# Chapter 3 Ore reserve calculation

## 3-1 Assay data and processing

This survey results clarify the shape of mineralized zone and ore grades for both the Hayl as Safil and Rakah deposit. Base on these results, ore reserve calculations were made for these ore deposits. Data and method for the calculation are given in this paragraph.

### (1) Assay data

The ore reserve calculation for the Hayl as Safil deposit was made using the assay results of 12 drill holes (Table 1-5) completed in this project as well as 30 previous drill holes (Table 1-6).

The calculation for the Rakah deposit was made using the 11 drill holes (Table 2-1) completed in this project and 45 previous drill holes (Table 2-2).

Assay results obtained from the gossan and secondary enriched zones in the drill holes were excluded for the calculation because only sulfide minerals are recoverable in the designed mineral processing plant. The all assay results used for the calculation are shown in Appendix 16.

### (2) Calculation method

The calculation was made according to the following procedures.

① Determination of specific gravity.

② Determination of size for an ore block (20 m × 20 m × 10 m).

③ Determination of ore boundary for each 10 m level on the base of geologic level sheets.

④ Selection and determination of calculation method.

⑤ Calculation of tonnage and grade for each ore block and preparation of level sheets by computer.

⑥ Modification of volume for ore blocks on the base of geologic level sheets.

⑦ Re-calculation of ore reserve for each block and preparation of modified level sheets.

⑧ Totaling the calculated ore reserves.

The specific gravity of ore has good correlation with the contents of sulfur in general. But no assay for sulfur was made in this survey as well as previous survey. MPM made the measurement of specific gravity for the core samples in Hayl as Safil deposit. The measured specific gravity ranges from 2.82 to 4.73, and show good correlation (correlation coefficient: 0.591) with the copper grade excluding the samples of more than 10% Cu. Therefore, the specific gravity (S.G.) of each block was decided by means of the least square method using these copper grades (Cu) and specific gravities. The obtained equation by the least square method is given as follows:

$$S.G. = 0.146 \times (Cu) + 2.0$$

Then 0.95 is multified for the obtained specific gravity because measured specific gravity in laboratory shows higher than actual gravity in general due to clay minerals and porosity in the ores. However, in case of extremely low and high Cu grade ore, the minimum and maximum specific gravities were decided to be 2.80 and 4.20 respectively. Specific gravities are measured for the samples from the Hayl as Safil deposit. But, volume of sulfide minerals in the Rakah deposit is lesser than that of the Hayl as Safil deposit. Because the gravity of ore in the Rakah deposit is thought to be lower than that of the Hayl as Safil deposit, further 0.95 were multified to the specific gravity obtained in the same manner for the Hayl as Safil deposit.

The size of the ore block is 20 m (N-S) by 20 m (E-W) with 10 m high. The size of ore block was decided based on the planned mining method.

Distribution of ore blocks for each level was decided using a geologic plan map and taking account of the ore shoot for each level.

Reasonable semivariogram, which suggests the applicapability of the Krieging method, could not be obtained. The grades of blocks at each level were estimated by means of the method to interpolate and/or extrapolate the values at the grid points from the values distributed randomly, using the second order polynomial approximation with the weight coefficients. In this case, the blocks in which the grade is known, was treated as the random data points.

Based on the above mentioned method, ore reserves for each block were calculated and distribution maps of ore blocks for each level were prepared. However, because of complicated shape of the mineralized zone, some blocks show difference between the calculated volume and expected volume, and then modification of the volume were made for these blocks. The calculation was made using 0.20% Cu as the cut-off grade. Distribution map and ore reserves of each ore block for the Hayl as Safil deposit are shown in Appendix 17 and 18 respectively. Distribution map and ore reserves of each ore block for the Rakah deposit are given in Appendix 19 and 20 separately.

The calculated ore reserves of each block were totaled for each level. The results are shown in Table 3-1 (Hayl as Safil deposit) and Table 3-2 (Rakah deposit).

## 3-2 Hayl as Safil deposit

The ore reserve estimation was made for the area where mineralized zone was confirmed by the drilling survey. The area is from the southern half of Main Gossan to the east and south of Main Gossan. The high Cu grade blocks are found mostly at the southeast of the mineralized zone

Table 3-1 Geologic ore reserves for each level in the Hayl as Safil deposit

| Level | Tonnage (t) | Grade | | | | Contents | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Cu % | Zn % | Au g/t | Ag g/t | Cu (t) | Zn (t) | Au (kg) | Ag (kg) |
| 670 mL | 107,400 | 1.54 | 0.01 | 0.16 | 1.44 | 1,649.18 | 10.74 | 17.64 | 154.44 |
| 660 mL | 481,190 | 1.13 | 0.16 | 0.59 | 3.67 | 5,424.66 | 775.16 | 285.15 | 1,768.25 |
| 650 mL | 672,786 | 1.62 | 0.13 | 0.73 | 4.78 | 10,896.35 | 904.97 | 490.12 | 3,217.21 |
| 640 mL | 731,264 | 1.15 | 0.10 | 0.60 | 4.50 | 8,402.76 | 761.18 | 437.95 | 3,285.13 |
| 630 mL | 931,714 | 1.53 | 0.12 | 0.84 | 6.09 | 14,261.97 | 1,149.19 | 786.46 | 5,673.25 |
| 620 mL | 862,313 | 1.86 | 0.22 | 0.48 | 3.97 | 16,059.30 | 1,936.14 | 412.04 | 3,426.34 |
| 610 mL | 823,918 | 0.82 | 0.22 | 0.42 | 2.46 | 6,726.55 | 1,784.45 | 350.16 | 2,029.95 |
| 600 mL | 758,520 | 0.77 | 0.18 | 0.47 | 2.41 | 5,836.21 | 1,340.75 | 354.05 | 1,830.98 |
| 590 mL | 726,651 | 1.24 | 0.16 | 0.67 | 4.22 | 8,992.08 | 1,187.17 | 487.18 | 3,065.58 |
| 580 mL | 617,390 | 1.03 | 0.15 | 0.29 | 1.29 | 6,355.17 | 925.94 | 178.96 | 798.68 |
| 570 mL | 624,068 | 0.79 | 0.13 | 0.14 | 0.84 | 4,951.49 | 815.55 | 85.82 | 522.16 |
| 560 ml | 483,944 | 0.75 | 0.08 | 0.11 | 0.90 | 3,618.67 | 396.36 | 55.25 | 435.21 |
| 550 mL | 462,926 | 0.47 | 0.08 | 0.07 | 0.40 | 2,187.98 | 356.52 | 32.95 | 183.97 |
| 540 mL | 445,793 | 0.49 | 0.04 | 0.05 | 0.48 | 2,179.57 | 165.23 | 22.99 | 215.21 |
| 530 mL | 424,705 | 0.48 | 0.02 | 0.04 | 0.21 | 2,043.84 | 103.35 | 15.94 | 89.24 |
| 520 mL | 378,937 | 0.42 | 0.03 | 0.05 | 0.32 | 1,600.78 | 117.30 | 19.65 | 122.54 |
| 510 mL | 458,349 | 0.30 | 0.03 | 0.11 | 0.66 | 1,372.36 | 149.67 | 52.53 | 302.05 |
| 500 mL | 360,733 | 0.54 | 0.05 | 0.27 | 0.73 | 1,945.26 | 198.03 | 98.33 | 264.62 |
| 490 mL | 200,490 | 0.33 | 0.07 | — | — | 663.11 | 130.42 | 0.00 | 0.00 |
| Total | 10,553,091 | 1.00 | 0.13 | 0.40 | 2.59 | 105,167.29 | 13,208.12 | 4,183.17 | 27,384.82 |

Table 3-2 Geologic ore reserves for each level in the Rakah deposit

| Level | Tonnage | Grade | | | | Contents | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (t) | Cu % | Zn % | Au g/t | Ag g/t | Cu (t) | Zn (t) | Au (kg) | Ag (kg) |
| 660 mL | 13,914 | 0.84 | 0.08 | 1.53 | 2.13 | 116.68 | 10.67 | 21.34 | 29.57 |
| 650 mL | 224,471 | 1.56 | 0.15 | 1.35 | 3.94 | 3,491.90 | 328.58 | 302.95 | 883.41 |
| 640 mL | 392,263 | 1.93 | 0.23 | 1.63 | 4.78 | 7,574.31 | 895.65 | 639.46 | 1,874.98 |
| 630 mL | 460,536 | 1.18 | 0.15 | 0.75 | 2.21 | 5,451.56 | 691.83 | 343.19 | 1,019.94 |
| 620 mL | 467,445 | 0.89 | 0.89 | 0.67 | 2.85 | 4,141.25 | 906.36 | 313.50 | 1,331.69 |
| 610 mL | 430,384 | 1.51 | 0.32 | 1.39 | 4.53 | 6,515.44 | 1,384.26 | 599.87 | 1,948.81 |
| 600 mL | 362,060 | 1.20 | 0.23 | 0.45 | 1.57 | 4,362.65 | 841.83 | 163.87 | 568.18 |
| 590 mL | 301,027 | 0.70 | 0.27 | 0.30 | 1.65 | 2,116.16 | 814.21 | 89.76 | 497.74 |
| 580 mL | 218,634 | 0.38 | 0.22 | 1.22 | 1.25 | 830.66 | 476.17 | 266.75 | 273.29 |
| 570 mL | 294,507 | 0.69 | 0.15 | 0.62 | 1.50 | 2,026.84 | 448.53 | 181.84 | 441.76 |
| 560 mL | 381,503 | 0.80 | 0.11 | 1.03 | 1.08 | 3,059.89 | 435.62 | 393.01 | 412.59 |
| 550 ml | 210,157 | 0.49 | 0.09 | 0.69 | 0.95 | 1,022.45 | 198.91 | 144.93 | 199.86 |
| 540 mL | 231,188 | 0.50 | 0.23 | 0.82 | 1.21 | 1,161.04 | 538.97 | 190.70 | 279.74 |
| 530 mL | 257,865 | 0.75 | 0.05 | 1.23 | 0.54 | 1,946.87 | 124.80 | 319.17 | 139.45 |
| 520 mL | 175,445 | 0.66 | 0.05 | 0.34 | 0.68 | 1,158.44 | 82.34 | 59.65 | 119.30 |
| 510 mL | 101,391 | 0.56 | 0.10 | 0.42 | — | 567.77 | 104.74 | 42.58 | 0.00 |
| 500 mL | 147,089 | 0.65 | 0.10 | 0.62 | — | 950.65 | 151.70 | 91.20 | 0.00 |
| 490 mL | 50,411 | 0.24 | 0.11 | — | — | 119.42 | 54.38 | 0.00 | 0.00 |
| 480 mL | 30,446 | 0.69 | 0.07 | — | — | 210.38 | 21.63 | 0.00 | 0.00 |
| Total | 4,750,736 | 0.99 | 0.18 | 0.88 | 2.11 | 46,824.39 | 8,511.18 | 4,163.77 | 10,020.31 |

where the massive ores occur. Most of the ore blocks in the stockwork ore zone show low Cu grade. The blocks at the upper level show higher Cu grade compared with the lower blocks. High Au blocks distribute in similar tendency to the Cu high blocks and are found in the area of massive ore zone and also at the upper level. High Zn blocks are found in the area of massive ore zone as well as marginal parts of the orebody. Ag show similar tendencies of Au.

This survey resulted to discover the large amounts of ore reserves.

The relationship between the ore reserves estimated by MPM before starting this project and the ore reserves estimated in this project is as follows:

| | Tonnage (t) | Cu% | Au g/t | Cu (t) | Au (kg) |
|---|---|---|---|---|---|
| MPM | 2,086,000 | 2.09 | 0.97 | 43,597 | 2,023 |
| This survey | 10,533,000 | 1.00 | 0.40 | 105,167 | 4,183 |
| | 8,467,000 | 0.73 | 0.26 | 61,570 | 2,160 |

Therefore, approximately 8.5 million tons of ores were newly discovered in this survey. The newly estimated ore reserves mainly consist of the stockwork ore.

## 3-3 Rakah deposit

The ore reserves calculation was made for both the mineralized zone of the lower and upper mineralized zone. The ore blocks containing massive and brecciated ore show higher grades of Cu and Au. Because these blocks are situated at the upper levels, the blocks at upper levels show higher grades. The blocks consisting of stockwork ore also show higher Cu grade at the upper levels. Because number of Au and Ag assays are limited for the previous drilling, the calculated Au and Ag grades for the stockwork ore blocks may be slightly higher than the exact Au and Ag grades.

Observation results for polished sections show that the copper minerals in the massive ore consist of secondary enriched copper minerals. No native gold is confirmed under the microscope and gold may be mixed in pyrite. The results of metallurgical test for mine development (Volume III) show that is is difficult to separate copper and gold in the massive ore and ore must be treated separately. The relation between the ore reserves of the massive ore and the total ore reserves are as follows:

| | Tonnage | Cu% | Au g/t | Cu (t) | Au (kg) |
|---|---|---|---|---|---|
| Massive and brecciated ores | 280,006 | 2.51 | 3.67 | 7,022.62 | 1,027.62 |
| Stockwork ore | 4,470,730 | 0.89 | 0.70 | 39,801.77 | 3,136.15 |
| Total | 4,750,736 | 0.99 | 0.88 | 46,824.39 | 4,163.77 |

## 3-4 Discussion

The estimation of ore reserves for the Hayl as Safil deposit was carried out in the area from the southern half of Main Gossan to the south where the drilling survey was completed. However the mineralized zone extend further north, and additional drill holes are necessary for the northern extension to clarify the grades and thickness of the mineralized zone. A drill hole HS-39 completed by MPM in the middle of the Main Gossan encountered stockwork ore zone of less than 1.0% Cu. Therefore, the northern extension of the Hayl as Safil deposit possibly consists of low grade stockwork ore, and also this stockwork ore zone is situated at deeper depth. This ore zone is thought to be low potentiality for development. The massive ore confirmed by a drill hole MJO-A12 in the Hayl as Safil deposit may extend to further east and additional ore reserves are expected in this part. And, therefore, it is possible to discover the additional ore reserves, but the ore reserves for the Hayl as Safil deposit are thought to be estimated mostly in this survey. A drill hole HS-7 by BRGM at the north of Small Gossan encountered massive sulfide ore but the follow-up drill holes could not confirm the extensions. Therefore, the ore reserves may be limited.

Sufficient drill holes were carried out for the massive ore zone of the Hayl as Safil deposit, but in the area of stockwork ore zone drill holes are not enough to calculate acculate ore reserves. It is necessary to carried out additional drill holes of 50 m grid if the ore deposits go to the development stage. Based on the results of these additional drill holes, ore reserves should be re-calculated.

This survey results possibly clarify the ore reserves of the Rakah deposit exactly and additional ore reserves are not expected for this deposits. However, accuracy of the Au grade of the ore reserves are thought to be low due to limited number of assay results. Because of low core recovery at the shallow depth, the ore reserves calculated may be different to the actual mineable ore reserves. But, the difference may be limited.

In addition to the above mentioned ore reserves, gossan and gossan dum in the Rakah deposit have higher content of Au and these are possible to estimate about 300 thousand tons of 5.0 g/t Au and 10.0 g/t Ag. In order to clarify the acculate ore reserves, it is necessary to carry out significant number of shallow drill holes. But if the Rakah deposit go to development stage, systematic sampling for the gossan should be carried out instead of the drilling, because the gossan zones is situated in the area of planned open pit. The gossan should be treated separately in the development stage.

# Chapter 4 Overall discussion for the survey results

## 4-1 Formation process of the ore deposits in the Rakah area

The surveys completed for the Hayl as Safil and Rakah deposits delineated following characteristics for these two ore deposits:

① The Samail Volcanic Rocks in the Rakah area are divided into the Lower Volcanic Rocks and Middle Volcanic Rocks. The Lower Volcanic Rocks is subdivided into the Lower Extrusives I and Lower Extrusives II in ascending order. The ore deposits is situated at the top of the Lower Extrusives I.

② The orebodies show lenticular shape and consist of the stockwork, massive and siliceous ores. The stockwork ore dominates the orebody and found at the uppermost part of the Lower Extrusives I. The massive and siliceous ores are found on the surface of the Lower Extrusives I and are overlaid with the Lower Extrusives II.

③ The stockwork ore consists of stockwork veinlets and disseminations of sulfide minerals. The host rocks are silicified, chloritized and brecciated. The Hayl as Safil deposit is characterized with intense silicification and repeated brecciation and the Rakah deposit is characterized with strong chloritization. Quartz-hematite are found throughout the stockwork ore zone.

④ The massive ore is mostly found at the marginal parts of the orebody and consist of sulfide breccia and fine-grained pyrite matrix. The sulfide minerals consist mostly of pyrite and framboidal and colloform textures are found in the pyrite.

⑤ The siliceous ore is found at the marginal part of the orebody and form irregular shape. The ore consists of strongly silicified brecciated host rocks with matrix of white to grey clay and sulfide minerals.

⑥ Ore minerals comprise pyrite and chalcopyrite with minor sphalerite. Secondary enriched copper minerals of covellite, chalcosite and bornite are found at the shallower depth.

⑦ Assay results show good correlation between Au and Cu. Especially the massive ore has high grades. Assays of Zn show higher values at the upper and marginal parts of the orebody.

The stratigraphic horaizon of the ore deposits in the Rakah area is same as the Lasail and Bayda deposits in the Sohar area. The nature of ore and constituent minerals of the ore deposits in the Rakah area are similar to those in the Sohar area. The Hayl as Safil and Rakah deposits in the Rakah area may be formed by the same formation processes and same age of the ore deposits in the Sohar area. These deposits are thought to be formed on the sea floor of spreading ridge and the footwall rocks are basic volcanic rocks. Therefore, these deposits can be classified into the Cyprus type copper deposits.

Taking accounts of the tectonic history of the Oman Mountains and the nature of mineralization, the ore deposits in the Rakah area may be formed by following formation processes and history.

① Eruption and deposition of the Lower Extrusives I in the spreading ridge of the Palaeo-Tethys sea.

② Formation of large-scale faults, parallel to the axis of the spreading ridge, and brecciation due to the igneous activity of the Lower Extrusives I. Formation and deposition of ore forming fluid due to the volcanic activity of the Lower Extrusives II. Formation of the stockwork ore in the brecciated zone, and of the massive and siliceous ores on the sea floor.

③ Repeated brecciation due to ascending ore forming fluid and enlargement of the mineralized zones.

④ Eruption and deposition of the Lower Extrusives II over the mineralized zones in the marginal part of the spreading ridge. Termination of sea weathering for the mineralized zones.

⑤ Large dislocation of ore bodies due to the obduction of the Samail Ophiolite.

⑥ Small dislocation of ore bodies due to the tectonic movement of after obduction.

⑦ Elosion and weathering of the surface and gossanization of the mineralized zone.

⑧ Deposition of Quaternary sediments over the mineralized zone and hanging wall volcanics.

The general trend of this type ore deposits in the Oman Mountains region is similar to that of the dykes in the Sheeted-dyke Complex which indicates the direction of the spreading ridge. Therefore, the parallel faults to the ridge may play important role as the path for the ore forming fluid. The volcanic activity of the Lower Extrusives II is the most conspicuous in the period of the formation of these ore deposits, and these ore deposits are found in the area, where the Lower Extrusives II are developed. These facts suggest the close relationship between the Lower Extrusives II and the formation of this type ore deposits.

## 4-2 *Potential and guidelines for further exploration work in the Rakah area*

This survey results clearly delineated both the Hayl as Safil and Rakah deposits and no remaining potential are expected for both the survey areas of Area A and B except the limited potential for the northern and southeastern extensions of the Hayl as Safil deposit.

However, this survey was carried out in the limited area of the Rakah area. The similar geology to the survey areas are widespread in the Rakah area, and the Tawi Rakah prospect, a copper showing, is found 4 km southeast of the Rakah deposit in the area where the Lower Extrusives I and II are distributed. Therefore, the potential of copper deposits is thought to be existed in the Rakah area. Previous survey results interpreted the sedimentary rock at the south of Rakah deposit are the Hawasina Sediments of Hawasina Nappes. However this survey results interpreted the sedimentary rocks are the Supra-ophiolite sediments. This interpretation suggests that the Samail Volcanic Rocks which are host rocks of the ore deposits are situated under these sedimentary rocks. Therefore it is necessary to carry out the exploration work for the area of the sedimentary rocks.

The guidelines for further exploration work of this type copper deposits in the Rakah area are as follows:

① Exploration work should be carried out at the boundary between the Lower Extrusives I and II where the Lower Extrusives II are predominant.

② The orebodies are dislocated by the obduction and the tectonic movement of after the obduction. Interpretation of these tectonic movement is very important for the exploration work.

③ Nature of ore is depend on the nature of the host rocks. Therefore it is better to understand that the Cyprus type copper ore deposits are not formed only by the massive sulfide ore.

④ The value of the ore deposits is depend on not only the grade but also the quantity of the ores. Therefore, even if the ore grades are low, it is better to carry out the exploration work to clarify the outline of the ore deposits.

These guidelines for the exploration are thought to be applicable for the exploration work of this type copper deposits in the Oman Mountains region.

# Chapter 5 Conclusions

The geologic, geophysical (CP method) and drilling surveys were carried out for the known two ore deposits, the Hayl as Safil and Rakah deposits in the Rakah area during a period of two years in order to clarify the potential of these ore deposits. These survey results delineated both the ore deposits very clearly and approximately 8.5 million tons of ore were discovered. The ore reserves confirmed in this survey are approximately 15.3 million tons for both the ore deposits. Based on these estimated ore reserves, a preliminary feasibility study for the mine development was carried out in this survey as shown in Volume III.

The survey results completed in the Rakah area are conclusively summarized as follows:

① The Rakah area is situated in the area of the Samail Nappe and the geology consists of the Samail Ophiolite and Supra-ophiolite sediments. The Samail Ophiolite comprises the Tectonites, Cumulate Sequence, High-level Gabbro, Sheeted-dyke Complex and Samail Volcanic Rocks in ascending order. The Samail Volcanic Rocks can be divided into the Lower Volcanic Rocks and Middle Volcanic Rocks. Furthermore the Lower Volcanic Rocks are subdivided into the Lower Extrusives I and Lower Extrusives II in ascending order. The known two ore deposits are situated at the top of the Lower Extrusives I and are covered with the Lower Extrusives II. These ore deposits are syngenetic copper deposits and this type ore deposits in the Oman Mountains region are situated in the area where the Lower Extrusives II are developed. Therefore, the Lower Extrusives II possibly have relation with the formation of these ore deposits. It is important for the exploration to clarify the distribution and stratigraphy of the volcanic rocks, especially of the Lower Extrusives II.

② Tectonically, the Rakah area is marked by the thrust faults related to the obduction of the Samail Ophiolite. The area is characterized by imbrication structure due to these thrust faults and stratigraphically lower units of ophiolite are observed at the upper part. Tectonic movement after the obduction formed NW-SE trending faults and gentle folds. The two known ore deposits in the area are dislocated by these tectonic movements. Especially the Hayl as Safil deposit is dislocated largely by a second order thrust faults related to the obduction.

③ The known ore deposits in the Rakah area consist of stockwork, massive and siliceous ores in ascending order. Among these ores, the massive and siliceous ores are found at the boundary between the Lower Extrusives I and II. The Hayl as Safil deposit is characterized with strongly silicified and brecciated thick stockwork ore zone. Quartz-hematite is found throughout the Hayl as Safil deposit. The stockwork ore in the Rakah deposit is characterized with strong chloritization. The massive and siliceous ores in the Rakah deposit are situated at the boundary between the Lower Extrusives I and II where sedimentary rocks are intercalated and show close relationship between these ores and the sedimentary rocks. Ore constituent minerals for these deposits consist of pyrite, chalcopyrite, sphalerite, covellite, chalcosite and bornite. Among these minerals, covellite, chalcosite and bornite are found at the shallower depth and are thought to be formed by secondary enrichment.

④ Based on the geophysical survey (CP method) results in Phase I, the drilling survey was carried out in Phase II for both the Hayl as Safil and Rakah deposits. The survey results confirmed that the geophysical survey delineated the mineralized zone exactly. Therefore, it is concluded that the CP method using drill hole for electrode is very efficient survey method to outline the mineralized zone.

⑤ The following geologic ore reserves were confirmed in this survey.

| | Tonnage (t) | Cu% | Au g/t | Cu (t) | Au (kg) |
|---|---|---|---|---|---|
| Hayl as Safil deposit | 10,553,091 | 1.00 | 0.40 | 105,167.29 | 4,183.17 |
| Rakah deposit | 4,750,736 | 0.99 | 0.88 | 46,824.39 | 4,163.77 |
| Total | 15,303,827 | 0.99 | 0.55 | 151,991.68 | 8,346.94 |

Within this 15.3 million tons, about 8.5 million tons of geologic ore reserves were discovered in this survey. Because of limited number of drill holes for the stockwork ore zone of the Hayl as Safil deposit, accuracy of the ore reserves for this zone is thought to be slightly low. The accuracy of the Au and Ag grades of the Rakah deposit is also low due to limited number of Au and Ag assay results.

⑥ Gossanized zone and gossan dump in the Rakah deposit contain higher Au and Ag and are estimated to be 300 thousand tons of 5.0 g/t Au and 10.0 g/t Ag. These gossan zone is located in the area of pre-stripping for the mine development and, therefore, systematic sampling and estimation of the tonnage should be carried out in the stage of the mine development.

⑦ Additional ore reserves are expected in the north and southeast of the Hayl as Safil deposit. However these ore reserves are thought to be limited and the ore reserves are mostly estimated in this survey.

This survey was carried out in a limited period of two years, but the Hayl as Safil and Rakah deposits are clearly delineated and necessary data for the mine development are obtained. This survey results are thought to be very usefull for further exploration work of this type ore deposits in the Oman Mountains region.

# FIGURES

## TABLES

## PLATES

# APPENDICES

# Appendix 1

## Descriptions for thin sections of typical rock facies in the Rakah area

Geologic unit : Tectonites
Rock name : Harzburgite (Hz)
Sample number : M008
Texture : Porphyroclastic and mesh textures
Descriptions : Rock consists of olivine and subordinate orthopyroxene and chromite. Olivine is completely altered to serpentine and magnetite, and exhibites mesh texture. Subhedral and anhedral orthopyroxene (enstatite) is 0.4 to 3 m/m in grain size and presents exsolution lamellae of clinopyroxene. Orthopyroxene is mostly altered to serpentine, chlorite and small amounts of magnetite and tremolite.

Geologic unit : Cumulate Sequence (Cg)
Rock name : Clinopyroxene gabbro
Sample number : M017
Texture : Orthocumulus texture
Descriptions : Cumulus phase consists of euhedral to subhedral plagioclase and augite. Augite is 1 to 1.5 m/m in grain size and is slightly altered to amphibole and chlorite. Post-cumulus phase consists of anhedral plagioclase, augite and subordinate olivine, apatite and opaque minerals. Augite exhibites locally poikilitic texture. Plagioclase is altered locally to sericite and calcite. Olivine is decomposed to serpentine and magnetite.

Geologic unit : High-level Gabbro (Hg)
Rock name : Clinopyroxene gabbro
Sample number : N011
Texture : Porphyritic texture
Descriptions : Rock consists of plagioclase, hornblende, augite and subordinate apatite and opaque minerals. Numerous euhedral to subhedral plagioclase grains are 0.2 to 1.5 m/m in size and are marked by sericitization. Green euhedral to subhedral hornblende, 0.3 to 2.5 m/m in grain size, is partially altered to chlorite. The rock is strongly altered and presents chlorite, amphibole, sericite, epidote, sphene, hematite and limonite.

Geologic unit : Sheeted-dyke Complex (Sd)
Rock name : Dolerite (dyke)
Sample number : M016
Texture : Glomeroporphyritic texture
Descriptions : Rock is mainly composed of plagioclase and mafic minerals with minor opaque minerals. Plagioclase is euhedral to subhedral, 0.3 to 1.2 m/m in grain size, and shows zoning structure. Mafic minerals are altered completely to chlorite, epidote and calcite. Alteration minerals are epidote, chlorite, calcite and subordinate sphene.

Geologic unit : Lower Volcanic Rocks (Lower Extrusives I)
Rock name : Pillow lava
Sample number : M032
Texture : Intersertal texture
Descriptions : Rock is altered completely and the original structure is not clear. Phenocrysts consist of plagioclase and mafic minerals. Plagioclase is altered mostly to quartz and epidote. Mafic minerals are mostly replaced with smectite, chlorite, epidote calcite and opaque minerals.

Geologic unit : Lower Volcanic Rocks (Lower Extrusives II)
Rock name : Andesitic pillow lava
Sample number : M015
Texture : Glomeroporphyritic texture
Descriptions : Phenocrysts consist of augite and subordinate plagioclase. Euhedral to subhedral and prismatic augite, 0.4 to 0.6 m/m in grain size, shows undulatory extinction and is altered to chlorite and epidote. Euhedral plagioclase is 0.4 m/m in grain size. Groundmass consists mainly of laths of plagioclase, augite, glass and opaque minerals. Glass is altered to chlorite, epidote, albite and smectite. Opaque minerals are probably iron oxide minerals and are partially oxidized to hematite.

Geologic unit : Middle Volcanic Rocks (M)
Rock name : Doleritic massive lava
Sample number : M005
Texture : Subophitic texture
Descriptions : Phenocrysts consist of euhedral plagioclase, 0.5 to 2.0 m/m in grain size, and subordinate euhedral to subhedral augite, 1.0 m/m in grain size. Plagioclase is altered to calcite and chlorite. Groundmass is composed of lath of plagioclase, augite and subordinate opaque minerals. Carbonetes, smectite, chlorite, sphene and epidote are the secondary minerals.

Geologic unit : Middle Volcanic Rocks (M)
Rock name : Basaltic pillow lava
Sample number : M003
Texture : Intersertal texture
Descriptions : Phenocrysts consist of plagioclase and augite. Euhedral plagioclase, 0.5 to 1.5 m/m in grain size, is prismatic. Small amounts of euhedral to subhedral augite are 0.5 m/m in grain size. Groundmass includes plagioclase, augite and subordinate titan-augite, hyperthene and iron oxide minerals. Carbonates and subordinate chlorite, epidote and smectite are the secondary minerals.

Geologic unit : Intrusive Rocks (I)
Rock name : Dolerite
Sample number : M031
Texture : Ophitic texture
Descriptions : Phenocrysts consist of euhedral plagioclase, 0.2 to 2.0 m/m in grain size, and subhedral augite, 0.4 to 0.6 m/m in grain size. Augite exhibites undulatory extinction. Groundmass is intensely altered and iron minerals are partially oxidized to hematite.

# Appendix 2

## Results of chemical analyses for petrochemical studies and C. I. P. W. norm calculation

# Results of whole rock chemical analyses

| Ser. No. | Sample No. | Coodinates | | Geol. *1 Unit | Rock Name | MAJOR COMPONENTS (%) | | | | | | | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N (km) | E (km) | | | $SiO_2$ | $TiO_2$ | $Al_2O_3$ | $Fe_2O_3$*2 | MnO | MgO | CaO | $Na_2O$ | $K_2O$ | BaO*3 | $P_2O_5$ | LOI*4 | $CO_2$ | Total | |
| 1 | M003 | 2,618.723 | 453.108 | Me | basalt | 43.82 | 0.48 | 14.83 | 7.26 | 0.10 | 4.59 | 16.36 | 3.75 | 0.08 | 17 | 0.05 | 9017 | 5.09 | 100.21 | calcareous |
| 2 | M005 | 2,619.150 | 452.857 | Me | dolerite | 43.68 | 1.19 | 14.34 | 10.19 | 0.21 | 5.65 | 11.70 | 4.15 | 0.12 | 40 | 0.11 | 1089 | 1.09 | 100.23 | |
| 3 | M011 | 2,618.724 | 454.245 | Hg | hb-cpx gabbro | 48.23 | 0.38 | 14.92 | 7.35 | 0.12 | 10.44 | 12.12 | 2.04 | 0.39 | 16 | 0.02 | 4034 | 0.43 | 100.35 | |
| 4 | M012 | 2,618.638 | 454.222 | Sd | dolerite | 51.75 | 0.72 | 15.77 | 10.54 | 0.17 | 3.71 | 14.14 | 0.16 | 0.03 | 4 | 0.05 | 3017 | 0.10 | 100.21 | |
| 5 | M015 | 2,619.830 | 453.344 | LII | andesite | 54.52 | 0.31 | 14.91 | 9.12 | 0.08 | 6.80 | 5.56 | 5.39 | 0.19 | 13 | 0.01 | 3.07 | 0.00 | 99.96 | |
| 6 | M016 | 2,617.975 | 457.542 | Sd | andesite | 52.48 | 0.83 | 14.73 | 9.49 | 0.16 | 8.20 | 5.86 | 3.34 | 0.29 | 3 | 0.06 | 4.74 | 0.16 | 100.18 | |
| 7 | M017 | 2,618.985 | 457.200 | Cg | cpx gabbro | 48.28 | 0.15 | 14.45 | 4.85 | 0.10 | 11.85 | 15.45 | 1.42 | 0.07 | 3 | 0.00 | 3.77 | 0.23 | 100.39 | |
| 8 | M018 | 2,618.950 | 457.236 | L' | andesite | 54.77 | 0.48 | 14.57 | 11.64 | 0.15 | 6.04 | 6.49 | 1.01 | 0.05 | 2 | 0.05 | 4.72 | 0.06 | 99.97 | |
| 9 | M020 | 2,618.365 | 457.172 | LII | basalt | 50.16 | 0.21 | 10.68 | 6.64 | 0.27 | 6.16 | 13.29 | 2.75 | 0.55 | 29 | 0.02 | 9.12 | 6.33 | 99.85 | |
| 10 | M022 | 2,618.938 | 458.642 | Me | andesite | 55.32 | 0.72 | 14.83 | 9.11 | 0.10 | 4.90 | 6.65 | 3.32 | 0.11 | 8 | 0.06 | 4.87 | 0.15 | 99.99 | |
| 11 | M023 | 2,618.440 | 458.925 | Me | basalt | 51.21 | 0.66 | 14.80 | 8.32 | 0.16 | 7.40 | 7.09 | 4.56 | 0.29 | 22 | 0.05 | 5.42 | 1.35 | 99.96 | |
| 12 | M024 | 2,618.314 | 458.596 | LI | basalt | 50.11 | 1.23 | 16.13 | 10.29 | 0.19 | 5.15 | 7.57 | 4.18 | 0.58 | 34 | 0.12 | 4.34 | 0.20 | 99.89 | |
| 13 | M031 | 2,618.249 | 457.534 | L' | dolerite | 50.32 | 1.11 | 15.42 | 9.91 | 0.22 | 4.75 | 8.97 | 4.52 | 0.69 | 45 | 0.10 | 4.48 | 1.58 | 100.49 | |
| 14 | M032 | 2,617.977 | 457.502 | LI | andesite | 52.18 | 0.84 | 14.42 | 10.22 | 0.18 | 7.35 | 6.04 | 2.13 | 0.76 | 18 | 0.06 | 5.83 | 0.17 | 100.03 | |
| 15 | M034 | 2,619.127 | 453.198 | LI | andesite | 61.46 | 0.61 | 9.92 | 12.82 | 0.04 | 8.06 | 0.67 | 0.24 | 0.07 | 12 | 0.01 | 6.14 | 0.24 | 100.04 | altered, silicified |
| 16 | MJO-A4 44.20 | 2,618.676 | 453.458 | LII | andesite | 52.71 | 0.50 | 15.77 | 7.98 | 0.09 | 6.78 | 5.58 | 5.61 | 0.07 | 14 | 0.05 | 4.69 | 0.36 | 99.83 | |
| 17 | MJO-A4 143.70 | 2,618.676 | 453.458 | LI | basalt | 47.12 | 0.45 | 16.02 | 6.75 | 0.13 | 9.50 | 9.03 | 2.22 | 1.36 | 42 | 0.03 | 7.16 | 0.60 | 99.77 | |
| 18 | MJO-A1 63.70 | 2,618.742 | 453.434 | LII | basalt | 51.92 | 0.52 | 16.91 | 7.73 | 0.08 | 6.10 | 7.13 | 5.26 | 0.41 | 30 | 0.06 | 4.26 | 0.23 | 100.38 | |
| 19 | MJO-A1 172.00 | 2,618.742 | 453.434 | LI | basalt | 46.55 | 0.26 | 12.77 | 8.49 | 0.09 | 12.35 | 11.71 | 0.49 | 0.11 | 6 | 0.01 | 7.22 | 0.62 | 100.05 | |
| 20 | MJO-B5 23.50 | 2,618.700 | 457.404 | LII | basalt | 49.01 | 0.27 | 14.05 | 7.84 | 0.11 | 8.04 | 11.43 | 2.22 | 0.96 | 30 | 0.04 | 6.01 | 2.09 | 99.98 | |
| 21 | MJO-B5 79.20 | 3,618.700 | 457.404 | LI | basalt | 45.64 | 0.33 | 15.49 | 9.47 | 0.10 | 8.97 | 8.28 | 1.73 | 1.22 | 22 | 0.03 | 8.29 | 0.30 | 99.60 | |
| 22 | MJO-B5 136.10 | 2,618.700 | 457.404 | LI | basalt | 50.77 | 1.09 | 15.22 | 9.64 | 0.26 | 6.66 | 6.51 | 4.84 | 0.16 | 18 | 0.10 | 4.40 | 0.36 | 99.29 | |
| 23 | MJO-B3 55.20 | 2,618.784 | 457.526 | LII | basalt | 51.91 | 0.45 | 15.54 | 8.33 | 0.09 | 4.79 | 9.83 | 4.25 | 0.17 | 15 | 0.04 | 4.39 | 0.30 | 99.79 | |
| 24 | MJO-B3 147.70 | 2,618.784 | 457.526 | LI | basalt | 50.05 | 1.19 | 16.08 | 10.06 | 0.17 | 5.21 | 4.84 | 3.81 | 0.92 | 37 | 0.11 | 4.47 | 0.43 | 99.91 | |
| 25 | MJO-B4 101.20 | 2,618.723 | 457.358 | LI | basalt | 49.49 | 0.30 | 13.42 | 8.20 | 0.09 | 10.09 | 8.93 | 1.50 | 0.94 | 22 | 0.01 | 6.87 | 0.39 | 99.84 | |
| 26 | MJO-B6 85.90 | 2,618.631 | 457.405 | LI | basalt | 49.22 | 0.76 | 16.83 | 9.27 | 0.18 | 5.95 | 7.64 | 5.10 | 0.11 | 16 | 0.10 | 5.09 | 0.68 | 100.25 | |
| 27 | N011 | 2,618.782 | 453.194 | LII | andesite | 57.48 | 0.21 | 12.67 | 8.96 | 0.07 | 7.02 | 6.00 | 3.61 | 0.51 | 18 | 0.01 | 3.62 | 0.50 | 100.16 | |
| 28 | MJO-B2 52.20 | 2,618.772 | 457.385 | LII | andesite | 57.07 | 0.28 | 12.13 | 7.22 | 0.10 | 6.05 | 9.66 | 3.02 | 0.48 | 19 | 0.04 | 3.90 | 0.95 | 99.95 | |
| 29 | MJO-A2 136.00 | 2,618.698 | 4553.296 | LI | basalt | 51.85 | 10.64 | 15.92 | 10.58 | 0.17 | 6.47 | 3.29 | 5.81 | 0.13 | 38 | 0.16 | 4.33 | 0.16 | 100.35 | |
| 30 | MJO-A5 17.50 | 2,618.792 | 453.296 | LII | basalt | 47.60 | 0.25 | 11.89 | 8.36 | 0.19 | 15.45 | 7.81 | 0.40 | 0.08 | 99 | 0.01 | 7.91 | 0.10 | 99.95 | |

*1 : Abbreviations are shown in Fig. II-3-1.  *2 : Total iron as $Fe_2O_3$  *3 : PPM  *4 : Ignition loss

