

andesite (?) commonly light gray with purplish streaks; microveinlets of hematite still abundant; rock is more competent down section resulting in the less fragmented character of the core sample; core recovery at this section is 80 to 85%.

20.3m to 21.8m section: Cream to buff coloured rock; generally silicified with distinct hematite and possibly jarosite (%) stains especially along fracture surfaces; cut section of core sample display breccia-like texture of rock with islands of sub-angular, highly silicified material surrounded by equally silicified matrix; disrupted veinlets of gray quartz (2mm wide) also noted; mafic minerals appears to be absent altogether.

21.8m to 24.2m section: Cream to buff andesite (?); highly bleached sections with mainly quartz and clay minerals observable; generally fragmented with highly irregular shapes; pervasive hematite staining and veinlet noted; minor specular hematite also observed as isolated patches within the groundmass.

24.2m to 25.35m section: Hematite rich section; red brown to purplish brown stained rock mass; narrow portions especially below the 25.0m level appear to be almost entirely hematite dominated, microveinlets with distinct purple stains still abundant.

25.35m to 28.15m section: Silicified andesite (?); buff to cream up-section becoming more red-brown or purplish at depth where hematite encrustation is more pronounced; rock mass appears to be more competent as longer core sections are recovered; the microbreccia texture is still apparent in the rock with subangular highly silicified fragments embedded in a siliceous mass; the texture is particularly distinct in the hematite impregnated section where the light coloured silica rich portion contrast with the hematite rich portions; specularite is abundant locally.

28.15m to 32.2m section: Gray to buff coloured rock with local red to red brown stains specially along fracture surfaces; the rock displays a moss-agate like texture with some portions showing specularite occupying

irregular voids within silicified ground mass; root-like veinlets of hematite are also noted; where hematite is minimal in amount, the rock generally crumbly and fragmented; hematite content of the rock varies from almost nil to roughly 10% of the rock volume.

32.2m to 35.35m section: Buff coloured rock with patches of gray and purplish brown; microbreccia texture with subangular clayey, cream fragments contrasting with purple-brown, hematite impregnated interstitial materials; microveinlets of hematite form a network of criss-crossing dendrites throughout the rockmass; section before 34.3m rock is highly fragmented and hematite impregnated.

35.35m to 38.0m section: Brown to purplish-red stained rock; relatively fresh portions show grayish blue, fine-grained andesite; fracture surfaces commonly hematite stain; rock mass appear to be mainly silica, clay and specular hematite; criss-crossing microveinlets of hematite stained quartz are found throughout the section; hematite stains decreases in intensity downhole and grades imperceptibly into gray to buff rock.

38.0m to 40.2m section: Gray to buff andesite (?); moderately argillized and fragmented; whole section generally pyrite bearing which occur as disseminations or patches throughout the rock mass; minute veinlets of pyrite also noted; microveinlets of quartz without pyrite also occur in occasional portions; pyrite content is anywhere from 5 to 10%.

40.2m to 43.45m section: Essentially similar to overlying section; some portions highly fragmented and argillized; argillized portions generally crumbly or powdery and tend to disaggregate into fine lumps; as in previous section, pyrite content is about 5 to 10% with some local portions having a higher percentage content; pyrite tend to occur as discreet and very fine crystals within the rock mass; crystals of up to 2mm diameter are rarely observed; local shears also smoothed surfaces with occasional directional features; pyrite crystals are locally abundant in these portions.

43.45m to 46.7m section: Gray to dark gray andesite; locally argillized with numerous quartz veinlets; rock is dominantly fine grained and altered; degree of fracturing varies from portion to portion; quartz veinlets generally less than 1.0 mm in thickness and do not appear to have any preferred orientation; exposed veinlets surfaces show abundant pyrite with very minor chalcopyrite.

46.7m to 49.05m section: Gray to greenish-gray andesite; silicified and argillized in portions; argillized parts tend to be crumbly and powdery; pyrite disseminations and microveinlets still pervasive but is less than 5% of rock mass; epidote encrustations common along shear surfaces; core recovery around 80-85%.

49.05m to 52.43m section: Essentially the same as the previous section; rock mass locally fractured and fragmented; argillized portions tend to occur along side sheared sections; pyrite still ubiquitous in this section; fine veinlets of milky quartz also noted; most are irregular and less than 2 mm wide; cut section shows numerous vugs sometimes filled-in by pyrite; patches of highly silicified rock also noted.

52.43m to 54.48m section: Gray to dark gray, fine-grained andesite; locally sheared and argillized resulting in fragmented character of rock mass; pyrite content still around 3 to 5%, occurring mainly as clumps or veinlets in the rock mass; milky quartz veinlets still noticeable in some portions.

54.48m to 58.28m section: Abundant milky quartz veinlets prior to 55.48 level; 2mm to 5mm wide; pyrite aggregates pervasive along both sides of the veinlets; content ranges from 8 to 10% of rock mass; epidotization noted. Highly sheared section; fragmented and crumbly; argillization moderately intense.

58.28m to 60.78m section: Gray andesite; generally competent section; more or less intact core locally sheared and argillized; quartz veinlets and pyrite mineralization still very distinct; silicified portions generally criss-crossed by minute quartz veinlets.

60.78m to 64.38m section: Generally solid and intact core; gray to dark gray andesite; silicified and argillized in portions; minor shears display irregular fracture surfaces; veinlets of quartz less abundant and distinct than in previous section; pyrite mineralization also less in terms of percentage.

64.38m to 67.0m section: Gray andesite; fine grained, silicified with numerous veinlets of gray quartz; these appear to have replaced the milky quartz veinlets in the previous sections; intrusion of quartz possibly episodic as evidenced by cross cutting veinlets; rock mass is very competent resulting in continuous core samples; fracturing results in highly irregular breaks with distinctive slickenside like features.

67.0m to 68.83m section: Essentially continuous with the previous section; pyrite and quartz veinlets still persist to this level; rock mass is very solid and dense.

68.83m to 70.2 m section: Gray andesite; silicified with numerous veinlets of quartz and pyrite; rock appears sugary in texture when wet; pyrite occurrence generally patchy; crystals rarely exceed 2mm diameter; quartz veinlets are without any preferred orientation and commonly 2- 5m wide.

70.2m to 72.0m section: Generally massive although local fractures are noted; pyrite and gray quartz veinlets pervasive; pyrite is less than 5% of rock mass; very minor chalcopyrite is observed.

72.0m to 75.35m section: Essentially continuous with previous section; entire section appears competent and dense with only minor fractures; core recovery is about 100%; minimal change in pyrite content or density of quartz veinlets is observed .

75.35m to 77.3m section: Slightly fractured, gray andesite; fine-grained; fractures surfaces tend to be glossy and smooth; pyrite content less than 5%; quartz veinlets crisscross and are less than 2 mm wide;

silicification and argillization still distinctive.

77.3m to 81.3m section: Essentially continuous with previous section; locally fractured along limited length; silicification intensity appear to vary from portion to portion but that is ubiquitous throughout the section; pyrite content is less than 2%; quartz veinlets are also few and far between.

81.3m to 85.7m section: Essentially similar to previous section; slightly fractured andesite; fracture fragments form smooth flake-like pieces locally; pyrite content averages around 4%; the pyrite occur as disseminations or interstitial fillings of voids in the rock mass; minute pyrite veinlets also noted; gray and milky quartz veinlets observed but no orientation is discernable.

85.7m to 87.75m section: Gray to light gray andesite; fine grained; bleaching appears to be more pronounced in this section; rock colour is lighter than in previous section; quartz veinlets and pyrite remains pronounced; microbreccia-like texture of some veinlets noted, this could have arisen through the incorporation of old vein materials into a younger intruding vein/veinlet.

87.75m to 89.1m section: Gray andesite, fine grained; generally massive and dense; microveinlets of quartz and pyrite form sparsely cross cutting network in the rock; pyrite content is around 3%.

89.1m to 93.5m section: Essentially similar to previous section; amount and intensity of quartz veinlets and pyrite is practically the same as in previous section; in some portions microveinlets of pyrite of quartz form dendrite like pattern in the rock; pyrite appears to form pockets along the veinlets where space is available thus the widest portions of the veinlets are the most favored sites.

93.5m to 95.45m section: Gray to light gray andesite; fine grained and massive; texture of rock appears to be porphyritic in some portions; microveinlets of quartz and pyrite still pervasive; locally observed are pockets of pyrite measuring from 5mm to 8mm in diameter; the

rock mass is characterized by numerous vesicles and pockmarks thus making it loose porous and permeable.

95.45m to 99.4m section: Essentially similar to previous section but is more massive at the lower portion; vesicular texture disappears down section; subparallel veinlets of quartz and pyrite very distinct at 98.5 level; only occasional cross cutting veinlets noted; pyrite occurring as pockets no longer prominent; it is mainly disseminated in the groundmass or is limited in the veinlets; fracturing of the rock is not distinct.

99.4m to 102.1m section: Essentially continuous with the previous section; quartz and pyrite veinlets tend to locally swarm in some portions; they are not evenly distributed throughout the section; pyrite pockets form at the intersection of the veinlets or where vesicles are present; it comprises less than 2% of the rock mass; variable intensity of silicification is also noted throughout the section.

102.1m to 105.2m section: Gray andesite; similar to previous section; distribution of veinlets and microveinlets appear more even all throughout the section; same veinlets are traceable for about 15 to 20cm along the core; numerous veinlets are also observed cutting across the other veinlets; silicification and argillization remain variable throughout the section.

105.2m to 108.35m section: Essentially similar to the previous section; uneven distribution of the veinlets more apparent; pyrite remains ubiquitous in this section; at level 107.0m breccia like texture is observed with subangular fragments of the original andesite groundmass surrounded by silica vein material; disjointed older veinlets are clearly discerned within the matrix of silica; pyrite pockets occur in once empty voids and vugs.

108.35m to 111.4m section: Continuous with previous section; rock mass remains fine grained andesite crisscrossed by quartz and pyrite veinlets; core relatively unfractured and competent; minor chalcopyrite

also noted with pyrite but only locally.

111.4m to 114.45m section: Continuous with previous section; practically the same condition as the overlying section; veinlets of quartz and pyrite form cross cutting network in variably silicified and/or argillized andesite; pyrite content is about 2-5% and is particularly prominent along fracture surfaces and veinlets.

114.45m to 117.1m section: Gray andesite; fine grained, locally porphyritic with plagioclase as main phenocryst; rock mass remains massive and dense; veinlets of gray and milky quartz and pyrite still pervasive; veinlets rarely exceed 5mm width.

117.1m to 118.95 m section: Essentially similar to previous section; fine grained andesite; silicified and argillized in portions and in varying degrees; sporadic pockets of pyrite noted but its main occurrence is in form of dissemination and veinlets.

118.95m to 122.0m section: Gray and milky quartz veinlets remain prevalent in this section; 5mm wide veinlet of milky quartz tend to concentrate along veinlets and vugs as infilling; the crystals are usually very fine to fine.

122.0m to 123.0m section: Breccia-like texture dominates this section; fragments of andesite, vein material and pyrite are surrounded by silica; veinlets of gray and milky quartz and pyrite criss-cross one another; these are seldom wider than 5 mm and tend to disrupt earlier form veinlets; pockets of pyrite occur in voids and interstitial space.

123.0m to 125.85m section: Gray andesite; fine grained and dense; highly fragmented portion locally observed possibly due to fracturing; quartz veinlets and pyrite remain prominent in the groundmass; veinlets locally form dendrites patterns within the rock; average pyrite content is less than 5%.

125.85m to 128.65m section: Highly fractured and

fragmented section especially at the lower level; degree of argillization is greater than in previous sections resulting in some clayey portions within this stretch; more silicified parts tend to break up into irregular fragments of varying sizes; pyrite and quartz veinlets remain prominent to this level.

129.95m to 133.15m section: Greenish-gray andesite; characteristically fragmented; argillized portions tend to be crumbly, plastic when wet; silicified portions commonly pyrite impregnated with abundant microveinlets of quartz; pyrite content is less than 5%; core size has been reduced to NQ.

133.15m to 135.15m section: Greenish gray andesite; less fragmented than previous section; chloritization and silicification also more pronounced; veinlets of milky quartz abound but vary in both size and orientation; argillization limited along shear and fracture zones; pyrite content is about 3%; this occur mainly with the quartz veinlets.

135.15m to 139.45m section: Essentially the same rock as the previous section but is more fragmented and argillized especially in the lower sections; veinlets of milky quartz still distinctive with pyrite occurring as irregular patches or stringers; samples of the rock appears porous and crumbly and tend to disintegrate when wet; bleaching has resulted into the lighter colour of the rock mass.

139.45m to 141.0m section: Rock passes into a more massive and silicified unit from the previous section; the andesite is gray to light gray in colour and is magnetite bearing; microveinlets of gray quartz plus magnetite are pervasive throughout this section; the magnetite bearing veinlets appear as dark hair-like dendrites cutting accross the rock mass; disseminations of the same is also noted in some portions; pyrite appears to be less abundant in this section.

141.0m to 146.6m section: Gray to light gray andesite; section down to 142.6m is massive and magnetite bearing; magnetite (mt) occr as fine disseminations in the



groundmass and less commonly as clumps/clusters of fine crystal; milky quartz veinlets are still common; the section from 142.6m to 144.0m is generally sheared; magnetite is characteristically absent in this section except for a minor portion where faint signs are detected; milky quartz veinlets are common; one veinlet (3 mm) was noted to have chalcopyrite but the mineral is generally rare in the section; below 144.0m, the unit is again massive and mt bearing; milky quartz veinlets still pervasive; pyrite is less than 1%.

146.6m to 149.65m section: Essentially continuous with the previous section; massive unit with very local fractures commonly healed by milky quartz; veinlets are 2 to 5mm wide; portions of the unit appear porphyritic and granular; rare islands of fine grained, mt-rich material are also observed, pyrite like magnetite occurs as disseminations in the groundmass; core recovery is excellent in this section due to the competent nature of the unit.

149.65m to 152.45m section: Similar to previous section; massive; medium grained andesite; fine hair-like veinlets and locally form patches especially in portions with abundant veinlets; magnetite occurs as disseminations in the groundmass but also shows occasional clustering along veinlets; chlorite alteration is still distinct in this section.

152.45m to 155.5m section: Essentially continuous with previous section; fine microveinlets of gray quartz are locally prominent occurring as subparallel strand of hair-like texture in the groundmass; pyrite shows preferential occurrence along this portions although minor disseminations are also noted; magnetite continues to be prominent in this section; 2 to 3mm wide milky quartz veinlets barren of sulphides occur sporadically.

155.5m to 158.55m section: Continuous with previous section; pyrite less pervasive than in previous section; tends to occur peripheral to quartz microveinlets; magnetite occurrence still notable but is generally very minimal in portions with abundant milky quartz veinlets or fracture zones; core recovery is excellent because of

the massive nature of the rock mass.

158.55m to 161.15m section: Continuous with previous section; relatively unfractured section displaying distinct microveinlets of gray and milky quartz; gray quartz characteristically hair-like in texture and tends to swarm locally; the latter occurs more prominently along fracture or shear sections; pyrite abounds along microveinlets; mt tends to disseminate throughout the groundmass.

161.15m to 163.05m section: Gray to greenish gray andesite; massive, medium grained; numerous milky quartz veinlets forming criss-crossing network noted; mt still pervasive; pyrite still prominent along veinlets and fracture surfaces but is less than 5% of rock mass.

163.05m to 166.10m section: Continuous with previous section; milky quartz veinlets becoming more prominent, width varies from 2 to 10mm; no visible sulphides within the vein material but pyrite is abundant along the veinlets; mt is still ubiquitous in this section; silicification and chloritization still variably discernible.

166.10m to 168.25m section: Continuous with previous section; milky quartz veinlets still prevalent but becoming less prominent both in terms of size and number; mt and pyrite still persist, patchy in occurrence; rock unit still massive and core recovery is almost 100%.

168.25 m to 171.70m section: Rock passes from massive to more fragmented section; unit is slightly argillized and sheared in portions; the section 168.4 to 169.25m contains minor mt but below 169.25 mt is absent; it appears mt is not present in the argillized and sheared section; milky quartz veinlets and pyrite are noted within the entire section.

171.7m to 174.10m section: Essentially similar to previous section but argillization is in portions more pervasive; gray to greenish gray colour passes to light greenish gray to buff colour; original mafic

constituents of the argillized rock appear to have altered to chlorite and magnetite; groundmass is mainly quartz and clay; light colour of the rock contrast sharply with the dark colours of the intervening rock mass; foliation-like features observed in the rock results from the orientation of the needle-shape mafic mineral along preferred direction prior to alteration.

174.10m to 176.4m section: Continuous with the previous section; dike-like appearance of the argillized portion shows contrast of light and dark colours; milky quartz veinlets, 2 to 5mm wide, locally abundant; pyrite and magnetite still present although patchy; argillized portion of the rock unit appear to be highly chloritized with numerous cross cutting quartz veinlets.

175.4m to 179.3m section: Argillized andesite passes on to chloritized andesite; abundant milky quartz veinlets noted cutting across chloritized andesite; pyrite and magnetite locally abundant although the latter is more evenly disseminated; epidote also locally observed contiguous to a quartz veinlet; pyrite content of the rock is generally less than 2%.

181.0 m to 183.78m section: Greenish gray andesite; chloritized, and argillized in portions; abundant milky quartz veinlets; variable width and orientation; magnetite spotty in occurrence, generally absent in portion with abundant quartz veinlets and highly argillized sections; pyrite is present but generally less than 2% of rock mass; chlorization appears to wane down section.

183.78m to 186.83m section: Gray to light gray andesite; medium to fine grained; variably argillized; numerous milky quartz veinlets; locally crumbly due to intense argillization, chloritization indistinct; magnetite occurrence very spotty, limited only to individual grains within the groundmass; fine veinlets of gray quartz again noted as swarms locally; pyrite persists as disseminations and interstitial fillings.

186.83m to 190.0m section: Essentially continuous with previous section; veinlets of milky quartz is variably

argillized andesite still prevalent; mt is absent in the argillized and veinlet impregnated sections but is present in minor amounts in the less altered section; pyrite is still present but is minimal.

190.0m to 193.68m section: Gray to light gray andesite; variably argillized with some portions almost totally clayey; microveinlets of milky quartz still discernible locally; the section 191.18 to 192.2m is mainly clay with only minor fragments of the original rock discernible; it tends to be powdery when dry and plastic when wet, intervening portions of more competent mass are noted throughout the section; magnetite is again limited to the less altered section of the rock where it occurs as discreet grains within the groundmass; pyrite still persists but is relatively minor.

193.68m to 197.0m section: Essentially a continuous section of variably argillized andesite similar to the previous section; alternating portions of crumbly and more competent rock mass are noted; highly argillized portions show very little original rock texture and tend to be plastic when wet; the massive portions show numerous milky quartz veinlets of varying width and orientation; as in the previous section; magnetite is absent in the argillized portions; it is locally abundant only in limited portions; pyrite occur as fine disseminations in the groundmass.

197.0m to 199.78m section: Gray to light gray andesite; generally more massive and competent than previous section; slight argillization; magnetite pervasive throughout the section, occurring as discreet grains within the groundmass; pyrite is very minor and limited to fracture surfaces or walls of veinlets; milky quartz veinlets locally prominent.

199.78m to 202.83m section: Essentially continuous with previous section; massive and competent; quartz veinlets tend to be epidote impregnated locally; magnetite still pervasive throughout the section; pyrite is less than 1% in the groundmass; fine veinlets of gray quartz also noted sporadically.

202.83m to 205.23m section: Gray andesite; highly fragmented section; rock mass tends to disaggregate into fine fragments; magnetite pervasive; locally very abundant; fine microveinlets of gray quartz visible in the more competent portions; pyrite occurs as disseminations within the groundmass and is less than 2%.

205.23m to 207.73m section: Essentially continuous with previous section; highly fragmented with only minimal portions with discernible milky quartz veinlets; fine veinlets of gray quartz appear to predominate; magnetite content generally higher than the previous 2 sections, pyrite still minor.

207.73m to 209.93m section: Magnetite bearing portion continues down to 208.10m level then passes on to essentially a magnetite-free section; the latter is characteristically argillized with occasional gray quartz veinlets; pyrite occurs both in the groundmass as isolated grains, along veinlet walls/surfaces; it is however very minor in extent; the lower section appears to be more competent and solid resulting in a generally excellent recovery of core sample.

209.93m to 211.93m section: Continuous with previous section; mt free with occasional milky quartz veinlets; well formed quartz crystals noted along veinlet surfaces; they form prismatic crystal jutting out from the surface; acid testing along this section and in the previous one reveal portions containing carbonates as evidenced by their effervescent reaction to the acid; this is especially prominent along fractures and veinlets of gray and milky quartz; this could indicate emplacement of carbonate minerals (possibly calcite) along existing space on fractures within the rock.

211.93m to 214.43m section: Gray to light gray andesite; variably argillized; occasional veinlets of milky and gray quartz and possibly calcite (?); magnetite is absent; pyrite is common as disseminations and veinlet material but is less than 5% average.

