The values of contents of SO_4 and water-insoluble matters are lower in Halite-A than in Halite-B. K is contained in the upper part of Halite-A in drill holes 2.18 and 2.19, but hardly contained in Halite-A in drill holes 2.20 and 2.21. As for Mg, its average content is higher in Halite-B than in Halite-A, and in the same Halite-A drill holes 2.18 and 2.19 show the trend that the upper the portion, the higher become Mg content values gradually.

To sum up the above-mentioned, the main components contained in the rock salt bed as found in the additional four drill holes indicate a different condition of contents in correspondence to Halite-A and Halite-B as divided in subsection 4.1 (2) above. Also in the same Halite-A bed, a conspicuous variance in the condition of containing Mg and K is recognized between drill holes 2.18 and 2.19 belonging to D area and drill holes 2.20 and 2.21 belonging to S-area.

(2) Trace Components of Rock Salt

Of 17 out of the samples subjected to analysis for main components of rock salt, analysis was made for the 10 components of Cd, Cr, Hg, Fe, Cu, Zn, Pb, As, V and Mn; generally their contents were found low and will not cause any problem in mining operation of the deposit.

(3) Relation between SO_4 and NaCl

In the analysis values of main components of rock salt found by the additional drilling (Fig. 4.6 (a) to (d)), the values of NaCl and SO_4 contents are recognized to be in a negative correlation.

The values of the two components are set forth in Fig. 4.7, which was used to verify the correlation. This indicates that Halite-A and Halite-B tend to be in separate groupings. The correlation coefficient due to linear regression is: $r = -0.76$ and $r = -0.86$, which indicates that Halite-A tends to be in more collective distribution.

(4) Relation between Bromine and Potassium

Generally sedimentation of rock salt requires existence of a blocked marine basin or a marine basin in a semi-blocked state. When in such a basin only evaporation by solar heat, etc. goes on and there is no or but little supplementation of sea water

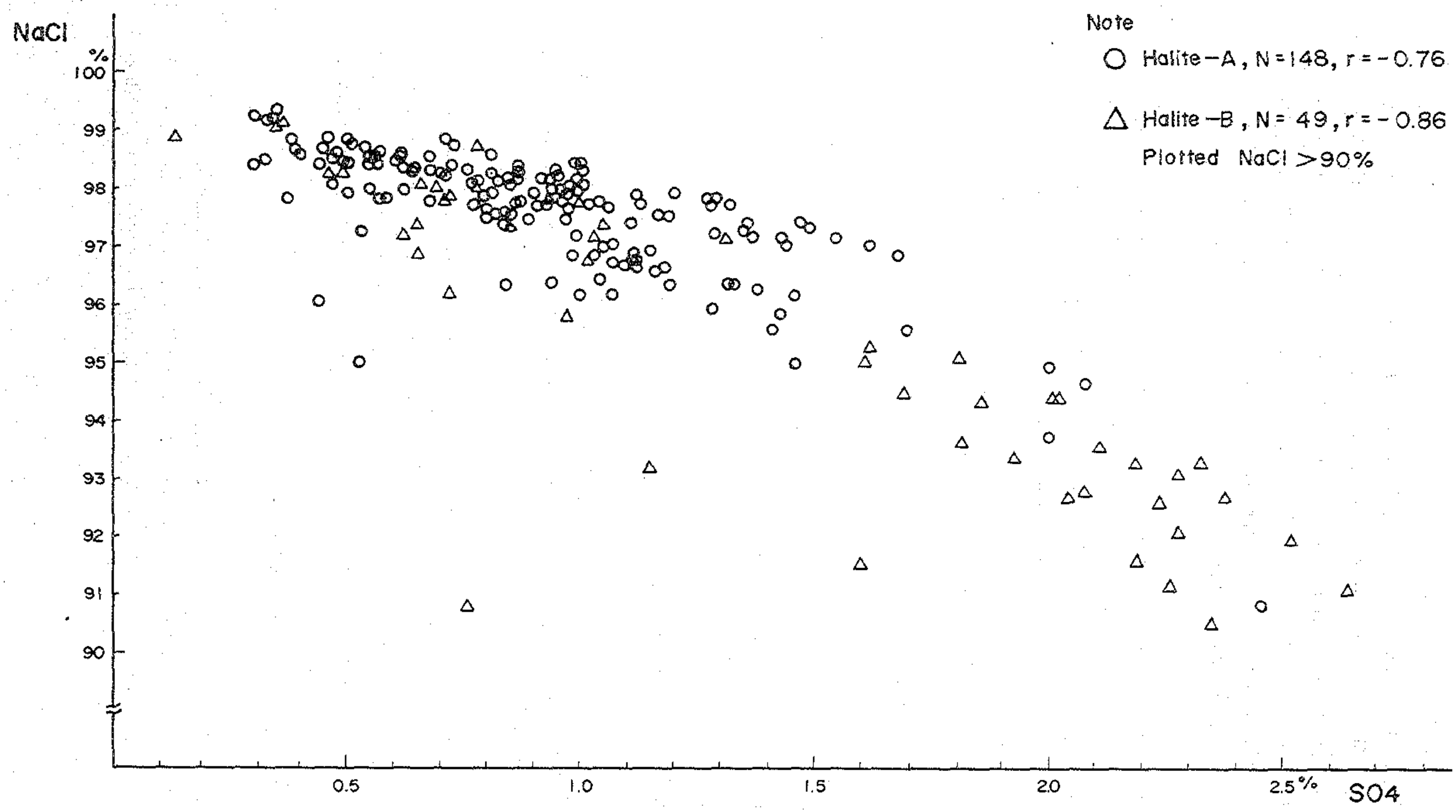


Fig.4·7 Relation between NaCl content and SO_4 content in the drill hole samples
(RS.2.18, RS.2.19, RS.2.20, RS.2.21)

from the sea, sedimentation of rock salt proceeds in the residual liquid; and besides, the salinity of the remaining seawater increases gradually to bring the evaporation to an end. In such situations bromine content increases by degrees in parallel with rise of salinity, and when the evaporation has almost finished and the mother liquor, the salt water, has reached a high salinity, a potassium mineral crystallizes suddenly. Thus created is what is called "rock salt bed of gradually increasing bromine type".

On the other hand, in case of a basin where salt concentration is sufficient to allow sedimentation of rock salt, when supplementation of sea water by its inflow is made appropriately from the sea, or when the basin is large and has a large amount of sea water, the salinity of brine does not rise higher. In such a case bromine content in the rock salt is low and its value does not change. Accordingly there is no crystallization of a potassium mineral. This is what is called "rock salt bed of unchanging bromine type".

Among the additional four drill holes, potassium occurs accompanying rock salt in drill holes 2.18 and 2.19; the minerals found are sylvite, carnallite and tachhydrite. In contrast to this, potassium is scarcely contained in drill holes 2.20 and 2.21.

In drill hole 2.18, potassium occurs at three levels: top of Halte-A bed, immediately below a nearly 1 m thick anhydrite layer in lower Halite-B, and top of Halite-B. In drill hole 2.19, it occurs at two levels: top of Halite-A and under a nearly 1 m thick anhydrite in lower Halite-B. In drill hole 2.19 potassium does not occur at the top of Halite-B. This can be accounted for by the presumption that potassium has melted away during the drilling work or by erosion and primarily potassium was existent.

In the rock salt containing potassium in drill holes 2.18 and 2.19, as shown in the vertical variation charts of Figs. 4.8 (a) and (b), a regular change in K and Br contents is found in a total of three cycles: once in Halite-A and twice interposing the anhydrite in the lower portion of Halite-B. This indicates that, in these two drill holes, both the rock salt beds of Halite-A and Halite-B belong to "gradually increasing bromine type".

The drill holes of 2.20 and 2.21 where potassium does not occur consist of Halite-A bed alone; there Br content in the rock salt bed does not change as Figs. 4.8 (c)

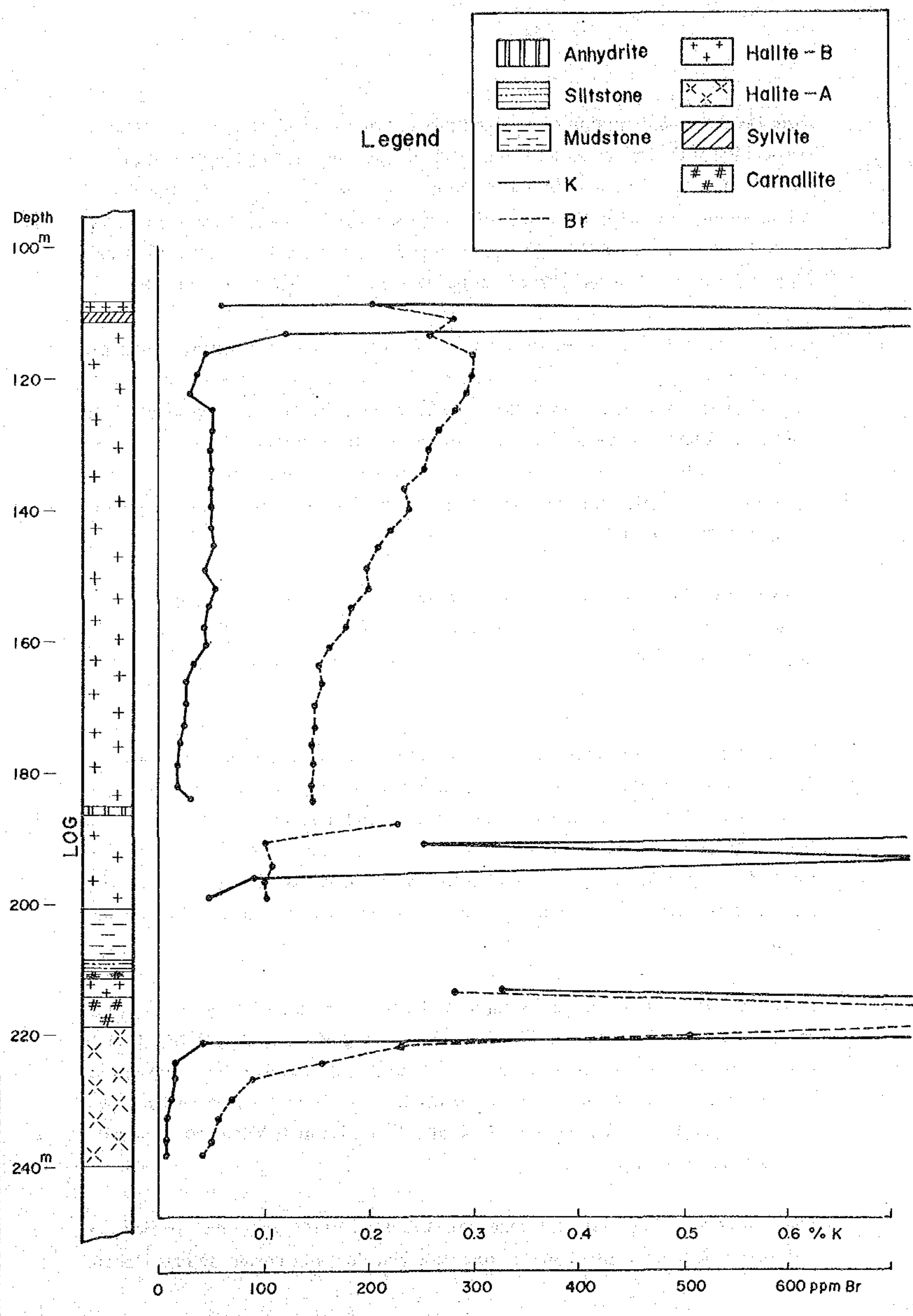


Fig.4·8 (a) Bromine and potassium distribution through halite of drill hole RS. 2. 18

