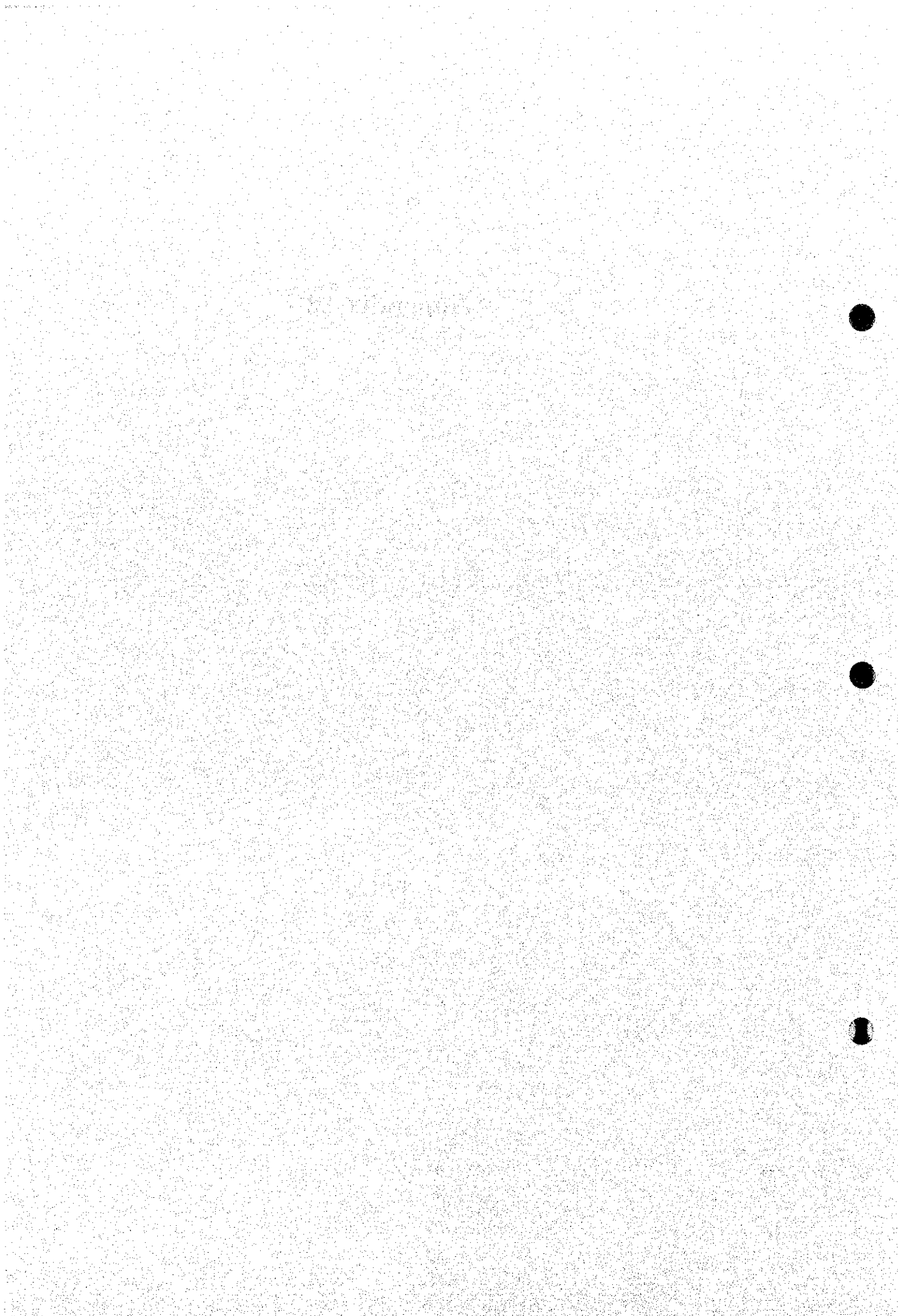


Appendix 12



Ore grade assay result

sample	Au_ppb	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_%	Ni_ppm	
Bacon-Manitq																					
XY26A	25	<1	1.29	<10	80	<5	<10	0.09	<5	30	30	20	2.22	<10	0.15	<0.01	<10	<5	0.27	-	
XY13	<5	<1	0.46	<10	60	<5	<10	0.05	<5	30	25	3.63	<10	<10	0.13	<0.01	<10	<5	0.10	-	
XY14	<5	<1	0.75	<10	260	<5	<10	0.08	<5	20	50	2.53	<10	<10	0.13	<0.01	50	<5	0.06	-	
XY21	<5	<1	0.61	<10	20	<5	<10	0.04	<5	40	15	1.67	<10	<10	0.07	<0.01	40	<5	0.09	-	
XY11A	<5	<1	0.77	<10	60	<5	<10	0.10	<5	40	45	0.29	<10	<10	0.14	<0.01	170	<5	0.08	-	
Pio Duran																					
SM07	10	4	1.09	<10	<20	<5	<10	0.72	35	120	14,500	3.31	<0.01	<10	<0.01	0.79	260	<5	0.02	-	
XY05	<5	<1	0.70	10	40	<5	<10	0.17	<5	70	30	0.46	<10	<10	0.10	0.18	160	<5	0.10	-	
XY28B	640	6	2.08	<10	20	<5	<10	0.58	<5	20	40	13,900	4.25	<10	0.15	1.89	490	<5	0.08	-	
XY30A	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	-	
Gate Mountains																					
XY34	<5	<1	0.88	<10	40	<5	<10	0.10	<5	60	35	2.56	<10	<10	0.12	0.01	10	10	0.18	-	
Western Goa																					
XY66A	<5	<1	0.02	<10	20	<5	<10	0.07	<5	380	5	0.63	<10	<10	0.01	0.19	50	<5	0.05	-	
XY66B	60	<1	0.06	<10	20	<5	<10	0.06	<5	200	25	0.97	<10	<10	0.04	0.05	440	5	0.03	-	
XY67A	<5	<1	0.59	<10	60	<5	<10	0.07	<5	100	395	1.45	<10	<10	0.22	0.08	220	<5	0.09	-	
Pasacao																					
XY58C	10	<1	0.27	180	280	<5	<10	12.15	<5	50	830	10	3.95	<10	0.03	7.10	1,000	<5	0.05	-	
XY58B	10	<1	0.38	1,080	3,920	<5	<10	0.11	<5	50	710	10	1.42	<10	0.04	0.26	90	<5	0.05	-	
XY59C	10	<1	0.15	600	1,540	<5	<10	1.49	<5	35	430	10	1.31	<10	0.04	0.97	410	<5	0.03	-	
XY60A	<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	-	
XY58A	35	<1	0.17	230	13,640	<5	<10	0.11	<5	15	360	80	0.82	<10	0.04	0.06	20	<5	0.05	-	
Balatan																					
SM78	210	<1	0.40	<10	<20	<5	<10	0.13	<5	130	3,970	0.97	<10	<10	0.05	0.15	70	<5	0.12	-	
Paracale																					
XY77A	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	missing	-
XY77C	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	-	
XY78A	57,190	48	0.21	<10	<20	<5	60	0.04	<5	5	460	140	1.84	<10	0.11	0.01	50	<5	0.05	-	
PKY340A	510	8	3.90	-	<100	<10	<20	1.95	10	980	780	1.00	-	-	1.80	1.00	650	<10	0.05	150	
Larap-Exiban																					
PSM289	415	34	0.20	-	<100	<10	<20	0.25	550	<10	10	12,940	29.30	-	<0.10	0.39	75,100	<10	<0.05	<10	
PSM287	25	<1	1.30	-	<100	<10	<20	0.30	<10	10	630	>30.00	-	-	<0.10	<0.05	140	<10	0.15	70	
Mt. Bagacay																					
PSM286	<5	<1	0.20	-	<100	<10	<20	0.25	<10	40	70	>30.00	-	-	<0.10	0.15	440	<10	0.05	<10	
Tuba																					
PSM270	25	<1	7.10	-	<100	<10	<20	0.10	<10	720	30	2.30	-	-	2.70	<0.05	20	<10	0.20	130	
PSM271	20	<1	6.05	-	<100	<10	<20	<0.05	<10	140	20	2.65	-	-	2.20	<0.05	10	<10	0.15	<10	
PSM273	75	<1	4.45	-	<100	<10	<20	0.05	<10	1,120	50	3.95	-	-	1.60	<0.05	20	<10	0.10	130	
PSM274	<5	<1	8.70	-	300	<10	<20	0.05	<10	230	50	4.05	-	-	2.30	1.90	390	<10	0.20	170	

