andesite	gray to dark gray colored slightly weathered Px-andesite, porphyritic	x					x				
369	SM69	Lake Buhi			altered rock float	small float of orange to white argillic and weakly silicified rock										
370	SM70a	Lake Buhi			altered rock float	gray to dark gray colored Kln-argillic, weakly silicified, Py dissemination										
371	SM70b	Lake Buhi			altered rock float	white Kln-argillic, moderately silicified			x							
372	SM70c	Lake Buhi			altered rock float	reddish to brown colored altered, strongly silicified rock, Fe-oxide stain and partly vuggy			x		x		x			
373	SM71a	Lake Buhi			altered rock float	Kln-argillic, strongly silicified			x							
374	SM71b	Lake Buhi			altered rock float	strongly silicified, Py dissemination, red to reddish brown color, Qtz charcedny, vuggy					x		x			
375	SM71c	Lake Buhi			altered rock float	orange to white colored altered rock, vuggy Qtz-vein										
376	SM72	Lake Buhi			altered rock float	white to light gray weakly silicified, weakly Kln-argillic altered rock, structure still remain			x							
377	SM73	Western Pasacao			pyroxine andesite	porphyritic, Pl at 5mm across at the most, Px at 3mm across at the most, Pl-rich, Wagas	x					x		x		
378	SM74	Western Pasacao			silicified rock	reddish to orange colored chalcedonic Qtz, host rock: porphyritic andesite, Wagas			x		x					
379	SM75	Western Pasacao			quartz vein	bluish white color chalcedonic Qtz-vein at 2cm wide at the most, host rock: tuff breccia, Wagas					x		x			
380	SM76a	Western Pasacao			dike intrusive	white to light gray felsic rock, granodiorite? Gp-veinlet or network, Balugan	x									
381	SM76b	Western Pasacao			dike intrusive	dark gray basaltic intrusive, weakly propylitic altered, Balugan										
382	SM77	Caoraasan, Balatan			quartz vein	green copper qtz-vein, Cu-oxide and Cp dissemination, Fe-oxide stain, Caoraasan										
383	SM78	Caoraasan, Balatan			quartz vein	green color Qtz-vein, Fe-oxide-stain, Caoraasan		x	x	x			x			
384	SM79	Caoraasan, Balatan			altered diorite	diorite, Hbl and Bt change into Chl, weak clay alteration, mica?, weak Py dissemination, Caoraasan	x					x		x		
385	SM80	Caoraasan, Balatan			gypsum ore	white Py banded Gp-ore, altered volcanic fragment occur partly, Caoraasan					x					
386	SM81	Caoraasan, Balatan			altered volcanic rock	Chl-Ep, dark green color, propylitic alteration, Caoraasan			x		x					
387	SM82	Caoraasan, Balatan			silicified volcanic rock	orange color Fe-oxide-stain, Kln-clay alteration, dark gray flesh part remain partly, Caoraasan			x		x					
388	SM83	Balatan	13 21455	123 16026	altered rock	host rock laminated medium to coarse grained sandstone, white caly (Kln), strongly silicified, Fe-oxide stain, Cal "clastic"?										
389	SM84	Balatan	13 21455	123 16026	altered rock	white colored strongly argillic altered (Kln?), "clastic"?										
390	SM85	Balatan	13 20577	123 15074	gypsum ore	banded Gp-ore, white color, fine grained, partly reddish purple, banded Py, Cabanbanan										
391	SM86	Balatan	13 20577	123 15074	gypsum ore	white colored Py-banded Gp-ore, partly green colored Cu-oxide-stain, Cabanbanan					x					
392	SM87	Balatan	13 20577	123 15074	altered rock	yellowish brown to yellowish green, reddish brown color moderately silicified white clay altered rock, Fe-oxide, Cabanbanan			x		x					
393	SM88	Balatan	13 20577	123 15074	altered volcanic rock	dark gray to greenish gray colored Chl-altered volcanic rock, probably basalt, Py dissemination, Cabanbanan										
394	SM89	Balatan			gypsum ore	white, fibrous Gp-ore/vein with dark gray Py-band, Py at 3mm across at the most, partly green colored portion (not sure Cu-oxide or algae?), Cabanbanan					x					
395	SM90	Balatan			altered rock	yellowish to dark gray colored clay alteration and weakly silicified altered volcanic rock with strong dissemination of Py, propylitic alteration, Cabanbanan			x							
396	SM91	Balatan			silicified rock	orange to yellowish brown colored strongly silicified rock, partly chalcedonic, Cabanbanan					x					
397	SM92	Mt. Culasi			altered tuf breccia	weakly to moderately silicified and white to orange colored Kln-Smc-argillic acidic tuff breccia, Manaoopre Creek			x							
398	SM93	Mt. Culasi	13 55464	123 03171	silicified rock float	strongly silicified without Py dissemination, a part of boulder sized float of highly silicified and fractured dacite with Py-band and Kln-clay, Manaoopre Creek					x		x			
399	SM94	Mt. Culasi	13 55464	123 03171	silicified rock float	same as SM93 but with Py dissemination			x		x					
400	SM95	Mt. Culasi			dacite	gray to light gray dacite with ordered mafic phenocryst, Manaoopre Creek	x					x		x		
401	SM96	Mt. Culasi			altered dacite	yellowish altered dacite with strong Lm-stain, reddish to brown color, Manaoopre Creek			x							
402	SM97	Mt. Culasi	13 55099	123 04170	hornblende andesite	dark gray porphyritic Hbl-andesite, Hbl at 10 by 5mm across, Manaoopre Creek	x					x				
403	SM98	Mt. Lako	14 00223	122 46224	biotite hornblende dacite	Bt-Hbl-dacite, porphyritic, gray color, Hbl at 8mm across at the most, Bt at 12mm across at the most, Pl at 10mm across at the most, ate B	x					x		x		
404	SM99	Mt. Lako			altered dacite	altered dacite, grey colored, Py dissemination, Chl, partly Smc-argillic, near ate B			x							

Table 2-1 Sample description sheet

ID	sample	prospect	coordination lat.	coordination long.	rock type	description	instrumental analyses TB	PS	Xr	CA	CA	WA	FI	KAr	others	remarks
405	SM100	Mt. Labo			altered rock	yellowish to white colored weakly silicified, Lm stain, Smc-argillic rock, partly dark gray Smc altered with Py dissemination, near site A			x		x					
406	SM101	Mt. Labo	13.59492	122.47030	altered rock	strongly to moderately silicified reddish brown colored Fe oxide stained vein, host rock white to gray Smc-argillic with Py dissemination, site A			x		x					
407	SM102	Mt. Labo			altered rock float	strongly to moderately silicified white to gray colored Fe oxide stain, partly Py dissemination, Wale River					x					
408	SM103	Mt. Labo			altered rock float	orange colored weakly to moderately silicified rock, Kln?, Fe oxide stain, Too River					x					
601	TH01	Pilar-Dorsal			calcareous siltstone	yellow to yellowish brown, soft, shell-bearing, Ba. Bayasong										
602	TH02	Pilar-Dorsal			coarse reef limestone	calcite crystal, white, Ba. Bayasong										
603	TH03	Pilar-Dorsal			calcareous siltstone	crystalline, Ba. Bayasong										
604	TH04	Pilar-Dorsal			beach sand	Mag Fe-Hbl-Cpx-Pl lithic fragment, Ba. Ranta, Consol										
605	TH05	Pilar-Dorsal	12.59120	123.40098	coarse reef limestone											
606	TH06	Calpi	13.05017	123.52090	pyroxene andesite	dark gray to black, fine Px-Pl phyric andesite	x				x					
607	TH07	Calpi	13.05110	123.52110	altered andesite	boulder float at 5m across, white to yellowish brown, weak silicified, Lm stained (Jar), Py										
608	TH08	Calpi	13.05070	123.52100	silicified andesite breccia	shearing fracture, rounded breccia, white to yellowish white			x		x					
609	TH09	Calpi	13.04480	123.52137	argillized rock	white to gray, strong alteration, moderately silicified, near old adit, beneath the silicified zone, Py, Smc			x							
610	TH10	Calpi	13.04480	123.52117	silicified rock	opaline silicified, white, old adit entrance, moderately silicified, Py			x		x					
611	TH11	Calpi	13.04250	123.51550	vein-like quartz	4 veins of Qtz, 1 to 2cm wide, strikes NNW, dips 45NE, silicification, adit 1					x					
612	TH12	Calpi	13.04250	123.51550	silicified and/or argillized rock	weakly silicified sugary silica, silicification, argillization, acid leaching? adit 1			x		x					
613	TH13	Calpi	13.04240	123.51540	silicified Smectite stained rock	Lm stained sugary silica, silicified, brown, acid leaching? adit 2					x					
614	TH14	Calpi	13.04240	123.51540	silicified rock	yellowish brown, strogly silicified, sugary silica, acid leaching? adit 2			x		x					
615	TH15	Calpi	13.04240	123.51540	silica vein	silica and Alu?, supergene, adit 2			x							
616	TH16	Calpi	13.04235	123.51450	silicified rock	float, weakly silicified, opaline silica alteration, Py										
617	TH17	Calpi	13.04225	123.51460	argillized rock	strong argillization, Smc, Py			x							
618	TH18	Calpi	13.04250	123.51550	silica vein	chalcedonic Qtz-veinlet, 2mm wide, Kln? adit 2					x					
619	TH19	Calpi			silicified argillized tuff	weakly silicified, white, Kln-alteration, Alu?			x		x					
620	TH20	Calpi			silicified argillized andesite	white, pink-reddish white, Kln-Smc-altered?, weakly silicified, moderately argillized, Py										
621	TH21	Calpi			pyrite silica vein	hydrothermal brecciation?, rounded silicified volcanic fragments, Py			x		x					
622	TH22	Calpi			pyrite-silica vein	hydrothermal brecciation?, rounded cahcedonic fragments, Py			x		x					
623	TH23	Calpi			silicified rock	along joint face, silica-vein, old adit					x					
624	TH24	Calpi			andesite	least altered, two-Px-andesite, Bt-bearing	x					x				
625	TH25	Calpi			silicified andesite?	float, weakly to moderately silicified, Py					x					
626	TH26	Monte Calvario			silicified rock	white, yellowish brown, strongly silicified as same as the Nansatsu-type silica body, Kln-Alu-alteration, Py, native sulphur, 143 peak			x		x					
627	TH27	Monte Calvario			silicified and/or argillized rock	yellowish to brown, Kln-Alu-altered?, weakly silicified, 143 peak			x							
628	TH28	Monte Calvario			silicaeous vein	gray, 5cm wide, strikes NNW, dips 70E, Py			x		x					
629	TH29	Monte Calvario			limonite vein	brown, 1 to 2cm wide, Smc-alteration			x		x					
630	TH30	Monte Calvario			silicified andesite	moderately silicified, Py-dissemination										
631	TH31	Monte Calvario			Px-andesite	partly Py-disseminated, very weakly altered	x									
632	TH32	Monte Calvario			tuff breccia	partly Py-disseminated, weakly altered										
633	TH33	Monte Calvario			volcanic or tuff breccia	gray volcanic or lapilli tuff, locle Py, very weakly altered			x							
634	TH34	Monte Calvario			tuff	pale gray, weakly Py-disseminated, weakly altered			x		x					
635	TH35	Monte Calvario			tuff breccia or volcanic breccia	minor alteration in matrix										
636	TH36	Monte Calvario			andesite	very weakly altered, minor Py-dissemination along the joint	x									
637	TH37	Monte Calvario			silica-vein float	60cm across, banding, Py, brecciated					x					
638	TH38	Magallanes			volcanic breccia	white to yellowish brown, andesite volcanic breccia, polylithologic nature indicates pyroclastic flow deposits? Kln-Smc-altered, Hb-andesite clasts, very weak hydrothermal			x		x					
639	TH39	Magallanes			volcanic breccia	polylithologic ite nature indicates pyroclastic flow deposits? Subangular or subrounded, light gray andesite, purple andesite, black basalt, Ø 2mm to 60cm across			x		x					
640	TH40	Magallanes			pyroxene andesite float	black colored Px-andesite	x					x				
641	TH41	Mt. Bintacan			pyroxene andesite float	weakly weathered Px-andesite, foot hill of the mountains	x					x				
642	TH42	Tugas			argillized andesite	yellowish to light brown, Kln-Smc argillic, host: andesite			x		x					
643	TH43	Tugas			pyroxene andesite	pale purplish black, vitreous matrix	x				x					
644	TH44	Tugas			pyroxene andesitic volcanic breccia or lava flow	volcanic breccia or auto brecciated lava? black color	x									
645	TH45	Tugas			least altered pyroxene andesite	volcanic breccia or auto brecciated lava? Yellow to brown color, weak argillic										
646	TH46	Tugas			silicified pyroxene andesite	fresh andesite and slightly silicified rock floats, Kln-Alu-silicification?, Py			x		x					

Table 2-1 Sample description sheet

ID	sample	prospect	coordination lat.	coordination long.	rock type	description	instrumental analyses TS	PS	XI	CA	CA	WA	FI	KAr	others	remarks
647	TH47	Tugas			weak argillic andesite	pale greenish gray, Py dissemination, weak argillic, Smc-altered, Py			x							
648	TH48	Tugas			silicified rock float	near to surface, strongly silicified, Py-dissemination, native sulphur					x					
649	TH49	Tugas			silicified rock	breaching, originally flow banded andesite?, strongly silicified			x		x					
650	TH50	Tugas			silicified andesite	moderately to strongly silicified, Py-dissemination										
651	TH51	Tugas			silicified andesite	water fall outcrop, moderately to strongly silicified, Py-dissemination			x		x					
652	TH52	Manurabi			basaltic andesite float	aphyric basaltic andesite	x									
653	TH53	Manurabi			basaltic andesite	partly joint, basaltic andesite	x									
654	TH54	Cirablam			basaltic andesite	basaltic andesite	x					x		x		
655	TH55	Cirablam			tuff	accretional lapilli, silica and Chl-vein cuts the lapilli			x		x					
656	TH56	Bonot			Basaltic andesitic volcanics	basaltic andesite clast within volcanic breccia	x									
657	TH57	Sibobo			silicified rock	moderately to strongly silicified breccia fragment within hydrothermal breccia, white, silica, Kln?			x		x					
658	TH58	Sibobo			matrix of hydrothermal brecciation	matrix of hydrothermal breccia, white to light brown, Kln? Smc supergene			x		x					
659	TH59	Sibobo			argillized rock	boundary between hydrothermal breccia and argillized zone, yellow to purple or brown, Smc-alteration			x							
660	TH60	Sibobo			silicified rock	weakly silicified rock, white, Kln			x		x					
661	TH61	Sibobo			pyroxene andesite float	fine grained, young volcanics, laharic deposit?	x									
662	TH62	Sibobo			argillized hornblende andesite	weak argillization, Smc-alteration, Kln?			x							
663	TH63	Sibobo			hornblende andesite	fresh part of argillization, representative sample of host rock	x					x		x		
664	TH64	Sibobo			argillized rock	argillization and/or silicification, sugary silica, Kln?, Alu?			x							
665	TH65	Sibobo			silicified and/or argillized rock	moderate silicification, moderate argillization, sugary silica, hydrothermal breccia			x		x					
666	TH66	Sibobo			silicified and/or argillized rock	moderate silicification, moderate argillization, steam heated acid leached zone? Py-dissemination, native sulfur					x					
667	TH67	Sibobo			silicified rock	moderately to strongly silicified rock, tabular an hexagonal Alu-crystal occur in the vug, probably supergene and possibly hypogene			x					x		
668	TH68	Sibobo			silicified rock and silica vein	silica-vein within strongly silicified rock, 0.2 to 1.5cm wide, gray colored					x					
669	TH69	Sibobo			pyroxene andesite	weakly argillized, host rock of argillization and silicification, different from TH63 andesite	x					x				
670	TH70	Sibobo			silicified and argillized rock	moderately silicified and argillized, overline by TH57, continues to the hydrothermal breccia			x							
671	TH71	Siruma	14.00090	123.16570	quartz veinlet	within the weathered green schist, parallel to the schistosity		x			x					
672	TH72	Siruma	13.59543	123.17307	quartz veinlet in green schist float	Qtz-veinlet within the green schist (chlorite schist?), parallel to the schistosity, no alteration halo		x			x					
673	TH73	Siruma	13.59537	123.17456	white clay	pale greenish gray colored clay, Smc(?), schistosity still remains, from white caly Mica, Ill-Kln(?)-Smc(?)			x							
674	TH74	Siruma	13.59537	123.17456	quartz vein	Qtz-vein in schist, parallel to schistosity					x		x			
675	TH75	Siruma	13.59537	123.17456	quartz vein clast and white clay	taken from a zone of rounded Qtz-fragment parallel to schistosity, Ill-Kln(?)			x		x			x		
676	TH76	Siruma	14.00437	123.16432	chlorite schist	amphibole(?), Ep(?)	x									
677	TH77	Siruma	14.00437	123.16432	quartz vein float	ridge					x					
678	TH78	Siruma	14.00529	123.16554	quartz vein	in the green schist, parallel to the schistosity, strikes N72W, dips vertically, taken from old shaft					x					
679	TH79	Southern Siruma Bay	14.00037	123.14011	cherty lime stone	cherty lime stone with Qtz-veinlets, maroon to pale purplish gray, Qtz-vein has no alteration halo	x									
680	TH80	Southern Siruma Bay	14.00037	123.14011	mica schist	white mica rich schist with green copper (Ma?)	x									
681	TH81	Southern Siruma Bay	14.00037	123.14011	quartz veinlet in schist	Qtz-veinlet in the schist, green copper (Ma?)					x					
682	TH82	Southern Siruma Bay	14.00037	123.14011	quartz veinlet in schist	MnO2-crystal(?), Qtz-veinlets within high grade Mn-ore										
683	TH83	Northern Siruma Bay	14.01180	123.15025	epidote schist	Ep-rich part within green schist, Qtz-veinlets occurs parallel to schistosity without alteration halo	x									
684	TH84	Popoot	13.57343	123.15028	argillized schist	argillized schist, schistode structure still remains, Py-rich	x		x		x					
685	TH85	Popoot	13.57310	123.15067	argillized rock	argillized schist, schistode structure still remains, Ill(?)			x							
686	TH86	Tamban-Olas	13.53121	123.29431	green rock	along crack Ep-Py, original rock basalt or gabbro	x					x				
687	TH87	Tamban-Olas	13.53121	123.29431	quartz vein	in the TH86 green rock, along shear zone, strikes N40W, dips steeply					x					
688	TH88	Tamban-Olas	13.53102	123.29256	green schist	amphibolite schist(?)	x									
689	TH89	Tamban-Olas	13.53102	123.29256	calcite quartz vein	Cal-Qtz-vein, banding, green schist fragment, Py					x					
690	TH90	Mt. Bagacay	14.12567	122.47088	hornblende andesite	large Hbl-phenocryst, Hbl-fresh	x					x		x		
691	TH91	Mt. Bagacay			quartz vein float with altered host rock	druse Qtz-crystal, Py			x		x		x			
692	TH92	Mt. Bagacay			andesite or sandstone hornfels	fine grained andesite or sandstone hornfels, host rock of Qtz-vein	x									
693	TH93	Mt. Bagacay	14.12591	122.47129	andesitic pyroclastics hornfels	host rock, pyroclastics, rounded clast at 2 a 20cm across	x									
694	TH94	Mt. Bagacay	14.12591	122.47129	quartz vein with host rock	Qtz-vein along joint or shear zone, 2cm wide, Ill-altered(?), Py					x					
695	TH95	Mt. Bagacay	14.12591	122.47129	quartz vein	waste, Cp, Qtz-crystal, Py					x		x			
696	TH96	Agunan Mine	14.13435	122.46514	magnetite ore			x								