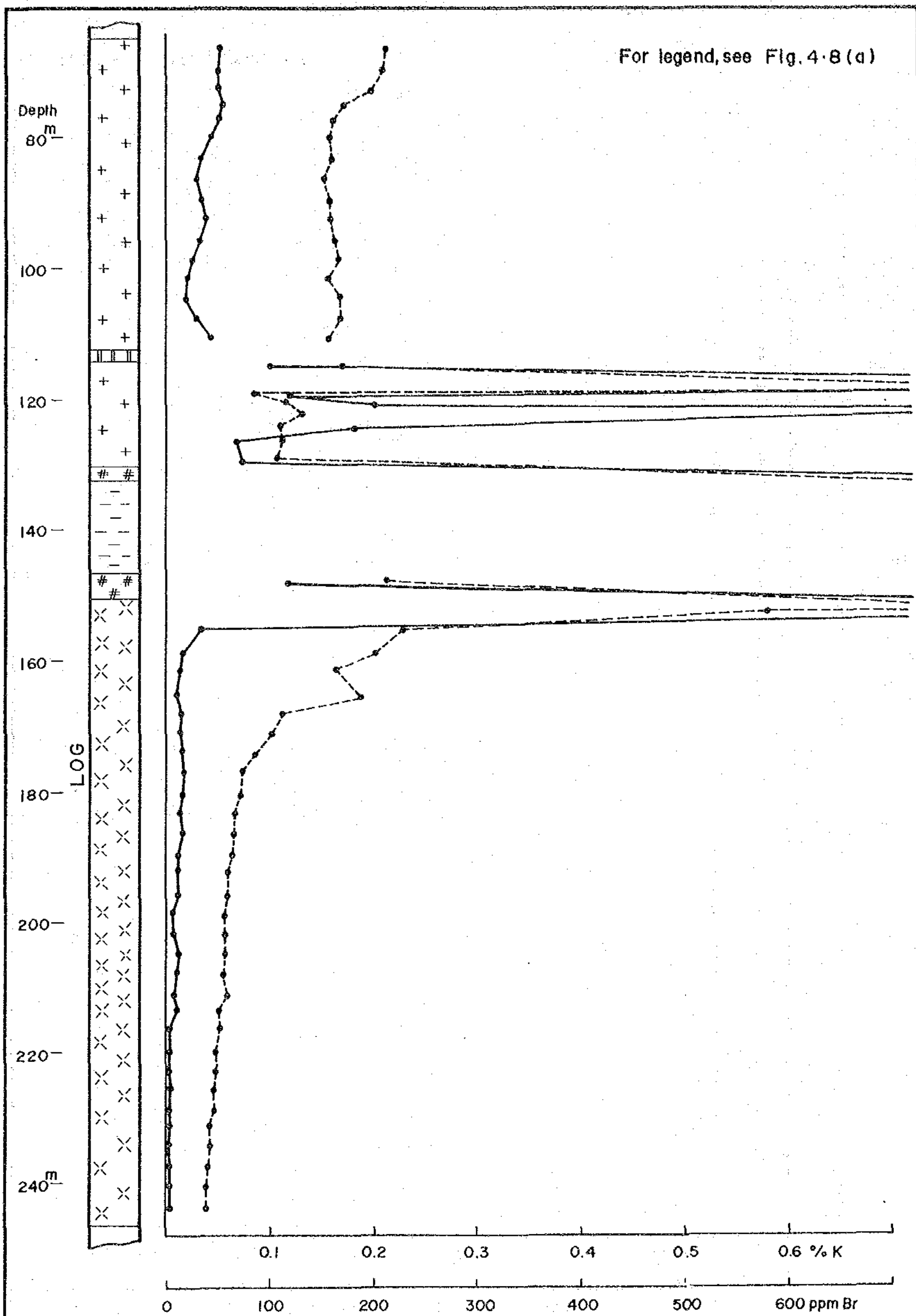


Fig. 4·8(b) Bromine and potassium distribution through halite of drill hole RS. 2. 19

For legend, see Fig. 4·8(a)

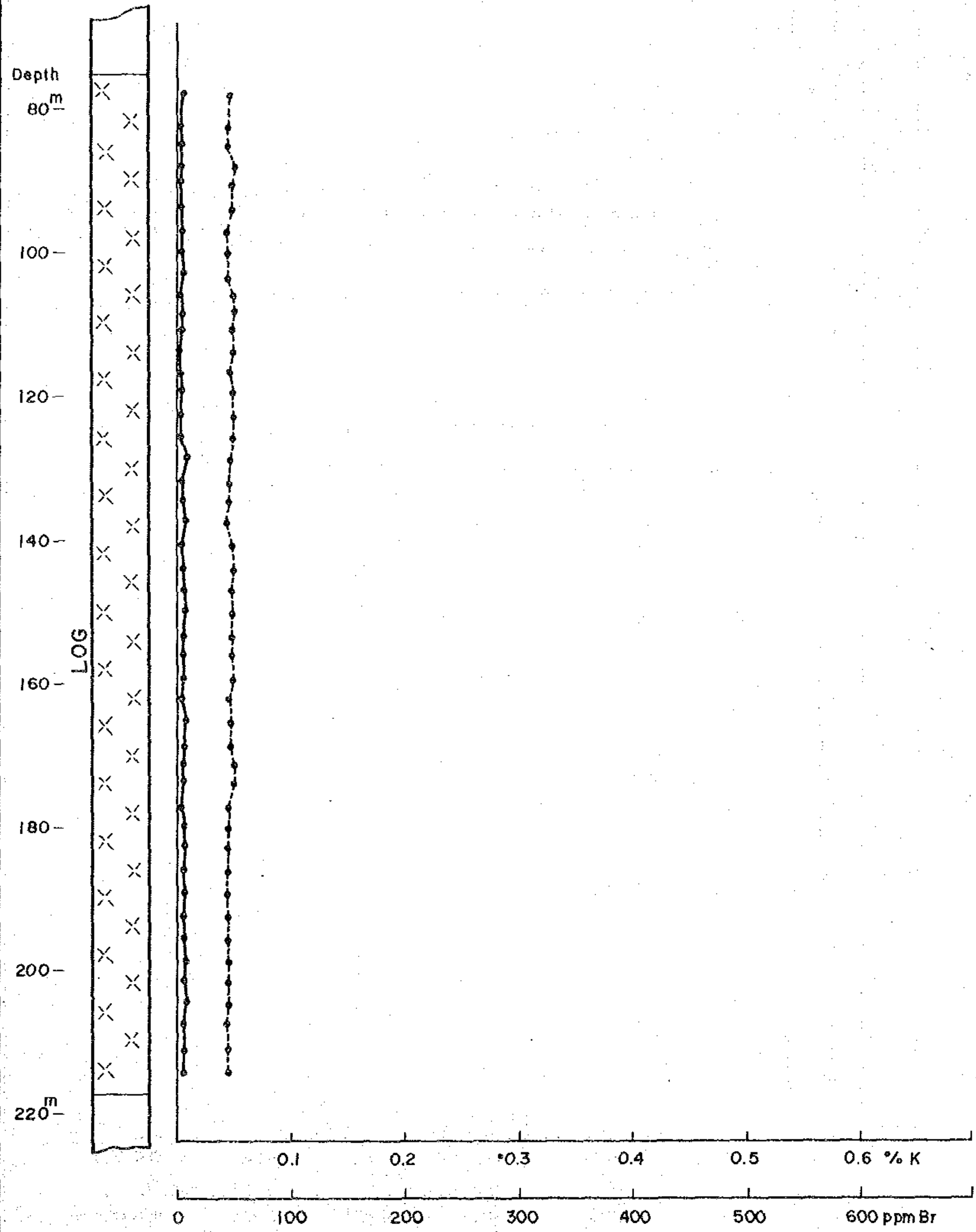


Fig. 4·8(c) Bromine and potassium distribution through halite of drill hole RS. 2. 20

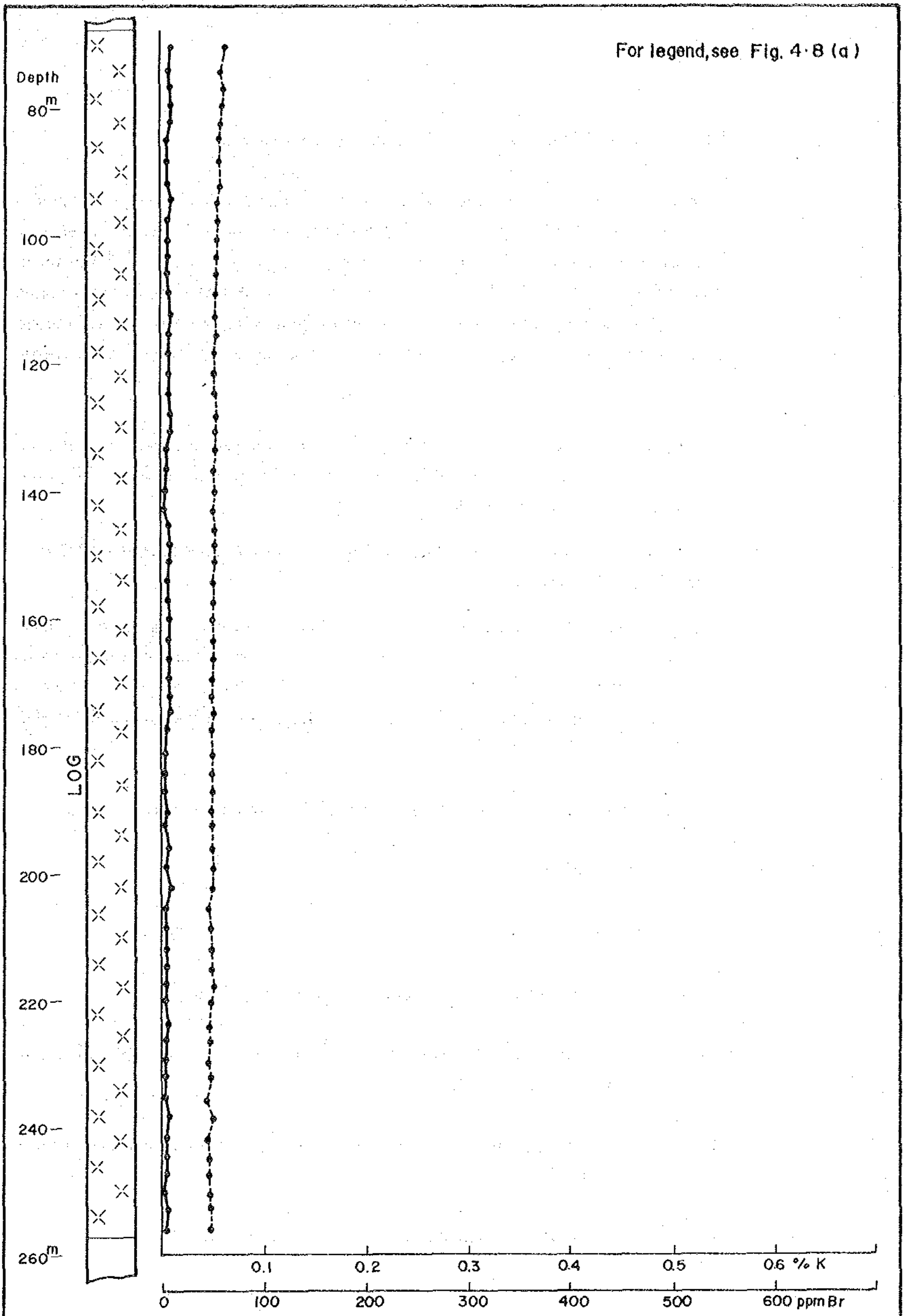


Fig.4·8(d) Bromine and potassium distribution through halite of drill hole RS.2.21

and (d) indicate. It is classified as "unchanging bromine type".

As mentioned in the above, the rock salt where potassium occurs belongs to "gradually increasing bromine type". Aslo Halite-A that occurs in D-area (samples 2.18 and 2.19) and Halite-A that occurs in S-area (drill holes 2.20 and 2.21) differ in distribution of bromine. The former is rock salt of gradually increasing bromine type, while the latter rock salt of unchanging bromine type. In other words, though they are the same Halite-A bed, these two were in different sedimentary environment.

The feature of vertical distribution of bromine and potassium as above-mentioned can be positively said to be useful in the future exploration of rock salt and potassium in other areas of Khorat Plateau.

(5) **Comparison between Analysis Values by Department of Mineral Resources, Ministry of Industry, and those by J.I.C.A.**

Chemical analysis was made of 50 samples that had been subjected to chemical analysis by D.M.R. (Appx. 4). Of the results, comparative charts of the results of analysis of NaCl, SO_4 and Mg are shown as Fig. 4.9. They indicate that there is only a little difference about NaCl, but some differences are recognized about SO_4 and Mg.

The samples used for analysis by D.M.R. and J.I.C.A. are not entirely identical.

4.3 Conditions of Anhydrite Occurrence

(1) Distribution and Form

The distribution and form of anhydrite are classified as follows:

(a) Anhydrite that was deposited in layers on the basement in precedence to sedimentation of rock salt.

(b) Anhydrite that occurs in band form, in speckles, or in an irregular form in the rock salt bed.

(c) Anhydrite that is contained minutely in the rock salt bed.