Ore grade assay result

sample	Pb_ppm	Sr_ppm	Ti_%	V_ppm	Zn_ppm
Bacon-Manito					
KY26A	-	-	-	-	-
KY13	-	-	-	-	-
KY14	-	-	-	-	-
KY21	-	-	-	-	-
KY11A	-	-	-	-	-
Pio Duran					
SM07	-	-	-	-	-
KY05	-	-	-	-	-
KY28B	-	-	-	-	-
KY30A	-	-	-	-	-
Gate Mountains					
KY34	-	-	-	-	-
Western Goz					
KY66A	-	-	-	-	-
KY66B	-	-	-	-	-
KY67A	-	-	-	-	-
Pasacao					
KY58C	-	-	-	-	-
KY58B	-	-	-	-	-
KY59C	-	-	-	-	-
KY60A	-	-	-	-	-
KY58A	-	-	-	-	-
Balalan					
SM78	-	-	-	-	-
Paracale					
KY77a	-	-	-	-	-
KY77C	-	-	-	-	-
KY78a1	-	-	-	-	-
PXY340A	0.57	70	0.20	120	2,540
Larap-Exhiban					
PSM289	6.43	10	<0.05	10	95,000
PSM287	0.00	30	0.05	120	40
Mt. Bagacay					
PSM286	0.00	10	<0.05	30	80
Tuba					
PSM270	0.00	10	0.25	120	<20
PSM271	0.00	60	0.05	90	<20
PSM273	0.01	110	0.15	50	<20
PSM274	0.00	10	0.30	130	20

Appendix 13

[The page contains extremely faint and illegible text, likely due to low contrast or scanning quality. No specific content can be transcribed.]



Fluid Inclusion Thermometrics

regional area / locality	sample	Th avg dc	Th max dc	Th min dc	Th dev	NaCl avg wt%	boiling note
<u>Tiwi-Mt. Malinao</u>							
Inalait River	PTH263	206.5	237	181	15.8	0.2	f many other single liquid phase inclusions are observed/necking down is also observed
Inalait River	PTH282	169.5	188	152	10.8	0.3	f many other single liquid phase inclusions are observed/necking down is also observed
Lake Buhí	SM70c	154.0	168	141	7.9	0.2	f suitable inclusions for observation are very few because of size
Lake Buhí	SM71b	309.9	334	288	12.5	0.4	f some other gas phase inclusions are observed
Tiwi	SM30	237.4	251	223	7.3	2.1	t size of vapor vary greatly and it suggests boiling has occurred.
Tiwi	SM31	262.0	288	241	10.6	0.9	f many other single liquid phase inclusions are observed/necking down is also observed
Tiwi	SM32	237.4	258	208	15.0	0.9	t size of vapor vary greatly and it suggests boiling has occurred
Tiwi	SM34	270.3	283	232	12.1	0.4	f many other single liquid phase inclusions are observed
<u>Pio Duran</u>							
Pantao-Nagas-Cabarian	SM07	168.8	191	147	13.3	0.4	f many other single liquid phase inclusions and secondary inclusions are observed/suitable inclusions for observation are few because of size
Pio Duran-Kapulaki	KY30a	220.0	242	193	14.2	2.5	t size of vapor vary greatly and it suggests boiling has occurred
<u>Siruma Peninsula</u>							
Siruma	TH74	161.4	182	142	12.1	0.9	t size of vapor vary greatly and it suggests boiling has occurred/many other secondary inclusions are observed
<u>Western Goa</u>							
Western Goa	KY66b	149.5	171	128	12.3	1.8	f many other single liquid phase inclusions and secondary inclusions are observed

Fluid Inclusion Thermometrics

regional area / locality	sample	Th avg dc	Th max dc	Th min dc	Th dev	NaCl avg wt%	boiling note
<u>Pasacao</u>							
Eastern Pasacao	KY57c	198.0	234	168	19.6	0.4	f many other single liquid phase inclusions are observed/necking down is also observed
Eastern Pasacao	KY59c	234.1	251	208	11.8	1.3	f many other single liquid phase inclusions are observed/necking down is also observed
Eastern Pasacao	KY60a	187.0	202	161	13.0	3.6	f many other single liquid phase inclusions are observed/necking down is also observed
Western Pasacao	SM75	123.1	151	107	14.6	0.2	f many other single liquid phase inclusions are observed
<u>Balatan</u>							
Caorasan, Balatan	SM78	122.2	142	103	10.6	0.2	f many other liquid single phase inclusions are observed
<u>Paracale</u>							
Benget Mine	PTH381	278.0	324	253	19.2	6.3	f many other single liquid phase inclusions are observed/necking down is also observed
Mt. Bunutan	PTH376	230.1	242	211	7.8	7.3	t size of vapor varies greatly and it suggests boiling has occurred
Paracale	KY78a1	288.3	301	276	7.2	7.6	f many other single liquid phase inclusions and secondary inclusions are observed
Paracale	KY78b	289.5	324	258	18.5	0.1	t size of vapor vary greatly and it suggests boiling has occurred
Paracale	KY79	222.7	252	200	15.5	0.6	f many other secondary inclusions are observed
<u>Larap-Exciban</u>							
Bessenar Pit	TH105	205.0	217	181	10.3	22.6	t size of vapor vary greatly and it suggests boiling has occurred
Igang prospect	PTH391	237.4	281	217	19.5	4.9	f many other secondary inclusions are observed