Table 2-1 Sample description sheet

ID	sample	coordination: prospect	lat.	long.	rock type	description	instrumental analyses: TS	PS	XI	CA	OA	WA	FI	KAr	others	remarks
697	TH97	Agusan Mine	14.13405	122.46514	andesite pyroclastics	host rock, fine grained andesite pyroclastics(?), hornfels, Py Mar(?)		x								
698	TH98	Agusan Mine	14.13405	122.46514	andesite(?) hornfels	host rock, coarse grained, hornfels	x									
699	TH99	Agusan Mine	14.13405	122.46514	green copper	oxide copper, chalcanthite or chrysocolla				x	x					
700	TH100	Tuli Mine site	14.15251	122.43326	silicified rock	silicification, supergene alteration overprinting, Py-Cp(?)-Cov(?), taken from hanging wall					x					
701	TH101	Tuli Mine site	14.15251	122.43326	argillized sandstone	weak Smc(?)-argilic, supergene overprinting, taken from footwall, yellowish			x							
702	TH102	Bessemer Pit	14.17127	122.39216	argillized diorite	Smc(?)-argilic, supergene alteration overprinting, yellowish color, mafic changes into Mag			x							
703	TH103	Bessemer Pit	14.17127	122.39216	pyrite magnetite ore	Aggregate of Py, rounded crystal of Py		x								
704	TH104	Bessemer Pit	14.17127	122.39216	magnetite ore	layered Mag intergrate with Qtz-vein		x								
705	TH105	Bessemer Pit	14.17127	122.39216	hydrothermal biotite	host Bt with Qtz-crystal, occur in druse part			x				x			
706	TH106	Bessemer Pit	14.17127	122.39216	molybdenite with quartz crystal	occur in druse part same as hydrothermal Bt		x								
707	TH107	Bessemer Pit	14.17127	122.39216	magnetite with biotite	hydrothermal Bt occurs in magnetite ore										
708	TH108	Bessemer Pit	14.17127	122.39216	biotite rock	occur in druse with Qtz-crystal and molybdenite								x		
709	TH109	Bessemer Pit	14.17127	122.39216	magnetite ore	Mag-vein occur in the druse such as TH108		x								
710	TH110	Mabato	14.15437	122.39064	dacite intrusion	Phenocryst, Smc-altered(?)	x		x							
711	TH111	Pangano	14.14090	122.39514	andesite hornfels	host rock of the mineralization in the Pangano Prospect, same as one of Larap Mine area, dark greenish, hornfels, Py, silicification	x				x					
712	TH112	Exban Mine site	14.11545	122.39267	silicified rock	silicification, in old adit			x		x					
713	TH113	Exban Mine site	14.11545	122.39267	shear zone matrix	supergene alteration overprinting, in old adit			x		x					
714	TH114	Exban Mine site	14.11545	122.39267	silicified rock	host rock, resembles TH111, in old adit		x								
715	TH115	Exban Mine site	14.11545	122.39267	vein materials	taken from waste, Qtz-Py-Cc-Cov(?)		x								

notes:

coordination: ddd mm'ss.s" -> ddd.mmmm

analyses: TS; thin section, PS; polished thin section, XI; X-ray diffraction, CA; geochemical grade assay of principal 33 elements, OA; ore grade assay of principal 23 elements,

WA; whole rock analyses major and trace element, KAr; K-Ar dating, Lt; polish, FI; fluid inclusion homogenized temperature

Table 2-2 Result of geochemical grade assay

SAMPLE	PROSPECT	REFERENCE	Au ppb FA+AA	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %
TH08	Calpi	Fig.II-3-1	<5	<.2	0.94	16	230	<.5	<2	0.01	<.5	<1	14	19	0.40	<10	<1	0.18	<10	<.01	25	1	0.01
TH10	Calpi	Fig.II-3-1	<5	<.2	0.52	12	570	<.5	<2	<.01	<.5	28	22	61	1.99	<10	<1	0.06	<10	<.01	815	8	<.01
TH11	Calpi	Fig.II-3-1	<5	<.2	1.29	6	30	<.5	<2	0.01	<.5	<1	33	13	1.66	<10	<1	0.24	<10	<.01	5	1	0.16
TH12	Calpi	Fig.II-3-1	<5	0.4	0.09	2	80	<.5	<2	<.01	<.5	1	326	4	0.78	<10	<1	0.01	<10	<.01	25	2	<.01
TH13	Calpi	Fig.II-3-1	<5	<.2	0.37	30	20	<.5	<2	<.01	<.5	1	169	95	7.98	<10	<1	0.03	<10	<.01	10	5	0.01
TH14	Calpi	Fig.II-3-1	<5	<.2	0.01	2	120	<.5	<2	<.01	<.5	<1	168	3	0.47	<10	<1	<.01	<10	<.01	5	3	<.01
TH18	Calpi	Fig.II-3-1	not/as	<.2	2.07	10	330	<.5	<2	0.07	<.5	4	1440	19	2.44	<10	<1	0.32	10	<.01	65	4	0.10
TH19	Calpi	Fig.II-3-1	<5	<.2	1.19	<2	90	<.5	<2	0.05	<.5	2	8	38	3.23	<10	<1	0.07	<10	0.02	60	1	0.03
TH21	Calpi	Fig.II-3-1	<5	<.2	1.31	<2	30	<.5	<2	0.03	<.5	4	44	79	4.16	<10	<1	0.05	<10	<.01	50	1	0.09
TH22	Calpi	Fig.II-3-1	<5	<.2	0.70	8	10	<.5	<2	0.01	<.5	10	44	74	5.23	<10	<1	0.04	<10	<.01	30	1	0.04
TH23	Calpi	Fig.II-3-1	<5	0.2	1.01	2	30	<.5	<2	<.01	<.5	1	59	55	3.42	<10	<1	0.12	<10	<.01	10	1	0.05
TH25	Calpi	Fig.II-3-1	<5	<.2	0.98	6	20	<.5	<2	<.01	<.5	20	36	434	2.02	<10	<1	0.10	<10	<.01	15	7	0.08
SM15	Masulog	Fig.II-3-1	<5	<.2	1.59	8	<10	<.5	<2	0.12	<.5	<1	16	4	0.95	<10	<1	0.01	<10	0.01	15	<1	0.02
SM17	Masulog	Fig.II-3-1	<5	<.2	7.27	<2	40	<.5	<2	0.27	<.5	8	8	146	3.67	<10	<1	0.03	<10	0.69	145	<1	0.01
KY12	Pili anomary	Fig.II-3-1	<5	<.2	1.10	6	50	<.5	<2	0.04	<.5	1	12	7	1.33	<10	<1	0.19	<10	0.02	5	1	0.04
KY15	Pili anomary	Fig.II-3-1	<5	<.2	1.04	4	70	<.5	<2	0.06	<.5	2	39	8	2.48	<10	1	0.17	<10	0.04	25	<1	0.16
KY16	Pili anomary	Fig.II-3-1	<5	0.2	7.37	4	340	0.5	<2	0.05	<.5	28	45	86	5.90	10	<1	0.08	10	0.11	990	3	0.04
KY18	Pili anomary	Fig.II-3-1	<5	<.2	1.40	4	120	<.5	<2	0.03	<.5	7	31	19	3.39	<10	<1	0.25	<10	0.01	115	<1	0.04
KY20	Pili anomary	Fig.II-3-1	<5	0.2	1.53	<2	60	<.5	<2	0.11	<.5	4	33	12	1.25	<10	<1	0.05	50	<.01	150	<1	0.08
KY22	Cawayan river	Fig.II-3-1	<5	0.2	3.02	<2	70	<.5	<2	1.79	<.5	17	52	48	3.97	<10	<1	0.13	10	1.79	1190	<1	0.39
KY23	Cawayan river	Fig.II-3-1	<5	<.2	9.08	<2	30	<.5	<2	0.06	<.5	26	32	72	4.56	<10	<1	0.04	30	0.57	275	<1	0.01
KY24	Cawayan river	Fig.II-3-1	<5	<.2	1.29	7	80	<.5	<2	0.02	<.5	7	29	22	2.27	<10	<1	0.03	<10	0.04	25	<1	0.01
KY26B	Cawayan river	Fig.II-3-1	<5	<.2	0.82	6	20	<.5	<2	<.01	<.5	21	9	31	5.09	<10	<1	0.11	<10	0.04	15	<1	<.01
KY27	Cawayan river	Fig.II-3-1	<5	<.2	1.84	<2	40	0.5	<2	0.63	<.5	15	20	63	2.78	<10	<1	0.17	10	0.37	140	1	0.03
SM21	Cawayan river	Fig.II-3-1	<5	<.2	0.60	<2	160	<.5	<2	0.01	<.5	<1	257	9	0.36	<10	<1	0.20	<10	<.01	10	<1	0.01
SM22	Cawayan river	Fig.II-3-1	<5	<.2	1.56	2	230	<.5	<2	0.01	<.5	<1	59	15	2.11	<10	<1	0.24	<10	<.01	<5	<1	0.12
SM23	Cawayan river	Fig.II-3-1	<5	<.2	0.94	6	70	<.5	<2	0.01	<.5	10	83	51	5.08	<10	<1	0.16	<10	<.01	<5	<1	0.13
SM25	Cawayan river	Fig.II-3-1	<5	<.2	2.26	<2	70	<.5	<2	0.08	<.5	5	14	41	2.82	<10	<1	0.01	<10	0.06	45	<1	<.01
SM27	Tiwi	Fig.II-3-7	<5	<.2	0.16	4	<10	<.5	<2	<.01	<.5	<1	85	3	0.13	<10	1	0.01	<10	<.01	<5	<1	0.01
SM29	Tiwi	Fig.II-3-7	<5	0.2	3.46	12	10	<.5	<2	11.15	<.5	17	59	60	3.01	<10	<1	0.03	<10	1.70	450	1	0.26
SM30	Tiwi	Fig.II-3-7	85	1.0	0.96	108	50	0.5	<2	1.63	14.5	15	74	19	3.65	<10	<1	0.44	<10	0.27	540	9	0.05
SM31	Tiwi	Fig.II-3-7	<5	<.2	0.81	<2	40	<.5	<2	8.35	<.5	10	39	8	1.97	<10	<1	0.40	<10	0.02	25	12	0.03
SM32	Tiwi	Fig.II-3-7	<5	0.2	0.92	34	10	<.5	<2	10.3	<.5	8	23	11	1.52	<10	<1	0.12	<10	0.54	675	1	0.03
SM34	Tiwi	Fig.II-3-7	<5	<.2	1.00	2	60	<.5	<2	1.97	<.5	9	15	48	1.47	<10	<1	0.22	10	0.15	190	1	0.06
SM35	Tiwi	Fig.II-3-7	<5	<.2	0.31	2	130	<.5	<2	0.03	<.5	<1	27	10	0.53	<10	<1	0.06	<10	<.01	<5	2	0.03
SM5	Pantao-Nagas-Cabarian	Fig.II-3-9	55	0.4	0.13	38	40	<.5	<2	7.38	<.5	8	23	34	1.77	<10	<1	0.06	<10	0.01	20	1	0.01
KY06	Pio Duran-Kapulaki	Fig.II-3-10	<5	<.2	2.95	<2	<10	<.5	<2	1.84	<.5	9	36	42	1.90	<10	<1	0.01	<10	1.19	270	<1	0.29
KY08	Pio Duran-Kapulaki	Fig.II-3-10	<5	<.2	2.02	4	20	<.5	<2	1.43	<.5	11	94	36	3.06	<10	<1	0.01	<10	1.10	505	<1	0.28
KY28A	Pio Duran-Kapulaki	Fig.II-3-10	<5	0.6	2.03	6	20	<.5	2	0.72	<.5	14	37	1460	3.37	<10	<1	0.11	<10	1.45	675	<1	0.05
KY29	Pio Duran-Kapulaki	Fig.II-3-10	<5	<.2	1.71	<2	30	<.5	<2	0.64	<.5	10	56	39	3.41	<10	<1	0.15	<10	1.33	695	<1	0.06
TH26	Monte Calvario	Fig.II-3-12	<5	<.2	0.35	6	160	<.5	<2	0.01	<.5	3	137	15	4.52	<10	<1	0.02	<10	<.01	30	2	0.03
TH28	Monte Calvario	Fig.II-3-12	<5	<.2	0.34	16	60	<.5	<2	0.01	<.5	11	49	10	1.10	<10	<1	0.01	<10	0.01	5	<1	<.01
TH29	Monte Calvario	Fig.II-3-12	<5	<.2	2.50	10	40	<.5	<2	0.01	<.5	5	7	4	4.91	<10	<1	0.09	10	0.16	20	<1	0.14
TH34	Monte Calvario	Fig.II-3-12	<5	<.2	2.97	<2	80	0.5	<2	0.24	<.5	21	9	123	3.13	<10	<1	0.06	30	0.11	130	1	0.06
TH37	Monte Calvario	Fig.II-3-12	<5	<.2	0.13	<2	120	<.5	<2	0.01	<.5	5	376	35	0.82	<10	<1	<.01	<10	<.01	20	<1	<.01
SM38	Sisigon	Fig.II-3-12	<5	<.2	0.35	8	<10	<.5	<2	0.01	<.5	<1	38	23	2.77	<10	<1	0.08	<10	<.01	15	1	0.03
SM41	Sisigon	Fig.II-3-12	<5	<.2	0.29	8	30	<.5	2	0.01	<.5	9	45	23	3.17	<10	<1	0.08	<10	<.01	10	<1	<.01
SM42	Sisigon	Fig.II-3-12	10	<.2	0.36	10	40	<.5	<2	0.01	<.5	1	100	11	0.98	<10	<1	0.09	<10	<.01	40	1	0.03
KY31	Bulawan, Gabao	Fig.II-3-12	<5	<.2	0.99	<2	30	1	<2	0.61	<.5	17	6	22	5.40	<10	<1	0.30	<10	0.30	185	<1	0.02
KY33	Bulawan, Gabao	Fig.II-3-12	<5	0.2	3.62	<2	20	2	<2	0.26	<.5	27	11	65	5.20	<10	<1	0.06	20	2.54	1165	<1	0.01
KY35	Bulawan, Gabao	Fig.II-3-12	<5	<.2	1.71	4	40	<.5	<2	0.08	<.5	30	12	36	6.13	<10	<1	0.18	<10	0.93	205	1	0.01
KY36	Bulawan, Gabao	Fig.II-3-12	<5	<.2	1.74	6	20	<.5	<2	0.01	<.5	28	13	24	6.50	<10	<1	0.25	<10	0.16	75	<1	0.09
KY37	Bulawan, Gabao	Fig.II-3-12	<5	<.2	2.00	<2	500	<.5	<2	0.11	<.5	1	6	13	2.57	<10	<1	0.45	<10	0.19	25	<1	0.09
KY39	Roxas, Gabao	Fig.II-3-12	<5	0.2	1.38	<2	50	<.5	<2	0.83	<.5	10	30	29	2.83	<10	<1	0.09	10	0.24	245	1	0.15
KY45	Southern Irosin	Fig.II-3-12	<5	0.2	4.03	<2	190	<.5	<2	2.9	<.5	15	57	76	4.50	<10	<1	0.13	10	1.06	655	<1	0.47
KY46	Southern Irosin	Fig.II-3-12	<5	<.2	0.28	92	40	<.5	4	0.12	<.5	1	13	22	13.05	<10	<1	0.01	<10	0.03	225	3	<.01
KY47	Southern Irosin	Fig.II-3-12	<5	<.2	0.54	28	<10	<.5	<2	2.56	<.5	19	11	64	4.38	<10	<1	0.03	10	1.83	1050	<1	0.01
KY48	Southern Irosin	Fig.II-3-12	<5	<.2	0.80	30	<10	<.5	<2	1.19	<.5	28	6	62	3.79	<10	<1	0.07	20	0.25	190	<1	0.02
TH38	Magallanes	Fig.II-3-14	<5	<.2	6.99	2	1040	2.5	<2	0.07	<.5	21	14	20	6.71	<10	<1	0.03	70	0.09	1270	1	0.07
TH39	Magallanes	Fig.II-3-14	<5	0.4	5.04	8	790	2	<2	0.01	<.5	32	8	32	5.54	<10	<1	0.01	30	0.70	7760	<1	0.07