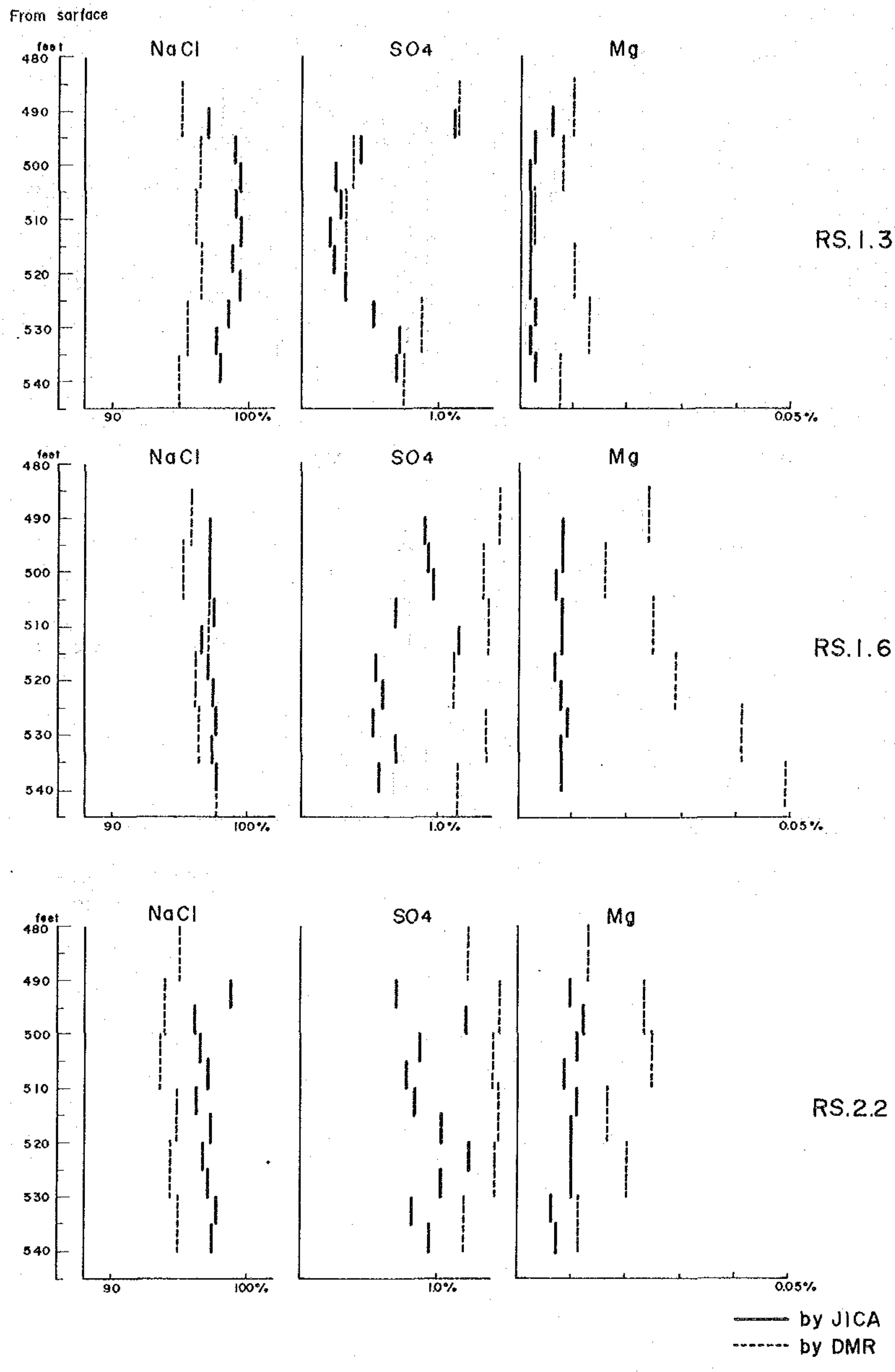


Fig.4·9 Results of Chemical analysis (Comparison between JICA data and DMR'S)

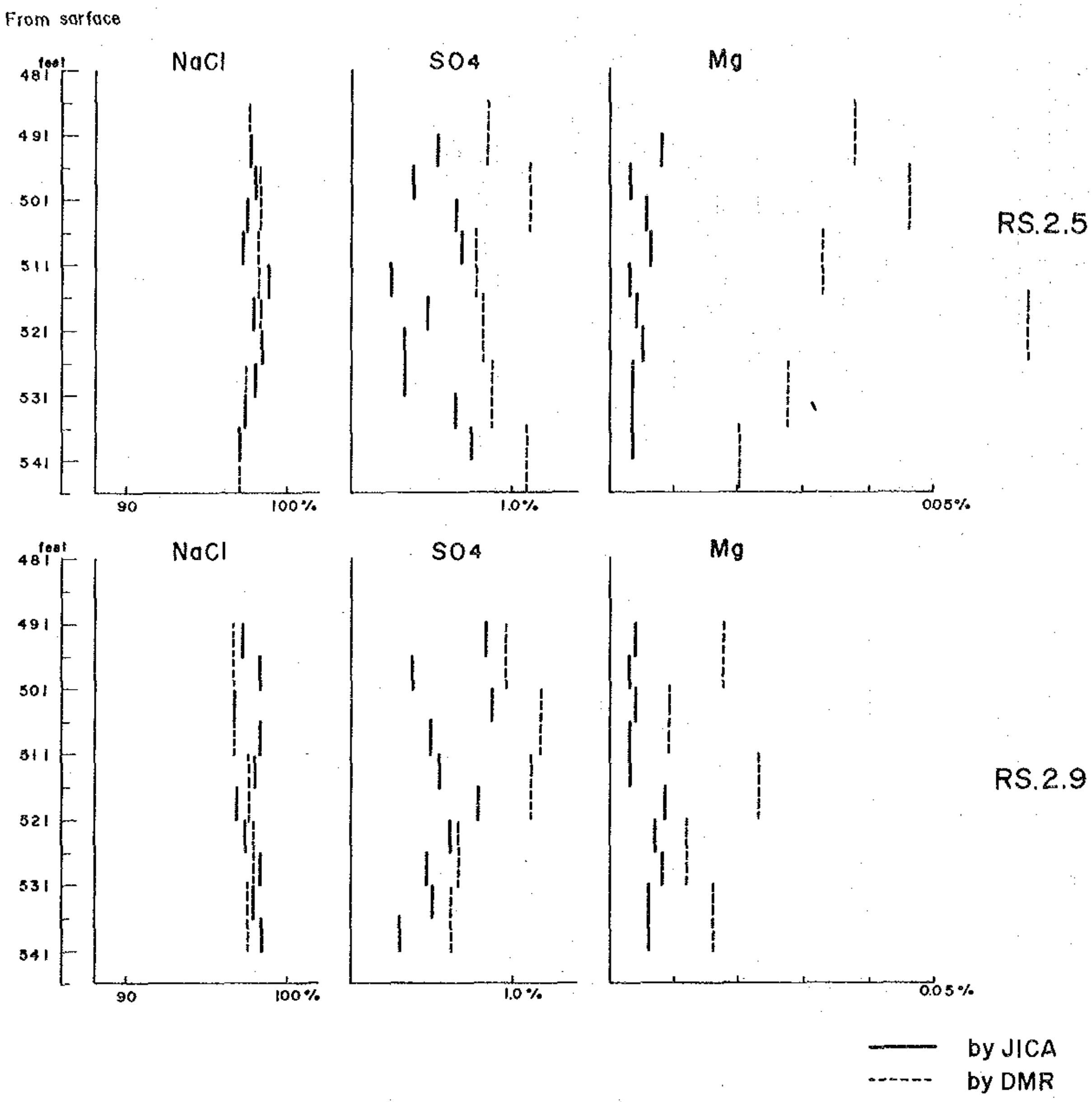
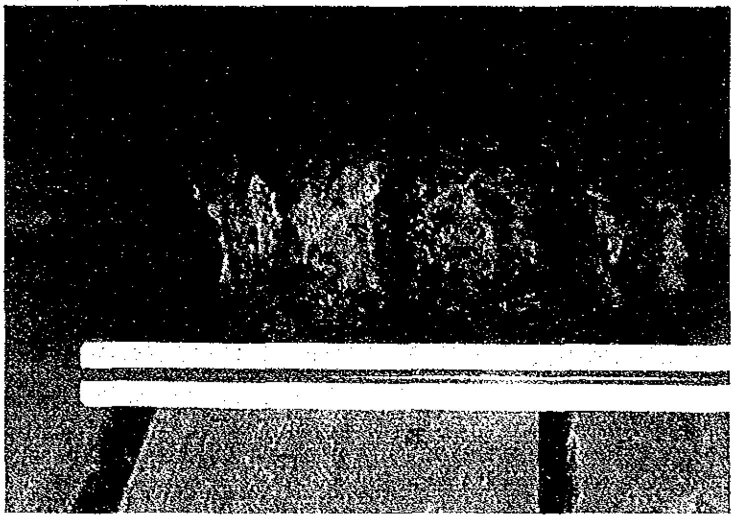


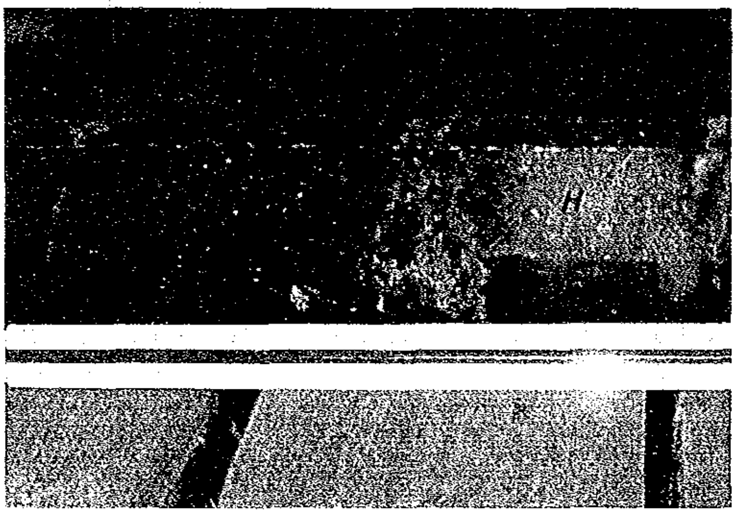
Fig.4·9 (continued)



Typical contact between halite bed and underlying anhydrite (Drill core RS. 20.18, 185m in depth)

H: halite

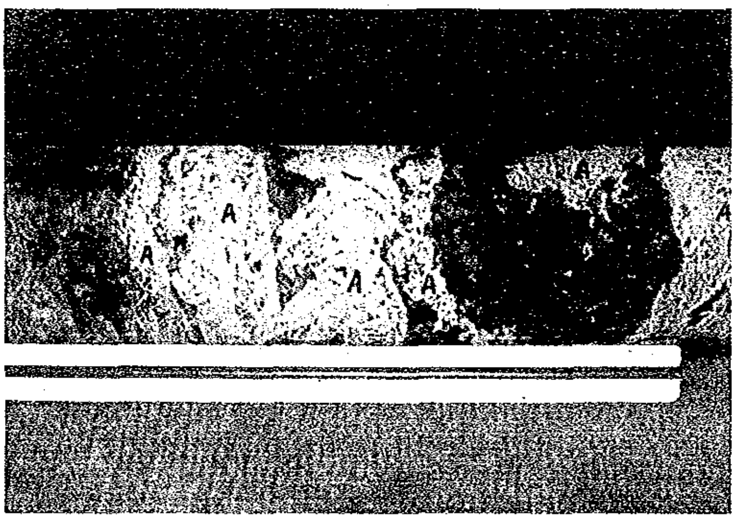
A: anhydrite



Anhydrite layer in halite bed (Drill core RS. 20.18, 176m in depth)

H: halite

A: anhydrite

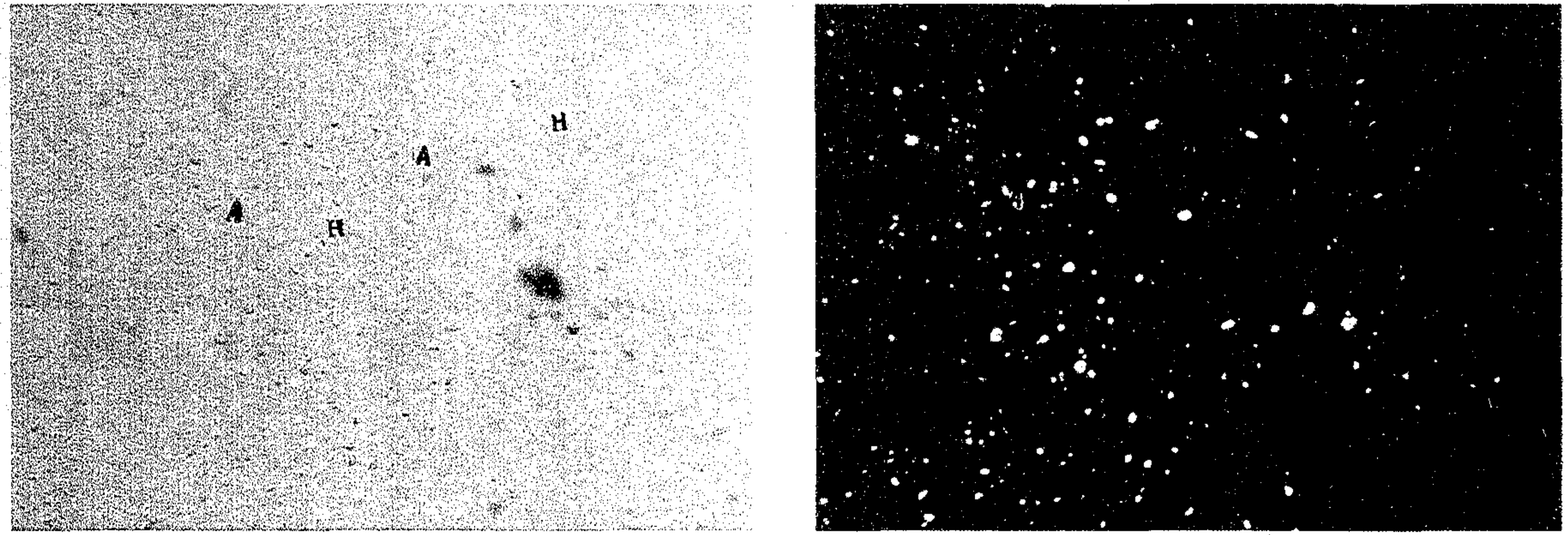


Nodular anhydrite in halite bed (Drill core RS.20.19, 112.10m in depth)