# Results of C. I. P W. norm calclation

| Ser. No. | Sample No. | Geol. *1 Unit | q | c | or | ab | an | ne | ac | ns | ks | wo | diwo | dien | difs | hyen | olfo | olfa | mt | hm | il | tn | pf | ru | ap | cc | pr | Total FeO | S.I. *2 | F.M.I. *3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M003 | Me | 0.00 | 0.00 | 0.47 | 30.30 | 22.58 | 0.77 | 0.00 | 0.00 | 0.00 | 0.00 | 9.54 | 5.43 | 3.71 | 0.00 | 4.21 | 3.17 | 2.12 | 0.00 | 0.91 | 0.00 | 0.00 | 0.00 | 0.12 | 11.58 | 0.00 | 6.55 | 30.65 | 1.43 |
| 2 | M005 | Me | 0.00 | 0.00 | 0.71 | 31.31 | 20.15 | 2.06 | 0.00 | 0.00 | 0.00 | 0.00 | 12.36 | 6.88 | 4.99 | 0.00 | 5.04 | 4.03 | 2.96 | 0.00 | 2.26 | 0.00 | 0.00 | 0.00 | 0.25 | 2.48 | 0.00 | 9.18 | 29.59 | 4.62 |
| 3 | M011 | Hg | 0.00 | 0.00 | 2.30 | 17.26 | 30.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 11.11 | 7.76 | 2.42 | 2.94 | 6.16 | 2.11 | 2.13 | 0.00 | 0.72 | 0.00 | 0.00 | 0.00 | 0.05 | 0.98 | 0.00 | 6.61 | 63.59 | 0.63 |
| 4 | *M012* | *Sd* | *0.00* | *0.00* | *0.47* | *30.30* | *22.58* | *0.77* | 0.00 | 0.00 | 0.00 | 0.00 | 9.54 | 5.43 | 3.71 | 0.00 | 4.21 | 3.17 | 2.12 | 0.00 | 0.91 | 0.00 | 0.00 | 0.00 | 0.12 | 11.58 | 0.00 | 9.49 | 27.71 | 2.56 |
| 5 | M015 | LII | 0.00 | 0.00 | 1.12 | 45.61 | 15.93 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.84 | 2.84 | 1.73 | 6.09 | 2.77 | 1.84 | 2.64 | 0.00 | 0.59 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 8.21 | 33.03 | 1.21 |
| 6 | M016 | Sd | 0.00 | 0.00 | 0.71 | 31.31 | 20.15 | 2.06 | 0.00 | 0.00 | 0.00 | 0.00 | 12.36 | 6.88 | 4.99 | 0.00 | 5.04 | 4.03 | 2.96 | 0.00 | 2.26 | 0.00 | 0.00 | 0.00 | 0.25 | 2.48 | 0.00 | 8.54 | 40.26 | 1.04 |
| 7 | M017 | Cg | 0.00 | 0.00 | 0.41 | 12.02 | 32.85 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 17.62 | 13.32 | 2.50 | 0.99 | 7.66 | 1.59 | 1.41 | 0.00 | 0.28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.52 | 0.00 | 4.36 | 66.94 | 0.37 |
| 8 | M018 | L' | 0.00 | 0.00 | 0.47 | 30.30 | 22.58 | 0.77 | 0.00 | 0.00 | 0.00 | 0.00 | 9.54 | 5.43 | 3.71 | 0.00 | 4.21 | 3.17 | 2.12 | 0.00 | 0.91 | 0.00 | 0.00 | 0.00 | 0.12 | 11.58 | 0.00 | 10.48 | 34.36 | 1.73 |
| 9 | M020 | LII | 0.00 | 0.00 | 2.30 | 17.26 | 30.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 11.11 | 7.76 | 2.42 | 2.94 | 6.16 | 2.11 | 2.13 | 0.00 | 0.72 | 0.00 | 0.00 | 0.00 | 0.05 | 0.98 | 0.00 | 5.98 | 39.9. | 0.97 |
| 10 | M022 | Me | 0.00 | 0.00 | 0.71 | 31.31 | 20.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12.36 | 6.88 | 4.99 | 0.00 | 5.04 | 4.03 | 2.96 | 0.00 | 2.26 | 0.00 | 0.00 | 0.00 | 0.25 | 2.48 | 0.00 | 8.20 | 29.65 | 1.67 |
| 11 | M023 | Me | 0.00 | 0.00 | 0.47 | 30.30 | 22.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 9.54 | 5.43 | 3.71 | 0.00 | 4.21 | 3.17 | 2.12 | 0.00 | 0.91 | 0.00 | 0.00 | 0.00 | 0.12 | 11.58 | 0.00 | 7.48 | 37.50 | 1.01 |
| 12 | M024 | LI | 0.00 | 0.00 | 0.71 | 31.31 | 20.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12.36 | 6.88 | 4.99 | 0.00 | 5.04 | 4.03 | 2.96 | 0.00 | 2.26 | 0.00 | 0.00 | 0.00 | 0.25 | 2.48 | 0.00 | 9.29 | 26.86 | 1.80 |
| 13 | *M031* | *L'* | *0.00* | *0.00* | *2.30* | *17.26* | *30.40* | *0.00* | *0.00* | *0.00* | *0.00* | 0.00 | 11.11 | 7.76 | 2.42 | 2.94 | 6.16 | 2.11 | 2.13 | 0.00 | 0.72 | 0.00 | 0.00 | 0.00 | 0.05 | 0.98 | 0.00 | 8.91 | 25.17 | 1.88 |
| 14 | M032 | LI | 0.00 | 0.00 | 0.47 | 30.30 | 22.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 9.54 | 5.43 | 3.71 | 0.00 | 4.21 | 3.17 | 2.12 | 0.00 | 0.91 | 0.00 | 0.00 | 0.00 | 0.12 | 11.58 | 0.00 | 9.20 | 37.88 | 1.25 |
| 15 | M034 | LI | 0.00 | 0.00 | 1.12 | 45.31 | 15.93 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.84 | 2.87 | 1.73 | 6.09 | 2.77 | 1.84 | 2.64 | 0.00 | 0.59 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 11.53 | 40.50 | 1.43 |
| 16 | MJO-A4 44.20 | LII | 0.00 | 0.00 | 0.41 | 47.47 | 17.64 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.10 | 1.88 | 0.95 | 3.49 | 5.70 | 3.18 | 2.32 | 0.00 | 0.95 | 0.00 | 0.00 | 0.00 | 0.12 | 0.82 | 0.00 | 7.18 | 34.52 | 1.06 |
| 17 | MJO-A4 143.70 | LI | 0.00 | 0.00 | 8.04 | 18.79 | 29.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.47 | 3.13 | 0.97 | 3.30 | 6.90 | 2.35 | 1.96 | 0.00 | 0.85 | 0.00 | 0.00 | 0.00 | 0.07 | 1.36 | 0.00 | 6.07 | 49.60 | 0.64 |
| 18 | MJO-A1 63.70 | LII | 0.00 | 0.00 | 2.42 | 44.51 | 21.32 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.04 | 3.08 | 1.67 | 0.28 | 8.12 | 4.84 | 2.25 | 0.00 | 0.99 | 0.00 | 0.00 | 0.00 | 4.07 | 0.52 | 0.00 | 6.95 | 32.58 | 1.14 |
| 19 | MJO-A1 172.00 | LI | 1.94 | 0.00 | 0.65 | 4.15 | 32.32 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 8.93 | 6.24 | 1.94 | 7.75 | 0.00 | 0.00 | 2.46 | 0.00 | 0.49 | 0.00 | 0.00 | 0.00 | 0.02 | 1.41 | 0.00 | 7.64 | 59.98 | 0.62 |
| 20 | MJO-B5 23.50 | LII | 1.86 | 0.00 | 5.67 | 18.79 | 25.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.84 | 4.42 | 1.95 | 7.00 | 0.00 | 0.00 | 2.28 | 0.00 | 0.51 | 0.00 | 0.00 | 0.00 | 0.09 | 4.75 | 0.00 | 7.05 | 44.00 | 0.88 |
| 21 | MJO-B5 79.20 | LI | 0.00 | 0.00 | 7.21 | 15.06 | 30.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.39 | 2.15 | 1.02 | 6.57 | 4.45 | 2.33 | 2.74 | 0.00 | 0.63 | 0.00 | 0.00 | 0.00 | 0.07 | 0.68 | 0.00 | 8.52 | 43.78 | 0.95 |
| 22 | MJO-B5 136.10 | LI | 0.00 | 0.00 | 0.95 | 40.95 | 19.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.10 | 2.44 | 1.45 | 4.47 | 4.63 | 3.02 | 2.80 | 0.00 | 2.07 | 0.00 | 0.00 | 0.00 | 0.22 | 0.82 | 0.00 | 8.68 | 32.75 | 1.30 |
| 23 | MJO-B3 55.20 | LII | 0.32 | 0.00 | 1.00 | 35.96 | 22.82 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 9.85 | 5.40 | 4.10 | 5.10 | 0.00 | 0.00 | 2.42 | 0.00 | 0.85 | 0.00 | 0.00 | 0.00 | 0.09 | 0.68 | 0.00 | 7.50 | 28.66 | 1.57 |
| 24 | MJO-B3 147.70 | LI | 0.00 | 0.00 | 5.44 | 32.24 | 24.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.65 | 2.53 | 1.95 | 6.83 | 1.09 | 0.93 | 2.91 | 0.00 | 2.26 | 0.00 | 0.00 | 0.00 | 0.25 | 0.98 | 0.00 | 9.05 | 27.44 | 1.74 |
| 25 | MJO-B4 101.20 | LI | 3.14 | 0.00 | 5.55 | 12.69 | 27.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.02 | 4.07 | 1.48 | 7.80 | 0.00 | 0.00 | 2.38 | 0.00 | 0.57 | 0.00 | 0.00 | 0.00 | 0.02 | 0.89 | 0.00 | 7.38 | 50.69 | 0.73 |
| 26 | MJO-B6 85.90 | LI | 0.00 | 0.00 | 0.65 | 42.03 | 22.70 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.10 | 2.36 | 1.56 | 0.00 | 8.73 | 6.36 | 2.68 | 0.00 | 1.44 | 0.00 | 0.00 | 0.00 | 0.23 | 1.55 | 0.00 | 8.33 | 30.52 | 1.40 |
| 27 | N011 | LII | 0.00 | 0.00 | 0.41 | 47.47 | 17.64 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.01 | 1.88 | 0.95 | 3.49 | 5.70 | 3.18 | 2.32 | 0.00 | 0.95 | 0.00 | 0.00 | 0.00 | 0.12 | 0.82 | 0.00 | 8.06 | 36.56 | 1.15 |
| 28 | MJO-B2 52.20 | LII | 12.19 | 0.00 | 2.84 | 25.55 | 18.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 9.52 | 5.88 | 3.15 | 5.05 | 0.00 | 0.00 | 2.09 | 0.00 | 0.53 | 0.00 | 0.00 | 0.00 | 0.09 | 2.16 | 0.00 | 6.50 | 37.70 | 1.07 |
| 29 | MJO-A2 136.00 | LI | 0.00 | 1.03 | 0.77 | 49.16 | 14.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.10 | 4.30 | 2.89 | 3.07 | 0.00 | 3.11 | 0.00 | 0.00 | 0.00 | 0.37 | 0.36 | 0.00 | 9.53 | 29.49 | 1.47 |
| 30 | MJO-A5 17.50 | LII | 2.79 | 0.00 | 0.47 | 3.38 | 30.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.16 | 2.30 | 0.57 | 9.18 | 0.00 | 0.00 | 2.42 | 0.00 | 0.47 | 0.00 | 0.00 | 0.00 | 0.02 | 0.23 | 0.00 | 7.52 | 65.88 | 0.49 |

*1 S.I.: Abbreviations are shown in Fig. II-3-1. *2 S.I.: Solidification Index = MgO×100/(MgO + Total FeO + $Na_2O$ + $K_2O$) *3 F.M.I.: *Total FeO – MgO Index = Total FeO/MgO ($Fe_2O_3$ : FeO was estimated to be 1 : 4.)*

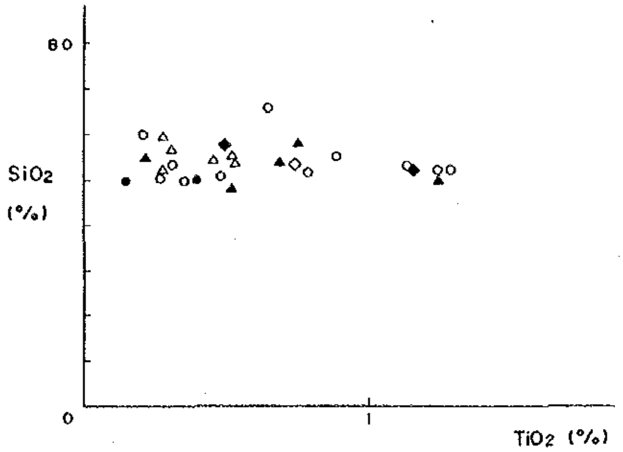
# Results of chemical analyses for minor elements

| Ser. No. | Sample No. | Geol.*1 Unit | Al | Ba | Be | Bi | Cd | Ca | Cr | Co | Cu | Fe | Pb | Mg | Mn | Mo | Ni | P | K | Ag | Na | Sr | Ti | W | V | Zn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M003 | Me | 75900 | 15 | 1 | <3 | <1 | 117000 | 58 | 29 | 67 | 50900 | 6 | 27700 | 774 | <2 | 37 | 235 | 640 | 2.2 | 27800 | 89 | 2700 | <10 | 214 | 54 |
| 2 | M005 | Me | 45900 | 35 | 3 | <3 | <1 | 83600 | 156 | 45 | 54 | 71300 | 7 | 34100 | 1680 | <2 | 78 | 450 | 1000 | 1.0 | 30800 | 132 | 7020 | <10 | 267 | 71 |
| 3 | M011 | Hg | 79000 | 15 | 1 | <3 | <1 | 86600 | 322 | 35 | 87 | 51400 | 6 | 63000 | 906 | <2 | 130 | 76 | 3200 | 0.7 | 15100 | 134 | 2290 | <10 | 190 | 55 |
| 4 | M012 | Sd | 83400 | 3 | 2 | <3 | <1 | 101000 | 166 | 22 | 7 | 73800 | 5 | 22400 | 1300 | <2 | 25 | 238 | 270 | 0.2 | 1200 | 383 | 4320 | 33 | 317 | 36 |
| 5 | M015 | LII | 78900 | 11 | 1 | <3 | <1 | 39700 | 322 | 31 | 53 | 63800 | 5 | 41000 | 612 | <2 | 149 | 58 | 1550 | 0.1 | 40000 | 151 | 1850 | <10 | 243 | 72 |
| 6 | M016 | Sd | 78000 | 3 | 1 | <3 | <1 | 41900 | 81 | 35 | 5 | 66300 | 4 | 49500 | 1250 | <2 | 45 | 261 | 2400 | 0.1 | 24800 | 73 | 4990 | <10 | 105 | 28 |
| 7 | M017 | Cg | 76500 | 3 | <1 | 3 | <1 | 110000 | 463 | 28 | 134 | 33900 | 4 | 71500 | 743 | <2 | 14 | 12 | 550 | 0.6 | 10500 | 108 | 911 | 27 | 74 | 30 |
| 8 | M018 | L' | 77100 | 1 | 2 | <3 | <1 | 46400 | 127 | 33 | 34 | 81400 | 5 | 36400 | 1140 | <2 | 42 | 225 | 450 | <0.1 | 7500 | 127 | 2850 | <10 | 190 | 60 |
| 9 | M020 | LII | 56500 | 26 | 1 | 3 | <1 | 95000 | 359 | 29 | 45 | 46400 | 9 | 73100 | 2070 | <2 | 192 | 71 | 4600 | 1.3 | 20400 | 124 | 1270 | 34 | 158 | 55 |
| 10 | M022 | Me | 78500 | 7 | 2 | <3 | <1 | 47500 | 98 | 29 | 220 | 63700 | <3 | 29600 | 805 | <2 | 31 | 278 | 910 | 0.7 | 24600 | 55 | 4330 | <10 | 224 | 65 |
| 11 | M023 | Me | 78200 | 20 | 1 | <3 | <1 | 50700 | 43 | 32 | 31 | 58200 | 7 | 44600 | 1240 | <2 | 39 | 202 | 2400 | 0.4 | 33800 | 128 | 3970 | <10 | 220 | 73 |
| 12 | M024 | LI | 85400 | 30 | 3 | <3 | <1 | 54100 | 70 | 35 | 75 | 72000 | 6 | 31100 | 1470 | <2 | 42 | 507 | 4800 | 0.6 | 31000 | 148 | 7340 | <10 | 291 | 83 |
| 13 | M031 | L' | 81600 | 40 | 3 | <3 | <1 | 64100 | 56 | 35 | 27 | 69300 | 7 | 28600 | 1730 | <2 | 26 | 418 | 5800 | 0.4 | 33500 | 197 | 6660 | 30 | 288 | 76 |
| 14 | M032 | LI | 76300 | 16 | 2 | <3 | <1 | 43200 | 56 | 35 | 46 | 71500 | 3 | 44400 | 1430 | <2 | 31 | 257 | 6300 | 0.3 | 15800 | 253 | 5040 | <10 | 285 | 87 |
| 15 | M034 | LI | 52500 | 11 | 1 | <3 | <1 | 4790 | 93 | 33 | 1830 | 89700 | <3 | 48600 | 297 | <2 | 35 | 57 | 550 | 0.1 | 1800 | 22 | 3670 | 35 | 156 | 292 |
| 16 | MJO-A4 44.20 | LII | 83500 | 13 | 2 | <3 | <1 | 39800 | 165 | 124 | 13 | 55800 | 5 | 40900 | 666 | <2 | 46 | 224 | 550 | 0.9 | 41600 | 87 | 2980 | <10 | 196 | 195 |
| 17 | MJO-A4 143.70 | LI | 84800 | 37 | 1 | <3 | <1 | 64500 | 263 | 31 | 12 | 47200 | 8 | 57300 | 976 | <2 | 93 | 128 | 11300 | 0.6 | 16500 | 186 | 2690 | 18 | 186 | 58 |
| 18 | MJO-A1 63.70 | LII | 89500 | 27 | 2 | <3 | <1 | 51000 | 113 | 34 | 8 | 54100 | 10 | 36800 | 602 | <2 | 44 | 250 | 3400 | 0.6 | 39000 | 135 | 3120 | 20 | 197 | 90 |
| 19 | MJO-A1 172.00 | LI | 67600 | 6 | 1 | <3 | <1 | 82700 | 457 | 25 | 22 | 39400 | 6 | 74500 | 724 | <2 | 211 | 65 | 910 | 0.9 | 3600 | 40 | 1540 | 54 | 231 | 67 |
| 20 | MJO-B5 23.50 | LII | 74400 | 27 | 1 | <3 | <1 | 81700 | 312 | 39 | 37 | 54800 | <3 | 48500 | 843 | <2 | 137 | 166 | 8000 | 0.8 | 16500 | 86 | 1610 | 48 | 207 | 71 |
| 21 | MJO-B5 79.20 | LI | 82000 | 20 | 1 | <3 | <1 | 63100 | 305 | 30 | 8 | 66200 | 4 | 54100 | 805 | <2 | 106 | 111 | 10100 | 0.6 | 13200 | 80 | 1950 | <10 | 244 | 85 |
| 22 | MJO-B5 136.10 | LI | 80600 | 16 | 2 | <3 | <1 | 46600 | 76 | 45 | 26 | 67400 | 3 | 40200 | 2000 | <2 | 49 | 416 | 1360 | 0.3 | 35900 | 104 | 6550 | <10 | 249 | 87 |
| 23 | MJO-B3 55.20 | LII | 82200 | 13 | 3 | <3 | <1 | 70300 | 127 | 35 | 18 | 58300 | 5 | 28900 | 720 | <2 | 54 | 179 | 1450 | 0.7 | 31500 | 67 | 2710 | 49 | 237 | 59 |
| 24 | MJO-B3 147.70 | LI | 85160 | 33 | 3 | <3 | <1 | 56000 | 61 | 28 | 15 | 70400 | <3 | 31400 | 1280 | <2 | 38 | 485 | 7600 | 0.2 | 28300 | 154 | 7150 | 10 | 291 | 83 |
| 25 | MJO-B4 101.20 | LI | 71000 | 20 | 1 | <3 | <1 | 63800 | 367 | 33 | 101 | 57300 | 6 | 60900 | 685 | <2 | 174 | 32 | 7800 | 0.2 | 11100 | 147 | 1800 | 29 | 220 | 70 |
| 26 | MJO-B6 85.90 | LI | 89100 | 15 | 3 | <3 | <1 | 54600 | 41 | 37 | 25 | 64800 | 9 | 35900 | 1400 | <2 | 31 | 413 | 910 | 0.6 | 3800 | 107 | 4560 | <10 | 272 | 72 |
| 27 | N011 | LII | 67100 | 16 | 1 | <3 | <1 | 42800 | 396 | 30 | 34 | 62700 | 6 | 42300 | 546 | <2 | 137 | 33 | 4200 | 0.1 | 26800 | 133 | 1260 | 32 | 228 | 65 |
| 28 | MJO-B2 52.20 | LII | 64200 | 17 | 2 | <3 | <1 | 69000 | 464 | 34 | 26 | 50500 | 6 | 36500 | 787 | <2 | 186 | 154 | 4000 | 0.6 | 22400 | 85 | 1690 | 30 | 207 | 54 |
| 29 | MJO-A2 136.00 | LI | 84300 | 34 | 6 | <3 | <1 | 23500 | 65 | 45 | 40 | 74000 | 15 | 39000 | 1350 | <2 | 25 | 698 | 1100 | 0.2 | 43100 | 121 | 9830 | <10 | 321 | 540 |
| 30 | MJO-A5 17.50 | LII | 62900 | 88 | 3 | <3 | <1 | 55800 | 655 | 100 | 2310 | 58500 | 6 | 93200 | 1460 | <2 | 419 | <3 | 700 | 0.4 | 3000 | 89 | 1500 | 16 | 200 | 472 |
| 31 | MJO-A1 106.90 | LI | 63300 | 2 | 1 | <3 | <1 | 3650 | 209 | 128 | 653 | 123700 | 4 | 54600 | 349 | 2 | 70 | 68 | 910 | <0.1 | 7400 | 16 | 3260 | 34 | 195 | 601 |
| 32 | N010*2 | ORE | 4380 | 8 | 1 | <3 | <1 | 4750 | 769 | 40 | 36 | 38700 | <3 | 2370 | 84 | 5 | 36 | 45 | 450 | 0.6 | 1700 | 40 | 181 | 28 | 33 | 60 |
| 33 | MJO-B1*3 40.80 | ORE | 4340 | <1 | <1 | <3 | 4 | 423 | 94 | 14 | 7070 | 408200 | 511 | 2710 | 1914 | 2 | 20 | 39 | 180 | 20.2 | 500 | 2 | 229 | 35 | 31 | 641 |

*1 Abbreviations are shown in Fig. II-3-1.  *2 Coodinates: N 2,618.845, E 453.168  *3 Coodinates: N 2,618.796, E 457.278

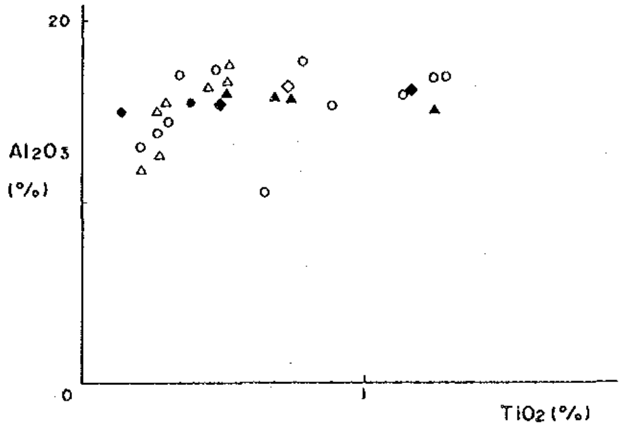
# Appendix 3

## $TiO_2$ diagrams



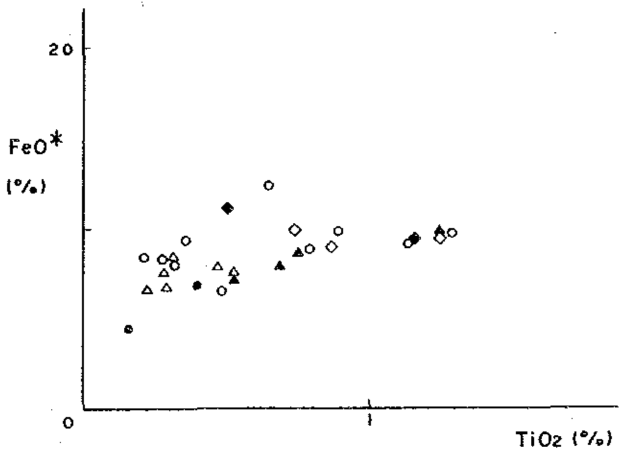
60
SiO2
(%)
0
1
TiO2 (%)

(a)



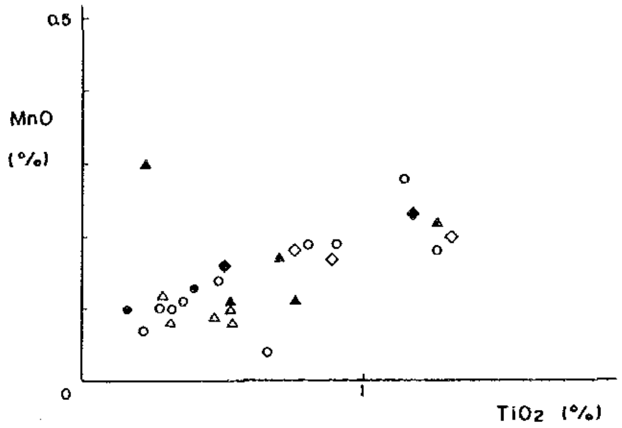
20
Al2O3
(%)
0
1
TiO2 (%)

(b)



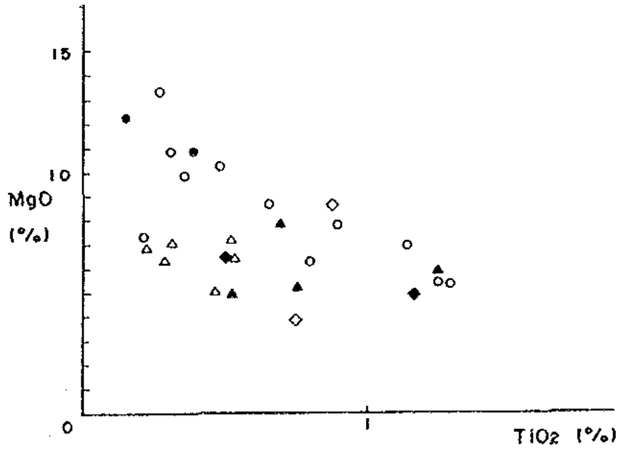
20
FeO*
(%)
0
1
TiO2 (%)

(c)



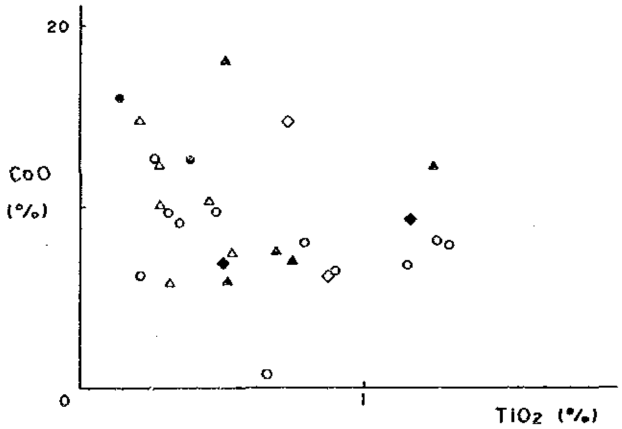
0.5
MnO
(%)
0
1
TiO2 (%)

(d)



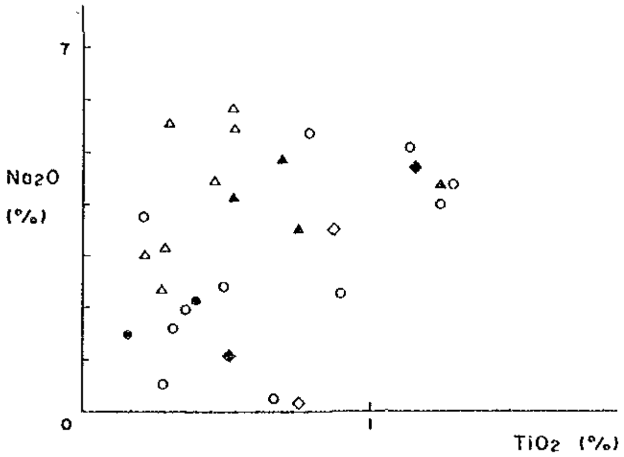
15
10
MgO
(%)
0
1
TiO2 (%)

(e)

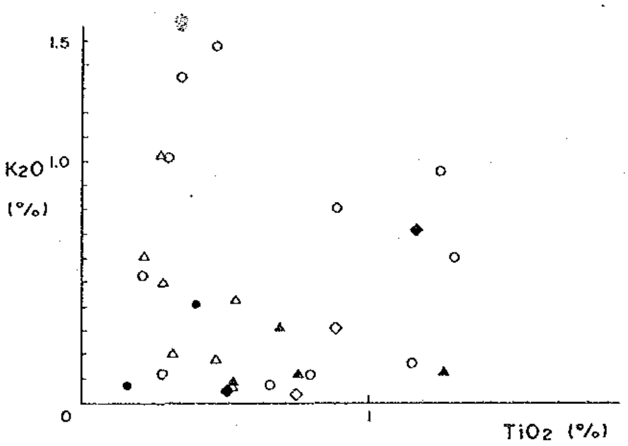


20
CaO
(%)
0
1
TiO2 (%)

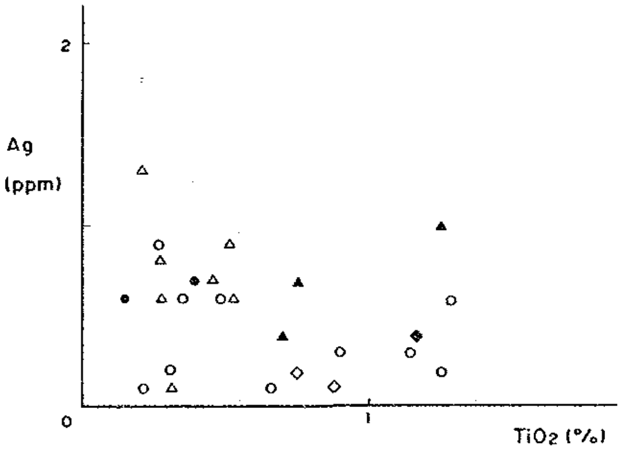
(f)


7
Na2O
(%)
0
1
TiO2 (%)

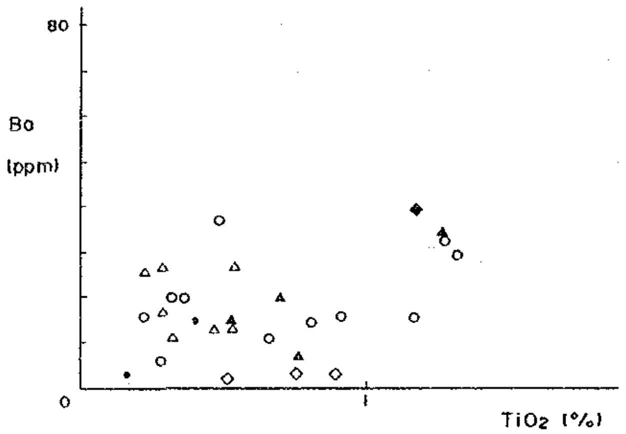
(g)


1.5
K2O
1.0
(%)
0
1
TiO2 (%)

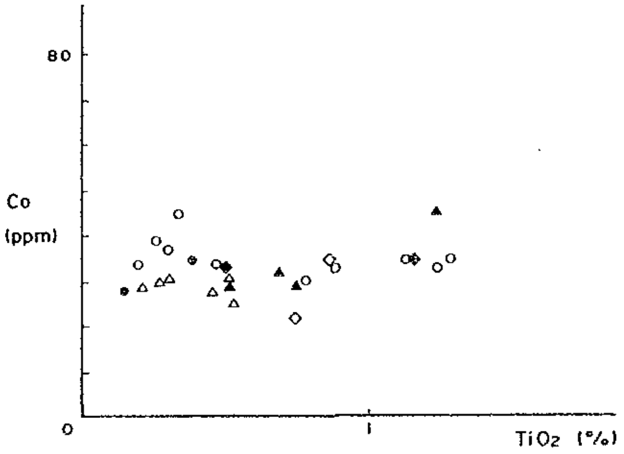
(h)


2
Ag
(ppm)
0
1
TiO2 (%)

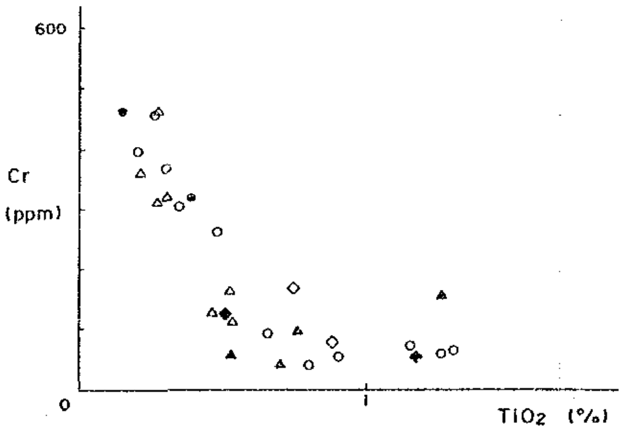
(i)


80
Ba
(ppm)
0
1
TiO2 (%)

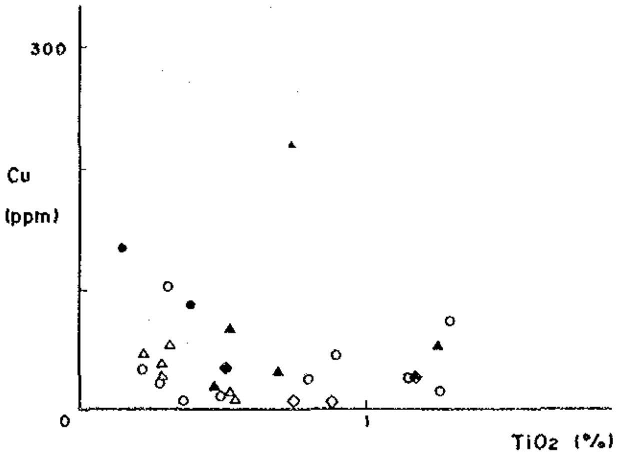
(j)


80
Co
(ppm)
0
1
TiO2 (%)

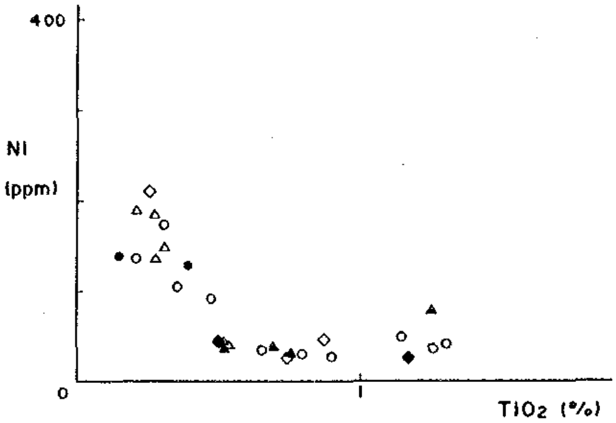
(k)


600
Cr
(ppm)
0
1
TiO2 (%)

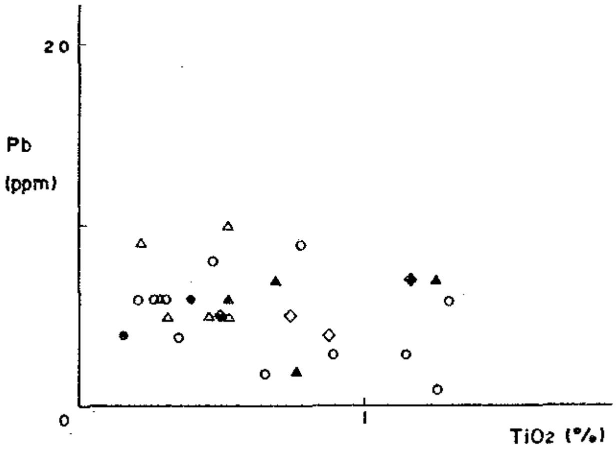
(ℓ)


300
Cu
(ppm)
0
1
TiO2 (%)

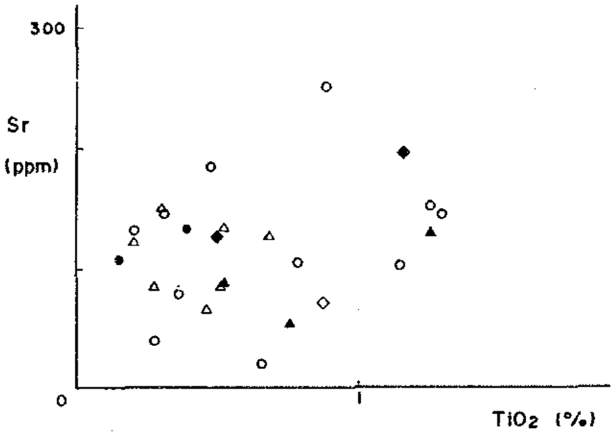
(m)


400
Ni
(ppm)
0
1
TiO2 (%)

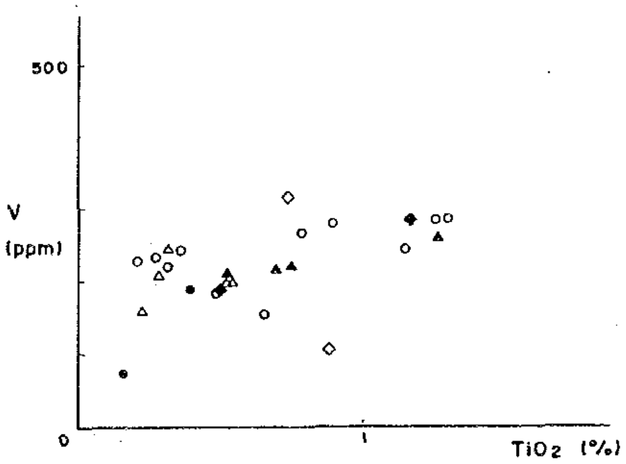
(n)


20
Pb
(ppm)
0
1
TiO2 (%)

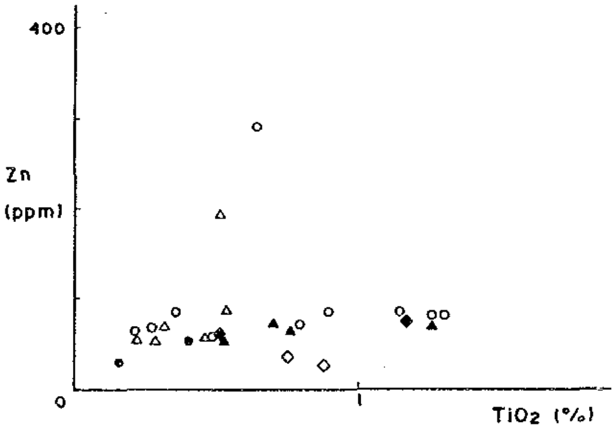
(o)


300
Sr
(ppm)
0
1
TiO2 (%)

(p)


500
V
(ppm)
0
1
TiO2 (%)

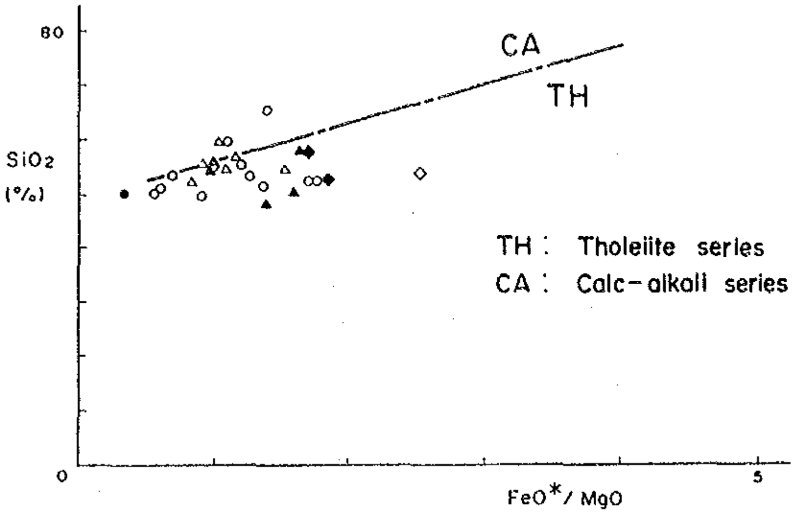
(q)


400
Zn
(ppm)
0
1
TiO2 (%)

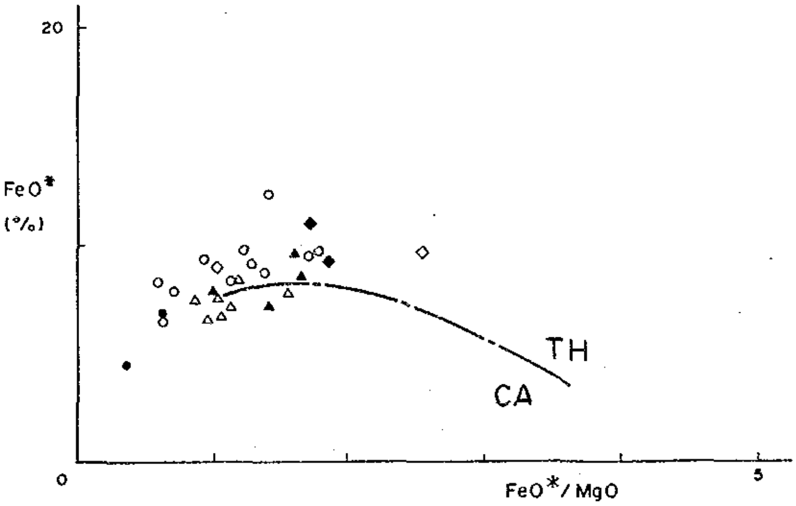
(r)

# Appendix 4

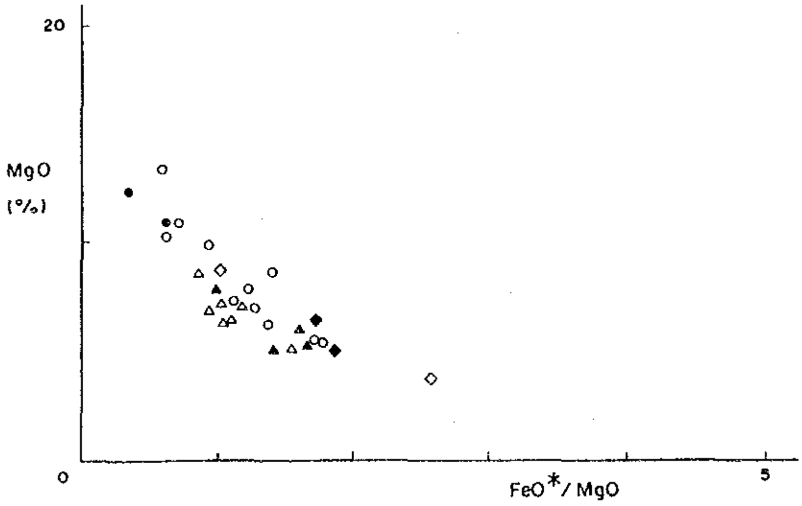
## FeO* / MgO diagrams


80
SiO2
(%)
0
5
FeO*/ MgO
CA
TH
TH : Tholeiite series
CA : Calc-alkali series

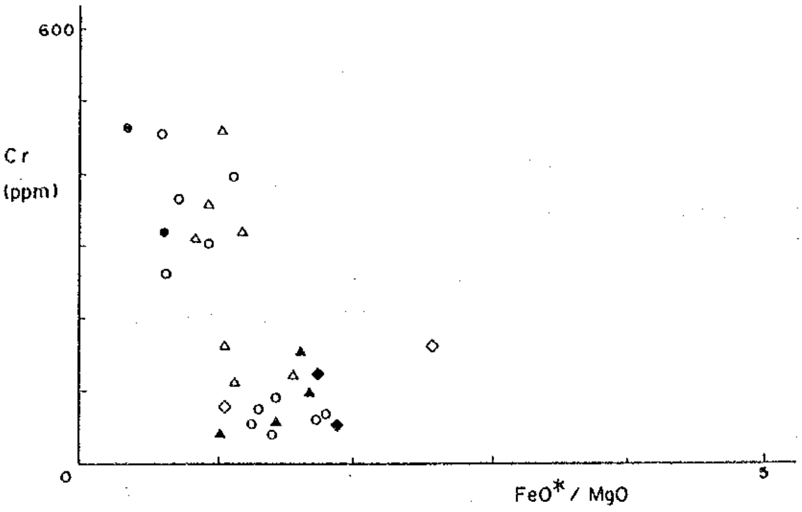
(a)


20
FeO*
(%)
0
5
FeO*/ MgO
TH
CA

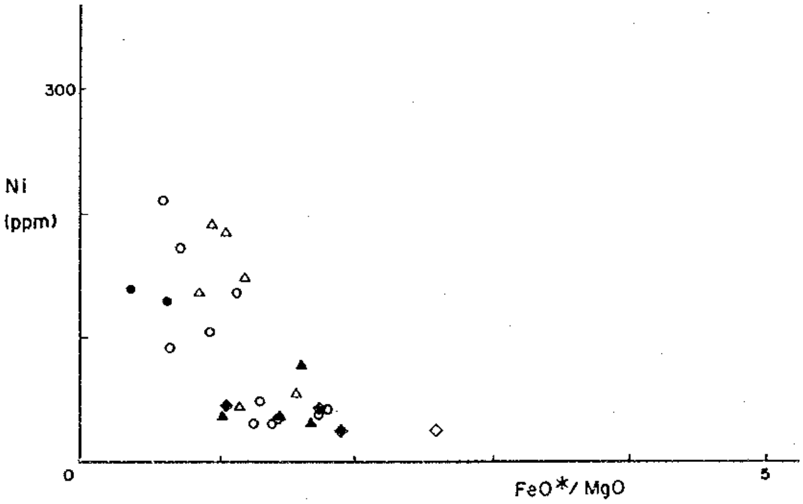
(b)


20
MgO
(%)
0
5
FeO*/ MgO

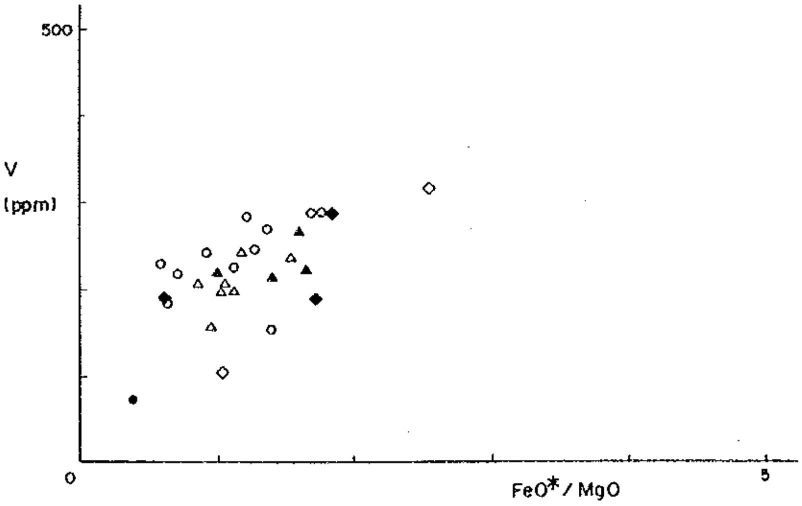
(c)