214.43m to 217.48m section: Continuous with previous

section; reappearance of magnetite at around 214.20m level of previous section; and continuous to this section; intervening portions (20-30 cm long) that are magnetite-free noted throughout; pyrite and quartz veinlets still prominent; calcite (?) microveinlets or veinlet impregnation still evident.

217.48m to 220.38m section: Gray andesite; similar to previous section in terms of rock texture but is generally barren of magnetite; veinlets of quartz still locally prominent; pyrite is present at around 1-2%; argillization intensity is variable but generally increases towards the lower section; rock mass is by and large competent as evidenced by the solid core samples obtained, although the lowest 1/2m section is highly fragmented due to intense argillization.

220.38m to 222.88m section: Continuous with the previous section; argillized, becoming less intense down section; magnetite remains absent within this section; 5-7mm wide quartz veinlets noted locally; pyrite is the only visible sulphide in the veinlets and in the groundmass; it is generally less than 5% average; acid effervescence still observed especially along veinlet trends and fracture surfaces; core recovery and condition is very good.

222.9m to 225.38m section: Essentially similar to previous section; argillization has waned and magnetite is again present in some portions; quartz veinlets locally form swarms and are particularly prevalent along section 223.10 to 223.45m; the veinlets are generally narrow and tend to form an intertwining network along a preferred trend; pyrite is abundant along this network and is also found disseminated in the groundmass; magnetite is essentially absent within these portions.

225.38m to 227.50m section: Continuous with previous section; gray to light gray andesite; quartz veinlets locally abundant; pyrite occurrence is patchy ranging from 2 to 5% in some portions; magnetite is also erratically distributed being totally absent in some and present in other portions; argillization intensity

is also varied with the lower part of the section showing more intense alteration; veinlets of calcite sporadically noted.

227.5m to 230.55m section: Continuous with previous section; highly argillized in the upper portion and variably argillized down section; light gray to gray colour with a distinct dark gray portion along 229.2m to 230.0m section; magnetite appears to be absent throughout this section; pyrite is ubiquitous but patchy in occurrence; calcite veinlets occasionally noted, gray quartz microveinlets prominent and tend to form swarms locally.

230.55m to 232.78m section: Gray to light gray andesite; argillized to intensely argillized along distinct intervals; milky quartz veinlets locally abundant, magnetite detected only as minor patches pyrite occurs as discrete, fine crystals in the groundmass and contiguous to quartz veinlets.

232.78m to 235.83m section: Continuous with previous section; generally intact section with intervening fragmented portions; argillization still very defined, highly argillized portions tend to be flaky and crumbly and are generally darker coloured; pyrite is well dispersed as fine crystals in the groundmass; magnetite appears to be absent; calcite veinlets locally noted.

235.83m to 237.33m section: Essentially similar to previous section; highly fragmented upper portion passes on to a more competent and less argillized lower section; chloritization becoming more pronounced down section; pyrite still very prominent as dispersed crystals throughout the groundmass; magnetite is practically absent except for very minor indications.

237.33m to 240.33m section: Light gray to gray andesite; variably argillized with occasional quartz and calcite veinlets; magnetite impregnated portion noted along 238.45m to 238.85m interval; it occurs as very fine disseminations in the groundmass, pyrite is ubiquitous and tend to cluster along fracture and veinlet surfaces; the core sample is relatively

competent and intact with only short sections showing fragmented or broken up rock mass.

240.33m to 242.83m section: Continuous with previous section; slight argillization; locally abundant milky quartz veinlets; magnetite occurrence patchy but generally this section is more mt-rich than the 2 previous sections; pyrite is about 3 to 5% dispersed in the groundmass and more distinctly along veinlets and fracture surfaces; fracturing of the rock mass appears to be controlled by the veinlet orientation; degree of fragmentation of the core sample is moderate.

242.83m to 244.93m section: Continuous with previous section; moderately to highly fragmental especially down section; magnetite is patchy in occurrence, more rare than in the previous section; pyrite is still very prominent particularly along veinlets; microveinlets of almost pure pyrite noted locally criss-crossing quartz veinlets; pyrite is about 2 to 4% of rock mass; acid effervescence noted in some veinlets could indicate calcite impregnation along these veinlets.

244.93m to 247.13m section: Similar to previous section: fine to slightly porphyritic andesite; argillized or chloritized in portions; pyrite and magnetite bearing although the latter is rather erratic in distribution; veinlets of quartz and possibly some of calcite are noted cross-cutting one another in varied directions, pyrite impregnation of veinlet walls is very distinct.

247.13m to 249.23m section: Gray to light gray andesite; argillized in portions; locally sheared and fragmented; milky and gray quartz veinlets noted; pyrite is about 2% found mainly along quartz veinlets; magnetite is generally rare to absent.

249.23m to 251.73m section: Displays essentially the same characteristics as the previous section; intervening sections of variably argillized andesite; intensely argillized portions tend to be crumbly or flaky to powdery in texture; pyrite content is comparable to the previous section; mt is not observed.



251.73m to 254.6m section: Continuous with previous section; fragmented rock mass especially on the upper portions; highly argillized sections tend to be very brittle to patchy and commonly disaggregates when roughly handled; sheared surfaces show distinct striations; pyrite is ubiquitous and is around 2 to 3%; magnetite is noted only as very minor patches in less argillized rock; milky quartz veinlets run subparallel to shear surfaces but are commonly less than 3mm in width, cross-cutting microveinlets also noted locally.

254.6m to 256.63m section: Gray to light gray andesite; intensely argillized lower section; upper meter section more competent and intact magnetite bearing; sporadic quartz veinlets with abundant pyrite; argillized portion is dark gray in colour, easily disaggregated, and semi-plastic when wet; pyrite tend to be consistent in both argillized and less argillized portions.

256.63m to 259.63m section: Intensely argillized section extends 258.0m level then passes on to less argillized andesite; magnetite is notably rich along a half meter interval from 258.0m to 288.5m and then disappears along the rest of the section; veinlets of quartz and calcite noted but are not very prominent; hairlike microveinlets of both minerals are more widespread locally; pyrite is very minor, generally less than 1%.

259.63m to 261.58m section: Gray to greenish gray andesite; fine-grained; displays varying degrees of argillization and chloritization; moderately to intensely fragmented core arising from highly fractured/sheared rock mass; veinlets of quartz and microveinlets of calcite plus quartz are diapersed throughout the section; pyrite is still minor; commonly occurring as very fine aggregates in interstitial spaces contiguous to quartz veinlets.

261.58m to 263.18m section: Continuous with previous section; fragmented rock, argillized in varying degrees; magnetite-bearing portions limited to the less

argillized sections of the rock; magnetite occurs as distinct crystals or aggregates of crystals within the groundmass; it is usually found with pyrite and chlorite(?); pyrite is common throughout the section but is generally less than 2% average.

263.18m to 266.28m section: More of the same sequence; alternation of intensely and slightly argillized rock or competent/solid fragmented rock; argillized portions tend to be semiplastic when wet and powdery when dry; less argillized sections tend to contain magnetite as irregular patches, pyrite and quartz veinlets /microveinlets common throughout the section.

266.28m to 268.03m section: Continuous with previous section; highly sheared portions show flake-like fragments of fine grained andesite within clay matrix giving rise to the schist-like texture of the rock; magnetite is again encountered in the more competent and solid section of the unit and is not found in the intensely argillized or sheared portions; pyrite is still common but minor in amount, the bottom section is almost wholly clay material.

268.03m to 270.43m section: Continuous with previous section; fragmented and section of variably argillized andesite; magnetite bearing portions along the less argillized parts of the unit; pyrite is very fine grained; disseminated throughout the groundmass; microveinlets/veinlets of milky quartz locally prominent.

270.43m to 272.83m section: Slightly argillized andesite; fragmented core sample; pyrite content generally higher than previous sections and is around 5 to 8%; it occurs more or less evenly throughout the groundmass within interstitial spaces; magnetite is present as discreet cluster of crystals irregularly distributed throughout the section.

272.83m to 275.00m section: Essentially continuous with previous section; argillization noted to intensely down section but is locally variable; pyrite content is still around 5% magnetite is rare; hair line fractures or microveinlets lined with pyrite are observed throughout

the section; intense shearing along some portions has given rise to the schistose-like texture of the rock unit; fracture surfaces are commonly striated.

275.00m to 277.0m section: Continuous with previous section: gray to dark gray coloured, fine grained andesite; argillization variable and locally intense; magnetite is not encountered in this section; pyrite occurs dominantly as disseminations, content is less than 5% average. quartz veinlets still observed but is generally sparse; core is relatively fragmented and sheared.

277.0m to 279.0m section: Variably argillized andesite up to level 278.58; gray to dark gray colour with abundant pyrite (5%) and no magnetite; this passes on to very fine grained, chloritized andesite or tuffaceous andesite(?); pyrite is essentially absent in this portion.

279.0m to 281.8m section: Continuous with previous section: fine-grained, chloritized andesite extends to 281.18m; porphyritic texture; phenocryst of mafic minerals in a fine grained, argillic groundmass; pyrite is absent; magnetite also not detected, original mafic minerals transformed to chlorite thus giving the rock a distinctive greenish shade; beyond 281.18m level, the rock returns to the typical argillized, pyrite bearing andesite.

281.8m to 285.6m section: Gray to greenish gray andesite; fine to very fine grained; variably argillized and chloritized; pyrite is minor - less than 1%; magnetite is negligible in occurrence; veinlets of quartz plus calcite are sparsely dispersed; core sample locally fragmented especially along shear zones and argillized portions.

285.6m to 288.6m section: The initial meter length of core is almost totally clay material; light greenish gray in colour, it is generally plastic when wet and powdery/crumby when dry, flaky fragments of rock material commonly found within the clayey mass; rock passes on to a more rigid and competent, less argillized

section beyond 286.5m level, rock is fine grained, possibly tuffaceous andesite with very minor pyrite and no magnetite; this passes on to the more typical granular texture and andesite showing some argillized portions and abundant pyrite (3%); microveinlets of almost totally pyrite noted to be prominent locally; magnetite still not detected in this portion.

288.6m to 291.5m section: Essentially gray to greenish gray; fine grained andesite; rock mass is generally competent resulting in good core recovery and condition; section from 288.9m to 290.6m is magnetite bearing with local portions having as much as 5% content; pyrite is generally common but is less than 1%; beyond 290.6 level, magnetite disappears abruptly and is rarely encountered within the rest of the section; quartz veinlets and microveinlets with abundant pyrite becomes very prominent; pyrite is around 5-7% in this portion; veinlets of quartz bordered by pyrite and veinlets almost totally of pyrite are relatively common.

291.5m to 293.6m section: Continuous with previous section; mainly fine grained andesite with abundant quartz veinlets and high pyrite (5%) content; magnetite is generally rare, occurring mainly as isolated islands or clusters of crystals along the length of the section; core condition and recovery is still very good.

293.6m to 296.0m section: Essentially continuous with previous section; magnetite is more prominent; the occurrence is rather patchy and erratic; pyrite content is locally variable but is around 3% average; pyrite impregnated quartz veinlets/microveinlets are common especially down section where they appear as dendrite like dark lines cutting across the groundmass.

296.0m to 298.0m section: Argillized and fragmented andesite; gray to light gray colour; pyrite content generally less than in previous section; quartz veinlets indistinct possibly due to the sheared nature of the rock mass; magnetite is detected only in one portion and is considered rare in this section; core sample is commonly crumbly and tend to disaggregate into small angular bits.

298.0 m to 300.0m section: Essentially similar to the previous section; but is less argillized and fragmented, more competent portions show chlorite alteration and abundant quartz microveinlets impregnated by pyrite; dark bands noted in the rock was determined to be closely spaced veinlets of quartz with very fine crystals of pyrite; pyrite content is very variable but may average about 3%; magnetite is not detected in this section.



**APX. 16 Detailed Geologic Log, MJPP-5**

Drill Hole MJPP5

Location: Bgy. Moto, San Dionisio (Madarag)

0.0m to 5.0m to section: HQ size core: Mainly soil material; red brown to brown colour; sandy to silty upper portion grading into more clayey material down section; organic debris present only on the first 70cm part; sparse fragments of weathered rock material characterize the upper 3 m portion.

5.0m to 10.75m section: Brown to light brown soil; generally clayey with rare weathered rock fragments, occasional plant and root debris noted; soil tends to be powdery and crumbly when dry and semiplastic when wet.

10.75 m to 13.85m section: Alternating sequence of weathered and oxidized rock and soil material; rock mass is generally purplish gray in colour and fragmented with some portions completely disintegrated into very fine silky material, hematite/limonite stains are distinctive especially along fracture surfaces and microveinlets, remnant highly silicified portions are also noted locally.

13.85m to 17.15m section: Oxidized and slightly weathered rock; purplish gray to red brown colour; generally fragmented with individual pieces tending to be crumbly; hematite stains still very distinctive especially along fracture surfaces but generally tends to permeate the entire silicified groundmass.

17.15m to 20.5m section: Continuous with previous section but generally less fragmented; purplish gray in colour with intervening portions of gray and grayish cream; red to red brown hematite stains are prominent along fracture surfaces; rock mass is generally silicified with the less oxidized portions showing a distinctly silicified and pyritized, fine grained rock; pyrite content of the original rock must be around 10% almost all of which had been transformed to hematite/limonite in the highly oxidized sections.

20.5m to 24.0m section: Continuous with previous section but relatively less oxidized; gray to light gray



colour ; locally purplish gray and red brown in the oxidized parts; rock mass is highly, albeit irregularly silicified with islands or patches of less silicified material surrounded by a siliceous mass; pyrite content is also around 10% commonly occurring as clusters or disseminations in the groundmass and as fracture or cavity fillings; core sample is moderately fragmented, typically broken up along natural fracture or shear lines.

24.0m to 27.5m section: Highly oxidized rock; fine-grained texture; variably oxidized; color varies from buff to gray with the more oxidized portions showing purple gray and ochre or rust tinge; numerous vugs and microfractures lined with hematite/limonite stains are also noted especially in the more oxidized parts; pyrite is around 7% to 10% in the fresh or unoxidized rock; core sample is moderately to highly fragmented.

27.5m to 31.1m section: Continuous with previous section; highly silicified rock mass; generally buff to light gray in color with reddish brown to ochre hematite/limonite stains; numerous hairline fractures criss-cross the rock mass and are commonly hematite/limonite lined; veinlets/microveinlets of quartz are common; their dark gray color is probably due to very fine pyrite inclusions; pyrite contents of the rock is less than 2%, a high proportion of which had been oxidized to hematite or limonite.

31.1m to 34.7m section: Essentially continuous with previous section; oxidized in the upper portion down to 32.85m level; gray to light gray colour; buff or cream with red brown and purple stains when oxidized section also slightly argillized; pyrite content is around 7 to 10%, occurring as fine disseminations in the groundmass and as veinlet infillings.

34.7m to 38.8m section: Variably silicified and argillized rock; generally fine grained; oxidized in portions resulting in the distinctive purplish hematite stains and pitted character of the rock mass especially in the lower part of the section; highly silicified portions tend to be dense and massive with peculiar

marble like appearance, most of the pyrite had been oxidized but in the fresher sections, pyrite is around 7% or less; the core sample is generally solid and intact save for the moderately fragmented 40cm upper part.

38.8m to 41.7% section: Continuous with previous section: silicified and oxidized, fine grained rock; red brown to purple gray colour due to the pervasive hematite staining; the rock mass is locally vuggy or pitted due to numerous cavities formed after the oxidation and leaching of pre-existing pyrite and ferromagnesian minerals; most of these are surface coated by specular hematite; original pyrite content of the rock is estimated to be around 7 to 10%.

41.7m to 44.35m section: Continuous with previous section but is relatively less oxidized; gray colour with minor patches of red brown and purple; highly silicified and pyritized with pyrite content averaging around 7 to 10%; fine crystals of the mineral tend to cluster or form irregular patches contiguous to quartz veinlets/microveinlets; they are prominent along fracture surfaces and intersections of these veinlets; core sample is slightly fragmented and recovery is around 90%.

44.35 m to 48.0 m section: Silicified rock; gray to light gray colour; fine grained; locally argillized and sheared in some portions; generally pyrite rich with around 10 to 15% average; minute specks of chalcocite (?) associated with the pyrite also noted in some portions; core sample is moderately fragmented commonly along the sheared portions of the rock mass.

48.0m to 51.6m section: Essentially continuous with previous section; gray to light gray; fine grained rock; generally silicified with some local argillized portions; numerous veinlets/microveinlets of quartz impregnated with pyrite are noted to criss cross the rock mass; pyrite tends to be finely crystalline, occurring principally as small pads or clusters in the silicified groundmass; numerous vugs and cavities are commonly filled in or lined by pyrite; it is around 15%

average for the whole section.

51.6m to 54.6m section: Continuous with previous section; highly silicified and locally argillized; fine grained rock; light gray to gray colour with some limonite/hematite stains along fracture surfaces; a short interval at around 53.75m level shows milky quartz intrusion into a highly silicified rock with fragments of the latter (2 to 3cm diameter) floating in the siliceous mass; pyrite is prominently disseminated in the quartz veinlets; pyrite dominated veinlets are also common; it constitutes around 10% of the rock mass.

54.6m to 60.6m section: Continuous with the previous section; variably silicified, fine grained rock; highly silicified section along 58.7m to 59.1m interval display the marble-like texture and features noted in the earlier section, averaging about 6 to 8% of the rock mass; the core sample is relative solid and intact and the core recovery is 100%.

60.6m to 63.75 m section: Continuous with previous section but became more intensely silicified at the bottom 2.0 m portion; gray to light gray colour, generally fine grained; pyrite remains prominent at around 8% commonly conspicuous as irregular clusters along quartz microveinlets and fracture surfaces; silicified portion tends to be very massive and dense in contrast to the more porous or less solid texture of the unsilicified section.

63.75m to 66.8m section: Continuous with previous section; highly silicified, fine grained rock; massive and dense except for the bottom 35cm portion which is pitted and slightly argillized, pyrite content is still around 8 to 10%; vugs and cavities noted in the bottom portion are either filled in or coated by pyrite; most of the other voids however appear to be lined or surface-coated by clay minerals; the core sample is essentially solid and intact.

66.8m to 69.6m section: Continuous with previous section both in terms of rock type and character; highly silicified, fine grained rock, commonly massive and

dense with some local pitted portions; pyrite remains ubiquitous and is about 8% of the rock mass; the marble like texture noted earlier is again very prominent in the highly silicified portion of this section; the core sample is generally solid and intact and the core recovery is 100%.

69.6m to 72.7m section: Light gray, moderately silicified with local argillization; cores are dense but relatively fragmented with some section exhibiting solid cores; moderately fresh pyrite disseminations and minute microveinlets; pyrite varies in amount (10-12%).

72.7m to 76.0m section: Light gray, moderately to strongly silicified with some veinlets of quartz material lined with pyrite crystals; very slight magnetism was noted on black sooty material; pyrite occurs mostly as dissemination and microveinlets ranging from 12-14%.

76.0m to 79.45m section: More solid and dense cores with core recovery at 95%. Moderately to strongly silicified with numerous quartz veinlets. Pyrite disseminations increases down the section occurring mostly as disseminations, clusters and veinlets. Pyrite 15-18%. Specks of purple black to black crystals present (bornite?).

79.45m to 82.85m section: Generally same as the previous section, moderately to strongly silicified with numerous quartz microveinlets and veinlets. Dense and solid cores with high core recovery. Specks of minute chalcopyrite grains noted and at 80.7m portion, specks of bornite was noted occurring as minute clusters. Pyrite occurs mostly as disseminations and microveinlets.

82.85m to 86.65m section: Generally the same as the previous section, strongly silicified rock with numerous quartz veinlets. Dense and solid cores with original mafic minerals no longer discernible. Pyrite occurs as clusters, disseminations and microveinlets and ranges from 15-20%.

86.65m to 89.05m section: Highly silicified rockmass with quartz veinlets and patches of quartz material. Mafic minerals no longer discernible almost totally replaced by pyrite. Pyrite occurs mostly as disseminations, clusters and veinlets. Pyrite crystals are generally fresh and ranges from 15-20% in amount. Vuggy surface feature was observed in highly silicified portions with some pyrite crystals along the edge of the vugs.

89.05m to 92.65m section: Continuous with the previous section; moderate to strong silicification with numerous quartz veinlets and patches. Original mafic minerals no longer discernible probably totally replaced by pyrite. Pyrite crystals occur as disseminations, clusters and veinlets. At 92.0m, chalcocite specks was observed occurring as bluish patch within moderately pyritized groundmass. Pyrite 20-22%.

92.65m to 95.0m section: Highly argillized section; light gray to off-white color, generally crumbly to gravelly and very sticky when wet. Presence of quartz material also noted with abundant fresh pyrite crystals (8-10%).

95.0m to 97.7m section: Light gray with brownish tint, dense and moderately solid cores to slightly fragmented. Moderately silicified with argillization confined only along fracture planes. Original mafic minerals no longer discernible and almost totally replaced by pyrite. Pyrite (15-18%); minute specks of bornite observed at 95.70m.