H: halite

A: anhydrite

Fig. 4.10 Photographs showing anhydrite in rock salt



Open nicol

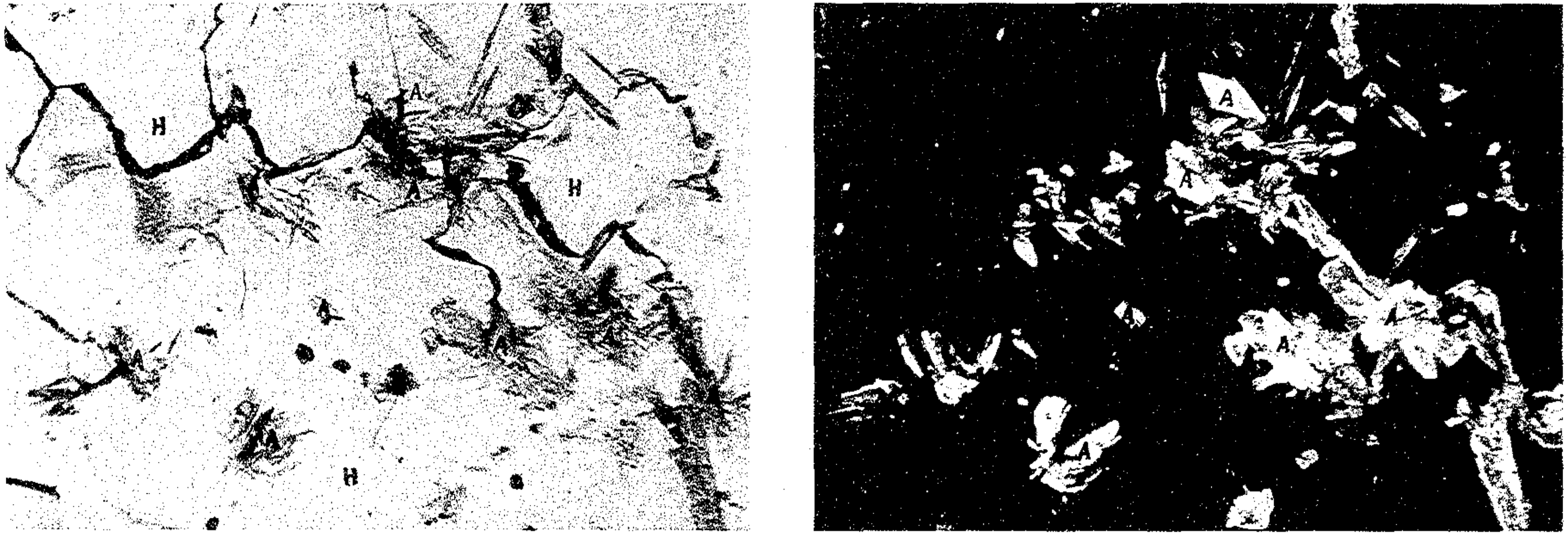
Crossed nicols

0 0.5mm

H: halite A: anhydrite

(Drill core RS. 2.18, 230m in depth)

Fig. 4.11 Photomicrographs of anhydrite in thin sections



Open nicol

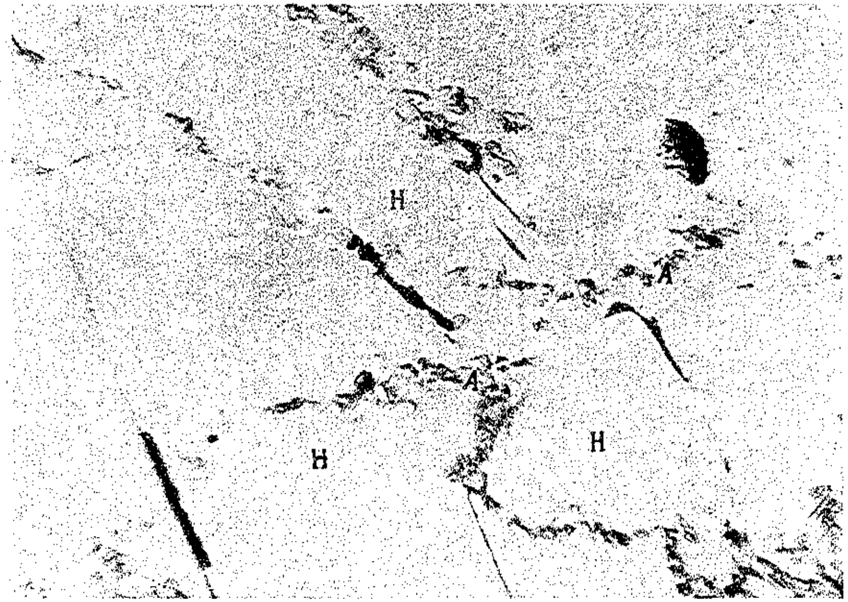
Crossed nicols

0 0.5mm

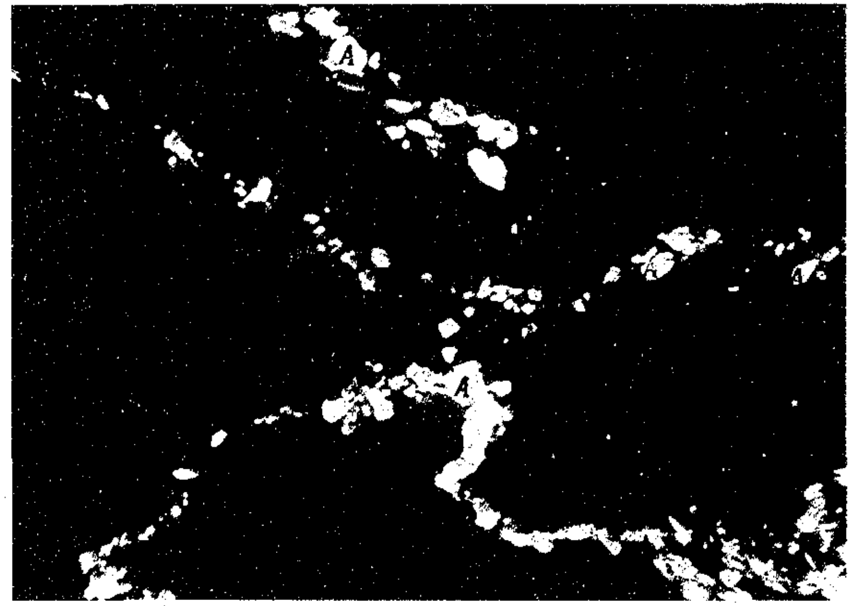
H: halite A: anhydrite

(Drill core RS. 2.19, 75m in depth)

Fig. 4.11 Photomicrographs of anhydrite in thin sections (cont'd)



Open nicol



Crossed nicols

0 0.5mm

H: halite A: anhydrite

(Drill core RS. 2.20, 126m in depth)

Fig. 4.11 Photomicrographs of anhydrite in thin sections (cont'd)

Of the above, (a) and (b) can be distinctly observed with the naked eye. (Fig. 4.10).

As for (c), however, in some cases minute anhydrite not observable with the naked eye is contained. It happens at times that even rock salt which is thought to have high purity when seen with the naked eye is found to have a high SO_4 content according to the result of chemical analysis. X-ray diffraction and microscopic observation were made for such samples to confirm the anhydrite content and to examine how it is contained and what size it is.

(2) X-ray Diffraction

For the samples for X-ray diffraction, out of the drill cores two samples were used: One was rock salt with comparatively high NaCl grade which was white and translucent as seen with the naked eye and felt somewhat like fat (sample 20-18, RS. 2.20, at the depth of 126.80 to 129.85m) and the other was light-gray rock salt having dark bands around which anhydrite was contained (sample 19-5, RS. 2.19, at the depth of 75.00 to 78.00m)

As the result of X-ray diffraction, these two samples were identified as rock salt containing anhydrite as seen in Appx. 5, which means that rock salt which seems to be of high purity for the naked eye can contain minute anhydrite.

(3) Microscopic Observation

Microscopic observation was made to confirm the form and size of minute anhydrite contained in the rock salt bed. The samples used for it were the same as those used for X-ray diffraction. The result is shown in Fig. 4.11; anhydrite occurs in such complicated conditions as minute crystals, minute speckles, and minute ribbons. Some single crystals of anhydrite are of a size less than 0.05mm. Anhydrite which is thus minutely intermixed in rock salt beds is difficult to remove with physical methods.

4.4 Water-insoluble Matters

Bamnet-Narong rock salt arrests attention in respect to its somewhat high SO_4 content as mentioned in the preceding section and its high content of water-insoluble matters.

The values of the quantity of such insoluble matters were calculated by an analysis method in accordance with "Methods for salt Analysis, 1961 by the Japan Monopoly Corporation", and, they are identified as "water-insolubles".

(1) **X-ray Diffraction**

Packing up five out of the samples that had been subjected to chemical analysis for main components of rock salt, X-ray diffraction was made to identify the mineral composition of these water-insoluble matters (Appx. 6).

Table 4.3 indicates that, as the minerals in the water-insoluble matters, anhydrite is ubiquitously contained and other mineral contents are dolomite, magnesite, quartz, feldspar, mica, chlorite, and montmorillonite.

Among them, anhydrite, dolomite, and magnesite are what are called endogenetic minerals which crystallized from sea water simultaneously with rock salt, while quartz, feldspar, mica, chlorite, and montmorillonite are exotic minerals coming from land outside of the rock salt sedimentation basin.

In contrast to solar salt which is an artificial product, rock salt is an entirely natural product; moreover it was created in some environment essentially different from that for rock salt over a long period of the geological age. So that it is only natural for rock salt to include endogenetic and exotic minerals as above-mentioned.

4.5 Average Component Values

As aforementioned Bamnet-Narong rock salt deposit is divided into Halite-A and Halite-B beds with respect to the geological structure and components; further, Halite-A is divided into D-area and S-area from the viewpoints of distribution of the components and the form of rock salt occurrence. In this section described are the average values of main components of the rock salt corresponding to the abvoe-mentioned division of the rock salt beds.

(1) **Average Values of Main Components of Rock Salt**

For 197 samples with not less than 90% of NaCl content out of the samples taken from the additional four drill holes, the average values of the components corresponding to respective rock salt beds are set forth on Table 4.4 and Fig. 4.12.

Table 4.3 X-Ray Diffraction Analysis of Water-insolubles

Sample	Locality	I.M	X-ray diffraction of I.M							
			A	Ms	D	Q	F	Mc	C	M
18-14	RS. 2. 18: 147.00 m – 150.00 m	5.29%	++		-					
18-31	RS. 2. 18: 197.96 m – 200.28 m	0.41%	+	+	-	?	-	-	+	-
19-3	RS. 2. 19: 70.35 m – 72.38 m	4.88%	++		-	++				
19-11	RS. 2. 19: 93.30 m – 96.35 m	7.04%	++		+	?				
20-4	RS. 2. 20: 86.00 m – 89.00 m	1.22%	++		+	?				