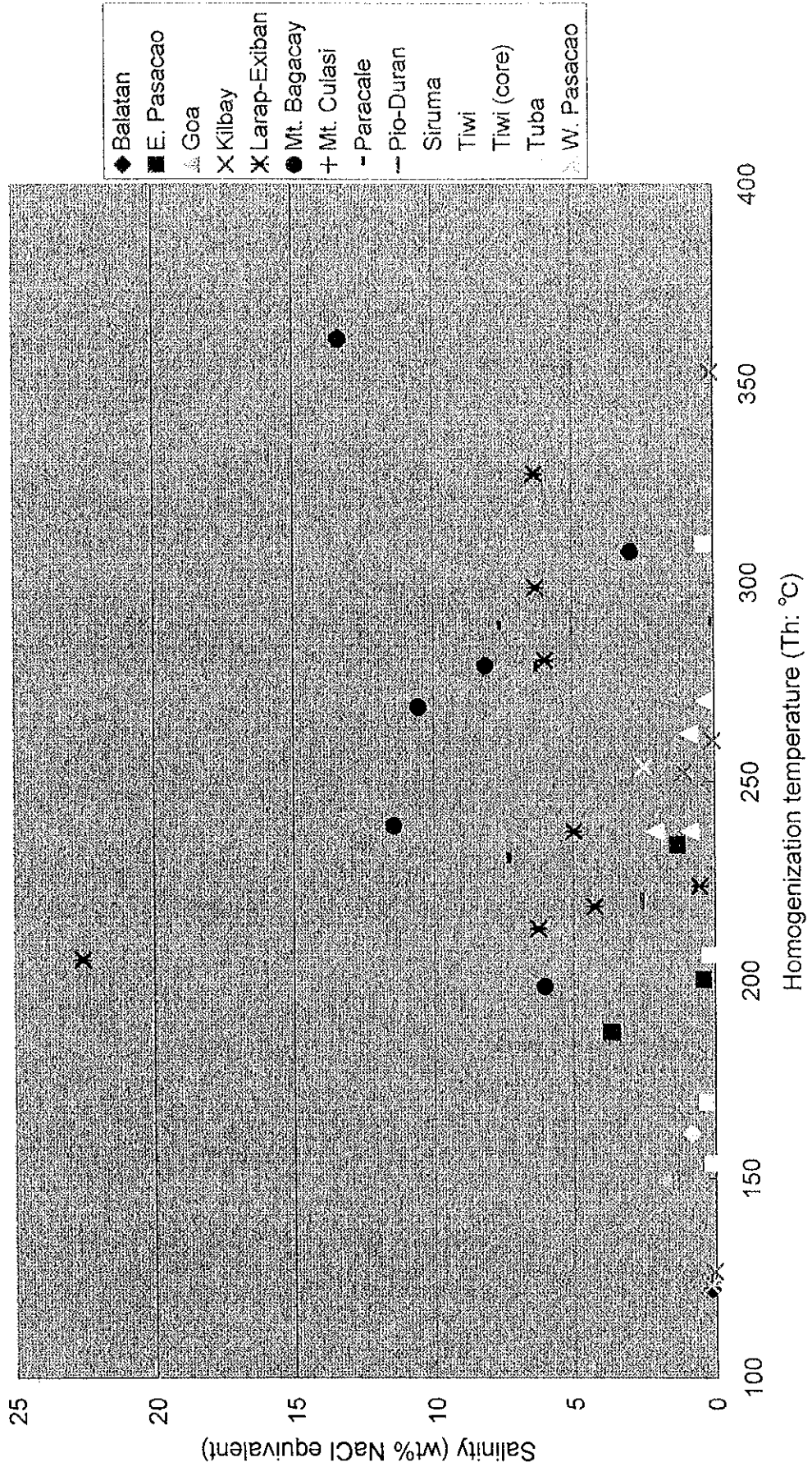
Fluid Inclusion Thermometrics

regional area / locality	sample	Th avg dc	Th max dc	Th min dc	Th dev	NaCl avg wt%	boiling note
Igang prospect	PTH393	218.5	237	185	13.2	4.2	t size of vapor varies greatly and it suggests boiling has occurred
Larap-Exciban	PSM290	212.9	241	180	19.2	6.2	f many other secondary inclusions are observed
Matalang	PTH387	327.3	355	283	18.9	6.3	f many other single liquid phase inclusions are observed/necking down is also observed
Tumbaga prospect	PKY327A	298.6	319	295	5.3	6.3	t size of vapor varies greatly and it suggests boiling has occurred
Tumbaga prospect	PKY329	223.6	240	199	12.4	0.5	f size of inclusions are not large often enough to observe
Tumbaga prospect	PKY333	280.4	295	267	7.6	6.0	t size of vapor varies greatly and it suggests boiling has occurred
<u>Mt. Bagacay</u>							
B. Mancasay	PKY313	361.4	372	349	6.0	13.3	t size of vapor varies greatly and it suggests boiling has occurred
Manpungo	PKY321	307.8	331	282	14.4	2.9	f many other single liquid phase inclusions are observed/necking down is also observed
Mt. Bagacay	PSM281	238.9	264	197	20.2	11.4	f many other single liquid phase inclusions are observed/necking down is also observed
Mt. Bagacay	TH91	268.8	291	241	14.3	10.5	f many other liquid single phase inclusions are observed/necking down is also observed
Mt. Bagacay	TH95	279.1	291	264	7.3	8.1	t size of vapor vary greatly and it suggests boiling has occurred
Napangasan, Babel	PTH371	198.5	235	173	18.1	6.0	f many other single liquid phase inclusions are observed
<u>Mt. Cuiasi</u>							
Mt. Cuiasi	SM93	124.0	142	107	9.3	0.2	f many other liquid single phase inclusions are observed/suitable inclusions for observation are few because of size

Fluid Inclusion Thermometrics

regional area / locality	sample	Th avg dc	Th max dc	Th min dc	Th dev	NaCl avg wt%	boiling note
<u>Kilbav</u>							
Alawihaw creek	PTH334	126.7	145	104	10.8	0.1	f many other secondary inclusions are observed
Bacaco	PKY290	252.3	264	239	7.3	1.1	t size of vapor varies greatly and it suggests boiling has occurred
Bacaco	PKY294	260.3	269	250	4.7	0.1	f many other secondary inclusions are observed
Layaton River	PTH322	353.0	366	339	7.3	0.1	t size of vapor varies greatly and it suggests boiling has occurred
<u>Tuba</u>							
Mapulo	PSM272	253.7	273	226	12.2	2.5	f many other single liquid phase inclusions are observed/necking down is also observed

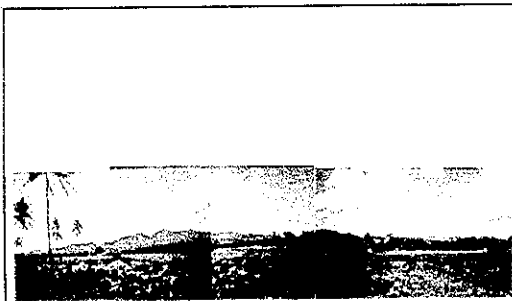
Homogenization temperature vs. Salinity (Average values from each specimen)



Appendix 14

Bicol Area Image Library

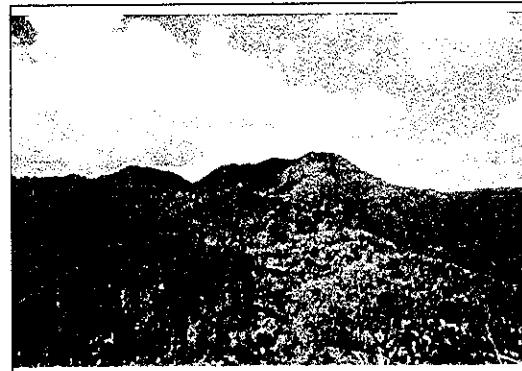
Bacon-Manito area



PH01
4km southeast of Manito
View of the Bac-Man geothermal production field and the survey area. Looking south. The survey area is located on the right of the photo. The highest dome is Pangas volcano. Bac-Man geothermal energy plant is at near skyline in the center, where we can see steams. Note that the survey area has low relief in comparison to the Bac-Man geothermal field where the volcanic topography is well-preserved.
[see oversize](#)



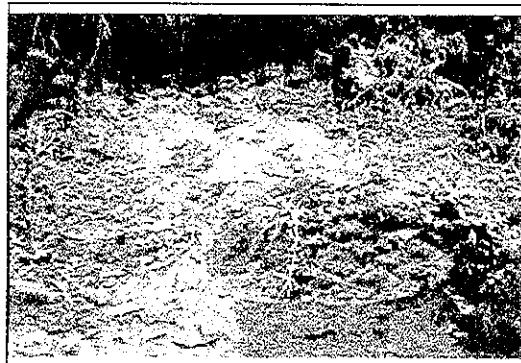
PH02
samples: PTH201, PTH202
Salvacion
Steaming ground of 'Salvacion hot spring'. There is no hot water coming out any more. The dark colored rocks are silicified with opalline cracks. X-ray analysis shows cristobalite, tridymite, and goethite. The beige color clay deposited in the water consists of sulfur, cristobalite, and tridymite.



PH03
1km SE of Salvacion
View from a ridge near the Salvacion spring. Looking east. Thick vegetation. There is Danao Lake on the other side of the hill.



PH04
Upstream of Parang River (Bacon), PTH201, PTH202
Mainit hot spring. HCO₃-SO₄ type hot water deposits carbonates. The temperature of water is around 45?.