97.7m to 100.6m section: Generally continuous with the previous section. Moderately to highly silicified with quartz veinlets / microveinlets and patches of quartz material. Vuggy surface feature of quartz also noted. Pyrite crystals occur mostly as disseminations and veinlets. Pyrite (10-15%).

100.6m to 103.1m section: NQ size core; continuous with the previous section; moderately silicified but becoming argillized going down the last 0.50m section; numerous veinlets of quartz and pyrite noted; very fine

hair-like veinlets of very fine pyrite crystals observed. Pyrite crystals occurring as patches and pods in a highly silicified matrix; pyrite (10%).

103.1m to 106.1m section: Continuous with the previous section; moderately to strongly silicified rock; numerous pyrite micro-veinlets, patches and pods noted in a highly groundmass; light gray with pinkish brown patches; solid and dense cores; pyrite (10-15%).

106.1m to 109.1m section: Light gray to dark gray with black patches and light brown to pinkish brown patches; moderately silicified and slightly argillized, lower 1.2m section. Highly silicified with quartz patches occurring as buff white patches. Pyrite generally occurs as disseminations, clusters and veinlets. Numerous quartz microveinlets with pyrite well observed, pyrite varies from 8-12%.

112.20m - 115.70m Section: Light gray to dark gray to black, slightly silicified and slightly argillized becoming more intense at the middle portion of the section. Argillized to almost gougy texture is observed along fracture planes almost indicating a relatively weak sheared zone. Pyrite generally occurs as minute disseminations, clusters and microveinlets.

155.70m to 119.30m Moderately silicified with numerous quartz veinlets and microveinlets with patches of quartz material. The upper 1.20 m is made up of highly silicified core, with patches and veinlets of quartz material. Pyrite occurs as microveinlets and dissemination. At the last 1.20m., pyrite veinlet up to 1.50 cm thick was noted, made up of minute pyrite crystals with numerous microveinlets showing dendritic pattern.

119.30m - 122.75m. section: Light gray to dark gray with black patches, variably argillized, slightly to moderately silicified. Very fine pyrite crystals occurring as black disseminations is well noted with some micro-veinlets giving dendritic pattern.

122.75m to 125.55m section: Generally continuous with the previous section. Generally dense and solid cores. Variably argillized slightly silicified but becoming more silicified at the last (1) one meter section. Quartz patches and microveinlets are well noted with pyrite occurring mostly as microveinlets and stringers.

125.55m to 129.05m section: Moderately to strongly silicified rock, showing veinlets/microveinlets, and patches of quartz material. Original mafic minerals no longer discernible with pyrite occurring mostly as disseminations and microveinlets. Pyrite occurring as pods and clusters is well observed (10-15%)

129.05 to 132.45m section: First 90 cm portion moderately to strongly silicified rock with patches of quartz material showing minor vuggy structure. Lower section shows variable amount of argillization and slight silicification. Cores are generally solid to moderately fractured.

132.45 to 135.85m section: Slightly to moderately silicified, first one (1m) section is highly silicified with quartz veinlets and quartz patches. Vuggy structures could be observed, pyrite disseminations and veinlets is well observed. Last 70cm. portion is moderately argillized with minor gouge-like material along fracture planes.

135.85m to 138.25m section: Variably silicified and argillized rock. First 55cm. section, moderately silicified rock with remaining portion slightly to moderately argillized and slightly silicified. Silicification becoming more intense in the last one (1) meter section with increasing amount of pyrite occurring as disseminations, clusters and microveinlets. Pyrite 10-15%

138.25m - 141.75m section: Slightly to moderately silicified with variable amount of argillization. At 139.75 m to 140.55m section, moderately to highly silicified rock with quartz veinlets and abundant pyrite disseminations and microveinlets. Oxidized crystals of chalcopyrite/Bornite? showing purple to black color, and

shows pleochroic appearance is observed as minute specks in the highly silicified rock. Pyrite 15-18%

141.75m to 145.95m section: Generally dense and solid cores with high recovery rate, slightly to moderately silicified with argillized section generally confined in fracture planes. Silicification becomes more intense in the last 1 meter portion. Silica grains occurs as very minute crystals in an almost even distribution, indicating original rockmass as porous in general.

145.75m to 148.80m section: Slightly to moderately argillized, slightly silicified become more intensely silicified at the last 1.10m section. Pyrite abruptly increase in the highly silicified section and occurs generally as disseminations and microveinlets. Specks of magnetite could also be observed. Pyrite varies from 10-15%.

148.80m to 152.36m Generally the same as the previous section, with slight to moderate amount of argillization. Moderate to highly silicified portion is noted at 150.60m to 151.60m section. Pyrite occurs mostly as dissemination and veinlets and ranges from 10-12%.

152.36m to 155.60m section: Continuous with the previous section. Slight to moderate amount of silicification with variable amount of argillization. First 84cm portion is moderate argillized and slightly silicified. At 153.20 to 154.40m moderately to highly silicified rock with patches of quartz and quartz microveinlets. Lower portion of the section is moderately argillized.

155.80m to 158.50m section: Highly argillized section, crumbly to highly crushed cores. Showing chalk like texture and white to off white color, almost totally clay material. At 157.40m to 158.50cm. Moderately crushed cores with some competent and solid cores; moderately argillized and slightly silicified. Pyrite in highly argillized portion ranges from 2 to 4%.

158.50m to 161.70m section: Highly argillized section, crumbly and highly fragmented, almost totally clay



material with very minimal pyrite crystals. Last 1.20m portion is made up of moderately argillized and silicified rock with moderate amount of pyrite; generally solid cores.

161.70m to 165.00m section: Light gray to gray, moderately to highly silicified and slightly argillized. Silicified portions shows patches of quartz material and quartz microveinlets. Pyrite generally occurs as disseminations, clusters and microveinlets and varies from 8 to 12%. Generally solid and dense cores. Last (1) one meter portion becoming more argillized and less silicified.

165.00m to 168.85m section Generally solid cores, slightly to moderately silicified at the upper portion. Highly silicified part is between 166.15m to 167.15m with patches of quartz material and microveinlets of quartz with pyrite. Pyrite 10 to 12%. From 167.15m to 168.8m is a highly argillized section with very minimal pyrite (3-4%).

168.85m to 171.25m section: Highly argillized section, almost totally clay material, crumbly and fragmented to generally loose, showing a chalk-like texture. Pyrite is very minimal (3 to 5%).

171.25m - 174.40m. Generally continuous with the previous section. Highly argillized, generally loose and crumbly with some portions showing an almost gouge-like material. Pyrite content is 3%.

174.40m to 177.30m section: Continuous with the previous section, highly argillized and crumbly but with intermittent solid cores made of moderately argillized and slightly silicified rock. At the last 0.90m portion highly crushed cores of moderately argillized and slightly silicified rock was noted.

177.30m to 180.80m section: Continuous with the previous sections, highly argillized crumbly with chalk like texture. Highly fragmented cores becoming a little bit more solid going down the section. Pyrite mostly occurring as impregnation (2-3%).

180.80m to 183.60m section: Generally the same as the previous sections. Highly argillized almost totally clay material, crumbly and fragmented. Pyrite = 2%.

183m to 186m section: Highly argillized section, highly fragmented and crumbly with chalk-like texture. Some portions shows a gray gouge appearance. Pyrite = 2-3%.

186.70m to 189.60m section: Highly argillized section, light gray to gray, crumbly to highly fragmented becoming very sticky when wet, almost totally clay material. Generally gougy in appearance with pyrite impregnations (3-4%).

189.60m to 193.10m: Same as the previous section. Light gray to gray almost totally clay material with pyrite impregnations (3-4%).

193.10m to 195.70m section: Same and continuous with the previous section. Gray material almost totally clay material, crumbly and very sticky when wet, almost appearing like a gouge material. Pyrite = 4%. Minute quartz material observable as granules/

195.70m - 198.70m section: Generally continuous with the previous section. Highly argillized, crumbly and fragmented cores. Very sticky when wet with some granules of quartz material noted. Pyrite occurs mainly as impregnations. Pyrite = 4 to 5%; light gray to gray, slightly magnetic becoming more pronounce at the last 0.50m portion.

198.90m to 201.90m section: Variably argillized and silicified rock, moderately fragmented to intact core. Silicified portion exhibits light gray to greenish gray with milky white patches. Quartz microveinlets lined with pyrite and patches of quartz material observed. Moderately chloritized with original mafic minerals no longer discernible, slightly to moderately magnetic with magnetite occurring mostly as clusters and microveinlets. Magnetite = 2-3%; highly argillized portion generally gray in color and slightly magnetic. Pyrite in the whole section is around 5-8%.

201.90m to 204.30m section: Variably argillized and silicified section, with more intense argillization noted at the first 0.90m upper portion becoming more silicified in the last 1.50m down section. Minor argillized portion mostly confined along fracture planes still notable in the silicified portion. Magnetite becoming more pronounced occurring mostly as clusters and microveinlets. Pyrite dissemination and microveinlets is well noted in the silicified portion. Pyrite = 10-12%, magnetite = 3-4%.

204.30m to 206.60m section: Moderately fractured cores but generally intact and dense. Light gray to greenish gray, moderately to highly silicified and moderately chloritized with original mafic minerals no longer discernible. Numerous milky white coloured quartz veinlets and microveinlets lined with pyrite was noted. Pyrite = 8 - 12%; moderately magnetic with magnetite occurring mostly as clusters, disseminations and microveinlets. Magnetite = 3 to 5%.

206.6m to 209.6m section: Gray to greenish gray, fine grained andesite; variably chloritized resulting in the greenish tinge in colour, distinct veinlets of milky quartz pinch and swell along the trend of the core axis; pyrite is pervasive as fine disseminations and is around 10% of the rock mass; magnetite also occurs as isolated or clusters of crystals often contiguous with pyrite it is about 5% in content.

209.6m to 212.4m section: Continuous with previous section, chloritization still distinctive; pyrite and magnetite occurrences appears to have diminished in this section; pyrite is around 5%, mainly as disseminations and linings along quartz veinlets/microveinlets; magnetite is irregularly patchy and is less than 5% average.

212.4m to 216.0m section: Light gray to greenish gray fine-grained andesite; generally chloritized and partially argillized especially along the bottom half meter portion; the core is relatively intact and solid

except for the fragmented, argillized section, pyrite content is around 7 to 10%; magnetite is about 15 to 20% in the chloritized portion but almost totally absent in the argillized part; veinlets of anhydrite and milky quartz noted throughout the section.

216.0m to 218.4m section: Initial 1.0m (216 to 217m) portion is moderately fragmented, sheared and argillized rock barren of magnetite; this grades into a relatively solid and competent, chloritized rock that is generally magnetite rich, 10 to 15%; pyrite appears to be pervasive throughout the section and is around 10 to 15% average, it is particularly distinctive along microveinlets and fracture surfaces.

218.4m to 221.45m section: Continuous with previous section but is relatively more fragmented, magnetite is still distinct but tends to be patchy in occurrences its average content would be around 7 to 10% for the entire section; pyrite content is about 10%, milky quartz veinlets centered by pyrite crystals are particularly distinctive in this section; pyrite crystals tend to be fine grained but occasional coarse, well formed crystals are also encountered isolated in the groundmass.

221.45m to 224.25m section: Continuous with previous section; gray to greenish gray colour, fine grained; magnetite occurrence is patchy and is around 10% of the rock mass; it commonly forms clusters characterized by their very dark colour contrasting sharply with the lighter coloured groundmass; pyrite is still pervasive occurring mainly as disseminations and fracture fillings commonly enveloped by milky quartz; it is about 10% in average content.

224.35m to 227.35m section: Essentially continuous with previous section, variably chloritized rock with local argillized or silicified portions; magnetite is still observed but is generally much less pronounced than in previous section (less than 5%); milky quartz veinlets form irregular patterns in the rock mass; microveinlets/veinlets almost wholly made up of pyrite are particularly striking in this section; pyrite is 10% in average content, core sample is moderately fragmented

but relatively intact.

227.4m to 230.28m section: Light gray to gray, fine grained andesite; variably argillized and silicified; chlorite alteration appears to have waned considerably, occurring only along minor portions of the section; magnetite is almost totally absent except as minor patches within the chloritized zones; magnetite tends to correlate positively with the chlorite or porphyritic alteration; pyrite is still pervasive as veinlet fillings and disseminations (10%); milky quartz veinlets also distinct.

230.28m to 233.0m section: Continuous with previous section: Light gray to gray, fine grained andesite; variably argillized, locally intensely sheared, magnetite not observed, most probably absent in this section; milky quartz veinlets still prominent but tend to be very variable in both trend and size; pyrite content is about 10%, commonly concentrated along veinlets and fracture surfaces; core condition and recovery generally good.

233.0m to 236.18m section: Essentially continuous with previous section; alternating portions with solid and highly fragmented core samples; variably argillized with the more intensely argillized portions being more fragmented; magnetite is not observed; pyrite is around 10% in average; generally very prominent as veinlet fillings together with quartz; milky quartz veinlets are not as distinct as in the previous section.

236.15m to 238.7m section: Gray to light gray colour becoming lighter shaded at the lowest portion; generally fine grained, variably argillized and locally sheared; irregularly trending and shaped milky quartz veinlets are prominent in the upper 1 meter section becoming indistinct down section; pyrite is pervasive and would average around 12 to 15% of the rock mass; the core sample is moderately fractured but the recovery is generally good.

238.7m to 242.0m section: Buff to cream, fine to medium grained andesite(?); generally silicified and bleached;

original mafic constituents appear to have been totally altered to chlorite, magnetite and pyrite; plagioclase laths are often corroded and altered to clay; sheared surfaces shows distinct dark striations commonly dominated by magnetite and pyrite; although pyrite is pervasive in this section; it is generally less than 5% average; pinkish-orange quartz are noted as veinlets and irregular blebs within the groundmass; this gives the peculiar pinkish and orange tinge in some portions of the rock; well developed, coarsely crystalline pyrite are also within the quartz veinlets; core sample is relatively solid and intact.

242.0m.-225.05m. section: The portion 242.0m.-243.50 m. is essentially continuous with the previous section; buff to cream silicified and bleached rock with magnetite and chlorite; this grades into generally gray to greenish gray, variably argillized and chloritized andesite; the 30-40 cm. section gradational to the two portions are distinctly argillized and sheared; magnetite content ranges from 5% in the silicified portion to 10% in the argillized and chloritized portion; pyrite is less than 3% in the former and around 10% in the latter.

245.05m.-247.80m. section: Essentially continuous with the previous section; greenish gray, fine grained andesite; magnetite bearing at around 5-10%; pyrite content is 3-5%, generally limited along fracture surfaces and quartz microveinlets; milky quartz veinlets locally prominent but tend to be irregular in shape and variably trending; core sample is relatively solid and intact.

247.8m.-250.80m. Section: Continuous with previous section; greenish gray to gray, fine grained andesite; generally chloritized but less intense in the bottom 80cm. portion; magnetite content ranges from 10% in the upper portion to nil in the lowest portion possibly following the decline in the chloritized alteration intensity; pyrite in fillings of microveinlets/veinlets (1 to 3 mm. wide) are quite striking in this section ; its average content is about 5%.

250.8M.-255.0m. section: gray to light gray, fine grained to porphyritic andesite; variably argillized with the more intensely argillized portion almost wholly transformed to clay minerals; milky quartz veinlets are common as with pyrite dominated veinlets which are distinctive; pyrite occurrence tends to be patchy but are generally more pronounced along the more silicified portions of the rock mass; its average content is around 7%.

255.0m. - 258.5m. section: More of the same material as the previous section in terms of rock type and characteristics; sheared in some portions; porphyritic texture with phenocrysts of plagioclase set in a fine-grained, darker colored groundmass; variably chloritized and silicified; magnetite bearing (~5 -10%), possibly after pyroxene or hornblende; pyrite content is less than 5%; highly fragmented portions tend to coincide with the sheared sections of the rockmass.

258.5m to 262.1m section: Continuous with the previous section; gray to greenish gray color; fine-grained to slightly porphyritic texture; generally chloritized; magnetite is pervasive but tends to be patchy in occurrence, often as isolated grains or clusters of grains in the groundmass; pyrite is also ubiquitous, averaging around 5 to 7% of the rockmass; the core sample is generally solid and intact.

262.1m to 265.5m section: Gray to greenish gray, medium grained to porphyritic andesite; chloritized in portions; generally magnetite bearing (~5%) possibly replacing original mafic minerals; pyrite content is from 5 to 7%, mainly occurring as veinlets and coatings of shear or fracture surfaces; veinlets with microveinlets of milky quartz abound but no distinct preferred trend is discernible; core sample is generally solid and intact except for minor highly fragmented portions; core recovery is good.

265.5m to 269.25m section: Continuous with previous section: gray to greenish gray, porphyritic andesite; chloritized and magnetite-bearing (~10%); milky quartz veinlets locally abundant, almost worm-like; pyrite is

still pervasive and locally prominent (r20%) but on the average is around 7 to 10% for the entire section; magnetite and chlorite replaced the original mafic minerals; pseudomorphs of these minerals after hornblende or pyroxene are occasionally noted, the core sample is generally solid and competent with only minor fracture noted.

269.25m to 273.65m section: Continuous with previous section; variably silicified, generally chloritized and magnetite bearing; porphyritic texture; original mafic constituents have been altered to chlorite plus magnetite and pyrite; milky quartz veinlets, generally less than 2 mm wide are conspicuous throughout the section; pyrite is locally abundant, especially along fracture surfaces and veinlet, but on average is less than 5% of the rock mass; rare specks of chalcopyrite are locally noted; core sample is relative solid and intact and recovery is good.

273.65m to 276.45m section: Continuous with previous section; generally porphyritic andesite, variably silicified, chloritized; magnetite after mafic minerals common, around 5 to 10%; pyrite is ubiquitous, common as microveinlets probably of younger age than milky quartz veinlets; milky quartz veinlets generally abundant, forming steep angles (>45°) with the core axis; open fractures are locally noted, commonly lined with fine pyrite crystals; pyrite is less than 5% average.

276.45m to 280.70m section: Gray to greenish gray, fine grained to porphyritic andesite; variably silicified, chloritized and locally slightly argillized, magnetite bearing especially along the more chloritized portions; pyrite is around 3%, commonly occurring as veinlet infillings and coatings of fracture surfaces; distinct patches of fine magnetite grains are noted to form small pads (1mm by 3mm) in the groundmass, the core is moderately fragmented with the argillized portion being more broken up.

280.7m to 282.4m section: Continuous with previous section; fine grained to porphyritic andesite; silicified and chloritized in portions; milky quartz



veinlets, 2 to 4mm wide and variably trending, commonly encountered, magnetite content is about 7 to 10%, occurring as discrete grains or clusters in the groundmass; pyrite is about 5%, disseminated as fine crystals and coating of fracture surfaces.

282.4m to 286.55m section: Gray to greenish gray; fine grained to porphyritic andesite; variably silicified and chloritized; abundant milky quartz veinlets, commonly forming anastomizing network with the rock; magnetite content is around 5 to 7%, irregularly distributed throughout the groundmass; pyrite is still prominent but is less than 5%; rare specks of sooty chalcocite also noted locally; core sample is moderately fractured especially along natural fissures and veinlet-rock interface.

286.55 to 289.35m section: Essentially continuous with previous section; porphyritic andesite, variably silicified and chloritized; magnetite bearing; average content about 7 to 10%; milky quartz veinlets still observed but not as prominent as in previous section; pyrite content is around 10%, mainly as disseminations and clusters in the groundmass; minor chalcopyrite also noted but is generally sporadic in occurrence; core sample is relatively solid and continuous.

289.35m to 293.75m section: Gray to greenish gray andesite; fine grained to slightly porphyritic; magnetite bearing down to 292.35m level; magnetite tends to be absent in the more argillized portion of the rock; pyrite is still persistent but is generally more prominent as veinlet infillings and coatings of fracture surfaces; it is on the average about 5% or less; well formed, coarsely crystalline pyrite grains are common especially on surface coatings; specks of chalcocite (%) are also noted together with the pyrite; milky quartz veinlets are particularly abundant in the lower argillized portion of the section.

293.75m to 296.45m section: The argillized portion continues down to 294.65 then passes on to a more silicified rock; the former tends to be crumbly and fragmented whereas the latter to more solid and massive

and is characteristically magnetite bearing; magnetite content is around 5-7%; pyrite occurs throughout the section and is around 7 to 10%; porphyritic texture recurs at the bottom 1.5m portion of the section; the core sample is generally intact with moderate fragmentation especially in the argillized section.

296.45m to 300.91m section: Continuous with previous section; variably silicified andesite with local intervening argillized portions; fine grained to porphyritic textures predominate; milky quartz veinlets are common and prominent especially in the more argillized section; magnetite is also present but is characteristically absent in the argillized portions; pyrite content varies from 5 to 20% and is generally conspicuous as veinlet fillings often associated with quartz; specks of pyrite as disseminations in the groundmass are also noted, often contiguous with magnetite grains.