++ : Abundant
+ : Medial
- : A little

I.M : I.M % of original samples
A : Anhydrite
Ms : Magnesite
D : Dolomite
Q : Quartz
F : Feldspar
Mc : Mica
C : Chlorite
M : Montmorillonite

Table 4.4 Calculation Result of the Mean Contents of Chemical Components of Rock Salt from Additional Drilling Cores at Bamnet-Narong

		Halite-A			Halite-B	Total
		D-area	S-area	Sub Total		
H_2O	N	39	109	148	49	197
	$\bar{X}$ (%)	0.10	0.10	0.12	0.25	0.15
	σ	0.14	0.09		0.24	
I.M (water-insolubles)	N	39	109	148	49	197
	$\bar{X}$ (%)	1.29	0.51	0.71	1.76	0.97
	σ	0.97	0.43		1.66	
Cl	N	39	109	148	49	197
	$\bar{X}$ (%)	58.88	59.40	59.26	58.05	58.96
	σ	0.84	0.52		1.57	
SO_4	N	39	109	148	49	197
	$\bar{X}$ (%)	1.01	0.90	0.93	1.40	1.05
	σ	0.43	0.36		0.72	
Ca	N	39	109	148	49	197
	$\bar{X}$ (%)	0.43	0.37	0.39	0.58	0.44
	σ	0.16	0.14		0.28	
Mg	N	39	109	148	49	197
	$\bar{X}$ (%)	0.013	0.003	0.006	0.042	0.015
	σ	0 029	0.001		0.087	
K	N	39	109	148	49	197
	$\bar{X}$ (%)	0.020	0.007	0.010	0.140	0.040
	σ	0.053	0.001		0.363	
Na	N	39	109	148	49	197
	$\bar{X}$ (%)	38.13	38.50	38.40	37.47	38.17
	σ	0.57	0.34		1.02	
NaCl	N	39	109	148	49	197
	$\bar{X}$ (%)	96.92	97.86	97.61	95.24	97.02
	σ	1.45	0.85		2.58	

N: Number of analysis $\bar{X}$ (%): Mean σ: Standard deviation (Calculated for sampels with NaCl > 90%)

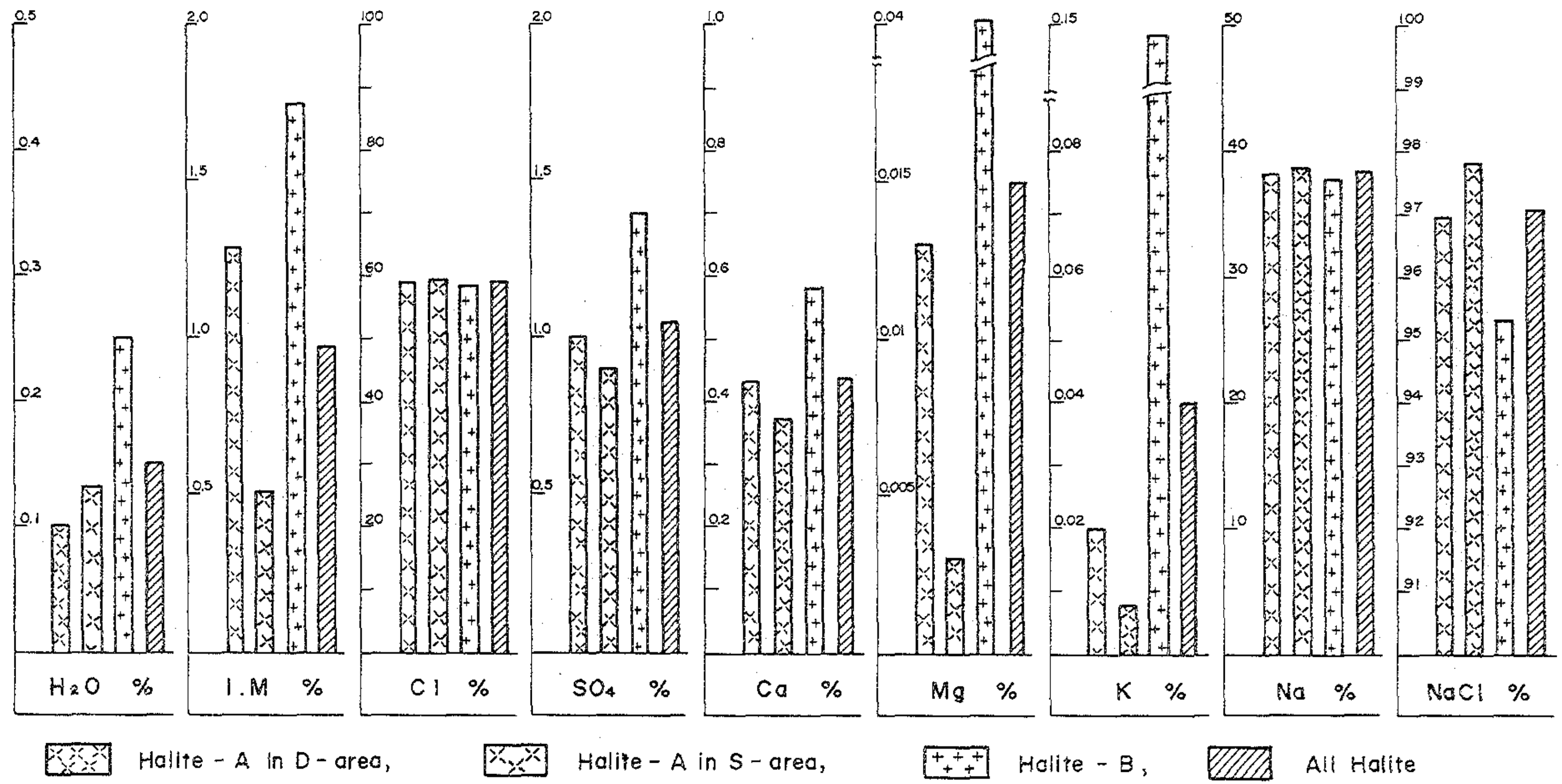


Fig.4·12 Average contents of rock salt components of Bamnet - Narong

(Refer to calculation in Table 4·5)

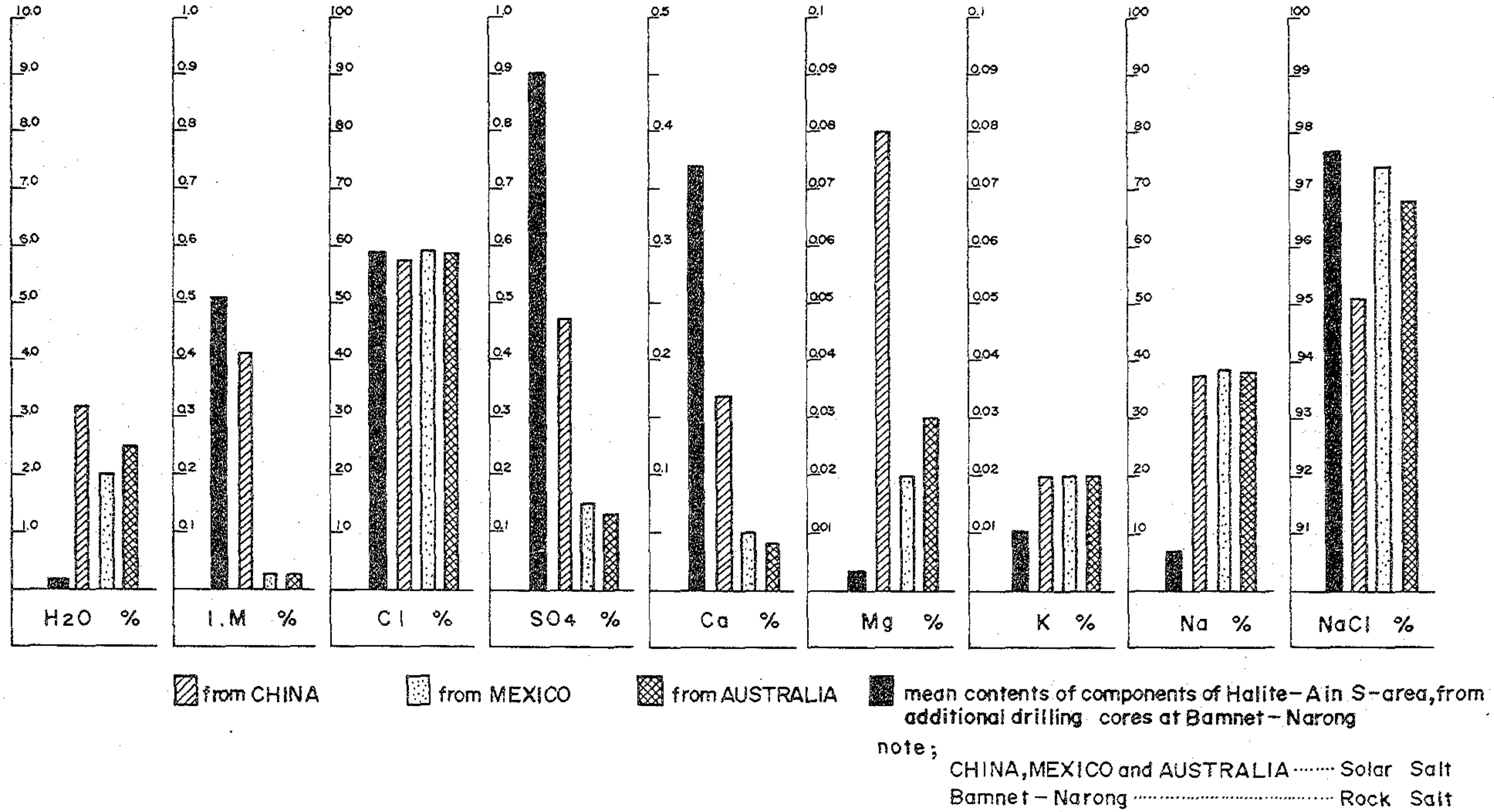


Fig.4-13 Comparison of chemical components between Bamnet - Narong rock salt and Japan-imported salt.

As is obvious from this table, Halite-A in S-area excels Halite-B and Halite-A in D-area in quality. Also it can compare with the rock salt deposits in various parts of the world in its quality. An example of the average values of components in some other rock salt deposits is shown on Table 4.5.

(2) Comparison with Salt imported by Japan

The grade of the porduct from Bamnet-Narong deposit in its future mining operation does not necessarily coincide with the average grade obtained by the drilling but has to be affected by the mining method, mining levels, amount of production, and other factors.

The average values of the components of rock salt of Halite-A in S-area which were obtained in the preceding seciton are compared with those of salt imported to Japan (solar salt) in Fig. 4.13.

According to this figure, in the contents of NaCl, I.M., Ca and SO_4, Halite-A in S-area is higher than the imported salt, but is lower in the contents of K and Mg. Especially noted are the high values of I.M., SO_4 and Ca as described in 4.3. The contained SO_4 and Ca are ascribable to anhydrite contained in the rock salt. The high values of I.M. are due to what are called endogenetic minerals which were formed simultaneously with sedimentation of the rock salt as mentioned in 4.4 and to exotic minerals. It is universally observed and comes from its "predestined" nature that rock salt thus has high values of the contents of SO_4, Ca and I.M. as compared with solar salt which is formed half artificially.

4.6 Characteristics of Compressive Strength and Tensile Strength

(1) Difference by Drill Hole

Average values and standard deviations of compressive strength, tangential Young's modulus, and tensile strength for test pieces from each drill hole are shown in Table 4.6.

As shown, compressive strength, tensile strength, and Young's modulus for test pieces from Drill Holes 2-18 and 2-19 are larger than those for test pieces from Drill Holes 2-20 and 2-21. The respective values for the former two drill holes approxi-

Table 4.5 Average Chemical Composition of Salt Rocks of the Dead Sea Group (w%)

Number of analyses	Water soluble salts								Insoluble residue
	Na	K	Mg	Ca	Cl	Br	SO_4	Total	
23	21.6	0.05	0.12	0.53	33.3	0.0160	0.8	56.4	-
7	12.9	0.13	0.17	0.59	21.8	0.0075	0.7	36.3	-
16	37.7	0.03	0.02	0.18	58.6	0.0113	0.2	96.7	2.75
6	37.1	0.01	0.06	0.37	58.4	0.0159	1.0	97.0	1.08
5	37.3	0.02	0.03	0.71	57.8	0.0110	1.7	97.6	2.37
115	36.6	0.57	0.10	0.62	56.6	0.0142	1.4	95.9	2.66
9	36.4	-	-	-	56.1	0.0112	-	92.5	3.28
19	36.4	0.02	0.02	0.47	56.3	0.0052	1.3	94.5	3.46
2	36.5	0.32	0.11	0.35	59.2	0.0100	0.2	96.7	-
101	37.6	0.16	0.07	0.52	57.9	0.0098	1.4	97.6	1.45

(Data of Israel Zak, 1973)

mate each other as do those for the latter two drill holes.

Brittleness index is extremely high for test pieces from Drill Hole 2-21.

Table 4.6 Physical Properties by Drill Hole

Drill hole	Compressive strength (kg/cm^2)	Tangential Young's Modulus (x10^3 kg/cm^2)	Tensile strength (kg/cm^2)	Brittleness index
RS. 2.18	313 ± 20	38.6 ± 11.7	19.6 ± 3.6	16
RS. 2.19	287 ± 13	32.4 ± 14.8	18.9 ± 4.4	15
RS. 2.20	202 ± 35	18.3 ± 8.4	14.2.± 3.5	14
RS. 2.21	218 ± 46	11.8 ± 3.5	11.6 ± 2.9	19

(2) Difference Due to Band

Test pieces were classified visually into those with and without bands. The average physical property values for test pieces thus calssified are shown in Table 4.7

Table 4.7 Difference in Physical Properties Between Test Pieces With and Without Bands

Item	Compressive strength Sc (kg/cm^2)	Tangential Young's modulus E tan (x10^3 kg/cm^2)	Tensile Strength St (kg/cm^2)	Brittleness index (Sc/St)
With band	318 + 31	41.4 ± 8.9	21.0 ± 5.2	15
Without band	264 + 49	29.0 ± 14.2	17.1 ± 3.9	15

The table shows that compressive strength, tensile strength, and tangential Young's modulus are larger for test pieces with bands, which means that banded test pieces are less liable to deformation.

The larger physical property values for the banded test pieces are presumably due to the fact that, as stated in 4.3 (1) above, the bands consist largely of anhydrite.

(3) **Difference by Halite Bed**

Table 4.8 shows test results classified by halite bed.