PM00
west of PSM209
Southern end of Cawayan river alteration, Bacon-Manito area. It looks like fairly straight line separates a part of hydrothermal alteration to fresh host rock, probably reflecting some structural control, such as faults.



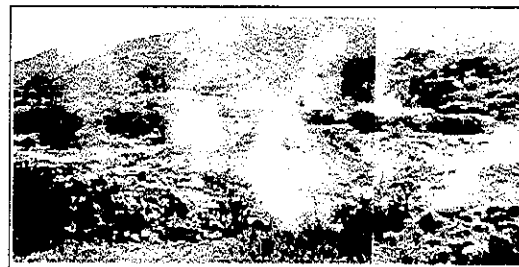
PM01
sample: PSM209
Spotty smectite alteration, south-east of Cawayan river alteration, Bacon-Manito area. There are few alteration outcrops beyond the boundary of previously known Cawayan river alteration, except this small clay showing.



PM02
northwest of PSM216
Black charcoal fragment found in ash fall tuff, upper portion of Buyo creek, Bacon - Manito area. This occurrence explains that recent volcanic material widely cover with the lower andesite horizon and prevent further ground mapping at the topographically higher level.



PY07
sample: PKY204
Danao Lake, Pili-Cumadcad
View of outflow point of the Danao Lake, the upper most part of the Pili river. The front slope was supposed to be ENE-WSW lineament but any alteration zones were not encountered.



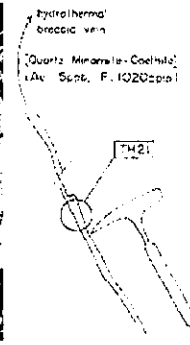
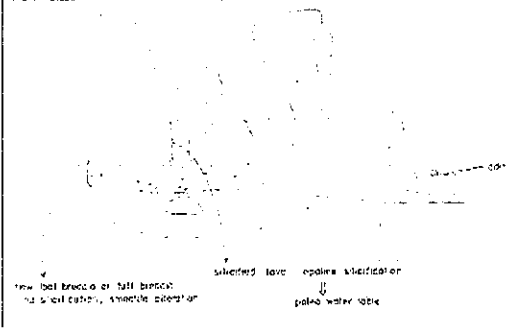
SM01
Cawayan Crater
Inang-Maharang hot spring and steaming ground at the center of Bacon-Manito area



SM03
Cawayan river
Outcrop of steam heated altered rock along Cawayan River in Bacon-Manito Area
see oversize



Calpi, Buyo river
Occurrence of steam-heated alteration at Calpi in the Buyo river, Bacon-Manito area



Calpi, Buyo river
Occurrence of hydrothermal breccia veins at Calpi, Buyo river, Bacon-Manito area

Balatan area



SM05a
Gypsum ore stockpile in Caorasan, northern Balatan



SM05b
Gypsum ore and altered volcanic rock with dark-grey pyrite band



Figure 1. Gypsum ore deposit.

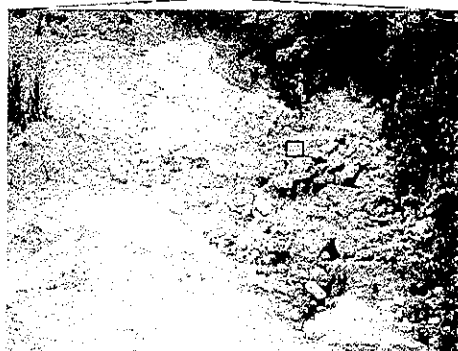


Figure 2. Gypsum ore deposit (close-up view).



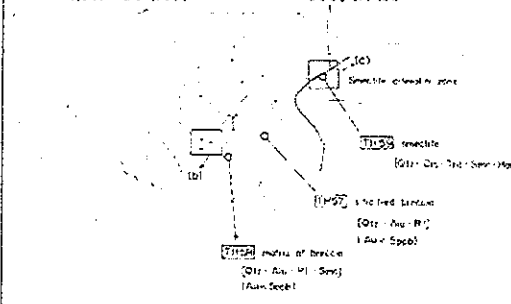
SM06
Gypsum ore deposit near
Cabananan, Northern Balatan

Calabanga-Tinembac area



Hydrothermal breccia pipe

Boundary between hydrothermal breccia pipe and argillaceous zone



Occurrence of hydrothermal breccia pipe in Sibobo, Calabanga-Tinembac Area
The Close-up portions are in below

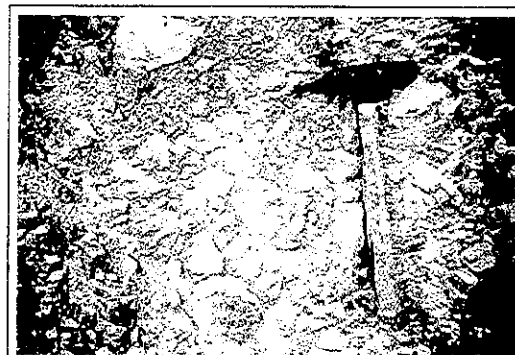
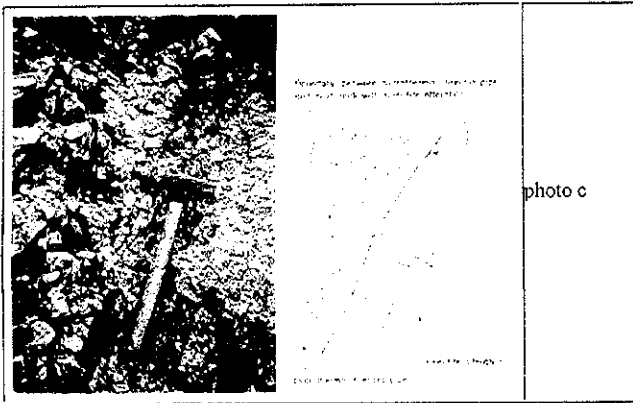


photo b
A close-up of the pipe.
Matrix is filled up with fine fragments of silicified breccia



Eastern Caramoan area

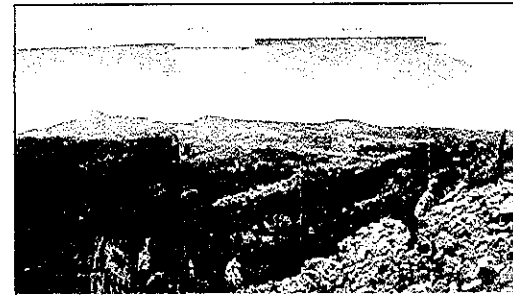


PM09, PM10
Malaiba mineralization, east Caramoan peninsula, corresponds to yellowish-brown shearzone with the width of 1.5 m. Shear style is characterized by ductile deformation, such as orenulation and kink, probably developed in a regional metamorphic event.