(d)



(e)



(f)

# Appendix 5

## Charged potential in area A

| X | Y | Potential (mV/A) | |
|---|---|---|---|
| (m) | (m) | HS-14 | HS-7 |
| 550 | 300 | 60.3 | 11.8 |
| 500 | 300 | 64.8 | 12.7 |
| 550 | 250 | 54.3 | 13.1 |
| 500 | 250 | 59.4 | 13.0 |
| 550 | 200 | 48.1 | 13.2 |
| 500 | 200 | 54.8 | 14.0 |
| 550 | 150 | 40.7 | 13.1 |
| 500 | 150 | 47.7 | 13.7 |
| 550 | 100 | 32.6 | 15.0 |
| 500 | 100 | 35.8 | 14.4 |
| 550 | 50 | 25.5 | 15.7 |
| 500 | 50 | 26.8 | 15.7 |
| 550 | 0 | 20.8 | 17.2 |
| 500 | 0 | 23.2 | 21.2 |
| 550 | -50 | 16.6 | 21.7 |
| 500 | -50 | 17.6 | 18.8 |
| 550 | -100 | 12.7 | 22.3 |
| 500 | -100 | 13.8 | 24.3 |
| 550 | -150 | 8.9 | 26.6 |
| 500 | -150 | 9.7 | 26.5 |
| 550 | -200 | 7.1 | 34.4 |
| 500 | -200 | 7.1 | 34.1 |
| 650 | -200 | 5.9 | 20.2 |
| 650 | -150 | 8.5 | 18.8 |
| 700 | -150 | 7.1 | 16.3 |
| 600 | 300 | 49.4 | 11.8 |
| 650 | 300 | 43.3 | 10.5 |
| 700 | 300 | 33.5 | 9.9 |
| 750 | 300 | 24.1 | 8.6 |
| 550 | 350 | 59.9 | 11.4 |
| 500 | 350 | 64.9 | 13.7 |
| 600 | 400 | 47.5 | 10.0 |
| 650 | 400 | 43.1 | 11.6 |
| 700 | 400 | 31.7 | 10.4 |
| 550 | 400 | 53.4 | 10.2 |
| 500 | 400 | 57.5 | 10.6 |
| 600 | 350 | 51.5 | 12.0 |
| 650 | 350 | 41.5 | 10.3 |
| 700 | 350 | 34.4 | 9.8 |
| 750 | 350 | 20.7 | 7.7 |
| 750 | 400 | 20.0 | 7.1 |
| 400 | 400 | 67.3 | 12.4 |
| 450 | 400 | 62.7 | 11.3 |
| 400 | 350 | 72.9 | 13.6 |
| 450 | 350 | 73.0 | 12.2 |
| 450 | 300 | 72.4 | 12.5 |
| 400 | 250 | 69.9 | 13.5 |
| 450 | 250 | 69.3 | 13.4 |
| 350 | 200 | 57.6 | 13.8 |
| 400 | 200 | 60.1 | 13.3 |
| 450 | 200 | 62.0 | 12.5 |
| 450 | 150 | 50.4 | 14.6 |
| 400 | 100 | 37.8 | 19.3 |
| 350 | 100 | 34.5 | 21.1 |
| 450 | 100 | 37.3 | 16.4 |
| 400 | 50 | 26.1 | 22.6 |
| 350 | 50 | 21.9 | 29.0 |
| 450 | 50 | 26.5 | 19.2 |
| 400 | 0 | 19.6 | 25.6 |
| 450 | 0 | 19.5 | 23.1 |
| 400 | -50 | 14.5 | 27.1 |
| 450 | -50 | 13.4 | 26.9 |
| 400 | -100 | 10.8 | 32.3 |
| 400 | 300 | 71.2 | 11.9 |
| 300 | 400 | 34.1 | 13.2 |
| 350 | 400 | 50.2 | 11.8 |
| 250 | 400 | 19.0 | 12.0 |
| 300 | 350 | 45.1 | 11.4 |
| 250 | 350 | 32.0 | 12.1 |
| 350 | 350 | 57.1 | 11.9 |
| 300 | 300 | 52.6 | 12.9 |
| 250 | 300 | 39.3 | 12.6 |
| 350 | 300 | 63.2 | 12.8 |
| 300 | 250 | 54.3 | 14.2 |
| 250 | 250 | 43.9 | 13.7 |

| X | Y | Potential (mV/A) | |
|---|---|---|---|
| (m) | (m) | HS-14 | HS-7 |
| 350 | 250 | 59.9 | 13.2 |
| 300 | 200 | 56.2 | 14.6 |
| 250 | 200 | 50.3 | 14.7 |
| 350 | 150 | 58.2 | 15.5 |
| 400 | 150 | 58.3 | 13.9 |
| 250 | 450 | 18.5 | 11.7 |
| 250 | 500 | 14.1 | 8.6 |
| 300 | 500 | 19.2 | 7.9 |
| 250 | 550 | 9.9 | 6.7 |
| 300 | 450 | 20.5 | 10.4 |
| 400 | 450 | 43.4 | 10.4 |
| 350 | 450 | 34.5 | 10.2 |
| 400 | 500 | 25.4 | 7.9 |
| 350 | 500 | 23.3 | 8.6 |
| 400 | 550 | 14.5 | 7.2 |
| 350 | 550 | 14.4 | 7.3 |
| 400 | 600 | 10.6 | 6.5 |
| 350 | 600 | 9.3 | 6.8 |
| 300 | 600 | 9.2 | 7.4 |
| 300 | 550 | 13.3 | 7.8 |
| 250 | 600 | 9.4 | 6.9 |
| 200 | 600 | 7.2 | 8.6 |
| 150 | 600 | 7.0 | 7.2 |
| 100 | 600 | 5.8 | 7.4 |
| 100 | 500 | 11.0 | 8.8 |
| 150 | 500 | 12.0 | 8.0 |
| 200 | 500 | 13.4 | 8.6 |
| 600 | 450 | 37.6 | 8.7 |
| 650 | 450 | 36.0 | 8.3 |
| 700 | 450 | 29.9 | 7.6 |
| 550 | 450 | 49.2 | 9.9 |
| 500 | 450 | 42.4 | 9.4 |
| 450 | 450 | 44.0 | 9.9 |
| 600 | 500 | 27.3 | 6.2 |
| 650 | 500 | 28.4 | 7.4 |
| 700 | 500 | 21.2 | 6.4 |
| 750 | 500 | 17.6 | 5.7 |
| 550 | 500 | 33.0 | 7.6 |
| 500 | 500 | 34.4 | 8.6 |
| 450 | 500 | 30.2 | 8.6 |
| 600 | 550 | 26.5 | 7.5 |
| 650 | 550 | 21.6 | 6.6 |
| 700 | 550 | 17.4 | 5.9 |
| 750 | 550 | 15.4 | 5.7 |
| 550 | 550 | 26.4 | 7.8 |
| 500 | 550 | 23.9 | 7.9 |
| 450 | 550 | 22.5 | 8.2 |
| 600 | 600 | 20.1 | 6.3 |
| 650 | 600 | 17.9 | 5.8 |
| 700 | 600 | 15.7 | 5.3 |
| 750 | 600 | 14.4 | 5.1 |
| 550 | 600 | 18.4 | 6.8 |
| 500 | 600 | 19.3 | 7.5 |
| 450 | 600 | 18.9 | 7.6 |
| 600 | 650 | 14.2 | 5.6 |
| 650 | 650 | 13.5 | 4.7 |
| 700 | 650 | 13.5 | 5.0 |
| 750 | 650 | 11.6 | 4.5 |
| 550 | 650 | 15.8 | 7.0 |
| 500 | 650 | 15.3 | 6.8 |
| 450 | 650 | 16.2 | 7.9 |
| 600 | 700 | 9.7 | 4.4 |
| 650 | 700 | 11.0 | 4.8 |
| 700 | 700 | 10.2 | 4.6 |
| 750 | 700 | 8.8 | 3.8 |
| 550 | 700 | 9.5 | 4.3 |
| 500 | 700 | 12.0 | 6.2 |
| 450 | 700 | 14.0 | 6.3 |
| 600 | 750 | 10.5 | 5.5 |
| 650 | 750 | 9.7 | 4.5 |
| 700 | 750 | 9.3 | 4.5 |
| 550 | 750 | 6.8 | 3.0 |
| 500 | 750 | 12.0 | 6.1 |
| 450 | 750 | 13.3 | 5.9 |
| 600 | 800 | 10.3 | 4.9 |

| X | Y | Potential (mV/A) | |
|---|---|---|---|
| (m) | (m) | HS-14 | HS-7 |
| 650 | 800 | 8.9 | 4.3 |
| 700 | 800 | 9.1 | 4.3 |
| 550 | 800 | 10.0 | 5.5 |
| 500 | 800 | 10.5 | 5.8 |
| 450 | 800 | 10.3 | 4.9 |
| 250 | 700 | 13.5 | 7.2 |
| 250 | 650 | 14.3 | 7.6 |
| 350 | 750 | 10.0 | 5.5 |
| 350 | 700 | 8.3 | 4.9 |
| 350 | 650 | 16.5 | 8.4 |
| 300 | 650 | 15.7 | 8.0 |
| 300 | 700 | 14.2 | 7.8 |
| 300 | 750 | 10.8 | 6.1 |
| 250 | 750 | 11.4 | 6.1 |
| 300 | 900 | 7.6 | 5.0 |
| 400 | 850 | 8.6 | 4.3 |
| 400 | 900 | 7.6 | 4.6 |
| 500 | 850 | 7.1 | 4.1 |
| 450 | 850 | 9.0 | 4.2 |
| 500 | 900 | 7.3 | 4.2 |
| 450 | 900 | 6.0 | 3.3 |
| 600 | 900 | 7.0 | 4.0 |
| 700 | 900 | 5.0 | 2.6 |
| 800 | 900 | 5.1 | 2.5 |
| 600 | 1000 | 5.1 | 3.0 |
| 700 | 1000 | 4.0 | 2.2 |
| 800 | 1000 | 3.4 | 2.4 |
| 500 | 1000 | 5.7 | 3.7 |
| 400 | 1000 | 6.0 | 4.1 |
| 300 | 1000 | 5.1 | 3.6 |
| 600 | 1100 | 3.4 | 2.4 |
| 700 | 1100 | 3.4 | 2.5 |
| 800 | 1100 | 3.1 | 2.3 |
| 500 | 1100 | 3.8 | 2.9 |
| 400 | 1100 | 2.6 | 2.4 |
| 300 | 1100 | 2.6 | 2.1 |
| 600 | 1200 | 2.3 | 2.4 |
| 500 | 1200 | 2.8 | 2.1 |
| 400 | 1200 | 3.1 | 2.4 |
| 700 | 1200 | 1.9 | 1.8 |
| 800 | 1200 | 1.1 | 1.1 |
| 600 | 1300 | 1.5 | 1.3 |
| 700 | 1300 | 1.3 | 1.2 |
| 800 | 1300 | 1.3 | 1.1 |
| 500 | 1300 | 1.6 | 1.7 |
| 600 | 1400 | 1.1 | .9 |
| 700 | 1400 | .9 | .8 |
| 800 | 1400 | .8 | .7 |
| 700 | 1500 | .6 | .5 |
| 800 | 800 | 8.3 | 3.8 |
| 900 | 800 | 6.0 | 3.1 |
| 1000 | 800 | 4.2 | 2.5 |
| 1100 | 800 | 3.0 | 1.9 |
| 900 | 900 | 4.7 | 2.6 |
| 1000 | 900 | 2.9 | 2.0 |
| 1100 | 900 | 2.6 | 1.6 |
| 900 | 1000 | 3.8 | 2.1 |
| 1000 | 1000 | 2.7 | 1.7 |
| 1100 | 1000 | 2.1 | 1.4 |
| 900 | 1100 | 2.3 | 1.7 |
| 1000 | 1100 | 1.9 | 1.3 |
| 1100 | 1100 | 1.5 | .9 |
| 900 | 1200 | 1.8 | 1.2 |
| 1000 | 1200 | 1.5 | 1.0 |
| 900 | 1300 | 1.2 | 1.2 |
| 1200 | 1000 | 2.7 | 1.6 |
| 1200 | 900 | 2.9 | 1.5 |
| 1300 | 900 | 2.2 | 1.2 |
| 1200 | 800 | 2.5 | 1.2 |
| 1300 | 800 | 2.4 | 1.2 |
| 1400 | 800 | 2.2 | 1.1 |
| 1200 | 700 | 4.8 | 2.8 |
| 1300 | 700 | 3.0 | 2.2 |
| 1400 | 700 | 2.5 | 1.4 |
| 1500 | 700 | 1.3 | 1.2 |

| X | Y | Potential (mV/A) | |
|---|---|---|---|
| (m) | (m) | HS-14 | HS-7 |
| 1100 | 700 | 5.8 | 3.9 |
| 1000 | 700 | 9.5 | 5.9 |
| 1200 | 600 | 6.2 | 3.6 |
| 1300 | 600 | 5.2 | 2.9 |
| 1400 | 600 | 3.6 | 2.1 |
| 1500 | 600 | 2.4 | 1.5 |
| 1100 | 600 | 6.9 | 3.5 |
| 1000 | 600 | 8.9 | 4.4 |
| 1200 | 500 | 6.7 | 4.4 |
| 1300 | 500 | 5.1 | 3.3 |
| 1400 | 500 | 3.7 | 2.2 |
| 1500 | 500 | 2.5 | 1.9 |
| 1100 | 500 | 9.5 | 4.7 |
| 1000 | 500 | 12.6 | 5.7 |
| 1200 | 400 | 7.7 | 5.1 |
| 1300 | 400 | 6.0 | 3.4 |
| 1400 | 400 | 3.8 | 2.7 |
| 1100 | 400 | 9.2 | 5.0 |
| 1200 | 300 | 7.8 | 5.5 |
| 1300 | 300 | 5.8 | 4.4 |
| 1200 | 200 | 8.7 | 6.3 |
| 1100 | 200 | 9.8 | 7.1 |
| 900 | 700 | 7.4 | 4.1 |
| 800 | 700 | 8.0 | 3.7 |
| 900 | 600 | 10.8 | 6.0 |
| 800 | 600 | 14.0 | 8.1 |
| 800 | 550 | 17.2 | 8.2 |
| 900 | 500 | 13.4 | 7.8 |
| 850 | 500 | 15.5 | 7.0 |
| 800 | 500 | 17.3 | 7.5 |
| 900 | 450 | 11.7 | 5.9 |
| 800 | 450 | 19.1 | 8.2 |
| 750 | 450 | 18.8 | 7.5 |
| 900 | 400 | 14.6 | 6.8 |
| 850 | 400 | 14.6 | 7.3 |
| 950 | 400 | 13.3 | 6.7 |
| 1000 | 400 | 12.1 | 6.6 |
| 900 | 350 | 12.6 | 6.4 |
| 950 | 350 | 11.8 | 8.0 |
| 1000 | 350 | 10.2 | 6.6 |
| 850 | 450 | 16.0 | 6.9 |
| 800 | 400 | 19.0 | 9.0 |
| 850 | 350 | 16.6 | 7.9 |
| 800 | 350 | 19.4 | 8.3 |
| 900 | 300 | 13.9 | 8.6 |
| 950 | 300 | 12.5 | 8.0 |
| 1000 | 300 | 10.6 | 7.7 |
| 1050 | 300 | 9.9 | 6.7 |
| 1100 | 300 | 8.9 | 6.1 |
| 850 | 300 | 17.7 | 8.9 |
| 800 | 300 | 19.5 | 8.4 |
| 900 | 250 | 15.7 | 8.7 |
| 950 | 250 | 13.1 | 8.3 |
| 1000 | 250 | 11.8 | 7.8 |
| 850 | 250 | 17.6 | 9.0 |
| 800 | 250 | 21.2 | 10.4 |
| 900 | 200 | 15.2 | 8.7 |
| 950 | 200 | 13.3 | 8.5 |
| 1000 | 200 | 12.1 | 8.3 |
| 850 | 200 | 17.6 | 8.6 |
| 800 | 200 | 20.5 | 10.9 |
| 900 | 150 | 13.8 | 9.1 |
| 850 | 150 | 15.8 | 9.2 |
| 800 | 150 | 17.9 | 11.6 |
| 850 | 100 | 14.7 | 10.8 |
| 800 | 100 | 13.5 | 11.8 |
| 800 | 50 | 13.0 | 11.5 |
| 600 | -250 | 7.2 | 27.3 |
| 700 | -200 | 7.8 | 15.5 |
| 600 | -200 | 9.7 | 28.1 |
| 600 | -150 | 11.5 | 21.0 |
| 600 | -100 | 12.7 | 21.6 |
| 650 | -100 | 10.7 | 15.3 |
| 700 | -100 | 10.1 | 14.3 |
| 600 | -50 | 14.6 | 16.6 |

| X | Y | Potential (mV/A) | |
|---|---|---|---|
| (m) | (m) | HS-14 | HS-7 |
| 650 | -50 | 14.2 | 15.2 |
| 700 | -50 | 10.2 | 15.3 |
| 600 | 0 | 18.9 | 15.0 |
| 650 | 0 | 13.5 | 16.0 |
| 700 | 0 | 12.7 | 12.3 |
| 750 | 0 | 9.5 | 10.9 |
| 600 | 50 | 22.1 | 14.6 |
| 650 | 50 | 20.0 | 15.4 |
| 700 | 50 | 16.2 | 13.9 |
| 750 | 50 | 11.3 | 11.8 |
| 600 | 100 | 28.2 | 12.8 |
| 650 | 100 | 24.6 | 12.4 |
| 700 | 100 | 21.1 | 11.2 |
| 750 | 100 | 14.2 | 11.8 |
| 600 | 150 | 34.7 | 11.4 |
| 650 | 150 | 28.9 | 13.0 |
| 700 | 150 | 26.2 | 12.3 |
| 750 | 150 | 16.1 | 11.0 |
| 600 | 200 | 41.1 | 12.4 |
| 650 | 200 | 32.5 | 11.8 |
| 700 | 200 | 28.8 | 10.9 |
| 750 | 200 | 15.3 | 7.1 |
| 600 | 250 | 45.4 | 12.4 |
| 650 | 250 | 36.3 | 12.2 |
| 700 | 250 | 30.5 | 10.2 |
| 750 | 250 | 25.2 | 9.4 |
| 350 | -150 | 12.1 | 48.3 |
| 350 | -100 | 15.9 | 41.8 |
| 350 | -50 | 17.7 | 40.1 |
| 350 | 0 | 23.1 | 34.3 |
| 300 | -150 | 15.0 | 54.7 |
| 300 | -100 | 18.1 | 45.4 |
| 300 | -50 | 19.4 | 41.2 |
| 250 | -150 | 16.1 | 51.1 |
| 250 | -100 | 18.6 | 43.6 |
| 250 | -50 | 19.6 | 42.1 |
| 200 | -150 | 14.7 | 56.9 |
| 150 | -150 | 14.3 | 76.0 |
| 150 | -100 | 17.7 | 56.1 |
| 100 | -150 | 13.2 | 82.5 |
| 100 | -100 | 17.1 | 54.0 |
| 100 | -50 | 18.7 | 49.6 |
| 100 | 0 | 22.1 | 40.9 |
| 50 | -150 | 10.8 | 72.1 |
| 50 | -100 | 13.7 | 64.3 |
| 50 | -50 | 15.4 | 51.6 |
| 150 | -50 | 20.0 | 46.6 |
| 250 | 100 | 34.2 | 29.1 |
| 0 | -150 | 10.2 | 79.3 |
| 0 | -100 | 11.3 | 64.3 |
| 0 | -50 | 13.4 | 52.4 |
| -50 | -150 | 8.1 | 72.4 |
| -50 | -100 | 9.7 | 64.0 |
| -50 | -50 | 12.1 | 52.0 |
| -50 | 0 | 11.8 | 36.4 |
| 0 | 0 | 15.6 | 39.7 |
| 50 | 0 | 18.7 | 39.2 |
| -50 | 50 | 13.5 | 30.8 |
| 0 | 50 | 18.7 | 30.7 |
| 100 | 50 | 27.7 | 31.1 |
| 150 | 50 | 30.8 | 30.8 |
| 200 | 50 | 33.8 | 31.3 |
| 200 | 100 | 32.3 | 31.3 |
| 250 | 50 | 29.4 | 33.2 |
| 250 | 0 | 22.8 | 40.0 |
| 50 | 50 | 23.3 | 30.7 |
| -50 | 100 | 15.1 | 29.4 |
| 0 | 100 | 19.4 | 30.3 |
| 50 | 100 | 26.2 | 30.5 |
| 100 | 100 | 29.7 | 29.6 |
| -50 | 150 | 15.2 | 24.6 |
| 0 | 150 | 20.2 | 24.3 |
| 50 | 150 | 27.4 | 25.1 |
| 100 | 150 | 34.3 | 27.3 |
| -50 | 200 | 16.4 | 18.3 |

| X | Y | Potential (mV/A) | |
|---|---|---|---|
| (m) | (m) | HS-14 | HS-7 |
| 0 | 200 | 20.4 | 21.8 |
| 50 | 200 | 25.5 | 21.9 |
| 100 | 200 | 31.7 | 21.9 |
| 150 | 200 | 42.5 | 21.6 |
| 200 | 200 | 40.2 | 20.5 |
| -50 | 250 | 15.8 | 15.2 |
| 0 | 250 | 20.0 | 16.9 |
| 50 | 250 | 25.2 | 15.9 |
| 100 | 250 | 32.8 | 16.4 |
| 150 | 250 | 41.3 | 18.3 |
| 200 | 250 | 44.3 | 17.8 |
| -50 | 300 | 12.9 | 12.2 |
| 0 | 300 | 18.6 | 14.0 |
| 50 | 300 | 23.9 | 13.2 |
| 100 | 300 | 28.9 | 13.3 |
| 150 | 300 | 32.2 | 15.0 |
| 200 | 300 | 39.1 | 14.1 |
| -50 | 350 | 12.5 | 13.4 |
| 0 | 350 | 16.4 | 12.7 |
| 50 | 350 | 21.7 | 13.7 |
| 150 | 350 | 29.4 | 13.9 |
| 200 | 350 | 33.3 | 12.5 |
| 100 | 350 | 23.7 | 17.6 |
| 0 | 400 | 13.2 | 9.9 |
| 50 | 400 | 17.7 | 13.4 |
| 100 | 400 | 21.5 | 12.9 |
| 150 | 400 | 23.9 | 13.1 |
| 200 | 400 | 28.2 | 13.2 |
| -50 | 450 | 9.5 | 11.8 |
| 0 | 450 | 11.1 | 11.0 |
| 50 | 450 | 13.0 | 13.8 |
| 100 | 450 | 16.6 | 11.2 |
| 150 | 450 | 17.3 | 11.3 |
| 200 | 450 | 18.9 | 12.6 |
| 50 | 500 | 12.4 | 11.5 |
| 0 | 500 | 8.1 | 10.4 |
| -100 | 600 | 3.3 | 6.7 |
| 0 | 600 | 5.6 | 6.2 |
| 100 | 550 | 11.3 | 8.1 |
| 150 | 550 | 11.8 | 7.8 |
| 200 | 550 | 14.9 | 8.7 |
| 200 | 650 | 7.8 | 6.7 |
| 200 | 700 | 6.5 | 6.1 |
| -100 | 700 | 1.1 | 5.6 |
| 0 | 700 | 3.0 | 5.2 |
| 100 | 700 | 4.5 | 6.2 |
| 0 | 800 | 1.0 | 4.9 |
| 100 | 800 | 1.5 | 5.2 |
| 100 | 900 | 1.2 | 3.4 |
| 200 | 800 | 3.5 | 7.4 |
| 200 | 900 | 2.6 | 3.6 |
| -200 | 600 | 1.6 | 8.6 |
| 200 | 1000 | 1.5 | 3.4 |
| -200 | 500 | 2.2 | 8.1 |
| -300 | 500 | 1.9 | 8.3 |
| -200 | 400 | 2.7 | 10.1 |
| -300 | 400 | 1.8 | 8.5 |
| -200 | 300 | 5.4 | 13.0 |
| -300 | 300 | 2.5 | 9.1 |
| -150 | 200 | 8.9 | 18.4 |
| -150 | 250 | 8.9 | 18.4 |
| -150 | 300 | 8.7 | 12.7 |
| -200 | 200 | 6.8 | 17.7 |
| -200 | 250 | 6.4 | 12.8 |
| -250 | 200 | 4.5 | 14.8 |
| -300 | 200 | 2.5 | 13.1 |
| -150 | 150 | 9.3 | 22.0 |
| -200 | 150 | 7.1 | 21.4 |
| -250 | 150 | 5.5 | 20.9 |
| -300 | 150 | 3.2 | 18.0 |
| -150 | 100 | 9.1 | 26.7 |
| -200 | 100 | 7.0 | 23.2 |
| -250 | 100 | 5.3 | 23.1 |
| -300 | 100 | 3.5 | 18.5 |
| -350 | 100 | .9 | 13.4 |

| X | Y | Potential (mV/A) | |
|---|---|---|---|
| (m) | (m) | HS-14 | HS-7 |
| -150 | 50 | 8.9 | 32.6 |
| -200 | 50 | 6.8 | 29.6 |
| -250 | 50 | 4.8 | 27.1 |
| -300 | 50 | 3.6 | 30.8 |
| -350 | 50 | 1.9 | 27.6 |
| -150 | 0 | 7.5 | 34.2 |
| -200 | 0 | 5.1 | 35.1 |
| -250 | 0 | 3.6 | 32.4 |
| -300 | 0 | 3.3 | 29.8 |
| -350 | 0 | 1.7 | 30.8 |
| -150 | -50 | 7.0 | 44.0 |
| -200 | -50 | 4.5 | 39.2 |
| -250 | -50 | 3.6 | 38.8 |
| -300 | -50 | 2.1 | 34.4 |
| -350 | -50 | 1.8 | 30.8 |
| -150 | -100 | 5.3 | 53.1 |
| -200 | -100 | 4.2 | 45.2 |
| -250 | -100 | 3.1 | 43.0 |
| -300 | -100 | 1.6 | 40.3 |
| -150 | -150 | 4.3 | 62.1 |
| -200 | -150 | 3.1 | 56.8 |
| -250 | -150 | 2.4 | 51.9 |
| -150 | -200 | 3.3 | 79.9 |
| -200 | -200 | 3.8 | 72.1 |
| -300 | -200 | 1.5 | 53.5 |
| -400 | -100 | 1.1 | 30.6 |
| -400 | 0 | 1.5 | 25.2 |
| -500 | 0 | .9 | 17.4 |
| -400 | 50 | 1.4 | 16.3 |
| -400 | 100 | 1.1 | 10.6 |
| -500 | 100 | .9 | 8.3 |
| -600 | 100 | .8 | 6.9 |
| -400 | 200 | 1.1 | 6.4 |
| -500 | 200 | 1.0 | 8.8 |
| -600 | 200 | .9 | 4.7 |
| -400 | 300 | 1.2 | 5.6 |
| -500 | 300 | 1.0 | 4.9 |
| -400 | 400 | 1.3 | 4.8 |
| -300 | -300 | .8 | 62.3 |
| -200 | -300 | 1.6 | 82.4 |
| -200 | -400 | 3.4 | 87.4 |
| -100 | -250 | 3.2 | 94.0 |
| -150 | -250 | 2.3 | 87.6 |
| -100 | -300 | 2.4 | 106.0 |
| -100 | -400 | 1.2 | 139.4 |
| -100 | -500 | .9 | 117.2 |
| 400 | 800 | 10.7 | 6.2 |
| 400 | 700 | 14.5 | 7.6 |
| 400 | 750 | 13.6 | 6.9 |
| 350 | 800 | 11.0 | 6.7 |
| 300 | 800 | 10.6 | 6.4 |
| 450 | -200 | 9.6 | 35.2 |
| 400 | -200 | 12.3 | 46.6 |
| 350 | -200 | 9.2 | 52.2 |
| 300 | -200 | 12.2 | 58.5 |
| 250 | -200 | 13.0 | 69.1 |
| 200 | -200 | 11.1 | 89.7 |
| 150 | -200 | 9.6 | 116.2 |
| 100 | -200 | 9.3 | 120.4 |
| 50 | -200 | 9.1 | 112.5 |
| 0 | -200 | 7.7 | 104.5 |
| -50 | -200 | 6.0 | 98.0 |
| -100 | -200 | 4.4 | 87.7 |
| -100 | 500 | 6.5 | 8.8 |
| -100 | 450 | 7.7 | 10.7 |
| -100 | 400 | 8.5 | 10.0 |
| -100 | 350 | 10.7 | 11.3 |
| -100 | 300 | 12.1 | 11.4 |
| -100 | 250 | 12.0 | 15.0 |
| -100 | 200 | 11.9 | 17.7 |
| -100 | 150 | 12.0 | 20.4 |
| -100 | 100 | 11.5 | 26.6 |
| -100 | 50 | 10.6 | 32.0 |
| -100 | 0 | 10.6 | 37.7 |
| -100 | -50 | 7.5 | 53.7 |

| X | Y | Potential (mV/A) | |
|---|---|---|---|
| (m) | (m) | HS-14 | HS-7 |
| -100 | -100 | 6.1 | 63.0 |
| -100 | -150 | 5.5 | 67.3 |
| 0 | -250 | 4.7 | 143.9 |
| -50 | -250 | 3.6 | 125.6 |
| 0 | -300 | 4.0 | 213.4 |
| -50 | -300 | 3.0 | 134.3 |
| 0 | -350 | 2.7 | 232.3 |
| -50 | -350 | 1.7 | 151.4 |
| 0 | -400 | 1.6 | 220.8 |
| 50 | -250 | 5.6 | 136.5 |
| 100 | -250 | 5.6 | 200.1 |
| 200 | -250 | 8.7 | 114.9 |
| 150 | -250 | 6.5 | 152.7 |
| 250 | -250 | 8.6 | 83.0 |
| 200 | -300 | 5.8 | 106.3 |
| 150 | -300 | 5.6 | 203.3 |
| 200 | -350 | 3.7 | 118.1 |
| 150 | -350 | 3.8 | 213.2 |
| 200 | -400 | 2.8 | 157.8 |
| 300 | -250 | 7.5 | 62.4 |
| 350 | -250 | 6.5 | 55.0 |
| 300 | -300 | 6.0 | 68.3 |
| 250 | -300 | 6.4 | 109.0 |
| 350 | -300 | 5.7 | 61.6 |
| 300 | -350 | 4.8 | 79.6 |
| 250 | -350 | 4.5 | 88.8 |
| 350 | -350 | 3.8 | 68.0 |
| 300 | -400 | 3.2 | 76.8 |
| 250 | -400 | 3.2 | 98.0 |
| 350 | -400 | 3.0 | 65.0 |
| 400 | -250 | 6.1 | 44.4 |
| 450 | -250 | 7.8 | 38.1 |
| 400 | -300 | 5.1 | 46.2 |
| 450 | -300 | 5.7 | 41.9 |
| 500 | -300 | 6.9 | 36.1 |
| 400 | -350 | 4.4 | 50.3 |
| 500 | -250 | 9.3 | 35.4 |
| 600 | -300 | 5.3 | 24.2 |
| 600 | -400 | 3.6 | 29.4 |
| 500 | -400 | 1.7 | 29.8 |
| 400 | -400 | 4.7 | 58.0 |
| 600 | -500 | .6 | 31.6 |
| 500 | -500 | .7 | 37.0 |
| 500 | -600 | .6 | 33.8 |
| 400 | -500 | .8 | 55.7 |
| 400 | -600 | .6 | 45.5 |
| 400 | -700 | .5 | 33.5 |
| 300 | -500 | 2.7 | 75.5 |
| 300 | -450 | 3.5 | 75.5 |
| 300 | -600 | .8 | 60.7 |
| 300 | -700 | .9 | 41.0 |
| 300 | -800 | .6 | 30.4 |
| 250 | -500 | 2.8 | 87.2 |
| 250 | -450 | 3.9 | 85.8 |
| 200 | -500 | 3.2 | 109.5 |
| 200 | -450 | 4.1 | 107.0 |
| 200 | -550 | 1.3 | 88.5 |
| 200 | -600 | 1.2 | 63.8 |
| 200 | -700 | .7 | 49.4 |
| 200 | -800 | .6 | 37.9 |
| 150 | -500 | 2.5 | 106.9 |
| 150 | -450 | 4.4 | 181.6 |
| 150 | -400 | 4.5 | 174.5 |
| 100 | -500 | 3.3 | 185.3 |
| 100 | -600 | 2.6 | 90.8 |
| 100 | -700 | 2.5 | 49.8 |
| 100 | -450 | 3.9 | 237.3 |
| 100 | -400 | 4.4 | 281.3 |
| 100 | -350 | 4.7 | 295.8 |
| 100 | -300 | 4.9 | 234.4 |
| 50 | -450 | 4.1 | 245.8 |
| 50 | -400 | 4.4 | 281.3 |
| 50 | -350 | 4.5 | 281.8 |
| 50 | -300 | 4.8 | 218.1 |
| 0 | -500 | 3.1 | 177.3 |

| X | Y | Potential (mV/A) | |
|---|---|---|---|
| (m) | (m) | HS-14 | HS-7 |
| 0 | -600 | .6 | 80.8 |
| 700 | -400 | 2.6 | 11.2 |
| 900 | 100 | 12.8 | 10.6 |
| 1000 | 100 | 9.6 | 8.0 |
| 900 | 0 | 10.7 | 10.5 |
| 1000 | 0 | 9.0 | 10.6 |
| 800 | 0 | 12.0 | 13.3 |
| 900 | -100 | 10.0 | 14.1 |
| 800 | -100 | 11.2 | 12.4 |
| 1000 | -100 | 8.0 | 8.9 |
| 900 | -200 | 8.6 | 13.3 |
| 800 | -200 | 9.5 | 15.4 |
| 800 | -300 | 6.9 | 14.0 |
| 700 | -300 | 7.7 | 19.4 |
| 400 | 650 | 15.7 | 7.6 |
| -50 | 400 | 10.1 | 13.9 |
| 450 | -100 | 13.0 | 29.4 |
| 400 | -150 | 9.9 | 38.8 |
| 450 | -150 | 9.6 | 36.4 |

# Appendix 6

## Electric field in area A

| X | Y | HS-14 | | HS-7 | | X | Y | HS-14 | | HS-7 | | X | Y | HS-14 | | HS-7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (m) | (m) | \|E\| | φ | \|E\| | φ | (m) | (m) | \|E\| | φ | \|E\| | φ | (m) | (m) | \|E\| | φ | \|E\| | φ |
| 325 | 575 | 37 | 92 | 2 | 179 | 275 | 375 | 36 | 288 | 2 | 222 | 850 | 675 | 3 | 198 | 0 | 189 |
| 325 | 525 | 15 | 89 | 5 | 39 | 225 | 325 | 8 | 218 | 3 | 118 | 850 | 750 | 7 | 168 | 3 | 166 |
| 275 | 575 | 44 | 62 | 7 | 132 | 225 | 275 | 30 | 222 | 3 | 176 | 850 | 575 | 4 | 195 | 4 | 149 |
| 275 | 525 | 25 | 44 | 1 | 202 | 175 | 375 | 2 | 182 | 8 | 137 | 825 | 525 | 12 | 171 | 6 | 169 |
| 225 | 575 | 38 | 57 | 5 | 94 | 175 | 425 | 27 | 77 | 3 | 222 | 825 | 475 | 5 | 188 | 4 | 230 |
| 225 | 525 | 28 | 55 | 4 | 143 | 475 | 275 | 17 | 204 | 12 | 158 | 725 | 275 | 8 | 197 | 4 | 208 |
| 175 | 675 | 28 | 28 | 4 | 84 | 525 | 275 | 22 | 231 | 7 | 161 | 675 | 275 | 5 | 239 | 2 | 232 |
| 175 | 525 | 34 | 45 | 2 | 65 | 525 | 325 | 25 | 215 | 2 | 263 | 775 | 375 | 12 | 286 | 6 | 309 |
| 125 | 575 | 29 | 18 | 8 | 143 | 575 | 275 | 12 | 262 | 4 | 278 | 725 | 375 | 22 | 286 | 10 | 283 |
| 125 | 525 | 42 | 15 | 3 | 225 | 475 | 325 | 48 | 265 | 9 | 174 | 675 | 375 | 28 | 175 | 12 | 167 |
| 75 | 575 | 25 | 16 | 3 | 159 | 475 | 425 | 61 | 182 | 9 | 170 | 675 | 325 | 6 | 207 | 2 | 248 |
| 75 | 525 | 31 | 9 | 5 | 182 | 475 | 375 | 49 | 218 | 5 | 187 | 725 | 325 | 23 | 120 | 12 | 120 |
| 25 | 575 | 16 | 9 | 7 | 139 | 525 | 425 | 40 | 204 | 3 | 228 | 775 | 325 | 3 | 103 | 2 | 62 |
| 25 | 525 | 15 | 34 | 23 | 144 | 525 | 375 | 31 | 193 | 5 | 151 | 825 | 275 | 4 | 151 | 1 | 175 |
| -25 | 575 | 16 | 26 | 23 | 132 | 575 | 425 | 30 | 244 | 4 | 234 | 950 | 350 | 4 | 179 | 2 | 166 |
| -25 | 525 | 20 | 9 | 13 | 309 | 575 | 375 | 17 | 181 | 1 | 173 | 875 | 425 | 4 | 200 | 1 | 11 |
| -75 | 575 | 14 | 359 | 3 | 131 | 625 | 425 | 33 | 302 | 5 | 317 | 950 | 425 | 6 | 117 | 5 | 102 |
| -75 | 525 | 13 | 18 | 20 | 160 | 625 | 375 | 25 | 350 | 6 | 13 | 875 | 550 | 6 | 275 | 1 | 280 |
| -125 | 575 | 15 | 325 | 24 | 128 | 625 | 325 | 22 | 360 | 3 | 45 | 875 | 475 | 12 | 147 | 3 | 174 |
| -125 | 525 | 14 | 11 | 7 | 183 | 575 | 325 | 14 | 195 | 2 | 126 | 950 | 550 | 3 | 172 | 1 | 161 |
| -175 | 575 | 11 | 305 | 34 | 141 | 625 | 275 | 17 | 2 | 3 | 322 | 950 | 475 | 5 | 238 | 3 | 253 |
| -175 | 525 | 9 | 1 | 26 | 182 | 625 | 225 | 8 | 286 | 8 | 137 | 950 | 650 | 5 | 134 | 3 | 126 |
| -175 | 675 | 11 | 324 | 16 | 106 | 650 | 175 | 1 | 213 | 6 | 228 | 950 | 750 | 2 | 183 | 1 | 164 |
| -125 | 675 | 9 | 32 | 15 | 144 | 650 | 125 | 5 | 240 | 2 | 161 | 950 | 850 | 3 | 166 | 0 | 223 |
| -125 | 750 | 11 | 333 | 7 | 184 | 525 | 125 | 3 | 285 | 3 | 133 | 1050 | 650 | 4 | 146 | 2 | 127 |
| 325 | 625 | 22 | 71 | 5 | 83 | 525 | 175 | 5 | 262 | 2 | 245 | 1050 | 750 | 1 | 136 | 1 | 339 |
| 325 | 675 | 34 | 101 | 2 | 106 | 525 | 225 | 5 | 336 | 0 | 43 | 1050 | 850 | 1 | 236 | 0 | 100 |
| 325 | 725 | 32 | 85 | 5 | 95 | 475 | 625 | 35 | 171 | 8 | 172 | 1050 | 550 | 3 | 162 | 2 | 138 |
| 325 | 775 | 12 | 162 | 5 | 236 | 475 | 675 | 33 | 141 | 4 | 141 | 1050 | 450 | 6 | 175 | 3 | 166 |
| 375 | 575 | 36 | 128 | 4 | 208 | 475 | 725 | 40 | 138 | 6 | 227 | 1050 | 350 | 5 | 200 | 3 | 196 |
| 375 | 525 | 30 | 146 | 13 | 143 | 475 | 575 | 68 | 144 | 9 | 153 | 1150 | 650 | 2 | 177 | 0 | 279 |
| 425 | 625 | 37 | 156 | 7 | 231 | 475 | 525 | 36 | 220 | 3 | 216 | 1150 | 750 | 3 | 169 | 1 | 162 |
| 425 | 675 | 46 | 122 | 12 | 159 | 475 | 475 | 47 | 174 | 5 | 158 | 1150 | 850 | 4 | 158 | 2 | 155 |
| 425 | 725 | 40 | 99 | 14 | 131 | 525 | 625 | 5 | 236 | 6 | 318 | 1150 | 550 | 2 | 159 | 2 | 149 |
| 425 | 575 | 25 | 126 | 1 | 145 | 525 | 675 | 34 | 133 | 4 | 128 | 1150 | 450 | 2 | 292 | 1 | 264 |
| 425 | 525 | 53 | 165 | 4 | 164 | 525 | 725 | 18 | 137 | 3 | 128 | 1250 | 650 | 2 | 153 | 2 | 149 |
| 375 | 625 | 37 | 112 | 9 | 140 | 525 | 775 | 8 | 172 | 6 | 267 | 1250 | 550 | 2 | 158 | 1 | 216 |
| 375 | 675 | 25 | 77 | 5 | 22 | 525 | 575 | 30 | 139 | 5 | 81 | 1250 | 750 | 2 | 128 | 2 | 132 |
| 375 | 725 | 47 | 101 | 7 | 75 | 525 | 525 | 36 | 172 | 4 | 124 | 1250 | 850 | 1 | 281 | 0 | 280 |
| 375 | 775 | 8 | 252 | 7 | 254 | 525 | 475 | 30 | 209 | 1 | 188 | 1350 | 650 | 1 | 155 | 1 | 156 |
| 425 | 775 | 11 | 312 | 13 | 296 | 575 | 625 | 27 | 143 | 5 | 143 | 1350 | 750 | 1 | 176 | 1 | 173 |
| 425 | 425 | 83 | 169 | 8 | 151 | 575 | 675 | 19 | 131 | 4 | 137 | 1350 | 850 | 1 | 168 | 1 | 190 |
| 425 | 475 | 66 | 165 | 5 | 152 | 575 | 725 | 9 | 129 | 2 | 158 | 1450 | 750 | 1 | 161 | 1 | 160 |
| 375 | 425 | 19 | 181 | 6 | 130 | 575 | 775 | 4 | 221 | 7 | 255 | 850 | 850 | 7 | 145 | 3 | 150 |
| 375 | 475 | 45 | 142 | 6 | 239 | 575 | 575 | 27 | 181 | 3 | 167 | 850 | 950 | 4 | 128 | 1 | 131 |
| 325 | 475 | 26 | 86 | 1 | 226 | 575 | 525 | 18 | 207 | 2 | 162 | 850 | 1050 | 3 | 137 | 1 | 129 |
| 275 | 425 | 5 | 23 | 6 | 177 | 575 | 475 | 13 | 202 | 2 | 155 | 850 | 1150 | 1 | 169 | 1 | 119 |
| 275 | 475 | 35 | 73 | 4 | 157 | 625 | 625 | 22 | 160 | 3 | 145 | 950 | 950 | 3 | 116 | 1 | 131 |
| 225 | 375 | 11 | 313 | 3 | 140 | 625 | 675 | 17 | 154 | 4 | 155 | 950 | 1050 | 1 | 117 | 1 | 130 |
| 225 | 425 | 34 | 349 | 3 | 72 | 625 | 725 | 9 | 149 | 1 | 147 | 950 | 1150 | 1 | 211 | 0 | 142 |
| 225 | 475 | 35 | 45 | 6 | 301 | 625 | 775 | 11 | 156 | 9 | 256 | 1050 | 950 | 3 | 145 | 1 | 130 |
| 175 | 475 | 41 | 13 | 7 | 157 | 625 | 575 | 11 | 213 | 2 | 74 | 1050 | 1050 | 2 | 140 | 1 | 144 |
| 125 | 425 | 69 | 1 | 20 | 152 | 625 | 525 | 14 | 168 | 3 | 135 | 1050 | 1150 | 1 | 228 | 1 | 201 |
| 125 | 375 | 81 | 352 | 20 | 162 | 625 | 475 | 9 | 188 | 1 | 20 | 1150 | 950 | 1 | 143 | 1 | 139 |
| 125 | 475 | 45 | 7 | 10 | 132 | 675 | 625 | 16 | 172 | 5 | 145 | 1150 | 1050 | 1 | 132 | 1 | 128 |
| 75 | 425 | 40 | 358 | 16 | 135 | 675 | 675 | 8 | 180 | 1 | 286 | 1250 | 950 | 1 | 156 | 0 | 105 |
| 75 | 375 | 45 | 342 | 35 | 141 | 675 | 725 | 13 | 149 | 2 | 122 | 950 | 1250 | 1 | 105 | 0 | 59 |
| 75 | 475 | 37 | 358 | 15 | 128 | 675 | 825 | 10 | 168 | 2 | 182 | 850 | 1250 | 0 | 100 | 0 | 330 |
| 25 | 425 | 22 | 1 | 13 | 140 | 675 | 575 | 22 | 165 | 10 | 153 | 850 | 1350 | 1 | 161 | 0 | 151 |
| 25 | 475 | 27 | 332 | 15 | 153 | 675 | 525 | 11 | 190 | 2 | 193 | 750 | 1250 | 6 | 141 | 4 | 159 |
| -25 | 425 | 18 | 13 | 5 | 174 | 675 | 475 | 8 | 156 | 7 | 146 | 750 | 1350 | 1 | 140 | 3 | 141 |
| -25 | 475 | 25 | 326 | 31 | 115 | 725 | 625 | 6 | 302 | 4 | 338 | 750 | 1450 | 3 | 103 | 1 | 140 |
| -75 | 425 | 15 | 329 | 20 | 151 | 725 | 675 | 5 | 149 | 1 | 155 | 750 | 1150 | 7 | 162 | 5 | 155 |
| 325 | 425 | 7 | 324 | 6 | 341 | 725 | 725 | 6 | 123 | 3 | 102 | 750 | 1050 | 14 | 148 | 8 | 153 |
| 425 | 325 | 72 | 230 | 11 | 153 | 750 | 775 | 4 | 110 | 1 | 72 | 650 | 1250 | 4 | 144 | 2 | 136 |
| 425 | 375 | 79 | 227 | 6 | 201 | 725 | 575 | 9 | 182 | 4 | 182 | 650 | 1350 | 5 | 144 | 2 | 132 |
| 425 | 275 | 51 | 268 | 4 | 259 | 725 | 525 | 8 | 90 | 6 | 94 | 650 | 1450 | 3 | 133 | 2 | 137 |
| 375 | 325 | 55 | 228 | 6 | 344 | 725 | 475 | 7 | 111 | 1 | 163 | 650 | 1150 | 3 | 148 | 1 | 356 |
| 375 | 275 | 63 | 225 | 2 | 100 | 775 | 625 | 3 | 106 | 4 | 120 | 650 | 1050 | 4 | 74 | 3 | 28 |
| 375 | 375 | 59 | 247 | 6 | 267 | 775 | 675 | 3 | 154 | 1 | 177 | 550 | 1250 | 3 | 107 | 3 | 126 |
| 325 | 325 | 44 | 234 | 5 | 177 | 775 | 750 | 2 | 111 | 1 | 130 | 550 | 1350 | 3 | 88 | 2 | 111 |
| 325 | 275 | 52 | 241 | 2 | 206 | 775 | 575 | 16 | 310 | 12 | 315 | 550 | 1450 | 2 | 95 | 1 | 100 |
| 325 | 375 | 34 | 233 | 4 | 134 | 775 | 525 | 18 | 106 | 10 | 96 | 550 | 1150 | 8 | 133 | 2 | 168 |
| 275 | 325 | 20 | 254 | 6 | 142 | 775 | 475 | 11 | 157 | 3 | 188 | 550 | 1050 | 10 | 140 | 3 | 142 |
| 275 | 275 | 39 | 246 | 4 | 202 | 850 | 625 | 7 | 139 | 3 | 125 | 450 | 1250 | 4 | 119 | 4 | 113 |