**APX. 17 Detailed Geologic Log, MJPP-6**

DRILL HOLE; MJPP -6  
LOCATION; BRGY. LOONG, CONCEPCION ILOILO

0.0m - 3.0m section: HQ size, reddish brown color with white colored horizon moderately to highly argillized. generally crumbly and loose, remnants of minute sulfide veinlets still discernible with few remnants of quartz veinlets observed.

3.0m to 6.0m section: HQ size reddish brown color with white patchy zones, moderately to highly argillized white to buff white clay minerals well observed with remnants of quartz material. generally crumbly and loose material highly oxidized sulfide minerals observed occurring as stringers and impregnations (1%).

6.0m to 9.0m section: HQ size, reddish brown colour, moderately argillized, remnant of quartz veinlet (2-3mm) with highly oxidized pyrite observed, at 6.30m significant amount of quartz vein material well observed with prominent highly oxidized pyrite veinlets, at 7.30m level fresh pyrite crystals occurring as disseminations and patches within a moderately to highly silicified zone, pyrite (3-5%), sample taken at 8.50 m level.

9.0m to 15m section: Buff white to light gray section with fresh pyrite crystals within quartz-clay material. Amount of pyrite up to 5% in some sections. Moderately to highly argillized zone observed at 10.35m level up to 11.55m, generally crumbly and loose material. At 11.55m level, moderately silicified section with impregnations of fresh pyrite crystals occurring as disseminations. Black colored pyrite noted when oxidized. Generally uniform silicification with minor amount of clay material observed. Pyrite ranges from 1-4% in abundance.

15.0m to 18.0m section: Buff white color with light greenish tint. Generally leached and moderately silicified. Clayey material well observed along fracture planes. Remnants of mafic minerals still

observable. At 17.70m level, loose sandy material composed mainly of quartz crystal; highly leached zone with pyrite crystals occurring as impregnations on remnants of quartz crystals.

18.0m to 19.95m section: White to light brown color; loose sandy material composed mainly of remnants of quartz crystals, highly leached with some clay material. Pyrite occurring as disseminations (1-3%) 19.95m - 21.0m more compact sandy material composed of quartz crystals and clay material, almost gravelly in some portions, sample taken at 20.0m level.

21.0m to 27.0m section: Light brown with buff-white patches, generally loose sandy texture composed mainly of quartz. Highly leached and argillized, presence of pyrite occurring as disseminations and patches well noted at 22.20m level highly leached zone composed mainly of clay-quartz material with lesser amount of quartz crystals. Light brown composed mainly of clay-quartz material, generally loose with disseminations of pyrite. Highly leached zone with original groundmass no longer discernible, 24.0 - 27.0m level within a highly argillized zone with quartz crystals occurring as remnants of the original material. Minute pyrite crystals occurring as specks and disseminations (1-3%).

27.0m to 33.0m section: Light brown with whitish portion and orange-brown horizons due to the oxidation of sulfide minerals, highly argillized and leached zone generally loose with some portions more compact; still within the clay-quartz zone, pyrite crystals moderately fresh (1-3%). Light brown to buff white color clay-quartz material slightly compact; Highly leached zone. At 31.45m level, prominent quartz crystals within a clay-quartz zone, is well observed almost gravelly in texture with minor pyrite crystals at 31.85m, generally loose quartz clay material observed.

33.0m to 36.0m section" Light brown to buff white color moderately loose clay-quartz material. Highly leached zone with original groundmass totally altered into clay minerals. at 34.70m level finer quartz crystal remnants was noted with some disseminations of pyrite crystals.

quartz crystals occurs as clusters of granules cemented together by clay material.

36.0m to 39.0m section: Light brown with buff white zone; highly argillized and highly leached material. Generally clay-quartz with moderate amount of oxidized pyrite crystals. Minute pyrite crystals (2%) occurs as specks. Original rock mass totally altered with remnants of quartz crystals highly prominent (40-50%)

39.0 to 42.0m section: Light brown to buff white color, loose sandy material with clayey matrix, generally clay-quartz material up to 41.75m level. at 41.75m light gray colored highly silicified andesite with pyrite crystals (2-4%). Highly broken material with clear fracture planes. Some quartz vein material with moderate amount of pyrite minerals (4%) noted.

42.0 to 48.0m section: Light gray color, highly silicified zone with prominent quartz vein material with moderate amount of pyrite crystals up to (10%). At 44.0m level light gray colored silicified andesite with pyrite disseminations, moderately silicified. Amount of sulfate minerals significantly increasing in abundance. At 44.70m level no core was recovered. Sludge made up of quartz crystals with pyrite (2-3%), light brown and sandy in texture made up of quartz crystals (70%) and clay minerals. Sludge materials up to 47.70 m level. Greenish gray, moderately weathered andesite slightly silicified with pyrite disseminations (3%) noted at the last 30 cm. section.

48.0m to 51.0m section: Greenish gray andesite, moderately silicified with minute quartz veinlets (1mm). Pyrite crystals occurs as disseminations and patches moderate amount of chloritization well observed giving a dark green color sections. Moderately fresh pyrite crystals occurs as disseminations and clusters. With minute pyrite stringers (Pyrite 3%).

51.0m to 54.0m section: Dark green to greenish gray, chloritized moderately silicified andesite. Generally fresh with pyrite disseminations and clusters. At 52.30m level sample was taken, quartz veinlet (1mm) was noted.

with some pyrite crystals present along the vicinities of the quartz veinlet.

54.0m to 57.0m section: Light gray-dark greenish gray fine grained andesite, moderate amount of silicification observed locally, quartz veinlets and microveinlets criss-crossing in some section with pyrite crystals along the periphery of the veinlets. Section generally contain pyrite (3%), highly broken and fragmented core.

57.0m to 60.0m section: Almost the same with the previous section, but with increasing amount of quartz veinlets and microveinlets. They occur as milky white to buff white criss-crossing each other with pyrite present along and within vuggy portions.

60.0m to 66.0m section: Light gray-greenish gray andesite, moderately silicified, criss-crossing quartz veinlets well-observed. An increasing degree of silicification and increase of quartz veinlets noted. Pyrite disseminations and clusters significantly increasing (4-5%). At 63.10m, moderately huge pyrite crystals occurring as clusters within quartz material. 65.0m level highly silicified andesite with quartz vein material, pyrite occurs as microveinlets, clusters and dissemination, Pyrite 4-5% (sample taken).

66.0m to 69.0m section: Light gray to greenish gray, moderately silicified with some section having more intense silification. Epidote was noted occurring as patches. Slight argillization could be observed mainly along fracture planes. Pyrite varies from (1-5%) in the whole section.

69.0m to 72m section: Moderately to highly silicified andesite with prominent quartz vein material in several sections. Pyrite occurs as disseminations and clusters and varies in amount (2-10%). Argillization is minimal with moderate amount of chlorotization.

72.0 to 75m section: Moderately to highly silicified andesite, more competent cores. Quartz vein material pervasive within the section. Some quartz showing vuggy structures, quartz occurring as clear white to milky with

a tint of orange to light and brown due to the oxidation of sulfide minerals. pyrite is pervasive ranging from 5-15%.

75.0m to 78.0m section: Greenish gray light gray, moderately strongly silicified andesite. core generally more competent, moderate amount of chloritization observed with minimal argillization, pyrite is pervasive occurring as impregnations and clusters. Very fine microveinlets of oxidized pyrite noted.

78.0m to 84.0m section: Slight to moderately silicified andesite moderately chloritized, pyrite occurs as impregnations/ disseminations ranging from (3-10%). 79.70m level minute chalcopyrite grains was noted (4%) confine only on one place occurring as specks. At level 81.80 and 82.60 minute chalcopyrite grains was observed occurring as specks, less than 1% content within the rock mass. Moderately silicified andesite with some quartz vein material observed but with no definite trend. Sample taken at 81.50m level.

84.0m to 87.0m section: Moderately silicified andesite, light gray in color with pyrite disseminations (2-10%). 86.10 - 87.0m level probably sheared zone, moderately highly crushed rock fragments with clay minerals along fracture zones. Gougy portion also noted. 86.80m level chalcopyrite grains was also observed.

87.0to 90.0m section: Light gray with patchy portions, moderately silicified with quartz vein material observed. At 87.50 and 88.70 sample was taken, quartz vein material and highly silicified andesite, vuggy quartz structure well noted. Pyrite occurs as disseminations.

90.0m to 93.0m section: Light gray color to mottled (gray, black and buff white spots), moderately to strongly silicified. Generally fractured with moderate amount of pyrite (5-10%). 90.50 -90.62 m level specks of chalcopyrite grains were noted (1%). Magnetite microveinlets (1-2mm) was noted at 91.33m level, presence of magnetite was noted occurring as minute clusters of grains.



93.0m to 96.0m Highly crushed core, light gray, moderate-intense silica flooding, pyrite occurs generally as disseminations. Magnetite occurs as minute cluster grains with microveinlets of magnetite noted at 93.35m and 93.65m level. Magnetite grains occur as impregnations along the veinlets.

96.0 to 99.0m section: Light gray with mottled/spotty white portions due to quartz material, moderately to strongly silicified, pyrite crystal generally fresh, occurring as disseminations and varies from 5-20% in amount, magnetite varies in amount from point to point, they occur generally as minute cluster grains and impregnations. At 97.95m to 98.33 m level, highly silicified zone with quartz vein material showing vuggy structures with moderately huge pyrite crystals.

99.0m to 102.0m section: Light gray color, moderately silicified, generally magnetic, pyrite occurs as impregnations and disseminations and generally fresh. magnetite grains noted to be in clusters and impregnations. Significantly more competent core than the previous cores.

102.0m to 104.0m section: generally crushed core, generally same as the previous section, moderately magnetic with magnetite occurring as patches and clusters. 104.82m level, magnetite microveinlets was noted with some pyrite crystals present along the edge of the veinlet. (veinlet 1mm).

104.0m to 107.21m level, moderately fractured slightly sheared zone with quartz vein material, quartz veinlet (0.2 - 0.5cm thick) shows a clear white-milky white color, with some vuggy structures. Branching of quartz microveinlets was observed within the section. Pyrite occurs as impregnation, the whole section is moderately magnetic with very fine magnetite grains, calcite veinlets also noted.

107.21m - 111.80m section: generally crushed core, lightly fragmented, light to dark gray, moderately silicified with pyrite disseminations. 110.35m -110.47m

level dark gray, moderately, silicified, and highly magnetic portion. Degree of magnetization is intense with magnetite present as clusters and disseminations giving a dark gray to black color.

111.80m to 114m section: Moderate to strong magnetization was observed, light gray to dark gray color, with magnetite occurring mostly as clusters and minute disseminated grains giving a black spotty color. At 113.90m magnetite veinlets was observed along the periphery of a quartz vein zone.

114.0m to 116.40m section: Very strong magnetization was noted, dark gray to almost black color section. Huge amount of magnetite grains was observed mainly as disseminations, clusters and veinlets, quartz veinlets and stringers was also noted along the section giving a clear white and milky white color. Fresh and slightly oxidized pyrite crystals is also present. Samples was taken at 114.0m - 116.0m level.

116.0m to 120.48m Section: Slightly magnetic zone moderately crushed core and moderately silicified with pyrite crystals (3-10%). At 117.76m to 119.96m level intermittent occurrence of quartz vein material and quartz veinlets. Strong presence of magnetite was observed along this section. Magnetization increases from 118.0m going down the section. Calcite veinlets noted.

120.48, to 132m section: Presence of multidirectional quartz veinlets, criss-crossing the rockmass, slight to moderate amount of magnetization was observed, strong presence of magnetite occurs locally as clusters and patches with some occurring as veinlets along the edge of the quartz veinlets.

122.50 -126.0m section: Greenish gray to dark gray, moderate amount of magnetite was noted with locally strong presence of magnetite, at 124.65 m quartz vein material showing vuggy structure and fragments? of quartz within the rock mass giving an almost breccia like texture. Presence of irregular quartz veinlets occurs within the section.

126.0 to 132.65m section: Dark greenish gray- almost black strong presence of magnetite within the whole section. Magnetite occurs as minute dissemination and clusters giving a black tone. Microveinlets of magnetite also observed along with intermittent quartz microveinlets. Pyrite varies in amount from point to point. Dark gray colour, moderate to strong amount of magnetite observed. Slight to moderate amount of silicification is present. At 130.82-131.37m level presence of hematite/jarosite? stains and patches was observed along fracture planes. They occur as reddish brown to reddish purple. Pyrite occurs as disseminations and varies from 5 - 15%.

132.65 m to 134.49m section: Quartz vein zone showing vuggy structures, presence of argillized zone very prominent near the contact of the quartz and the rock mass (andesite). Some stains of hematite is noticeable with pyrite crystals. Moderate to strong magnetite content could be observed within the whole section.

134.49m to 137.73m section: generally quartz vein zone. Occurrence of quartz vein material in this section is relatively high giving a light gray color with milky white horizons. Vuggy structures of the quartz material is very discernable. Magnetite occurs as patches and microveinlets with pyrite occurring mostly as disseminations and microveinlets.

137.73m to 144.5m section: Moderately argillized zone with some quartz veinlets. Slightly magnetic. From 138.40 down the section strong presence of magnetite is observed with intermittent presence of quartz veinlets and microveinlets. Very fine magnetite grains in clusters gives a black color patches in the rockmass. Minute calcite microveinlets observed.

144.5m to 146.5m section: Greenish gray andesite, variably argillized and silicified in portions; chlorite alteration also distinct; rock is generally fragmented and sheared resulting in the broken up character of the core; magnetite appears to be patchy in occurrence and is generally absent in the argillized portion and in

sections with abundant quartz veinlets; pyrite is pervasive and tends to aggregate along fracture and veinlet surfaces; pyrite content is around 3%.

146.5m to 148.4m section: Light greenish gray to dark gray andesite; silicified and argillized portions show light colours which contrast sharply with the dark coloured, chloritized rock. magnetite, pyrite, and chalcopyrite are noted as patches or irregular blebs in the dark coloured section; magnetite is not found in the argillized/silicified portions; pyrite is pervasive throughout the section; cpy is very minor (1%)

148.4m to 152.0m section: Essentially continuous with previous section; mainly silicified and argillized andesite; milky quartz veinlets still prominent but are generally barren of sulphides except pyrite; magnetite is also absent in this section; rock mass is generally brittle and sheared resulting in the highly fragmented core samples recovered in some portions.

152.0m to 155.50m section: Continuous with previous section: argillized portions tend to be powdery when dry and plastic when wet; silicified portions tend to be brittle and flaky; pyrite is observed in both as discreet dissemination in the rock mass and patches in fracture and veinlet surfaces; magnetite is absent in this section.

155.0m to 158.0m section: Light greenish gray andesite; shade becoming darker downsection; silicified and argillized to varying degrees; shearing and fracturing of rock mass is quite evident from the fragmented character of the core sample; microbreccia-like structure noted in some portions with disjointed quartz veinlets interspersed with fragmented rock groundmass; pyrite still very prominent but is less than 2% of rock mass; it tends to form irregular patches along fracture surfaces.

158.0m to 161.0m section: Essentially continuous with previous section; initial half meter section is highly fragmented andesite; fragments tend to be flaky and brittle; silicification intensity is variable; magnetite

reappears at 158.5m level where it is found to be pervasive within the dark coloured bands or islands surrounded by silicified/argillized rock mass; pyrite is ubiquitous throughout the section and locally may constitute as much as 5% of the rock mass, the magnetite rich portions may contain as high as 10% magnetite content; beyond 160.5m level, magnetite again disappears.

161.0m to 164.0m section: Highly fragmented, greenish-gray andesite; generally silicified with abundant milky quartz veinlets; locally some portions may have 50% veinlet material in the groundmass; pyrite is ubiquitous but patchy; some sections show slaty or phyllitic texture; narrow bands (45 mm)/veinlets (?) of magnetite rich material (most often quartz) are observed locally; they tend to be subparallel to some of the quartz veinlets which run concordant to the shear direction.

164.0m to 166.5m section: Essentially continuous with previous section; sheared andesite with local bands or angular islands of magnetite-rich material; milky quartz still very prominent; occurrence of mt is quite different from previous sections wherein it occurs as patchy disseminations in the groundmass; here mt is not found in the groundmass but instead occur as distinct bands or islands within the rock mass.

166.5 to 169.5m section: Silicified andesite; quartz veinlet impregnated; locally with mt disseminations; dark coloured, fine grained and silicified portions with minor mt locally observed; the section 168.5 to 169.0m is mainly quartz vein material with pyrite content averaging around 10-15%; mt is occasionally encountered; pyrite is coarsely crystalline (1-2mm) and tends to be interstitial to quartz.

169.5m to 171.9m section: Essentially continuous with previous section; highly silicified rock with abundant quartz veinlets of variable size and trend; pyrite still pervasive but is less than 5% average, mt occurrence still patchy; dark and light coloured portions within the section may represent variable alteration patterns in the rock with argillized/silicified portions being

light coloured and chloritized/mt-rich portions being dark.

171.9m to 174.9m section: Silicified andesite; light greenish gray colour with intervening dark bands; brittle and crumbly; occasional milky qtz. veinlets; mt bearing although patchy and sporadic; pyrite locally abundant but is on the average less prominent than in previous section.

174.9m to 178.0m section: Continuous with previous section; silicified and fragmented rock mass; milky qtz. veinlets locally abundant, tend to form anastomizing networks; dark coloured bands or islands show high concentration of magnetite, 15 to 20%; pyrite is still present but is only sporadically abundant; intense fragmentation of the core may be due to the sheared character of the rock mass.

178.0m to 180.0m section: Essentially continuous with previous section; fragmented, silicified andesite; veinlets impregnated; dark coloured, mt-bearing portions also contain abundant pyrite; fracturing of the core appear most rampant along sections without much qtz. veinlet impregnation.

180.0m to 182.0m section: Continuous with previous section; degree of fragmentation of core appear very variable with some portions more competent and solid than others; silification essentially variable with sections with abundant qtz. veinlets more intensely altered; mt is still dominantly found in the dark-coloured portions; pyrite is minor.

182.0m to 185.0m section: Essentially a continuous section of mt rich, dark coloured, and fine-grained unit; from 182.6 downwards, the rock is silicified basaltic andesite (?); minute veinlets of qtz. noted criss-crossing the unit; pyrite occurs as isolated specks in the groundmass and along fracture surfaces; this section is the most prominent in terms of mt-content (20-25%).

185.0m to 187.7m section: The mt rich section

continuous down to 187.7m but intervening portions of veinlet rich, silicified rock noted to increase down section; the rock is still dark gray, fine grained basaltic andesite (?) with numerous microveinlets of quartz; pyrite is less than 2% and is limited along fracture surfaces.

187.7m to 189.8m section: Silicified andesite; highly fragmented; magnetite conspicuously absent; pyrite is prominent along veinlets and fracture surfaces; some portions appear to be almost wholly made up of vein material; degree of fragmentation is most intense at the lowest section.

189.8m to 192.7m section: Continuous with previous section; highly fragmented with only occasional solid portions; intensely silicified, almost entirely made up of vein material; magnetite noted very locally and is generally rare; pyrite still very prominent as disseminations or fissure filling; rock mass displays a mottled texture of variegated colours; veinlets of anhydrite also noted.

192.7m to 196.7m section: More of the same material in terms of rock character and type; not as intensely fragmented as previous section and core recovery and quality better; highly silicified portions tend to be brittle breaking up into generally small, angular bits; abundant cross cutting milky quartz veinlets are common throughout the section; magnetite is not detected; pyrite is well dispersed in the groundmass and along veinlets and constitutes around 3-5% of the rock mass; veinlets of anhydrite still noted in some portions.

196.7m to 198.7m section: Mainly gray to light gray, silicified and argillized andesite; generally solid core with some intervening, highly fragmented portions; anhydrite veinlets (2-7mm wide) are becoming more prominent; they tend to form subparallel networks within the argillized portions of the rock; pyrite is still present but is less than 3% average; magnetite noted along a short interval but rather limited in occurrence in this section.

198.7m to 202.7m section: Continuous with previous section; generally intact core sample with local fragmented portions; rock mass is variably argillized, silicified and chloritized in portions; anhydrite veinlets are particularly conspicuous; fracturing in the core is common along these veinlets; pyrite is less than 3%, occurring mainly along fracture surfaces and as minor disseminations; magnetite is absent throughout this section; from all indications, anhydrite depositions is later than rock alteration (silicification & argillization) and sulfide deposition (pyrite); the veinlets are characteristically barren of any sulphides.

202.7m to 205.9m section: Continuous with previous section; essentially intact core with very local fragmented portions; these appear to correspond with sections that have numerous cross-cutting anhydrite veinlets; the veinlets are variable in size and orientation and tend to separate as distinct flakes from the intruded rock mass; pyrite is patchy in distribution and on the average is less than 3%; an 8 cm portion at the bottom of the section shows pyrite making up almost 20% of the rock mass; this occurrence is rather uncommon.

205.9m to 209.4m section: Essentially continuous with previous section; anhydrite deposition is very pervasive in this section; breccis like texture is commonly observed with subangular to lath-like islands of quartz and silicified rock floating or surrounded by anhydrite vein material; minute fractures within the silicified fragments are also filled-up by anhydrite; pyrite is limited to the silicified portions and is less than 2% average; magnetite is not observed; rock mass tends to fracture or part along veinlet surfaces thus giving it a rather easy-to-fragment character.