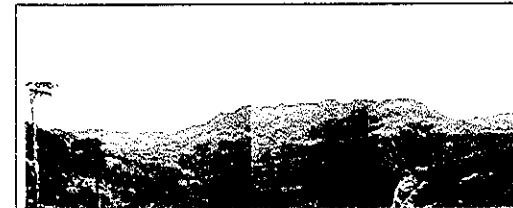
Gate Mountains area



PH05
near Sisigon, Salvacion
View of Bulusan volcano and Irosin Caldera from the edge of the caldera rim. Looking north. The highest mountains is Bulusan Volcano. The steep hill on the left is Jaramoan andesite dome.
see oversize



PH06
West of Pange, PTH250
View of northern part of the Gate Mountains area from a hill in 3km northwest of Tugas. Looking north. The rock of the hill is hornblende-pyroxene andesite. Gently slopes are formed by Pre-Caldera volcanics. Bulusan Volcano and Mt. Tabontabon can be seen in the distance.
see oversize



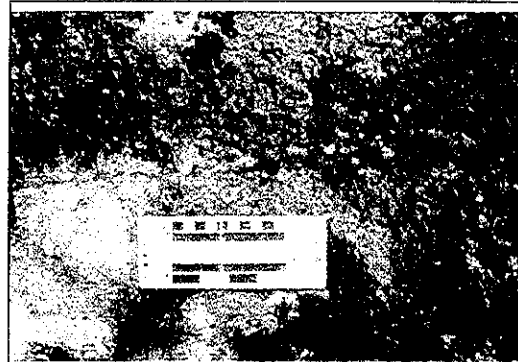
PH07
sample: PTH250
West of Pange
View of western part of the Gate Mountains area from the same hill as the photo 6. Looking south. The hydrothermal alteration zone are distributed in lower part of the area. The ridge range NS direction.
see oversize



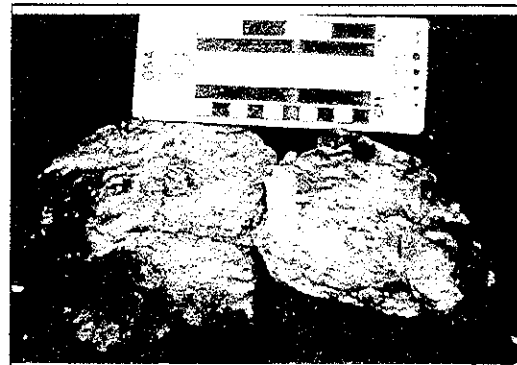
PM03
north of PSM285
Stratified tuffaceous alternation,
upper portion of Bonot creek,
Gate mountain area. The
alternation consists of coarse
grained tuff, lapilli tuff, and tuff
breccia, which partly include
lithic fragments.



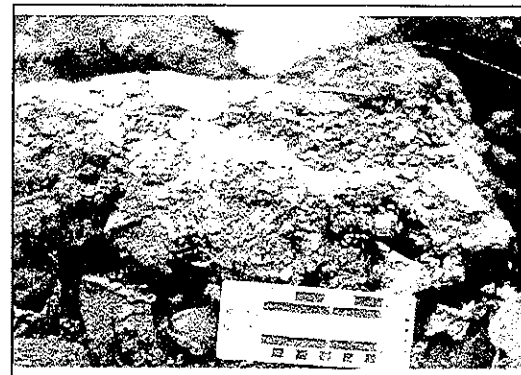
PY13
Horizontal argillic alteration zone
lies within least altered andesite
lava flow, uniformly with its platy
joint.



PY16
Quartz-pyrite veinlets lie within
andesite-dacite

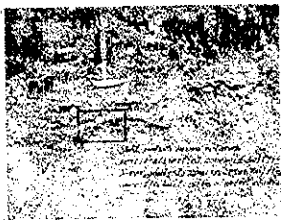


PY18
sample: PKY250
Culasi
Floating boulder of chaledonic
quartz showing banding and
lenticular cavities are developed
uniformly along the banding.
These textures correspond to
stratiform texture of silica sinter
and shrink texture of the volume
by dehydration during
recrystarization of amorphase
silica into quartz respectively.



PY19
sample: PKY253
Culasi
Floating boulder of chaledonic
quartz showing banding texture
and brecciation in places.

Irosin South area

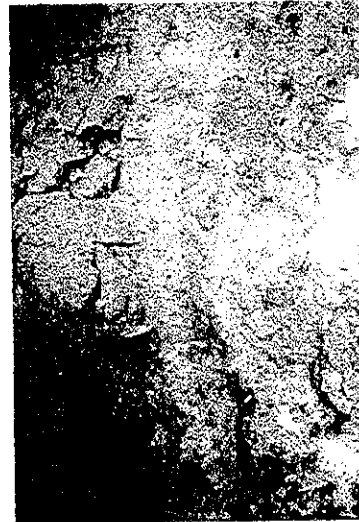


SM04
 Outcrop of altered Older
 Volcanics under Caldera Pumice
 near Calpi along Matnog Road in
 Sisigon-Matnog area, eastern part
 of Gate Mountains

Kilbay area



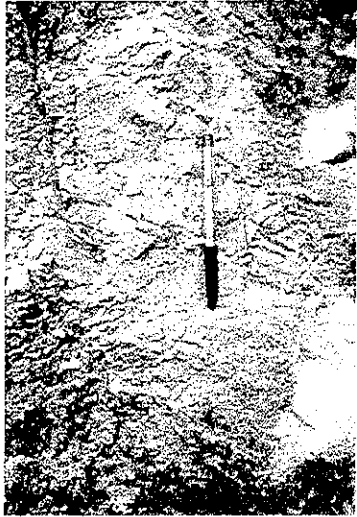
PH15
 sample: PTH319
 Layaton Creek
 Outcrop of alteration in Layaton
 Creek. Argillized and weak
 silicification. Alteration minerals
 are Qtz-Chl/Smc-Ser/Smc-Jar-Py.
 The original rock is Hbl-Bt
 andesitic lapilli tuff.



PH16
 sample: PTH320
 Layaton Creek
 The close-up of the photo 16. A
 fault is observed. Fault breccia is
 0.1 to 8cm in diameter and
 silicified. The matrix clay is Qtz-
 Py-Ser/Smc. Pyrite stringer is
 parallel to the fault. Those
 occurrence shows that the fault
 movement and the hydrothermal
 alteration occurred in the same
 time.



PH17
 samples: PTH321, PTH322
 Layaton Creek
 The big outcrop of hydrothermal
 alteration in Layaton Creek.
 Quartz veins (PTH321, 322) are
 observed at the place where a
 person stand.



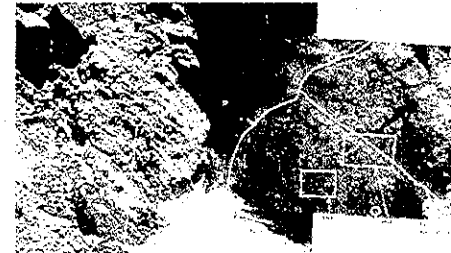
PH18
sample: PTH321
Layaton Creek
Chalcedonic quartz vein with very fine grained sulfides. The vein is 1 to 6mm in width and contains Au:275ppb and Cu:718ppm. It strikes N40°W and dips vertical.



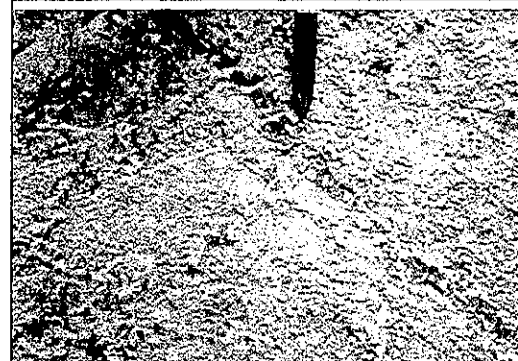
PH19
sample: PTH322
Layaton Creek
Chalcedonic quartz vein with very fine grained sulfides. The vein contains Au:250ppb and Cu:727ppm. It strikes N32°W and dips vertical.



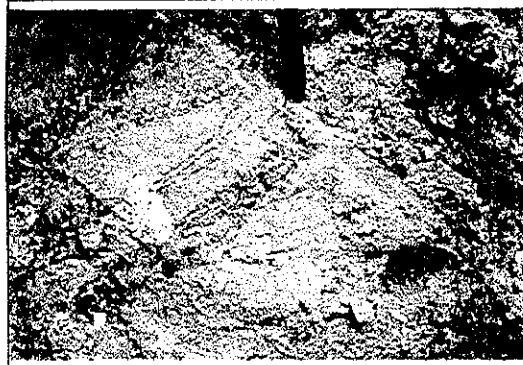
PH20
sample: PTH323
Layaton Creek
Outcrop of highly silicified alteration. Alteration zone is developed horizontally. Hydrothermal brecciation is also observed.
see oversize



PH21
samples: PTH324-PTH326
Layaton Creek
Outcrop of kaolinite alteration. Two kinds of quartz veins are observed. One is black color veins with 0.5 to 10cm in width. Other is light gray color veins with 0.5 to 3cm in width. Black color quartz veins are chalcedonic and have metal contents of Au:180ppb, Cu:828ppm, Mo:34ppm. The black color veins consist of quartz and minor pyrite, rutile, anatase, and kaolinite in X-ray diffraction.
see oversize



PH22
sample: PTH326
Layaton Creek
The close-up of the photo 21. The black colored vein is cut by the light gray colored veins. The black color veins strike N70°-80°E and dip 42°-50°N. The light gray color veins strike N60°W and dip 40°S.