Table 2-2 Result of geochemical grade assay

SAMPLE	PROSPECT	REFERENCE	Au ppb FA+AA	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %
SM67	Bacolodo	Fig.II-3-14	<5	0.2	2.33	1930	210	0.5	<2	0.56	0.5	4	57	16	5.93	<10	<1	0.06	<10	0.13	225	1	0.20
SM44	San Roque-Mt. Malobago	Fig.II-3-15	<5	<.2	0.19	2	30	<.5	<2	0.01	<.5	<1	42	20	2.27	<10	<1	0.03	<10	<.01	15	4	<.01
SM47	San Roque-Mt. Malobago	Fig.II-3-15	<5	<.2	0.43	12	60	<.5	<2	<.01	<.5	<1	29	14	4.94	<10	<1	0.16	<10	<.01	<5	6	0.02
TM42	Tugas	Fig.II-3-16	<5	0.6	3.84	2	110	0.5	<2	0.01	<.5	10	18	52	5.60	<10	<1	<.01	<10	0.05	225	<1	<.01
TM46	Tugas	Fig.II-3-16	<5	<.2	1.29	6	160	<.5	<2	0.01	<.5	1	93	9	0.47	<10	<1	0.16	<10	<.01	365	<1	0.10
TM48	Tugas	Fig.II-3-16	<5	<.2	0.28	44	170	<.5	2	<.01	<.5	12	236	212	2.27	<10	<1	0.01	<10	<.01	45	1	<.01
TM49	Tugas	Fig.II-3-16	<5	<.2	0.09	12	30	<.5	2	<.01	<.5	2	133	21	3.22	<10	<1	<.01	<10	<.01	125	1	<.01
TM51	Tugas	Fig.II-3-16	<5	<.2	1.44	6	170	<.5	<2	0.22	<.5	14	18	6	1.69	<10	7	0.08	<10	0.17	840	<1	0.06
KY40	Matnog-Culasi	Fig.II-3-16	<5	<.2	0.46	44	10	<.5	<2	0.03	<.5	22	25	118	7.33	<10	<1	0.10	<10	0.02	20	2	0.04
KY41	Matnog-Culasi	Fig.II-3-16	<5	0.2	6.03	14	300	0.5	<2	0.39	<.5	19	12	81	6.69	10	<1	0.04	20	0.31	480	<1	0.03
KY42	Matnog-Culasi	Fig.II-3-16	<5	<.2	0.46	6	20	<.5	<2	<.01	<.5	18	28	42	6.36	<10	<1	0.03	<10	<.01	10	2	0.05
KY43	Matnog-Culasi	Fig.II-3-16	<5	<.2	0.41	2	90	0.5	2	0.01	<.5	20	24	51	2.03	<10	<1	0.05	<10	<.01	5	1	0.05
KY44	Matnog-Culasi	Fig.II-3-16	<5	0.2	0.14	26	420	0.5	<2	0.65	<.5	8	83	1	2.13	<10	<1	0.01	<10	0.04	3140	<1	<.01
SM50	Matnog-Culasi	Fig.II-3-16	<5	<.2	3.17	<2	190	0.5	<2	1.16	<.5	6	7	80	1.70	<10	<1	0.19	10	0.36	110	<1	0.20
SM53	Matnog-Culasi	Fig.II-3-16	<5	<.2	1.69	20	90	0.5	6	0.05	<.5	5	13	47	10.85	<10	<1	0.06	10	0.03	170	4	0.02
SM55	Matnog-Culasi	Fig.II-3-16	120	<.2	0.49	12	40	<.5	<2	0.01	<.5	<1	131	2	0.52	<10	<1	0.11	<10	<.01	35	36	0.01
TM55	Ginablam	Fig.II-3-16	<5	0.8	0.07	90	1840	<.5	<2	<.01	<.5	20	93	34	4.22	<10	<1	<.01	<10	<.01	8580	2	<.01
SM60	Butag-Sua	Fig.II-3-17	<5	<.2	0.05	<2	10	<.5	<2	<.01	<.5	<1	187	1	0.28	<10	<1	<.01	<10	<.01	10	<1	<.01
SM61	Butag-Sua	Fig.II-3-17	<5	<.2	0.68	4	80	<.5	<2	<.01	<.5	4	19	21	0.43	<10	<1	0.15	<10	<.01	10	1	0.05
SM65	Butag-Sua	Fig.II-3-17	<5	<.2	0.50	2	50	<.5	2	0.02	<.5	<1	56	4	0.82	<10	<1	0.06	<10	0.05	<5	1	0.27
SM66	Butag-Sua	Fig.II-3-17	<5	<.2	0.65	<2	30	<.5	<2	0.01	<.5	2	44	14	3.48	<10	<1	0.04	<10	0.01	45	1	0.14
TM71	Siruma	Fig.II-3-19	<5	<.2	0.81	2	<10	<.5	<2	<.01	<.5	1	222	16	2.40	<10	<1	<.01	<10	0.01	20	<1	0.01
TM72	Siruma	Fig.II-3-19	<5	<.2	2.06	8	10	<.5	<2	1.31	<.5	16	315	160	2.26	<10	<1	0.04	<10	1.56	505	<1	0.10
TM74	Siruma	Fig.II-3-19	<5	<.2	0.42	<2	10	<.5	<2	<.01	<.5	<1	227	3	0.37	<10	<1	0.10	<10	0.03	10	<1	0.06
TM75	Siruma	Fig.II-3-19	5	0.2	0.23	4	30	<.5	<2	0.03	<.5	1	446	9	0.50	<10	<1	0.02	<10	0.03	65	<1	<.01
TM77	Siruma	Fig.II-3-19	10	<.2	0.15	<2	10	<.5	<2	0.02	<.5	5	344	44	0.55	<10	<1	<.01	<10	0.03	130	<1	<.01
TM78	Siruma	Fig.II-3-19	2200	0.6	3.01	<2	30	<.5	<2	0.06	<.5	51	227	565	3.16	<10	<1	0.14	<10	1.03	520	<1	0.01
TM81	Southern Siruma Bay	Fig.II-3-19	5	<.2	0.36	2	170	<.5	<2	0.02	<.5	10	643	28	0.87	<10	<1	0.07	<10	0.07	1990	1	0.03
TM84	Popoot	Fig.II-3-21	55	0.4	0.80	12	30	<.5	2	2.31	<.5	11	52	195	2.76	<10	<1	0.15	<10	1.13	760	3	0.14
TM87	Tamban-Olas	Fig.II-3-21	10	<.2	1.21	<2	<10	<.5	<2	0.61	<.5	9	301	311	1.91	<10	<1	<.01	<10	0.57	300	2	0.02
TM89	Tamban-Olas	Fig.II-3-21	10	<.2	0.54	<2	<10	<.5	<2	>15.00	<.5	5	56	4	0.98	<10	<1	0.01	<10	0.54	1465	<1	0.03
KY67C	Western Goa	Fig.II-3-22	<5	0.2	0.29	2	20	<.5	<2	0.13	<.5	16	51	284	2.55	<10	<1	0.11	<10	0.22	905	<1	0.03
SM74	Western Pasacao	Fig.II-3-23	<5	0.4	0.59	<2	90	0.5	<2	13.95	<.5	15	27	68	4.01	<10	<1	0.04	<10	1.24	1415	<1	0.03
SM75	Western Pasacao	Fig.II-3-23	<5	<.2	0.91	<2	40	<.5	<2	7.53	<.5	9	101	14	3.25	<10	<1	0.01	<10	1.47	1250	<1	0.03
KY57B	Eastern Pasacao	Fig.II-3-24	<5	<.2	0.88	10	50	<.5	<2	0.53	<.5	11	20	99	1.89	<10	<1	0.15	20	0.28	165	1	0.48
KY57C	Eastern Pasacao	Fig.II-3-24	<5	0.2	0.24	<2	40	0.5	<2	10.8	<.5	11	29	58	5.34	<10	<1	0.02	<10	5.43	2010	<1	0.11
KY57D	Eastern Pasacao	Fig.II-3-24	<5	0.2	0.12	<2	10	0.5	<2	10.8	<.5	13	55	5	3.89	<10	<1	0.01	<10	5.30	1630	<1	0.04
KY59A	Eastern Pasacao	Fig.II-3-24	<5	0.8	0.13	616	420	<.5	<2	0.14	<.5	30	366	4	0.77	<10	<1	0.02	<10	0.13	40	<1	0.01
KY59D	Eastern Pasacao	Fig.II-3-24	<5	0.2	0.28	432	820	<.5	<2	10.05	<.5	39	229	<1	3.12	<10	1	0.01	<10	5.67	825	<1	0.03
KY60B	Eastern Pasacao	Fig.II-3-24	<5	<.2	0.19	22	120	<.5	<2	2.28	<.5	51	213	10	3.66	<10	<1	0.01	<10	11.55	555	<1	0.16
KY61	Eastern Pasacao	Fig.II-3-24	80	0.2	0.78	138	50	<.5	<2	7.55	<.5	42	897	1	2.97	<10	<1	<.01	<10	8.47	1515	18	0.08
SM70	Lake Buhi	Fig.II-3-26	<5	<.2	0.20	20	40	<.5	<2	0.04	<.5	<1	13	76	4.68	<10	<1	0.02	<10	0.01	60	3	0.01
SM71	Lake Buhi	Fig.II-3-26	<5	<.2	0.34	4	190	<.5	<2	9.08	<.5	2	26	36	1.41	<10	<1	0.02	<10	0.14	810	<1	0.06
SM80	Caorasan, Balatan	Fig.II-3-27	<5	<.2	0.01	<2	<10	<.5	<2	13.9	<.5	3	1	27	1.00	<10	<1	<.01	<10	<.01	5	2	0.01
SM81	Caorasan, Balatan	Fig.II-3-27	<5	0.2	2.41	6	<10	<.5	<2	1.86	<.5	19	85	<1	3.52	<10	<1	0.01	<10	2.37	465	<1	0.04
SM82	Caorasan, Balatan	Fig.II-3-27	<5	<.2	1.92	6	<10	<.5	<2	0.5	<.5	4	31	13	3.38	<10	<1	0.01	<10	1.05	300	3	0.03
SM86	Balatan	Fig.II-3-27	<5	<.2	0.01	<2	<10	<.5	<2	14.55	<.5	2	2	16	0.33	<10	<1	<.01	<10	<.01	<5	1	0.01
SM87	Balatan	Fig.II-3-27	<5	<.2	0.71	2	30	<.5	<2	0.06	<.5	<1	28	15	2.79	<10	<1	0.17	<10	0.31	35	1	0.01
SM89	Balatan	Fig.II-3-27	15	<.2	0.05	2	<10	<.5	2	0.02	<.5	20	83	208	>15.00	<10	<1	0.01	<10	<.01	5	<1	<.01
SM91	Balatan	Fig.II-3-27	<5	<.2	0.05	2	10	<.5	<2	0.08	<.5	1	261	11	0.91	<10	<1	0.02	<10	<.01	10	4	<.01
KY65C	Southern Balatan	Fig.II-3-27	<5	0.2	1.22	2	60	<.5	<2	0.9	<.5	14	98	77	3.80	<10	<1	0.08	10	1.03	555	3	0.09
TM57	Sibobo	Fig.II-3-30	<5	<.2	0.44	2	<10	<.5	<2	0.03	<.5	<1	37	1	0.22	<10	<1	0.03	<10	0.01	20	<1	0.06
TM58	Sibobo	Fig.II-3-30	<5	<.2	1.39	2	<10	<.5	<2	0.02	<.5	<1	93	3	0.41	<10	<1	0.15	<10	<.01	85	<1	0.10
TM60	Sibobo	Fig.II-3-30	<5	<.2	0.38	<2	10	<.5	<2	<.01	<.5	<1	9	1	0.06	<10	<1	0.03	<10	<.01	<5	<1	0.04
TM65	Sibobo	Fig.II-3-30	<5	<.2	1.59	6	40	<.5	<2	<.01	<.5	<1	49	9	0.36	10	<1	0.09	<10	<.01	5	3	0.07
TM66	Sibobo	Fig.II-3-30	15	<.2	1.33	<2	70	<.5	<2	0.06	<.5	7	18	90	2.23	<10	<1	0.08	<10	0.01	15	6	0.07
TM68	Sibobo	Fig.II-3-30	<5	<.2	0.67	2	20	<.5	<2	<.01	<.5	<1	92	4	0.60	<10	<1	0.19	<10	<.01	5	<1	0.08
TM99	Agusan Mine	Fig.II-3-33	60	<.2	4.46	<2	10	<.5	Intf*	0.24	<.5	749	60	0.388	5.37	<10	1	0.03	<10	0.17	155	29	0.21
TM100	Tidi Mine site	Fig.II-3-33	2180	22.6	0.34	74	380	<.5	<2	0.03	<.5	6	133	1775	1.62	<10	<1	0.12	<10	0.03	25	13	<.01
TM111	Pangano	Fig.II-3-33	25	0.2	1.40	<2	80	<.5	<2	1.34	<.5	26	66	397	2.86	<10	<1	0.45	<10	1.12	495	21	0.13

Table 2-2 Result of geochemical grade assay

SAMPLE	PROSPECT	REFERENCE	Au ppb FA+AA	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	Hg ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %
TH112	Exiban Mine site	Fig.II-3-33	15	<.2	1.16	2	70	<.5	<2	0.21	<.5	3	78	362	2.14	<10	<1	0.71	<10	0.55	150	2	0.03
TH113	Exiban Mine site	Fig.II-3-33	250	0.2	1.73	10	30	<.5	<2	0.24	<.5	7	34	375	3.44	<10	<1	0.63	<10	0.91	225	1	0.05
TH91	Mt. Bagacay	Fig.II-3-33	880	<.2	1.10	6	140	<.5	2	0.14	<.5	3	122	4	1.62	<10	<1	0.67	10	0.07	40	1	0.01
TH94	Mt. Bagacay	Fig.II-3-33	6780	6.2	2.47	6	60	<.5	14	0.99	<.5	14	85	3810	5.75	<10	<1	0.89	<10	0.72	455	8	0.01
TH95	Mt. Bagacay	Fig.II-3-33	2600	6.6	1.34	<2	40	<.5	8	0.27	<.5	9	82	4710	7.98	<10	<1	0.35	<10	0.68	290	5	<.01
KY68B	Bulala	Fig.II-3-36	<5	<.2	0.33	116	10	<.5	<2	0.02	<.5	5	73	21	3.65	<10	<1	<.01	<10	0.04	45	1	<.01
KY72	Bulala	Fig.II-3-36	<5	<.2	0.53	14	50	<.5	<2	<.01	<.5	2	10	44	3.66	<10	<1	0.08	<10	<.01	5	1	<.01
KY74	Bulala	Fig.II-3-36	<5	<.2	0.20	74	<10	<.5	<2	<.01	<.5	9	139	142	4.50	<10	<1	<.01	<10	<.01	20	1	<.01
SM93	Mt. Culasi	Fig.II-3-37	<5	0.2	0.01	14	470	<.5	<2	0.01	<.5	1	84	11	0.59	<10	<1	<.01	<10	<.01	5	3	<.01
SM94	Mt. Culasi	Fig.II-3-37	<5	7.2	0.01	158	30	<.5	86	0.01	<.5	5	55	35	4.12	<10	<1	0.03	<10	<.01	20	58	<.01
SM100	Mt. Labo	Fig.II-3-39	5	0.2	1.39	12	10	<.5	<2	0.03	<.5	7	29	45	3.22	<10	<1	0.14	<10	0.06	25	4	0.05
SM101	Mt. Labo	Fig.II-3-39	<5	<.2	0.79	28	90	<.5	<2	0.02	<.5	6	37	22	4.13	<10	<1	0.03	<10	0.01	20	4	0.04
SM102	Mt. Labo	Fig.II-3-39	<5	<.2	0.99	18	140	<.5	<2	0.02	<.5	4	38	21	1.98	<10	<1	0.19	<10	<.01	615	5	0.05
SM103	Mt. Labo	Fig.II-3-39	<5	1.0	2.59	10	20	<.5	<2	0.01	<.5	2	83	16	1.89	<10	<1	0.59	<10	<.01	40	2	0.11