209.4m to 211.75m section: More of the same material as in previous section; light gray andesite, silicified in portions; criss-crossed by anhydrite; generally intact core with only minor fragmentation; pyrite is present but minor in amount and limited in extend to the silicified portions; magnetite is not detected;



anhydrite veinlets generally variable in orientation and size; they are distinctly clear to white in colour and fibrous in textures, forming flake-like sections when separated from the intruded rock mass.

211.75m to 215.4m section: Continuous with previous section; variably silicified and argillized andesite dominated by anhydrite/gypsum veinlets; some portions distinctly breccia-like in texture with subangular fragments of quartz and silicified rock in anhydrite mass; highly argillized portion noted at the bottom of the section; this is mainly clay material with minor rock fragments and remnant anhydrite veinlets; pyrite is minor, whereas magnetite is absent.

215.4m to 217.9m section: Essentially continuous with previous section; generally intact section of variably silicified and argillized andesite; light gray colour; generally fine grained texture; anhydrite still very dominant; local portions with high pyrite percentage (10-15%) noted especially in the more silicified portions.

217.9m to 220.5m section: light grayish green, fine grained andesite; generally silicified and argillized in portions; abundant veinlets of anhydrite forming cross cutting networks throughout the section; fracturing in the rock tends to be along these veinlets; pyrite is locally significant as fine disseminations but is less than 5% average for the whole mass; magnetite is not detected.

220.5m to 224.6m section: Highly fragmented section especially within the initial 2 1/2 portion becoming more intact in the lower section; rock is mainly silicified and argillized with veinlets of quartz and anhydrite; anhydrite veinlets generally indistinct and noted more often along fracture surfaces; these appear to be less prominent than in previous sections; pyrite content is about 5 to 10% and is commonly observed as disseminations and veinlet material; magnetite is again absent in this section; fragmentation of the rock may be due to its inherent brittleness especially the more silicified portions.

224.6m to 226.2m section: Essentially continuous with previous section; anhydrite is less pervasive in previous section and tend to appear as isolated veinlets along the section; milky quartz veinlets are more distinct; pyrite is again well dispersed throughout the groundmass particularly along veinlets and fracture surfaces.

226.2m to 229.2m section: light gray to gray andesite; a relatively intact and solid section in terms of core character; quartz veinlets are more dominant than anhydrite veinlets; rock is generally silicified with only local argillized portions noted; pyrite is pervasive but is more abundant along portions contiguous to qtz. veinlets where the content is around 5 to 10% ; magnetite is not detected.

229.2m to 232.0m section: The initial 40cm (to 229.6m) of the section is similar to the previous section, light gray, fine-grained andesite; the rock passes on to a dark gray to almost black, fine-grained basaltic andesite (?) down section; this portion is magnetite bearing along some intervals and is generally pyrite rich (10-15%); veinlets of both quartz and anhydrite are noted; the core sample is generally fragmented with only short intervals (10-15 cm) showing solid material.

232.0m to 234.7m section: Essentially continuous with previous section; dark greenish gray to greenish black, fine grained basaltic andesite (?); generally magnetite bearing although very variable in content (1-7%); pyrite is ubiquitous but also patchy in occurrence; veinlets of quartz and anhydrite noted but the former is more dominant; this section is relatively more competent and intact than the previous section; locally sheared portions appear brittle and fragmented.

234.7m to 237.7m section: Light gray to almost buff coloured andesite; abrupt change from previous section in terms of rock colour and textures; magnetite is characteristically absent and pyrite, although present, is very minor; anhydrite veinlets again very prominent with much of the micro-fractures being filled up by this

mineral; rock is generally silicified and argillized in local portions.

237.7m to 240.18m section: Essentially continuous with the previous section; light gray colored andesite becoming darker shade down section; mainly silicified although highly argillized portions are noted; clear to white veinlets of anhydrite appear like roots cutting across the rock mass; they are variable in width and orientation, often cross cutting or mesh like; pyrite is minor in terms of abundance and occurs only as very fine disseminated crystals in the groundmass; magnetite is not detected in this section.

240.18m to 242.2m section: Dark gray to Greenish gray andesite; magnetite bearing although erratic in distribution; rock mass is relatively solid and competent resulting in an intact core sample; numerous irregularly shaped and oriented milky quartz veinlets are noted throughout the section forming distinct white bands or lines cutting across the dark coloured groundmass veinlets of anhydrite also present locally.

242.2m to 245.2m section: Greenish gray andesite; mottled colour of gray, buff and green; generally fine grained; magnetite distinctly absent in this section; pyrite is very minor in occurrence; milky quartz veinlets still prominent in some portions; anhydrite veinlets also noted but are commonly indistinct; the rock is variably silicified and argillized; core sample forms an intact and almost solid section.

245.2m to 248.2m section: Continuous with previous section, but intense fragmentation of some intervals (245.5 to 245.75 and 246.9 to 247.3) noted; preponderance of milky quartz and anhydrite veinlets still observed in this section; pyrite is common as disseminations and veinlets material, commonly with quartz; fragmented portions roughly correspond to section with numerous cross cutting veinlets of anhydrite; magnetite still not detected in this section.

248.2m to 251.2m section: Continuous with previous section in terms of rock type and character; abundant

anhydrite veinlets forming anastomizing networks in the rock; they are commonly clear to white in colour and variable in width; fragmentation of the rockmass is common where microveinlets of anhydrite form cross cutting network; the rock tends to part along the veinlets surfaces due to the inherent softness of the anhydrite; pyrite is locally abundant but is on the average less than 5%; magnetite is still not detected in this section.

251.2m to 254.4m section: Essentially a solid and competent section in the initial meter (down to 252.5), then passes on to a highly fragmented unit downsection; rock type is still fine grained andesite criss crossed by numerous anhydrite veinlets of variable size and orientation; pyrite is present at around 2-3%, commonly occurring as interstitial material in silicified rock or clusters of fine crystals adjacent to qtz. veinlets; local argillized portions noted; intense shearing is deduced from the highly fragmented character of the core; magnetite is not detected as in previous section.

254.4m to 256.5m section: Silicified, fine grained andesite with occasional anhydrite veinlets /microveinlets; highly fragmented upper half meter portion passing on to more solid although fractured rock mass; fractured portions appears slightly argillized; pyrite is minimal, limited only along some veinlet and fracture surfaces.

256.5m to 259.5m section: Shift to BQ size core sample; silicified andesite in the upper portions becoming more argillized down section; mainly solid and intact core especially along the silicified part; fracturing of the core limited along the contact of the anhydrite veinlets and host rock; veinlets of anydrite are recovered as 2 to 5 mm wide flakes along the core sample; argillized portions tend to be crumbly & powdery when dry & plastic when wet; pyrite content is minimal almost negligible.

259.5m to 262.5m section: Essentially continuous with previous section; variably silicified and argillized rock with prominent anhydrite veinlets; core sample is locally highly fragmented especially within the more

argillized portions and sections with numerous cross cutting veinlets; as noted earlier, the core sample tend to break up or fracture along the rock-anhydrite veinlets contact; pyrite is locally appreciable in amount as veinlet material and fracture filling especially in the more silicified portions but on the average is still less than 2% of the rock mass.

262.5m to 266.17m section: Generally silicified, fine grined andesite; very local, intervening argillized portions; anhydrite veinlets and micro-veinlets still pervasive and prominent; local breccia-like features of silicified rock or quartz surrounded by anhydrite noted, pyrite occurrence is still patchy and erratic, on the average less than 1% of rock mass; magnetite is again not noted in this section; core quality and recovery is generally good.

266.17m to 269.0m section: Continuous with previous section; generally silicified andesite; variably argillized and sheared in some portions; veinlets of anhydrite still distinctive; milky quartz veinlets also observed in the lower half meter section; patches of pyrite plus magnetite characterize this lower section; the close affinity of pyrite & magnetite with the quartz veinlets could indicate coeval relationship among the three mineral; magnetite is not detected in the upper section whereas pyrite is pronounced along shear and fracture zones within the entire section.

269.0m to 273.4m section: Essentially continuous with overlying sequence; highly silicified, fine grained andesite criss-crossed by anhydrite and milky quartz veinlets; rock mass generally massive and solid with only minor portions that are fragmented or fractured; patchy occurrence of pyrite and magnetite again noted; the two minerals are locally observed to cluster about or contiguous to intersections of quartz veinlets and microveinlets; portions with abundant pyrite and some magnetite are also characteristically chloritized thus giving the rock a distinctive greenish gray tint.

273.4m to 276.4m section: Silicified andesite, generally fine grained; gray to light gray colour.

locally with patches of green-gray and pink or brown; microveinlets of quartz and veinlets of anhydrite still pervasive; microveinlets of quartz form criss crossing networks in the generally silicified groundmass and are often bounded by pyrite clusters; microveinlets almost totally made up of pyrite also noted; magnetite occurs as fine crystals interstitial to pyrite or as rare clusters in the groundmass; pyrite is around 5 to 10% in the more prolific portions; core sample is variable fragmented locally.

276.4m to 279.4m section: Silicified andesite, essentially the same characteristics as the overlying section; greenish gray to light gray colour commonly interrupted by patches of pinkish brown, greenish colour probably arose from chlorite alteration, pinkish brown mineral might be pink epidote (?); anhydrite and milky quartz veinlets/microveinlets still very distinctive; equally prominent are quartz veinlets almost wholly impregnated or centered by pyrite; magnetite is detected as minute, isolated clusters along short intervals; pyrite averages around 5% throughout the section.

279.4m to 282.4m section: Continuous with previous section; silicified andesite; variable fragmented core sample; greenish gray to light gray colour; abundance of pinkish brown mineral in the rock has waned considerably downsection; chloritization also appears patchy; crosscutting milky quartz veinlets locally abundant; pyrite dominated veinlets still prominent as in previous section; magnetite is found locally in sections with numerous milky quartz veinlets as disseminations in the groundmass.

282.4m to 285.4m section: Moderately fragmented core sample; silicified andesite; gray to dark gray colour; fine grained; milky quartz veinlets locally abundant; anhydrite veinlets less conspicuous than in previous section; pyrite is limited to portions with qtz. as fine disseminations and clusters; magnetite is not detected in this section.

285.4m to 288.4m section Essentially continuous with previous section but relatively less fragmented; gray to

light gray colour; silicified, fine grained andesite; the colour is several shades lighter than in previous section possible due to bleaching or more intense silicification; the texture is intergranular with quartz as dominant mineral; pyrite appears as fine disseminations in the groundmass and as veinlet material; anhydrite veinlets are sporadically common; magnetite is not detected.

288.4m to 291.4m section: Gray to dark gray, fine grained; silicified andesite; fragmented especially down section; distinctive vein-like pyrite inclusions within highly silicified rock noted in some portions; magnetite is invariably present with pyrite and also occurs as fine disseminations in dark coloured bands; anhydrite and milky quartz veinlets not as prominent as in earlier sections; microbreccia-like texture of quartz, anhydrite & silicified rock mix-up noted locally.

291.4m to 293.5m section: Essentially continuous with previous sections; dark gray to gray andesite; variably silicified and argillized; relatively richer in pyrite at around 7 to 10% of rock mass; pyrite prominent as patches or veinlet material along portions bounded by numerous quartz veinlets tend to run subparallel to the quartz veinlets; core sample is moderately fragmented.

293.5m to 296.5m section: Practically the same sequence as the previous section with silicified andesite encompassing pyrite rich and pyrite-poor portions or bands; pyrite & magnetite appear as patches irregularly distributed within sections with abundant quartz veinlets; the two minerals are rare in the relatively argillized or less & silicified portions; core sample generally fragmented, almost gravel-like.

296.5m to 299.5m section: Dark gray to gray, silicified andesite; very fine grained; magnetite bearing although locally it may be rare; milky quartz veinlets not as prominent as in previous section; pyrite occurrence rather patchy commonly found along veinlet and fracture surfaces; the content is generally less than 5%.

299.5m to 302.5m section: Essentially continuous with

previous section; dark gray to almost black colour; variably silicified; section almost continuously magnetite bearing; pyrite is rather sparse, encountered solely as fine disseminations along fracture or veinlet surfaces; milky quartz veinlets faintly distinctive; anhydrite veinlets commonly sporadic in occurrence.

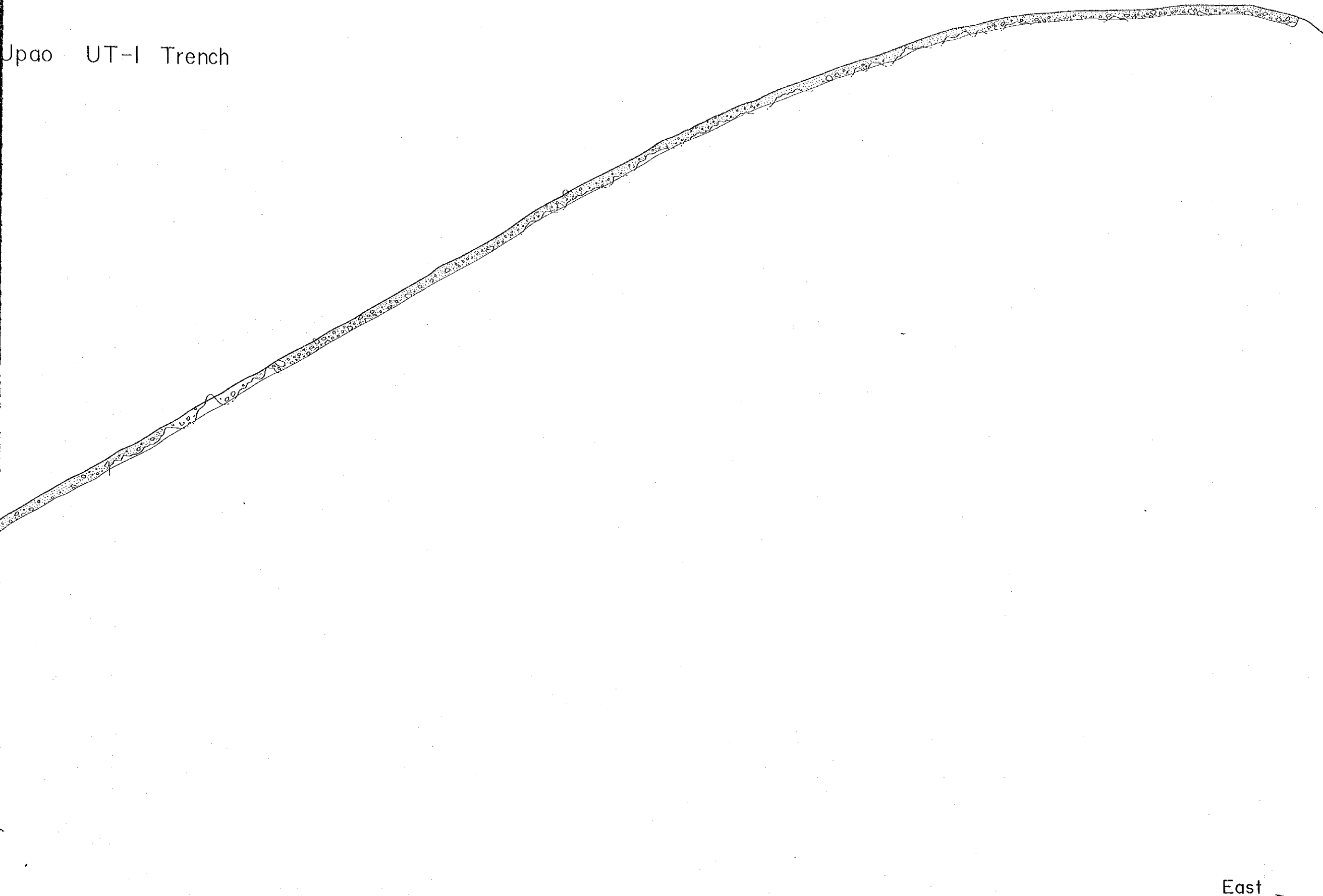
302.5m to 305.1m section: Continuous with previous section; magnetite rich sequence continues throughout this section; silicification is rather uniform throughout; pyrite occurrence still relatively rare compared to the previous sections; milky quartz veinlets noted in some portions.







Upao UT-1 Trench



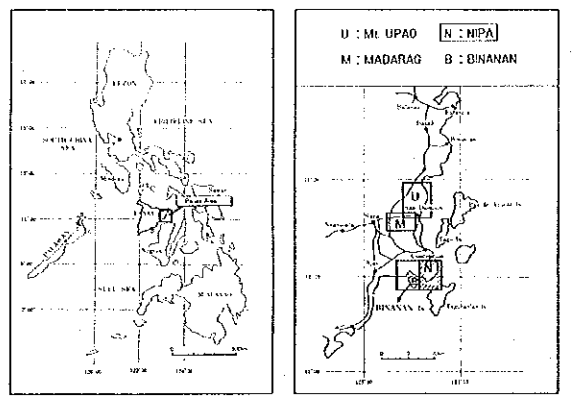
East

- dark brownish purple. Arg. Hem. Lim. rich alt-andesite.
- milky white. Arg. Andesite with soft Hem. Lim.
- grayish purple. Arg. black spot-in oxide? bearing fine alt-andesite.
- reddish purple-grayish purple Arg. (weak) alt-andesite. white clay (kaolin) fill in joint.
- dark purple. siliceous band (ca. 2m) surrounded by dark purple andesite with abundant Hem. Lim. and argillite.
- red Hem. Lim. rich yellow. Arg. Andesite + reddish purple alt-andesite.
- soft grayish purple alt-andesite. Hem. Lim. rich white clay (kaolin) fill in joint.
- grayish purple colored arg. Andesite. dark purple colored bands (ca. 2cm). Hem. Lim. rich throughout.
- discontinuous gray siliceous band (ca. 2cm) surrounded by dark purple grayish purple band Arg. (weak) Andesite.
- grayish Arg. Andesite. Hem. Lim. rich throughout.
- float (18x2cm). siliceous, alt andesite, white clay (kaolin), red clay (hem. Lim) fill in joint.
- reddish purple. Hem. Lim. rich Arg. Andesite.
- black spot (Hem?) bearing porous light gray Arg. (weak) Andesite. Hem. Lim. rich throughout.
- grayish Arg. (weak). soft alt-andesite. red Hem. Lim. rich throughout.
- grayish purple colored vein (5cm). grayish purple. joint gray Arg. (weak) Andesite.
- dark grayish purple. Arg. alt-andesite with sporadic band. siliceous and black spot (Hem.).
- reddish purple-grayish purple alt-andesite. with weak siliceous andesite.
- black spot (Hem. Lim.) bearing milky white-reddish purple Arg. (weak) Andesite.
- dark grayish-reddish purple argillite. dark purple. reddish purple vein (1-2cm). yellow Arg. (weak) Andesite with red Lim. vein (5cm).
- dark purple. porous. weakly siliceous andesite with white vein (1-2cm).
- reddish purple weakly siliceous argillite-andesite. with abundant Hem. Lim. and argillite.
- dark gray silice (weak). porous alt-andesite.
- grayish purple. black spot bearing Arg. Andesite.
- red Arg. alt-andesite with white siliceous vein (1-2cm).
- dark purple. Arg. Andesite. red clay vein (1-2cm). and yellow along cracks/fissures. yellowish brown/dark silice folded band.
- Similar to 158.5m, but no siliceous vein. the rock is softer, more into argillite.
- light gray-yellowish gray arg. soft red clay (with hematite. Limonite)

MINERAL EXPLORATION  
IN  
PANAY AREA  
IN THE REPUBLIC OF THE PHILIPPINES  
Geologic Map of UT-1 Trench,  
Mt. Upao Area, 1992