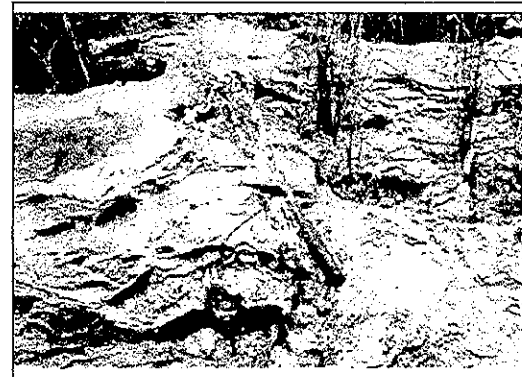
PH23
sample: PTH326
Layaton Creek
The light gray color veins are cut by a fault which strikes N65°W and dips 42°N. The light gray color vein has Au:215ppb, Cu:529ppm.



PH25
samples: PTH335, PTH336
Kilbay-Alawihaw Creek
Occurrence of carbonate-silica sinter terrace adjacent to the hot spring of the photo 25. The thickness is around 1 m. Banding of carbonate and silica is observed. Carbonate bands are dominant.



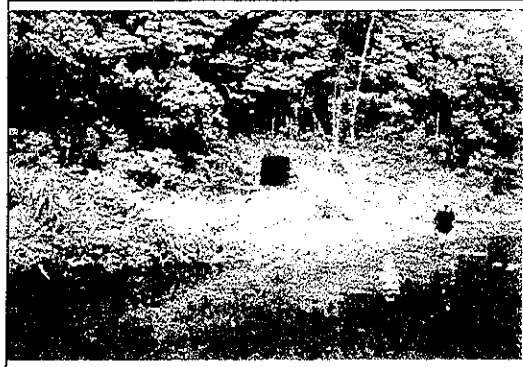
PH24
PTH335
Kilbay-Alawihaw Creek
Hot spring in Kilbay-Alawihaw creek. The temperature could be more than 60°. According to Zeide-Deifin et al. (1995), the hot springs distributed in Kilbay-Alawihaw Creek are neutral chloride type. Those hot springs have around 70 to 300 ppm of SiO₂ and 1700 to 2700 mg/kg of Cl. The temperature ranges from 45 to 85°.



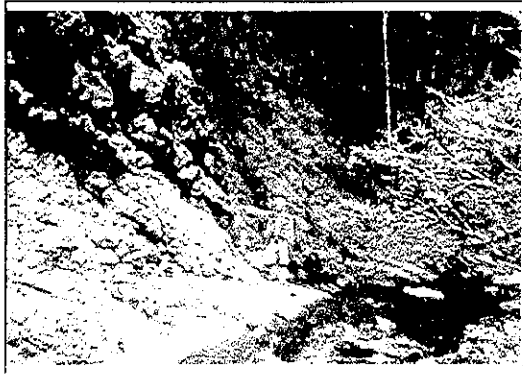
PH26
sample: PTH337
Kilbay-Alawihaw Creek
Close-up of the carbonate-silica sinter terrace.



PH27
sample: PTH334
Kilbay-Alawihaw Creek
Floats of the carbonate-silica sinter. Banding of carbonate and silica is observed. The Carbonates are calcite.



PH28
sample: PTH338
Kilbay-Alawihaw Creek
Old adit in silicified rocks in the
middle of Kilbay-Alawihaw
Creek.



PH29
sample: PTH358
Tonton River
Columnar joints developed in
pyroxene andesite lava. This rock
has large phenocrysts of
plagioclase and aphanitic
groundmass. Under the
microscope, pyroxene
microphenocrysts are observed in
intersertal groundmass.



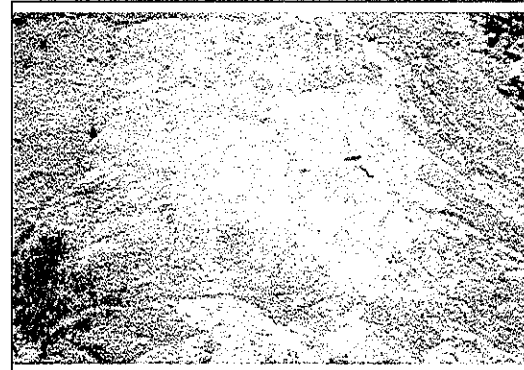
PY22
sample: PKY285
Tabion Munti
A production pit for "bowl clay".
White layer is thought to be a fall
out ash unit.



PY25
sample: PKY289
Bacaco
Fine quartz-pyrite veinlet
(PKY289) in argillic -
sericite/sericite mixed layer clay
- altered andesite. The sample
consists of the veinlet and the host
rock shows 5ppb of Au.



PY27
sample:PKY294
Bacaco
Wide silicified-pyritized zone, 4m wide, with quartz vein (PKY294), 4cm wide. The quartz vein shows 340ppb of Au and the homogenization temperature of its fluid inclusions is 260.3 degree Cels. and the salinity is 0.05 wt% on average.



PH31
samples:PTH380-PTH382
Benguet Mine
Quartz veinlet stockwork in sericite alteration.



PY31
sample:PKY302
The south of Susundalaga mountains
An outcrop of highly silicified vein, 1.8m wide, with acid leached zone in periphery.



PH32
sample:PTH385
Matalang Prospect
Quartz veinlet stockwork in andesite which has potassic alteration with magnetite dissemination. The vein has 15 ppb of Au, 632 ppm of Cu, and 137 ppm of Mo. The vein interval is about 3 to 20 cm.

Larap-Exiban area



PH30
samples:PTH380-PTH382
Benguet Mine
Open pit of the Benguet mine. Now "Base Metal Mining Corporation" has this mine. Gold bearing quartz veins were in altered the Paracale Trondhjemite. see oversize



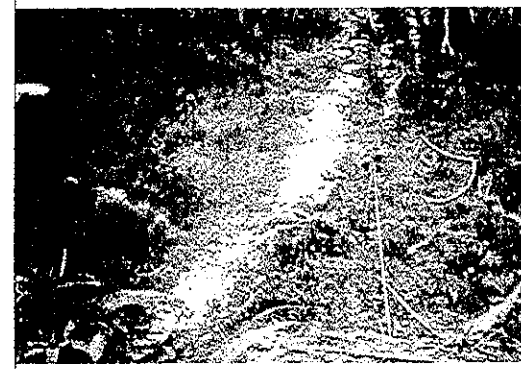
PH33
sample: PTH387
Matalang Prospect
Outcrop of quartz vein stockwork
in andesite in Matalang Prospect.



PH35
sample: PTH391, PTH392
Ilgang Prospect
Quartz veinlet stockwork in
amphibolite which has dense
pyrite dissemination.