Table 2-2 Result of geochemical grade assay

SAMPLE	PROSPECT	REFERENCE	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
TH08	Calpi	Fig.II-3-1	<1	240	<2	<2	1	192	<.01	<10	<10	21	<10	<2
TH10	Calpi	Fig.II-3-1	1	430	6	<2	1	172	<.01	<10	<10	18	<10	4
TH11	Calpi	Fig.II-3-1	<1	170	<2	<2	1	104	<.01	<10	<10	39	<10	<2
TH12	Calpi	Fig.II-3-1	5	30	<2	<2	3	17	0.01	<10	<10	4	<10	<2
TH13	Calpi	Fig.II-3-1	5	80	2	<2	<1	50	<.01	<10	<10	9	<10	6
TH14	Calpi	Fig.II-3-1	2	<10	<2	<2	<1	2	<.01	<10	<10	2	<10	<2
TH18	Calpi	Fig.II-3-1	20	970	44	<2	5	965	0.01	<10	<10	59	<10	8
TH19	Calpi	Fig.II-3-1	<1	210	2	<2	1	126	<.01	<10	<10	34	<10	4
TH21	Calpi	Fig.II-3-1	3	1020	<2	<2	2	207	<.01	<10	<10	35	<10	2
TH22	Calpi	Fig.II-3-1	6	340	2	<2	1	109	<.01	<10	<10	18	<10	12
TH23	Calpi	Fig.II-3-1	2	140	<2	<2	3	85	<.01	<10	<10	26	<10	2
TH25	Calpi	Fig.II-3-1	4	160	2	<2	1	103	<.01	<10	<10	12	<10	6
SM15	Masulog	Fig.II-3-1	<1	40	<2	<2	1	21	<.01	<10	<10	23	<10	<2
SM17	Masulog	Fig.II-3-1	5	270	<2	<2	20	34	0.06	<10	<10	177	<10	112
KY12	Pili anomary	Fig.II-3-1	1	180	<2	<2	2	136	<.01	<10	<10	23	<10	<2
KY15	Pili anomary	Fig.II-3-1	1	180	<2	<2	1	146	<.01	<10	<10	13	<10	<2
KY16	Pili anomary	Fig.II-3-1	40	220	6	<2	14	48	0.19	<10	<10	168	<10	76
KY18	Pili anomary	Fig.II-3-1	2	370	<2	<2	4	219	0.01	<10	<10	44	<10	10
KY20	Pili anomary	Fig.II-3-1	3	190	2	<2	3	152	0.01	<10	<10	42	<10	6
KY22	Cawayan river	Fig.II-3-1	18	1040	<2	<2	8	286	0.14	<10	<10	132	<10	62
KY23	Cawayan river	Fig.II-3-1	25	640	4	<2	7	18	<.01	<10	<10	47	<10	74
KY24	Cawayan river	Fig.II-3-1	5	20	6	<2	3	15	<.01	<10	<10	16	<10	14
KY26B	Cawayan river	Fig.II-3-1	5	150	2	<2	2	31	<.01	<10	<10	22	<10	2
KY27	Cawayan river	Fig.II-3-1	11	780	2	<2	7	80	0.01	<10	<10	43	<10	28
SM21	Cawayan river	Fig.II-3-1	3	110	<2	<2	<1	79	<.01	<10	<10	15	<10	<2
SM22	Cawayan river	Fig.II-3-1	<1	340	<2	<2	3	253	<.01	<10	<10	29	<10	<2
SM23	Cawayan river	Fig.II-3-1	6	130	<2	<2	<1	126	<.01	<10	<10	23	<10	2
SM25	Cawayan river	Fig.II-3-1	1	90	<2	<2	7	76	<.01	<10	<10	42	<10	4
SM27	Tiwi	Fig.II-3-7	1	10	<2	10	<1	9	<.01	<10	<10	3	<10	<2
SM29	Tiwi	Fig.II-3-7	28	610	<2	<2	6	566	0.17	<10	<10	50	<10	76
SM30	Tiwi	Fig.II-3-7	24	2110	674	2	8	80	<.01	<10	<10	30	<10	722
SM31	Tiwi	Fig.II-3-7	5	1140	14	<2	1	890	<.01	<10	<10	13	<10	10
SM32	Tiwi	Fig.II-3-7	5	440	2	<2	<1	1430	<.01	<10	<10	20	<10	44
SM34	Tiwi	Fig.II-3-7	5	1320	2	<2	1	78	0.04	<10	<10	13	<10	22
SM35	Tiwi	Fig.II-3-7	<1	50	<2	<2	<1	27	<.01	<10	<10	8	<10	<2
SM5	Pantao-Nagas-Cabarian	Fig.II-3-9	20	<10	<2	<2	<1	142	<.01	<10	<10	3	<10	6
KY06	Pio Duran-Kapulaki	Fig.II-3-10	13	190	<2	<2	6	48	0.13	<10	<10	72	<10	20
KY08	Pio Duran-Kapulaki	Fig.II-3-10	10	200	<2	<2	8	21	0.08	<10	<10	65	<10	46
KY28A	Pio Duran-Kapulaki	Fig.II-3-10	12	760	<2	<2	6	58	0.11	<10	<10	84	<10	58
KY29	Pio Duran-Kapulaki	Fig.II-3-10	5	590	<2	<2	3	31	0.07	<10	<10	68	<10	54
TH26	Monte Calvario	Fig.II-3-12	3	440	<2	2	2	146	<.01	<10	<10	14	<10	6
TH28	Monte Calvario	Fig.II-3-12	5	30	10	<2	<1	54	<.01	<10	<10	6	<10	<2
TH29	Monte Calvario	Fig.II-3-12	1	400	2	2	3	205	<.01	<10	<10	51	<10	10
TH34	Monte Calvario	Fig.II-3-12	3	1730	<2	<2	9	34	0.04	<10	<10	78	<10	24
TH37	Monte Calvario	Fig.II-3-12	7	50	<2	2	<1	7	<.01	<10	<10	5	<10	<2
SM38	Sisigon	Fig.II-3-12	<1	90	<2	<2	<1	26	<.01	<10	<10	20	<10	<2
SM41	Sisigon	Fig.II-3-12	7	80	2	<2	<1	28	<.01	<10	<10	6	<10	10
SM42	Sisigon	Fig.II-3-12	1	70	<2	<2	<1	40	<.01	<10	<10	20	<10	2
KY31	Bulawan, Gabao	Fig.II-3-12	4	840	<2	2	3	49	<.01	<10	<10	5	<10	10
KY33	Bulawan, Gabao	Fig.II-3-12	10	50	<2	<2	8	31	0.01	<10	<10	171	<10	174
KY35	Bulawan, Gabao	Fig.II-3-12	18	1580	10	<2	<1	12	<.01	<10	<10	13	<10	40
KY36	Bulawan, Gabao	Fig.II-3-12	10	10	<2	<2	3	10	<.01	<10	<10	19	<10	8
KY37	Bulawan, Gabao	Fig.II-3-12	<1	560	6	<2	1	88	<.01	<10	<10	10	<10	2
KY39	Roxas, Gabao	Fig.II-3-12	5	1000	2	<2	6	79	0.17	<10	<10	123	<10	38
KY45	Southern Irosin	Fig.II-3-12	9	1130	<2	<2	12	438	0.07	<10	<10	156	<10	42
KY46	Southern Irosin	Fig.II-3-12	4	2120	6	<2	3	73	<.01	<10	<10	19	<10	26
KY47	Southern Irosin	Fig.II-3-12	11	1120	2	<2	11	63	<.01	<10	<10	40	<10	32
KY48	Southern Irosin	Fig.II-3-12	15	1270	2	2	5	111	<.01	<10	<10	13	<10	14
TH38	Magallanes	Fig.II-3-14	1	930	12	<2	16	483	0.23	<10	<10	232	<10	68
TH39	Magallanes	Fig.II-3-14	2	390	16	<2	18	170	0.17	<10	<10	171	<10	90

Table 2-2 Result of geochemical grade assay

SAMPLE	PROSPECT	REFERENCE	Mi ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
SM67	Bacolodo	Fig.II-3-14	5	1290	10	6	4	127	0.06	<10	<10	51	<10	64
SM44	San Roque-Mt. Malobago	Fig.II-3-15	14	40	2	<2	<1	17	<.01	<10	<10	8	10	2
SM47	San Roque-Mt. Malobago	Fig.II-3-15	<1	210	<2	2	<1	79	<.01	<10	<10	18	<10	2
TM42	Tugas	Fig.II-3-16	10	190	10	<2	15	5	0.21	<10	<10	156	<10	56
TM46	Tugas	Fig.II-3-16	<1	250	<2	<2	1	258	<.01	<10	<10	10	<10	<2
TM48	Tugas	Fig.II-3-16	6	80	<2	2	<1	10	<.01	<10	<10	8	<10	4
TM49	Tugas	Fig.II-3-16	2	50	<2	<2	<1	1	<.01	<10	<10	3	<10	8
TM51	Tugas	Fig.II-3-16	5	30	2	<2	3	22	0.01	<10	<10	14	<10	14
KY40	Matnog-Culasi	Fig.II-3-16	9	90	<2	<2	<1	49	<.01	<10	<10	8	<10	6
KY41	Matnog-Culasi	Fig.II-3-16	8	30	8	<2	25	72	0.10	<10	<10	184	<10	58
KY42	Matnog-Culasi	Fig.II-3-16	4	80	<2	<2	<1	86	<.01	<10	<10	12	<10	4
KY43	Matnog-Culasi	Fig.II-3-16	8	140	<2	<2	<1	108	<.01	<10	<10	12	<10	<2
KY44	Matnog-Culasi	Fig.II-3-16	12	550	<2	<2	<1	22	<.01	<10	<10	10	<10	30
SM50	Matnog-Culasi	Fig.II-3-16	1	130	4	<2	12	585	0.01	<10	<10	88	<10	34
SM53	Matnog-Culasi	Fig.II-3-16	3	440	12	2	7	84	0.01	<10	<10	155	<10	38
SM55	Matnog-Culasi	Fig.II-3-16	1	50	12	<2	<1	25	<.01	<10	<10	7	<10	<2
TM55	Ginablan	Fig.II-3-16	4	110	16	<2	<1	16	<.01	<10	<10	3	<10	10
SM40	Butag-Sua	Fig.II-3-17	2	<10	<2	<2	<1	3	<.01	<10	<10	2	<10	<2
SM41	Butag-Sua	Fig.II-3-17	1	80	<2	<2	1	95	<.01	<10	<10	12	<10	<2
SM45	Butag-Sua	Fig.II-3-17	<1	360	<2	<2	<1	511	<.01	<10	<10	13	<10	<2
SM66	Butag-Sua	Fig.II-3-17	<1	140	<2	<2	1	109	<.01	<10	<10	27	<10	6
TM71	Siruma	Fig.II-3-19	4	30	<2	<2	6	1	<.01	<10	<10	56	<10	6
TM72	Siruma	Fig.II-3-19	53	320	<2	<2	7	71	0.27	<10	<10	75	<10	34
TM74	Siruma	Fig.II-3-19	3	<10	<2	<2	1	1	<.01	<10	<10	30	<10	<2
TM75	Siruma	Fig.II-3-19	7	10	4	<2	<1	7	<.01	<10	<10	5	<10	10
TM77	Siruma	Fig.II-3-19	11	<10	<2	<2	<1	1	<.01	<10	<10	6	<10	<2
TM78	Siruma	Fig.II-3-19	78	30	8	<2	15	7	0.03	<10	<10	105	<10	42
TM81	Southern Siruma Bay	Fig.II-3-19	15	<10	<2	<2	2	21	<.01	<10	<10	9	<10	10
TM84	Popoot	Fig.II-3-21	8	540	<2	<2	3	47	<.01	<10	<10	15	<10	70
TM87	Tamban-Olas	Fig.II-3-21	12	110	<2	<2	3	37	0.07	<10	<10	59	<10	20
TM89	Tamban-Olas	Fig.II-3-21	12	<10	<2	<2	1	216	<.01	<10	<10	11	<10	8
KY67C	Western Goa	Fig.II-3-22	11	100	<2	<2	4	10	<.01	<10	<10	8	<10	76
SM74	Western Pasacao	Fig.II-3-23	29	390	2	<2	11	82	<.01	<10	<10	82	<10	54
SM75	Western Pasacao	Fig.II-3-23	41	380	<2	<2	7	125	<.01	<10	<10	34	<10	24
KY57B	Eastern Pasacao	Fig.II-3-24	19	1560	6	<2	5	53	<.01	<10	<10	40	<10	18
KY57C	Eastern Pasacao	Fig.II-3-24	9	360	2	<2	12	112	<.01	<10	<10	98	<10	60
KY57D	Eastern Pasacao	Fig.II-3-24	14	130	<2	<2	3	90	<.01	<10	<10	33	<10	44
KY59A	Eastern Pasacao	Fig.II-3-24	516	<10	26	4	3	37	<.01	<10	<10	10	<10	28
KY59D	Eastern Pasacao	Fig.II-3-24	638	<10	<2	<2	5	291	<.01	<10	<10	15	<10	18
KY60B	Eastern Pasacao	Fig.II-3-24	849	<10	<2	<2	9	58	<.01	<10	<10	23	<10	22
KY61	Eastern Pasacao	Fig.II-3-24	634	<10	<2	<2	7	575	<.01	<10	<10	29	<10	44
SM70	Lake Buhi	Fig.II-3-26	<1	290	10	<2	<1	44	<.01	<10	<10	2	<10	6
SM71	Lake Buhi	Fig.II-3-26	1	150	<2	<2	<1	421	<.01	<10	<10	39	<10	10
SM80	Caorasan, Balatan	Fig.II-3-27	1	<10	<2	<2	<1	741	<.01	<10	<10	<1	<10	2
SM81	Caorasan, Balatan	Fig.II-3-27	28	200	<2	<2	7	84	0.15	<10	<10	92	<10	44
SM82	Caorasan, Balatan	Fig.II-3-27	6	280	<2	<2	7	51	0.06	<10	<10	76	<10	38
SM86	Balatan	Fig.II-3-27	3	<10	<2	<2	<1	834	<.01	<10	<10	<1	<10	<2
SM87	Balatan	Fig.II-3-27	<1	300	6	<2	1	26	<.01	<10	<10	16	<10	6
SM89	Balatan	Fig.II-3-27	27	10	<2	4	<1	3	<.01	<10	<10	<1	<10	14
SM91	Balatan	Fig.II-3-27	3	<10	<2	<2	<1	4	<.01	<10	<10	1	<10	<2
KY65C	Southern Balatan	Fig.II-3-27	42	1110	6	<2	9	48	0.11	<10	<10	73	<10	74
TM57	Sibobo	Fig.II-3-30	<1	40	<2	<2	<1	51	<.01	<10	<10	5	<10	<2
TM58	Sibobo	Fig.II-3-30	1	50	<2	<2	<1	84	<.01	<10	<10	14	<10	2
TM60	Sibobo	Fig.II-3-30	<1	60	<2	<2	<1	95	<.01	<10	<10	6	<10	<2
TM65	Sibobo	Fig.II-3-30	<1	50	<2	<2	<1	58	<.01	<10	<10	14	<10	<2
TM66	Sibobo	Fig.II-3-30	3	90	<2	<2	1	85	0.01	<10	<10	14	<10	6
TM68	Sibobo	Fig.II-3-30	<1	90	<2	<2	<1	98	<.01	<10	<10	7	<10	<2
TM99	Agusan Mine	Fig.II-3-33	151	Intf*	<2	<2	50	13	0.04	<10	<10	165	<10	20
TM100	Tidi Mine site	Fig.II-3-33	10	160	420	<2	2	13	<.01	<10	<10	12	<10	92
TM111	Pangano	Fig.II-3-33	30	950	<2	<2	12	27	0.15	<10	<10	121	<10	62

Table 2-2 Result of geochemical grade assay

SAMPLE	PROSPECT	REFERENCE	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
TH112	Exiban Mine site	Fig.II-3-33	1	570	10	<2	5	14	0.05	<10	<10	27	<10	18
TH113	Exiban Mine site	Fig.II-3-33	2	970	2	<2	6	19	0.05	<10	<10	45	<10	24
TH91	Mt. Bagacay	Fig.II-3-33	2	160	4	<2	<1	17	<.01	<10	<10	16	<10	2
TH94	Mt. Bagacay	Fig.II-3-33	8	930	<2	<2	2	24	<.01	<10	<10	40	<10	52
TH95	Mt. Bagacay	Fig.II-3-33	9	810	2	<2	1	11	<.01	<10	<10	43	<10	38
KY68B	Bulala	Fig.II-3-36	6	30	2	<2	<1	11	<.01	<10	<10	7	<10	6
KY72	Bulala	Fig.II-3-36	1	170	6	<2	2	20	<.01	<10	<10	26	<10	<2
KY74	Bulala	Fig.II-3-36	4	40	4	<2	<1	2	<.01	<10	<10	30	<10	6
SM93	Mt. Culasi	Fig.II-3-37	1	20	4	<2	<1	5	<.01	<10	<10	1	<10	<2
SM94	Mt. Culasi	Fig.II-3-37	9	30	144	4	<1	8	<.01	<10	<10	4	<10	8
SM100	Mt. Labo	Fig.II-3-39	7	60	12	<2	2	34	<.01	<10	<10	15	<10	50
SM101	Mt. Labo	Fig.II-3-39	7	80	2	<2	1	22	<.01	<10	<10	12	<10	10
SM102	Mt. Labo	Fig.II-3-39	2	300	48	<2	1	100	<.01	<10	<10	31	<10	16
SM103	Mt. Labo	Fig.II-3-39	2	110	12	<2	7	186	0.02	<10	<10	31	<10	24

Table 2-3 Result of ore grade assay

SAMPLE	PROSPECT	REFERENCE	Au ppb FA+AA	Au FA g/t	Ag ppm	Al %	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Hg ppm	K %	Mg %	Mn ppm	Mo ppm	Na %
KY11A	Pili anomary	Fig.II-3-1	<5	---	<1	0.77	<10	60	<5	<10	0.1	<5	<5	40	45	0.29	<10	0.14	0.01	170	<5	0.08
KY13	Pili anomary	Fig.II-3-1	<5	---	<1	0.46	<10	60	<5	<10	0.05	<5	<5	30	25	3.63	<10	0.13	<.01	<10	<5	0.1
KY14	Pili anomary	Fig.II-3-1	<5	---	<1	0.75	<10	260	<5	<10	0.08	<5	<5	20	50	2.53	<10	0.13	0.01	50	<5	0.06
KY21	Pili anomary	Fig.II-3-1	<5	---	<1	0.61	<10	20	<5	<10	0.04	<5	<5	40	15	1.67	<10	0.07	<.01	40	<5	0.09
KY26A	Cawayan river	Fig.II-3-1	25	---	<1	1.29	<10	80	<5	<10	0.09	<5	<5	30	20	2.22	<10	0.15	<.01	<10	<5	0.27
SM7	Pantao-Nagas-Cabarlan	Fig.II-3-9	10	---	4	1.09	<10	<20	<5	<10	0.72	35	5	120	14500	3.31	<10	<.01	0.79	260	<5	0.02
KY05	Pio Duran-Kapulaki	Fig.II-3-10	<5	---	<1	0.7	10	40	<5	<10	0.17	<5	<5	70	30	0.46	<10	0.1	0.18	160	<5	0.1
KY26B	Pio Duran-Kapulaki	Fig.II-3-10	640	---	6	2.08	<10	20	<5	<10	0.58	<5	20	40	13900	4.25	<10	0.15	1.89	490	<5	0.08
KY30A	Pio Duran-Kapulaki	Fig.II-3-10	10	---	<1	4.79	10	40	<5	<10	6.23	<5	5	60	230	2.64	<10	0.02	1.04	560	5	0.04
KY34	Bulawan, Gabao	Fig.II-3-12	<5	---	<1	0.88	<10	40	<5	<10	0.1	<5	<5	60	35	2.56	<10	0.12	0.01	10	10	0.18
KY66A	Western Goa	Fig.II-3-22	<5	---	<1	0.02	<10	20	<5	<10	0.07	<5	<5	380	5	0.63	<10	0.01	0.19	50	<5	0.05
KY66B	Western Goa	Fig.II-3-22	60	---	<1	0.06	<10	20	<5	<10	0.06	<5	5	200	25	0.87	<10	0.04	0.05	440	5	0.03
KY67A	Western Goa	Fig.II-3-22	<5	---	<1	0.59	<10	40	<5	<10	0.07	<5	5	100	395	1.45	<10	0.22	0.08	220	<5	0.09
KY58A	Eastern Pasacao	Fig.II-3-24	35	---	<1	0.17	230	13640	<5	<10	0.11	<5	15	380	80	0.82	<10	0.04	0.06	20	<5	0.05
KY58B	Eastern Pasacao	Fig.II-3-24	10	---	<1	0.38	1080	3920	<5	<10	0.11	<5	50	710	70	1.42	<10	0.04	0.76	90	<5	0.05
KY58C	Eastern Pasacao	Fig.II-3-24	10	---	<1	0.27	180	280	<5	<10	12.15	<5	50	830	10	3.95	<10	0.03	7.1	1080	<5	0.05
KY59C	Eastern Pasacao	Fig.II-3-24	10	---	<1	0.15	600	1540	<5	<10	1.49	<5	35	430	10	1.31	<10	0.04	0.97	410	<5	0.03
KY60A	Eastern Pasacao	Fig.II-3-24	<5	---	<1	0.12	<10	100	<5	<10	1.87	<5	30	270	5	2.33	<10	0.01	7.55	430	<5	0.12
SM78	Caorasan, Balatan	Fig.II-3-27	210	---	<1	0.4	<10	<20	<5	<10	0.13	<5	<5	130	3970	0.97	<10	0.05	0.15	70	<5	0.12
KY77A	Parocale	Fig.II-3-32	missing	---	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing
KY77C	Paracale	Fig.II-3-32	35	---	65	0.06	10	<20	<5	600	0.04	<5	25	460	250	6.35	<10	0.02	0.01	50	<5	0.04
KY78A	Paracale	Fig.II-3-32	>10000	57.19	48	0.21	<10	<20	<5	60	0.04	<5	5	460	140	1.84	<10	0.11	0.01	50	<5	0.05