PL. 1-1

LOCATION INDEX



JAPAN INTERNATIONAL COOPERATION AGENCY  
METAL MINING AGENCY OF JAPAN  
BUREAU OF MINES and GEO-SCIENCES

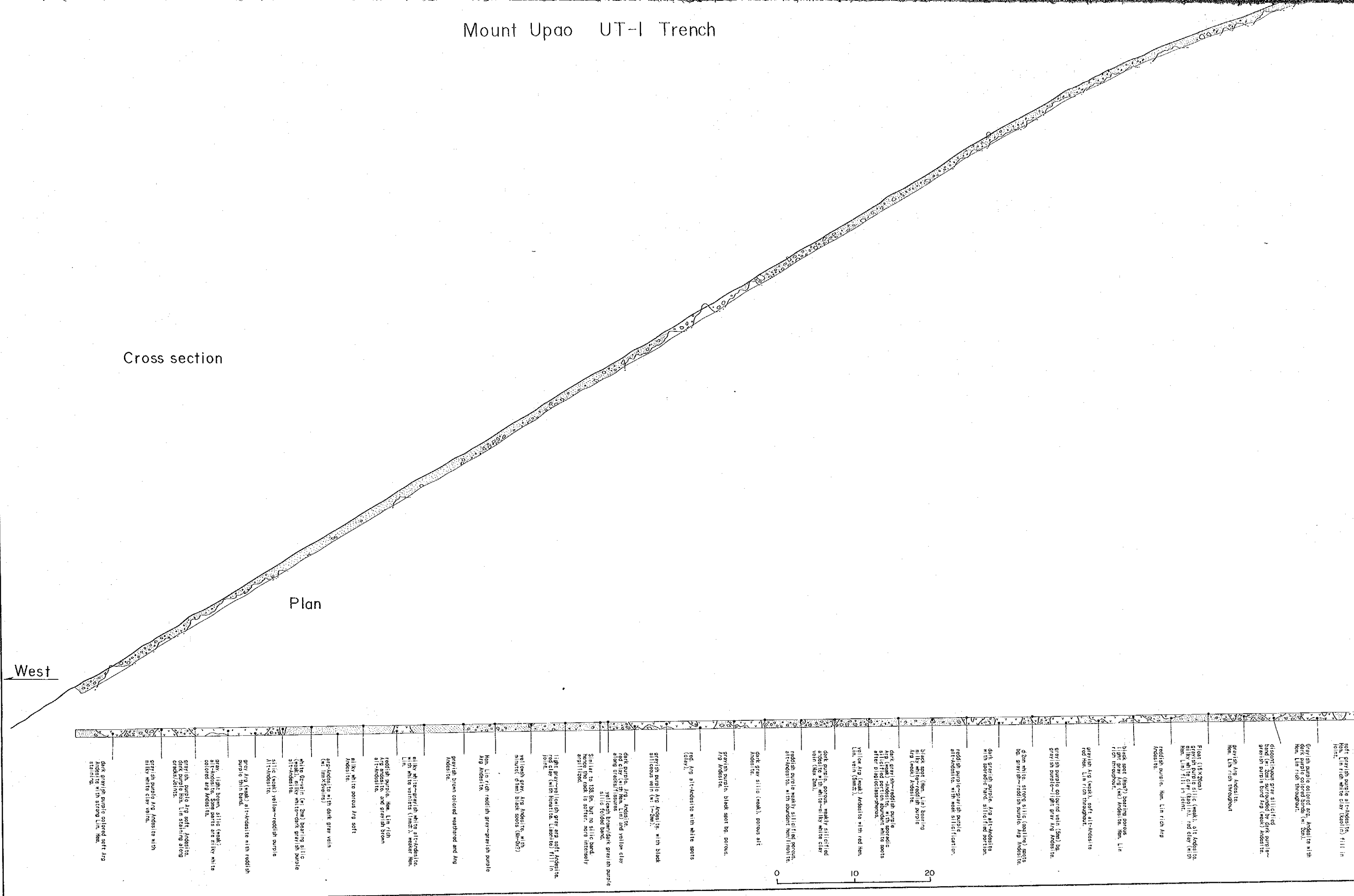
FEBRUARY 1993

# Mount Upao UT-1 Trench

Cross section

Plan

West



soft grayish purple of andesite  
flow. Lim rich white clay (see 10) fill in  
joint.

grayish purple colored arg. andesite with  
limb. Lim rich throughout.

disjoint mass gray silicified  
band (see 20) surrounded by dark purple  
grayish purple band arg (weak) andesite.

grayish arg. andesite.  
Hem. Lim rich throughout

float (15x20cm)  
grayish purple silic (weak), of andesite  
with white clay (see 10). red clay vein  
Hem. Lim rich throughout.

reddish purple. Hem. Lim rich arg  
andesite.

black spot (Hem?) bearing porous  
light gray arg (weak) andesite. Hem. Lim  
rich throughout.

grayish arg (weak), soft, alt-andesite  
red Hem. Lim rich throughout.

grayish purple colored vein (see 10) of  
grayish purple light gray arg andesite.

5 cm white strong silic (oolitic) spots  
bg. grayish reddish purple. Arg andesite.

dark grayish purple. Arg alt-andesite  
with sporadic hard silicified portion.

reddish purple light grayish purple  
alt-andesite. with weak silicification.

black spot (Hem. Lim) bearing  
rich white reddish purple  
arg (weak) andesite.

dark grayish reddish purple  
arg (weak) andesite. with sporadic  
silicified portions. Lim spots  
after diagenesis.

yellow arg (weak) andesite with red Hem.  
Lim vein (see 10).

dark purple, porous, weakly silicified  
andesite with white clay  
vein (see 10).

reddish purple weakly silicified porous,  
alt-andesite. with abundant hem/limonite.

dark gray silic (weak), porous alt  
andesite.

grayish purple, black spot bg. porous,  
arg andesite.

red. Arg alt-andesite with white spots  
(clay).

grayish purple arg andesite. with black  
siliceous vein (see 10).

dark purple. Arg. andesite  
red clay with hem. Lim) and yellow clay  
along cracks/fissures.

yellowish brown/dark grayish purple  
silic folded band.

Similar to 138.96, but no silic band.  
Hence the rock is softer, more intensely  
argillized.

light gray-yellowish gray arg soft andesite  
red clay (see 10) hematite. Limonite fill in  
joint.

yellowish gray. Arg andesite. with  
mineral (lim) black spots (see 10-2?)

Hem. Lim rich reddish gray-grayish purple  
arg andesite.

grayish brown colored weathered and arg  
andesite.

silky white porous arg soft  
andesite.

arg-andesite with dark gray vein  
(see 10) (see 10)

white 0.2-0.5 cm (see 20) bearing silic  
alt-andesite with dark grayish purple  
alt-andesite.

silic (weak) yellow-reddish purple  
alt-andesite.

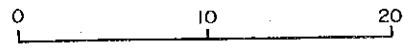
gray arg (weak) alt-andesite with reddish  
purple thin band.

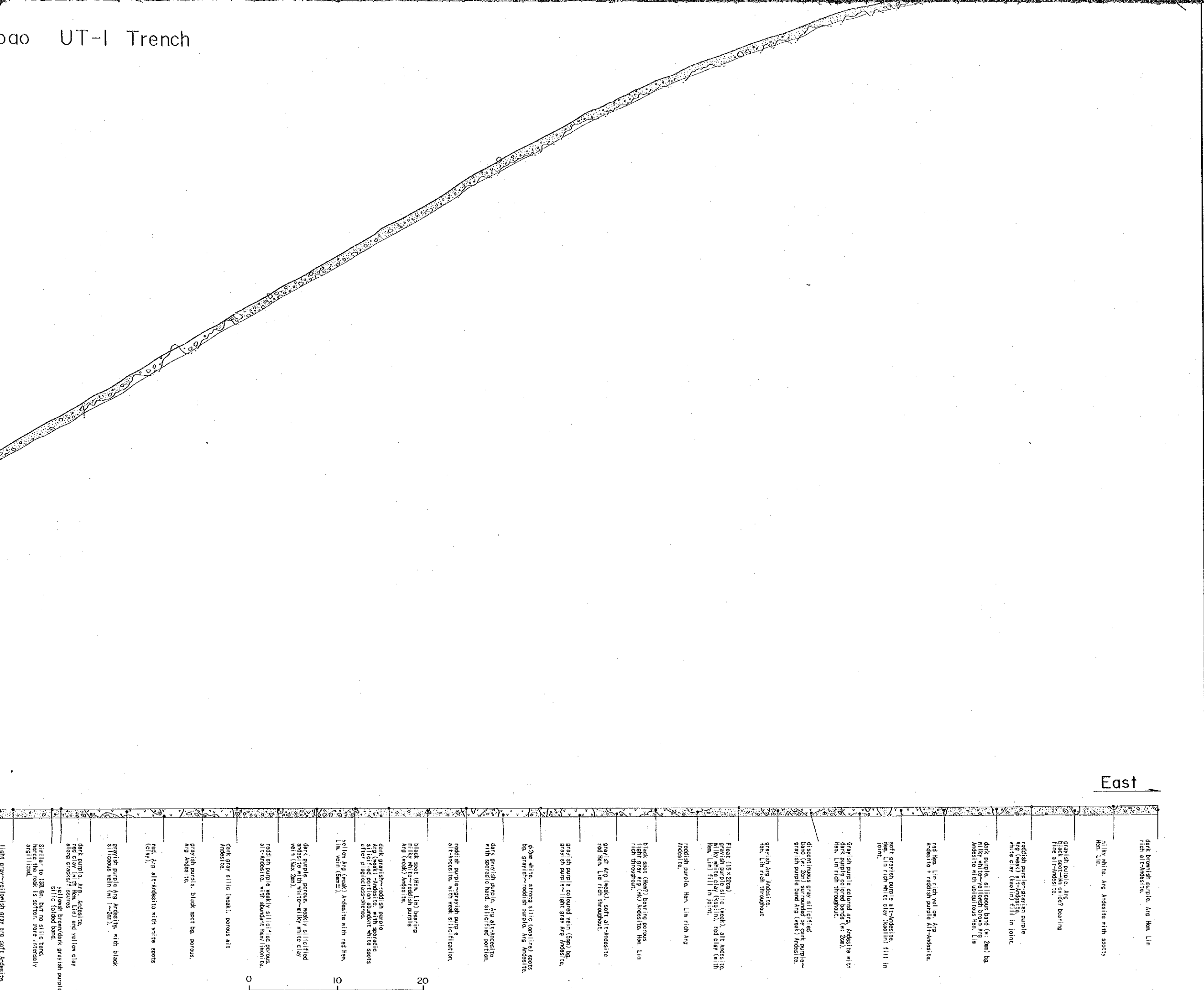
gray, light brown, silic (weak)  
alt-andesite. Some parts are silky white  
colored arg andesite.

grayish purple arg soft, andesite,  
dark purple hue. Lim staining along  
cracks/joints.

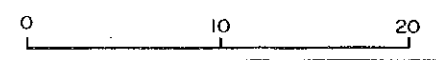
grayish purple arg andesite with  
rich white clay vein.

dark grayish purple colored soft arg  
andesite with strong Lim. Hem.





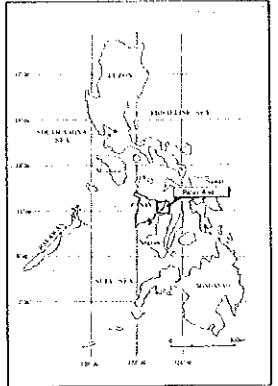
East



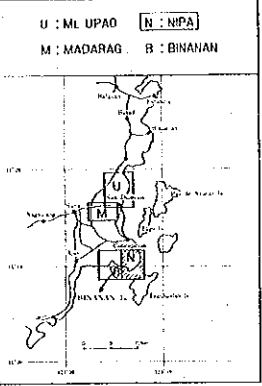
IN THE REPUBLIC OF THE PHILIPPINES

Geologic Map of UT-1 Trench,  
Mt. Upao Area, 1992

LOCATION INDEX



U : Mt. UPAO    W : NPA  
M : MADARAG    B : BINAHAN



JAPAN INTERNATIONAL COOPERATION AGENCY  
METAL MINING AGENCY OF JAPAN  
BUREAU OF MINES and GEO-SCIENCES

FEBRUARY 1993

Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
39	40.2	20	2.2	56	35	1	7	5.70	45	40	1.4
UT-1.041a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
239	40.2	14	1.4	22	67	1	5	5.80	45	30	2.0
UT-1.045a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
103	40.2	14	1.0	9	70	41	3	4.70	45	30	2.8
UT-1.050a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
199	40.2	26	0.4	5	42	41	2	2.80	45	30	4.5
UT-1.055a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
17	40.2	48	1.2	12	61	1	8	7.20	45	40	12.0
UT-1.059a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
10	40.2	30	1.2	32	6	3	8	14.20	45	40	2.4
UT-1.063a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
16	40.2	32	0.5	8	14	1	2	3.80	45	10	3.6
UT-1.065a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
13	40.2	28	1.0	19	17	1	2	5.20	45	10	2.0
UT-1.070a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
33	40.2	42	0.8	14	4	4	2	7.70	45	30	5.4
UT-1.075a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
8	40.2	32	0.4	7	3	1	2	6.40	45	30	9.8
UT-1.080a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
5	40.2	28	0.6	6	9	2	2	7.80	45	20	13.0
UT-1.085a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
7	40.2	46	0.5	16	5	1	2	5.50	45	20	6.6
UT-1.090a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
4	40.2	32	0.4	11	6	3	2	7.40	45	10	4.2
UT-1.095a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
1	40.2	38	0.4	8	10	2	3	7.00	45	30	7.4
UT-1.100a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
4	40.2	32	0.4	11	6	3	2	7.40	45	10	4.2
UT-1.105a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
23	40.2	50	2.2	38	40	2	4	12.50	45	20	13.0
UT-1.110a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
4	40.2	34	0.8	13	2	2	3	7.70	45	22	12.0
UT-1.115a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
1	40.2	14	0.4	11	3	1	2	5.50	45	10	6.0
UT-1.120a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
3	40.2	22	1.2	10	3	4	2	5.80	45	10	12.0
UT-1.125a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
4	40.2	36	1.0	39	51	1	3	6.40	45	20	8.4
UT-1.130a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
5	40.2	50	1.3	25	2	1	2	8.10	45	10	7.8
UT-1.135a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
4	40.2	38	1.0	20	8	1	3	6.20	45	20	6.6
UT-1.138a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
5	40.2	50	1.8	31	8	1	2	7.50	45	30	7.8
UT-1.140a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
4	40.2	30	1.0	32	4	2	2	8.60	45	30	8.2
UT-1.145a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
6	40.2	34	2.2	26	8	2	20	6.00	45	20	15.0
UT-1.150a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
5	40.2	34	0.8	34	6	3	3	10.40	45	20	10.2
UT-1.155a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
2	40.2	16	0.4	18	8	1	2	6.80	45	20	9.0
UT-1.160a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
13	40.2	114	1.8	40	2	2	2	10.50	45	20	14.0
UT-1.165a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
13	40.2	10	1.0	34	4	4	4	14.80	45	20	15.0
UT-1.170a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
5	40.2	24	1.0	12	71	2	38	2.50	10	20	1.4
UT-1.175a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
13	40.2	10	1.0	34	4	4	4	14.80	45	20	15.0
UT-1.180a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
9	40.2	2	0.8	5	20	41	23	1.10	45	20	40.2
UT-1.185a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
1	40.2	70	0.6	78	12	6	22	10.30	45	20	4.0
UT-1.190a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
7	40.2	2	0.2	3	4	2	41	0.10	45	20	40.2
UT-1.195a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
9	40.2	2	0.8	5	20	41	23	1.10	45	20	40.2
UT-1.200a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
15	40.2	2	0.6	5	23	41	1	2.20	45	20	7.8
UT-1.205a											
Au	Ag	As	Sb	Cu	Pb	Zn	Mg	Fe	Mn	Hg	Sr
9	40.2	34	0.6	8	3	1	2	4.70	45	20	9.0
UT-1.212a											

grayish purple colored arg. Andesite with  
Hem. Lin rich throughout.

discontinuous gray silicified  
purple (M. 223) surrounded by dark purple-  
grayish purple band Arg (weak) Andesite.

grayish Arg Andesite.  
Hem. Lin rich throughout

float (15x20cm)  
grayish purple silic (weak), sil Andesite  
Hem. Lin 511 in joint. red clay thin  
Hem. Lin 511 in joint.

reddish purple. Hem. Lin rich Arg  
Andesite.

black spot (Hem) bearing porous  
light gray Arg (wk) Andesite. Hem. Lin  
rich throughout.

grayish Arg (weak), soft sil-Andesite  
red Hem. Lin rich throughout.

grayish purple colored vein (Saw) be.  
grayish purple light gray Arg Andesite.

dark white, strong silic (yellow) spots  
be. grayish reddish purple Arg Andesite.

reddish purple-grayish purple  
sil-Andesite. with weak silicification.

dark grayish purple. Arg sil-Andesite  
with secondary hard, silicified portion.

black spot (Hem. Lin) bearing  
milky white-redish purple  
Arg (weak) Andesite.

dark grayish-redish purple  
Arg (weak) Andesite. with secondary  
silicified portion abundant white spots  
after etching with phenol.

yellow Arg (weak) Andesite with red Hem.  
Lin. vein (Saw).

dark purple, porous, weakly silicified  
Andesite with white milky white clay  
vein (Hem. Lin).

reddish purple weakly silicified porous  
sil-Andesite. with abundant thin fibrous  
vein (Hem. Lin).

dark gray silic (weak), porous sil  
Andesite.

grayish purple. black spot be. porous.  
Arg Andesite.

red. Arg sil-Andesite with white spots  
(clay).

reddish purple Arg Andesite. with black  
silicaceous vein (Hem. Lin).

grayish purple Arg Andesite. with black  
silicaceous vein (Hem. Lin).

dark purple. Arg. Andesite.  
red clay (Hem. Lin) and yellow clay  
arg. red sil-Andesite.

yellowish brown/dark grayish purple  
silic folded band.

Similar to 138 Arg. but no silic band.  
Pore the rock is softer, more intensely  
argillized.

light gray-yellowish gray arg soft Andesite.  
red clay (with hematite. Libonite) fill in  
joint.

yellowish gray. Arg Andesite. with  
minute (thin) black spots (Hem. Lin)

Hem. Lin rich reddish gray-grayish purple  
Arg Andesite.

grayish brown colored weathered and Arg  
Andesite.

milky white porous Arg soft  
Andesite.

arg-Andesite with dark gray vein  
(Hem. Lin) veins

white-grayish (as 2nd) bearing silic  
yellow, silic white-dark grayish purple  
sil-Andesite.

silic (weak) yellow-redish purple  
sil-Andesite.

gray Arg (weak) sil-Andesite with reddish  
purple thin band.

gray, light brown, silic (weak)  
sil-Andesite. Some parts are milky white  
colorful arg Andesite.

grayish purple Arg soft. Andesite.  
dark purple Hem. Lin staining along  
crevices/joints.

grayish purple Arg Andesite with  
milky white clay veins.

dark grayish purple colored soft Arg  
Andesite with strong Hem. Lin.  
staining.

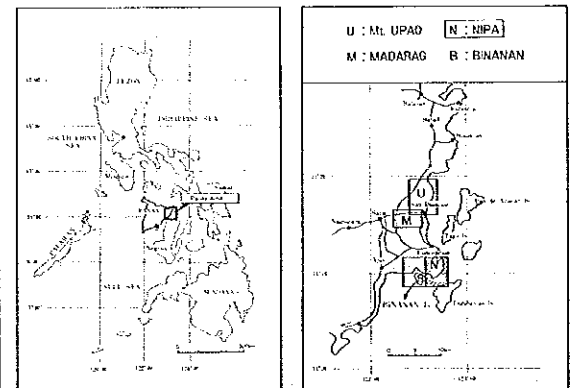
West

0 10 20

MINERAL EXPLORATION  
IN  
PANAY AREA  
IN THE REPUBLIC OF THE PHILIPPINES

Sample Location Map of UT-1 Trench,  
Mt. Upao

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JAPAN INTERNATIONAL COOPERATION AGENCY  
METAL MINING AGENCY OF JAPAN  
BUREAU OF MINES and GEO-SCIENCES

FEBRUARY 1993

LEGEND

Au, Hg in ppb

Fe in Percent

Other Elements in ppm

Sample No.	Au	Ag	As	Sb	Cu	Fe	Zn	Mn	Pb	Ni	Mo	Sn
1	0.2	54	1.2	59	7	3	13.50	45	20	18.0		
2	0.2	20	1.2	12	21	1	4.20	45	10	8.0		
3	0.2	14	0.8	32	15	2	5.10	45	10	1.8		
4	0.2	70	1.0	19	3	2	3.10	45	30	12.0		
5	0.2	32	1.5	22	51	1	5.40	45	20	5.8		
6	0.2	46	1.2	15	11	3	6.90	30	40	4.2		
7	0.2	20	1.2	10	3	4	2.50	45	10	12.0		
8	0.2	30	1.0	30	5	1	3.50	45	20	8.4		
9	0.2	14	0.4	11	3	1	2.50	45	10	8.0		
10	0.2	22	1.2	10	3	4	2.50	45	10	12.0		
11	0.2	34	0.8	13	2	2	3.70	45	20	12.0		
12	0.2	32	0.8	11	5	3	2.40	45	10	4.2		
13	0.2	50	2.2	88	40	2	4.12	30	18.0			
14	0.2	54	0.8	13	2	2	3.70	45	20	12.0		
15	0.2	28	0.8	6	3	2	2.70	45	20	12.0		
16	0.2	42	0.8	14	3	4	2.70	45	30	5.4		
17	0.2	46	1.2	12	51	1	6.70	45	40	12.0		
18	0.2	32	0.8	14	1	2	3.00	45	10	3.8		
19	0.2	35	1.2	32	6	3	5.40	45	40	2.4		
20	0.2	26	1.0	19	17	1	2.50	45	10	3.0		
21	0.2	28	0.8	5	42	1	2.30	45	30	4.8		
22	0.2	14	1.4	32	67	1	5.50	45	30	2.0		
23	0.2	14	1.4	32	67	1	5.50	45	30	2.0		
24	0.2	14	1.0	8	70	1	3.70	45	30	2.8		
25	0.2	20	2.2	50	35	1	7.60	45	40	1.4		
26	0.2	46	1.2	12	51	1	6.70	45	40	12.0		
27	0.2	46	1.2	12	51	1	6.70	45	40	12.0		
28	0.2	28	0.8	5	42	1	2.30	45	30	4.8		
29	0.2	28	0.8	5	42	1	2.30	45	30	4.8		
30	0.2	28	0.8	5	42	1	2.30	45	30	4.8		

East

0 10 20

dark brownish purple. Arg. Hem. Lin  
rich airt-Andesite.

silky white. Arg. Andesite with quartz  
Hem. Lin

greyish purple. Arg.  
black spot- Mn oxide? bearing  
fine airt-Andesite.

reddish purple-greyish purple  
Arg. (weak) airt-Andesite.  
white clay (kaolin) fill in joint.

dark purple. siliceous sand (or Zn?) be  
Andesite with abundant Hem. Lin

red Hem. Lin rich yellow. Arg.  
Andesite + reddish purple airt-Andesite.

soft greyish purple airt-Andesite.  
Hem. Lin rich white clay (kaolin) fill in  
joint.

greyish purple colored arg. Andesite with  
dark purple colored bands (w. Zn?).  
Hem. Lin rich throughout.

discontinuous grey silicified  
Andesite with dark purple-greyish  
greyish purple sand Arg. (weak) Andesite.  
Hem. Lin rich throughout

greyish Arg. Andesite.  
Hem. Lin rich throughout

float (15x20cm)  
greyish purple siliceous (weak). airt-Andesite.  
silky white clay (kaolin). red clay (with  
Hem. Lin) fill in joint.

reddish purple. Hem. Lin rich Arg.  
Andesite.

black spot (Hem. Lin) bearing  
light grey Arg. (wk) Andesite. Hem. Lin  
rich throughout.

greyish Arg. (weak). soft airt-Andesite  
red Hem. Lin rich throughout.

greyish purple colored vein (Sma) be  
greyish purple-light grey Arg. Andesite.