Table 4.8 Difference among halite beds

Halite bed	Density	P-wave velocity	Compressive strength	Young's modulus		Poisson's ratio	
	ρ	Vp	Sc	E (tan)	E (80% sec)	ν (tan)	ν (80% sec)
	(g/cm^3)	($x10^3 m/sec$)	(kg/cm^2)	($x10^3 kg/cm^2$)	($x10^3 kg/cm^2$)		
Halite A in S area	2.1	2.9 ± 0.61	211 ± 40.4	14.8 ± 6.86	8.2 ± 3.37	0.24 ± 0.118	0.68 ± 0.183
Halite A in D area	2.2	3.7 ± 0.15	297 ± 11.6	27.6 ± 5.25	10.0 ± 0.74	0.27 ± 0.066	0.68 ± 0.145
Halite B in D area	2.2	4.2 ± 0.26	301 ± 29.2	44.1 ± 10.92	12.8 ± 2.64	0.28 ± 0.09	0.65±0.087

According to the above-mentioned test results, the strength of each bed is arranged in the following order.

Halite-B bed in D-area $>$ Halite-A bed in D-area $\gg$ Halite A bed in S-area

4.7 Characteristics of P-wave Velocity

P-wave velocity shows a tendency similar to compressive strength. The value is high for test pieces from Drill Holes 2.18 and 2.19 and low for those from Drill Holes 2.20 and 2.21. As it was deduced that P-wave velocity is correlated with compressive strength, the correlation was investigated.

The coefficient of correlation is $r \fallingdotseq 0.65$, and the correlation can be expressed as

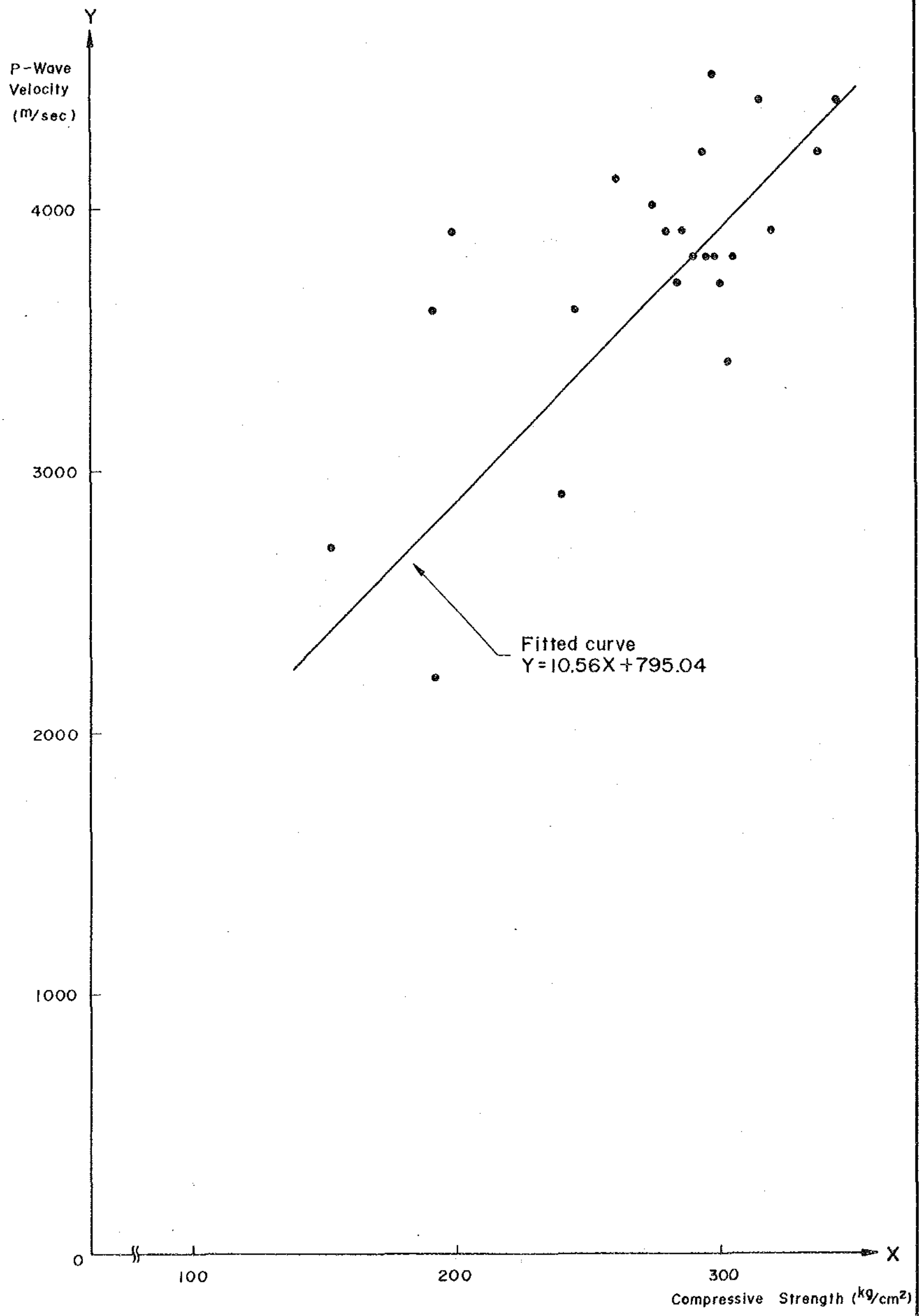


Fig.4·14 Relationship between P-Wave Velocity and Compressive Strength in the following equation:

$$y = 10.56x + 795.04$$

where y = P-wave velocity

x = Compressive strength

The relationship between P-wave velocity and compressive strength is shown in Fig. 4.14.

Table 4.9 P-wave velocity by drill hole

Drill hole	P-wave velocity ($\times 10^3$ m/sec)
RS. 2.18	4.1 ± 0.34
RS. 2.19	3.8 ± 0.24
RS. 2.20	3.2 ± 0.65
RS. 2.21	2.6 ± 0.28

4.8 Hardness Characteristics

Hardness of test pieces from Drill Holes 2.18, 2.19, and 2.20 is approximately 10. Those from Drill Hole 2.21, however, have a hardness ranging from 6.4 to 7.4.

4.9 Creep Characteristics

Creep is a special characteristic of rock salt. An attempt was made to express the test results rheologically, by the Burgers' model shown in Fig. 4.15.

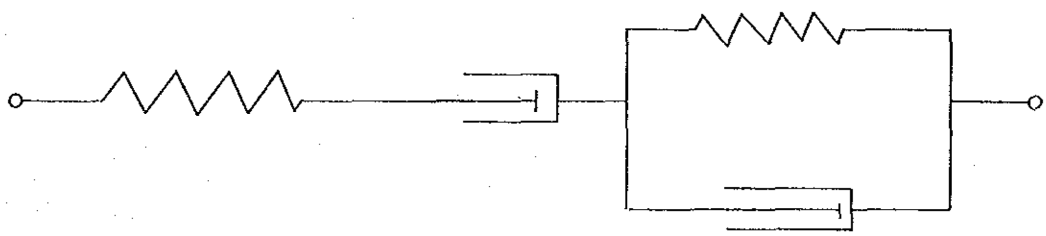


Fig. 4.15 Burgers' Model (1-Maxwell and 1-Voigt)

In Burgers' model, time-dependent strain ϵ (t) under constant stress $\sigma = \sigma_0$ is given by the following equation:

$$\epsilon(t) = \frac{\sigma_0}{E_1} + \frac{\sigma_0}{E_2}\left[1 - \exp\left(-\frac{E_2}{\eta_2}t\right)\right] + \frac{\sigma_0}{\eta_1}t \qquad (4.9.1)$$

To fit the measured values into Equation 4.9.1, moduli of elasticity E_1, η_1, E_2 and η_2 were calculated by using the least squares method (standard application program for least squares, SALS). The least squares method is one of the subroutines which is a nonlinear Gauss-Newton method to calculate the model function and differential matrix. The results are shown in Table 3.9.

Although an attempt was made to fit the obtained values into Fig. 4.15, there was a heavy divergence in the first stage of transient creep (up to about 150 minutes). Therefore, the Voigt model shown in Fig. 4.16 was used.

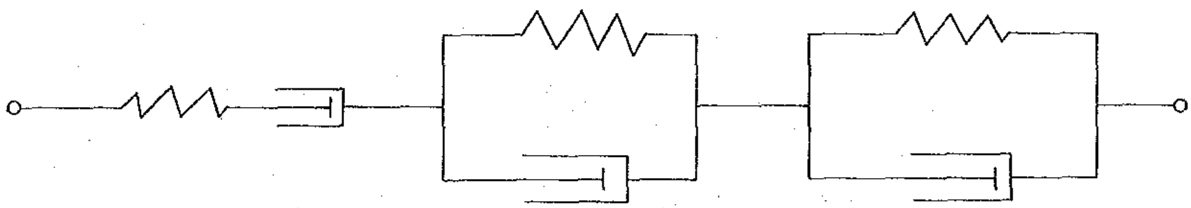


Fig. 4.16 Voigt Model (1-Maxwell and 2-Voigt)

strain ϵ (t) in this model can be expressed by the following equation:

$$\epsilon(t) = \left(\frac{1}{E_1} + \frac{1}{E_2} + \frac{1}{E_3}\right)\sigma_0 - \frac{\sigma_0}{E_2}\exp\left(-\frac{E_2}{\eta_2}t\right) - \frac{\sigma_0}{E_3}\exp\left(-\frac{E_3}{\eta_3}t\right) + \frac{\sigma_0}{\eta_1}t \qquad (4.9.2)$$

where $E_1 \sim E_3$: Moduli of elasticity

$\eta_1 \sim \eta_3$: Moduli of viscosity

t : Time (minutes)

As with Equation 4.9.2, the least squares method was used to calculate E_1, E_2, E3, η_1, η_2 and η_3. The results are presented in Table 3.9.Figs. 3.3 (a)–(d) are strain-time curves.

The results for test piece 18.6 can be expressed as in the following equation:

In all following equations ϵ are of micron order.

$$\epsilon(t) = 15065 - 5389.9 \exp(-0.0051896t) + 1.0166t$$

where stress level : 243 kg/cm^2, 78%

rheology model : 1-Maxwell and 1-Voigt

Test results for test piece 19.14 can be expressed by the following equation:

$$\epsilon(t) = 55014 - 14467 \exp(-0.0015702t) - 2625.4 \exp(-0.017167t) + 0.50870t$$

where stress level : 227.3 kg/cm^2, 79%

rheology model : 1-Maxwell and 1-Voigt

Test results for test piece 21.11 may be expressed by the following equation:

$$\epsilon(t) = 27573 - 2659 \exp(-0.002635t) + 0.0614t$$

where stress level : 67.8 kg/cm^2, 34%

rheology model : 1-Maxwell and 1-Voigt

Test results for test piece 21.13 are given by:

$$\epsilon(t) = 19053 - 1059 \exp(-0.01123t) + 0.0455t$$

where stress level : 73.3 kg/cm^2, 37%

rheology model : 1-Maxwell and 1-Voigt

4.10 Characteristics under Confining Stress

From Table 3.10, Mohr's circles can be drawn. And from the Mohr's circles, the coefficient of internal friction angle and cohesion are calculated.

When the state of stresses is (σ_1, σ_3), the highest points of the Mohr's circles in a $\sigma-\tau$ plane can be expressed as $(\sigma_1 + \sigma_3)/2$, $(\sigma_1 - \sigma_3)/2$*). From the straight lines ($\tau = C + k\sigma$) passing through these highest points, internal friction angle ϕ (deg) and cohesion c (kg/cm^2) can be calculated.

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* $\sigma_1 - \sigma_3$ means differential stress, σ_3 represents confining stress.

By calculating the group of straight lines passing through the highest points by the least squares method, c and ϕ are obtained as follows:

Internal friction angle	55.8 degrees
Cohesion	16.9 kg/cm^2
Correlation coefficient	0.999

From the results of the triaxial compression test, it can be said that, where the roof, pillar and like are concerned, the greater the confining stress, the larger the permissible deformation and permissible load. This suggests that, in mining design, rock bolts and steel bands can be effective means.

Fig. 4.17 shows the relationship between confining stress and compressive strength.

(Reference)

The above values have been calculated on the basis of the theory of elasticity. Hence, they do not accurately show the deformation and fracture behavior of objects that have large deformation, like rock salt.

Therefore, it will be assumed that radial deformation is related to axial displacement as follows:

$$d = 49.30 + \alpha x$$

where d: diameter after radial displacement

α: factor

x: axial displacement

By correcting the above data with this equation, internal friction angle and cohesion will be as follows:

Corrected internal friction angle:	37.3 degrees
Corrected cohesion:	43.7 kg/cm^2
Correlation coefficient:	0.994

In design, it is desirable that the values on the safe side be adopted.