SAMPLE	PROSPECT	REFERENCE	Ni ppm	P ppm	Pb ppm	Sb ppm	Sc ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm
KY11A	Pili anomary	Fig.II-3-1	<5	100	10	10	<5	105	<.01	<20	<20	<20	<20	75
KY13	Pili anomary	Fig.II-3-1	<5	100	20	<10	<5	85	<.01	<20	<20	<20	<20	15
KY14	Pili anomary	Fig.II-3-1	<5	100	15	<10	<5	95	<.01	<20	<20	20	<20	40
KY21	Pili anomary	Fig.II-3-1	<5	200	5	<10	<5	115	<.01	<20	<20	40	<20	10
KY26A	Cawayan river	Fig.II-3-1	5	1200	5	<10	<5	190	<.01	<20	<20	60	<20	5
SM7	Pantao-Nagas-Cabarlan	Fig.II-3-9	10	100	15	<10	<5	20	0.04	<20	<20	120	<20	1810
KY05	Pio Duran-Kapulaki	Fig.II-3-10	10	100	20	<10	<5	60	<.01	<20	<20	<20	<20	50
KY26B	Pio Duran-Kapulaki	Fig.II-3-10	35	800	20	<10	5	60	0.14	<20	<20	120	<20	90
KY30A	Pio Duran-Kapulaki	Fig.II-3-10	5	300	20	<10	<5	75	0.09	<20	<20	80	<20	65
KY34	Bulawan, Gabao	Fig.II-3-12	<5	200	5	<10	<5	155	<.01	<20	<20	<20	<20	5
KY66A	Western Goa	Fig.II-3-22	30	<100	<5	<10	<5	<5	<.01	<20	<20	<20	<20	<5
KY66B	Western Goa	Fig.II-3-22	10	100	5	<10	<5	5	<.01	<20	<20	<20	<20	15
KY67A	Western Goa	Fig.II-3-22	20	<100	5	<10	<5	20	0.01	<20	<20	20	<20	35
KY58A	Eastern Pasacao	Fig.II-3-24	180	<100	10	<10	<5	345	<.01	<20	<20	<20	<20	20
KY58B	Eastern Pasacao	Fig.II-3-24	1180	<100	5	<10	<5	65	<.01	<20	<20	<20	<20	25
KY58C	Eastern Pasacao	Fig.II-3-24	1055	<100	<5	<10	5	330	<.01	<20	<20	20	<20	20
KY59C	Eastern Pasacao	Fig.II-3-24	760	<100	5	10	<5	65	<.01	<20	<20	<20	<20	20
KY60A	Eastern Pasacao	Fig.II-3-24	445	<100	<5	<10	<5	50	<.01	<20	<20	<20	<20	15
SM78	Caorasan, Balatan	Fig.II-3-27	<5	<100	15	<10	<5	25	0.01	<20	<20	<20	<20	25
KY77A	Parocale	Fig.II-3-32	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing
KY77C	Paracale	Fig.II-3-32	150	<100	35	<10	<5	<5	<.01	<20	<20	<20	<20	5
KY78A	Parocale	Fig.II-3-32	35	<100	1780	<10	<5	5	<.01	<20	<20	<20	<20	5

Table 2-4 Result of whole rock analysis (major and trace elements)

SAMPLE	PROSPECT	REFERENCE	Al2O3 %	CaO %	Cr2O3 %	Fe2O3 %	K2O %	MgO %	MnO %	Na2O %	P2O5 %	SiO2 %	TiO2 %	LOI %	TOTAL %	FeO %	+H2O %	-H2O %	Ba ppm	Ce ppm	Ce ppm	Co ppm	Cu ppm	Dy ppm	Er ppm	Eu ppm
TH06	Calpi	Fig.II-3-1	17.30	6.33	<.01	6.74	1.54	3.48	0.12	3.42	0.17	56.93	0.74	2.28	99.05	2.18	1.01	1.08	702.0	51.5	0.9	20.0	65	4.0	2.1	1.6
TH24	Calpi	Fig.II-3-1	16.08	6.72	<.01	7.15	2.07	3.38	0.13	3.32	0.34	55.72	0.65	1.29	98.85	2.95	0.61	0.62	645.0	53.5	1.0	21.0	60	4.3	2.3	1.5
SM28	Tiwi	Fig.II-3-7	17.87	4.48	<.01	5.37	2.33	1.14	0.18	4.74	0.43	61.59	0.47	1.33	99.93	0.81	0.30	0.73	763.0	72.0	1.0	8.5	10	5.3	3.2	2.0
SM02	Pantao-Nagas-Cabarian	Fig.II-3-9	16.02	8.26	<.01	7.36	0.70	6.89	0.21	3.15	0.07	52.76	0.53	3.02	98.97	4.72	2.03	0.97	225.0	14.5	0.1	24.5	45	4.5	2.9	1.2
SM03	Pantao-Nagas-Cabarian	Fig.II-3-9	15.65	12.46	<.01	6.03	0.30	6.66	0.11	3.27	0.03	49.69	0.60	4.63	99.43	3.37	2.26	0.65	70.5	8.0	<.1	28.0	15	3.2	1.8	0.6
SM04	Pantao-Nagas-Cabarian	Fig.II-3-9	16.85	4.26	<.01	8.62	0.17	1.72	0.14	6.90	0.19	53.62	0.97	5.53	98.97	1.22	2.16	2.37	26.0	21.0	<.1	22.0	100	5.1	2.8	1.4
KY29	Pio Duran-Kapulaki	Fig.II-3-10	17.88	3.46	<.01	6.39	1.68	3.22	0.16	4.67	0.17	58.36	0.50	2.74	99.23	3.71	2.26	0.27	194.5	15.5	2.6	14.0	45	2.7	1.9	1.0
SM39	Sisigon	Fig.II-3-12	18.93	7.03	<.01	7.47	1.52	3.28	0.14	2.97	0.24	54.27	0.66	3.04	98.95	2.64	1.80	1.44	629.0	43.5	1.1	21.0	35	4.1	2.4	1.3
SM43	Sisigon	Fig.II-3-12	17.72	6.20	<.01	6.25	1.80	3.16	0.13	3.51	0.17	57.39	0.52	1.64	98.49	2.90	0.68	0.86	452.0	29.0	0.4	17.5	30	3.2	1.7	1.0
TH40	Magallanes	Fig.II-3-14	17.28	6.25	<.01	6.80	2.54	3.15	0.14	3.64	0.40	56.54	0.71	0.98	98.43	3.47	0.87	0.20	775.0	68.0	1.6	14.5	35	4.6	2.5	1.7
TH41	Mt. Bintacan	Fig.II-3-14	18.67	4.19	<.01	6.95	1.91	2.17	0.18	3.02	0.37	56.72	0.55	4.38	99.11	1.95	2.38	1.99	1360.0	59.5	0.2	16.0	35	3.9	2.1	1.6
SM46	San Roque-Mt. Malobago	Fig.II-3-15	14.63	2.17	<.01	1.78	3.00	0.64	0.10	3.91	0.11	71.02	0.18	2.09	99.63	0.50	1.84	0.08	772.0	39.5	1.5	10.5	5	2.0	1.2	0.7
SM49	San Roque-Mt. Malobago	Fig.II-3-15	17.77	5.72	<.01	6.33	1.83	3.12	0.13	3.16	0.18	56.40	0.53	3.77	98.94	2.74	2.25	1.60	446.0	31.0	0.7	17.0	40	3.1	1.7	0.9
TH43	Tugas	Fig.II-3-16	18.69	6.65	<.01	6.94	2.17	2.51	0.10	3.77	0.22	56.52	0.75	1.59	99.91	2.31	0.55	0.97	815.0	56.0	1.3	18.5	35	5.4	3.4	1.7
TH54	Ginablam	Fig.II-3-16	18.00	6.34	<.01	5.91	1.61	2.69	0.12	3.82	0.20	58.55	0.56	0.95	98.75	2.27	0.27	0.63	803.0	42.0	0.7	14.5	40	3.4	2.3	1.4
SM59	Butag-Sua	Fig.II-3-17	19.90	6.67	<.01	5.80	1.63	1.94	0.12	3.84	0.29	56.57	0.59	1.66	99.01	2.02	0.82	0.85	576.0	35.5	0.9	13.0	45	4.6	3.0	1.5
TH86	Tamban-Olas	Fig.II-3-21	14.37	11.34	<.01	9.62	0.07	2.79	0.17	0.31	0.23	57.05	0.81	2.55	99.31	3.30	2.55	0.15	11.5	13.5	<.1	8.0	40	2.4	1.3	0.7
SM73	Western Pasacao	Fig.II-3-23	17.94	4.76	<.01	8.09	3.16	1.31	0.12	3.67	0.57	52.82	0.87	5.64	98.95	1.10	1.98	1.63	1040.0	70.0	1.6	18.5	30	4.7	2.2	2.1
SM68	Lake Buhi	Fig.II-3-26	18.49	6.12	<.01	6.61	1.84	3.26	0.14	3.53	0.25	56.90	0.78	1.85	99.97	2.06	1.42	0.37	670.0	53.5	0.5	18.5	80	3.5	2.3	1.6
SM79	Caorasan, Balatan	Fig.II-3-27	19.12	5.66	<.01	6.43	1.27	2.91	0.11	6.04	0.30	57.77	0.64	3.37	98.97	2.51	2.51	0.74	394.0	34.0	0.9	16.5	55	2.2	1.7	1.3
TH63	Sibobo	Fig.II-3-30	18.69	5.76	<.01	5.77	1.55	1.57	0.09	3.96	0.29	57.66	0.55	2.96	98.85	1.50	0.96	1.19	1115.0	36.5	0.5	10.0	60	4.3	2.7	1.4
TH69	Sibobo	Fig.II-3-30	17.73	5.33	<.01	5.90	1.82	2.43	0.11	3.93	0.23	58.84	0.52	1.72	98.56	1.33	0.89	0.75	509.0	35.5	1.2	12.0	50	3.0	1.9	1.2
TH90	Mt. Bagacay	Fig.II-3-33	18.22	7.76	<.01	9.20	1.28	5.81	0.15	3.44	0.42	49.86	0.85	2.74	99.73	4.14	1.95	0.74	706.0	59.0	<.1	28.5	175	3.8	2.2	1.7
SM95	Mt. Culasi	Fig.II-3-37	17.03	2.73	<.01	2.51	3.04	0.49	0.10	4.19	0.11	67.01	0.24	1.41	98.86	0.97	0.66	0.49	752.0	38.0	0.9	3.5	5	1.8	0.8	0.7
SM97	Mt. Culasi	Fig.II-3-37	18.73	5.25	<.01	6.36	1.85	2.67	0.09	3.74	0.20	56.22	0.58	3.44	99.08	1.46	1.73	1.54	556.0	32.5	1.2	14.0	65	3.6	1.9	1.4
SM98	Mt. Labo	Fig.II-3-39	18.25	6.34	<.01	7.32	1.89	2.97	0.14	3.27	0.34	55.53	0.69	2.39	99.13	2.76	1.31	0.69	406.0	25.5	0.7	17.0	20	3.3	2.0	1.1

SAMPLE	PROSPECT	REFERENCE	Gd ppm	Ga ppm	Nd ppm	Ho ppm	La ppm	Pb ppm	Lu ppm	Nd ppm	Ni ppm	Nb ppm	Pr ppm	Rb ppm	Sm ppm	Ag ppm	Sr ppm	Ta ppm	Tb ppm	Tl ppm	Th ppm	Tm ppm	Sn ppm	W ppm	U ppm	V ppm
TH06	Calpi	Fig.II-3-1	5.0	16	3	0.8	23.5	10	0.4	22.0	<5	6	5.8	35.8	4.3	<1	740.0	1.5	0.6	<.5	3	0.3	3	7	1.5	205
TH24	Calpi	Fig.II-3-1	5.2	16	3	0.8	23.5	<5	0.4	23.5	<5	6	6.1	42.2	4.5	1	772.0	1.5	0.7	<.5	3	0.4	3	11	1.5	165
SM28	Tiwi	Fig.II-3-7	6.7	17	4	1.1	34.0	5	0.5	31.5	<5	8	8.6	46.4	6.5	<1	675.0	1.5	1.0	<.5	3	0.5	8	2	1.5	80
SM02	Pantao-Nagas-Cabarian	Fig.II-3-9	4.0	14	<1	1.0	3.5	<5	0.5	10.5	110	2	2.2	6.2	3.4	<1	483.0	<.5	0.7	<.5	3	0.5	6	1	<.5	195
SM03	Pantao-Nagas-Cabarian	Fig.II-3-9	2.4	13	<1	0.6	2.5	5	0.3	6.0	35	2	1.2	2.8	2.0	1	83.3	<.5	0.4	<.5	1	0.3	4	1	<.5	260
SM04	Pantao-Nagas-Cabarian	Fig.II-3-9	5.1	19	5	1.0	7.5	5	0.5	15.0	<5	5	3.2	1.0	5.9	1	185.0	0.5	0.9	0.5	1	0.4	7	3	<.5	260
KY29	Pio Duran-Kapulaki	Fig.II-3-10	3.1	16	2	0.7	6.0	<5	0.4	9.0	<5	4	2.0	33.4	2.3	1	434.0	0.5	0.5	0.5	2	0.3	5	3	<.5	140
SM39	Sisigon	Fig.II-3-12	4.4	18	3	0.8	20.5	5	0.4	17.5	<5	4	4.6	53.2	3.2	<1	700.0	0.5	0.8	<.5	3	0.3	3	4	1.5	180
SM43	Sisigon	Fig.II-3-12	3.4	16	2	0.6	14.0	5	0.3	13.5	5	4	3.2	33.8	2.7	<1	412.0	2.0	0.5	<.5	3	0.3	4	10	1.0	155
TH40	Magallanes	Fig.II-3-14	6.3	17	4	0.9	31.0	5	0.4	26.5	<5	7	7.2	54.2	5.9	<1	707.0	0.5	0.9	<.5	5	0.4	3	6	2.0	165
TH41	Mt. Bintacan	Fig.II-3-14	4.7	17	3	0.7	25.5	5	0.4	24.5	<5	6	6.4	25.2	5.2	<1	569.0	1.0	0.7	<.5	2	0.3	3	6	0.5	115
SM46	San Roque-Mt. Malobago	Fig.II-3-15	2.5	12	3	0.4	19.0	10	0.3	11.5	<5	7	3.9	61.8	1.6	<1	242.0	2.0	0.4	0.5	3	0.2	3	9	2.0	20
SM49	San Roque-Mt. Malobago	Fig.II-3-15	3.1	16	2	0.6	14.0	<5	0.3	12.0	15	4	3.5	34.0	2.6	<1	373.0	1.5	0.4	<.5	2	0.3	3	8	1.0	160
TH43	Tugas	Fig.II-3-16	6.0	17	4	1.2	29.0	5	0.5	24.0	<5	5	6.0	48.2	5.2	1	638.0	0.5	1.0	0.5	5	0.4	3	4	2.5	185
TH54	Ginablam	Fig.II-3-16	4.2	16	3	0.7	20.5	5	0.4	17.0	<5	4	4.4	29.4	3.6	<1	540.0	0.5	0.6	<.5	3	0.4	2	1	1.5	135
SM59	Butag-Sua	Fig.II-3-17	5.8	17	4	0.9	21.0	5	0.4	22.0	15	4	5.4	24.6	5.0	<1	491.0	1.0	0.9	0.5	2	0.5	3	6	1.0	110
TH86	Tamban-Olas	Fig.II-3-21	2.5	10	1	0.5	5.0	<5	0.2	7.5	<5	<1	1.8	0.2	2.1	<1	214.0	0.5	0.4	<.5	<1	0.2	3	7	<.5	165
SM73	Western Pasacao	Fig.II-3-23	5.8	20	6	0.6	35.0	10	0.2	32.5	5	9	9.0	64.6	5.9	2	821.0	2.0	0.8	0.5	4	0.3	4	10	2.0	220
SM68	Lake Buhi	Fig.II-3-26	5.0	17	4	0.8	24.5	<5	0.4	24.0	10	8	5.9	29.2	4.6	<1	674.0	1.5	0.8	<.5	4	0.4	4	9	1.5	160
SM79	Caorasan, Balatan	Fig.II-3-27	3.5	18	1	0.4	13.5	5	0.1	17.5	<5	3	4.0	11.6	3.0	<1	1210.0	0.5	0.5	<.5	<1	0.1	3	9	<.5	165
TH63	Sibobo	Fig.II-3-30	4.4	18	3	0.8	15.5	<5	0.5	19.0	<5	5	4.4	27.2	3.9	<1	906.0	1.0	0.7	<.5	1	0.4	3	1	0.5	145
TH69	Sibobo	Fig.II-3-30	3.7	16	4	0.6	16.0	15	0.4	15.0	<5	6	3.9	36.0	3.2	<1	681.0	0.5	0.6	0.5	1	0.3	3	1	1.0	120
TH90	Mt. Bagacay	Fig.II-3-33	5.0	17	1	0.8	26.0	5	0.3	25.5	<5	6	6.4	15.2	4.7	16	1745.0	0.5	0.8	0.5	3	0.3	4	2	1.0	330
SM95	Mt. Culasi	Fig.II-3-37	1.9	15	3	0.3	17.5	10	0.1	14.5	<5	6	3.9	54.8	2.0	<1	805.0	2.0	0.3	<.5	2	0.1	3	10	2.0	25
SM97	Mt. Culasi	Fig.II-3-37	4.1	17	3	0.7	14.0	5	0.4	17.5	<5	4	3.9	31.0	3.8	<1	733.0	1.0	0.6	<.5	2	0.3	3	7	1.5	175
SM98	Mt. Labo	Fig.II-3-39	3.5	16	2	0.7	10.5	<5	0.3	12.0	10	3	2.9	26.2	3.1	<1	661.0	1.0	0.6	<.5	1	0.3	3	6	0.5	200