4mm white. string siliceous (kaolin) spots  
be. greyish-reddish purple Arg. Andesite.

dark greyish purple. Arg. airt-Andesite  
with sporadic hard. silicified portion.

reddish purple-greyish purple  
airt-Andesite. with weak silicification.

black spot (Hem. Lin) bearing  
silky white-reddish purple  
Arg. (weak) Andesite.

dark greyish-reddish purple  
Arg. (weak) Andesite. with sporadic  
siliceous portion abundant white spots  
also present throughout.

yellow Arg. (weak) Andesite with red Hem.  
Lin vein (Sma?).

dark purple. porous. weakly silicified  
Andesite with white-silky white clay  
vein (Max Zn?).

reddish purple weakly silicified porous  
airt-Andesite. with abundant hem. Lin spots.

dark grey siliceous (weak). porous airt-  
Andesite.

greyish purple. black spot be. porous.  
Arg. Andesite.

red Arg. airt-Andesite with white spots  
(Clay).

greyish purple Arg. Andesite. with black  
siliceous vein (w. Sma?).

dark purple. Arg. Andesite.  
porous streaks of Hem. Lin and yellow clay  
vein (Max Zn?).

siliceous (weak) Andesite.  
yellow brown/dark greyish purple  
siliceous foiled band.

siliceous (weak) Andesite. with no siliceous  
vein (Max Zn?).

reddish purple. Arg. Andesite.  
porous streaks of Hem. Lin and yellow clay  
vein (Max Zn?).

siliceous (weak) Andesite. with no siliceous  
vein (Max Zn?).

reddish purple. Arg. Andesite.  
porous streaks of Hem. Lin and yellow clay  
vein (Max Zn?).

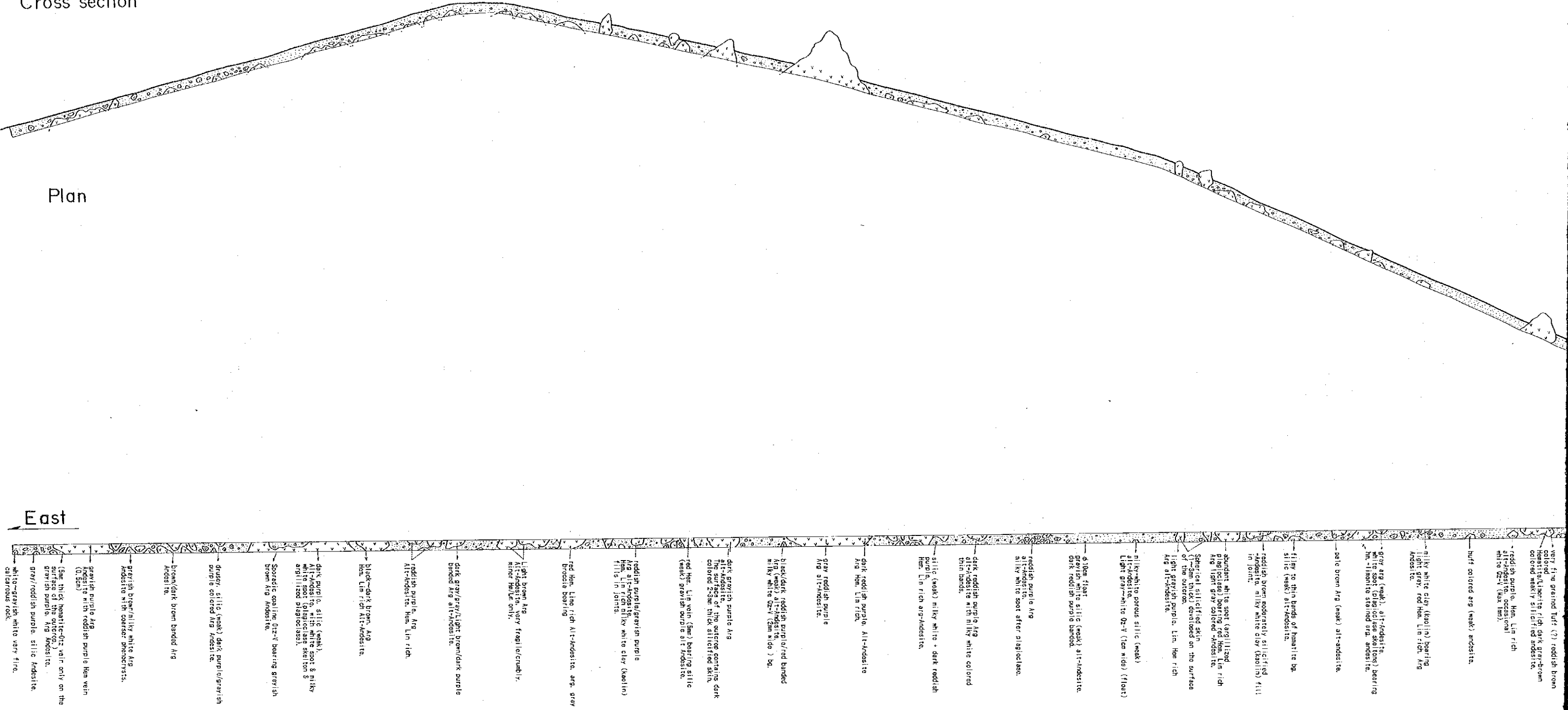
siliceous (weak) Andesite. with no siliceous  
vein (Max Zn?).

# Monut Upao UT-2 Trench

Cross section

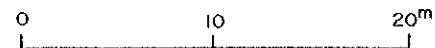
Plan

East

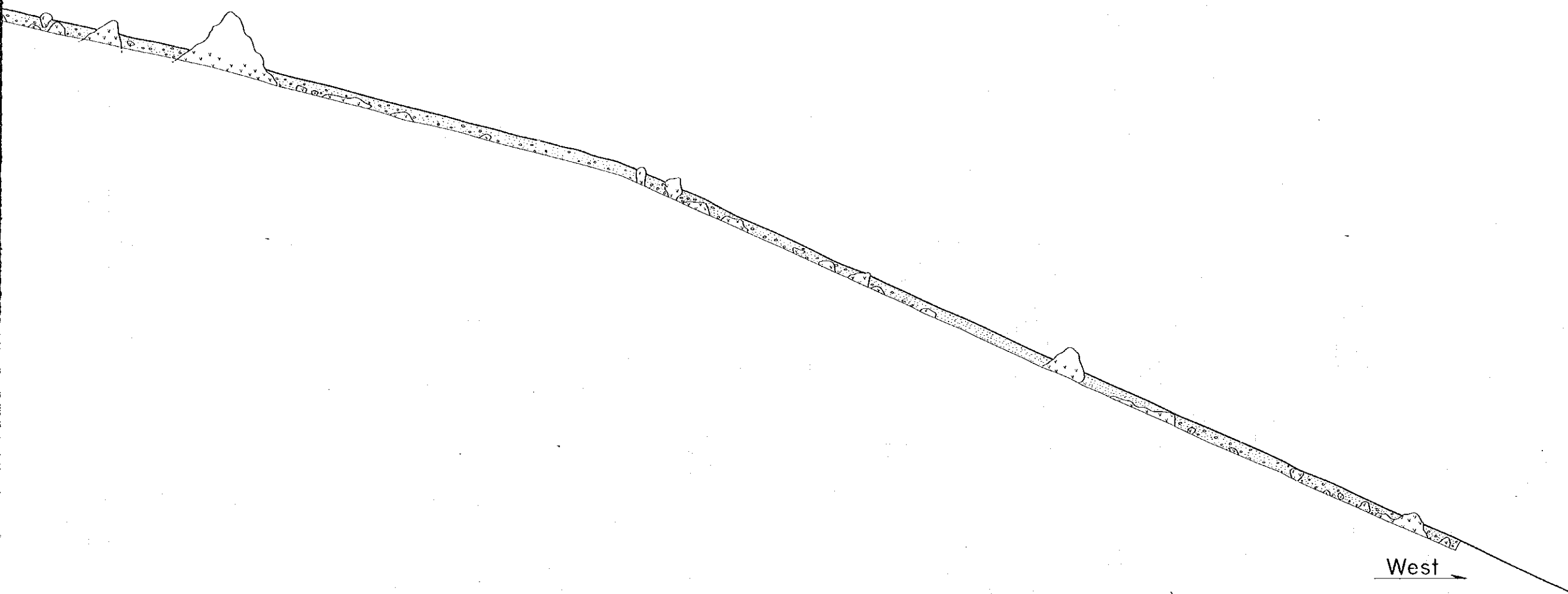




nut Upao UT-2 Trench



West

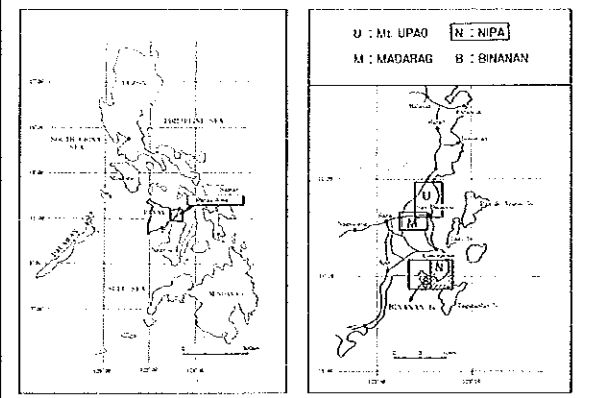


- grayish brown altered andesite.
- hematite limonite along cracks on coarsened surface. Hematite limonite rich nodules disp. by ring structure.
- reddish purple silicified (weak) andesite. (float)
- reddish brown, Hem. Lim Yeln (~3m) bearing reddish purple. Arg andesite (float)
- pale gray/white in fill: (float) silicified. Hem. Lim in fill: (float)
- white spot - plagioclase relict. Silicified. Hem. Lim in fill: (float)
- grayish purple. Arg (weak). alt-andesite. Hem. Lim rich. abundant white spots. grayish purple silicified (weak). alt-andesite. with fine (lim) dark brown Hem. Lim Yeln.
- red. Hem. Lim stained Arg. gray. alt-andesite.
- very fine grained buff (?) reddish brown hematite/limonite rich dark gray-brown colored maskiv silicified andesite.
- reddish purple. Hem. Lim rich alt-andesite. occasional white (2-3) (max 1mm).
- buff colored arg (weak) andesite.
- milky white clay (kaolin) bearing light gray. red Hem. Lim rich. Arg andesite.
- gray arg (weak). alt-andesite. white spot (plagioclase skeleton) bearing limonite stained arg. andesite.
- pale brown Arg (weak) alt-andesite.
- flow to thin bands of hematite bearing silicified alt-andesite.
- reddish brown moderately silicified andesite. milky white clay (kaolin) fill in joints.
- abundant white spot (argillized orange) bearing red Hem. Lim rich arg. light gray. andesite.
- spherical silicified skin (1-2mm thick) developed on the surface of the outcrop. Light grayish purple. Lim. Hem rich Arg alt-andesite.
- silky white porous silicified (weak) light gray/white (2-3) (lim wide) (float)
- 10cm float. grayish white silicified (weak) alt-andesite. dark reddish purple banded.
- reddish purple Arg alt-andesite. milky white spot after plagioclase.
- dark reddish purple Arg alt-andesite with milky white colored thin bands.
- silicified (weak) milky white + dark reddish purple. Hem. Lim rich arg-andesite.
- dark reddish purple. Alt-andesite. Arg Hem. Lim rich.
- gray reddish purple Arg alt-andesite.
- black/dark reddish purple/red banded milky white (2-3) (2-3m wide) bc.
- dark grayish purple Arg alt-andesite. The surface of the outcrop contains dark colored 2-3mm thick silicified skin.
- red Hem. Lim vein (5mm) bearing silicified (weak) grayish purple alt-andesite.

MINERAL EXPLORATION  
IN  
PANAY AREA  
IN THE REPUBLIC OF THE PHILIPPINES

Geologic Map of UT-2 Trench,  
Mt. Upao Area, 1992

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JAPAN INTERNATIONAL COOPERATION AGENCY  
METAL MINING AGENCY OF JAPAN  
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FEBRUARY 1993

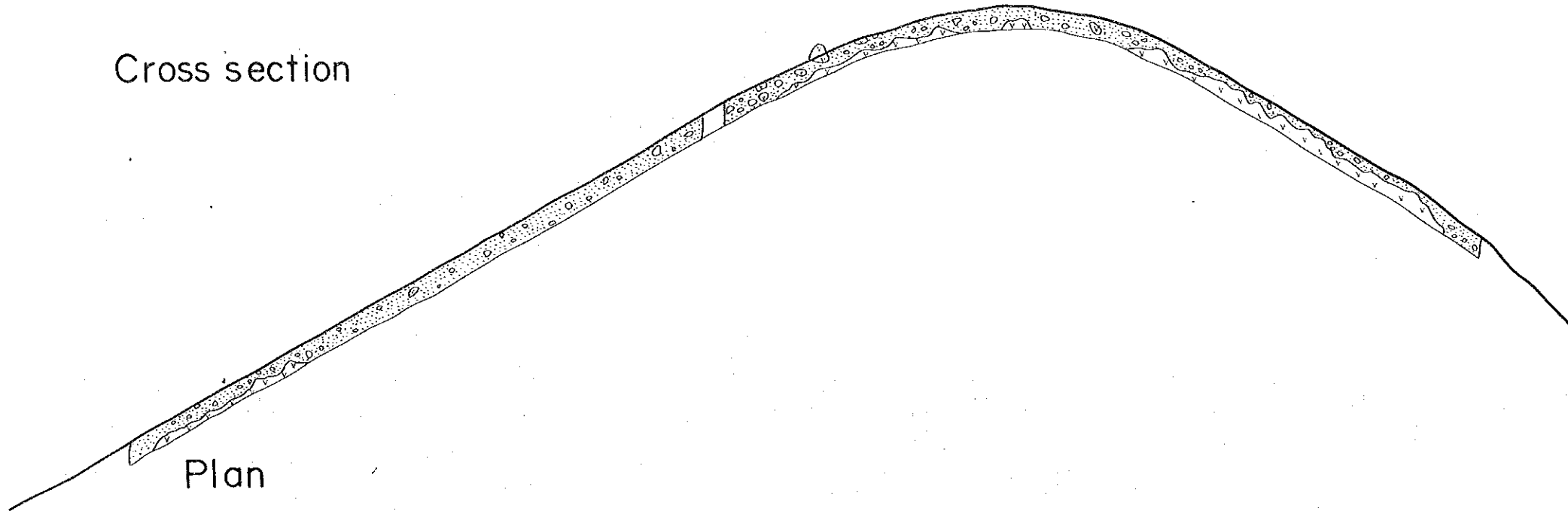
UT-2.035a													very fine ground Turf (?) reddish brown colored nodules. Aluminous rich dark grey-green colored nodules silicified andesite.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	35	0.2	870	20.0	115	35	1	0.50	5	10	7.2	
UT-2.040a													reddish purple hematite rich white quartz (dark tan).											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	30	0.2	22	1.2	11	30	1	3.50	5	20	8.0	
UT-2.045a													buff colored arg (weak) andesite.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	100	0.2	118	2.8	10	62	1	2.40	5	20	8.8	
UT-2.050a													silky white clay (kaolin) bearing light grey, red hematite rich arg nodules.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	7	0.2	4	0.2	5	10	0.1	2.10	5	10	2.2	
UT-2.055a													grey arg (weak), silicified nodules. Hem. Aluminous (fine) bearing hem. Aluminous stained arg. andesite.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	12	0.2	100	1.0	14	15	1	0.50	5	10	8.8	
UT-2.060a													pale brown arg (weak) silicified andesite.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	30	0.2	24	0.2	52	30	0.1	2.40	5	20	7.8	
UT-2.065a													fly to thin bands of hematite bearing silicified andesite.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	4	0.2	42	0.8	9	14	1	3.40	10	10	5.2	
UT-2.068.5a													reddish brown nodularly silicified andesite, silky white clay (kaolin) fill in joint.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	4	0.2	40	0.8	13	2	0.1	0.30	5	10	3.8	
UT-2.073a													abundant white arg (argillized plagioclase) bearing and hematite arg light grey colored andesite.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	23	0.2	84	1.0	64	17	0.1	2.40	5	20	5.4	
UT-2.078a													Spherical silicified skin nodules, developed on the surface of the outcrop. light greyish purple. Hem. hematite arg silicified.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	2	0.2	38	0.8	0	4	0.1	1.20	5	10	5.2	
UT-2.081.5a													silky-white porous silicified (weak) andesite.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	32	0.2	100	0.0	3	3	0.1	2.30	5	20	5.2	
UT-2.088.5a													glow float grey white silicified (weak) silicified arg reddish purple nodules.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	11	0.2	50	0.4	1	20	0.1	1.00	5	10	1.0	
UT-2.094a													reddish purple arg milky white spot after plagioclase.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	59	0.2	24	1.4	4	32	0.1	0.40	5	20	7.4	
UT-2.100a													dark reddish purple arg nodules with silky white colored thin bands.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	573	0.2	130	5.2	29	73	1	3.10	5	50	22.0	
UT-2.104a													silicified (weak) silky white + dark reddish purple. Hem. Hem rich arg-andesite.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	302	0.2	104	2.0	47	13	0.1	3.50	5	20	43.0	
UT-2.110.5a													black/dark reddish purple/red banded arg silicified milky white quartz (same vein) ha.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	13	0.2	224	7.4	71	3	2	4.12	50	5	20	12.8
UT-2.126a													dark greyish purple arg silicified. the surface of the outcrop contains dark colored 2-3cm thick silicified skin.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	10	0.2	30	1.8	17	11	1	4.80	5	20	3.0	
UT-2.130.4a													red hematite vein (5cm) bearing silicified nodules. greyish purple silicified andesite.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	78	0.2	14	0.8	38	4	0.1	9.5.10	5	10	5.2	
UT-2.138a													reddish purple/greyish purple arg silicified hem. Hem rich silky white clay (kaolin) fills in joints.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	4	0.2	28	1.0	24	20	1	3.90	5	10	8.4	
UT-2.143.5a													red hematite vein rich silicified. arg. grey purple bearing.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	2	0.2	28	1.2	9	24	0.1	2.5.20	5	10	5.4	
UT-2.148a													light brown arg silicified. very fragile/crumbly. milky white arg.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	43	0.2	4	0.2	197	2	1	2.80	5	20	5.2	
UT-2.155.3a													dark grey/arg/light brown/dark purple banded arg silicified.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	20	0.2	20	0.8	80	10	2	2.40	5	20	5.4	
UT-2.160a													reddish purple arg andesite. Hem. Hem rich.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	11	0.2	5	0.5	34	88	1	3.30	5	20	4.0	
UT-2.165a													black-dark brown arg hem. Hem rich silicified.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	15	0.2	8	1.0	82	39	158	2.5.30	5	20	8.2	
UT-2.170a													dark purple, silicified (weak). nodules with white spots & silky argillized plagioclase.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	140	0.2	134	11.5	158	18	3	1.1.40	5	20	14.8	
UT-2.174.4a													sporadic coarse Qtz-V bearing greyish brown arg andesite.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	7	0.2	10	1.2	37	7	3	2.7.80	5	20	35.3	
UT-2.180.6a													crusty silicified (weak) dark purple/greyish purple colored arg andesite.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	10	0.2	24	1.4	37	43	0.1	2.5.90	5	20	7.8	
UT-2.190a													brown/dark brown banded arg andesite.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	7	0.2	8	1.2	15	22	1	2.3.40	5	20	4.4	
UT-2.192a													greyish brown/silky white arg andesite with coarse nodules.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	4	0.2	4	0.4	50	3	1	1.7.10	5	20	8.0	
UT-2.197a													greyish purple arg andesite with reddish purple hematite vein.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	1	0.2	12	0.8	27	9	2	10.80	5	10	6.3	
UT-2.200a													(same thick hematite-Qtz vein only on the surface of the outcrop). greyish purple, arg andesite. grey/reddish purple, silicified andesite. white-greyish white very fine, calcareous rock.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	2	0.2	20	0.2	43	3	1	1.8.30	5	20	10.8	
UT-2.201a													white-greyish white very fine, calcareous rock.											
Au	Ag	As	Sb	Cu	Pb	Zn	Mn	Fe	Mg	Hg	Sr	Ba	1	0.2	2	0.2	8	5	0.1	1.30	5	10	2.9	