|E| : Intensity(unit; mV/A·100m) of Electiric Field
φ : Azimuth(unit; Degree) of Electiric Field

| X | Y | HS-14 |  | HS-7 |  | X | Y | HS-14 |  | HS-7 |  | X | Y | HS-14 |  | HS-7 |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (m) | (m) | \|E\| | φ | \|E\| | φ | (m) | (m) | \|E\| | φ | \|E\| | φ | (m) | (m) | \|E\| | φ | \|E\| | φ |
| 450 | 1350 | 5 | 112 | 2 | 100 | 225 | 625 | 31 | 63 | 2 | 91 | 375 | 25 | 21 | 240 | 10 | 199 |
| 450 | 1150 | 3 | 77 | 1 | 200 | 225 | 675 | 17 | 43 | 3 | 60 | 375 | 75 | 15 | 206 | 13 | 266 |
| 350 | 1250 | 4 | 93 | 2 | 106 | 225 | 725 | 44 | 83 | 12 | 101 | 375 | 175 | 23 | 215 | 5 | 120 |
| 250 | 1150 | 3 | 130 | 3 | 141 | 225 | 775 | 46 | 314 | 22 | 289 | 375 | 225 | 18 | 166 | 3 | 29 |
| 750 | 950 | 7 | 257 | 5 | 255 | 275 | 625 | 37 | 52 | 1 | 43 | 375 | 125 | 21 | 249 | 20 | 141 |
| 750 | 850 | 2 | 40 | 1 | 314 | 275 | 675 | 36 | 31 | 7 | 118 | 425 | 25 | 17 | 245 | 12 | 287 |
| 650 | 950 | 5 | 186 | 3 | 163 | 275 | 725 | 23 | 46 | 3 | 66 | 425 | 75 | 20 | 219 | 2 | 49 |
| 650 | 850 | 11 | 152 | 8 | 155 | 275 | 775 | 4 | 285 | 12 | 266 | 425 | 125 | 18 | 206 | 6 | 184 |
| 575 | 850 | 11 | 154 | 3 | 94 | -125 | 375 | 15 | 31 | 39 | 124 | 425 | 175 | 27 | 214 | 6 | 185 |
| 550 | 950 | 6 | 203 | 4 | 153 | -75 | 375 | 18 | 70 | 33 | 100 | 425 | 225 | 44 | 135 | 5 | 118 |
| 550 | 875 | 9 | 128 | 5 | 218 | -25 | 375 | 25 | 25 | 49 | 114 | 525 | -25 | 8 | 228 | 7 | 157 |
| 525 | 825 | 7 | 122 | 2 | 69 | 25 | 375 | 19 | 118 | 35 | 121 | 475 | 25 | 12 | 212 | 10 | 257 |
| 475 | 950 | 6 | 338 | 7 | 16 | -125 | 325 | 17 | 48 | 47 | 136 | 475 | 75 | 12 | 260 | 12 | 132 |
| 475 | 825 | 21 | 145 | 9 | 145 | -75 | 325 | 12 | 68 | 26 | 126 | 475 | 125 | 19 | 188 | 8 | 183 |
| 475 | 775 | 15 | 185 | 11 | 195 | 0 | 325 | 12 | 53 | 22 | 148 | 475 | 175 | 19 | 197 | 12 | 200 |
| 425 | 925 | 19 | 164 | 8 | 174 | -125 | 275 | 10 | 26 | 30 | 206 | 475 | 225 | 19 | 176 | 14 | 168 |
| 425 | 875 | 6 | 2 | 3 | 131 | -75 | 275 | 4 | 29 | 8 | 230 | 550 | 75 | 10 | 152 | 10 | 104 |
| 450 | 975 | 5 | 78 | 2 | 164 | -25 | 275 | 7 | 7 | 16 | 168 | 550 | 25 | 15 | 253 | 8 | 208 |
| 450 | 1050 | 6 | 81 | 4 | 118 | -100 | 225 | 8 | 319 | 26 | 128 | 650 | -50 | 5 | 227 | 2 | 157 |
| 375 | 925 | 9 | 23 | 7 | 286 | -125 | 175 | 12 | 354 | 99 | 136 | 650 | 50 | 4 | 185 | 3 | 226 |
| 375 | 975 | 9 | 47 | 8 | 133 | -75 | 200 | 5 | 338 | 49 | 153 | 575 | 125 | 19 | 185 | 3 | 156 |
| 375 | 1050 | 10 | 37 | 3 | 90 | -125 | 125 | 12 | 326 | 126 | 169 | 575 | 175 | 19 | 213 | 4 | 238 |
| 475 | 875 | 27 | 115 | 9 | 117 | -75 | 125 | 10 | 300 | 32 | 244 | 575 | 225 | 31 | 147 | 7 | 95 |
| 425 | 825 | 17 | 89 | 7 | 116 | -25 | 125 | 13 | 323 | 28 | 180 | 675 | 225 | 23 | 259 | 4 | 230 |
| 375 | 875 | 18 | 116 | 7 | 111 | 25 | 150 | 26 | 336 | 25 | 181 | 750 | 225 | 24 | 258 | 5 | 300 |
| 375 | 825 | 11 | 98 | 3 | 25 | -125 | 75 | 14 | 312 | 71 | 249 | 750 | 50 | 4 | 218 | 2 | 255 |
| 325 | 925 | 7 | 132 | 9 | 166 | -75 | 75 | 12 | 297 | 52 | 141 | 750 | 150 | 6 | 215 | 2 | 170 |
| 325 | 975 | 8 | 111 | 1 | 94 | -25 | 75 | 18 | 323 | 33 | 168 | 850 | 150 | 3 | 262 | 5 | 233 |
| 325 | 1025 | 4 | 122 | 6 | 139 | 0 | 200 | 18 | 356 | 27 | 173 | 850 | 250 | 12 | 263 | 7 | 165 |
| 350 | 1075 | 4 | 81 | 3 | 130 | 150 | 300 | 27 | 359 | 28 | 151 | 950 | 250 | 9 | 257 | 2 | 262 |
| 350 | 1150 | 2 | 73 | 2 | 150 | -125 | 25 | 4 | 3 | 64 | 143 | 550 | -150 | 7 | 262 | 2 | 302 |
| 325 | 875 | 16 | 106 | 4 | 164 | -75 | 25 | 9 | 323 | 43 | 162 | 450 | -150 | 10 | 265 | 4 | 177 |
| 325 | 825 | 7 | 95 | 2 | 255 | -25 | 25 | 8 | 333 | 45 | 163 | 450 | -250 | 2 | 275 | 3 | 263 |
| 275 | 925 | 12 | 125 | 2 | 106 | -125 | -25 | 9 | 308 | 37 | 220 | 350 | -175 | 12 | 248 | 5 | 168 |
| 275 | 975 | 6 | 115 | 2 | 115 | -75 | -25 | 10 | 327 | 41 | 182 | 350 | -250 | 5 | 257 | 7 | 261 |
| 275 | 1050 | 8 | 126 | 2 | 102 | -25 | -25 | 4 | 254 | 53 | 182 | 225 | -125 | 10 | 272 | 2 | 90 |
| 275 | 875 | 8 | 88 | 1 | 114 | 25 | -25 | 14 | 295 | 22 | 210 | 275 | -125 | 11 | 265 | 23 | 149 |
| 275 | 825 | 16 | 115 | 10 | 144 | 25 | 25 | 15 | 316 | 31 | 176 | 350 | -125 | 12 | 250 | 8 | 146 |
| 225 | 925 | 8 | 75 | 1 | 81 | 25 | 75 | 18 | 335 | 29 | 175 | 225 | -175 | 7 | 258 | 17 | 189 |
| 225 | 975 | 5 | 98 | 1 | 137 | 75 | -25 | 18 | 286 | 5 | 176 | 275 | -175 | 9 | 249 | 19 | 273 |
| 225 | 1050 | 5 | 105 | 3 | 129 | 75 | 25 | 16 | 279 | 1 | 182 | 250 | -225 | 8 | 253 | 13 | 231 |
| 225 | 875 | 10 | 91 | 2 | 343 | 75 | 125 | 12 | 302 | 5 | 170 | 250 | -275 | 7 | 269 | 9 | 221 |
| 225 | 825 | 12 | 78 | 9 | 101 | 100 | 175 | 15 | 317 | 5 | 199 | 175 | -125 | 9 | 261 | 13 | 156 |
| 175 | 950 | 8 | 49 | 2 | 149 | 75 | 225 | 16 | 109 | 7 | 270 | 175 | -175 | 7 | 262 | 13 | 188 |
| 175 | 875 | 11 | 46 | 2 | 169 | 150 | 225 | 15 | 335 | 20 | 158 | 175 | -225 | 7 | 241 | 21 | 185 |
| 175 | 825 | 14 | 38 | 10 | 107 | 75 | 300 | 21 | 38 | 16 | 153 | 175 | -275 | 8 | 254 | 19 | 211 |
| 125 | 875 | 9 | 60 | 6 | 173 | 25 | 300 | 23 | 353 | 25 | 157 | 125 | -125 | 8 | 274 | 16 | 178 |
| 125 | 825 | 18 | 344 | 4 | 97 | 75 | 75 | 18 | 303 | 2 | 241 | 125 | -175 | 7 | 273 | 13 | 243 |
| 75 | 850 | 2 | 32 | 3 | 69 | 125 | -25 | 15 | 272 | 17 | 191 | 125 | -225 | 6 | 276 | 7 | 183 |
| -225 | 650 | 9 | 21 | 22 | 82 | 125 | 25 | 23 | 276 | 20 | 182 | 125 | -275 | 6 | 262 | 16 | 264 |
| -175 | 750 | 6 | 249 | 5 | 301 | 125 | 75 | 13 | 289 | 19 | 171 | 150 | -325 | 9 | 260 | 19 | 242 |
| -175 | 625 | 14 | 65 | 36 | 132 | 125 | 150 | 16 | 344 | 8 | 201 | 75 | -125 | 6 | 276 | 20 | 174 |
| -125 | 625 | 11 | 68 | 8 | 76 | 175 | -25 | 18 | 284 | 22 | 177 | 75 | -175 | 7 | 275 | 24 | 205 |
| -75 | 625 | 9 | 47 | 27 | 128 | 175 | 25 | 24 | 272 | 9 | 198 | 75 | -225 | 7 | 282 | 16 | 213 |
| -75 | 675 | 12 | 10 | 3 | 95 | 175 | 75 | 24 | 255 | 13 | 215 | 75 | -275 | 4 | 261 | 44 | 163 |
| -75 | 750 | 6 | 294 | 7 | 356 | 175 | 150 | 12 | 139 | 19 | 172 | 75 | -325 | 7 | 241 | 49 | 193 |
| -25 | 625 | 18 | 5 | 5 | 117 | 225 | -25 | 14 | 262 | 16 | 229 | 25 | -125 | 12 | 295 | 13 | 246 |
| -25 | 675 | 12 | 88 | 7 | 329 | 225 | 25 | 18 | 265 | 17 | 181 | 25 | -175 | 10 | 306 | 19 | 171 |
| -25 | 750 | 9 | 353 | 12 | 202 | 225 | 75 | 21 | 266 | 20 | 180 | 25 | -225 | 7 | 310 | 20 | 207 |
| 25 | 625 | 23 | 59 | 4 | 246 | 225 | 125 | 37 | 276 | 19 | 177 | 25 | -275 | 2 | 319 | 9 | 291 |
| 25 | 675 | 24 | 7 | 13 | 99 | 225 | 175 | 9 | 118 | 12 | 162 | 25 | -325 | 5 | 275 | 11 | 163 |
| 25 | 725 | 17 | 43 | 8 | 42 | 225 | 225 | 37 | 292 | 22 | 115 | -25 | -125 | 3 | 315 | 47 | 225 |
| 25 | 775 | 15 | 295 | 14 | 283 | 275 | -25 | 17 | 235 | 12 | 211 | -25 | -175 | 9 | 284 | 22 | 230 |
| 75 | 625 | 23 | 19 | 7 | 205 | 275 | 25 | 18 | 255 | 11 | 160 | -25 | -225 | 3 | 269 | 22 | 184 |
| 75 | 675 | 22 | 40 | 12 | 153 | 275 | 75 | 26 | 261 | 9 | 192 | -25 | -275 | 7 | 309 | 21 | 224 |
| 75 | 725 | 25 | 45 | 12 | 142 | 275 | 125 | 32 | 246 | 12 | 211 | -25 | -325 | 1 | 248 | 12 | 270 |
| 75 | 775 | 15 | 313 | 4 | 273 | 275 | 175 | 33 | 198 | 11 | 171 | -75 | -125 | 6 | 334 | 46 | 228 |
| 125 | 625 | 27 | 29 | 5 | 164 | 275 | 225 | 17 | 176 | 19 | 133 | -75 | -175 | 4 | 284 | 34 | 233 |
| 125 | 675 | 16 | 53 | 5 | 99 | 325 | -25 | 19 | 266 | 7 | 304 | -75 | -225 | 4 | 296 | 16 | 207 |
| 125 | 725 | 26 | 73 | 3 | 306 | 325 | 25 | 20 | 247 | 5 | 149 | -75 | -275 | 5 | 287 | 22 | 204 |
| 125 | 775 | 3 | 276 | 9 | 210 | 325 | 75 | 19 | 246 | 2 | 351 | -125 | -125 | 6 | 310 | 35 | 210 |
| 175 | 625 | 27 | 76 | 3 | 246 | 325 | 125 | 21 | 212 | 16 | 338 | -125 | -175 | 6 | 314 | 43 | 205 |
| 175 | 675 | 16 | 69 | 7 | 162 | 325 | 175 | 26 | 248 | 5 | 140 | -125 | -225 | 3 | 314 | 35 | 209 |
| 175 | 725 | 33 | 75 | 10 | 136 | 325 | 225 | 20 | 181 | 7 | 137 | -175 | -125 | 5 | 311 | 66 | 203 |
| 175 | 775 | 20 | 263 | 17 | 223 | 375 | -25 | 15 | 238 | 3 | 56 | -175 | -175 | 3 | 145 | 59 | 207 |

|E| : Intensity(unit; mV/A·100m) of Electiric Field
φ : Azimuth(unit; Degree) of Electiric Field

| X | Y | HS-14 | | HS-7 | |
|---|---|---|---|---|---|
| (m) | (m) | \|E\| | $\phi$ | \|E\| | $\phi$ |
| -150 | -250 | 4 | 274 | 39 | 235 |
| -50 | -350 | 1 | 306 | 19 | 241 |
| 25 | -375 | 1 | 248 | 36 | 212 |
| 50 | -450 | 1 | 270 | 20 | 220 |
| 75 | -375 | 2 | 239 | 43 | 244 |
| 150 | -375 | 1 | 95 | 12 | 234 |
| 150 | -450 | 1 | 303 | 4 | 282 |
| 150 | -550 | 0 | 321 | 5 | 212 |
| 250 | -350 | 3 | 277 | 11 | 262 |
| 250 | -450 | □ | 257 | 8 | 149 |
| 350 | -350 | 2 | 274 | 6 | 258 |
| -250 | -250 | 2 | 311 | 37 | 246 |
| -250 | -150 | 4 | 338 | 44 | 246 |
| -350 | -150 | 5 | 130 | 89 | 265 |
| -225 | -75 | 5 | 340 | 109 | 259 |
| -225 | -125 | 4 | 319 | 34 | 220 |
| -275 | -75 | 3 | 320 | 105 | 247 |
| -350 | -50 | 2 | 341 | 212 | 255 |
| -450 | -50 | 5 | 276 | 160 | 284 |
| 625 | 425 | 7 | 171 | 8 | 146 |
| 725 | 425 | 3 | 155 | 5 | 118 |
| 775 | 425 | 10 | 174 | 4 | 125 |
| 850 | 375 | 7 | 169 | 4 | 157 |
| 850 | 325 | 5 | 195 | 3 | 199 |
| -175 | 475 | 8 | 89 | 6 | 42 |
| -175 | 425 | 13 | 131 | 47 | 124 |
| -175 | 375 | 14 | 313 | 23 | 125 |
| -175 | 325 | 16 | 40 | 22 | 95 |
| -175 | 275 | 14 | 10 | 62 | 145 |
| -175 | 225 | 16 | 337 | 122 | 145 |
| -175 | 175 | 20 | 345 | 151 | 143 |
| -175 | 125 | 13 | 356 | 113 | 173 |
| -175 | 75 | 4 | 349 | 154 | 190 |
| -175 | 25 | 10 | 331 | 90 | 198 |
| -175 | -25 | 9 | 322 | 90 | 194 |
| -175 | -75 | 6 | 305 | 78 | 207 |
| 550 | -50 | 6 | 206 | 4 | 215 |
| 475 | -75 | 7 | 235 | 7 | 213 |
| 425 | -75 | 6 | 246 | 13 | 279 |
| 375 | -75 | 10 | 220 | 8 | 240 |
| 325 | -75 | 6 | 209 | 3 | 261 |
| 275 | -75 | 13 | 271 | 12 | 182 |
| 225 | -75 | 15 | 272 | 9 | 191 |
| 175 | -75 | 11 | 269 | 17 | 237 |
| 125 | -75 | 12 | 277 | 23 | 205 |
| 75 | -75 | 11 | 288 | 19 | 167 |
| 25 | -75 | 4 | 269 | 20 | 167 |
| -25 | -75 | 19 | 304 | 55 | 174 |
| -75 | -75 | 13 | 291 | 32 | 186 |
| -125 | -75 | 9 | 283 | 23 | 230 |
| -225 | 25 | 11 | 342 | 136 | 169 |
| -225 | -25 | 9 | 335 | 113 | 214 |
| -275 | 25 | 6 | 294 | 365 | 183 |
| -275 | -25 | 4 | 301 | 398 | 266 |
| -325 | 25 | 10 | 297 | 212 | 249 |
| -325 | -25 | 6 | 322 | 418 | 262 |
| -375 | 25 | 13 | 287 | 246 | 281 |
| -225 | 75 | 12 | 0 | 231 | 249 |
| -225 | 125 | 13 | 346 | 315 | 149 |
| -225 | 225 | 8 | 3 | 138 | 128 |
| -225 | 175 | 13 | 324 | 179 | 134 |
| -225 | 275 | 15 | 15 | 85 | 124 |
| -275 | 225 | 10 | 350 | 31 | 342 |
| -275 | 175 | 3 | 347 | 539 | 123 |
| -325 | 225 | 8 | 341 | 107 | 112 |
| -325 | 175 | 6 | 1 | 453 | 95 |
| -375 | 225 | 4 | 336 | 376 | 128 |
| -225 | 325 | 17 | 11 | 28 | 118 |
| -225 | 375 | 9 | 8 | 37 | 105 |
| -275 | 325 | 5 | 12 | 30 | 131 |
| -275 | 275 | 8 | 8 | 164 | 123 |
| -275 | 375 | 4 | 38 | 57 | 113 |
| -325 | 325 | 5 | 41 | 55 | 134 |
| -325 | 275 | 6 | 349 | 75 | 24 |
| -325 | 375 | 7 | 343 | 64 | 110 |

| X | Y | HS-14 | | HS-7 | |
|---|---|---|---|---|---|
| (m) | (m) | \|E\| | $\phi$ | \|E\| | $\phi$ |
| -375 | 325 | 6 | 4 | 41 | 76 |
| -375 | 275 | 4 | 2 | 79 | 114 |
| -375 | 375 | 9 | 287 | 15 | 313 |
| -225 | 426 | 22 | 344 | 23 | 71 |
| -225 | 475 | 8 | 321 | 14 | 137 |
| -275 | 425 | 4 | 330 | 16 | 113 |
| -275 | 475 | 8 | 330 | 24 | 124 |
| -275 | 550 | 8 | 19 | 20 | 97 |
| -325 | 450 | 4 | 307 | 22 | 129 |
| -225 | 550 | 8 | 154 | 15 | 108 |
| -275 | 650 | 9 | 316 | 11 | 12 |
| -350 | 650 | 3 | 33 | 32 | 106 |
| -350 | 550 | 9 | 342 | 10 | 79 |
| -375 | 450 | 7 | 123 | 83 | 137 |
| -450 | 550 | 2 | 3 | 18 | 143 |
| -450 | 450 | 8 | 1 | 38 | 83 |
| -550 | 450 | 0 | 4 | 31 | 49 |
| -475 | 350 | 5 | 50 | 40 | 90 |
| -425 | 350 | 5 | 232 | 43 | 161 |
| -550 | 350 | 4 | 5 | 43 | 46 |
| -650 | 350 | 1 | 95 | 42 | 21 |
| -475 | 275 | 4 | 6 | 47 | 97 |
| -425 | 275 | 5 | 161 | 42 | 103 |
| -475 | 225 | 4 | 25 | 90 | 96 |
| -425 | 225 | 7 | 174 | 220 | 23 |
| -525 | 250 | 8 | 8 | 108 | 39 |
| -575 | 250 | 1 | 73 | 99 | 4 |
| -650 | 250 | 1 | 343 | 33 | 31 |
| -750 | 250 | 0 | 34 | 28 | 33 |
| -475 | 175 | 8 | 339 | 299 | 358 |
| -425 | 175 | 1 | 65 | 300 | 95 |
| -375 | 175 | 10 | 121 | 168 | 23 |
| -475 | 125 | 4 | 52 | 376 | 57 |
| -550 | 150 | 3 | 66 | 197 | 16 |
| -650 | 150 | 4 | 86 | 82 | 0 |
| -425 | 125 | 3 | 316 | 284 | 52 |
| -375 | 125 | 1 | 332 | 431 | 82 |
| -325 | 125 | 6 | 81 | 411 | 127 |
| -275 | 125 | 1 | 135 | 286 | 154 |
| -425 | 75 | 2 | 37 | 146 | 13 |
| -375 | 75 | 0 | 56 | 2 | 0 |
| -325 | 75 | 1 | 327 | 261 | 192 |
| -275 | 75 | 0 | 286 | 413 | 189 |
| -450 | 50 | 3 | 187 | 89 | 349 |
| -550 | 50 | 6 | 320 | 194 | 354 |
| 125 | 950 | 8 | 59 | 8 | 140 |
| 150 | 1100 | 6 | 34 | 2 | 76 |
| 50 | 950 | 6 | 39 | 0 | 304 |
| 25 | 850 | 5 | 36 | 9 | 142 |
| -50 | 950 | 4 | 70 | 13 | 125 |
| -50 | 850 | 3 | 56 | 4 | 299 |
| -150 | 850 | 4 | 28 | 7 | 145 |
| -250 | 750 | 3 | 144 | 16 | 139 |
| 675 | 425 | 5 | 204 | 1 | 268 |
| 425 | -25 | 11 | 258 | 15 | 117 |
| -75 | 475 | 3 | 293 | 19 | 116 |
| -125 | 425 | 3 | 19 | 24 | 159 |
| -125 | 475 | 12 | 359 | 41 | 125 |

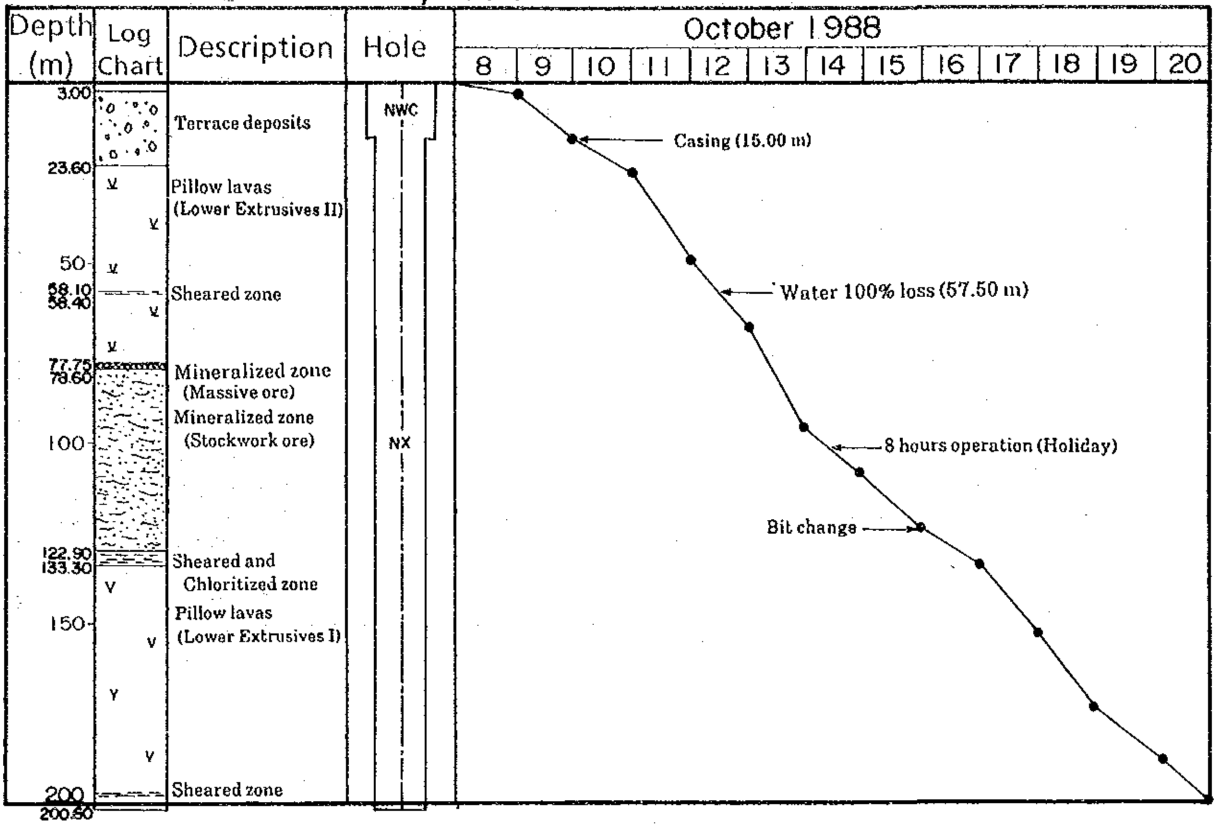
| X | Y | HS-14 | | HS-7 | |
|---|---|---|---|---|---|
| (m) | (m) | \|E\| | $\phi$ | \|E\| | $\phi$ |

|E| : Intensity(unit; mV/A·100m) of Electiric Field
$\phi$ : Azimuth(unit; Degree) of Electiric Field

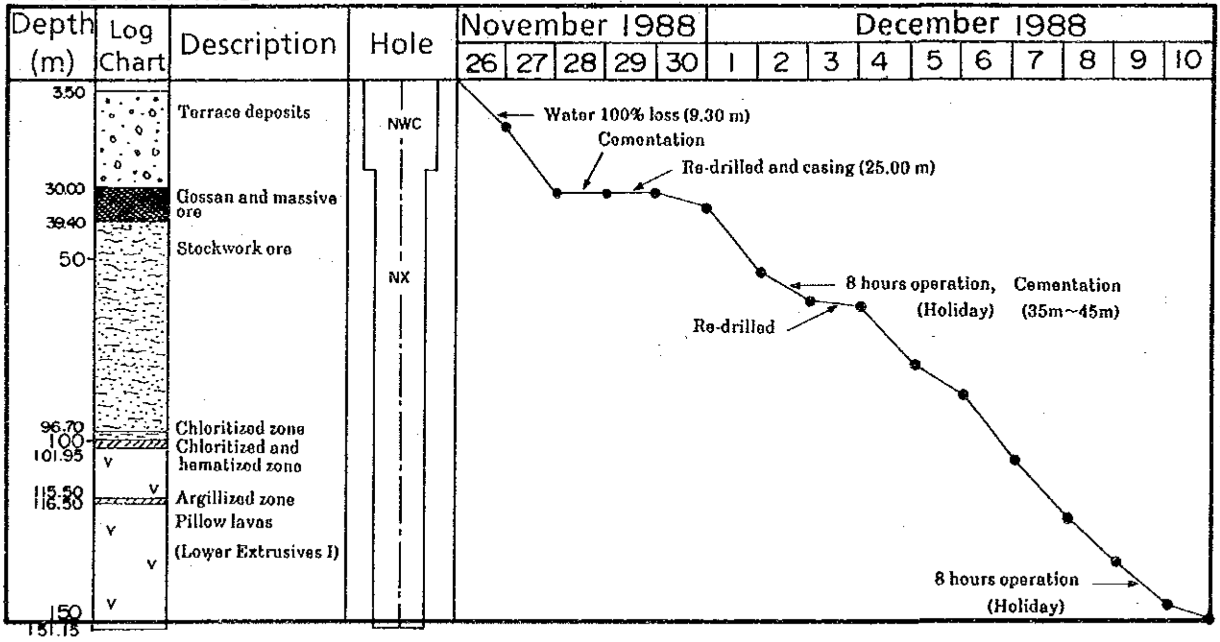
# Appendix 7

## Progress of the each drill hole in area A

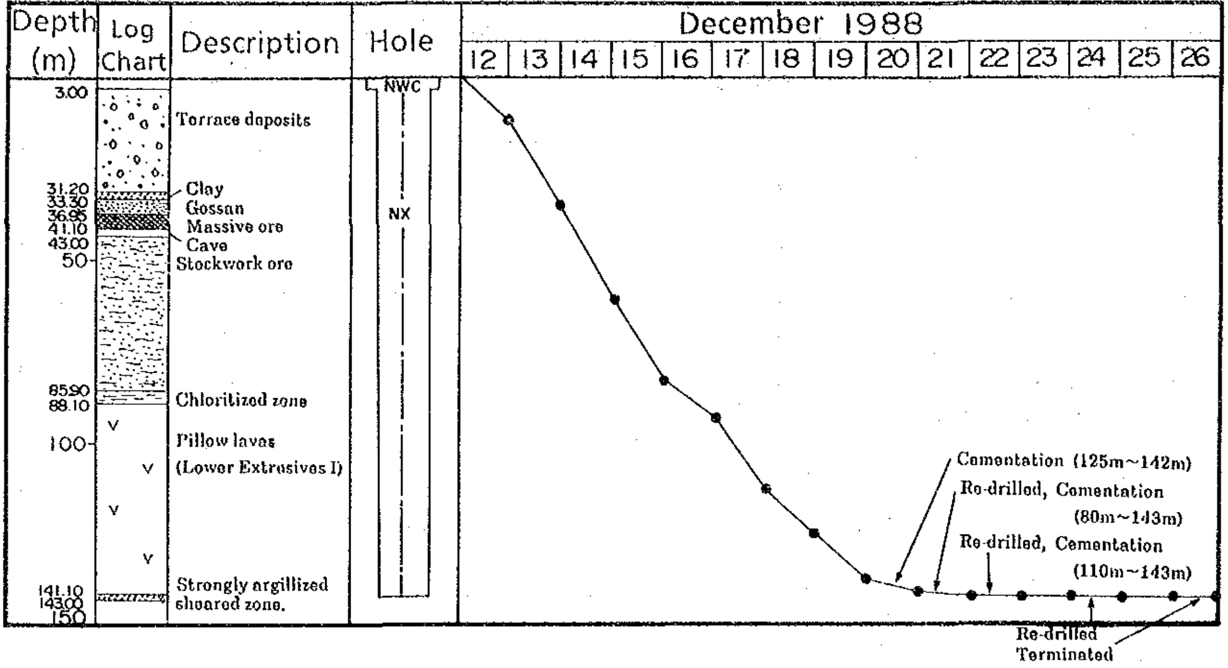
Hole No. MJO-A1 (270°, -50°)



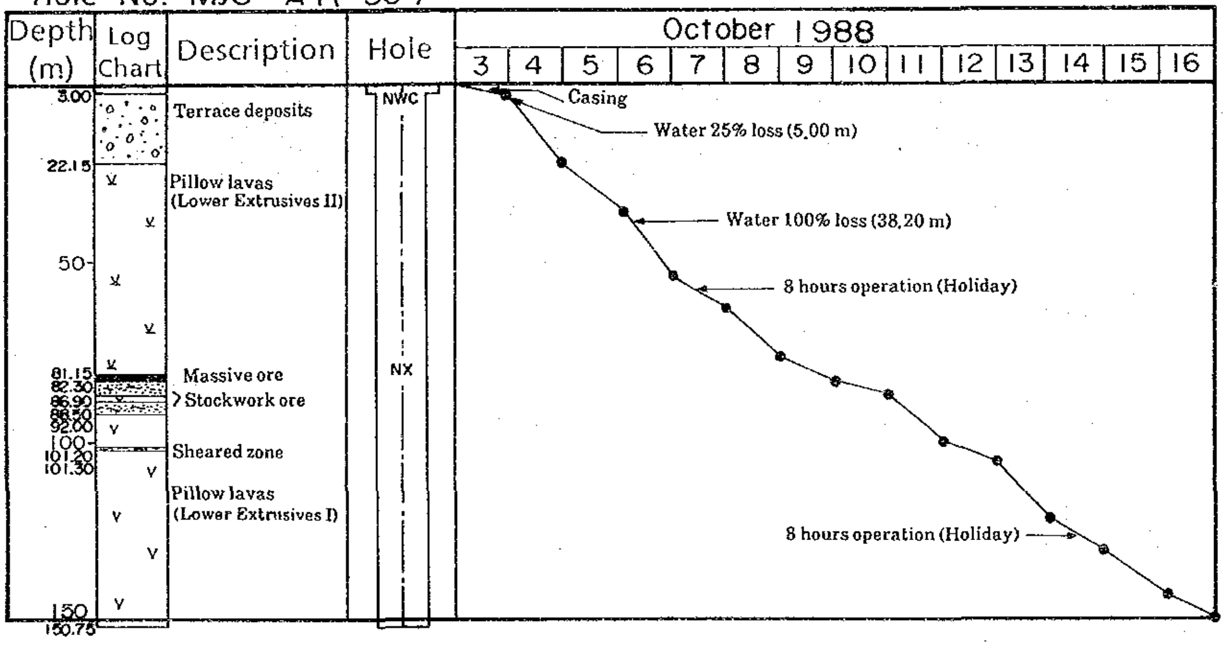
Hole No. MJO-A2 (-90°)



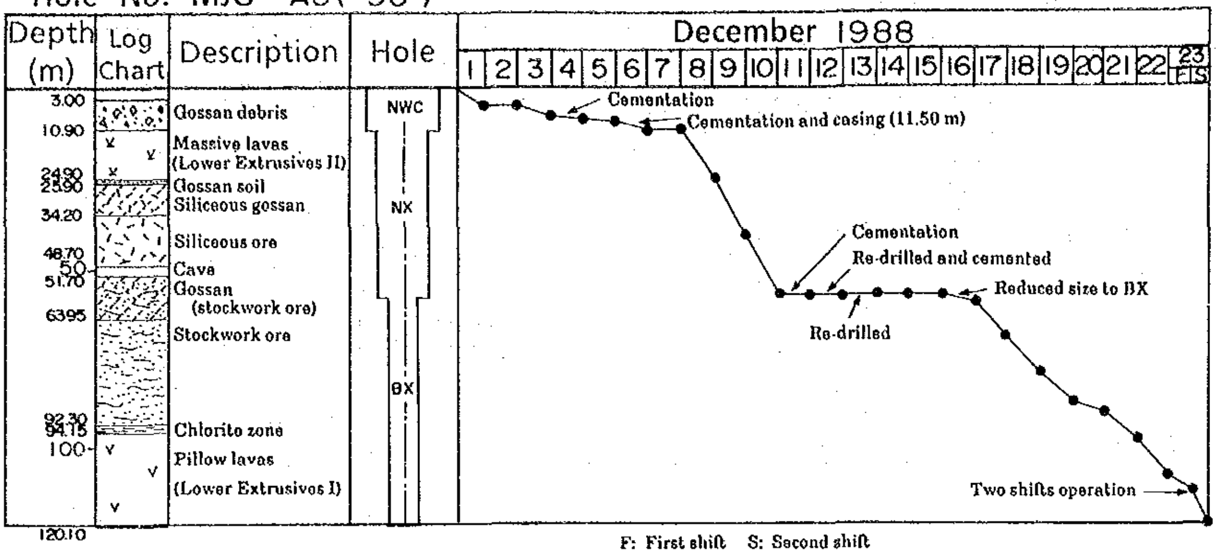
Hole No. MJO-A3 (270°, -50°)



Hole No. MJO-A4 (-90°)

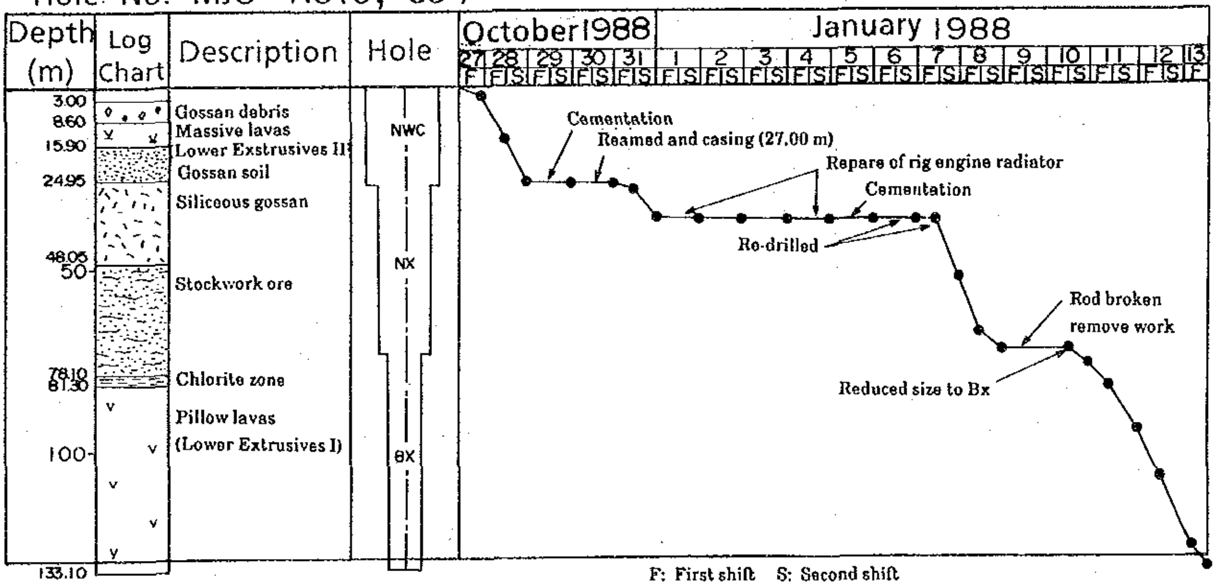


Hole No. MJO - A5 (-90°)