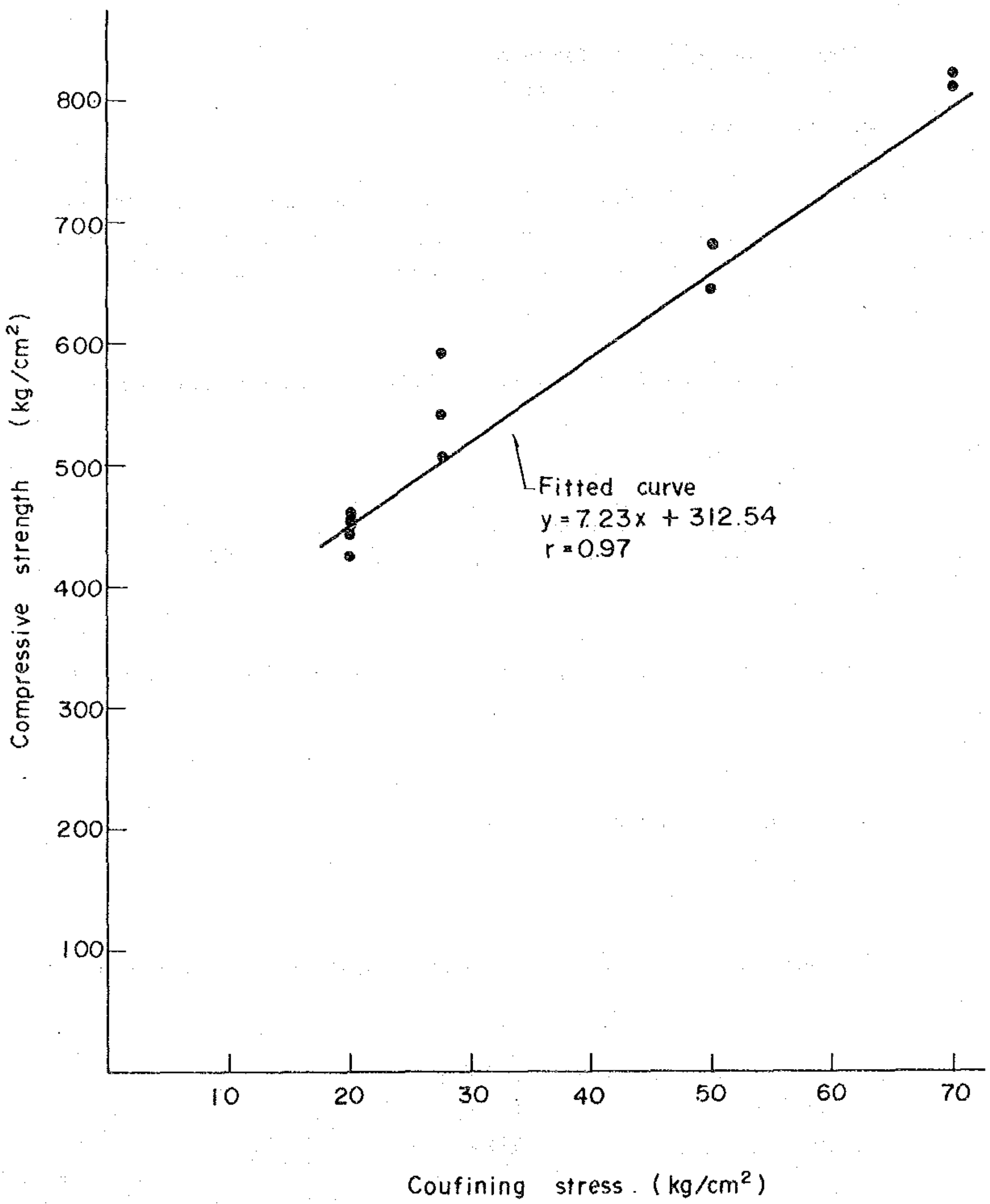


Fig.4·17 Relationship between confining stress and compressive strength

4.11 Other Studies

Correlationships of physical property values with sampling depth and chemical grades (insoluble minerals, SO_4, NaCl) were investigated, but no significant correlations were found.

CHAPTER 5. CONCLUSION

The above-mentioned survey work with the additional four drill cores has disclosed a number of facts of Bament-Narong rock salt deposit. The mains are briefed in the following:

Geology

(1) The rock salt deposit occurring in Bamnet-Narong district has a depth ranging from 100 to 280m, lying lower than about 60m depth under the surface. It has enormous reserves.

(2) Stratigraphically this deposit is composed of two beds, the lower being called Halite-A and the upper Halite-B.

(3) Halite-A bed is higher in NaCl content values and less in their scattering than Halite-B. Also in mean anhydrite content values Halite-A is lower.

(4) In this district there is an area where Halite-B occurs over Halite-A (D-area) and, for the other, an area where only Halite-A is found (S-area), which means that Halite-A occurs extending over both the area.

(5) Halite-A occurring in S-area and Halite-A in D-area differ from each other in the conditions of distribution of Br, K, etc., leading to the presumption that these two areas were in different environment of rock salt sedimentation.

(6) Halite-A in S-area excels that in D-area in both size and quality. The former is recommended for the subject of planning as the rock salt bed for mining in the comprehensive evaluation.

Chemical components and quality

(1) In vertical variation of Br in the rock salt, there are two types: "gradually increasing bromine type" and"unchanging bromine type".

In the top of the former rock salt bed, there occurs potassium.

This correlation can be an important guide to the future exploration for potassium and rock salt in Khorat district.

(2) The contents of the main components of rock salt in Halite-A bed in S-area excel those of salt currently imported to Japan (solar salt) in NaCl, K and Mg.

And the contents of SO_4 and water-insoluble matters show high values. These should be thoroughly studied in the stage of the comprehensive evaluation for the suitability of this rock salt as raw material for industrial and ordinary salt.

(3) The component of SO_4 comes from anhydrite ($CaSO_4$); water-insoluble matters are composed of anhydrite, dolomite, magnesite, quartz, feldspar, mica, chlorite and others.

(4) The size of anhydrite contained in rock salt ranges from that recognizable with the naked eye to that as minute as unrecognizable.

(5) When minute anhydrite particles are contained in rock salt, it is difficult to eliminate them with physical methods.

(6) **That** rock salt containes more SO_4 and water-insoluble matters than solar salt comes from "predestined" nature attributable to formation of rock salt in general.

Rock mechanics

(1) Halite-A in the Bamnet-Narong area has a compressive strength of 211 kg/cm^2, which means that it will fully withstand underground mining.

(2) Halite-A in S-area, and Halite-A and B in D-area have compressive strengths in following order, Halite-A in S-area having the smallest value:

Halite-B in D-area	>	Halite-A in D-area	≫	Halite-A in S-area
(301 kg/cm^2)		(297 kg/cm^2)		(211 kg/cm^2)

(3) P-wave velocity (y) and compressive strength (x) stand in the following relationship:

$y = 10.56x + 795.04$

This relationship can be used in a simple method for estimating compressive strength.

(4) Since strength increases enormously under confining pressure, reinforcing the pillar with roof bolts, steel bands and the like should provide an effective support.

(5) Since the rock salt has a high brittleness index (14 – 19), it lends itself to mechanical cutting.

(6) Since the rock salt is liable to creep, it is desirable that the mining structure be designed so as to prevent stress concentration and that the retired mining method be adopted. In considering pillar design and mining recovery, the stress level should be held low enough (35 – 40%) to prevent excessive secondary creep of the mining structure.

Summary

The Bamnet-Narong rock salt deposit is an abundant source of rock salt. The physical properties of the rock salt are such that they permit underground mining.

As for the most suitable Halite bed to be mined, geological structure and chemical analysis point to Halite-A in S-area.

Although the rock salt from Halite-A in S-area is generally of excellent quality, comparisons with the solar salt that Japan has been importing reveal that it is inferior in some respects and superior in others, with regard to purity and impurities contained.

In the comprehensive evaluation, the above facts must be taken into consideration in drawing up plans for rock salt mining.

APPENDICES

LOG RECORD AND CHEMICAL ANALYSIS DATA

OF

DRILL HOLE RS·2·18

LOCATION	Bamnet - Narong
COORDINATE	
ELEVATION	about 204^{m}
BEARING	
INCLINATION	90°
DRILLING DATE	started Aug. 19. 1979
	completed Sep. 18. 1979
TOTAL DEPTH	$242^{m}.00$

Appx. I (a)

(SCALE 1:500)

Depth meter	Core Diameter	Symbols	Thickness	Obtained Core Length	Core Recovery	Geological Description	Formation
69.00			69.00	—	—	no core.	
71.00			2.00	—	—	no core; cuttings contains anhydrite.	
72.32	PQ size		1.32	1.32	100.00	Anhydrite; white gray to gray massive anhydrite.	
96.30	"		23.98	23.98	100.00	Mudstone; reddish-brown mudstone, locally gray and gray clay. with glassy harite, veinlet and irregularity, as follows 82.30m ~ 82.70m, 83.70m ~ 84.35m, 88.05m ~ 88.35m, 89.15m ~ 89.45m, 89.90m ~ 90.10m, 92.00m ~ 92.60m, 93.65m ~ 94.20m, dotted gypsum in part.	
97.50	"		1.20	1.20	100.00	Sandy-Mudstone; greenish-gray laminated.	
101.30	"		3.80	3.80	100.00	Mudstone; reddish-brown.	
108.78	"		7.48	7.48	100.00	Mudstone; dark greenish-gray	
110.28	"		1.50	1.50	100.00	Halite; mostly glassy, light-brown, with gray thin anhydrite band in part, bedding make 20 ~ 30° angles to core.	
111.55	"		1.27	1.27	100.00	Sylvite ~ Halite; Sylvite; mostly cloudy-white colour about 15~20% in halite, halite; light brownish-gray colour.	
132.40	"		20.85	20.85	100.00	Halite; smoky gray, massive.	
147.75	"		15.35	15.35	100.00	Halite; light-brown massive halite with gray anhydrite bands, (thickness 3~20mm, 5~18° angle to core).	
157.62	"		9.87	9.87	100.00	Halite; light brown-gray massive halite, with anhydrite bands (less then 10mm thickness).	
169.50	"		11.88	11.88	100.00	Halite; smoky-gray massive halite.	
174.22	"		4.72	4.72	100.00	Halite; light-brown ~ gray massive halite with anhydrite bands, 15~40° angle 15~45° to core.	
185.06	"		10.84	10.84	100.00	Halite; smoky-gray ~ gray massive halite, anhydrite bands angle 15 ~ 30° to core.	
186.00	"		0.94	0.94	100.00	Anhydrite; white gray massive halite and layere anhydrite,	

Result of Analysis

meter	H2O %	I.M %	Cl %	SO4 %	Ca %	Mg %	K %	Na %	NaCl %
108.78									
110.28	0.24	1.58	58.64	0.72	0.31	0.026	0.061	37.85	96.22
111.65	0.13	0.25	58.21	0.83	0.35	0.023	5.07	34.72	88.26
114.00	0.12	0.10	59.65	0.72	0.32	0.020	0.122	38.54	97.96
117.00	0.14	0.08	60.13	0.13	0.07	0.016	0.044	38.91	98.90
120.00	0.14	0.11	59.78	0.49	0.23	0.018	0.038	38.67	98.30
123.00	0.08	0.10	60.22	0.35	0.16	0.014	0.030	38.98	99.08
126.00	0.14	0.12	60.30	0.36	0.17	0.018	0.050	39.01	99.15
129.00	0.16	0.30	59.69	0.66	0.30	0.023	0.052	38.60	98.11
132.00	0.19	0.77	59.51	0.93	0.40	0.024	0.048	38.50	97.86
135.00	0.15	0.38	59.41	1.00	0.43	0.023	0.049	38.48	97.81
138.00	0.16	0.40	59.10	1.03	0.43	0.026	0.049	38.24	97.20
141.00	0.15	0.71	58.90	1.02	0.44	0.026	0.051	38.09	96.82
144.00	0.17	0.72	59.25	1.05	0.44	0.024	0.050	38.33	97.43
147.00	0.15	2.07	57.41	1.70	0.69	0.025	0.051	37.19	94.53
150.00	0.21	5.29	55.69	2.19	0.90	0.022	0.043	36.06	91.65
153.00	0.38	1.55	58.29	0.97	0.40	0.023	0.052	37.72	95.87
156.00	0.20	3.56	56.28	2.24	0.91	0.022	0.046	36.44	92.64
159.00	0.16	3.98	56.31	2.04	0.82	0.018	0.041	36.48	92.74
162.00	0.12	1.61	57.76	1.81	0.73	0.014	0.046	37.42	95.13
165.00	0.16	3.47	56.82	1.82	0.74	0.018	0.033	36.84	93.65
167.67	0.11	2.80	57.68	1.61	0.64	0.013	0.025	37.38	95.02
171.00	0.12	3.14	57.06	1.93	0.76	0.013	0.025	36.98	93.99
174.00	0.12	3.94	56.54	2.28	0.90	0.013	0.024	36.64	93.14
177.04	0.15	5.05	55.31	2.64	1.05	0.014	0.020	35.85	91.12
180.16	0.12	4.53	55.84	2.52	0.97	0.010	0.018	36.19	91.99
182.88	0.09	2.06	57.32	2.01	0.80	0.009	0.019	37.15	94.43
185.06	0.14	6.32	53.60	3.12	1.25	0.011	0.033	34.77	88.39
186.00									
188.90	1.47	0.19	58.90	0.76	0.32	0.56	2.39	35.72	90.80