East



# Madarag MT-1 Trench

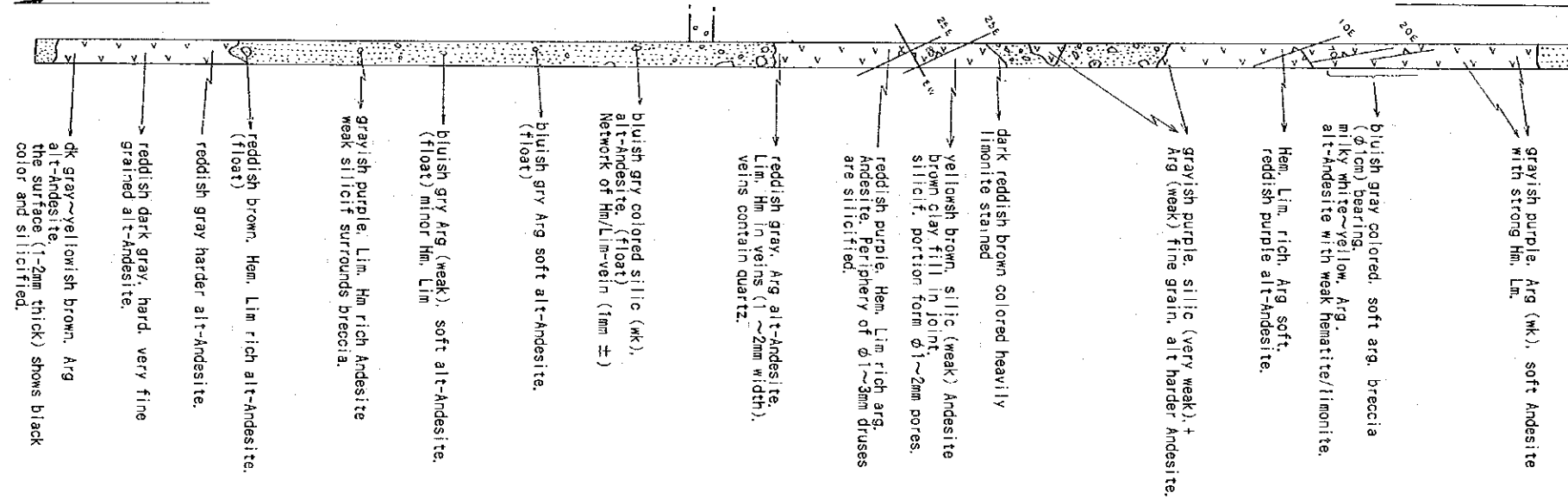
Cross section



Plan

S30W

N30E



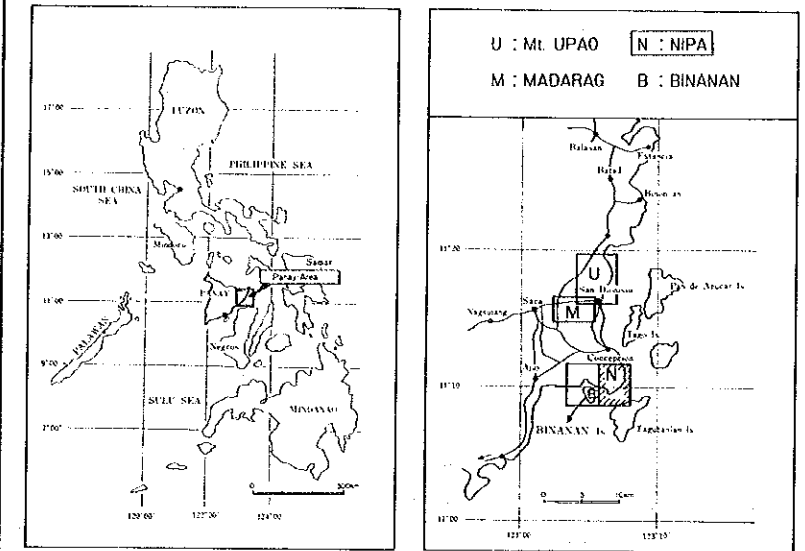
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MINERAL EXPLORATION  
IN  
PANAY AREA  
IN THE REPUBLIC OF THE PHILIPPINES

PL. 2-1

Geologic Map of MT-1 Trench,  
Madarag Area, 1992

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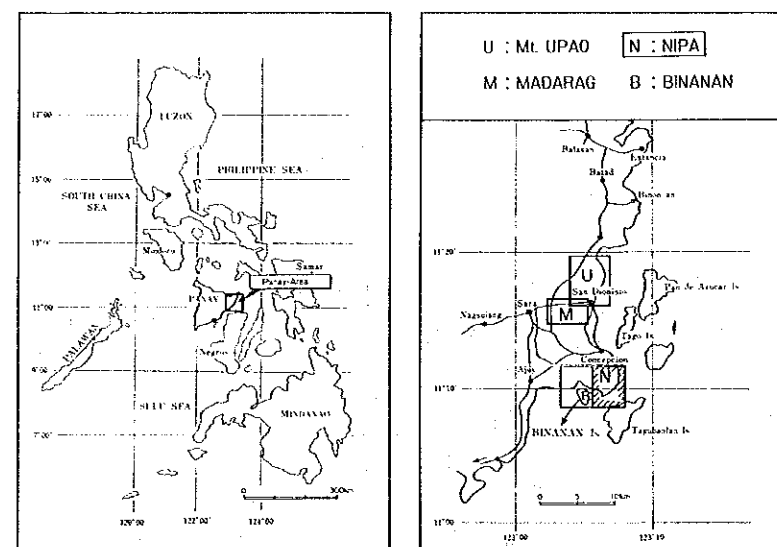
JAPAN INTERNATIONAL COOPERATION AGENCY  
METAL MINING AGENCY OF JAPAN  
BUREAU OF MINES and GEO-SCIENCES

FEBRUARY 1993

MINERAL EXPLORATION  
IN  
PANAY AREA  
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Sample Location Map of MT-1 Trench,  
Madarag Area

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JAPAN INTERNATIONAL COOPERATION AGENCY  
METAL MINING AGENCY OF JAPAN  
BUREAU OF MINES and GEO-SCIENCES

FEBRUARY 1993

LEGEND

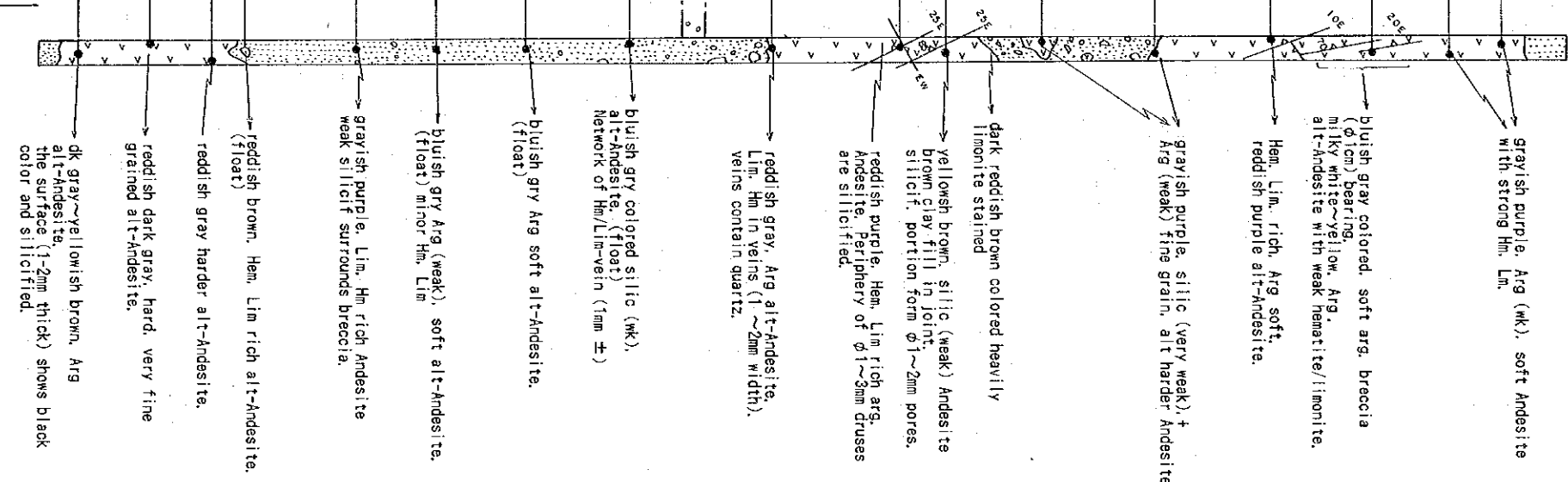
Au, Hg in ppb

Fe in Percent

Other Elements in ppm

MT-1, 021m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
9	<0.2	14	0.4	18	34	2	17	4.80	<5	10	10.0
MT-1, 018.7m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
31	0.5	198	0.8	158	87	3	280	7.80	<5	10	24.0
MT-1, 015.0m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
9	<0.2	12	0.6	34	143	4	28	5.00	<5	20	6.0
MT-1, 010m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
14	<0.2	10	0.2	48	48	6	10	6.20	<5	20	11.2
MT-1, 004m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
22	<0.2	38	0.8	18	80	5	83	4.50	<5	30	28.0
MT-1, 026m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
18	0.4	28	0.4	13	30	3	43	5.10	<5	20	27.0
MT-1, 030m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
12	<0.2	44	0.8	18	55	2	29	3.80	<5	10	1.8
MT-1, 032m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
50	0.4	64	0.4	88	197	5	55	19.00	<5	20	37.0
MT-1, 038m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
47	<0.2	28	0.4	31	111	3	108	8.50	<5	20	32.0
MT-1, 045m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
54	0.4	58	0.2	24	91	3	48	8.30	<5	20	88.0
MT-1, 050m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
26	0.3	14	0.2	92	112	3	133	5.00	10	20	34.0
MT-1, 055m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
37	<0.2	34	0.8	24	209	2	76	6.20	5	20	44.0
MT-1, 059m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
43	0.2	56	0.8	32	172	3	184	7.00	<5	60	53.0
MT-1, 065m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
339	0.5	374	6.4	79	104	3	138	6.80	<5	20	49.0
MT-1, 066.5m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
25	0.3	14	0.2	14	113	3	40	5.10	<5	20	38.0
MT-1, 068.3m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
97	<0.2	2	0.6	5	416	2	41	6.00	<5	10	<0.2
MT-1, 073m											
Au	Ag	As	Sb	Cu	Pb	Zn	Mo	Fe	Mn	Hg	Se
35	<0.2	4	0.8	12	145		17	1.50	<5	20	<0.2

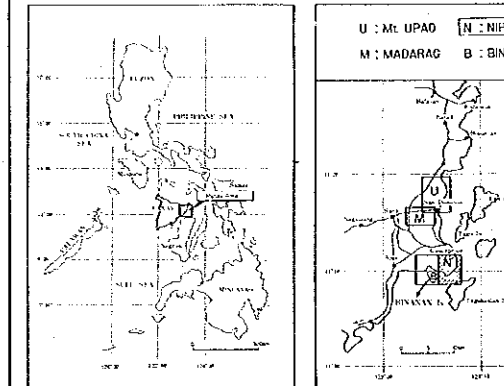
S30W N30E



MINERAL EXPLORATION  
IN  
PANAY AREA  
IN THE REPUBLIC OF THE PHILIPPINES

Geologic Map of MT-2 Trench,  
Madarag Area, 1992

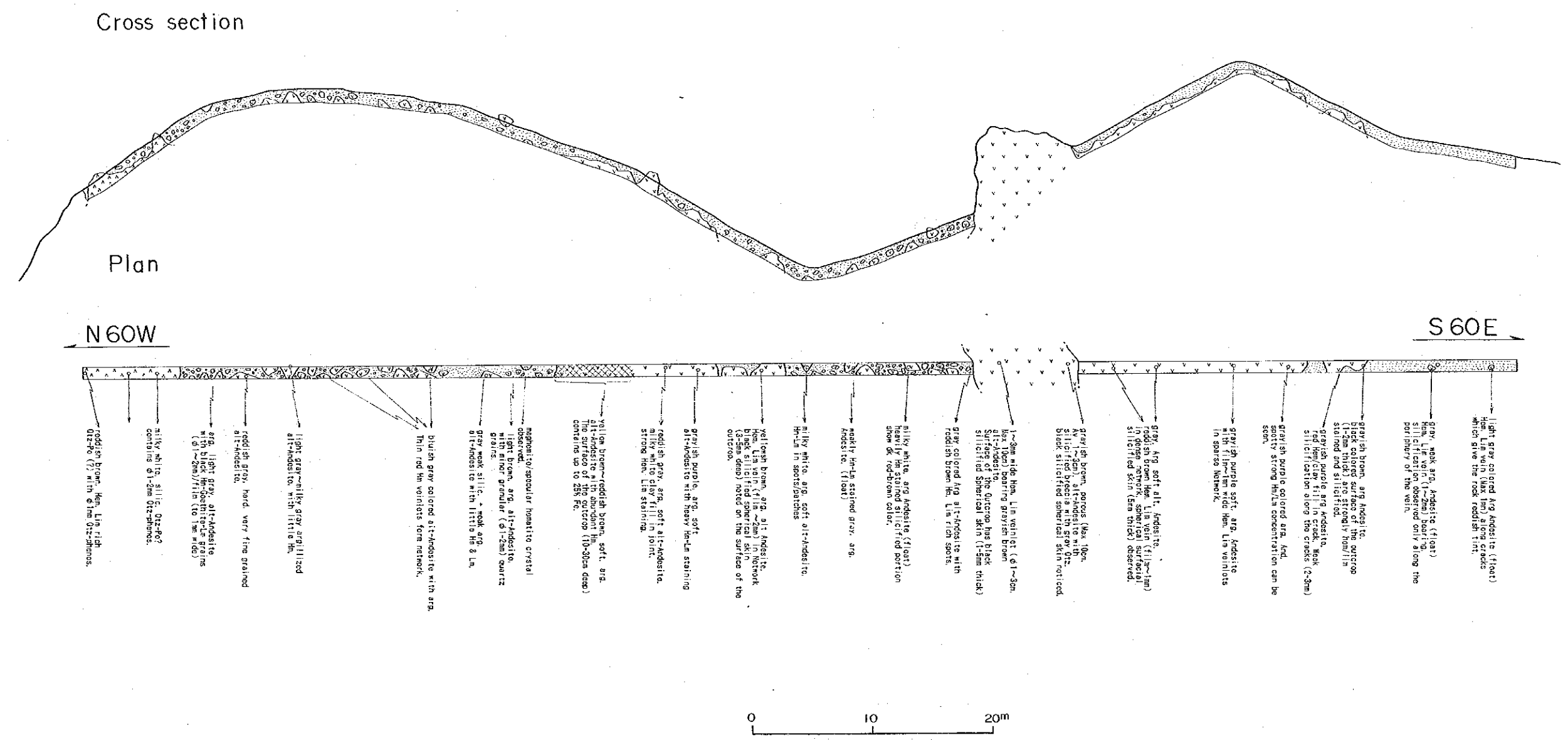
LOCATION INDEX



JAPAN INTERNATIONAL COOPERATION AGENCY  
METAL MINING AGENCY OF JAPAN  
BUREAU OF MINES and GEO-SCIENCES

FEBRUARY 1993

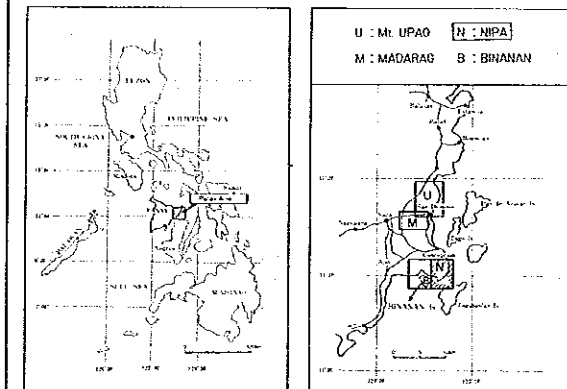
Madarag  
MT-2 Trench



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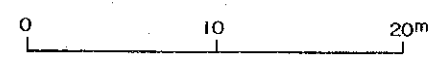
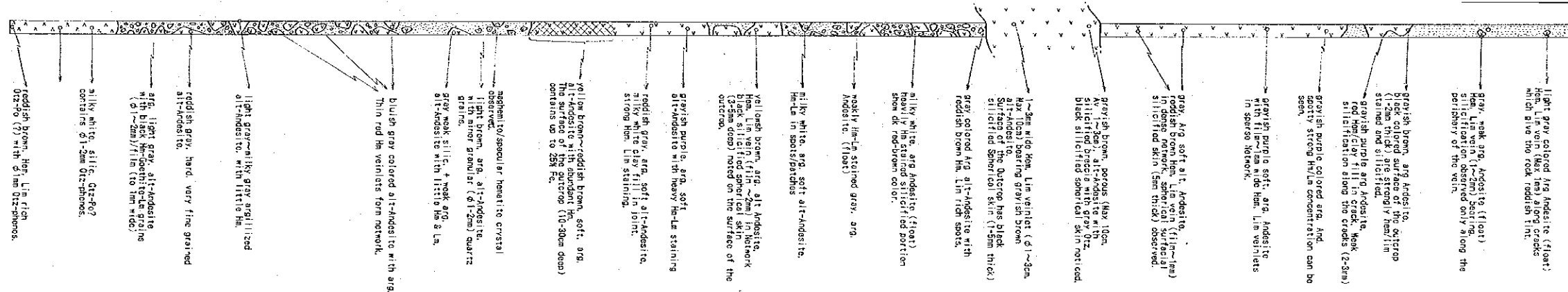
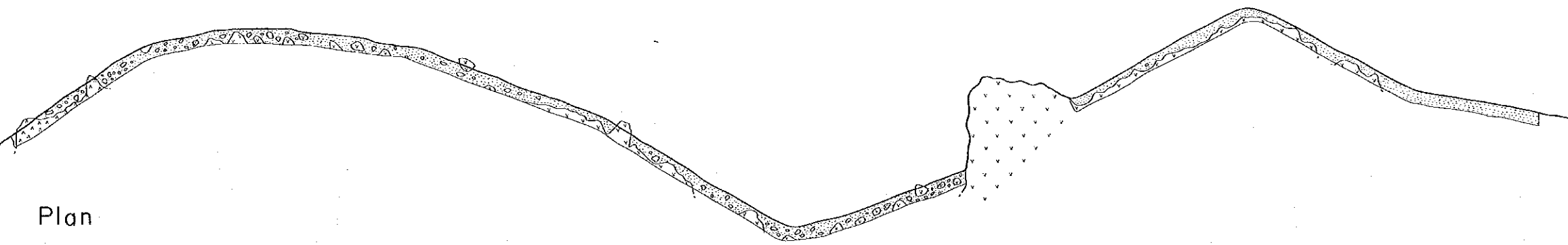
Madarag  
MT-2 Trench

Cross section

Plan

N 60W

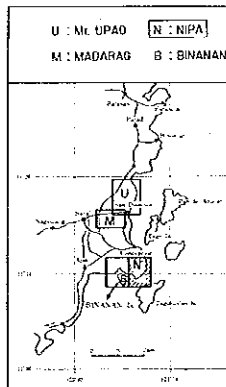
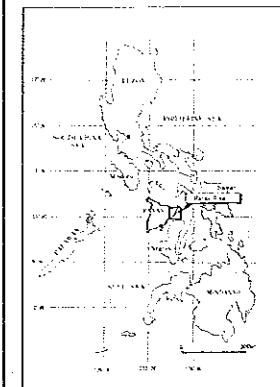
S 60E



MINERAL EXPLORATION IN PANAY AREA IN THE REPUBLIC OF THE PHILIPPINES

Sample Location Map of MT-2 Trench, Madarag Area

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LEGEND

Au, Hg in ppb Fe in Percent Other Elements in ppm