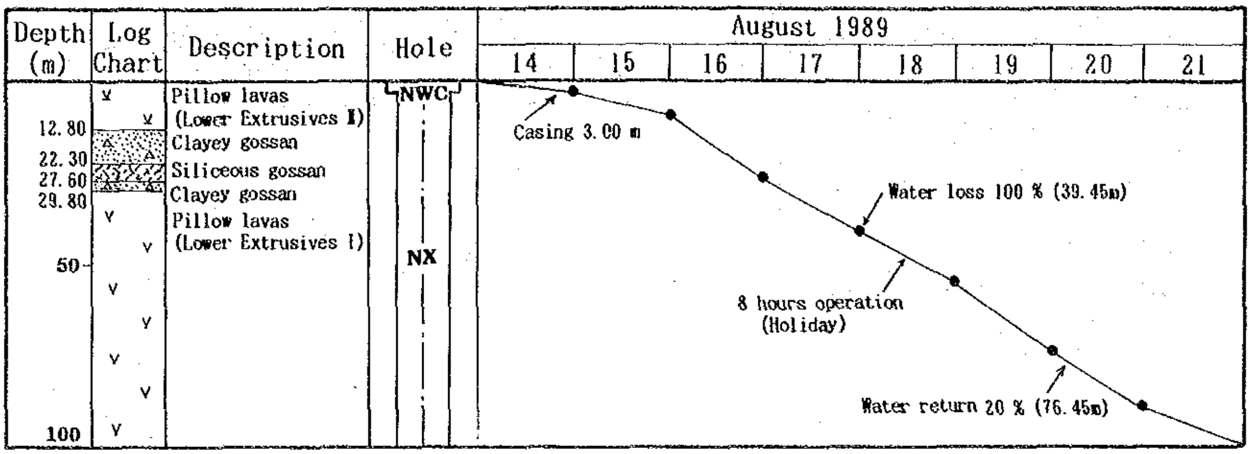
F: First shift S: Second shift

Hole No. MJO - A6 (0°, -50°)

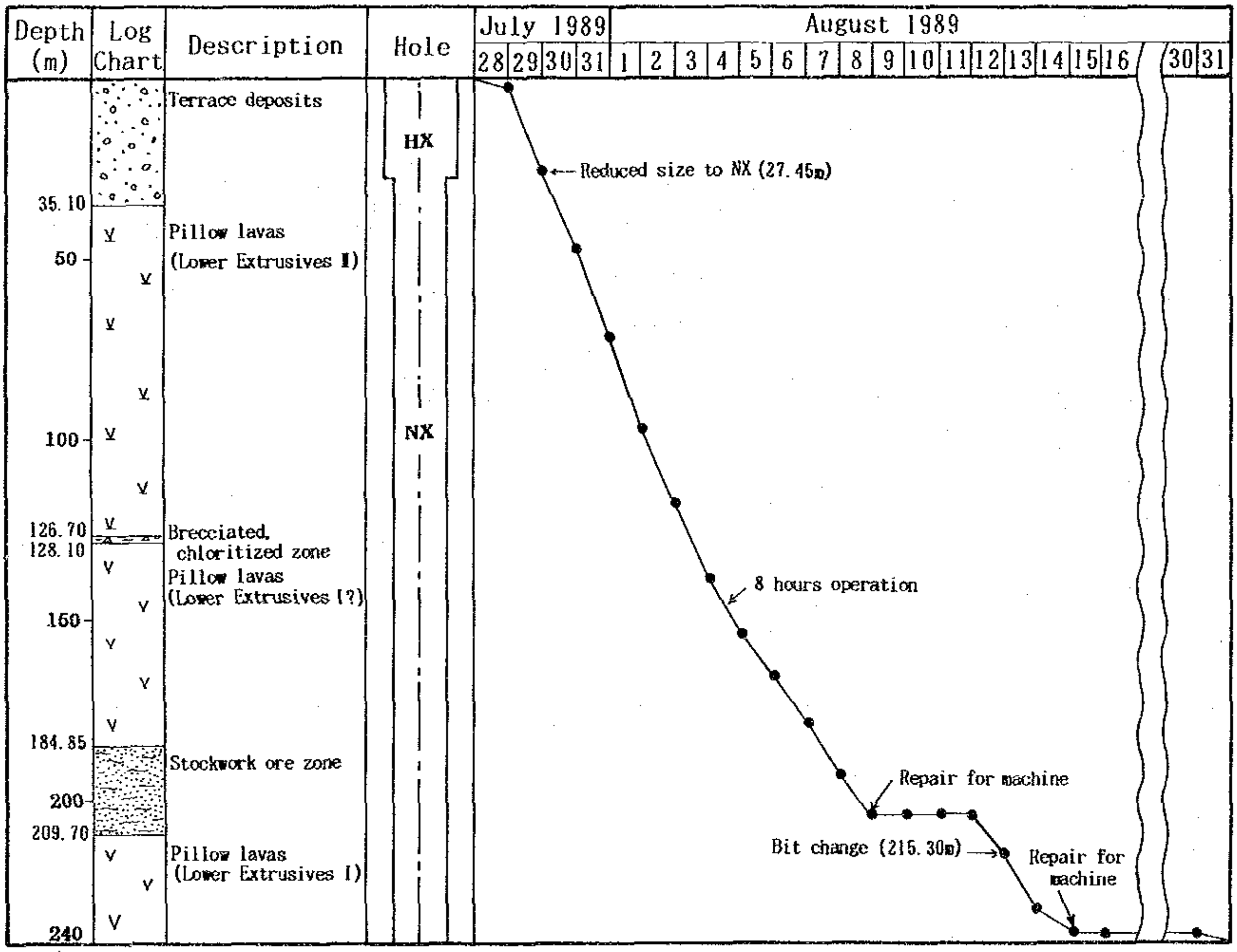


F: First shift S: Second shift

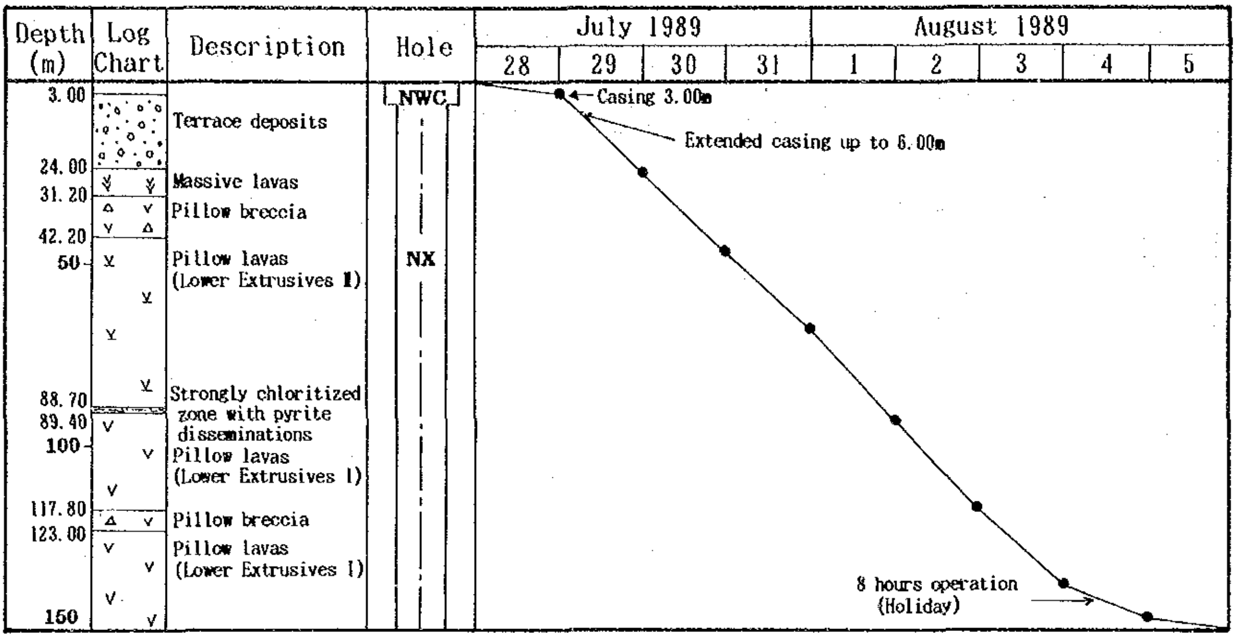
**Hole No. MJO-A7 (-90° )**



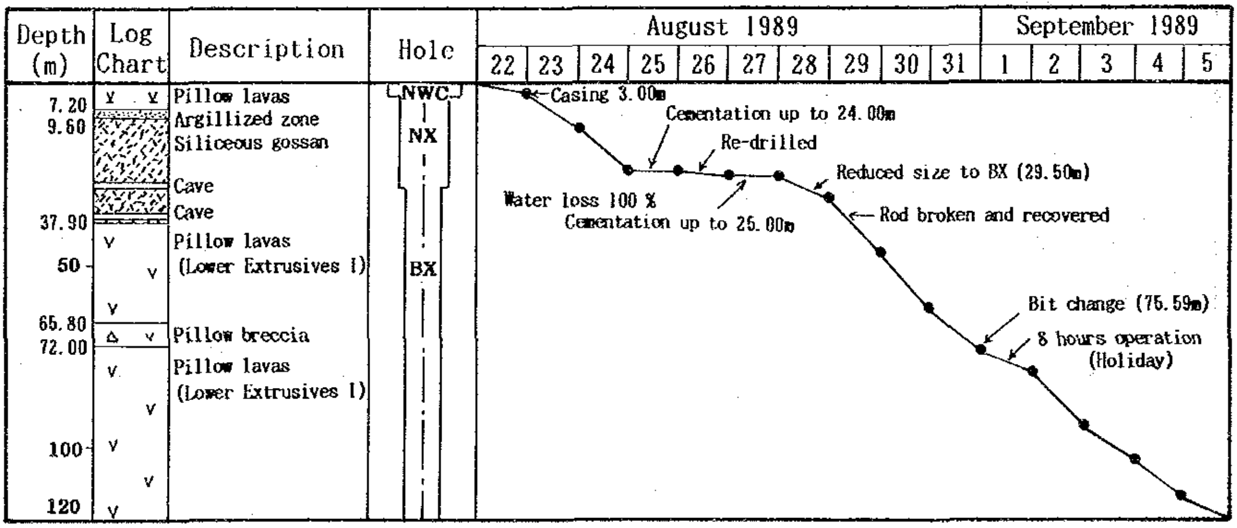
**Hole No. MJO-A8 (-90° )**



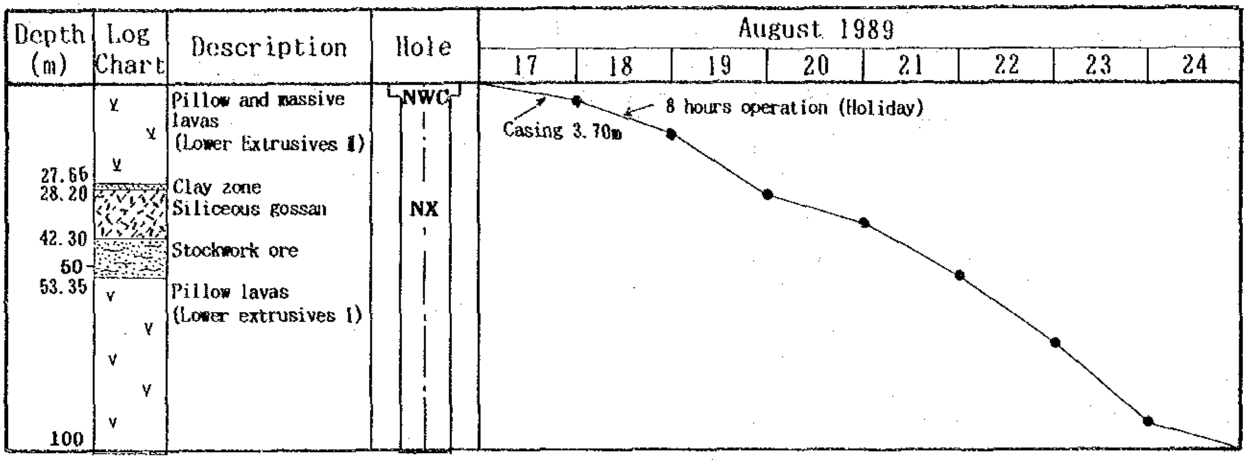
**Hole No. MJO-A9 (-90° )**



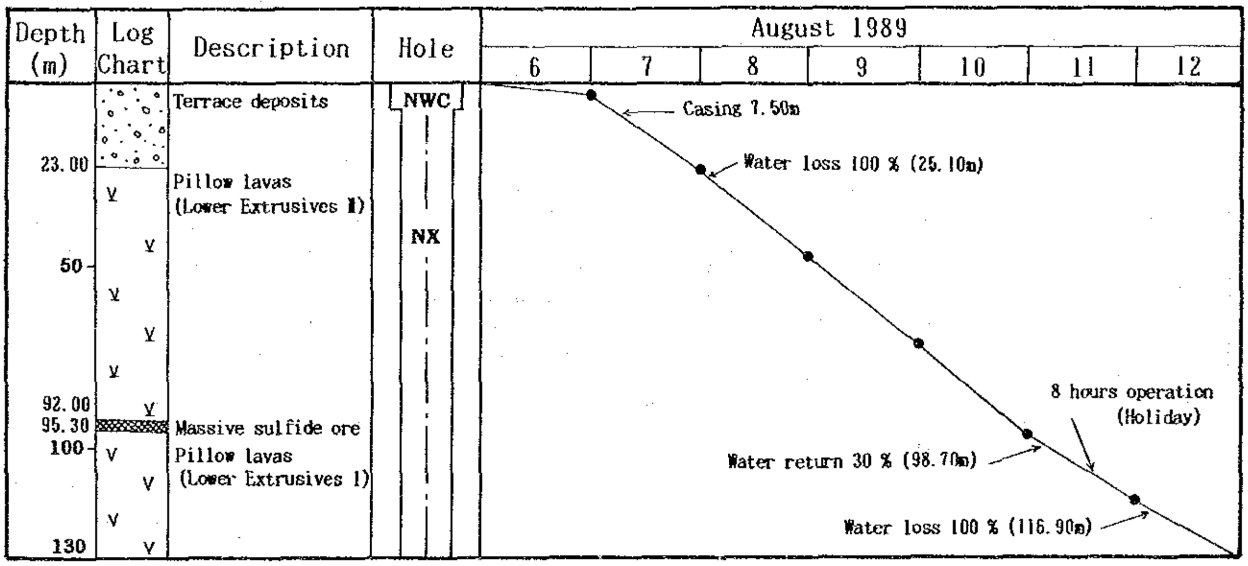
**Hole No. MJO-A10 (0° ,-50° )**



**Hole No. MJO-A11 (-90° )**



**Hole No. MJO-A12 (-90° )**



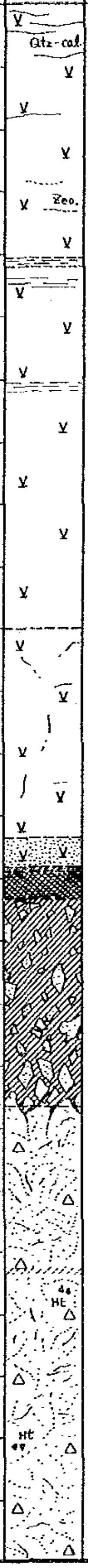
# Appendix 8

## Geologic core log for the drill holes in area A

Hole No. MJO – A 1 (From 0.00 m to 50.00 m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| |  | Casing. No recovery. | | | | | | | | |
| 3.00 | | Terrace deposits.<br>Gravel and sand<br>Rounded to subrounded<br>Pebble to granule in size. | | | | | | | | |
| 10 | | Locally cemented with calcite. | | | | | | | | |
| 20 | | Completely cemented with calcite. | | | | | | | | |
| 23.60 | | Light brownish green brecciated Poillow lava. Fractures filled with hematite and calcite.<br>Weakly weathered. | | | | | | | | |
| 27.40 | | Light green pillow breccia.<br>Hematite dominant in matrix. | | | | | | | | |
| 28.60 | | Light brownish green pillow lava weakly brecciated.<br>Vesicles filled with calcite. | | | | | | | | |
| 30 | | | | | | | | | | |
| | | 34.70~35.00<br>Sheared zone with calcite, hematite and clay | | | | | | | | |
| | | 38.40~39.40<br>Dominant hematite zone | | | | | | | | |
| 39.40 | | Green chloritized massicve lava with calcite stringers. | | | | | | | | |
| 40 | | | | | | | | | | |
| 43.15 | | Green~dark green chloritized pillow breccia with dominant hematite in matrix. | | | | | | | | |
| 45.70 | | Dark green and light green pillow lava. Chloritized.<br>47.60~48.70 Brecciated | | | | | | | | |
| 50 | | | | | | | | | | |

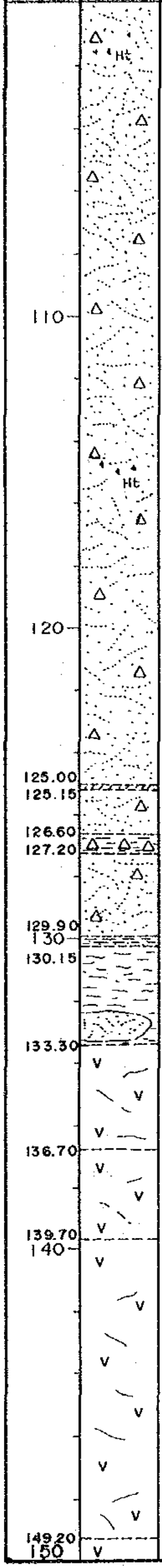
Hole No. MJO－A1 (From 50.00 m to 100.00 m)



| Depth (m) | Lithology and Alteration | Mineralization |
|---|---|---|
| 58.10<br>58.40 | Sheared zone with quartz and hematite veinlets. Chloritized. | |
| 60 | Dark green chloritized pillow lava.<br>58.70 Sheared 3 cm<br>58.90 Sheared 2 cm<br>62.10~70.00 Green in color | |
| 70 | Dark green~dark brownish green brecciated strongly chloritized pillow lava. Hematite in matrix and along fractures. | |
| 76.70 | Light yellowish green brecciated strongly argillized pillow lava. | |
| 77.60 | Hematite-clay zone. | |
| 77.75 | Massive sulfide zone. | Pyrite≫chalcopyrite massive ore with angular hematite and silicified rocks fragment. |
| 78.60 | Stockwork zone with sulfides.<br>Fragment : strongly silicified. | Stockwork ore. Sulfide 30~80 Vol. % in strongly silicified rocks. |
| 80 | | |
| 85.30 | Light green strongly silicified and brecciated zone with stockwork mineralization.<br>Argillized in part.<br>90.50~90.70 Clay zone | Pyrite > chalcopyrite with quartz veinlets and disseminations.<br>Stockwork zone.<br>Minor hematite fragment in places. |
| 90 | | |
| 100 | | |

| Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 77.75 | 0.85 | 2.0 | 2.6 | 1.08 | <0.01 | 0.06 |
| 78.60 | 2.00 | 2.2 | 5.1 | 0.68 | <0.01 | 0.07 |
| 80.60 | 2.00 | 1.9 | 8.0 | 0.64 | <0.01 | 0.29 |
| 82.60 | 2.00 | 1.1 | 8.5 | 0.76 | <0.01 | 0.50 |
| 84.60 | 2.00 | 1.0 | 3.1 | 0.33 | <0.01 | 0.27 |
| 86.60 | 2.00 | 0.1 | 0.7 | 0.40 | <0.01 | 0.06 |
| 88.60 | 2.00 | Tr | 1.1 | 0.53 | <0.01 | 0.40 |
| 90.60 | 2.00 | 0.1 | 1.2 | 0.90 | <0.01 | 0.27 |
| 92.60 | 2.00 | Tr | Tr | 0.89 | <0.01 | 0.15 |
| 94.60 | 2.00 | Tr | Tr | 0.69 | <0.01 | 0.13 |
| 96.60 | 2.00 | Tr | Tr | 0.36 | <0.01 | 0.18 |
| 98.60 | 2.00 | Tr | Tr | 0.38 | <0.01 | 0.10 |

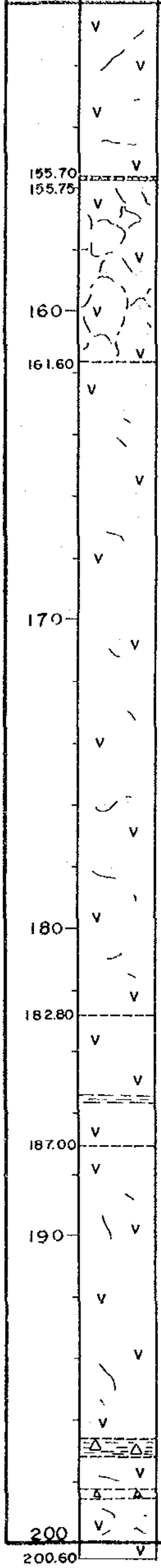
Hole No. MJO - A1 (From 100.00 m to 150.00 m)



| Depth (m) | Lithology and Alteration | Mineralization |
|---|---|---|
| 125.00<br>125.15 | 125.00~125.15<br>Dark brown brecciated clay zone | |
| 126.60<br>127.20 | 126.60~127.20<br>Brecciated strongly clhloritized zone. | 126.00~127.20<br>Pyrite disseminations |
| 129.90<br>130.15 | Sheared zone with hematite, chlorite and gray clay. | |
| | Strongly chloritized phyllitic zone. | Pyrite disseminations.<br>132.30~133.20<br>Siliceous stockwork ore |
| 133.30 | Dark green chloritized, weakly brecciated pillow lava. | Quartz-hematite stringers<br>No sulfide minerals. |
| 136.70 | Light green aphanitic pillow lava.<br>Weakly chloritized.<br>Fractures filled with hematite and calcite. | |
| 139.70 | Same as 133.30~136.70<br>Hematite in fractures | Calcite-quartz stringers. |
| 149.20 | Dark brownish green pillow lava and pillow breccia.<br>Hematite and chlorite. | Calcite stringers. |

| Depth (m) | D.L. (m) | Au. (g/t) | Au (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 100.60<br>102.60 | 2.00 | Tr | Tr | 0.51 | <0.01 | 0.11 |
| 102.60<br>104.60 | 2.00 | Tr | Tr | 0.66 | <0.01 | 0.14 |
| 104.60<br>106.60 | 2.00 | Tr | 0.3 | 0.36 | <0.01 | 0.18 |
| 106.60<br>108.60 | 2.00 | Tr | Tr | 0.41 | <0.01 | 0.16 |
| 108.60<br>110.60 | 2.00 | 0.8 | 1.6 | 0.52 | <0.01 | 0.30 |
| 110.60<br>112.60 | 2.00 | 0.2 | 4.1 | 0.29 | <0.01 | 0.68 |
| 112.60<br>114.60 | 2.00 | 0.9 | 2.3 | 0.51 | <0.01 | 0.66 |
| 114.60<br>116.60 | 2.00 | 0.6 | 3.1 | 1.38 | <0.01 | 0.69 |
| 116.60<br>118.60 | 2.00 | 0.3 | 3.3 | 0.37 | <0.01 | 1.20 |
| 118.60<br>120.60 | 2.00 | 0.3 | 1.6 | 0.41 | <0.01 | 0.14 |
| 120.60<br>122.60 | 2.00 | 0.1 | 1.8 | 0.64 | <0.01 | 0.21 |
| 122.60<br>124.60 | 2.00 | 0.5 | 1.7 | 0.75 | <0.01 | 0.56 |
| 124.60<br>126.60 | 2.00 | 0.6 | 3.5 | 0.69 | <0.01 | 0.73 |
| 126.60<br>128.60 | 2.00 | 1.1 | 3.0 | 0.63 | <0.01 | 1.36 |
| 128.60<br>130.15 | 1.55 | 0.8 | 4.3 | 1.00 | <0.01 | 1.08 |
| 130.15<br>132.30 | | | | | | |
| 132.30<br>133.20 | 0.90 | 1.9 | 3.2 | 0.49 | <0.01 | 0.95 |

Hole No. MJO－A1 (From 150.00 m to 200.60 m)



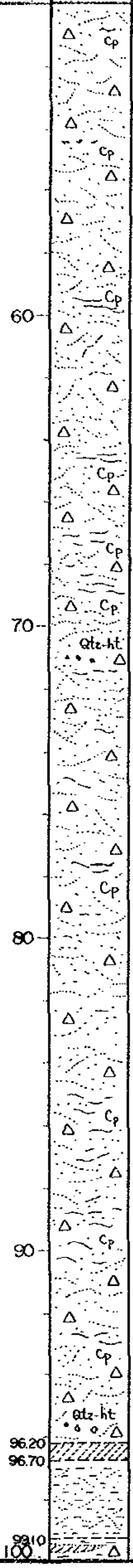
| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 155.70 | | Gray clay zone | | | | | | | | |
| 155.75 | | Light green (fragment) and reddish-brown (matrix) brecciated pillow lava. Chloritized, hematized and weakly sheared. | | | | | | | | |
| 161.60 | | Light green weakly chloritized pillow lava. Fractures and matrix filled with hematite. | | | | | | | | |
| 182.80 | | Green chloritized and weakly brecciated pillow lava.<br>Fractures filled with hematite<br>185.40~185.70<br>Weakly sheared | | | | | | | | |
| 187.00 | | Dark green strongly chloritized pillow lava. Fractures filled with hematite. Vesicles filled with chlorite and zeolites.<br>196.70~197.30<br>Sheared and brecciated zone<br>Chloritized and argillized<br>198.20~198.50<br>Brecciated zone<br>200.60 End of hole | | | | | | | | |
| 200.60 | | | | | | | | | | |

Hole No. MJO－A2 (From 0.00 m to 50.00m)

| Depth (m) | Lithology and Alteration | Mineralization |
|---|---|---|
|  | Casing. No recovery. |  |
| 3.50 | Gravel and sand (terrace deposits)<br>Gravel :gabbro dominant (boulder to pebble) |  |
| 19.20 | Gravel and sand.<br>Gravel :gabbro dominant<br>Cemented with calcite. |  |
| 25.30 | Gravel and sand.<br>Cemented with calcite in part |  |
| 30 | Reddish brown gossan soil. | Mostly hematite |
| 30.70 | Siliceous ore. Intensely silicified and brecciated rock. | Matrix : coarse-grained pyrite with minor chalcopyrite and hematite. |
| 32.45 | Reddish-brown weathered ore zone. | Hematite and gathite with angular siliceous fragments. |
| 34.80 | Massive ore zone. |  |
| 35.50 | Weathered massive ore zone. | Massive sulfide and hematite-gathite with minor siliceous fragments. |
| 38.20 | More sulfides. |  |
| 39.40 | Strongly silicified and brecciated zone with sulfide mineralization (stockwork ore).<br>39.40~81.50<br>Matrix of breccia filled with hematite in places | Pyrite > chalcopyrite stringers, spots and disseminations<br>Quartz veinlet network and brecciated quartz fragments.<br>Fractures filled with quartz. |
| 50 |  |  |

| Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 30.00 | 2.00 | 1.5 | 8.4 | 0.55 | <0.01 | 0.04 |
| 32.00 | 2.00 | 2.9 | 7.7 | 1.13 | <0.01 | 0.03 |
| 34.00 | 1.50 | 2.0 | 8.8 | 0.17 | <0.01 | 0.02 |
| 35.50 | 2.00 | 1.1 | 4.3 | 0.42 | <0.01 | 0.02 |
| 37.50 | 1.90 | 2.5 | 10.5 | 1.11 | 0.01 | 0.07 |
| 39.40 | 2.00 | 1.2 | 11.0 | 0.77 | <0.01 | 0.38 |
| 41.40 | 2.00 | 0.6 | 4.0 | 0.33 | <0.01 | 0.28 |
| 43.40 | 2.00 | Tr | Tr | 0.24 | <0.01 | 0.29 |
| 45.40 | 2.00 | 0.7 | 3.5 | 0.25 | <0.01 | 0.21 |
| 47.40 | 2.00 | 0.7 | 2.0 | 0.63 | <0.01 | 0.21 |
| 49.40 |  |  |  |  |  |  |

Hole No. MJO – A2 (From 50.00 m to 100.00 m)



**Lithology and Alteration**

50.40~62.30 Hematite dominant in matrix

96.20–96.70 Light green clay zone.

Dark green strongly chloritized rock .

99.10–100 Mixture of chloritized and hematized zones.

**Mineralization**

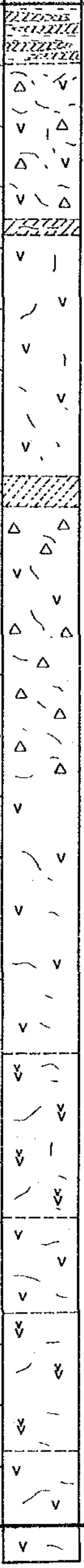
51.70 Sphalerite in spots

Pyrite diss eminations

Pirite stringers and disseminations.

| Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 51.40 | 2.00 | 0.5 | 1.8 | 1.03 | <0.01 | 0.06 |
| 53.40 | 2.00 | Tr | Tr | 1.09 | <0.01 | 0.13 |
| 55.40 | 2.00 | 0.2 | 1.0 | 1.36 | <0.01 | 0.18 |
| 57.40 | 2.00 | 0.4 | 0.7 | 0.72 | <0.01 | 0.09 |
| 59.40 | 2.00 | 0.4 | 1.8 | 2.12 | <0.01 | 0.14 |
| 61.40 | 2.00 | 0.1 | 1.3 | 0.97 | <0.01 | 0.09 |
| 63.40 | 2.00 | 0.2 | 1.5 | 0.77 | <0.01 | 0.26 |
| 65.40 | 2.00 | 0.2 | 2.0 | 0.67 | <0.01 | 0.35 |
| 67.40 | 2.00 | 0.1 | 1.5 | 0.60 | <0.01 | 0.18 |
| 69.40 | 2.00 | 0.3 | 1.2 | 0.77 | <0.01 | 0.28 |
| 71.40 | 2.00 | 0.1 | 1.5 | 0.46 | <0.01 | 0.15 |
| 73.40 | 2.00 | Tr | Tr | 0.33 | <0.01 | 0.11 |
| 75.40 | 2.00 | 0.2 | 0.9 | 0.38 | <0.01 | 0.07 |
| 77.40 | 2.00 | Tr | Tr | 0.35 | <0.01 | 0.05 |
| 79.40 | 2.00 | 0.2 | 0.6 | 0.56 | <0.01 | 0.20 |
| 81.40 | 2.00 | 0.3 | 0.6 | 0.40 | <0.01 | 0.06 |
| 83.40 | 2.00 | Tr | Tr | 0.42 | <0.01 | 0.08 |
| 85.40 | 2.00 | 0.5 | 2.1 | 0.76 | <0.01 | 0.19 |
| 87.40 | 2.00 | 0.6 | 3.6 | 4.92 | <0.01 | 0.33 |
| 89.40 | 2.00 | 0.3 | 2.6 | 1.08 | <0.01 | 0.50 |
| 91.40 | 2.00 | 0.3 | 1.8 | 0.71 | <0.01 | 0.65 |
| 93.40 | 2.00 | 0.2 | 1.8 | 1.15 | <0.01 | 0.43 |
| 95.40 | 2.00 | Tr | Tr | 0.24 | <0.01 | 0.17 |
| 96.20 | 0.80 | Tr | Tr | 0.08 | <0.01 | 0.10 |

Hole No. MJO-A2 (From 100.00 m to 151.15 m)



| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 101.95 | | Light green~green strongly chloritized and brecciated pillow lava. Minor hematite in places. Quartz in matrix and stringers. | | | | | | | | |
| 107.00<br>107.50 | | Reddish brown hematite zone with quartz stringers. | | | | | | | | |
| | | Green chloritized and weakly brecciated pillow lava. with quartz stringers. Hematite in matrix. | | | | | | | | |
| 110 | | | | | | | | | | |
| 115.50 | | Light green argillized zone. | | | | | | | | |
| 116.50 | | Dark green~dark brown hematized and chloritized pillow lava to pillow breccia with quartz stringers.<br>116.50~117.90 Strongly brecciated zone<br>120.00~125.30 Pillow breccia strongly hematized | | | | | | | | |
| 120 | | | | | | | | | | |
| 130 | | | | | | | | | | |
| 134.40 | | Green chloritized doleritic massive lava. Hematite and quartz stringers and veinlets. | | | | | | | | |
| 139.90<br>140 | | Dark green~dark brown chloritized pillow lava with quartz stringers. | | | | | | | | |
| 143.00 | | Green massive lava with quartz and calcite stringers. Vesicles filled with calcite. | | | | | | | | |
| 147.55 | | Same as 139.90~143.00 | | | | | | | | |
| 150 | | 151.15 End of hole | | | | | | | | |
| 151.15 | | | | | | | | | | |

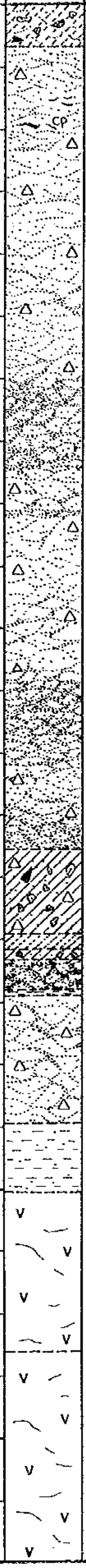
## Hole No. MJO - A3 (From 0.00 m to 50.00 m)

| Depth (m) | Lithology and Alteration | Mineralization |
|---|---|---|
| | Casing. No recovery | |
| 3.00 | Terrace deposits. Gravel and sand. Gabbro boulder dominant. | |
| 7.20 | Gravel and sand. Locally cemented with calcite. Mostly cobble to granule in size | |
| 10 | | |
| 13.25 | Gravel and sand. Cemented with calcite. Gabbro boulder in places. | |
| 20 | | |
| 30 | | |
| 31.20 | Clay zone. Light yellowish gray and locally reddish brown. | |
| 33.30 | Dark reddish brown gossan soil. | |
| 34.30 | Red siliceous gossan with hematite. | Brecciated with siliceous fragment.<br>36.20~36.40 Fine-grained massive ore<br>36.95~37.60 Pirite ≫ chalcopyrite brecciated. Fine-grained.<br>37.90~41.10 Pyrite > chalcopyrite. Fine grained. |
| 35.00 | Reddish brown gossan, possible massive ore | |
| 36.95 | Massive ore. | |
| 37.60 | Brecciated zone with siliceous fragments. | |
| 37.90 | Brecciated massive ore. Lower part: siliceous fragments | |
| 40 | | |
| 41.10 | Cave. No recovery | |
| 43.00 | Gray brecciated clay zone. | Pyrite disseminations. |
| 43.70 | Light argillized, brecciated zone. Silicified in part. Hematite in matrix locally.<br>46.40~47.00 Strongly argillized and brecciated | Pyrite disseminations.<br>Chalcopyrite:pyrite fragments in matrix. |
| 49.70 | | |
| 50 | | |

| Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 36.20 | 1.70 | 5.2 | 18.2 | 1.89 | 0.01 | 0.06 |
| 37.90 | 1.60 | 1.8 | 20.3 | 9.44 | 0.01 | 0.03 |
| 39.50 | 1.60 | 1.1 | 17.1 | 12.44 | <0.01 | 0.05 |
| 41.10 | | | | | | |
| 43.00 | 2.00 | 1.0 | 8.1 | 2.37 | <0.01 | 0.04 |
| 45.00 | 2.00 | 0.3 | 8.5 | 2.24 | <0.01 | 0.04 |
| 47.00 | 2.00 | 0.9 | 11.1 | 2.80 | 0.01 | 0.04 |
| 49.00 | 2.00 | 2.4 | 12.1 | 2.43 | <0.01 | 0.04 |

## Hole No. MJO-A3 (From 50.00m to 100.00m)

**Depth (m)** | **Chart** | **Lithology and Alteration** | **Mineralization**



Depth marks: 51.35, 60, 70, 77.10, 80, 80.60, 85.90, 88.10, 90, 93.20, 100

**Lithology and Alteration**

50.00–51.35: Light gray argillized and hematized zone with siliceous and sulfides fragments.

51.35–77.10: Light green silicified and brecciated zone with mineralization. Locally argillized.
Quartz-hematite fragments in places.

77.10–80.60: reddish brown strongly hematized and brecciated zone with sulfides and siliceous fragments.
Matrix: Mostly hematite
79.80~80.30 Hematitic clay

80.60–85.90: Light green brecciated and strongly silicified zone.
Lower part:
Strongly brecciated and weakly chloritized
81.60~81.80
Strongly chloritized zone

85.90–88.10: Sttrongly chloritized zone with hematite bands. Dark green

88.10–93.20: Light green~green pillow lavas chloritized with quartz-hematite veinlets and calcite stringers weakly brecciated. Variole like texture visible.

93.20–100: Dark green and dark brown weakly brecciated pillow lavas chloritized. Variole-like texture visible. Hematite in fracture and calcite stringers.

**Mineralization**

Sulfide fragment: Pyrite
Sulfides: 35 vol%

Chalcopyrite-pyrite quartz stockwork zone
53.00
Brnite-chalcopyrite spots

52.60~53.80
Chalcopyrite rich
Pyrite: 20 vol%
Chalcopyrite: 6 vol%

62.10~64.90
Sulfides (pyrite):
50 vol%

66.10~66.30
Sulfides (pyrite):
70 vol%

71.60~74.40
Sulfides (pyrite):
50~60 vol%

76.10~77.10
Sulfides (pyrite and chalcopyrite): 75 vol%

80.60~81.40
Sulfides (pyrite):
60 vol%

81.60~81.80
Pyrite disseminations

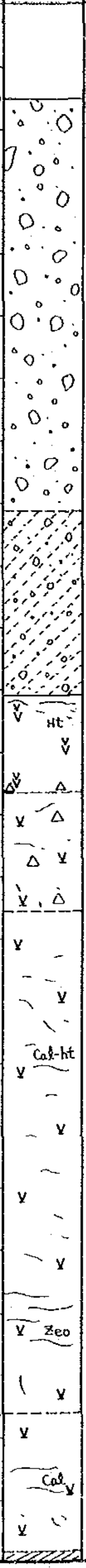
Weak pyrite disseminations

| Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 51.00 | 2.00 | 1.1 | 17.4 | 3.39 | <0.01 | 0.05 |
| 53.00 | 2.00 | 0.4 | 10.6 | 3.04 | <0.01 | 0.06 |
| 55.00 | 2.00 | 0.5 | 8.9 | 1.69 | <0.01 | 0.05 |
| 57.00 | 2.00 | 0.3 | 4.9 | 1.58 | <0.01 | 0.06 |
| 59.00 | 2.00 | 0.5 | 6.5 | 1.26 | <0.01 | 0.14 |
| 61.00 | 2.00 | 0.4 | 8.5 | 0.33 | <0.01 | 0.21 |
| 63.00 | 2.00 | 0.2 | 8.8 | 3.26 | <0.01 | 0.09 |
| 65.00 | 2.00 | 0.8 | 8.6 | 2.97 | <0.01 | 0.08 |
| 67.00 | 2.00 | 0.6 | 5.6 | 1.61 | <0.01 | 0.12 |
| 69.00 | 2.00 | 0.3 | 4.8 | 1.75 | <0.01 | 0.19 |
| 71.00 | 2.00 | 0.4 | 6.0 | 1.00 | <0.01 | 0.42 |
| 73.00 | 2.00 | 2.1 | 7.7 | 1.14 | <0.01 | 0.79 |
| 75.00 | 2.10 | 1.0 | 20.7 | 4.37 | 0.01 | 0.18 |
| 77.10 | 1.80 | 2.4 | 12.4 | 0.43 | <0.01 | 0.02 |
| 78.90 | 1.70 | 2.8 | 4.4 | 0.82 | <0.01 | 0.01 |
| 80.60 | 2.00 | 0.7 | 11.5 | 1.98 | 0.01 | 0.29 |
| 82.60 | 2.00 | 1.0 | 3.4 | 0.65 | <0.01 | 0.11 |
| 84.60 | 1.30 | 0.7 | 4.8 | 0.34 | <0.01 | 0.14 |
| 85.90 | | | | | | |

Hole No. MJO-A3 (From 100.00 m to 143.00 m)

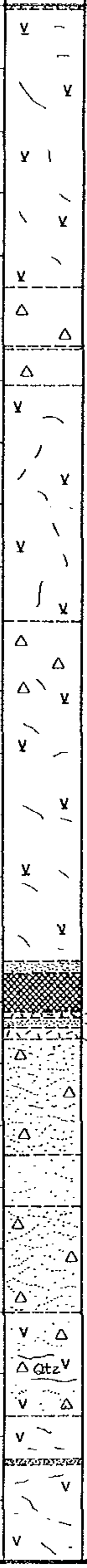
| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 107.80 |  | Light green chloritized pillow lavas.<br>Hematite in matrix and fractures.<br>Calcite stringers variole-like texture in places. |  |  |  |  |  |  |  |  |
| 110 |  |  |  |  |  |  |  |  |  |  |
| 120 |  |  |  |  |  |  |  |  |  |  |
| 122.10 |  | Strongly argillized sheared zone. |  |  |  |  |  |  |  |  |
| 122.30 |  | Light green and locally dark green pillow lavas.<br>Hematite dominant in fractures variole-like texture visible. |  |  |  |  |  |  |  |  |
| 130 |  |  |  |  |  |  |  |  |  |  |
| 140 |  |  |  |  |  |  |  |  |  |  |
| 141.10 |  | 141.10~141.70<br>Strongly argillized sheared zone.<br>141.70~143.00 Weakly argillized.<br>142.70~142.80<br>Sheared and fractured. |  |  |  |  |  |  |  |  |
| 141.70 |  |  |  |  |  |  |  |  |  |  |
| 143.00 |  | 143.00 m End of hole |  |  |  |  |  |  |  |  |
| 150 |  |  |  |  |  |  |  |  |  |  |

Hole No. MJO-A4 (From 0.00 m to 50.00 m)



| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Casing. No recovery. | | | | | | | | |
| 3.00 | | Gravel and sand (terrace deposits)<br>Gravel : peridotite > gabbro<br>Matrix : sand and calcite. | | | | | | | | |
| 16.20 | | Terrace deposits. Rounded to subangular pebble to granule.<br>Matrix : completely cemented with calcite | | | | | | | | |
| 22.15 | | Dark green medium-grained basaltic massive lava with epidota.<br>Calcita-hematite stringers.<br>Bottom : argillized and brecciated | | | | | | | | |
| 25.30 | | Light brownish-green argillized and weathered pillow lava.<br>Weakly brecciated. | | | | | | | | |
| 29.10 | | Light green~green pillow lava with closely packed pillows. Zeolite and epidote spots and in vesicles.<br>Weakly weathered | | | | | | | | |
| 45.20 | | Dark bluish-green weakly chloritized and brecciated pillow lava<br>49.60~49.80<br>Sheared zone with calcite<br>49.85~50.05<br>Hyaloclastite with dominant hematite | | | | | | | | |
| 50 | | | | | | | | | | |