Table 2-5 Result of determination of mineral assemblages by X-ray diffraction

No.	Sample No.	Prospect	Reference of locality	Silicate minerals: Silicate: Quartz	Cristobalite	Tridymite	Feldspar: Plagioclase	K-feldspar	Albite	Clay minerals: Sericite	Chlorite	Kaolinite	Smectite	Pyrophyllite	Halloysite	Ser / Sme	Chl / Sme	Zeolite: Clinoptilolite	Mordenite	Laumontite	Stilbite	Heulandite	Others: Hornblend	Pyroxine	Biotite	Sulfate: Alunite	Gypsum	Barite	Jarosite	Carbonate: Calcite	Dolomite	Siderite	Magnesite	Others: Pyrite	Hematite	Anatase	Rutile	Goethite	Marcasite	Magnetite	Sphalerite	Celes	Comments	Preparation: Ethylene glycol	Hcl
1	TH 08	Calpi	Fig.II-3-1		△	△																				○																		
2	TH 09	Calpi	Fig.II-3-1		△	△							◎													○																		
3	TH 10	Calpi	Fig.II-3-1		◎	○																				△																		
4	TH 12	Calpi	Fig.II-3-1	◎																																								
5	TH 14	Calpi	Fig.II-3-1	◎																															○									
6	TH 15	Calpi	Fig.II-3-1	◎																							△							◎		△								
7	TH 17	Calpi	Fig.II-3-1		△	△	○	△					◎													◎																		
8	TH 19	Calpi	Fig.II-3-1		△									△												◎																	minamiite		
9	TH 21	Calpi	Fig.II-3-1	○																						◎																		
10	TH 22	Calpi	Fig.II-3-1	◎																						◎								○										
11	SM 15	Masulog	Fig.II-3-1									◎														○																	minamiite		
12	SM 17	Masulog	Fig.II-3-1		△										△																											amorphous		
13	KY 11b	Pili anomary	Fig.II-3-1	◎																						◎																		
14	KY 13	Pili anomary	Fig.II-3-1		△	△																				○		△						○									meta-alunite		
15	KY 15	Pili anomary	Fig.II-3-1		△	△																				◎																	meta-alunite		
16	KY 16	Pili anomary	Fig.II-3-1		○										◎																											minamiite		
17	KY 20	Pili anomary	Fig.II-3-1	◎																						◎																		
18	KY 24	Cawayan river	Fig.II-3-1	△	○	△						◎																						◎										
19	KY 26b	Cawayan river	Fig.II-3-1		△	△						○		△																				◎		△								
20	KY 27	Cawayan river	Fig.II-3-1		△	△	◎						△																					◎										
21	SM 21	Cawayan river	Fig.II-3-1	◎																																							
22	SM 22a	Cawayan river	Fig.II-3-1		△	○						△														◎																		
23	SM 22b	Cawayan river	Fig.II-3-1		△	△							◎																					◎										
24	SM 23	Cawayan river	Fig.II-3-1	◎																						◎								◎										
25	SM 25	Cawayan river	Fig.II-3-1		△	△						◎																						○										
26	SM 29	Tiwi	Fig.II-3-7	△			△				○																			◎										◎	◎				
27	SM 30	Tiwi	Fig.II-3-7	◎				◎		△																	◎																	anhydrite		
28	SM 31	Tiwi	Fig.II-3-7	◎						○																◎								◎										
29	SM 32	Tiwi	Fig.II-3-7	○				○			○																																
30	SM 34	Tiwi	Fig.II-3-7	◎												△						○								○				◎										
31	SM 35	Tiwi	Fig.II-3-7	△	△	△																				◎										△								
32	TH 26	Monte Calvario	Fig.II-3-12	◎																																							
33	TH 27	Monte Calvario	Fig.II-3-12	◎									◎													○										△		○						
34	TH 28	Monte Calvario	Fig.II-3-12		△	○							○																														
35	TH 29	Monte Calvario	Fig.II-3-12		△	△							◎																														
36	TH 33	Monte Calvario	Fig.II-3-12	△			○						◎																	△													
37	TH 34	Monte Calvario	Fig.II-3-12				◎	○																										○									
38	SM 38	Sisigon	Fig.II-3-12	◎																						◎																	minimiite		
39	SM 41	Sisigon	Fig.II-3-12	◎			○																			◎																	minimiite		
40	SM 42	Sisigon	Fig.II-3-12	◎																																							
41	KY 31	Bulawan, Gabao	Fig.II-3-12	△												○																				○								*
42	KY 33	Bulawan, Gabao	Fig.II-3-12	△										○			○																											
43	KY 36	Bulawan, Gabao	Fig.II-3-12	○											△	○																				◎								
44	KY 47	Southern Irosin	Fig.II-3-12	○									◎	◎																		○				◎								unkown
45	KY 48	Southern Irosin	Fig.II-3-12				△							◎																						◎								
46	TH 38	Magallanes	Fig.II-3-14		△	△									△																							△						
47	TH 39	Magallanes	Fig.II-3-14		△	△									○																							△						
48	SM 67	Bacolodo	Fig.II-3-14				◎																																				
49	SM 44	San Roque-Mt. Malobago	Fig.II-3-15		○	△																				△																		
50	SM 47	San Roque-Mt. Malobago	Fig.II-3-15	○	△																					◎																		

Table 2-5 Result of determination of mineral assemblages by X-ray diffraction

No.	Sample No.	Prospect	Reference of locality	Silicate minerals																								Sulfate			Carbonate			Others								Comments	Preparation	
				Silicate			Feldspar			Clay minerals							Zeolite						Others																					
				Quartz	Cristobalite	Tridymite	Plagioclase	K-Feldspar	Albite	Sericite	Chlorite	Kaolinite	Smectite	Pyrophyllite	Halloysite	Ser / Sme	Chl / Sme	Clinoptilolite	Mordenite	Laumontite	Stilbite	Wairakite	Heulandite	Hornblend	Pyroxene	Biotite	Alunite	Gypsum	Barite	Jarosite	Calcite	Dolomite	Siderite	Magnesite	Pyrite	Hematite	Anatase	Rutile	Goethite	Marcasite	Magnetite	Sphalerite	Galena		Ethylene glycol	Hcl
51	TH 42	Tugas	Fig.II-3-16		△	△						◎																															
52	TH 46	Tugas	Fig.II-3-16	○																							○																	
53	TH 47	Tugas	Fig.II-3-16	△			○						○															△							△				○					
54	TH 49	Tugas	Fig.II-3-16	○																																		○					
55	TH 51	Tugas	Fig.II-3-16	○																							·							·				○					
56	KY 41	Matnog-Culasi	Fig.II-3-16										○		△																												
57	KY 43	Matnog-Culasi	Fig.II-3-16			○																					○																Astrophyllite		
58	SM 50	Matnog-Culasi	Fig.II-3-16				○	·					○					·																										
59	SM 53	Matnog-Culasi	Fig.II-3-16	○	△								·		·												·																	
60	SM 55	Matnog-Culasi	Fig.II-3-16	○																							○																	
61	SM 57	Matnog-Culasi	Fig.II-3-16												○																												
62	TH 55	Ginablam	Fig.II-3-16				·						·																													amorphous		
63	SM 60	Butag-Sua	Fig.II-3-17	○																														·			△					
64	SM 61	Butag-Sua	Fig.II-3-17		△																						○																
65	SM 65	Butag-Sua	Fig.II-3-17	○			·								·												○										△					
66	SM 66	Butag-Sua	Fig.II-3-17	○								·															○										·					
67	TH 73	Siruma	Fig.II-3-19	○						○		○																														
68	TH 75	Siruma	Fig.II-3-19	○						·		△																														
69	TH 84	Popoot	Fig.II-3-21	○						○		·																								·						
70	TH 85	Popoot	Fig.II-3-21	○						○		○																														
71	KY 67b	Western Goa	Fig.II-3-22	○			○			○		○																										△					
72	KY 67c	Western Goa	Fig.II-3-22	○			○			○		○																									△						
73	SM 74	Western Pasacao	Fig.II-3-23	○			△						·																			○	○									
74	KY 57b	Eastern Pasacao	Fig.II-3-24	△			○	○								·																			·						
75	KY 60b	Eastern Pasacao	Fig.II-3-24	○																												○	○									
76	SM 70b	Lake Buhi	Fig.II-3-26			△						○															○								·		·						
77	SM 70c	Lake Buhi	Fig.II-3-26	○																														○	·	△						
78	SM 71a	Lake Buhi	Fig.II-3-26	○																															△							
79	SM 72	Lake Buhi	Fig.II-3-26		△		○	○							△												·															
80	SM 78	Caorasan, Balatan	Fig.II-3-27	○			○																																			
81	SM 81	Caorasan, Balatan	Fig.II-3-27	·																												○										
82	SM 82	Caorasan, Balatan	Fig.II-3-27	○			○									○																											
83	SM 87	Balatan	Fig.II-3-27	○			△									○																											
84	SM 90	Balatan	Fig.II-3-27	○												△												○							○									
85	TH 57	Sibobo	Fig.II-3-30	○																							○																
86	TH 58	Sibobo	Fig.II-3-30	○									·														○																
87	TH 59	Sibobo	Fig.II-3-30	△	△	△							○		·																												
88	TH 60	Sibobo	Fig.II-3-30	○		△							·														○																
89	TH 62	Sibobo	Fig.II-3-30		△		△						○		·												·																
90	TH 64	Sibobo	Fig.II-3-30	○																							△										△						
91	TH 65	Sibobo	Fig.II-3-30	○											·												○										·						
92	TH 67	Sibobo	Fig.II-3-30	○																							○										·						
93	TH 70	Sibobo	Fig.II-3-30	○																							○										·						
94	KY 78d	Paracale	Fig.II-3-32								○			○																		○												
95	TH 101	Tidi Mine site	Fig.II-3-33	○								○				○											·																
96	TH 102	Bessemar Pit	Fig.II-3-33	·								○																										○						
97	TH 105	Bessemar Pit	Fig.II-3-33	○						○		·				○	○												△										○					
98	TH 110	Mabato	Fig.II-3-33	△				○				·																															
99	TH 112	Exiban Mine site	Fig.II-3-33	○			·	○		△																																
100	TH 113	Exiban Mine site	Fig.II-3-33	○			○	△					○			△	△																										

Table 2-5 Result of determination of mineral assemblages by X-ray diffraction

No.	Sample No.	Prospect	Reference of locality	Silicate minerals																								Sulfate				Carbonate				Others												Comments	Preparation	
				Silicate			Feldspar			Clay minerals							Zeolite							Others																									
				Quartz	Cristobalite	Tridymite	Plagioclase	K-Feldspar	Albite	Sericite	Chlorite	Kaolinite	Smectite	Pyrophyllite	Halloysite	Ser / Sme	Chl / Sme	Clinoptilolite	Mordenite	Laumontite	Stilbite	Wairakite	Heulandite	Hornblend	Pyroxine	Biotite	Alunite	Gypsum	Barite	Jarosite	Calcite	Dolomite	Siderite	Magnesite	Pyrite	Hematite	Anatase	Rutile	Goethite	Marcasite	Magnetite	Sphalerite	Galena		Ethylene glycol	HCl
101	TH 91	Mt. Bagacay	Fig.II-3-33	◎						○																									·												
102	KY 68a	Bulala	Fig.II-3-36	◎								◎																								△												
103	KY 72	Bulala	Fig.II-3-36	◎								◎																								△												
104	KY 74	Bulala	Fig.II-3-36	◎								◎																							○		△											
105	SM 92	Mt. Culasi	Fig.II-3-37		△		△						·		△																															
106	SM 94	Mt. Culasi	Fig.II-3-37	△	○	○																													○												
107	SM 96	Mt. Culasi	Fig.II-3-37	△			△								·												○									○										
108	SM 99	Mt. Labo	Fig.II-3-39		·		·																				○								○										amorphous	
109	SM 100	Mt. Labo	Fig.II-3-39	△	△	△						△	△														○												○							
110	SM 101	Mt. Labo	Fig.II-3-39	△	◎	△							·		·																				·											

NOTE
Ser/Sme : Sericite/Smectite mixed-layer clay mineral
Chl/Sme : Chlorite/Smectite mixed-layer clay mineral

Criteria of quantity of minerals

mineral	(d value)	peak hight from base line (unit: chart scale) ◎(abundant)	○(medium)	△(few)	·(trace)
Quartz	(3.34)				
Cristobalite	(4.05)	more than 100	99 - 50	49 - 10	less than 10
Tridymite	(4.27)				
Plagioclase	(3.17)	more than 40	39 - 20	19 - 10	less than 10
K-Feldsper	(3.30)	more than 20	19 - 10	9 - 5	less than 5
Albite	(3.20)				
Sericite	(10.10)				
Chlorite	(7.10)				
Kaolinite	(7.18)	more than 20	19 - 10	9 - 5	less than 5
Smectite	(15.15)				
Halloysite	(4.42)				
Pyrophyllite	(3.04)				
Clinoptilolite	(8.93)				
Heulandite	(8.95)	more than 20	19 - 10	9 - 5	less than 5
Laumontite	(4.16)				
Mordenite	(3.48)				
Hornblend	(8.40)				
Pyroxine	(3.31)	more than 20	19 - 10	9 - 5	less than 5
Hyperthine	(3.18)				
Biotite	(10.10)				
Alunite	(2.99)				
Jarosite	(3.08)	more than 45	44 - 20	19 - 10	less than 10
Barite	(3.45)				
Gypsum	(2.87)				
Calcite	(3.03)				
Ankerite	(2.90)	more than 45	44 - 20	19 - 10	less than 10
Magnesite	(2.74)				
Siderite	(2.80)				
Pyrite	(2.71)				
Anatase	(3.52)				
Rutile	(3.25)				
Hematite	(2.70)				
Goethite	(4.18)	more than 10	9 -5	4 - 3	less than 3
Marcasite	(2.69)				
Magnetite	(2.53)				
Sphalerite	(3.12)				
Galena	(2.96)				

Table 2-6 Result of measurement of $\delta^{18}O$ and δD

Sample	Prospect	$\delta^{18}O$ (‰, SMOW)	δD (‰, SMOW)
TH-75	Siruma	+21.7	-58.6

Table 2-7 Result of determination of temperature by isotope geothermometer

Sample	Prospect	$\delta^{34}S_{CDT}$ sphalerite	$\delta^{34}S_{CDT}$ galena	Temperature (°C) *1	Temperature (°C) *2
KY-79	Paracale	-2.8	-4.2	417	431

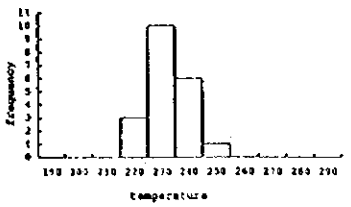
note *1: Kajiwara and Kruoe, 1971
*2: Ohmoto and Rye, 1979

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (1/22)

sample SK30
prospect Tiwi
rock type quartz vein within altered andesite breccia
reference Fig.II-3-7
fluid inclusions size of vapor vary greatly and it suggests boiling has occurred

No	Mineral	Size (μm)	Volume ratio (%)	Form	Temperature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	7.5	10	po	231	-1.2	2.07
2	Quartz	15.0	10	irr	239	-1.3	2.24
3	Quartz	7.5	10	po	229	-1.2	2.07
4	Quartz	5.0	5	tr	242	–	–
5	Quartz	10.0	10	po	246	-1.1	1.91
6	Quartz	12.5	10	po	237	-1.2	2.07
7	Quartz	27.5	12	irr	241	-1.2	2.07
8	Quartz	15.0	10	po	237	-1.4	2.41
9	Quartz	7.5	10	po	238	-1.2	2.07
10	Quartz	< 2.5	3	eg	232	–	–
11	Quartz	22.5	10	irr	244	-1.4	2.41
12	Quartz	20.0	15	po	251	-1.1	1.91
13	Quartz	30.0	5	tu	227	-1.2	2.07
14	Quartz	12.5	10	po	231	-1.2	2.07
15	Quartz	5.0	12	eg	246	–	–
16	Quartz	5.0	10	po	231	–	–
17	Quartz	< 2.5	5	eg	223	–	–
18	Quartz	5.0	10	po	236	–	–
19	Quartz	12.5	12	irr	247	-1.2	2.07
20	Quartz	5.0	10	po	237	–	–

eg:egg irr:irregular po:polygon eq:square tr:triangle tu:tube wg:wedge



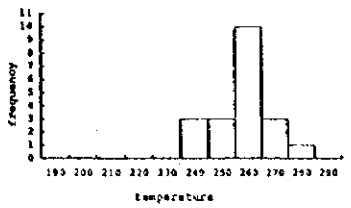
mineral	Quartz
inclusions	20
maximum	251 ℃
minimum	223 ℃
average	237.4 ℃
deviation	7.3

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (2/22)

sample SK31
prospect Tiwi
rock type altered andesite breccia
reference Fig.II-3-7
fluid inclusions many ocher single liquid phase inclusions are observed
boiling down is also observed

No	Mineral	Size (μm)	Volume ratio (%)	Form	Temperature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	20.0	12	eg	242	-0.4	0.71
2	Quartz	12.5	10	tu	245	-0.2	0.35
3	Quartz	10.0	12	po	245	-0.7	1.23
4	Quartz	5.0	10	po	264	–	–
5	Quartz	20.0	3	tu	265	–	–
6	Quartz	20.0	7	irr	261	-0.6	1.05
7	Quartz	22.5	10	po	272	-0.6	1.05
8	Quartz	10.0	15	tr	268	-0.7	1.23
9	Quartz	7.5	10	irr	258	–	–
10	Quartz	5.0	10	po	274	–	–
11	Quartz	35.0	10	irr	245	-0.4	0.71
12	Quartz	10.0	7	irr	252	-0.6	1.05
13	Quartz	10.0	5	irr	241	-0.4	0.71
14	Quartz	< 2.5	3	eg	245	–	–
15	Quartz	2.5	3	eg	273	–	–
16	Quartz	5.0	10	po	241	–	–
17	Quartz	17.5	10	irr	251	-0.6	1.05
18	Quartz	20.0	12	irr	266	-0.4	0.71
19	Quartz	5.0	10	po	245	–	–
20	Quartz	7.5	10	po	264	–	–

eg:egg irr:irregular po:polygon eq:square tr:triangle tu:tube wg:wedge



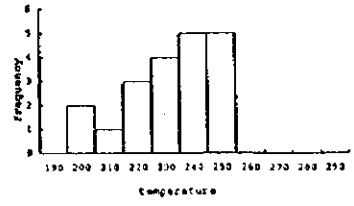
mineral	Quartz
inclusions	20
maximum	288 ℃
minimum	241 ℃
average	262.0 ℃
deviation	19.6