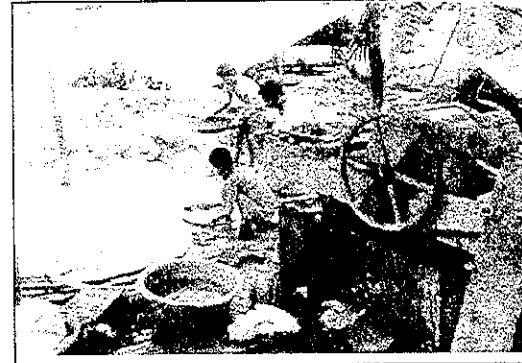
PH34
Sample: PTH387
Matalang Prospect
Close-up of the outcrop of Photo
35. Quartz veinlet stockwork in
andesite which has potassic
alteration with magnetite
dissemination



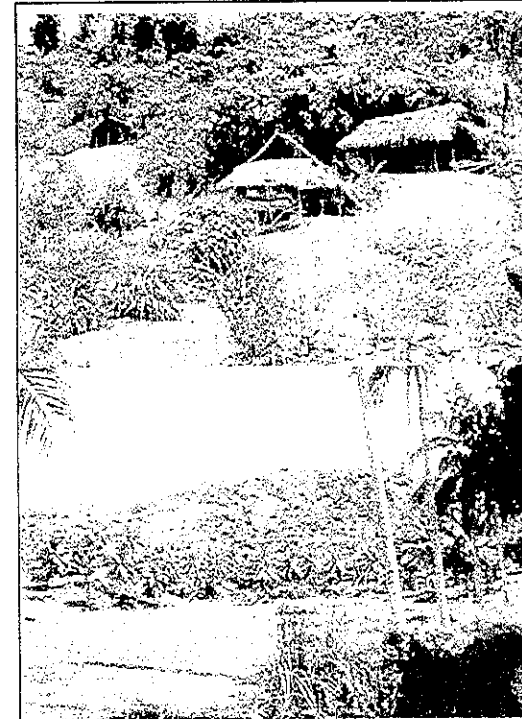
PH36
sample: PTH393
Ilgang Prospect
Occurrence of quartz veins in
dioritic rocks. The quartz vein is
20cm in width and it strikes
N60°W and dips 75°E. It is cut
and displaced by another quartz
vein which trends northeast and
dips steeply westward.



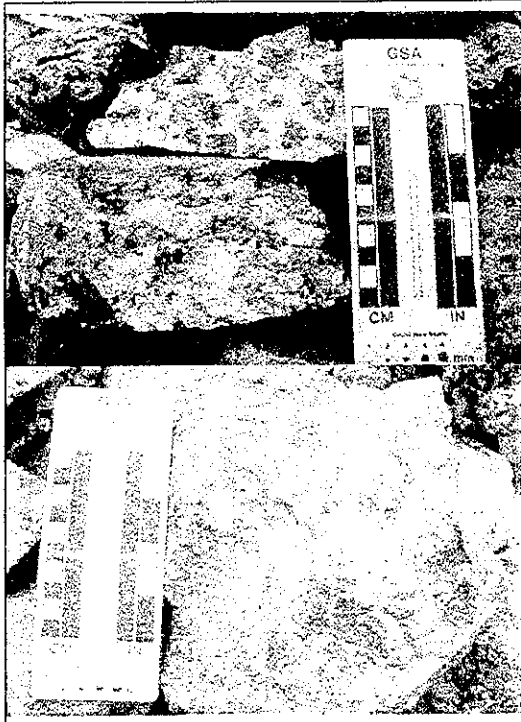
PH37
samples: PTH395, PTH396
Igang Prospect
Quartz vein stockwork in tonalitic rocks in the Igang Prospect. The vein has 10 ppb of Au, 436 ppm of Cu, and 126 ppm of Mo.



PY49, PY52
sample: PKY332
Tumbaga prospect
The pictures show some processes of treatment of auriferous ore and gold extraction. The ore, highly oxidized limonite-quartz vein, is crushed with hammer into less than 5mm diameter (a), then crushed again by motorized milling machine (b). Finally, gold particles are extracted by panning (b).



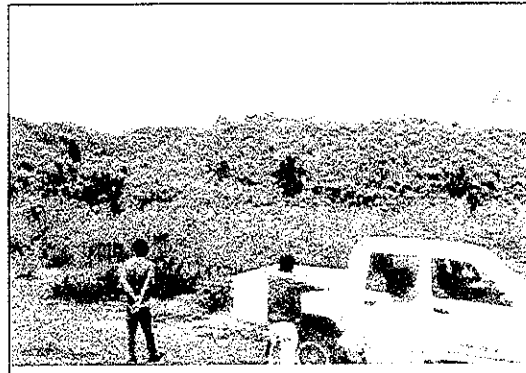
PY50, PY51
sample: PKY332
Tumbaga prospect
View of the small steep hill where several active mining pits are situated, in northwest of 304 peak. Striped vegetation area, in the center, and foot of the hill are mining site (a). View of small huts on the hill. Dumped rock are mainly porphyritic andesite or andesite porphyry (b).



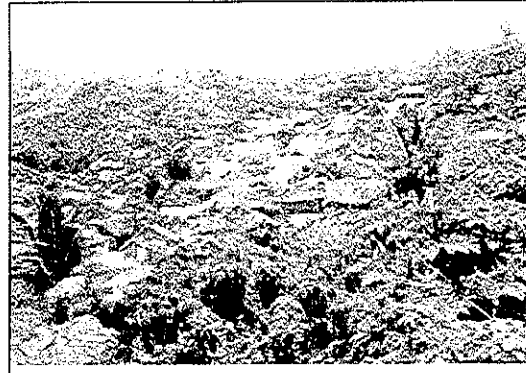
PY55, PY56
 samples:PKY335, PKY336
 Paracale National mine
 The samples showing relationship
 between pyrite-quartz vein and
 host rock, andesite (?).



PY57
 sample:PKY337
 Paracale National mine
 Many dark gray chunks are
 ultramafic rocks. The waste dump
 including ultramafic rocks
 suggests that the andesite or
 andesitic tuff unit which is
 hosting pyrite-quartz vein system
 is underlain by them.



PY58
 sample:PKY339
 Capacuan mine site
 View of abandoned Capacuan pit.



PY60
 sample:PKY340
 Santa Barbara gold prospect
 View of Santa Barbara gold rush
 area. Whole area is owned by one
 owner but each hut which has one
 pit at least is been operating by
 different independent small scale
 miner team. Many huts, around
 one hundred are seen but more
 than half of them are abandoned
 at this moment.



Occurrence of hydrothermal biotite at the Bessemer Pit, Larap Mine



PY35
sample:PKY315
Mancasay
Old production pit for Au. Bed rock, granitic rock (PKY315) was encountered at the end of the pit.

Mt. Bagacay area

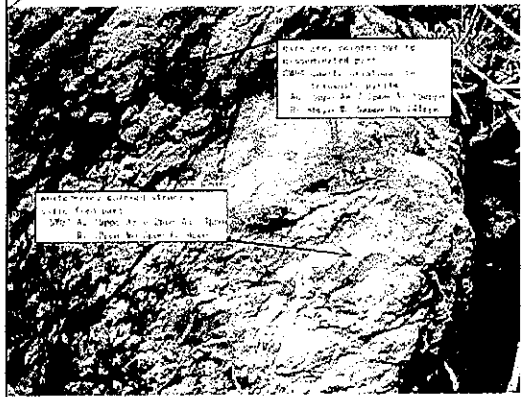
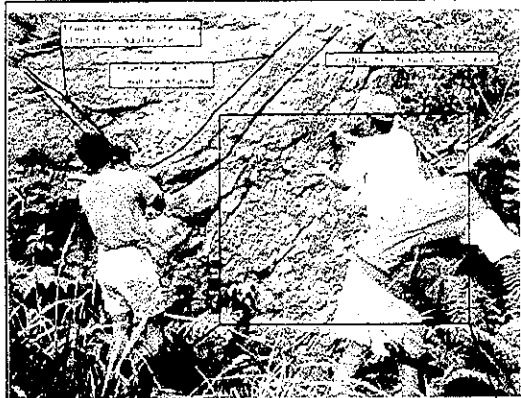


PY34
samples:PKY310-PKY314
Mancasay
Striped soil for gold extraction. Some samples showing anomalous Au value (up to 60ppb) and Cu value (up to 1,270ppm) were taken from this soil.