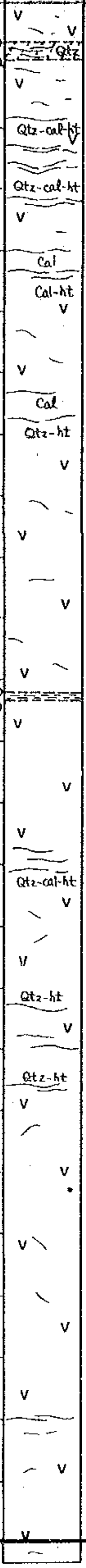
Hole No. MJO-A4 (From 50.00 m to 100.00 m)



| Depth (m) | Chart | Lithology and Alteration | Mineralization |
|---|---|---|---|
| 50.05 | | | |
| 59.00 | | Light bluish-green chloritized pillow breccia. Vesicles filled with zeolite. Calcite stringers.<br>60.80~60.85<br>Sheared zone with chlorite, calcite | |
| 62.10 | | Light green weakly chloritized and weakly brecciated pillow lava. (same as 45.20~59.00) | |
| 69.80 | | Dark green weakly brecciated and strongly chloritized pillow lava.<br>Upper part : brecciated<br>Lower part : comparatively massive<br>Quartz, hematite and zeolites stringers.<br>Vesicles filled with zeolites.<br>Bottom part : weakly argillized | |
| 80.75 | | Pyrite-clay zone. | 80.75~81.15<br>Pyrite in gray clay with hematite |
| 81.15 | | Massive ore. | 81.15~82.20<br>Massive medium to fine-grained pyrite ≫ chalcopyrite zone with minor clay |
| 82.30 | | Siliceous ore | 82.30~82.50<br>Dense pyrite and chalco pyrite in siliceous fragment |
| 82.50 | | Pyrite-clay zone | 82.50~82.80<br>Dense pyrite dissemination in gray clay sheared. |
| 82.80 | | Silicious ore | 82.50~83.20<br>Same as 82.30~82.50 |
| 83.20 | | Stockwork zone:<br>Green~light green brecciated and weakly silicified zone (pillow lava) | 83.20~86.90 and 88.50~92.00<br>Pyrite >chalcopyrite stockwork zone with quartz-hematite |
| 86.90 | | Poor mineralized zone. | |
| 88.50 | | Same as 83.20~86.90. | |
| 92.00 | | Green~light green brecciated Chloritized and weakly silicified pillow lava. | 92.00~95.30<br>Pyrite disseminations |
| 95.30 | | Brownish-green weakly chloritized and brecciated pillow lava with hematite in matrix.<br>96.70~96.80<br>Quartz and clay zone. | No sulfide minerals.<br>98.50~101.20<br>Very weak pyrite disseminations |
| 100 | | | |

| Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 80.75 | 1.55 | 1.2 | 4.5 | 3.24 | 0.01 | 0.34 |
| 82.30 | 0.90 | 2.2 | 11.6 | 3.81 | <0.01 | 0.54 |
| 83.20 | 1.80 | 0.1 | 2.6 | 0.60 | <0.01 | 0.55 |
| 85.00 | 1.90 | 0.4 | 5.8 | 1.67 | <0.01 | 0.27 |
| 86.90 | | | | | | |
| 88.50 | 1.80 | 0.2 | 5.2 | 1.19 | <0.01 | 0.28 |
| 90.30 | 1.70 | 0.1 | 2.8 | 1.17 | <0.01 | 0.09 |
| 92.00 | | | | | | |

Hole No. MJO－A4 (From 100.00 m to 150.75 m)



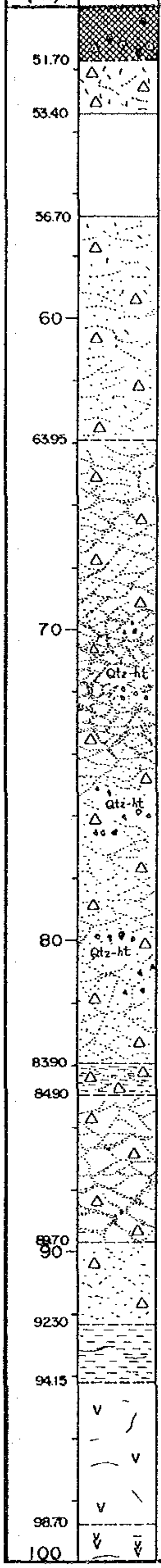
| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 101.20<br>101.80 | | Strongly chloritized sheared and argillized zone.<br>Dark green chloritized and weakly silicified pillow lava. Weakly brecciated. Many quartz, calcite and hematite vein to stringers. Hematite in matrix. | | | | | | | | |
| 110 | | | | | | | | | | |
| 120 | | | | | | | | | | |
| 122.40<br>122.60 | | Strongly chloritized sheared and argillized zone.<br>Dark green~green chloritized and weakly silicitied pillow lava. Weakly brecciated.<br>Calcite-quartz with minor hematite veins, veinlets and stringers. | | | | | | | | |
| 130 | | | | | | | | | | |
| | | 136.60~126.90<br>Hematite dominant zone in matrix | | | | | | | | |
| 140 | | | | | | | | | | |
| | | 145.90<br>Hematite-quartz vein 4 cm | | | | | | | | |
| 150 | | 150.75 End of hole | | | | | | | | |
| 150.75 | | | | | | | | | | |

Hole No. MJO - A5 (From 0.00 m to 50.00 m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization |
|---|---|---|---|
|  |  | Casing. No recovery. |  |
| 3.00 |  | Gossan debris<br>(Overburden) |  |
| 10.90 |  | Light green doleritic massive lavas. Weakly brecciated locally. Hematite band and in fractures. Calcite stringers.<br>19.90~20.80 Weathered |  |
| 20.80 |  | Light green argillized and chloritized pillow lavas. Weakly sheared and weathered.<br>23.00~24.90 Strongly argillized and weathered | Weak pyrite disseminations. |
| 24.90 |  | Reddish brown gossan soil.<br>Hematite, limonite and clay. |  |
| 25.90 |  | Siliceous gossan.<br>Brecciated siliceous fragments with gray clay. Cemented with hematite. Dominant limonite and hematite. |  |
| 34.20 |  | Light green~white strongly brecciated, silicified and argillized zone. Quartz stringers and fragments. Hematite dominant in matrix. Weakly weathered.<br>43.30~44.30 Strongly brecciated and argillized zone | Pyrite disseminations.<br>Pyrite and chalcopyrite disseminated breccia. |
| 48.70 |  | Massive sulfides with siliceous fragments. | Pyrite > Chalcopyrite |
| 50 |  |  |  |

| Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 34.20 | 2.00 | 0.3 | 3.7 | 0.78 | <0.01 | 0.01 |
| 36.20 | 2.00 | 0.4 | 1.4 | 0.68 | <0.01 | <0.01 |
| 38.20 | 2.00 | 0.3 | 1.6 | 0.51 | <0.01 | 0.06 |
| 40.20 | 2.00 | 2.2 | 1.8 | 0.19 | <0.01 | 0.35 |
| 42.20 | 2.00 | Tr | Tr | 0.83 | <0.01 | 0.19 |
| 44.20 | 2.00 | 1.9 | 2.6 | 2.23 | <0.01 | 0.01 |
| 46.20 | 2.50 | 1.8 | 6.9 | 5.37 | <0.01 | 0.01 |
| 48.70 | 1.50 | 1.8 | 14.1 | 10.53 | <0.01 | 0.06 |

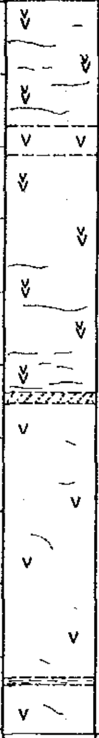
Hole No. MJO－A5 (From· 50.00m to 100.00m)



| Depth (m) | Lithology and Alteration | Mineralization |
|---|---|---|
| 51.70 | White strongly brecciated siliceous zone with quartz-hematite veins and stringers. Weakly weathered. | Pyrite disseminations.<br>Quartz-pyrite veins |
| 53.40 | Cave | |
| 56.70 | Brecciated silicified zone Weathered. Hematite and limonite in matrix. | Siliceous gossan.<br>Pyrite disseminations and veins. |
| 63.95 | Strongly silicified brecciated zone. Quartz-hematite breccia in places. | Pyrite disseminations and breccia.<br>(Stockwork ore zone)<br>Sulfides: 15~35 vol%<br>70.00~73.50<br>Sulfides (pyrite):<br>30~60 vol% |
| 83.90 | Dark green strongly brecciated and chloritized zone. | Pyrite disseminations and stringers. |
| 84.90 | Same as 63.95~83.90 | |
| 89.70 | Light green strongly silicified and brecciated volcanics. | Pyrite disseminations.<br>Pyrite-chalcopyrite-quartz boxwork. |
| 92.30 | Dark brown (upper) and dark green (lower) hematized and chloritized zone with quartz stringers. | |
| 94.15 | Dark green chloritized pillow lavas with quartz-hematite and calcite stringers. | |
| 98.70 | | |

| Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 50.20 | 1.50 | 1.3 | 8.9 | 9.56 | <0.01 | 0.04 |
| 51.70 | 1.70 | 1.5 | 4.6 | 2.08 | <0.01 | 0.02 |
| 53.40 | | | | | | |
| 56.70 | 3.50 | 0.8 | 1.1 | 0.29 | <0.01 | 0.01 |
| 60.20 | 3.75 | 1.6 | 4.5 | 0.64 | <0.01 | 0.01 |
| 63.95 | 2.05 | 1.1 | 17.0 | 3.06 | <0.01 | 0.01 |
| 66.00 | 2.00 | 1.4 | 37.2 | 3.90 | 0.01 | 0.04 |
| 68.00 | 2.00 | 0.6 | 12.9 | 0.98 | <0.01 | 0.03 |
| 70.00 | 2.00 | 1.5 | 10.0 | 0.36 | <0.01 | 0.06 |
| 72.00 | 2.00 | 2.2 | 11.8 | 0.79 | 0.01 | 0.05 |
| 74.00 | 2.00 | 2.9 | 16.1 | 0.65 | <0.01 | 0.12 |
| 76.00 | 2.00 | 0.4 | 2.6 | 0.44 | <0.01 | 0.09 |
| 78.00 | 2.00 | 0.3 | 2.2 | 0.16 | <0.01 | 0.08 |
| 80.00 | 2.00 | 0.1 | 2.0 | 0.98 | <0.01 | 0.48 |
| 82.00 | 2.00 | 0.4 | 3.3 | 0.13 | <0.01 | 0.67 |
| 84.00 | 2.00 | 0.2 | 3.1 | 0.66 | <0.01 | 0.53 |
| 86.00 | 2.00 | 0.4 | 4.5 | 0.68 | <0.01 | 0.99 |
| 88.00 | 2.00 | 0.4 | 1.6 | 0.31 | <0.01 | 0.43 |
| 90.00 | 2.30 | 0.4 | 0.8 | 0.10 | <0.01 | 0.07 |
| 92.30 | | | | | | |

Hole No. MJO-A5 (From 100.00m to 120.10m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Light green~green massive lavas with quartz-calcite stringers and veinlets.<br>101.00, 102.80<br>Quartz-calcite veinlets<br>103.40~104.20<br>Pillow lavas weakly brecciated<br>107.25, 108.40<br>Quartz-calcite veinlets |  |  |  |  |  |  |  |  |
| 110<br>110.70<br>111.00 |  | Green argillized, chloritized and brecciated zone with hematite in matrix. |  |  |  |  |  |  |  |  |
|  |  | Green~brownish green weakly chloritized pillow lavas.<br>Hematite in fractures and matrix.<br>Variole-like structure in part.<br>118.60~118.75<br>Strongly chloritized |  |  |  |  |  |  |  |  |
| 120<br>120.10 |  | 120.10 m End of hole |  |  |  |  |  |  |  |  |

Hole No. MJO - A6 (From 0.00 m to 50.00m)

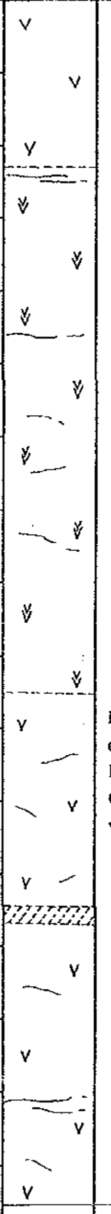
| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| |  | Casing. No recovery. | | | | | | | | |
| 3.00 | | Gossan debris.<br>(Overburden) | | | | | | | | |
| 8.60 | | Green~yellowish green doleritic mossive lavas. Weathered and argillized.<br>10.80 Hematite-calcite vein.<br>10.60~11.20 Hematized.<br>11.20~12.60 Strongly argillized, chloritized and sheared. | | | | | | | | |
| 10 | | | | | | | | | | |
| 11.20 | | | | | | | | | | |
| 12.60 | | | | | | | | | | |
| 15.90 | | | | | | | | | | |
| 20 | | | | | | | | | | |
| 24.95 | | Brecciated siliceous gossan. | Limonite and hematite. | | | | | | | |
| 25.50 | | | | | | | | | | |
| 26.00 | | Many cavities. Poor core recovery.<br>25.50~26.00 Cave. | | | | | | | | |
| 30 | | | | | | | | | | |
| 36.70 | | Light brown and dark brown gossan soil with angular siliceous breccia. | Limonite and goethite | | | | | | | |
| 37.70 | | Brecciated siliceous gossan.<br>Many cavities<br>39.20~40.70 Cave. | Limonite. | | | | | | | |
| 39.20 | | | | | | | | | | |
| 40 | | | | | | | | | | |
| 40.70 | | | | | | | | | | |
| 43.10 | | Light brown gossan soil with siliceous breccia. | Goethite and limonite. | | | | | | | |
| 45.30 | | Dark brown~reddish brown silicified, brecciated gossan. | Limonite and hematite. | | | | | | | |
| 48.05 | | Strongly silicified, chloritized and brecciated zone.<br>(stockwork ore) | Pyrite disseminations and veinlets.<br>Pyrite: 10 vol.% | | | | | | | |
| 50 | | | | | | | | | | |

## Hole No. MJO - A6 (From 50.00m to 100.00m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization |
|---|---|---|---|
| 51.60<br>52.00 |  | Gray brecciated and strongly argillized zone. | |
| | | Light green silicified, chloritized and brecciated zone.<br>(Stockwork ore)<br>Hematite in matrix. | Pyrite disseminations.<br>Pyrite-chalcopyrite disseminated breccia.<br>Pyrite: 6~7 vol.% |
| | | 54.50~57.10<br>Hematite dominant in matrix. | |
| 60 | | | |
| 64.50<br>65.00 | | 64.50~65.00<br>Argillized zone. | |
| 70 | | | |
| | | 72.65 Reduced the size to BX. | |
| 78.10<br>78.80<br>79.30 | | Dark green strongly chloritized and brecciated zone with quartz and hematite breccia. | Pyrite disseminations. |
| 80 | | Silicified stockwork ore. | Pyrite disseminations and stringers. |
| 81.30 | | Dark reddish brown strongly hematized volcanics.<br>81.30~82.80 and 83.60~85.30<br>Brecciated and argillized.<br>Dark green strongly chloritized zone. | |
| 85.60 | | Dark brownish green hematized pillow lavas. Matrix: strongly chloritized. A few calcite and quartz stringers. | |
| 90 | | | |
| 95.40<br>95.70 | | Gray clay zone. | |
| | | 96.70 Sheared zone 5 cm. | |
| | | 97.70~104.60<br>Quartz-calcite veinlets and stringers. Hematite stringers. | |
| 100 | | | |

| Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 52.00 | | | | | | |
| | 2.00 | 0.7 | 2.3 | 0.54 | <0.01 | 0.41 |
| 54.00 | | | | | | |
| | 2.00 | 0.3 | 3.7 | 0.44 | <0.01 | 0.22 |
| 56.00 | | | | | | |
| | 2.00 | 0.3 | 2.1 | 0.42 | <0.01 | 0.24 |
| 58.00 | | | | | | |
| | 2.00 | 0.4 | 1.8 | 0.44 | <0.01 | 0.38 |
| 60.00 | | | | | | |
| | 2.00 | 0.3 | 1.9 | 0.37 | <0.01 | 0.37 |
| 62.00 | | | | | | |
| | 2.00 | 0.7 | 2.2 | 1.14 | <0.01 | 0.15 |
| 64.00 | | | | | | |
| | 2.00 | 0.8 | 2.3 | 0.91 | <0.01 | 0.31 |
| 66.00 | | | | | | |
| | 2.00 | 0.1 | 1.7 | 0.74 | <0.01 | 0.13 |
| 68.00 | | | | | | |
| | 2.00 | Tr | Tr | 0.58 | <0.01 | 0.11 |
| 70.00 | | | | | | |
| | 2.65 | Tr | Tr | 0.36 | <0.01 | 0.08 |
| 72.65 | | | | | | |
| | 2.00 | 0.1 | 1.0 | 0.43 | <0.01 | 0.05 |
| 74.65 | | | | | | |
| | 2.00 | 0.1 | 0.7 | 0.31 | <0.01 | 0.06 |
| 76.65 | | | | | | |
| | 2.65 | Tr | Tr | 0.37 | <0.01 | 0.06 |
| 79.30 | | | | | | |

Hole No. MJO-A6 (From 100.00m to 133.10m)

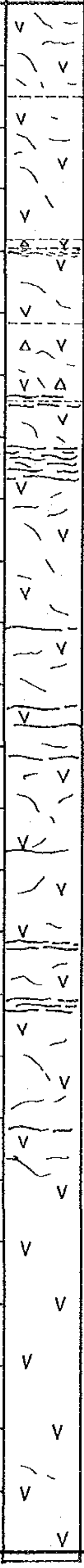
| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 104.60 |  | Light green~light greenish blue massive lava with quartz and calcite stringers.<br>104.80 Quartz veins.<br>109.30 Quartz vein. | | | | | | | | |
| 110 | | | | | | | | | | |
| 119.00 | | | | | | | | | | |
| 120 | | Dark green~dark brownish green chloritized pillow lava.<br>Hematite in matrix and fractures.<br>Quartz-calcite-hematite stringers and veinlets.<br>124.90~125.35<br>Brecciated weakly argillized zone. | | | | | | | | |
| 130 | | 130.20<br>Quartz-hematite vein. | | | | | | | | |
| 133.10 | | 133.10m End of hole. | | | | | | | | |
| 140 | | | | | | | | | | |
| 150 | | | | | | | | | | |

Hole No. MJO-A7 (From 0.00 m to 50.00 m)

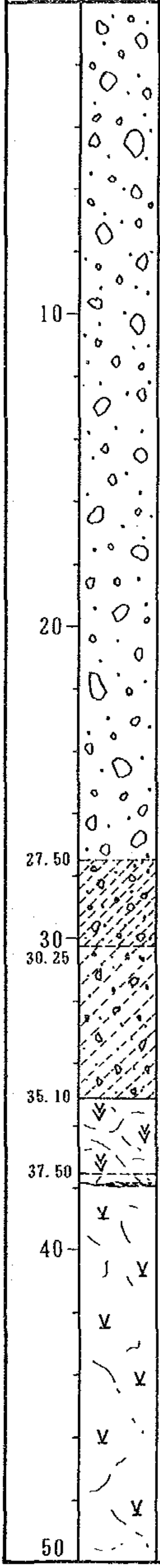
| Depth (m) | Lithology and Alteration | Mineralization |
|---|---|---|
|  | Pillow lavas, light green to light yellowish green, weakly brecciated. Weathered and weakly argillized. Calcite stringers.<br>6.50 - 7.10<br>Strongly brecciated zone. Calcite stringers and hematite in matrix.<br>9.20 - 9.80<br>Strongly argillized.<br>10.50 - 12.80<br>Enrichment of copper oxide minerals. |  |
| 12.80 | Gossan zone, clayey, reddish brown.<br>Fragment: light yellowish green argillized pillow lava. | Limonite-hematite-clay. |
| 22.30 | Siliceous gossan, reddish brown, intensely brecciated. | Limonite-hematite-quartz. |
| 27.60 | Gossan zone, strongly argillized, reddish brown. | Hematite-limonite-clay. |
| 29.80 | Pillow lavas, light yellowish green to yellowish brown, chloritized and weakly silicified. Brecciated and fractured. Quartz-calcite-hematite veinlets and stringers dominant.<br>29.80 - 32.20<br>Enrichment of copper oxide minerals along fractures.<br>33.20<br>Quartz-calcite-hematite veinlet 0.03m.<br>33.80<br>Quartz-hematite veinlet 0.02m (vertical).<br>34.90 - 36.10<br>Argillized and sheared zone with copper oxide minerals along fractures.<br>38.40 - 40.00<br>Strongly brecciated.<br>41.60<br>Quartz-hematite vein 0.06m. |  |
| 48.90 | Pillow lavas, dark green to green, weakly brecciated. |  |

| Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 10.50 - 12.80 | 2.30 | Tr | Tr | 3.28 | — | 0.41 |
| 12.80 - 14.80 | 2.00 | Tr | Tr | 1.30 | — | 0.21 |
| 14.80 - 16.80 | 2.00 | Tr | Tr | 1.03 | — | 0.16 |
| 16.80 - 18.80 | 2.00 | Tr | Tr | 0.51 | — | 0.05 |
| 18.80 - 20.80 | 2.00 | Tr | Tr | 0.11 | — | 0.02 |
| 20.80 - 22.30 | 1.50 | Tr | Tr | 0.05 | — | 0.02 |
| 22.30 - 24.30 | 2.00 | 0.1 | 0.8 | 0.01 | — | 0.02 |
| 24.30 - 26.30 | 2.00 | Tr | Tr | <0.01 | — | <0.01 |
| 26.30 - 27.60 | 1.30 | 1.5 | 5.6 | 0.01 | — | 0.01 |
| 27.60 - 29.80 | 2.20 | 0.3 | 2.6 | 0.23 | — | 0.10 |
| 29.80 - 32.20 | 2.40 | Tr | Tr | 1.02 | — | 0.16 |
| 32.20 - 34.90 |  |  |  |  |  |  |
| 34.90 - 36.10 | 1.20 | 0.1 | 1.4 | 0.38 | — | 0.05 |

Hole No. MJO－A 7 (From 50.00 m to 100.30 m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| |  | Hematite in matrix.<br>Guartz stringers. | | | | | | | | |
| 53.00 | | Pillow lavas, light yellowish to brownish green. Alternation of aphanitic and medium-grained lavas. Brecciated in places. Fractures and matrix are filled with hematite. Variole like texture in places | | | | | | | | |
| | | 57.60 - 57.90<br>Pillow breccia. | | | | | | | | |
| 60 | | 58.00<br>Sheared zone with chlorite 0.05m. | | | | | | | | |
| | | 60.30 - 62.80<br>Pillow breccia, chlorite in matrix. | | | | | | | | |
| | | 62.75 - 62.90<br>Fractured zone with quartz-calcite-hematite veinlets. | | | | | | | | |
| | | 64.35 - 65.40<br>Quartz-hematite veinlets and later stage calcite veins. | | | | | | | | |
| 70 | | 70.20, 72.80, 73.30, 74.30, 77.40<br>Quartz-hematite veinlets 0.01 - 0.03m. | | | | | | | | |
| 80 | | 80.30 - 80.50<br>Fractures filled with quartz stringers. | | | | | | | | |
| | | 82.10 - 82.50<br>Several quartz-hematite veinlets. | | | | | | | | |
| | | 85.30 Quartz stringers. | | | | | | | | |
| | | 87.90 - 100.30<br>Poor veinlets | | | | | | | | |
| 90 | | | | | | | | | | |
| 100 | | 100.30 m End of hole. | | | | | | | | |

Hole No. MJO-A8 (From 0.00 m to 50.00 m)



| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Gravel and sand (terrace deposits).<br>Gravel: boulder of harzburgite ≫ gabbro.<br>0 - 27.50<br>Poor core recovery. | | | | | | | | |
| 27.50 | | Gravel and sand, white to whitish brown, cemented with calcite.<br>Gravel: subrounded pebble to granule. | | | | | | | | |
| 30.25 | | Gravel and sand, light greenish brown, cemented with calcite.<br>Gravel: angular to subrounded cobble to granule. | | | | | | | | |
| 35.10 | | Doleritic massive lavas, green, with calcite stringers. Weakly fractured. | | | | | | | | |
| 37.50 | | Pillow lavas, green to dark green, weakly brecciated. Amigdal filled with zeolites and calcite. Fractures filled with thin hematite and calcite stringers.<br>37.80 - 37.90<br>Hematite-white clay vein. | | | | | | | | |
| 50 | | | | | | | | | | |

Hole No. MJO－A8 (From 50.00 m to 100.00m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 53.80<br>60<br>70<br>80<br>90<br>100 |  | Pillow lavas, dark green and dark brownish green in part. Brecciated to weakly brecciated. Chloritized and hematized in part. Fractures filled with quartz, hematite and calcite.<br>Matrix of pillows: green clay minerals in places.<br>54.70 - 54.90 Sheared and argillized zone with hematite.<br>59.50 - 59.55 Hematite.<br>62.65-62.80, 65.60-65.70 Quartz veins.<br>63.30 - 70.60 Amigdal in places filled with quartz and zeolite.<br>66.10 Quartz vein 0.02m.<br>72.70 - 72.90 Brecciated zone filled with calcite.<br>76.80 - 77.70 Pillow breccia.<br>78.95 Quartz-hematite veinlet.<br>84.60 - 84.70 Quartz-hematite vein 0.07m.<br>88.00(±) - 126.70 More closely packed pillow lavas. | | | | | | | | |

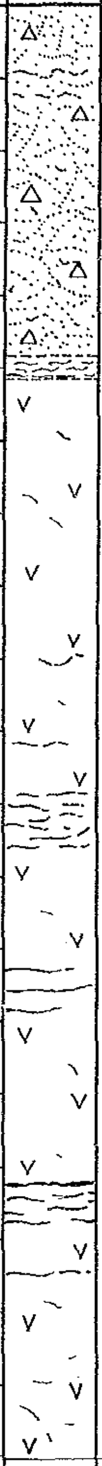
Hole No. MJO-A8 (From 100.00 m to 150.00m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| |  | 101.95 Quartz veinlet 0.02m. | | | | | | | | |
| | | 105.20 - 105.30<br>Quartz-hematite vein. | | | | | | | | |
| | | 107.40, 107.55<br>Quartz-hematite veinlets. | | | | | | | | |
| 110 | | 107.60(±) - 126.70<br>More deep green in color. | | | | | | | | |
| | | 108.20<br>Quartz-hematite veinlets. | | | | | | | | |
| | | 111.30 - 111.35<br>Quartz-hematite vein. | | | | | | | | |
| 120 | | | | | | | | | | |
| | | 121.00<br>Quartz-hematite veinlet. | | | | | | | | |
| | | 124.40, 126.05, 126.20<br>Quartz-hematite veinlets<br>(0.02 - 0.03m). | | | | | | | | |
| 126.70 | | Pillow lavas, dark green.<br>Strongly brecciated and chloritized | | | | | | | | |
| 128.10 | | 127.70, 128.10<br>Quartz-hematite veinlets. | | | | | | | | |
| 130 | | Pillow lavas, dark green and dark brownish green in part.<br>Chloritized and hematized.<br>Fractures filled with quartz, calcite and hematite. | | | | | | | | |
| | | 132.90 - 133.00<br>Quartz-hematite zone. | | | | | | | | |
| | | 136.60 - 138.40<br>Amigdal texture. | | | | | | | | |
| | | 138.40-138.50, 140.10-140.40<br>Quartz-calcite veins<br>(vertical). | | | | | | | | |
| 140 | | | | | | | | | | |
| 150 | | | | | | | | | | |

Hole No. MJO－A8 (From 150.00m to 200.00m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| |  | 150.90. 152.70 Hematite veinlets. | | | | | | | | |
| | | 155.00(±) - 179.10 Pillow margin: hematized. | | | | | | | | |
| 160 | | | | | | | | | | |
| 170 | | | | | | | | | | |
| 179.10<br>180 | | Brecciated pillow lavas, dark green to brown. Chloritized, hematized and brecciated. More intense alteration than upper pillow lavas. | | | | | | | | |
| 183.90 | | Hematite zone (hematized pillow lavas). Reddish brown brecciated. | | | | | | | | |
| 184.85 | | Silicified, strongly chloritized and brecciated zone with stockwork mineralization. Green. | Pyrite disseminations. Chalcopyrite-pyrite-quartz stringers in places. | 184.85 | 2.00 | Tr | Tr | 0.07 | — | 0.05 |
| | | | | 186.85 | 2.00 | Tr | Tr | 0.24 | — | 0.02 |
| | | | | 188.85 | 2.00 | Tr | Tr | 0.12 | — | 0.02 |
| 190 | | | | 190.85 | 2.00 | Tr | Tr | 0.20 | — | 0.02 |
| | | | 192.20 Chalcopyrite-pyrite-quartz stringers and veinlets. | 192.85 | 2.00 | 0.2 | 1.2 | 0.67 | — | 0.05 |
| | | | 196.00 Chalcopyrite-pyrite-quartz in matrix. | 194.85 | 2.00 | 0.2 | 0.5 | 0.68 | — | 0.02 |
| | | | | 196.85 | 2.00 | 1.0 | 0.7 | 0.61 | — | 0.16 |
| 200 | | | | 198.85 | 2.00 | 0.2 | 1.0 | 1.15 | — | 0.10 |

Hole No. MJO－A8 (From 200.00 m to 240.05m)

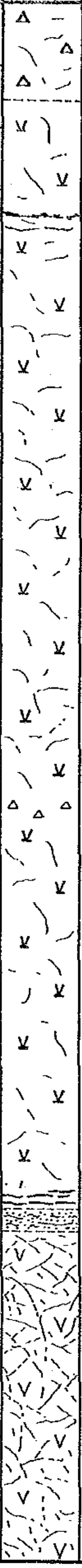
| Depth (m) | Chart | Lithology and Alteration | Mineralization |
|---|---|---|---|
| |  | | 201.80<br>Chalcopyrite-pyrite in matrix.<br>202.40<br>Chalcopyrite-pyrite. |
| 209.70<br>210<br>210.30 | | Strongly chloritized and sheared zone.<br>Pillow lavas, dark green at the top and green, weakly brecciated. Chloritized and hematized. Hematite in matrix. A few quartz and quartz-hematite stringers. | |
| 220 | | 221.70 - 223.20<br>Quartz, quartz-hematite and quartz-calcite stringers and veinlets dominant zone.<br>226.50<br>Quartz-calcite veunlet 0.01m.<br>227.10<br>Quartz-hematite veinlet 0.03m.<br>227.60<br>Quartz-calcite-hematite veinlet 0.04m. | |
| 230 | | 232.40 - 233.50<br>Quartz veinlets dominant zone More strongly chloritized and weakly sheared.<br>232.40 - 232.60<br>Silicified-quartz vein.<br>234.90<br>Quartz-veinlet 0.01m. | |
| 240<br>240.05 | | 240.05 m End of hole. | |
| 250 | | | |

| Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 200.85<br>202.85 | 2.00 | 0.1 | 1.0 | 1.03 | — | 0.03 |
| 202.85<br>204.85 | 2.00 | Tr | Tr | 0.65 | — | 0.02 |
| 204.85<br>206.85 | 2.00 | Tr | Tr | 0.50 | — | 0.26 |
| 206.85<br>208.85 | 2.00 | Tr | Tr | 0.67 | — | 0.10 |
| 208.85<br>209.70 | 0.85 | Tr | Tr | 0.08 | — | 0.05 |

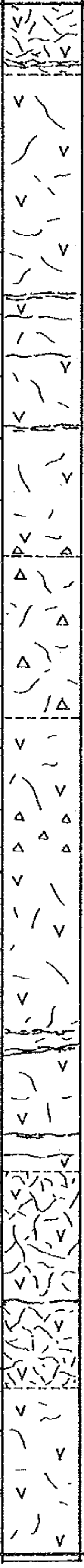
Hole No. MJO－A9 (From 0.00 m to 50.00 m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Casing. No recovery. |  |  |  |  |  |  |  |  |
| 3.00<br>10 |  | Gravel and sand (terrace deposits), light green to brown.<br>Gravel: harzburgite and gabbro (boulder to cobble).<br>Matrix: sand and white clay |  |  |  |  |  |  |  |  |
| 18.95<br>20 |  | Gravel, sand and soil. Light brownish gray.<br>Gravel: angular pebble to granule. |  |  |  |  |  |  |  |  |
| 21.00 |  | Gravel and sand. Rounded cobble to pebble. Cemented with calcite. |  |  |  |  |  |  |  |  |
| 24.00 |  | Doleritic massive lavas, light green. Fractures filled with dominant calcite and hematite. Weakly hematized and chloritized. |  |  |  |  |  |  |  |  |
| 30 |  | Bottom: strongly brecciated (0.15m). |  |  |  |  |  |  |  |  |
| 31.20 |  | Pillow breccia, dark brownish green. Epidotized and chloritized. Dominant calcite and hematite in matrix. |  |  |  |  |  |  |  |  |
|  |  | 38.90 Calcite vein. |  |  |  |  |  |  |  |  |
| 40 |  | 40.10 Calcite and white clay vein. |  |  |  |  |  |  |  |  |
| 42.20 |  | Pillow lavas, yellowish green. Brecciated and fractured. Weakly epidotized. Fractures filled with hematite and calcite. |  |  |  |  |  |  |  |  |
|  |  | Bottom 0.70m: strongly brecciated. |  |  |  |  |  |  |  |  |
| 49.10 |  |  |  |  |  |  |  |  |  |  |
| 50 |  |  |  |  |  |  |  |  |  |  |

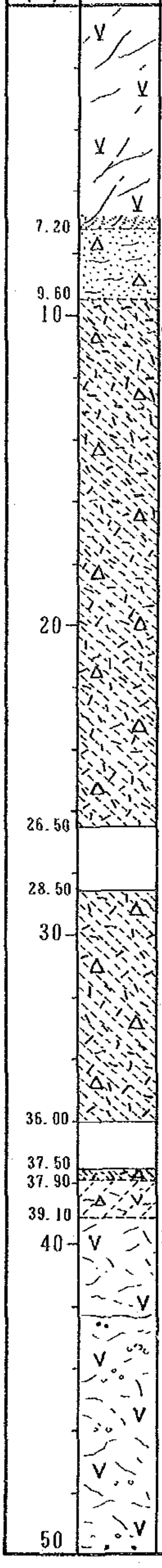
Hole No. MJO-A9 (From 50.00 m to 100.00m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| |  | Pillow breccia, dark brownish green. Strongly hematized and weakly chloritized. Fractures with hematite and calcite. | | | | | | | | |
| 53.10 | | Pillow lavas and pillow breccia in part. Brecciated and weakly chloritized. Fractures filled with quartz, calcite and hematite. Calcite and zeolites spots in places.<br>56.85 - 56.90 Hematite-calcite vein.<br>57.15 (0.04m) Calcite-hematite vainlet<br>75.50 - 76.10 Pillow breccia.<br>86.20 - 88.70 More chloritized<br>88.30, 88.50 - 88.60 Zeolites-quartz-hematite vein | | | | | | | | |
| 88.70 | | Strongly chloritized sheared zone with quartz stringers. Argillized. | Pyrite disseminations. | 88.70<br>89.40 | 0.70 | Tr | Tr | 0.06 | — | 0.21 |
| 89.40 | | Pillow lavas, brecciated, dark green to dark brownish green. Chloritized and silicified. Quartz-hematite stockwork with no sulfides | | | | | | | | |

Hole No. MJO－A9 (From 100.00 m to 150.20m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | 101.90 - 102.20 Quartz-hematite network vein. |  |  |  |  |  |  |  |  |
| 102.30 |  | Pillow lavas, brownish green Chloritized, hematized and weakly silicified. Quartz stringers. |  |  |  |  |  |  |  |  |
| 110 |  | 109.50 - 109.60 Quartz-hematite vein.<br>110.10 Quartz veinlet 0.03m.<br>111.30 Quartz veinlet 0.02m. |  |  |  |  |  |  |  |  |
|  |  | 113.70 - 113.85 Quartz-hematite vein. |  |  |  |  |  |  |  |  |
|  |  | Weakly brecciated at the bottom. |  |  |  |  |  |  |  |  |
| 117.80<br>120 |  | Pillow breccia, brownish green. Hematized, chloritized and silicified. Quartz stringers along fractures and in matrix. |  |  |  |  |  |  |  |  |
| 123.00 |  | Pillow lavas, brownish green, weakly brecciated. Chloritized, hematized and weakly silicified. Quartz-hematite and quartz stringers.<br>126.00 - 127.40 Pillow breccia. |  |  |  |  |  |  |  |  |
| 130 |  |  |  |  |  |  |  |  |  |  |
|  |  | 133.20 - 133.25, 133.60 - 133.65 Quartz-hematite vein. |  |  |  |  |  |  |  |  |
|  |  | 136.60 - 136.75 Quartz-hematite vein.<br>137.10 Quartz veinlet 0.02m. |  |  |  |  |  |  |  |  |
| 137.70<br>140 |  | Same pillow lavas with more intense quartz-hematite stockwork veins and veinlets. Chloritized and strongly silicified. Light brown.<br>141.90 Calcite vein 0.03m. |  |  |  |  |  |  |  |  |
| 144.60 |  | Pillow lavas, dark green to dark brownish green. Fractures filled with quartz and hematite veinlets and stringers. Chloritized and weakly silicified. |  |  |  |  |  |  |  |  |
| 150 |  | 150.20 m End of hole. |  |  |  |  |  |  |  |  |

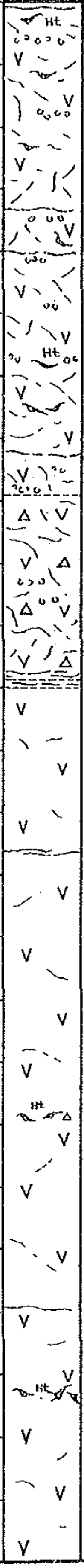
## Hole No. MJO-A10 (From 0.00 m to 50.00m)



| Depth (m) | Lithology and Alteration | Mineralization |
|---|---|---|
| | Pillow lavas, light green, weakly brecciated. Weathered. Fractures filled with hematite and calcite.<br>6.65 - 6.80<br>Hematite veins.<br>6.80 - 7.20<br>Enrichment of copper oxide minerals along fractures. | |
| 7.20 | Strongly argillized and weathered zone, white to brown with limonite and hematite. | |
| 9.60 | Siliceous gossan, reddish brown and white, intensely brecciated. | Limonite and hematite. |
| 26.50 | Cave zone. | |
| 28.50 | | |
| 36.00 | Cave zone. | |
| 37.50 | | |
| 37.90 | Pillow breccia, brownish green. Argillized and weathered. | |
| 39.10 | Pillow lavas, yellowish green, strongly chloritized and fractured. Fractures filled with dominant quartz-hematite-calcite veinlets and stringers. Hematite and dark green clay minerals in matrix. Variole like texture.<br>39.10 - 41.85<br>Weathered with limonite along fractures.<br>42.30<br>Quartz-hematite veinlet. | |
| 50 | | |

| Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 7.20 | | | | | | |
| | 2.40 | Tr | Tr | 0.65 | — | 0.01 |
| 9.60 | | | | | | |
| | 2.00 | 0.6 | 1.9 | 0.01 | — | <0.01 |
| 11.60 | | | | | | |
| | 2.00 | 0.1 | 0.9 | 0.01 | — | <0.01 |
| 13.60 | | | | | | |
| | 2.00 | 0.3 | 1.3 | 0.03 | — | <0.01 |
| 15.60 | | | | | | |
| | 2.00 | 0.2 | 2.5 | 0.02 | — | <0.01 |
| 17.60 | | | | | | |
| | 2.00 | 0.5 | 3.2 | 0.03 | — | <0.01 |
| 19.60 | | | | | | |
| | 2.00 | 0.3 | 5.9 | 0.01 | — | <0.01 |
| 21.60 | | | | | | |
| | 2.00 | 0.1 | 2.2 | 0.03 | — | <0.01 |
| 23.60 | | | | | | |
| | 2.00 | 1.8 | 5.7 | 0.06 | — | <0.01 |
| 25.60 | | | | | | |
| | 0.90 | 5.4 | 12.9 | 0.03 | — | <0.01 |
| 26.50 | | | | | | |
| 28.50 | | | | | | |
| | 2.00 | 3.7 | 16.0 | 0.05 | — | <0.01 |
| 30.50 | | | | | | |
| | 2.00 | 1.2 | 7.7 | 0.05 | — | <0.01 |
| 32.50 | | | | | | |
| | 2.00 | 0.7 | 3.9 | 0.09 | — | <0.01 |
| 34.50 | | | | | | |
| | 1.50 | 0.2 | 5.6 | 0.06 | — | <0.01 |
| 36.00 | | | | | | |
| 37.50 | | | | | | |
| 37.90 | 0.40 | Tr | Tr | 0.15 | — | <0.01 |

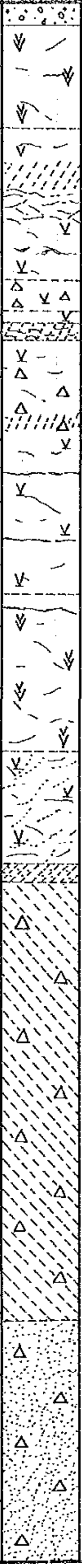
Hole No. MJO-A10 (From 50.00 m to 100.00m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| |  | 50.10<br>Quartz-hematite-calcite veinlet 0.03 m. | | | | | | | | |
| | | 56.60<br>Quartz-hematite veinlet 0.04 m. | | | | | | | | |
| | | 58.00<br>Quartz-hematite veinlet 0.02 m. | | | | | | | | |
| 60 | | | | | | | | | | |
| | | 64.40<br>Quartz-hematite caicite veinlet 0.03 m. | | | | | | | | |
| 65.80 | | Pillow breccia, yellowish green to dark green, chloritized and hematized (same lava flows as above). Variole like texture. Many quartz-hematite stringers. Hematite in matrix. Fractures filled with calcite. | | | | | | | | |
| 70 | | | | | | | | | | |
| 71.75<br>72.00 | | Light green aphanitic rock (pillow margin ?). | 71.60 - 72.00<br>Calcite veinlets with native copper. | | | | | | | |
| | | Pillow lavas, green to dark green, chloritized and hematized. Fractures filled with quartz, hematite and calcite. Hematite in matrix. | | | | | | | | |
| | | 77.30<br>Quartz-hematite veinlet 0.01 m. | | | | | | | | |
| 80 | | | | | | | | | | |
| | | Thick hematite in matrix. | | | | | | | | |
| 90 | | | | | | | | | | |
| | | 91.85<br>Calcite stringer 0.01 m. | | | | | | | | |
| | | 94.40 - 94.65<br>Hematite dominant in matrix. | | | | | | | | |
| 100 | | | | | | | | | | |

Hole No. MJO－A 1 0 (From 100.00 m to 120.55 m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| |  | 101.20 - 102.20<br>Pillow breccia.<br>Hematite in matrix.<br>104.35 - 104.55<br>Quartz-hematite vein (fault ?) | | | | | | | | |
| 104.55 | | Pillow lavas, dark green, weakly brecciated. Chloritized and silicified. Fractures filled with quartz, hematite and calcite. Hematite in matrix. | | | | | | | | |
| 110 | | 110.30 - 110.50<br>Strongly brecciated and sheared zone. Matrix filled with quartz, hematite and green clay minerals. | | | | | | | | |
| | | 115.10<br>Quartz-hematite stringer 0.01 m.<br>114.20 - 120.55<br>Vesicles filled with quartz.<br>118.60<br>Quartz-hematite stringer 0.01 m. | | | | | | | | |
| 120<br>120.55 | | 120.55 m End of hole. | | | | | | | | |
| 130 | | | | | | | | | | |
| 140 | | | | | | | | | | |
| 150 | | | | | | | | | | |

## Hole No. MJO-A11 (From 0.00 m to 50.00m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization |
|---|---|---|---|
| 0.75 |  | Soil and gravel, overburden. | |
| 4.00 | | Doleritic massive lavas, yellowish green. Weakly brecciated. | |
| 10<br>18.95 | | Pillow lavas, light yellowish green. Calcite and hematite stringers. Brecciated and epidotized in places.<br>5.10 - 6.00<br>Weakly argillized.<br>6.00 - 6.95<br>Strongly fractured with calcite veinlets and stringers.<br>7.95 - 8.15<br>Hematite and calcite in matrix.<br>8.90 - 9.90<br>Pillow breccia. Calcite fills fractures in matrix.<br>10.25 - 10.80<br>Sheared and argillized zone.<br>11.70 - 13.30<br>Strongly brecciated zone. Hematite/calcite in matrix.<br>13.30 - 13.70<br>Brecciated/argillized zone. | 15.15<br>Quartz-hematite veinlet 0.02m.<br>17.20<br>Quartz-calcite veinlet 0.01m. |
| 20<br>24.00 | | Doleritic massive lavas, light green to yellowish green, brecciated in places. Fractures filled with calcite and limonite.<br>19.40<br>Quartz-calcite veinlet 0.02m. | |
| 27.65 | | Pillow lavas, light green, brecciated. Fractures filled with limonite. Copper oxide minerals along fractures. | |
| 28.20 | | Argillized zone, bleached, whitish green. | |
| 30<br>40<br>42.30 | | Siliceous gossan zone, reddish brown, intensely brecciated. | Limonite- hematite- goethite. |
| 50 | | Stockwork zone, intensely brecciated and strongly silicified. Hematite in matrix | Fine-grained pyrite disseminations and stringers. |

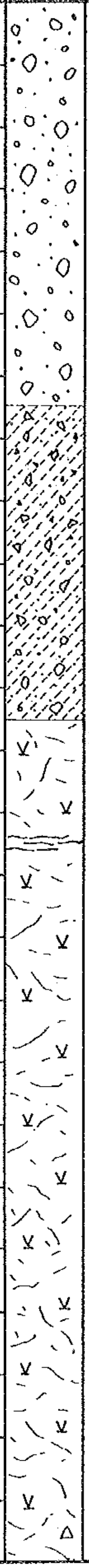
| Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|
| 24.00 | 2.00 | 0.1 | 1.5 | 3.60 | — | 0.10 |
| 26.00 | 1.65 | Tr | Tr | 3.98 | — | 0.05 |
| 27.65 | | | | | | |
| 28.20 | 2.00 | 0.1 | 0.8 | 0.14 | — | 0.01 |
| 30.20 | 2.00 | 0.1 | 6.4 | 0.12 | — | 0.01 |
| 32.20 | 2.00 | Tr | 1.0 | 0.04 | — | 0.01 |
| 34.20 | 2.00 | 5.6 | 8.7 | 0.21 | — | 0.03 |
| 36.20 | 2.00 | 1.1 | 5.4 | 0.07 | — | 0.01 |
| 38.20 | 2.00 | 0.2 | 3.7 | 0.10 | — | 0.01 |
| 40.20 | 2.10 | 0.4 | 19.0 | 0.43 | — | 0.01 |
| 42.30 | 2.00 | Tr | Tr | 3.10 | — | 0.01 |
| 44.30 | 2.00 | 0.3 | 2.7 | 0.66 | — | 0.01 |
| 46.30 | 2.00 | 0.3 | 12.7 | 1.06 | — | 0.01 |
| 48.30 | 2.00 | 0.4 | 5.8 | 1.19 | — | 0.03 |

## Hole No. MJO-A11 (From 50.00 m to 100.65m)

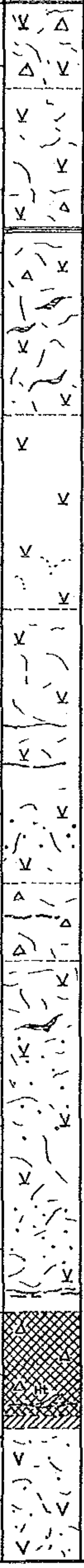
| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| |  | 50.00 - 53.35<br>Hematite dominant. | | 50.30 | | | | | | |
| | | | | | 2.00 | 0.1 | 3.3 | 0.89 | — | 0.01 |
| | | | | 52.30 | | | | | | |
| | | | | | 1.05 | 0.1 | 3.2 | 1.39 | — | 0.01 |
| 53.35 | | Argillized clay zone, whitish green, with hematite. | Weak pyrite disseminations. | 53.35 | | | | | | |
| 53.70<br>60 | | Pillow lavas, medium to coarse-grained, dark green, brecciated and chloritized. Fractures filled with quartz, calcite and hematite. Matrix filled with hematite in places<br>54.60 - 54.65<br>Quartz-hematite vein 0.05m.<br>67.50, 67.70<br>Quartz-hematite veinlets 0.01m.<br>68.00<br>Quartz-hematite veinlet 0.01m. | | | | | | | | |
| 68.00<br>70<br>80<br>90 | | Pillow lavas, aphanitic to fine-grained, light green to light greenish gray. Quartz, calcite and zeolites stringers. Hematite in matrix. Weakly brecciated in part.<br>74.60<br>Quartz-hematite veinlet 0.03m.<br>77.65<br>Zeolites veinlets 0.01m.<br>84.40 - 87.50<br>Brecciated in part. Matrix: calcite.<br>88.20<br>Hematite in matrix 0.05m.<br>91.60 Calcite stringer. | | | | | | | | |
| 91.60 | | Pillow lavas, green to light green, medium to coarse-grained. Weakly brecciated. Matrix filled with hematite. Fractures filled with hematite and calcite. | | | | | | | | |
| 97.20<br>100 | | Pillow breccia, dark green, chloritized. Matrix filled with hematite.<br>97.20 - 97.60<br>Quartz-hematite veinlets zone. | | | | | | | | |

100.65 m End of hole.