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (3/22)

sample SK32
prospect Tiwi
rock type altered andesite
reference Fig.II-3-7
fluid inclusions size of vapor vary greatly and it suggests boiling has occurred

No	Mineral	Size (μm)	Volume ratio (%)	Form	Temperature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	7.5	13	po	253	-0.6	1.05
2	Quartz	5.0	15	eg	250	-0.6	1.05
3	Quartz	5.0	12	eg	244	-0.4	0.71
4	Quartz	5.0	10	po	216	-0.5	0.88
5	Quartz	5.0	10	po	209	-0.6	1.05
6	Quartz	5.0	12	eg	226	-0.4	0.71
7	Quartz	7.5	15	po	236	-0.4	0.71
8	Quartz	5.0	17	eg	233	-0.4	0.71
9	Quartz	5.0	12	po	225	-0.4	0.71
10	Quartz	5.0	10	po	209	–	–
11	Quartz	5.0	13	po	242	-0.5	0.88
12	Quartz	5.0	17	eg	238	-0.6	1.05
13	Quartz	2.5	10	po	213	–	–
14	Quartz	2.5	10	po	223	–	–
15	Quartz	10.0	12	irr	248	-0.7	1.23
16	Quartz	7.5	13	po	252	-0.6	1.05
17	Quartz	5.0	13	eg	257	-0.4	0.71
18	Quartz	5.0	12	po	244	-0.6	1.05
19	Quartz	2.5	10	po	246	–	–
20	Quartz	5.0	13	po	255	-0.4	0.71

eg:egg irr:irregular po:polygon eq:square tr:triangle tu:tube wg:wedge



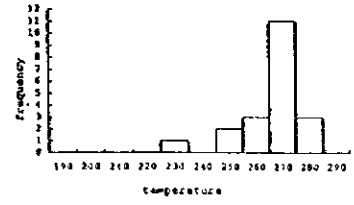
mineral	Quartz
inclusions	20
maximum	258 ℃
minimum	209 ℃
average	237.4 ℃
deviation	15.0

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (4/22)

sample SK34
prospect Tiwi
rock type altered andesite
reference Fig.II-3-7
fluid inclusions many other single liquid phase inclusions are observed

No	Mineral	Size (μm)	Volume ratio (%)	Form	Temperature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Calcite	20.0	15	po	273	-0.2	0.35
2	Calcite	25.0	15	po	281	-0.2	0.35
3	Calcite	5.0	10	tr	279	–	–
4	Calcite	25.0	13	tr	280	-0.2	0.35
5	Calcite	5.0	10	eq	273	–	–
6	Calcite	12.5	10	tu	277	-0.3	0.53
7	Calcite	7.5	7	po	278	–	–
8	Calcite	10.0	5	tu	281	-0.2	0.35
9	Calcite	12.5	7	tu	265	-0.1	0.18
10	Calcite	5.0	12	eq	232	–	–
11	Calcite	5.0	10	po	266	–	–
12	Calcite	12.5	10	po	275	-0.2	0.35
13	Calcite	5.0	3	po	232	–	–
14	Calcite	5.0	10	eg	273	–	–
15	Calcite	5.0	10	po	279	–	–
16	Calcite	2.5	5	eg	256	–	–
17	Calcite	10.0	13	po	279	–	–
18	Calcite	10.0	13	eq	283	-0.2	0.35
19	Calcite	7.5	10	po	272	–	–
20	Calcite	5.0	7	po	261	–	–

eg:egg irr:irregular po:polygon eq:square tr:triangle tu:tube wg:wedge



mineral	Calcite
inclusions	20
maximum	283 ℃
minimum	232 ℃
average	270.3 ℃
deviation	12.8

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (5/22)

sample 6m37
prospect Pantao-Magas-Cebarian
rock type diorite
reference Fig.II-3-9
fluid inclusions many other single liquid phase inclusions and secondary inclusions are observed
suitable inclusions for observation are few because of size

No	Mineral	Size (μm)	Volume ratio (%)	form	Temperature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	5.0	7	po	178	-1.4	0.71
2	Quartz	5.0	5	po	181	-0.2	0.35
3	Quartz	2.5	5	po	195	-	-
4	Quartz	< 2.5	3	eq	152	-	-
5	Quartz	< 2.5	2	eq	170	-	-
6	Quartz	< 2.5	2	eq	166	-	-
7	Quartz	7.5	5	po	163	-0.2	0.35
8	Quartz	5.0	3	po	167	-0.2	0.35
9	Quartz	2.5	3	po	161	-	-
10	Quartz	< 2.5	3	eq	173	-	-
11	Quartz	2.5	5	eq	191	-	-
12	Quartz	< 2.5	2	eq	154	-	-
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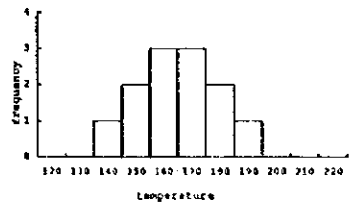


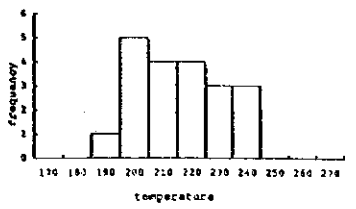
mineral	Quartz
inclusions	12
maximum	191 ℃
minimum	147 ℃
average	169.8 ℃
deviation	13.3

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (6/22)

sample EV30a
prospect Rio Duran-Expulsbi
rock type quartz-vein
reference Fig.II-3-10
fluid inclusions size of vaper vary greatly and it suggests boiling has occurred

No	Mineral	Size (μm)	Volume ratio (%)	Form	Temperature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Calcite	12.5	10	eq	242	-1.5	2.53
2	Calcite	10.0	10	eq	227	-1.4	2.41
3	Calcite	5.0	7	po	204	-	-
4	Calcite	3.0	12	eq	233	-	-
5	Calcite	7.5	10	eq	222	-1.0	1.74
6	Calcite	< 2.5	7	po	204	-	-
7	Calcite	2.5	10	eq	216	-	-
8	Calcite	7.5	12	eq	230	-1.9	3.23
9	Calcite	5.0	10	eq	232	-1.5	2.53
10	Calcite	5.0	7	eq	193	-	-
11	Calcite	15.0	10	po	231	-1.0	1.74
12	Calcite	5.0	12	eq	242	-	-
13	Calcite	5.0	10	po	206	-	-
14	Calcite	< 2.5	7	eq	231	-	-
15	Calcite	7.5	7	eq	221	-1.6	2.74
16	Calcite	10.0	12	eq	241	-1.7	2.90
17	Calcite	2.5	7	eq	203	-	-
18	Calcite	< 2.5	5	eq	206	-	-
19	Calcite	5.0	12	eq	237	-1.6	2.74
20	Calcite	7.5	10	eq	216	-1.5	2.57

eg:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



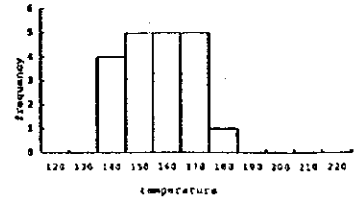
mineral	Calcite
inclusions	20
maximum	242 ℃
minimum	193 ℃
average	220.0 ℃
deviation	14.2

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (7/22)

sample TH74
prospect Siruma
rock type quartz vein
reference Fig.II-3-19
fluid inclusions size of vaper vary greatly and it suggests boiling has occurred
many other secondary inclusions are observed

No	Mineral	Size (μm)	Volume ratio (%)	Form	Temperature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	12.5	12	po	171	-0.8	0.88
2	Quartz	7.5	10	irr	149	-0.6	1.05
3	Quartz	7.5	12	po	180	-	-
4	Quartz	5.0	10	po	151	-	-
5	Quartz	22.5	10	irr	176	-0.6	0.71
6	Quartz	27.5	10	po	143	-0.5	0.88
7	Quartz	20.0	10	irr	151	-0.5	0.88
8	Quartz	7.5	12	eq	133	-0.6	1.05
9	Quartz	7.5	12	po	169	-0.5	0.88
10	Quartz	5.0	13	eq	197	-0.7	1.23
11	Quartz	5.0	10	po	146	-	-
12	Quartz	5.0	13	eq	167	-	-
13	Quartz	12.5	10	po	159	-0.4	0.71
14	Quartz	10.0	12	po	173	-0.5	0.88
15	Quartz	5.0	15	eq	192	-0.5	0.88
16	Quartz	5.0	10	po	151	-	-
17	Quartz	10.0	15	po	166	-0.6	1.05
18	Quartz	7.5	10	tu	142	-0.2	0.35
19	Quartz	5.0	12	po	153	-	-
20	Quartz	5.0	12	irr	168	-	-

eg:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



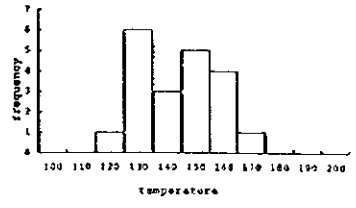
mineral	Quartz
inclusions	20
maximum	192 ℃
minimum	142 ℃
average	161.4 ℃
deviation	12.1

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (8/22)

sample XV66b
prospect Western Goa
rock type quartz vein
reference Fig.II-3-22
fluid inclusions many other single liquid phase inclusions and secondary inclusions are observed

No	Mineral	Size (μm)	Volume ratio (%)	Form	Temperature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	10.0	10	po	163	-1.1	1.91
2	Quartz	7.5	3	po	158	-0.8	1.40
3	Quartz	7.5	10	po	162	-	-
4	Quartz	5.0	5	po	147	-1.1	1.91
5	Quartz	5.0	7	po	155	-1.0	1.74
6	Quartz	5.5	3	irr	160	-1.1	1.91
7	Quartz	< 2.5	5	po	137	-	-
8	Quartz	< 2.5	3	eq	139	-	-
9	Quartz	2.5	3	eq	128	-	-
10	Quartz	5.0	7	po	145	-1.2	2.07
11	Quartz	12.5	10	irr	171	-1.0	1.74
12	Quartz	5.0	10	po	152	-1.0	1.74
13	Quartz	5.0	7	po	155	-1.1	1.91
14	Quartz	2.5	3	eq	138	-	-
15	Quartz	< 2.5	2	eq	131	-	-
16	Quartz	< 2.5	3	eq	135	-	-
17	Quartz	7.5	10	po	141	-0.8	1.40
18	Quartz	5.0	10	po	166	-1.0	1.74
19	Quartz	5.0	7	po	150	-	-
20	Quartz	2.5	3	po	134	-	-

eg:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



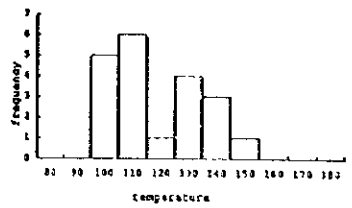
mineral	Quartz
inclusions	20
maximum	171 ℃
minimum	128 ℃
average	149.5 ℃
deviation	12.3

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (9/22)

sample EY57a
prospect Eastern Pasacao
rock type quartz vein
reference Fig.II-3-23
fluid inclusions many other single liquid phase inclusions are observed

No	Mineral	Size (μm)	Volume ratio (%)	Form	Tempe-rature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	5.0	7	po	130	-0.2	0.35
2	Quartz	5.0	3	po	116	-0.2	0.35
3	Quartz	2.5	2	po	107	–	–
4	Quartz	< 2.5	2	eq	110	–	–
5	Quartz	< 2.5	2	eq	100	–	–
6	Quartz	7.5	5	tu	144	-0.1	0.18
7	Quartz	5.0	3	po	132	0.0	0.00
8	Quartz	5.0	3	po	130	-0.2	0.35
9	Quartz	5.0	3	eq	142	-0.2	0.35
10	Quartz	2.5	3	eq	151	–	–
11	Quartz	< 2.5	2	eq	107	–	–
12	Quartz	< 2.5	2	eq	112	–	–
13	Quartz	< 2.5	2	eq	117	–	–
14	Quartz	5.0	3	po	132	-0.1	0.18
15	Quartz	5.0	2	po	109	0.0	0.00
16	Quartz	5.0	2	po	121	0.0	0.00
17	Quartz	2.5	2	po	113	–	–
18	Quartz	2.5	5	po	141	–	–
19	Quartz	< 2.5	2	eq	122	–	–
20	Quartz	< 2.5	2	eq	109	–	–

eq:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



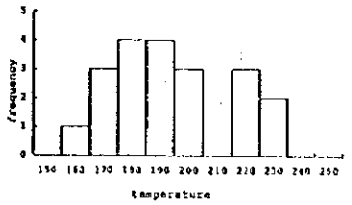
mineral	Quartz
inclusions	20
maximum	151 ℃
minimum	107 ℃
average	123.1 ℃
deviation	14.6

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (10/22)

sample EY57c
prospect Eastern Pasacao
rock type Quartz-vein
reference Fig.II-3-24
fluid inclusions many other single liquid phase inclusions are observed
necking down is also observed

No	Mineral	Size (μm)	Volume ratio (%)	Form	Tempe-rature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Calcite	15.0	12	po	234	-0.3	0.53
2	Calcite	12.5	10	irr	168	-0.2	0.35
3	Calcite	10.0	10	irr	176	-0.1	0.18
4	Calcite	17.5	5	tr	191	-0.2	0.35
5	Calcite	5.0	5	tu	194	–	–
6	Calcite	7.5	5	tu	163	–	–
7	Calcite	10.0	12	po	228	-0.2	0.35
8	Calcite	2.5	5	eq	167	–	–
9	Calcite	< 2.5	5	eq	160	–	–
10	Calcite	12.5	10	sq	193	-0.1	0.18
11	Calcite	5.0	12	sq	211	–	–
12	Calcite	7.5	10	po	201	-0.3	0.53
13	Calcite	5.0	12	sq	212	–	–
14	Calcite	2.5	3	po	113	–	–
15	Calcite	12.5	12	sq	221	-0.3	0.53
16	Calcite	17.5	10	sq	208	-0.3	0.53
17	Calcite	5.0	10	po	197	–	–
18	Calcite	2.5	2	eq	181	–	–
19	Calcite	5.0	3	irr	178	–	–
20	Calcite	10.0	10	irr	201	-0.2	0.35

eq:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



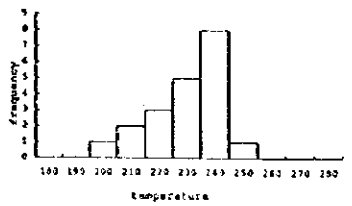
mineral	Calcite
inclusions	20
maximum	234 ℃
minimum	168 ℃
average	198.0 ℃
deviation	19.6

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (11/22)

sample EY59c
prospect Eastern Pasacao
rock type quartz-vein float
reference Fig.II-3-24
fluid inclusions many other single liquid phase inclusions are observed
necking down is also observed

No	Mineral	Size (μm)	Volume ratio (%)	Form	Tempe-rature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	22.5	10	po	232	-0.8	1.43
2	Quartz	5.0	3	po	241	–	–
3	Quartz	30.0	10	irr	218	-0.5	0.86
4	Quartz	22.5	12	sq	248	-0.8	1.43
5	Quartz	10.0	12	sq	241	-0.7	1.23
6	Quartz	2.5	5	po	251	–	–
7	Quartz	< 2.5	5	eq	246	–	–
8	Quartz	< 2.5	3	eq	232	–	–
9	Quartz	27.5	10	sq	245	-0.8	1.43
10	Quartz	27.5	12	sq	231	-0.8	1.40
11	Quartz	5.0	7	irr	217	–	–
12	Quartz	15.0	7	po	231	-0.7	1.23
13	Quartz	2.5	3	eq	221	–	–
14	Quartz	5.0	10	eq	228	-0.8	1.43
15	Quartz	5.0	10	sq	244	–	–
16	Quartz	17.5	7	tu	208	-0.6	1.05
17	Quartz	15.0	10	po	233	-0.8	1.42
18	Quartz	10.0	12	sq	249	-0.8	1.40
19	Quartz	5.0	7	irr	224	–	–
20	Quartz	5.0	10	irr	248	–	–

eq:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



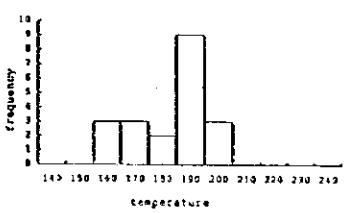
mineral	Quartz
inclusions	20
maximum	251 ℃
minimum	208 ℃
average	234.1 ℃
deviation	11.8

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (12/22)

sample EY60a
prospect Eastern Pasacao
rock type Quartz vein
reference Fig.II-3-24
fluid inclusions many other single liquid phase inclusions are observed
necking down is also observed

No	Mineral	Size (μm)	Volume ratio (%)	Form	Tempe-rature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	12.5	10	po	193	-2.3	3.87
2	Quartz	12.5	10	irr	167	-3.6	2.24
3	Quartz	7.5	3	irr	184	–	–
4	Quartz	12.5	10	irr	186	-2.2	3.71
5	Quartz	5.0	3	tr	172	-2.2	3.71
6	Quartz	< 2.5	3	eq	183	–	–
7	Quartz	2.5	10	po	189	–	–
8	Quartz	2.5	3	eq	171	–	–
9	Quartz	5.0	10	po	202	–	–
10	Quartz	< 2.5	5	eq	161	–	–
11	Quartz	10.0	10	irr	201	-2.3	3.87
12	Quartz	2.5	5	po	171	–	–
13	Quartz	< 2.5	5	eq	185	–	–
14	Quartz	< 2.5	5	eq	192	–	–
15	Quartz	5.0	10	sq	197	-2.2	3.71
16	Quartz	< 2.5	5	eq	183	–	–
17	Quartz	< 2.5	2	eq	167	–	–
18	Quartz	7.5	12	eq	202	-2.2	3.71
19	Quartz	< 2.5	5	eq	193	–	–
20	Quartz	< 2.5	7	eq	191	–	–

eq:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



mineral	Quartz
inclusions	20
maximum	202 ℃
minimum	161 ℃
average	187.0 ℃
deviation	13.0