PY39
samples:PKY320-PKY322
Mampungo clay mine
Active production site of the Mampungo clay mine. Highly weathered white micaceous granitic rock is supposed to belong to Paracale granodiorite.

Mt. Culasi area



SM07
Big altered rock float at Upper
Manasopre Creek

Pio Duran area

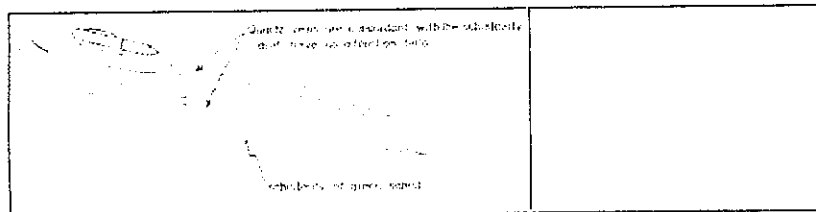


SM02
The copper occurrence in Nagas-
Pio Duran Area (The outcrop at
the south-eastern Catburawan)

Siruma Peninsula area



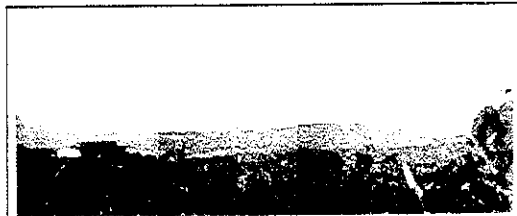
Occurrence of quartz veins in
green schist in Siruma Peninsula



Tiwi-Mt. Malinao area



PH08
Bulalacao in Caramoan Peninsula
View of the Northwestern part of
Tiwi-Mt. Malinao area. Looking
south from Bulalacao in
Caramoan Peninsula. Mt. Mayon
can be seen on the left. Mt.
Malinao can be seen in the center.
At the foothill of Mt. Malinao the
steam from Tiwi geothermal
energy plant can be seen. Low
relief area on the right of Mt.
Malinao is our survey area.



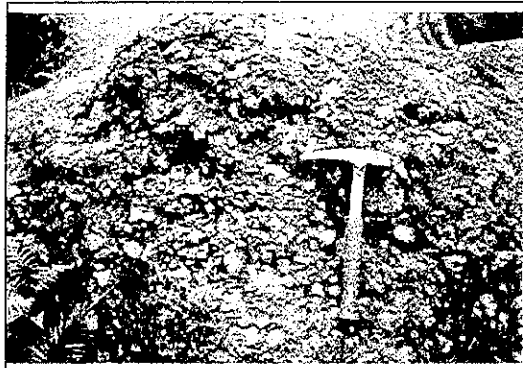
PH09
On the south ridge of Cayohoson
CreekView of the Northwestern
part of Tiwi-Mt. Malinao area.
Looking north. Thick
vegetation. The ridges and creeks
range toward NE direction.
Eastern slope of Mt. Iriga and
Lake Buhi can be seen on the left.
see oversize



PH10
samples: PTH274, PTH275,
PTH276
Upstream of Inalait River
Chalcedonic quartz vein with
alteration halo of mixed layer clay
in propylitic andesite in upstream
of Inalait River. Quartz vein is 3
to 6mm in width and strikes
N24°E and dips 75°E. It has no
gold anomaly.



PH11
sample: PTH280
Upstream of Inalait River
Big boulder of highly silicified
rock in the upstream of Inalait
River. It consists of quartz and
minor of anatase and goethite.
There are many silicified boulders
in this river. It has no gold
anomaly.



PH12
sample: PTH304
Upstream of Cayohoson Creek
Hydrothermal breccia in upstream
of Cayohoson Creek. Highly
silicified. Breccia size ranges
from 1 cm to 8 cm. Those are
coated by silica and limonite.
Au < 5ppb, Cu: 134ppm.



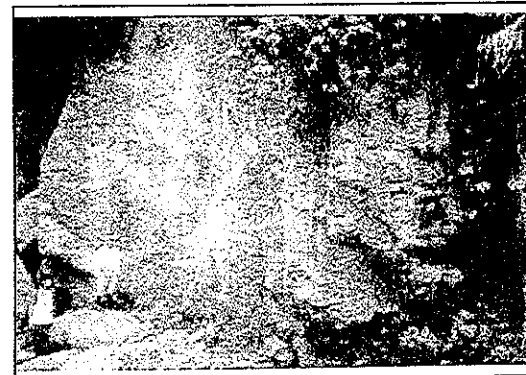
PH13
sample: PTH296
Along coast line, near Mayon
Flow banding in pyroxene-
hornblende dacite can be seen at
outcrop near Balangai Mayon. A
dark band has darker glassy
matrix than a light color band.
This dacite has many cognate
inclusions.



PH14
sample: PTH298
Along coast line, near Mayon
Occurrence of Hbl bearing Px
andesite near Balangai Mayon.
Columnar joints can be seen. The
rock is aphanitic and has many
vesicles. Pyroxene is
microphenocryst in size.
Hornblendes are anhedral and
completely changed to opacites.



PM04, PM05
samples: PSM238a,b
Smectitized andesite occurs in a
vein-like form trending N80E, at
the Buhi lake north, Tiwi-Mount
Malinao area. Altered part
contains larger amount of
smectite and tridymite than
surrounding portion.

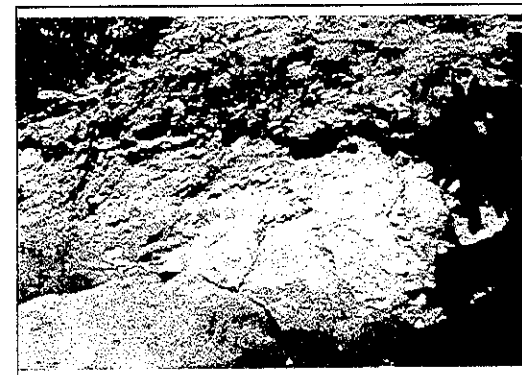


PM06
sample:PSM242
Argillic (some siliceous)
alteration outcrops in the north-
eastern outer rim of intensely
silicified zone, north-east Tiwi-
Mount Malinao area. At the outer
argillic portion, crystbarite and/or
tridymite are dominant silica
forms, unlike quartz dominance in
silicified zone. Alunite is also
deficient.

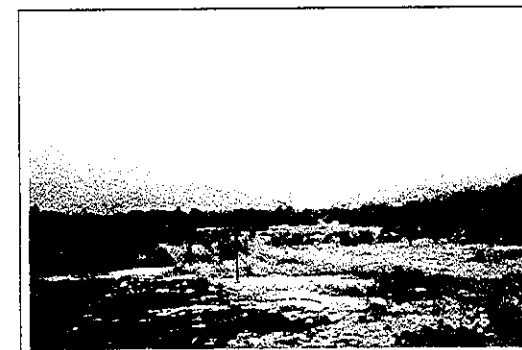
PM07
sample:PSM244
Silicified wall in the north-east
Tiwi - Mount Malinao area.
Rocks in this wall are totally
altered to intensely silicified rock.
X-ray analyses describe that such
silicified rock includes
natroalunite.



PM08
sample:PSM261
There are some small quartz vein
floats observed along the
Cayohasin creek, east side of
Buhi lake, Tiwi-Mount Malinao
area. This boulder consists of
numerous small fragments of
silicified rock and a larger white
quartz vein fragment with
silicified host rock which densely
disseminated by fine grained
pyrite.



PY20
sample:PKY262
Mayong
Highly silicified outcrop. The
texture of upper portion is not
clear due to strong oxidation but
pyrite vein lets are able to be
observed in lower portion.



Tiwi
View of the Tiwi geothermal
electricity plant, looking from
sinter terrace



Tiwi
Occurrence of sinter cone and
sinter terrace in the Tiwi
geothermal field

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