Hole No. MJO-A12 (From 0.00 m to 50.00 m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Gravel, sand and soil (terrace deposits).<br>Gravel: harzburgite≫gabbro, rounded boulder to pebble. |  |  |  |  |  |  |  |  |
| 10 |  |  |  |  |  |  |  |  |  |  |
| 12.90 |  | Gravel and sand, harzburgite≫gabbro, cobble to granule.<br>Cemented with calcite.<br>Upper part: subangular pebble to granule dominant. |  |  |  |  |  |  |  |  |
| 20 |  |  |  |  |  |  |  |  |  |  |
| 23.00 |  | Pillow lavas and pillow breccia in places, light brown to light brownish green.<br>Brecciated and dominant fractures filled with calcite and quartz stringers.<br>26.75, 26.95, 27.10<br>Calcite veinlets 0.01 - 0.02m<br>26.10-26.50, 28.10-28.60, 31.60-34.20<br>Variole texture. |  |  |  |  |  |  |  |  |
| 30 |  |  |  |  |  |  |  |  |  |  |
| 40 |  |  |  |  |  |  |  |  |  |  |
| 50 |  |  |  |  |  |  |  |  |  |  |

Hole No. MJO－A12 (From 50.00 m to 100.00 m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| 52.70<br>60 |  | Pillow lavas, green. Brecciated chloritized and hematized in part. Fractures and matrix are filled with hematite, quartz and calcite.<br>57.20 - 57.35<br>Metalliferous sedimentary layer.<br>59.80, 60.40, 62.20<br>Metalliferous sediments in matrix. | | | | | | | | |
| 63.20 | | Pillow lavas, rather massive and aphanitic, light green. Hematized in part. Few quartz and calcite stringers. | | | | | | | | |
| 69.40<br>70<br>80<br>90 | | Pillow lavas, dark green and medium grained. Chloritized and weakly hematized. Hematite, quartz and calcite are in fractures and matrix of pillows.<br>Bright green clay minerals in pillow matrix.<br>73.20, 74.40<br>Quartz veinlets 0.03m.<br>76.10 - 77.10<br>Vesicles filled with zeolites, quartz and calcite.<br>78.20 - 80.70<br>Pillow breccia.<br>79.30<br>Quartz-hematite veinlet 0.03m.<br>82.80<br>Metalliferous sediments 0.03m.<br>83.60-86.40, 88.50-90.40<br>Vesicles filled with zeolites and calcite.<br>91.40, 91.45<br>Quartz-hematite-calcite veinlets.<br>91.95 - 92.00<br>Green clay zone with hematite veinlet. | | | | | | | | |
| 92.00 | | Massive sulfide ore zone, brecciated. | Chalcopyrite ore breccia filled with pyrite and minor quartz. | 92.00<br>93.00 | 1.00 | 3.9 | 26.1 | 2.95 | — | 0.26 |
| | | | | 93.00<br>94.00 | 1.00 | 3.7 | 21.4 | 4.79 | — | 0.36 |
| | | | | 94.00<br>95.30 | 1.30 | 3.3 | 42.6 | 6.29 | — | 2.28 |
| 95.30 | | Hematite zone, brecciated. | | 95.30<br>95.70 | 0.40 | 0.3 | 2.3 | 0.26 | — | 0.41 |
| 95.70<br>100 | | Pillow lavas, dark green. Vesicles filled with calcite. Matrix and fractures are filled with calcite and quartz, and partly with hematite. | | | | | | | | |

Hole No. MJO－A12 (From 100.00 m to 130.35 m)

| Depth (m) | Chart | Lithology and Alteration | Mineralization | Depth (m) | D.L. (m) | Au (g/t) | Ag (g/t) | Cu (%) | Pb (%) | Zn (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| |  | 101.60<br>Calcite-quartz-(hematite) veinlet 0.02m. | | | | | | | | |
| 103.90 | | Pillow lavas with dominant quartz-hematite veinlets and stringers, green to dark green. Vesicles filled with quartz.<br>103.90 - 104.74<br>Brecciated zone with quartz-hematite veins.<br>105.20, 109.40<br>Quartz veinlets (0.01 - 0.02m). | | | | | | | | |
| 110 | | 113.40 - 113.80<br>Hematite dominant zone. | | | | | | | | |
| 120 | | 118.25 - 118.30<br>Quartz vein 0.05m.<br>119.20 - 119.60<br>Quartz-hematite veinlet zone. | | | | | | | | |
| 130 | | 129.20 - 129.60<br>Quartz veins and veinlets.<br>130.25<br>Quartz veinlet 0.01m. | | | | | | | | |
| 130.35 | | 130.35 m End of hole. | | | | | | | | |
| 140 | | | | | | | | | | |
| 150 | | | | | | | | | | |

# Appendix 9

## Assay results for gossan and gossan dump samples in area B

| Sample number | Descriptions | Assay results | | | |
|---|---|---|---|---|---|
| | | Au(g/t) | Ag(g/t) | Cu (%) | Zn (%) |
| N501 | Gossan dump. Light brown gossan soil with siliceous fragments. Limonite rich. | 3.6 | 4.3 | 0.38 | 0.02 |
| N502 | Gossan dump. Reddish brown gossan soil with minor siliceous fragments. Hematite rich. | 12.8 | 13.2 | 0.86 | 0.01 |
| N503 | Gossan dump. Light yellowish brown gossan soil. Limonite rich. | 0.5 | 1.4 | 0.25 | 0.01 |
| N504 | Gossan dump. Purplish red porous gossan soil with minor siliceous fragments. Hematite & goethite rich. | 7.4 | 21.1 | 0.68 | 0.01 |
| N505 | Gossan dump. Light yellowish brown gossan soil with siliceous fragments. Limonite rich. | 2.5 | 6.9 | 0.30 | 0.01 |
| N506 | Gossan dump. Light yellowish brown gossan soil with volcanic fragments. | 5.8 | 11.2 | 0.35 | 0.01 |
| N507 | Gossan dump. Mixture of red and light yellowish brown gossan soil with siliceous fragments. | 3.3 | 8.0 | 0.40 | 0.01 |
| N508 | Gossan dump. Reddish brown gossan soil with siliceous fragments. Hematite > limonite. | 1.0 | 2.5 | 0.10 | 0.01 |
| N509 | Gossan dump. Brown and reddish brown in part gossan soil with minor siliceous fragments. | 4.4 | 3.8 | 0.20 | 0.02 |
| N510 | Gossan dump. Red to reddish brown gossan soil with minor siliceous fragments. | 2.2 | 2.3 | 0.12 | 0.01 |
| N511 | Gossan dump. Light reddish brown gossan soil with siliceous fragments. | 0.6 | 1.7 | 0.26 | 0.10 |
| N512 | Siliceous gossan. Strongly brecciated. Hematite>limonite>goethite with green copper speck. | 0.5 | 0.4 | 0.25 | 0.05 |
| N513 | Siliceous gossan. Intensely silicified and brecciated. Goethite rich. | Tr | Tr | 0.21 | 0.05 |
| N514 | Siliceous gossan. Strongly silicified and brecciated. Hematite>limonite>goethite. | 4.6 | 8.4 | 0.09 | 0.10 |
| N515 | Siliceous gossan. Strongly silicified and brecciated. Green copper along fractures. Limonite rich. | 2.1 | 6.3 | 0.18 | 0.01 |
| N516 | Siliceous gossan. Chart origin ?. Brecciated. Goethite rich. | 13.7 | 13.5 | 0.28 | 0.10 |
| N517 | Siliceous gossan. Strongly silicified and brecciated. Goethite rich. | Tr | Tr | 0.10 | 0.03 |
| N518 | Siliceous gossan. Intensely silicified. Limonite>goethite>hematite. | 0.6 | 4.1 | 0.08 | 0.02 |
| N519 | Gossan dump. Brown porous gossan soil with siliceous volcanic fragments. | Tr | Tr | 0.03 | 0.01 |
| N520 | Gossan dump. Yellowish brown and reddish brown gossan soil with siliceous fragments. | 0.8 | 4.6 | 0.08 | 0.01 |

| Sample number | Descriptions | Assay results | | | |
|---|---|---|---|---|---|
| | | Au(g/t) | Ag(g/t) | Cu (%) | Zn (%) |
| N521 | Gossan dump. Reddish brown gossan soil with silicified volcanics. | 2.2 | 4.3 | 0.26 | 0.01 |
| N522 | Gossan dump. Reddish brown gossan soil with silicified volcanics. Hematite rich. | 2.3 | 2.3 | 0.32 | 0.01 |
| N523 | Gossan dump. Reddish brown gossan soil with silicified volcanics. | 2.2 | 3.1 | 0.19 | 0.01 |
| N524 | Siliceous gossan. Dark brown, strongly silicified. Limonite with green copper speck. | Tr | Tr | 0.16 | 0.01 |
| N525 | Siliceous gossan. Brown and black. Limonite and goethite. | Tr | Tr | 0.32 | 0.03 |
| N526 | Siliceous gossan. Brown , brecciated. Limonite rich. | Tr | Tr | 0.23 | 0.01 |
| N527 | Siliceous gossan. Brown, limonite>hematite. Brecciated. | Tr | Tr | 0.28 | 0.01 |
| N528 | Gossan dump. Reddish brown gossan soil with siliceous fragments. | 1.0 | 1.4 | 0.32 | 0.01 |
| N529 | Gossan dump. Reddish brown gossan soil with siliceous fragments. | 1.1 | 1.8 | 0.37 | 0.01 |
| N530 | Gossan dump. Reddish brown gossan soil with siliceous & volcanic fragments. Limonite & hematite. | 2.1 | 2.9 | 0.71 | 0.10 |
| N531 | Gossan dump. Reddish brown gossan soil. Limonite & hematite. | 0.9 | 3.4 | 0.60 | 0.05 |
| N532 | Gossan dump. Reddish brown gossan soil. Hematite rich. | Tr | Tr | 0.42 | 0.02 |
| N533 | Gossan dump. Brownish gray soil with volcanic fragments. | 0.9 | 1.8 | 1.13 | 0.16 |
| N534 | Gossan dump. Reddish brown gossan soil. Hematite rich. | 1.8 | 3.5 | 0.53 | 0.10 |
| N535 | Gossan dump. Reddish brown gossan soil. Hematite rich. | 4.5 | 3.1 | 0.11 | 0.01 |
| N536 | Gossan dump. Light reddish brown gossan soil with fragments. | Tr | Tr | 0.55 | 0.05 |
| N537 | Gossan dump. Reddish brown gossan soil. Hematite rich. | 0.6 | 1.7 | 0.62 | 0.10 |
| N538 | Siliceous gossan. Dark purplish brown, strongly silicified and brecciated. | Tr | Tr | 0.32 | 0.01 |
| N539 | Siliceous gossan. Red and yellowish brown. Hematite rich. | 0.7 | 1.3 | 0.11 | 0.01 |
| N540 | Gossan. Dark brown silicified and argillized in part. | Tr | Tr | 0.40 | 0.01 |

| Sample number | Descriptions | Assay results | | | |
|---|---|---|---|---|---|
| | | Au(g/t) | Ag(g/t) | Cu (%) | Zn (%) |
| N541 | Siliceous gossan. Gray and brownish gray. Limonite rich. | 0. 8 | 1. 9 | 0. 08 | 0. 01 |
| N542 | Siliceous gossan. Dark purplish brown. Hematite > goethite> limonite. | Tr | Tr | 0. 24 | 0. 03 |
| N543 | Siliceous gossan. Dark reddish brown gossan with green copper speck. Hematite rich. | Tr | Tr | 0. 10 | 0. 02 |
| N544 | Gossan dump. Light yellowish brown weathered volcanics with limonite. | 0. 4 | 1. 5 | 0. 35 | 0. 10 |
| N545 | Gossan dump. Reddish brown gossan soil. Porous soil in part. | 1. 5 | 1. 7 | 0. 32 | 0. 01 |
| N546 | Gossan dump. Reddish brown gossan soil with siliceous fragments. | 1. 9 | 2. 3 | 0. 47 | 0. 01 |
| N547 | Gossan dump. Dark brown gossan soil with fragments. Limonite rich. | 1. 6 | 3. 3 | 0. 28 | 0. 03 |
| N548 | Siliceous gossan. Dark purplish gray, strongly silicified and brecciated. | 1. 0 | 1. 3 | 0. 12 | <0. 01 |
| N549 | Gossan dump. Red gossan soil with volcanic fragments. | 5. 8 | 6. 5 | 0. 23 | <0. 01 |
| N550 | Siliceous gossan. Dark purplish brown, silicified and brecciated. | 0. 7 | 1. 9 | 0. 31 | 0. 01 |
| N551 | Siliceous gossan. Dark brown. Goethite and limonite. | 0. 8 | 2. 6 | 0. 45 | 0. 10 |
| N552 | Siliceous gossan. Brownish gray silicified and rusty volcanics with green copper speck. | Tr | Tr | 0. 28 | 0. 02 |
| N553 | Slag with green copper speck. | 0. 5 | 2. 0 | 1. 98 | 0. 01 |
| N554 | Slag. | 0. 7 | 2. 0 | 1. 52 | 0. 03 |
| N555 | Slag. | 0. 3 | 1. 5 | 0. 99 | 0. 05 |

# Appendix 10

## Charged potential in area B

| X | Y | Potential (mV/A) | |
|---|---|---|---|
| (m) | (m) | MJO-B1 | MJO-B5 |
| 0 | 1000 | 22.7 | 23.2 |
| -100 | 1000 | 21.8 | 22.4 |
| 100 | 1000 | 23.7 | 24.8 |
| 0 | 1100 | 19.2 | 19.7 |
| 100 | 1100 | 20.0 | 20.6 |
| 200 | 1000 | 23.9 | 24.8 |
| 300 | 1000 | 22.4 | 23.4 |
| 200 | 900 | 26.8 | 28.0 |
| 100 | 900 | 27.4 | 28.3 |
| 300 | 900 | 26.7 | 28.1 |
| 300 | 800 | 30.5 | 32.5 |
| 200 | 800 | 31.2 | 32.9 |
| 100 | 800 | 31.8 | 33.1 |
| 200 | 700 | 35.9 | 37.9 |
| 100 | 700 | 35.5 | 37.4 |
| 300 | 700 | 36.7 | 39.4 |
| 400 | 700 | 34.0 | 36.3 |
| 400 | 800 | 30.2 | 32.4 |
| 400 | 900 | 27.0 | 28.7 |
| 500 | 700 | 32.5 | 34.8 |
| 500 | 800 | 28.7 | 30.5 |
| 500 | 900 | 25.5 | 27.7 |
| 600 | 700 | 30.1 | 32.5 |
| 600 | 800 | 26.9 | 28.8 |
| 700 | 700 | 29.1 | 31.3 |
| 700 | 800 | 26.2 | 28.1 |
| 800 | 700 | 27.5 | 29.3 |
| 800 | 800 | 24.7 | 26.5 |
| 900 | 600 | 26.8 | 28.8 |
| 800 | 600 | 29.6 | 32.2 |
| 900 | 700 | 24.5 | 26.4 |
| 1000 | 700 | 23.1 | 24.9 |
| 1100 | 600 | 22.2 | 23.8 |
| 1000 | 600 | 24.1 | 25.9 |
| 1200 | 600 | 21.0 | 22.3 |
| 1000 | 500 | 25.8 | 27.9 |
| 1100 | 500 | 23.8 | 25.4 |
| 1200 | 500 | 22.1 | 23.8 |
| 1100 | 400 | 25.3 | 27.2 |
| 1100 | 300 | 26.9 | 28.9 |
| 1000 | 400 | 28.4 | 30.8 |
| 1000 | 300 | 30.5 | 32.7 |
| 200 | 600 | 46.1 | 49.3 |
| 100 | 600 | 47.9 | 50.4 |
| 300 | 600 | 42.2 | 44.7 |
| 400 | 600 | 39.4 | 42.5 |
| 200 | 500 | 52.8 | 56.5 |
| 100 | 500 | 58.9 | 62.3 |
| 300 | 500 | 50.5 | 55.1 |
| 300 | 400 | 54.4 | 59.1 |
| 400 | 500 | 47.9 | 52.5 |
| 400 | 400 | 51.5 | 56.4 |
| 500 | 600 | 37.4 | 40.5 |
| 500 | 500 | 44.4 | 47.9 |
| 500 | 400 | 48.5 | 52.8 |
| 600 | 500 | 42.4 | 46.0 |
| 600 | 400 | 45.0 | 49.2 |
| 600 | 600 | 33.9 | 36.5 |
| 700 | 600 | 32.0 | 34.5 |
| 700 | 500 | 38.2 | 41.7 |
| 700 | 400 | 40.9 | 44.8 |
| 800 | 500 | 34.1 | 37.1 |
| 800 | 400 | 37.5 | 41.0 |
| 900 | 500 | 29.1 | 31.2 |
| 200 | 450 | 58.3 | 62.4 |
| 150 | 450 | 61.7 | 65.7 |
| 100 | 450 | 64.9 | 68.5 |
| 200 | 400 | 63.4 | 68.2 |
| 150 | 400 | 66.1 | 70.4 |
| 100 | 400 | 71.3 | 75.1 |
| 250 | 400 | 58.9 | 63.1 |
| 200 | 350 | 66.7 | 71.8 |
| 250 | 350 | 62.3 | 67.7 |
| 300 | 350 | 59.3 | 64.5 |
| 350 | 350 | 55.0 | 60.1 |

| X | Y | Potential (mV/A) | |
|---|---|---|---|
| (m) | (m) | MJO-B1 | MJO-B5 |
| 250 | 300 | 67.9 | 74.1 |
| 300 | 300 | 64.6 | 70.3 |
| 350 | 300 | 60.0 | 65.7 |
| 400 | 300 | 53.2 | 58.7 |
| 500 | 300 | 50.8 | 55.3 |
| 300 | 250 | 65.9 | 73.1 |
| 350 | 250 | 63.1 | 69.8 |
| 400 | 250 | 58.4 | 64.4 |
| 450 | 250 | 55.5 | 60.9 |
| 500 | 250 | 51.9 | 56.9 |
| 350 | 200 | 65.7 | 72.8 |
| 400 | 200 | 59.6 | 65.4 |
| 450 | 200 | 56.7 | 62.1 |
| 500 | 200 | 58.1 | 59.3 |
| 550 | 200 | 51.6 | 56.2 |
| 600 | 200 | 50.5 | 55.0 |
| 400 | 150 | 63.7 | 70.2 |
| 450 | 150 | 60.8 | 66.8 |
| 500 | 150 | 56.2 | 61.7 |
| 550 | 150 | 54.4 | 59.6 |
| 600 | 150 | 51.8 | 56.3 |
| 400 | 100 | 74.0 | 82.2 |
| 450 | 100 | 64.2 | 70.6 |
| 400 | 50 | 76.7 | 85.3 |
| 450 | 50 | 67.7 | 74.5 |
| 500 | 50 | 62.2 | 68.7 |
| 550 | 50 | 58.7 | 64.2 |
| 500 | 100 | 60.1 | 66.3 |
| 550 | 100 | 56.2 | 61.9 |
| 600 | 50 | 55.1 | 60.1 |
| 600 | 0 | 54.7 | 59.9 |
| 550 | 0 | 58.2 | 63.9 |
| 500 | 0 | 61.1 | 67.3 |
| 450 | 0 | 69.6 | 76.9 |
| 400 | 0 | 77.5 | 86.3 |
| 600 | -50 | 57.1 | 62.8 |
| 550 | -50 | 60.7 | 66.4 |
| 500 | -50 | 65.4 | 71.7 |
| 450 | -50 | 73.0 | 79.8 |
| 400 | -50 | 80.8 | 89.3 |
| 600 | -100 | 57.4 | 62.2 |
| 550 | -100 | 62.1 | 67.7 |
| 500 | -100 | 65.9 | 71.9 |
| 450 | -100 | 72.7 | 79.6 |
| 400 | -100 | 81.6 | 89.6 |
| 600 | -150 | 57.1 | 61.3 |
| 550 | -150 | 60.9 | 66.6 |
| 500 | -150 | 65.7 | 71.5 |
| 450 | -150 | 72.1 | 78.0 |
| 400 | -150 | 81.7 | 89.3 |
| 600 | -200 | 57.6 | 61.9 |
| 550 | -200 | 59.7 | 64.5 |
| 500 | -200 | 66.3 | 71.1 |
| 450 | -200 | 71.5 | 77.8 |
| 400 | -200 | 83.1 | 90.5 |
| 550 | -250 | 60.1 | 64.3 |
| 500 | -250 | 66.2 | 70.8 |
| 450 | -250 | 71.5 | 76.6 |
| 400 | -250 | 80.3 | 86.3 |
| 600 | -300 | 55.6 | 59.4 |
| 500 | -300 | 62.8 | 67.0 |
| 400 | -300 | 74.8 | 79.8 |
| 500 | -400 | 55.4 | 58.6 |
| 400 | -400 | 65.7 | 68.6 |
| 600 | -500 | 46.9 | 49.1 |
| 500 | -500 | 51.4 | 53.3 |
| 400 | -500 | 58.1 | 60.0 |
| 600 | -600 | 43.1 | 44.9 |
| 700 | -600 | 39.5 | 40.8 |
| 700 | -500 | 43.2 | 44.9 |
| 600 | -400 | 47.7 | 50.0 |
| 700 | -400 | 45.5 | 47.5 |
| 800 | -400 | 40.5 | 42.3 |
| 700 | -300 | 48.6 | 51.5 |
| 800 | -300 | 41.7 | 43.9 |

| X | Y | Potential (mV/A) | |
|---|---|---|---|
| (m) | (m) | MJO-B1 | MJO-B5 |
| 700 | -200 | 50.9 | 54.4 |
| 800 | -200 | 42.3 | 44.5 |
| 700 | -100 | 49.7 | 53.5 |
| 800 | -100 | 44.8 | 48.1 |
| 600 | 100 | 53.2 | 58.3 |
| 700 | 100 | 46.8 | 51.0 |
| 700 | 0 | 48.8 | 52.6 |
| 800 | 0 | 44.1 | 47.7 |
| 800 | 100 | 44.1 | 47.6 |
| 700 | 200 | 45.8 | 49.7 |
| 600 | 300 | 46.7 | 50.7 |
| 800 | 300 | 41.0 | 44.4 |
| 800 | 200 | 42.6 | 46.0 |
| 900 | 100 | 40.5 | 43.7 |
| 1000 | 200 | 34.7 | 37.2 |
| 700 | 300 | 43.9 | 48.0 |
| 900 | 300 | 35.6 | 38.4 |
| 900 | 400 | 33.6 | 36.2 |
| 900 | 200 | 36.1 | 38.7 |
| 1000 | 100 | 35.1 | 38.0 |
| 1000 | 0 | 35.9 | 38.5 |
| 900 | 0 | 40.2 | 43.5 |
| 900 | -100 | 41.2 | 43.9 |
| 900 | -200 | 38.6 | 40.9 |
| 300 | 200 | 70.6 | 77.7 |
| 250 | 200 | 78.8 | 87.3 |
| 250 | 250 | 74.7 | 82.1 |
| 200 | 200 | 88.2 | 98.0 |
| 200 | 250 | 79.1 | 87.0 |
| 200 | 300 | 74.3 | 80.6 |
| 150 | 200 | 95.6 | 105.3 |
| 150 | 250 | 86.7 | 94.1 |
| 150 | 300 | 77.4 | 83.4 |
| 100 | 200 | 104.5 | 113.1 |
| 100 | 250 | 92.7 | 99.1 |
| 100 | 300 | 80.0 | 85.8 |
| 100 | 350 | 75.1 | 80.0 |
| 150 | 350 | 70.7 | 75.5 |
| 50 | 300 | 85.3 | 89.6 |
| 50 | 450 | 70.7 | 73.3 |
| 50 | -100 | 154.7 | 165.6 |
| 50 | -150 | 152.8 | 159.5 |
| 0 | -150 | 167.7 | 162.7 |
| -50 | -150 | 182.1 | 161.7 |
| -100 | -150 | 196.9 | 160.4 |
| -150 | -150 | 202.7 | 159.0 |
| -200 | -150 | 192.7 | 152.3 |
| -250 | -150 | 157.1 | 130.3 |
| -300 | -150 | 147.8 | 123.6 |
| -350 | -150 | 119.3 | 103.2 |
| -500 | -100 | 82.5 | 74.7 |
| -400 | -100 | 101.5 | 90.9 |
| -400 | -50 | 102.5 | 92.3 |
| -350 | -100 | 117.1 | 102.4 |
| -350 | -50 | 117.3 | 104.1 |
| -400 | -200 | 97.3 | 86.3 |
| -300 | -100 | 145.8 | 123.2 |
| -300 | -50 | 138.7 | 118.7 |
| -300 | -200 | 142.1 | 120.0 |
| -250 | -100 | 151.5 | 124.3 |
| -250 | -50 | 151.8 | 128.8 |
| -250 | -200 | 148.8 | 124.2 |
| -200 | -100 | 184.7 | 147.9 |
| -200 | -50 | 169.7 | 143.9 |
| -150 | -50 | 183.8 | 155.8 |
| -150 | -100 | 196.9 | 162.5 |
| -200 | -200 | 169.7 | 138.2 |
| -200 | -250 | 155.9 | 129.3 |
| -200 | -300 | 129.7 | 112.3 |
| -150 | -200 | 192.1 | 152.1 |
| -150 | -250 | 169.0 | 139.7 |
| -100 | -200 | 194.5 | 157.3 |
| -100 | -250 | 166.5 | 141.5 |
| -100 | -300 | 141.5 | 125.1 |
| -100 | -100 | 195.1 | 165.9 |

| X | Y | Potential (mV/A) | |
|---|---|---|---|
| (m) | (m) | MJO-B1 | MJO-B5 |
| -100 | -50 | 183.5 | 166.5 |
| -50 | -200 | 164.3 | 146.5 |
| -50 | -250 | 153.0 | 138.9 |
| -50 | -300 | 138.2 | 126.5 |
| -50 | -100 | 183.8 | 166.1 |
| -50 | -50 | 181.7 | 166.7 |
| 0 | -200 | 157.5 | 151.6 |
| 0 | -250 | 147.3 | 140.3 |
| 0 | -300 | 136.3 | 130.4 |
| 0 | -100 | 176.6 | 170.3 |
| 0 | -50 | 171.2 | 171.6 |
| 50 | -50 | 156.9 | 166.8 |
| 50 | -200 | 145.6 | 148.4 |
| 50 | -250 | 139.1 | 139.9 |
| 50 | -300 | 129.1 | 128.2 |
| 100 | -200 | 132.1 | 140.4 |
| 100 | -250 | 128.3 | 134.3 |
| 100 | -300 | 119.4 | 123.8 |
| 100 | -400 | 98.1 | 98.8 |
| 100 | -150 | 140.8 | 154.8 |
| 100 | -100 | 145.4 | 161.2 |
| 100 | -50 | 144.2 | 160.2 |
| 150 | -200 | 120.5 | 130.4 |
| 150 | -250 | 115.9 | 124.5 |
| 150 | -300 | 113.1 | 119.7 |
| 150 | -150 | 131.5 | 145.9 |
| 150 | -100 | 132.0 | 147.5 |
| 150 | -50 | 129.3 | 145.3 |
| 200 | -200 | 112.2 | 121.5 |
| 200 | -250 | 111.4 | 119.1 |
| 200 | -300 | 107.9 | 114.9 |
| 200 | -400 | 87.1 | 89.8 |
| 200 | -150 | 113.5 | 124.5 |
| 200 | -100 | 118.5 | 132.0 |
| 200 | -50 | 115.9 | 130.4 |
| 250 | -200 | 105.5 | 115.1 |
| 250 | -150 | 102.5 | 112.3 |
| 250 | -100 | 106.8 | 119.1 |
| 250 | -50 | 104.9 | 118.1 |
| 250 | -250 | 103.1 | 111.1 |
| 250 | -300 | 96.9 | 102.9 |
| 300 | -300 | 87.3 | 92.4 |
| 300 | -400 | 73.5 | 76.4 |
| 300 | -500 | 65.6 | 66.8 |
| 350 | -250 | 86.9 | 93.5 |
| 300 | -250 | 95.4 | 102.5 |
| 300 | -200 | 98.0 | 106.2 |
| 300 | -150 | 96.6 | 106.3 |
| 300 | -50 | 96.3 | 107.4 |
| 350 | -200 | 92.0 | 99.7 |
| 350 | -150 | 92.3 | 100.9 |
| 350 | -100 | 93.1 | 102.4 |
| 350 | -50 | 89.7 | 99.4 |
| 50 | 0 | 157.3 | 167.3 |
| 0 | 0 | 166.6 | 170.8 |
| -50 | 0 | 171.7 | 165.7 |
| -100 | 0 | 173.0 | 162.2 |
| -150 | 0 | 159.3 | 145.3 |
| -200 | 0 | 148.1 | 132.1 |
| -250 | 0 | 135.5 | 119.3 |
| -300 | 0 | 128.0 | 112.8 |
| -350 | 0 | 112.7 | 101.1 |
| -400 | 0 | 104.5 | 94.1 |
| -500 | 0 | 82.0 | 75.3 |
| -400 | 50 | 96.7 | 88.8 |
| -400 | 100 | 86.3 | 80.6 |
| -400 | 150 | 80.4 | 75.7 |
| -350 | 50 | 104.7 | 95.5 |
| -350 | 100 | 97.9 | 91.2 |
| -350 | 150 | 90.3 | 84.7 |
| -300 | 50 | 114.1 | 104.1 |
| -300 | 100 | 106.9 | 99.5 |
| -300 | 150 | 98.8 | 92.5 |
| -250 | 50 | 120.2 | 109.5 |
| -250 | 100 | 105.3 | 98.5 |
| -250 | 150 | 102.6 | 98.4 |
| -200 | 50 | 123.2 | 114.9 |
| -200 | 100 | 113.1 | 108.9 |
| -200 | 150 | 106.8 | 103.3 |
| -150 | 50 | 140.3 | 133.4 |
| -150 | 100 | 122.8 | 120.0 |
| -150 | 150 | 110.4 | 110.3 |
| -100 | 50 | 153.7 | 151.3 |
| -100 | 100 | 133.5 | 133.1 |
| -100 | 150 | 117.3 | 117.5 |
| -50 | 50 | 149.2 | 152.4 |
| -50 | 100 | 133.4 | 137.1 |
| -50 | 150 | 118.1 | 121.3 |
| 0 | 50 | 153.4 | 158.3 |
| 0 | 100 | 129.0 | 139.4 |
| 0 | 150 | 114.7 | 121.7 |
| 50 | 50 | 138.5 | 149.5 |
| 50 | 100 | 127.9 | 138.7 |
| 50 | 150 | 116.5 | 125.1 |
| 100 | 0 | 137.0 | 150.5 |
| 150 | 0 | 120.8 | 135.9 |
| 200 | 0 | 110.4 | 124.2 |
| 250 | 0 | 102.9 | 115.5 |
| 300 | 0 | 93.6 | 104.0 |
| 350 | 0 | 85.4 | 95.5 |
| 350 | 50 | 83.8 | 93.5 |
| 350 | 100 | 79.2 | 88.1 |
| 350 | 150 | 69.8 | 77.3 |
| 300 | 50 | 91.9 | 103.1 |
| 300 | 100 | 89.7 | 100.5 |
| 300 | 150 | 81.8 | 91.1 |
| 300 | -100 | 97.2 | 106.8 |
| 250 | 50 | 99.0 | 111.6 |
| 250 | 100 | 100.4 | 112.9 |
| 250 | 150 | 86.7 | 96.7 |
| 200 | 50 | 107.6 | 121.3 |
| 200 | 100 | 105.0 | 118.0 |
| 200 | 150 | 99.4 | 111.2 |
| 150 | 150 | 104.6 | 116.2 |
| 150 | 50 | 110.7 | 124.5 |
| 150 | 100 | 107.4 | 120.3 |
| 100 | 50 | 125.2 | 138.1 |
| 100 | 100 | 115.8 | 128.1 |
| 100 | 150 | 108.6 | 119.6 |
| 0 | 200 | 106.7 | 111.6 |
| -50 | 200 | 105.3 | 107.7 |
| -100 | 200 | 105.2 | 105.9 |
| -150 | 200 | 104.2 | 102.9 |
| -200 | 200 | 103.5 | 100.9 |
| -250 | 200 | 94.4 | 90.9 |
| -300 | 200 | 85.9 | 81.3 |
| -350 | 200 | 80.6 | 75.9 |
| -400 | 200 | 78.1 | 73.3 |
| -350 | 250 | 75.4 | 72.1 |
| -300 | 250 | 81.7 | 78.1 |
| -300 | 300 | 73.3 | 71.0 |
| -250 | 250 | 87.2 | 84.9 |
| -250 | 300 | 77.8 | 76.3 |
| -250 | 350 | 71.1 | 69.1 |
| -200 | 250 | 93.5 | 92.4 |
| -200 | 300 | 83.7 | 82.7 |
| -200 | 350 | 77.6 | 76.8 |
| -150 | 250 | 97.2 | 96.7 |
| -150 | 300 | 86.2 | 86.1 |
| -150 | 350 | 81.1 | 81.2 |
| -100 | 250 | 95.2 | 96.3 |
| -100 | 300 | 88.4 | 90.5 |
| -100 | 350 | 83.6 | 84.8 |
| -50 | 250 | 93.5 | 96.6 |
| -50 | 300 | 86.2 | 89.1 |
| -50 | 350 | 83.6 | 85.6 |
| 0 | 250 | 93.3 | 97.5 |
| 0 | 300 | 85.9 | 88.7 |
| 0 | 350 | 82.7 | 85.9 |
| 50 | 200 | 107.7 | 115.0 |
| 50 | 250 | 94.4 | 100.5 |
| 0 | 900 | 26.3 | 27.1 |
| -100 | 900 | 25.9 | 26.2 |
| 0 | 800 | 31.3 | 32.3 |
| -100 | 800 | 31.3 | 31.6 |
| 0 | 700 | 38.7 | 39.5 |
| -100 | 700 | 40.6 | 40.8 |
| -200 | 700 | 40.3 | 40.2 |
| 0 | 600 | 50.7 | 51.9 |
| -100 | 600 | 51.8 | 52.4 |
| -200 | 600 | 50.0 | 49.8 |
| 0 | 500 | 64.8 | 67.2 |
| -100 | 500 | 64.0 | 64.7 |
| -200 | 500 | 58.7 | 58.1 |
| -300 | 500 | 55.2 | 54.4 |
| 0 | 450 | 75.1 | 77.3 |
| -50 | 450 | 71.8 | 73.7 |
| -100 | 450 | 71.9 | 73.0 |
| -150 | 450 | 65.1 | 65.1 |
| 0 | 400 | 78.7 | 81.2 |
| -50 | 400 | 77.9 | 80.3 |
| -100 | 400 | 75.3 | 76.5 |
| -150 | 400 | 74.4 | 74.8 |
| -200 | 400 | 73.0 | 72.4 |
| -300 | 400 | 67.8 | 66.6 |
| 50 | 350 | 79.7 | 83.5 |
| 50 | 400 | 77.4 | 80.5 |