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (13/22)

sample SN70c
prospect Lake Buhi
rock type altered rock float
reference Fig.II-3-26
fluid inclusions suitable inclusions for observation are very few because of size

No	Mineral	Size (μm)	Volume ratio (%)	Form	Temperature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	5.0	7	po	147	0.0	0.00
2	Quartz	5.0	7	po	155	-0.1	0.18
3	Quartz	2.5	3	eg	160	–	–
4	Quartz	< 2.5	3	eg	153	–	–
5	Quartz	< 2.5	3	eg	155	–	–
6	Quartz	5.0	7	po	162	-0.1	0.18
7	Quartz	7.5	3	eg	144	-0.1	0.18
8	Quartz	5.0	7	po	145	-0.1	0.18
9	Quartz	5.0	5	po	141	-0.1	0.18
10	Quartz	2.5	3	eg	167	–	–
11	Quartz	2.5	3	eg	159	–	–
12	Quartz	< 2.5	3	eg	168	–	–
13	Quartz	< 2.5	2	eg	152	–	–
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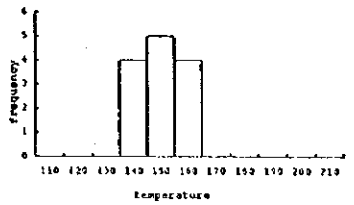
eg:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



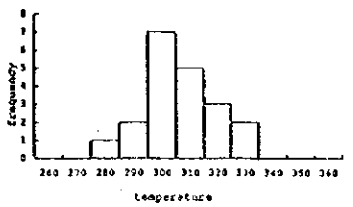
mineral	Quartz
inclusions	13
maximum	168 ℃
minimum	141 ℃
average	156.0 ℃
deviation	7.9

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (14/22)

sample SN71b
prospect Lake Buhi
rock type altered rock float
reference Fig.II-3-26
fluid inclusions some other gas phase inclusions are observed

No	Mineral	Size (μm)	Volume ratio (%)	Form	Temperature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	10.0	12	po	304	-0.2	0.35
2	Quartz	7.5	10	eg	324	-0.2	0.35
3	Quartz	7.5	12	po	316	-0.4	0.71
4	Quartz	< 2.5	7	eg	291	–	–
5	Quartz	2.5	5	po	302	–	–
6	Quartz	2.5	5	po	304	–	–
7	Quartz	5.0	10	po	331	-0.2	0.35
8	Quartz	2.5	10	po	334	–	–
9	Quartz	< 2.5	7	eg	293	–	–
10	Quartz	< 2.5	5	eg	331	–	–
11	Quartz	< 2.5	3	eg	307	–	–
12	Quartz	22.5	10	tu	303	–	–
13	Quartz	17.5	5	tu	331	–	–
14	Quartz	9.5	12	eg	314	-0.2	0.35
15	Quartz	2.5	5	eg	301	–	–
16	Quartz	2.5	?	eg	323	–	–
17	Quartz	5.0	12	po	306	0.0	0.00
18	Quartz	7.5	12	po	312	-0.2	0.35
19	Quartz	2.5	10	po	327	–	–
20	Quartz	< 2.5	5	eg	288	–	–

eg:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



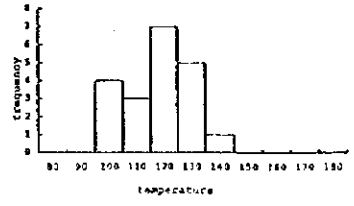
mineral	Quartz
inclusions	20
maximum	334 ℃
minimum	288 ℃
average	309.9 ℃
deviation	12.5

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (15/22)

sample SN76
prospect Caoayan, Balatan
rock type quartz vein
reference Fig.II-3-27
fluid inclusions many other lequid single phase inclusions are observed

No	Mineral	Size (μm)	Volume ratio (%)	Form	Temperature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	22.5	10	irr	172	-0.1	0.18
2	Quartz	7.5	7	po	121	0.0	0.00
3	Quartz	2.5	5	po	103	–	–
4	Quartz	< 2.5	3	eg	124	–	–
5	Quartz	< 2.5	2	eg	119	–	–
6	Quartz	5.0	10	po	126	-0.1	0.18
7	Quartz	10.0	10	tr	122	-0.1	0.18
8	Quartz	< 2.5	3	eg	106	–	–
9	Quartz	< 2.5	3	po	111	–	–
10	Quartz	2.5	10	po	142	–	–
11	Quartz	2.5	3	po	119	–	–
12	Quartz	5.0	10	eg	131	0.0	0.00
13	Quartz	< 2.5	5	eg	109	–	–
14	Quartz	< 2.5	3	eg	106	–	–
15	Quartz	< 2.5	5	eg	132	–	–
16	Quartz	5.0	7	po	124	-0.1	0.18
17	Quartz	7.5	7	po	133	-0.2	0.35
18	Quartz	2.5	5	po	124	–	–
19	Quartz	< 2.5	3	eg	132	–	–
20	Quartz	< 2.5	3	eg	125	–	–

eg:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



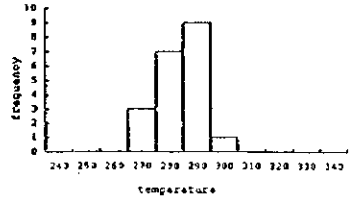
mineral	Quartz
inclusions	20
maximum	142 ℃
minimum	103 ℃
average	122.2 ℃
deviation	10.6

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (16/22)

sample KV76al
prospect Peracale
rock type quartz vein
reference Fig.II-3-32
fluid inclusions many other single liquid phase inclusions and secondary inclusio
are observed

No	Mineral	Size (μm)	Volume ratio (%)	Form	Temperature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	55.0	13	po	293	-4.7	7.45
2	Quartz	10.0	?	po	295	-4.8	7.59
3	Quartz	15.0	12	po	295	-4.9	7.73
4	Quartz	7.5	10	po	294	-4.8	7.59
5	Quartz	10.0	10	tu	293	–	–
6	Quartz	< 2.5	5	eg	301	–	–
7	Quartz	30.0	13	po	276	-3.7	6.01
8	Quartz	22.5	12	irr	283	-4.5	7.31
9	Quartz	27.5	15	po	293	-5.5	8.68
10	Quartz	25.0	12	irr	288	-4.3	6.34
11	Quartz	12.5	10	eg	278	-4.8	2.59
12	Quartz	5.0	10	po	281	–	–
13	Quartz	5.0	10	po	276	–	–
14	Quartz	5.0	10	tr	292	–	–
15	Quartz	27.5	12	irr	293	-4.8	7.59
16	Quartz	15.0	10	irr	286	-4.6	7.31
17	Quartz	10.0	10	po	286	-4.4	7.02
18	Quartz	12.5	10	po	291	-4.6	7.31
19	Quartz	5.0	?	eg	294	–	–
20	Quartz	5.0	10	po	294	–	–

eg:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



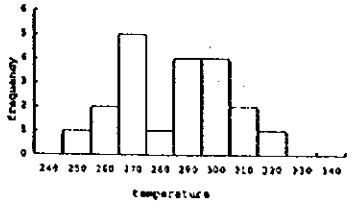
mineral	Quartz
inclusions	20
maximum	301 ℃
minimum	276 ℃
average	288.3 ℃
deviation	7.2

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (17/22)

sample EY39b
prospect Parracale
rock type altered granodiorite
reference Fig.II-3-32
fluid inclusions size of vapor very greatly and it suggests boiling has occurred

No	Mineral	Size (μm)	Volume ratio (%)	Form	Tempe-rature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	10.0	20	po	293	-0.1	0.18
2	Quartz	5.0	17	po	264	–	–
3	Quartz	7.5	13	po	258	0.0	0.00
4	Quartz	7.5	20	po	315	0.0	0.00
5	Quartz	22.5	20	irr	303	-0.2	0.35
6	Quartz	5.0	30	sq	297	-0.1	0.18
7	Quartz	12.5	17	po	268	0.0	0.00
8	Quartz	5.0	20	eg	316	–	–
9	Quartz	7.5	15	po	270	-0.1	0.18
10	Quartz	7.5	20	po	324	0.0	0.00
11	Quartz	10.0	12	po	271	0.0	0.00
12	Quartz	10.0	12	po	300	0.0	0.00
13	Quartz	17.5	17	irr	297	-0.2	0.35
14	Quartz	5.0	20	eg	304	0.0	0.00
15	Quartz	5.0	11	po	308	0.0	0.00
16	Quartz	7.5	20	po	277	–	–
17	Quartz	15.0	20	po	273	-0.1	0.18
18	Quartz	5.0	12	po	277	0.0	0.00
19	Quartz	7.5	13	po	265	0.0	0.00
20	Quartz	7.5	12	po	293	-0.1	0.18

eg:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



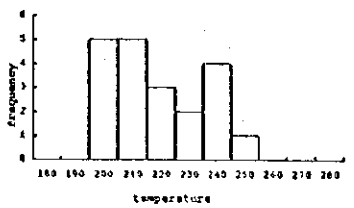
mineral Quartz
inclusions 20
maximum 324 ℃
minimum 258 ℃
average 289.5 ℃
deviation 18.5

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (18/22)

sample EY29
prospect Mackeale
rock type Sph-Ga-Cp-ore
reference Fig.II-3-32
fluid inclusions many other secondary inclusions are observed

No	Mineral	Size (μm)	Volume ratio (%)	Form	Tempe-rature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Sphalerite	7.5	5	po	242	-0.4	0.71
2	Sphalerite	7.5	3	po	203	-0.6	1.05
3	Sphalerite	5.0	3	eg	206	-0.2	0.35
4	Sphalerite	5.0	3	tr	214	–	–
5	Sphalerite	5.0	3	po	223	-0.4	0.71
6	Sphalerite	5.0	2	po	203	-0.2	0.35
7	Sphalerite	2.5	2	eg	200	–	–
8	Sphalerite	2.5	2	eg	206	–	–
9	Sphalerite	7.5	5	po	252	-0.2	0.35
10	Sphalerite	5.0	3	po	217	–	–
11	Sphalerite	5.0	5	po	235	–	–
12	Sphalerite	5.0	3	tr	240	-0.5	0.86
13	Sphalerite	2.5	2	po	211	–	–
14	Sphalerite	2.5	2	eg	223	–	–
15	Sphalerite	2.5	2	eg	218	–	–
16	Sphalerite	7.5	5	po	241	-0.4	0.71
17	Sphalerite	7.5	3	po	246	-0.3	0.53
18	Sphalerite	5.0	3	eg	233	-0.4	0.71
19	Sphalerite	5.0	2	po	219	–	–
20	Sphalerite	5.0	3	po	222	–	–

eg:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



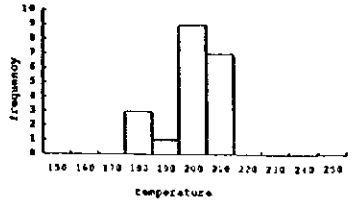
mineral Sphalerite
inclusions 20
maximum 252 ℃
minimum 200 ℃
average 222.7 ℃
deviation 15.5

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (19/22)

sample YH105
prospect Bassenar Pit
rock type hydrothermal biotite
reference Fig.II-3-33
fluid inclusions size of vapor very greatly and it suggests boiling has occurred

No	Mineral	Size (μm)	Volume ratio (%)	Form	Tempe-rature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	12.5	?	po	213	-20.9	22.90
2	Quartz	12.5	?	irr	207	-21.0	23.05
3	Quartz	7.5	5	eg	214	–	–
4	Quartz	2.5	5	eg	186	–	–
5	Quartz	< 2.5	3	eg	181	–	–
6	Quartz	7.5	?	po	198	–	–
7	Quartz	10.0	?	po	204	-20.5	22.90
8	Quartz	10.0	10	eg	206	–	–
9	Quartz	10.0	10	po	207	–	–
10	Quartz	5.0	5	eg	206	–	–
11	Quartz	15.0	?	irr	217	-19.6	22.80
12	Quartz	12.5	5	po	218	-19.1	21.75
13	Quartz	10.0	5	tr	208	-20.2	22.51
14	Quartz	5.0	5	tc	185	–	–
15	Quartz	5.0	5	po	213	–	–
16	Quartz	5.0	5	po	209	–	–
17	Quartz	7.5	?	po	211	-20.3	22.50
18	Quartz	5.0	3	po	204	–	–
19	Quartz	< 2.5	3	eg	201	–	–
20	Quartz	5.0	?	po	214	–	–

eg:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



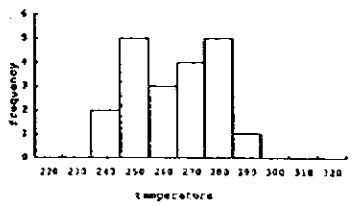
mineral Quartz
inclusions 20
maximum 217 ℃
minimum 181 ℃
average 205.0 ℃
deviation 10.3

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (20/22)

sample YH91
prospect Mt. Bagacay
rock type quartz vein float with altered host rock
reference Fig.II-3-33
fluid inclusions many other liquid single phase inclusions are observed necking down is also observed

No	Mineral	Size (μm)	Volume ratio (%)	Form	Tempe-rature (℃)	Melting Temp (℃)	NaCl Wt (%)
1	Quartz	62.5	13	po	259	-7.3	10.66
2	Quartz	32.5	15	eg	274	-6.9	10.36
3	Quartz	10.0	15	eg	269	-72	1073
4	Quartz	52.5	15	po	288	-72	1073
5	Quartz	30.0	15	po	241	-73	1080
6	Quartz	35.0	10	tu	278	-65	988
7	Quartz	37.5	12	po	256	-7.4	11.22
8	Quartz	5.0	15	tu	278	–	–
9	Quartz	15.0	7	po	262	-68	1038
10	Quartz	17.5	10	po	266	-69	1031
11	Quartz	27.5	12	irr	255	-7.3	10.88
12	Quartz	32.5	12	irr	253	-7.0	10.49
13	Quartz	67.5	12	po	282	-6.6	9.90
14	Quartz	20.0	10	po	291	-78	1122
15	Quartz	15.0	12	eg	278	-68	1024
16	Quartz	20.0	10	irr	280	-68	958
17	Quartz	55.0	12	irr	253	-7.2	10.73
18	Quartz	12.5	10	po	247	-68	1024
19	Quartz	5.0	10	po	269	–	–
20	Quartz	17.5	12	po	281	-70	1045

eg:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



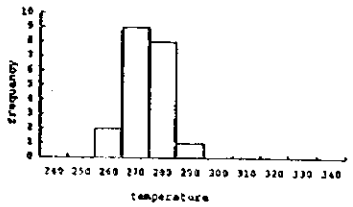
mineral Quartz
inclusions 20
maximum 291 ℃
minimum 241 ℃
average 266.8 ℃
deviation 16.3

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (21/22)

sample TM93
prospect Mt. Bagacay
rock type quartz vein
reference fig.II-3-33
fluid inclusions size of vapor vary greatly and it suggests boiling has occurred

No	Mineral	Size (μm)	Volume ratio (%)	Form	Temperature (℃)	Melting Temp (℃)	NaCl Wt.(%)
1	Quartz	35.0	10	po	265	-4.6	7.38
2	Quartz	32.5	10	irr	289	-4.2	6.74
3	Quartz	47.5	15	po	284	-5.2	8.81
4	Quartz	37.5	12	irr	283	-4.6	7.31
5	Quartz	22.5	12	po	273	-8.5	10.36
6	Quartz	7.5	10	po	275	—	—
7	Quartz	5.0	10	po	272	—	—
8	Quartz	32.5	12	po	279	-3.6	8.66
9	Quartz	12.5	10	po	274	—	—
10	Quartz	12.5	10	irr	264	—	—
11	Quartz	25.0	15	irr	279	-5.7	8.81
12	Quartz	20.0	12	irr	277	-5.9	9.09
13	Quartz	10.0	12	eg	273	—	—
14	Quartz	17.5	10	po	283	-3.2	8.14
15	Quartz	22.5	10	po	264	-6.1	9.34
16	Quartz	37.5	12	irr	282	-3.3	8.28
17	Quartz	17.5	12	po	279	-4.2	6.74
18	Quartz	22.5	20	po	291	-4.5	7.17
19	Quartz	12.5	10	po	284	-4.2	6.74
20	Quartz	10.0	10	po	288	—	—

eg:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



mineral	Quartz
inclusions	20
maximum	291 ℃
minimum	264 ℃
average	278.1 ℃
deviation	9.3

Figure 2-1 Result of determination of homogenization temperature and salinity of fluid inclusions (22/22)

sample SM93
prospect Mt. Culasi
rock type silicified rock float
reference Fig.II-3-3)
fluid inclusions many other liquid single phase inclusions are observed suitable inclusions for observation are few because of size

No	Mineral	Size (μm)	Volume ratio (%)	Form	Temperature (℃)	Melting Temp (℃)	NaCl Wt.(%)
1	Quartz	7.5	3	po	135	-0.3	0.18
2	Quartz	2.5	3	po	131	—	—
3	Quartz	5.0	3	po	119	-0.3	0.35
4	Quartz	5.0	5	po	142	0.0	0.00
5	Quartz	3.5	3	eg	123	—	—
6	Quartz	2.5	3	eg	126	—	—
7	Quartz	< 2.5	2	eg	107	—	—
8	Quartz	2.5	2	po	126	—	—
9	Quartz	5.0	5	po	132	0.0	0.00
10	Quartz	5.0	3	po	120	-0.1	0.18
11	Quartz	5.0	2	po	116	-0.1	0.18
12	Quartz	< 2.5	3	eg	135	—	—
13	Quartz	< 2.5	2	eg	111	—	—
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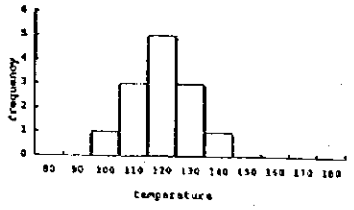
eg:egg irr:irregular po:polygon sq:square tr:triangle tu:tube wg:wedge



mineral	Quartz
inclusions	13
maximum	142 ℃
minimum	107 ℃
average	124.8 ℃
deviation	8.3