# Appendix 11

## Electric field in area B

| X | Y | MJO-B1 |  | MJO-B5 |  | X | Y | MJO-B1 |  | MJO-B5 |  | X | Y | MJO-B1 |  | MJO-B5 |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (m) | (m) | \|E\| | φ | \|E\| | φ | (m) | (m) | \|E\| | φ | \|E\| | φ | (m) | (m) | \|E\| | φ | \|E\| | φ |
| 1050 | 50 | 9 | 196 | 10 | 205 | 175 | 475 | 37 | 132 | 34 | 133 | 275 | 275 | 67 | 128 | 60 | 131 |
| 1050 | 150 | 9 | 183 | 11 | 180 | 175 | 525 | 16 | 43 | 16 | 138 | 225 | 225 | 79 | 134 | 77 | 136 |
| 950 | 250 | 7 | 177 | 8 | 182 | 175 | 575 | 23 | 137 | 24 | 136 | 275 | 225 | 39 | 137 | 40 | 142 |
| 950 | 150 | 9 | 171 | 9 | 176 | 175 | 650 | 21 | 113 | 18 | 112 | 325 | 225 | 60 | 140 | 55 | 144 |
| 950 | 350 | 11 | 184 | 12 | 186 | 125 | 425 | 85 | 136 | 83 | 136 | 225 | 175 | 69 | 140 | 67 | 147 |
| 850 | 350 | 10 | 175 | 11 | 179 | 125 | 475 | 32 | 130 | 29 | 131 | 275 | 175 | 72 | 141 | 64 | 146 |
| 850 | 250 | 11 | 171 | 12 | 175 | 75 | 425 | 56 | 107 | 56 | 106 | 325 | 175 | 44 | 156 | 42 | 161 |
| 850 | 150 | 11 | 172 | 12 | 177 | 75 | 475 | 39 | 123 | 35 | 124 | 225 | 125 | 89 | 143 | 80 | 151 |
| 750 | 250 | 12 | 190 | 13 | 197 | 75 | 525 | 25 | 122 | 25 | 118 | 275 | 125 | 84 | 155 | 71 | 159 |
| 750 | 150 | 9 | 186 | 11 | 186 | 75 | 575 | 27 | 125 | 24 | 119 | 325 | 125 | 34 | 152 | 31 | 158 |
| 750 | 350 | 17 | 156 | 19 | 156 | 125 | 525 | 33 | 135 | 32 | 136 | 375 | 125 | 35 | 131 | 33 | 137 |
| 750 | 450 | 10 | 159 | 11 | 159 | 125 | 575 | 20 | 120 | 21 | 122 | 375 | 175 | 37 | 139 | 31 | 144 |
| 850 | 450 | 9 | 154 | 11 | 153 | 75 | 650 | 22 | 120 | 20 | 116 | 325 | 75 | 47 | 137 | 36 | 148 |
| 750 | 550 | 11 | 148 | 12 | 152 | 25 | 650 | 18 | 81 | 18 | 87 | 525 | 75 | 61 | 145 | 38 | 142 |
| 850 | 550 | 9 | 152 | 8 | 149 | 25 | 575 | 22 | 82 | 20 | 85 | -75 | 75 | 48 | 76 | 23 | 75 |
| 750 | 650 | 8 | 162 | 10 | 162 | 25 | 525 | 19 | 69 | 19 | 69 | -125 | 75 | 61 | 81 | 39 | 37 |
| 750 | 750 | 8 | 152 | 9 | 148 | 25 | 475 | 52 | 103 | 49 | 104 | -125 | 25 | 87 | 59 | 41 | 23 |
| 750 | 850 | 10 | 133 | 10 | 134 | 25 | 425 | 48 | 96 | 47 | 96 | -125 | -25 | 73 | 83 | 23 | 347 |
| 650 | 950 | 9 | 130 | 9 | 129 | -25 | 650 | 33 | 116 | 34 | 116 | -125 | -75 | 75 | 97 | 28 | 347 |
| 650 | 850 | 9 | 126 | 11 | 130 | -25 | 575 | 26 | 125 | 22 | 125 | -125 | -125 | 41 | 135 | 19 | 338 |
| 650 | 1050 | 5 | 118 | 6 | 114 | -25 | 525 | 38 | 132 | 35 | 130 | -125 | -175 | 64 | 231 | 40 | 237 |
| 550 | 1050 | 7 | 131 | 8 | 129 | -25 | 475 | 50 | 114 | 43 | 110 | -125 | -225 | 180 | 261 | 114 | 255 |
| 550 | 1150 | 6 | 134 | 6 | 135 | -25 | 425 | 51 | 113 | 50 | 108 | -125 | -275 | 47 | 258 | 33 | 267 |
| 450 | 1050 | 10 | 130 | 12 | 129 | -75 | 650 | 23 | 94 | 22 | 82 | -125 | -325 | 143 | 266 | 102 | 268 |
| 350 | 1050 | 10 | 120 | 11 | 117 | -75 | 575 | 30 | 107 | 28 | 104 | -50 | -450 | 62 | 310 | 41 | 272 |
| 650 | 250 | 27 | 159 | 31 | 158 | -75 | 525 | 23 | 98 | 21 | 93 | -75 | -375 | 78 | 274 | 58 | 277 |
| 650 | 150 | 31 | 172 | 33 | 175 | -75 | 475 | 41 | 88 | 38 | 89 | -25 | -375 | 136 | 327 | 60 | 279 |
| 650 | 350 | 15 | 153 | 14 | 158 | -75 | 425 | 53 | 95 | 50 | 92 | -75 | -325 | 143 | 270 | 104 | 275 |
| 650 | 450 | 14 | 160 | 16 | 162 | -125 | 650 | 17 | 83 | 16 | 74 | -25 | -325 | 140 | 310 | 74 | 258 |
| 550 | 250 | 18 | 161 | 18 | 169 | -125 | 575 | 24 | 72 | 27 | 78 | -150 | -350 | 112 | 275 | 85 | 278 |
| 550 | 150 | 32 | 151 | 33 | 154 | -125 | 525 | 29 | 87 | 25 | 85 | -75 | -275 | 46 | 219 | 23 | 194 |
| 550 | 350 | 22 | 162 | 27 | 166 | -125 | 475 | 39 | 85 | 33 | 76 | -25 | -275 | 99 | 319 | 59 | 240 |
| 450 | 350 | 12 | 143 | 12 | 146 | -125 | 425 | 57 | 91 | 57 | 89 | -175 | -275 | 44 | 310 | 28 | 311 |
| 550 | 450 | 23 | 158 | 27 | 155 | -175 | 650 | 20 | 99 | 19 | 98 | -75 | -225 | 166 | 270 | 120 | 281 |
| 450 | 450 | 12 | 140 | 13 | 138 | -175 | 575 | 14 | 61 | 17 | 51 | -25 | -225 | 105 | 301 | 89 | 238 |
| 650 | 550 | 15 | 144 | 18 | 145 | -175 | 525 | 40 | 96 | 33 | 87 | -175 | -225 | 113 | 292 | 76 | 293 |
| 550 | 550 | 18 | 164 | 19 | 166 | -175 | 475 | 31 | 83 | 33 | 88 | -75 | -175 | 96 | 219 | 75 | 255 |
| 450 | 550 | 13 | 140 | 15 | 144 | -175 | 425 | 70 | 97 | 64 | 95 | -25 | -175 | 81 | 300 | 84 | 225 |
| 550 | 650 | 24 | 154 | 26 | 156 | -225 | 625 | 24 | 95 | 21 | 87 | -25 | -125 | 37 | 2 | 75 | 225 |
| 450 | 650 | 12 | 123 | 14 | 126 | -225 | 525 | 37 | 88 | 33 | 87 | -75 | -125 | 66 | 172 | 37 | 207 |
| 650 | 650 | 10 | 153 | 11 | 153 | -225 | 475 | 32 | 90 | 30 | 78 | -175 | -175 | 161 | 316 | 99 | 315 |
| 650 | 750 | 9 | 141 | 10 | 144 | -225 | 425 | 55 | 72 | 53 | 67 | -225 | -175 | 95 | 317 | 68 | 310 |
| 550 | 750 | 19 | 146 | 21 | 147 | -250 | 650 | 22 | 74 | 21 | 73 | -275 | -150 | 134 | 347 | 91 | 339 |
| 450 | 750 | 11 | 128 | 12 | 130 | -275 | 550 | 30 | 47 | 27 | 45 | -175 | -125 | 54 | 348 | 43 | 323 |
| 550 | 850 | 17 | 132 | 19 | 130 | -275 | 450 | 49 | 47 | 45 | 45 | -225 | -125 | 116 | 6 | 63 | 352 |
| 450 | 850 | 11 | 220 | 16 | 129 | -350 | 550 | 32 | 47 | 30 | 46 | -175 | -75 | 152 | 85 | 56 | 74 |
| 550 | 950 | 10 | 125 | 10 | 126 | -350 | 450 | 41 | 48 | 38 | 42 | -225 | -75 | 155 | 26 | 80 | 9 |
| 475 | 250 | 86 | 176 | 30 | 174 | -450 | 650 | 12 | 79 | 11 | 77 | -275 | -75 | 126 | 7 | 82 | 355 |
| 525 | 175 | 45 | 152 | 27 | 143 | -450 | 550 | 18 | 48 | 17 | 39 | -75 | -75 | 81 | 136 | 3 | 336 |
| 475 | 125 | 97 | 169 | 34 | 155 | -450 | 450 | 30 | 41 | 27 | 38 | -25 | -75 | 121 | 4 | 21 | 184 |
| 425 | 225 | 41 | 139 | 39 | 139 | -550 | 650 | 16 | 43 | 15 | 45 | -175 | -25 | 95 | 21 | 80 | 341 |
| 425 | 175 | 30 | 149 | 26 | 155 | -350 | 650 | 25 | 15 | 24 | 15 | -225 | -25 | 63 | 27 | 39 | 350 |
| 425 | 125 | 50 | 141 | 41 | 144 | -350 | 750 | 18 | 59 | 16 | 52 | -275 | -25 | 75 | 7 | 65 | 343 |
| 450 | 275 | 118 | 136 | 33 | 143 | -250 | 750 | 22 | 71 | 20 | 69 | -75 | -25 | 37 | 106 | 21 | 278 |
| 375 | 225 | 33 | 126 | 27 | 131 | -150 | 750 | 26 | 98 | 25 | 95 | -25 | -25 | 133 | 23 | 25 | 258 |
| 375 | 275 | 27 | 138 | 28 | 145 | -150 | 850 | 13 | 56 | 9 | 352 | -175 | 25 | 78 | 50 | 58 | 16 |
| 375 | 325 | 88 | 163 | 35 | 140 | -50 | 750 | 15 | 100 | 14 | 100 | -225 | 25 | 65 | 39 | 57 | 2 |
| 425 | 425 | 37 | 150 | 14 | 143 | -50 | 850 | 11 | 100 | 1 | 203 | -275 | 25 | 66 | 33 | 51 | 13 |
| 325 | 275 | 39 | 150 | 38 | 150 | 125 | 650 | 21 | 113 | 21 | 118 | -75 | 25 | 113 | 104 | 25 | 75 |
| 325 | 325 | 42 | 139 | 37 | 142 | 150 | 750 | 9 | 109 | 9 | 110 | -25 | 25 | 160 | 26 | 24 | 99 |
| 325 | 375 | 51 | 126 | 45 | 129 | 50 | 750 | 15 | 114 | 13 | 108 | -25 | 75 | 172 | 22 | 33 | 85 |
| 350 | 450 | 32 | 167 | 10 | 124 | 50 | 850 | 12 | 91 | 0 | 243 | -175 | 75 | 77 | 62 | 68 | 36 |
| 350 | 550 | 34 | 158 | 13 | 119 | 150 | 850 | 12 | 113 | 11 | 112 | -225 | 75 | 63 | 59 | 51 | 34 |
| 275 | 325 | 18 | 115 | 21 | 130 | 250 | 750 | 11 | 120 | 10 | 115 | -275 | 75 | 70 | 44 | 63 | 21 |
| 275 | 375 | 34 | 124 | 34 | 127 | 350 | 650 | 29 | 163 | 8 | 119 | -175 | 125 | 72 | 53 | 88 | 35 |
| 275 | 425 | 36 | 151 | 34 | 148 | 350 | 850 | 34 | 151 | 17 | 120 | -225 | 125 | 65 | 73 | 58 | 58 |
| 325 | 475 | 39 | 147 | 24 | 125 | 250 | 850 | 20 | 103 | 19 | 102 | -275 | 125 | 55 | 35 | 56 | 22 |
| 275 | 550 | 11 | 132 | 12 | 133 | 150 | 950 | 21 | 130 | 13 | 159 | -350 | 150 | 60 | 27 | 66 | 20 |
| 225 | 375 | 40 | 113 | 40 | 112 | 350 | 750 | 31 | 163 | 12 | 132 | -125 | 125 | 52 | 64 | 55 | 54 |
| 225 | 425 | 19 | 111 | 17 | 107 | 350 | 950 | 31 | 101 | 15 | 111 | -75 | 125 | 67 | 95 | 69 | 94 |
| 225 | 475 | 11 | 231 | 15 | 114 | 450 | 950 | 41 | 133 | 18 | 133 | -25 | 125 | 126 | 36 | 89 | 123 |
| 225 | 525 | 54 | 133 | 20 | 128 | 250 | 950 | 4 | 110 | 4 | 102 | -175 | 175 | 69 | 37 | 89 | 30 |
| 250 | 575 | 9 | 131 | 8 | 132 | 50 | 950 | 13 | 85 | 17 | 127 | -225 | 175 | 32 | 44 | 40 | 43 |
| 250 | 650 | 18 | 129 | 17 | 129 | 225 | 325 | 40 | 134 | 33 | 133 | -275 | 175 | 30 | 63 | 34 | 44 |
| 175 | 425 | 31 | 145 | 29 | 145 | 225 | 275 | 56 | 117 | 55 | 118 | -125 | 175 | 90 | 89 | 107 | 86 |

|E| : Intensity(unit; mV/A·100m) of Electiric Field
φ : Azimuth(unit; Degree) of Electiric Field

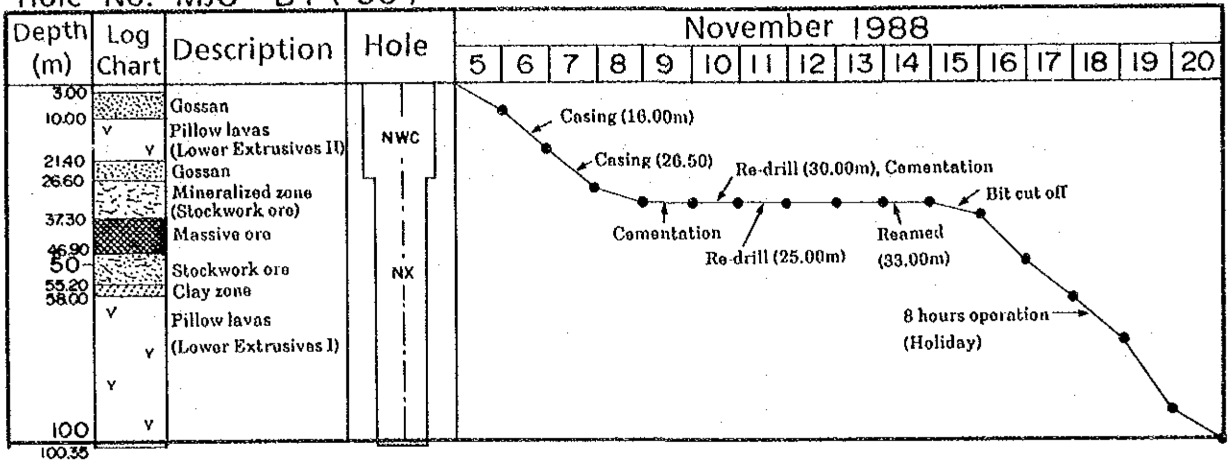
| X | Y | MJO-B1 | | MJO-B5 | |
|---|---|---|---|---|---|
| (m) | (m) | \|E\| | φ | \|E\| | φ |
| -75 | 175 | 69 | 101 | 78 | 98 |
| -25 | 175 | 103 | 40 | 88 | 122 |
| -175 | 225 | 34 | 79 | 35 | 65 |
| -225 | 225 | 62 | 274 | 42 | 73 |
| -275 | 225 | 46 | 293 | 64 | 71 |
| -350 | 250 | 52 | 357 | 71 | 28 |
| -125 | 225 | 61 | 65 | 71 | 58 |
| -75 | 225 | 60 | 102 | 65 | 97 |
| -25 | 225 | 100 | 34 | 69 | 117 |
| -175 | 275 | 62 | 256 | 47 | 107 |
| -125 | 275 | 70 | 288 | 45 | 42 |
| -75 | 275 | 50 | 259 | 62 | 95 |
| -25 | 275 | 107 | 330 | 55 | 104 |
| -225 | 275 | 102 | 153 | 47 | 65 |
| -275 | 275 | 69 | 57 | 66 | 52 |
| -275 | 350 | 62 | 38 | 60 | 32 |
| -350 | 350 | 48 | 30 | 45 | 26 |
| -450 | 350 | 33 | 44 | 29 | 35 |
| -225 | 375 | 50 | 52 | 48 | 49 |
| -225 | 325 | 54 | 73 | 49 | 68 |
| -175 | 325 | 37 | 104 | 33 | 89 |
| -125 | 325 | 26 | 81 | 27 | 84 |
| -25 | 325 | 43 | 113 | 43 | 113 |
| -175 | 375 | 53 | 88 | 46 | 83 |
| -125 | 375 | 64 | 86 | 58 | 82 |
| -75 | 375 | 72 | 106 | 66 | 103 |
| -25 | 375 | 59 | 116 | 54 | 111 |
| 25 | 75 | 166 | 133 | 123 | 137 |
| 25 | 25 | 96 | 145 | 65 | 165 |
| 25 | -25 | 139 | 167 | 71 | 201 |
| 25 | -75 | 116 | 176 | 57 | 198 |
| 25 | -125 | 141 | 216 | 103 | 235 |
| 25 | -175 | 164 | 204 | 108 | 217 |
| 25 | -225 | 119 | 220 | 81 | 232 |
| 25 | -275 | 95 | 208 | 54 | 217 |
| 25 | -325 | 104 | 242 | 65 | 244 |
| 25 | -375 | 68 | 226 | 44 | 232 |
| 75 | -450 | 83 | 234 | 56 | 237 |
| 75 | -375 | 79 | 217 | 53 | 219 |
| 125 | -375 | 78 | 243 | 58 | 245 |
| 175 | -375 | 61 | 257 | 47 | 255 |
| 75 | -325 | 70 | 234 | 48 | 244 |
| 125 | -325 | 71 | 230 | 53 | 232 |
| 175 | -325 | 77 | 221 | 59 | 222 |
| 75 | -275 | 67 | 220 | 35 | 229 |
| 125 | -275 | 50 | 169 | 35 | 172 |
| 175 | -275 | 81 | 196 | 63 | 208 |
| 75 | -225 | 91 | 191 | 61 | 206 |
| 125 | -225 | 49 | 250 | 52 | 269 |
| 175 | -225 | 55 | 207 | 45 | 213 |
| 75 | -175 | 119 | 239 | 97 | 252 |
| 125 | -175 | 69 | 237 | 62 | 243 |
| 175 | -175 | 29 | 228 | 37 | 252 |
| 75 | -125 | 132 | 218 | 112 | 233 |
| 125 | -125 | 98 | 221 | 82 | 233 |
| 175 | -125 | 56 | 228 | 52 | 224 |
| 75 | -75 | 124 | 167 | 91 | 184 |
| 125 | -75 | 97 | 180 | 81 | 194 |
| 175 | -75 | 73 | 183 | 61 | 198 |
| 75 | -25 | 98 | 195 | 82 | 201 |
| 125 | -25 | 96 | 164 | 80 | 188 |
| 175 | -25 | 79 | 165 | 68 | 182 |
| 75 | 25 | 171 | 149 | 104 | 155 |
| 125 | 25 | 86 | 176 | 89 | 178 |
| 175 | 25 | 49 | 193 | 53 | 199 |
| 75 | 75 | 102 | 128 | 79 | 133 |
| 125 | 75 | 100 | 133 | 86 | 142 |
| 175 | 75 | 71 | 138 | 58 | 151 |
| 25 | 125 | 120 | 126 | 96 | 130 |
| 25 | 175 | 87 | 134 | 82 | 134 |
| 25 | 225 | 49 | 111 | 46 | 108 |
| 25 | 275 | 61 | 113 | 61 | 109 |
| 25 | 325 | 50 | 102 | 43 | 96 |
| 25 | 375 | 48 | 101 | 47 | 102 |
| 75 | 375 | 51 | 123 | 49 | 124 |
| 125 | 375 | 65 | 151 | 61 | 151 |
| 175 | 375 | 44 | 124 | 42 | 122 |
| 75 | 325 | 50 | 105 | 50 | 105 |
| 125 | 325 | 78 | 127 | 78 | 127 |
| 175 | 325 | 99 | 133 | 96 | 134 |
| -75 | 325 | 26 | 102 | 22 | 82 |
| 75 | 275 | 44 | 79 | 43 | 81 |
| 125 | 275 | 105 | 142 | 102 | 142 |
| 175 | 275 | 56 | 148 | 55 | 149 |
| 75 | 225 | 54 | 107 | 51 | 109 |
| 125 | 225 | 43 | 141 | 43 | 143 |
| 175 | 225 | 101 | 131 | 98 | 132 |
| 175 | 175 | 62 | 150 | 60 | 155 |
| 75 | 175 | 27 | 136 | 26 | 143 |
| 125 | 175 | 23 | 140 | 24 | 151 |
| 75 | 125 | 104 | 123 | 84 | 126 |
| 125 | 125 | 66 | 131 | 57 | 138 |
| 175 | 125 | 35 | 135 | 37 | 152 |
| 225 | 25 | 80 | 185 | 72 | 194 |
| 225 | -25 | 71 | 187 | 59 | 199 |
| 225 | -75 | 60 | 181 | 49 | 191 |
| 225 | -125 | 42 | 188 | 34 | 206 |
| 225 | -175 | 60 | 184 | 44 | 193 |
| 225 | -225 | 70 | 232 | 59 | 239 |
| 225 | -275 | 57 | 244 | 50 | 251 |
| 225 | -325 | 44 | 226 | 33 | 236 |
| 300 | -375 | 27 | 213 | 20 | 221 |
| 325 | -325 | 47 | 234 | 35 | 237 |
| 275 | -275 | 60 | 213 | 49 | 224 |
| 350 | -275 | 31 | 238 | 29 | 248 |
| 275 | -225 | 68 | 214 | 57 | 221 |
| 325 | -225 | 53 | 221 | 48 | 221 |
| 425 | -225 | 54 | 226 | 44 | 241 |
| 275 | -175 | 63 | 200 | 53 | 204 |
| 325 | -175 | 39 | 203 | 34 | 209 |
| 375 | -175 | 35 | 217 | 31 | 225 |
| 275 | -125 | 67 | 170 | 53 | 178 |
| 325 | -125 | 34 | 203 | 33 | 222 |
| 375 | -125 | 42 | 201 | 37 | 209 |
| 275 | -75 | 42 | 166 | 29 | 183 |
| 325 | -75 | 32 | 155 | 29 | 167 |
| 375 | -75 | 49 | 180 | 42 | 185 |
| 275 | -25 | 44 | 179 | 38 | 187 |
| 325 | -25 | 15 | 175 | 18 | 174 |
| 375 | -25 | 35 | 171 | 27 | 183 |
| 275 | 25 | 45 | 188 | 46 | 199 |
| 325 | 25 | 20 | 169 | 15 | 197 |
| 375 | 25 | 30 | 143 | 26 | 153 |
| 225 | 75 | 82 | 166 | 73 | 173 |
| 275 | 75 | 55 | 170 | 55 | 172 |
| 950 | 50 | 25 | 155 | 17 | 167 |
| 950 | -50 | 23 | 183 | 16 | 189 |
| 850 | 50 | 21 | 136 | 16 | 157 |
| 850 | -50 | 16 | 180 | 15 | 187 |
| 750 | 50 | 35 | 129 | 25 | 143 |
| 750 | -50 | 28 | 168 | 25 | 172 |
| 800 | -150 | 22 | 182 | 20 | 185 |
| 650 | 50 | 48 | 138 | 38 | 154 |
| 650 | -50 | 34 | 174 | 32 | 178 |
| 650 | -150 | 30 | 191 | 27 | 195 |
| 550 | 50 | 63 | 132 | 51 | 145 |
| 550 | -50 | 37 | 184 | 35 | 191 |
| 550 | -150 | 31 | 212 | 29 | 219 |
| 600 | -250 | 29 | 201 | 27 | 202 |
| 475 | 25 | 67 | 157 | 26 | 130 |
| 525 | -25 | 53 | 202 | 38 | 208 |
| 475 | -75 | 48 | 179 | 10 | 200 |
| 525 | -125 | 57 | 226 | 47 | 237 |
| 425 | 25 | 23 | 160 | 20 | 169 |
| 425 | -25 | 37 | 187 | 33 | 188 |
| 425 | -75 | 25 | 217 | 26 | 228 |
| 425 | -125 | 56 | 185 | 49 | 190 |
| 450 | -175 | 44 | 191 | 24 | 209 |
| 450 | -250 | 41 | 202 | 22 | 220 |
| 375 | 75 | 31 | 116 | 23 | 131 |
| 425 | 75 | 55 | 138 | 45 | 143 |

|E| : Intensity (unit; mV/A·100m) of Electiric Field
φ : Azimuth (unit; Degree) of Electiric Field

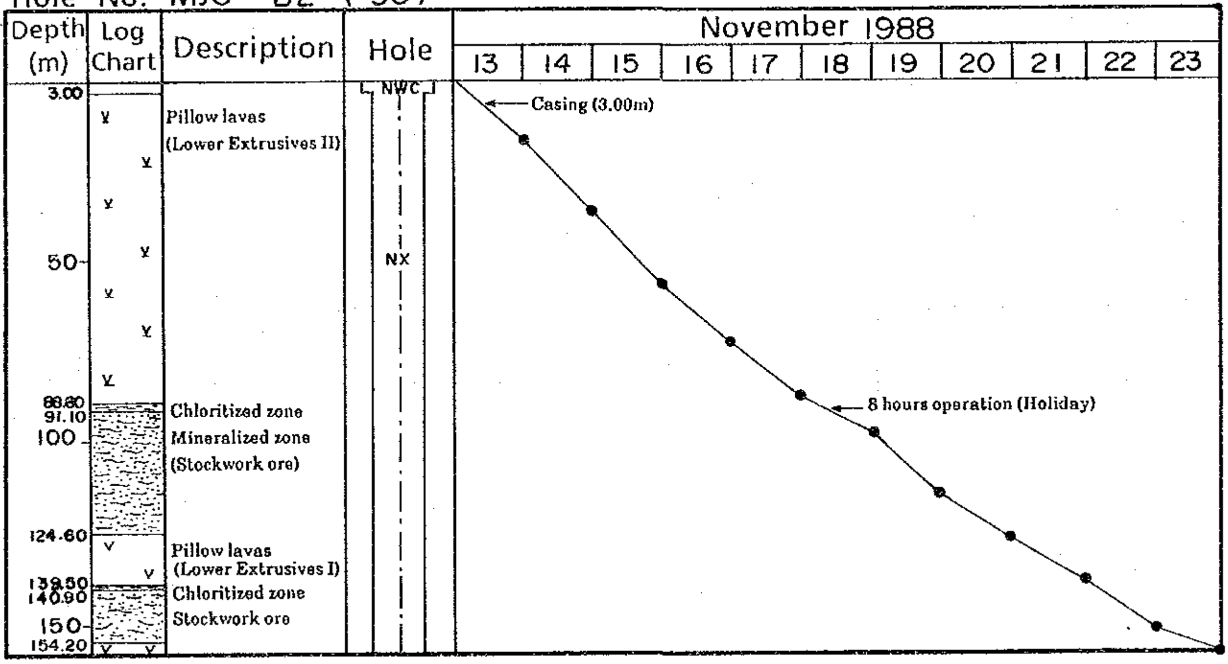
# Appendix 12

## Progress of the each drill hole in area B

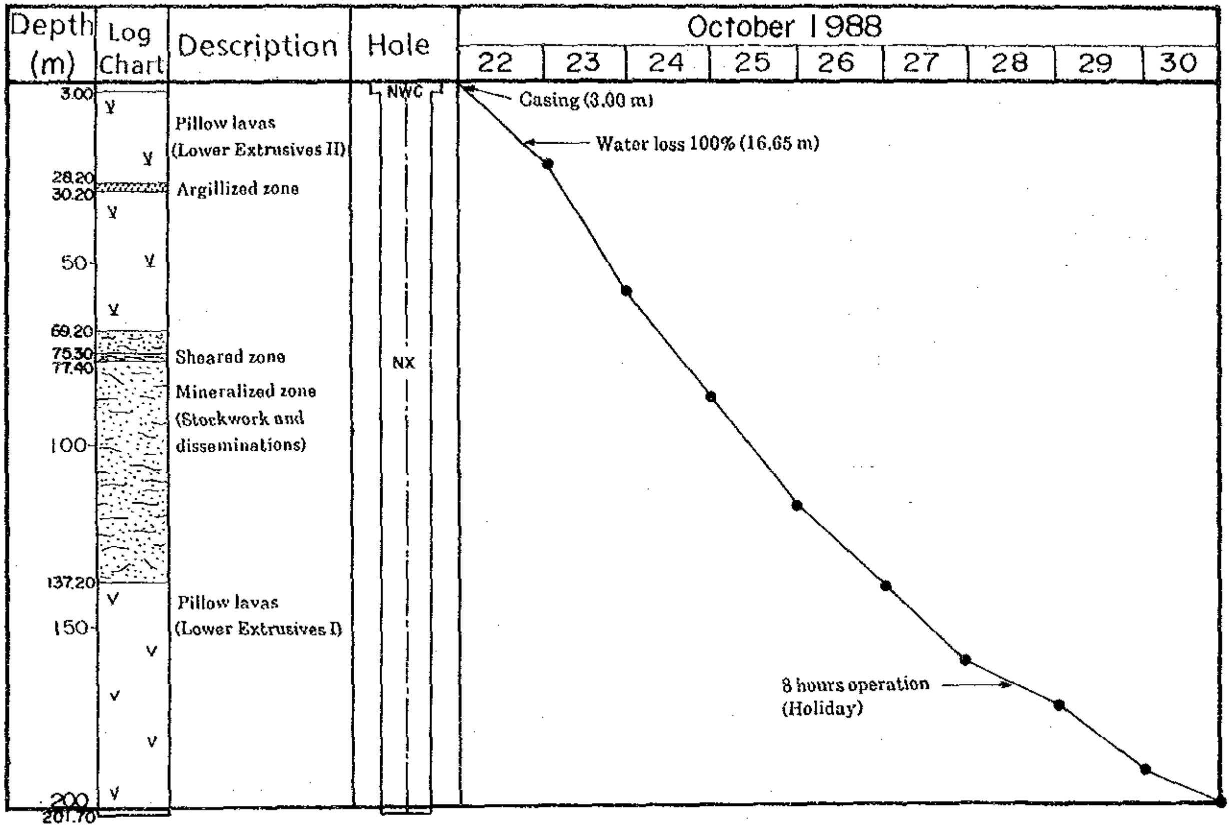
Hole No. MJO－B1 (-90°)



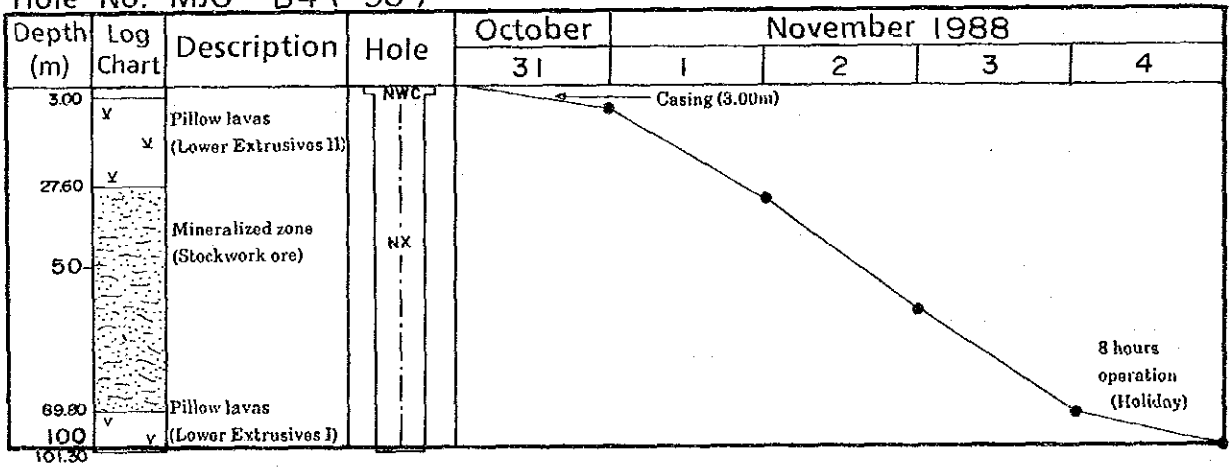
Hole No. MJO－B2 (-90°)



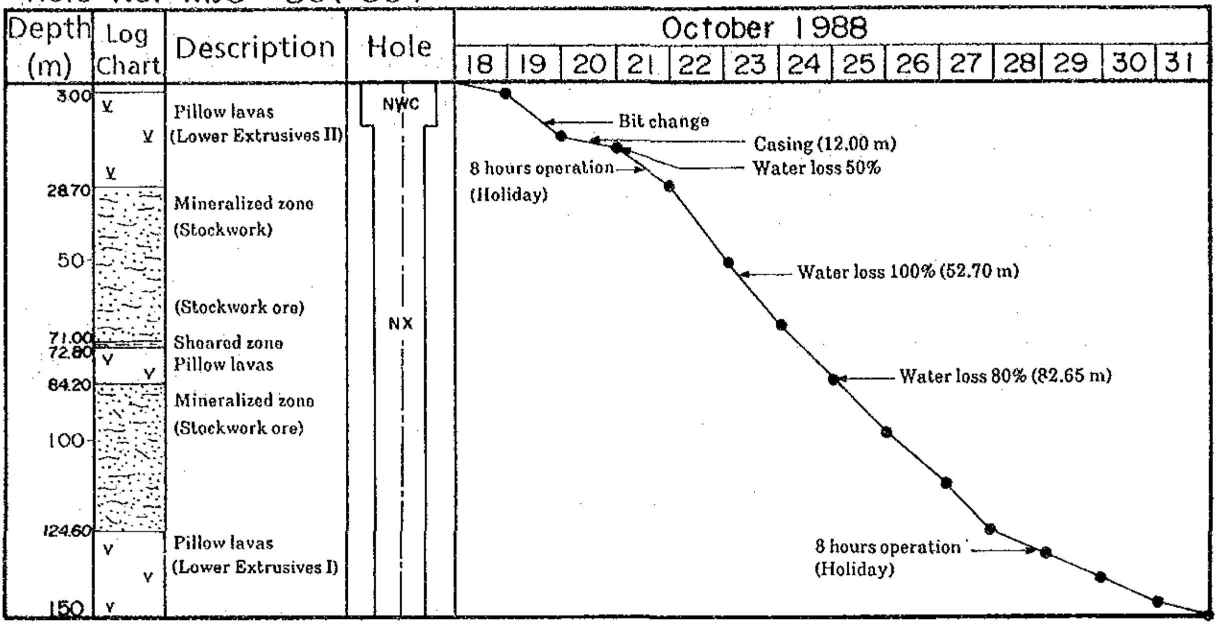
Hole No. MJO -B3 (-90°)



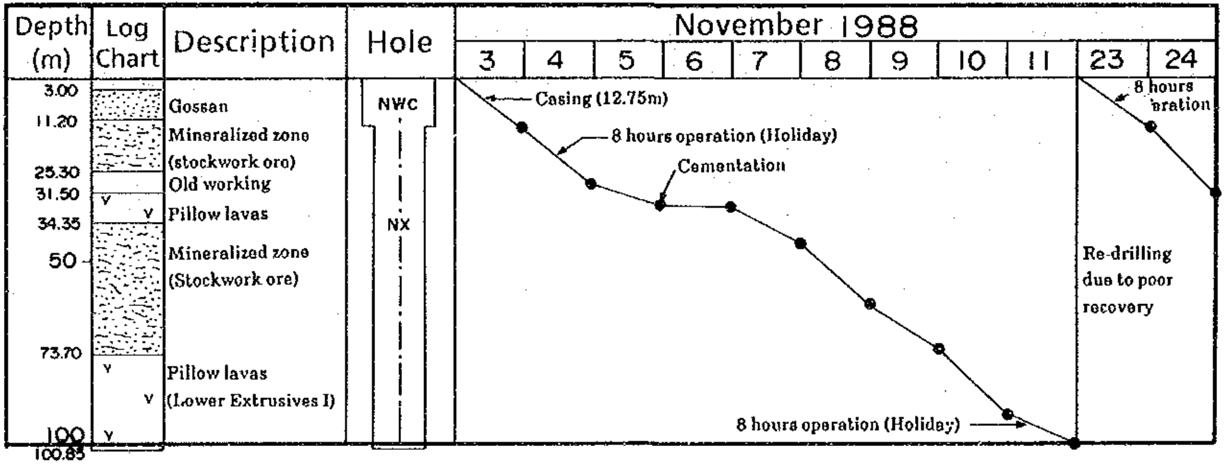
Hole No. MJO- B4 (-90°)



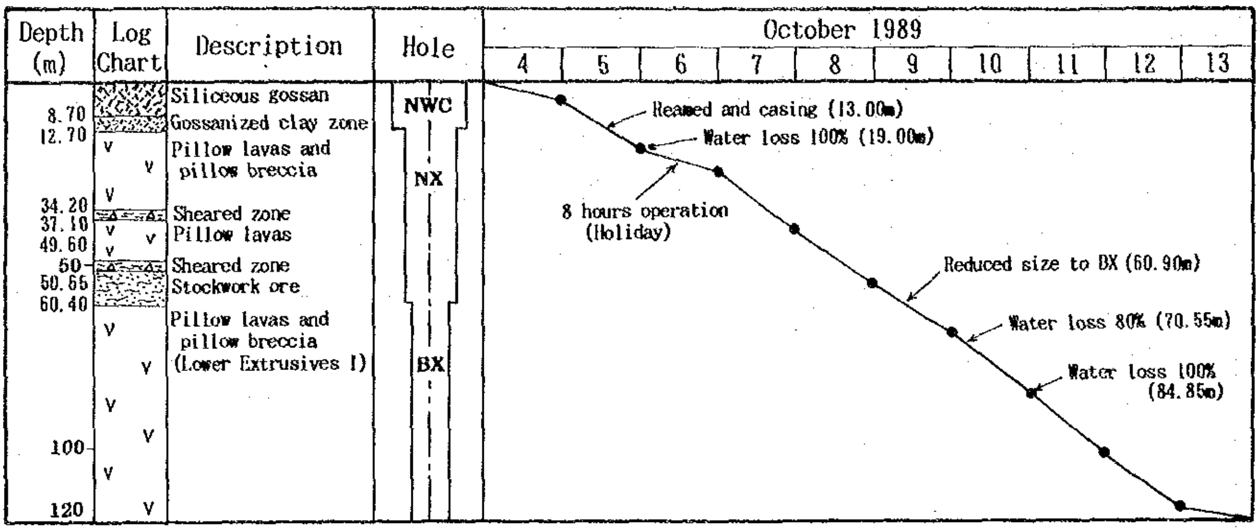
Hole No. MJO - B5 (-90°)



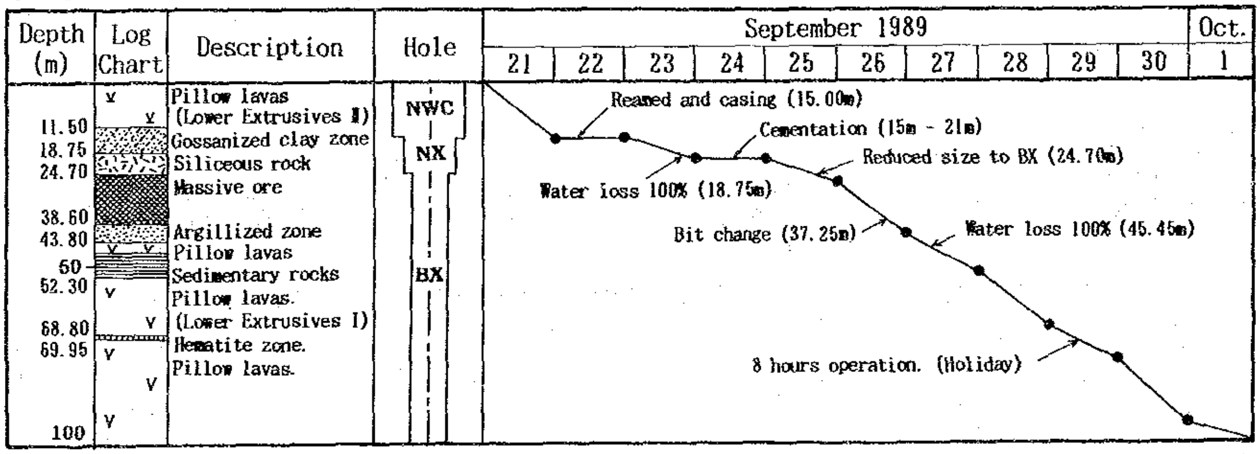
Hole No. MJO - B6 (-90°)



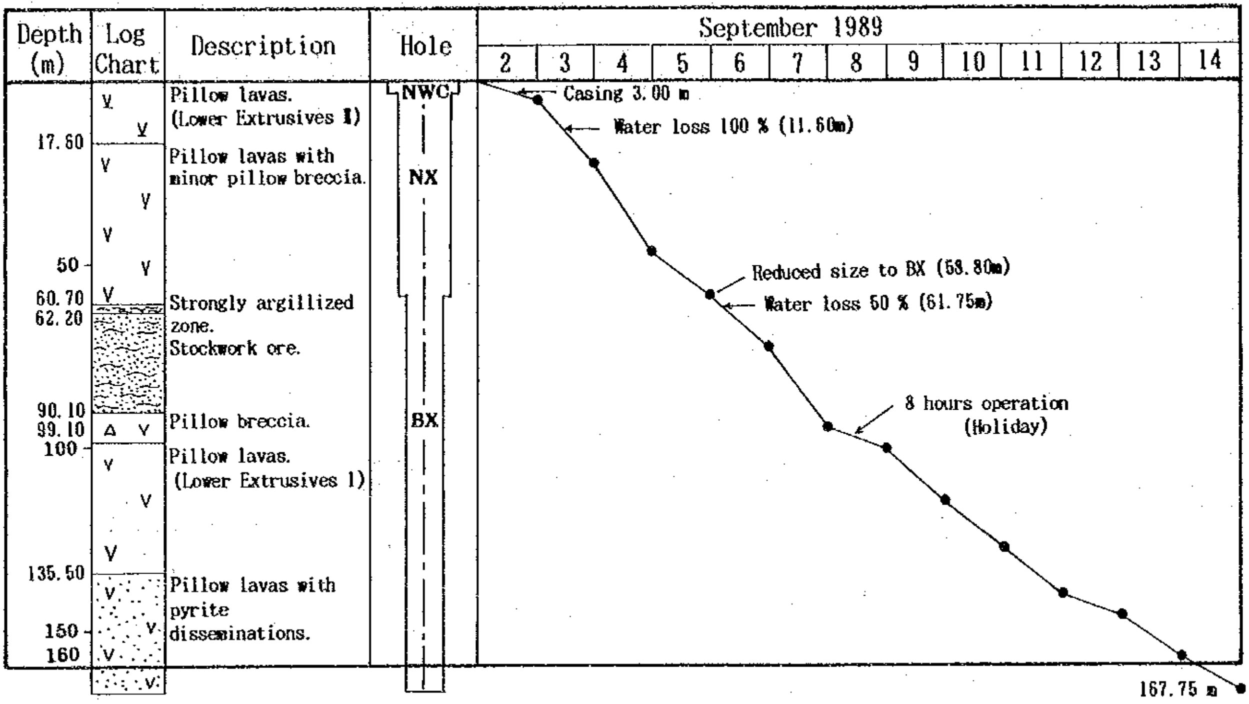
Hole No. MJO-B7 (-90° )



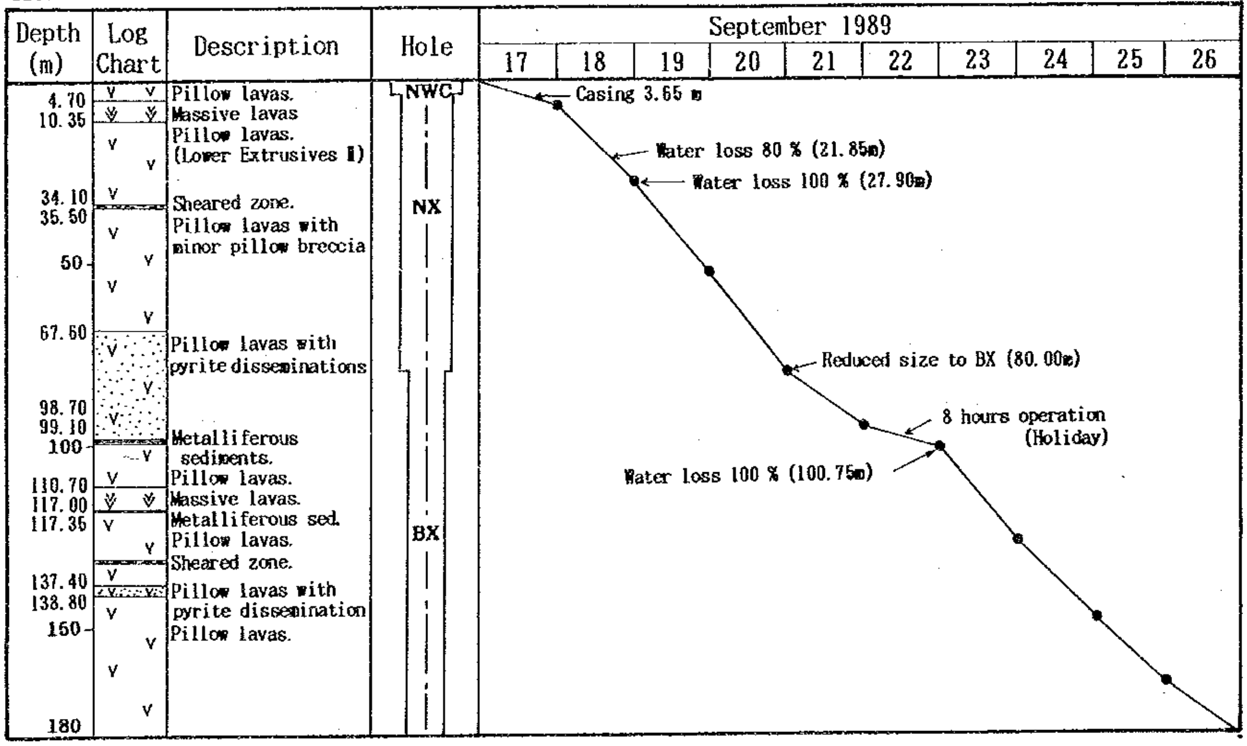
Hole No. MJO-B8 (-90° )



## Hole No. MJO-B9 (-90° )



## Hole No. MJO-B10 (-90° )



**Hole No. MJO-B11 (-90° )**