		69.00		69.00	—	—	
		71.00		2.00	—	—	no core; cuttings contains anhydrite.
		72.32	PQ size	1.32	1.32	100.00	Anhydrite; white gray to gray massive anhydrite.
250	80						
300		96.30		23.98	23.98	100.00	Mudstone; reddish-brown mudstone, locally gray and gray clay. with glassy harite, veinlet and irregularity, as follows 82.30m ~ 82.70m, 83.70m ~ 84.35m, 88.05m ~ 88.35m, 89.15m ~ 89.45m, 89.90m ~ 90.10m, 92.00m ~ 92.60m, 93.65m ~ 94.20m, dotted gypsum in part.
		97.50	″	1.20	1.20	100.00	Sandy-Mudstone; greenish-gray laminated.
	100	101.30	″	3.80	3.80	100.00	Mudstone; reddish-brown.
350		108.78	″	7.48	7.48	100.00	Mudstone; dark greenish-gray
		110.28	″	1.50	1.50	100.00	Halite; mostly glassy, light-brown, with gray thin anhydrite band in part, bedding make 20~30° angles to core.
		111.55	″	1.27	1.27	100.00	
400	120	132.40	″	20.85	20.85	100.00	Sylvite~Halite; Sylvite; mostly cloudy-white colour about 15~20% in halite, halite; light brownish-gray colour. Halite; smoky gray, massive.
450	140	147.75	″	15.35	15.35	100.00	Halite; light-brown massive halite with gray anhydrite bands, (thickness 3~20mm, 5~18° angle to core).
500		157.62	″	9.87	9.87	100.00	Halite; light brown-gray massive halite, with anhydrite bands (less than 10mm thickness).
550	160	169.50	″	11.88	11.88	100.00	Halite; smoky-gray massive halite.
		174.22	″	4.72	4.72	100.00	Halite; light-brown ~ gray massive halite with anhydrite bands, 15~40° angle 15~45° to core.
600	180	185.06	″	10.84	10.84	100.00	Halite; smoky-gray ~ gray massive halite, anhydrite bands angle 15~30° to core.
		186.00	″	0.94	0.94	100.00	Anhydrite; white gray massive halite and layere anhydrite, at above boundary with halite makes irregular contact, at below, sharp contact.
650	200	200.28	″	14.28	14.28	100.00	Halite; light-brown massive halite with some carnallite layers, from 187.27m to 195.33m.
		20850	″	8.22	8.22	100.00	Mudstone; redish-brown softly mudstone, with carnallite veinlets and stringers (30~45° angle to core).
		210.30	″	1.80	1.80	100.00	Siltstone; greenish-gray colour.
		210.60	•	0.30	0.30	100.00	Carnallite; orange-red colour.
700		214.23	″	3.63	3.63	100.00	Halite; dark gray massive with carnallite bands.
		215.35	•	1.12	1.12	100.00	Carnallite; with gray massive halite.
		218.40	″	3.05	3.05	100.00	Tachyhydrite~Carnallite; yellowish ~ orange, with halite.
	220	219.00	″	0.60	0.60	100.00	
			″				Halite; smoky-gray, with carnallite layer.
		225.66		6.66	6.66	100.00	Halite; smoky gray massive halite.
750		230.91	″	5.25	5.25	100.00	Halite; smoky gray massive halite with anhydrite dots.
	240	240.47	″	9.56	9.56	100.00	Halite; smoky gray massive halite
		241.25	″	0.78	0.78	100.00	Anhydrite; white-gray massive halite.
794.0		241.40	•	0.15	0.15	100.00	Siltstone; greenish, hard.
		242.00	•	0.60	0.60	100.00	Siltstone; reddish, hard.

108.78									
110.28	0.24	1.58	58.64	0.72	0.31	0.026	0.061	37.85	96.22
111.65	0.13	0.25	58.21	0.83	0.35	0.023	5.07	34.72	88.26
114.00	0.12	0.10	59.65	0.72	0.32	0.020	0.122	38.54	97.96
117.00	0.14	0.08	60.13	0.13	0.07	0.016	0.044	38.91	98.90
120.00	0.14	0.11	59.78	0.49	0.23	0.018	0.038	38.67	98.30
123.00	0.08	0.10	60.22	0.35	0.16	0.014	0.030	38.98	99.08
126.00	0.14	0.12	60.30	0.36	0.17	0.018	0.050	39.01	99.15
129.00	0.16	0.30	59.69	0.66	0.30	0.023	0.052	38.60	98.11
132.00	0.19	0.77	59.51	0.93	0.40	0.024	0.048	38.50	97.86
135.00	0.15	0.38	59.41	1.00	0.43	0.023	0.049	38.48	97.81
138.00	0.16	0.40	59.10	1.03	0.43	0.026	0.049	38.24	97.20
141.00	0.15	0.71	58.90	1.02	0.44	0.026	0.051	38.09	96.82
144.00	0.17	0.72	59.25	1.05	0.44	0.024	0.050	38.33	97.43
147.00	0.15	2.07	57.41	1.70	0.69	0.025	0.051	37.19	94.53
150.00	0.21	5.29	55.69	2.19	0.90	0.022	0.043	36.06	91.65
153.00	0.38	1.55	58.29	0.97	0.40	0.023	0.052	37.72	95.87
156.00	0.20	3.56	56.28	2.24	0.91	0.022	0.046	36.44	92.64
159.00	0.16	3.98	56.31	2.04	0.82	0.018	0.041	36.48	92.74
162.00	0.12	1.61	57.76	1.81	0.73	0.014	0.046	37.42	95.13
165.00	0.16	3.47	56.88	1.82	0.74	0.018	0.033	36.84	93.65
167.67	0.11	2.80	57.68	1.61	0.64	0.013	0.025	37.38	95.02
171.00	0.12	3.14	57.06	1.93	0.76	0.013	0.025	36.98	93.99
174.00	0.12	3.94	56.54	2.28	0.90	0.013	0.024	36.64	93.14
177.04	0.15	5.05	55.31	2.64	1.05	0.014	0.020	35.85	91.12
180.16	0.12	4.53	55.84	2.52	0.97	0.010	0.018	36.19	91.99
182.88	0.09	2.06	57.32	2.01	0.80	0.009	0.019	37.15	94.43
185.06	0.14	6.32	53.60	3.12	1.25	0.011	0.033	34.77	88.39
186.00									
188.90	1.47	0.19	58.90	0.76	0.32	0.56	2.39	35.72	90.80
191.94	0.25	0.18	59.86	0.78	0.32	0.044	0.25	38.58	98.08
195.10	0.40	0.14	59.78	0.65	0.31	0.073	0.78	38.11	96.88
197.96	0.17	0.11	60.11	0.78	0.34	0.025	0.092	38.86	98.77
200.28	0.17	0.41	59.50	0.71	0.29	0.025	0.054	38.50	97.87
213.40									
214.23	0.84	1.83	58.71	0.53	0.36	0.18	0.33	37.37	95.00
216.70	17.48	0.44	46.20	0.10	2.16	5.62	4.56	14.20	36.11
218.02	19.67	2.34	42.09	0.16	2.19	6.84	5.48	8.69	22.10
218.96	2.85	0.54	57.65	0.45	0.26	0.80	2.14	34.53	87.78
222.00	0.28	1.53	58.62	1.33	0.55	0.045	0.042	37.90	96.35
224.93	0.10	1.11	58.38	1.46	0.59	0.012	0.014	37.84	96.19
227.95	0.07	1.42	58.19	1.43	0.58	0.010	0.013	37.72	95.88
230.91	0.08	0.78	58.89	1.05	0.43	0.006	0.010	38.17	97.02
234.05	0.05	0.19	59.68	0.64	0.27	0.004	0.007	38.68	98.32
236.96	0.05	0.67	59.24	0.89	0.37	0.002	0.005	38.37	97.53
240.47	0.04	0.80	59.46	0.94	0.38	0.002	0.005	38.55	97.99

LOG RECORD AND CHEMICAL ANALYSIS DATA

OF

DRILL HOLE RS·2·19

LOCATION	Bamnet - Narong
COORDINATE	
ELEVATION	about 204^{m}
BEARING	
INCLINATION	90°
DRILLING DATE	started Aug. 22. 1979
	completed Sep. 12. 1979
TOTAL DEPTH	246^{m}.40

Appx. I (b)

(SCALE 1:500)

Depth (meter)	Core Diameter	Symbols	Thickness	Obtained Core Length	Core Recovery	Geological Description	Formation
64.00			64.00	—	100.00	no core.	
96.35	PQ size	+ + +	32.35	32.35	100.00	Halite; mostly light-brown ~ honey colour massive halite, with dense anhydrite bands (1~3 cm in thickness).	
112.10	〃	+ + +	15.75	15.40	97.78	Halite; smoky ~ gray massive halite, with anhydrite bands.	
113.00	〃		0.90	0.90	100.00	Anhydrite; white gray massive, with anhydrite bands.	
129.90	〃	+ + +	16.90	16.90	100.00	Halite; mostly honey ~ light-brown colour massive halite, with anhydrite, less than 1 %, with carnallite stringers as follows - at 114.50 m, 115.25 m ~ 116.35 m, 122.10 ~ 122.65 m.	
132.22	〃	# # #	2.32	2.32	100.00	Carnallite; reddish carnallite with mudstone and halite as follows - 129.90 m ~ 130.18 m carnallite ~ 130.26 m mudstone ~ 130.32 m carnallite ~ 130.62 m halite ~ 132.22 m carnallite.	
133.15	〃		0.93	0.93	100.00		
139.00	〃		5.85	5.85	100.00		
141.10	〃		2.10	2.10	100.00	Mudstone; reddish-brown, with carnallite veins and halite.	
146.88	〃		5.78	5.78	100.00	Mudstone; dark-gray mudstone interbedded with reddish-brown mudstone	
148.59	〃	× × ×	1.71	1.71	100.00	Halite; with layer carnallite.	
150.20	〃		1.61	1.61	100.00	Carnallite ~ Halite;	
153.05	〃	× × ×	2.85	2.85	100.00	Halite; with carnallite layers.	
166.10	〃	× × ×	13.05	13.05	100.00	Halite; smoky gray massive, with white anhydrite bands (thickness; less than 1 cm).	
	〃	× × ×				Halite; smoky gray massive halite, with anhydrite stringers.	

Result of Analysis

meter	H_2O %	I.M %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	NaCl %
64.00									
67.85	0.26	1.62	57.48	1.86	0.82	0.030	0.051	37.13	94.39
70.35	0.32	2.56	56.45	2.38	1.03	0.030	0.053	36.47	92.71
72.38	0.28	4.88	55.14	2.35	1.01	0.033	0.050	35.62	90.56
75.00	0.25	3.43	56.01	2.28	0.96	0.031	0.054	36.24	92.12
78.00	0.20	1.21	57.96	1.52	0.69	0.024	0.051	37.49	95.29
81.00	0.21	2.62	56.72	2.19	0.91	0.024	0.044	36.70	93.30
84.15	0.19	2.06	56.70	2.33	0.95	0.029	0.033	36.71	93.32
87.20	0.20	1.82	57.42	2.02	0.86	0.020	0.030	37.15	94.44
90.25	0.23	2.97	56.45	2.08	0.88	0.026	0.036	36.52	92.84
93.30	0.20	2.20	56.90	2.11	0.88	0.23	0.039	36.82	93.57
96.35	0.31	7.04	54.19	1.98	0.80	0.020	0.034	35.11	89.24
99.40	0.26	4.20	55.67	2.26	0.88	0.018	0.025	36.07	91.70
102.45	0.29	7.20	53.79	2.12	0.83	0.020	0.022	34.86	88.61
105.50	0.24	5.40	55.59	1.60	0.65	0.017	0.018	36.02	91.57
108.55	0.29	7.12	54.22	1.89	0.77	0.020	0.031	35.12	89.28
112.00	0.17	5.47	54.18	3.12	1.31	0.019	0.042	35.05	89.11
113.00									
114.40	0.20	0.77	59.15	1.31	0.55	0.028	0.106	38.23	97.17
116.59	5.43	0.09	56.63	0.56	0.26	1.12	2.47	33.12	84.18
118.61	0.18	0.16	59.26	0.85	0.35	0.024	0.12	38.31	97.38
120.75	0.42	0.14	59.43	0.62	0.30	0.068	0.20	38.25	97.22
123.00	1.28	0.25	58.30	1.15	0.47	0.33	0.90	36.67	93.20
124.99	0.28	0.11	59.43	0.65	0.28	0.048	0.18	38.32	97.41
127.57	0.18	0.25	59.61	0.69	0.29	0.027	0.068	38.56	98.01
130.20	0.24	0.29	59.78	0.46	0.21	0.032	0.073	38.66	98.26
132.21	34.68	3.53	37.69	0.11	0.11	8.01	12.45	1.55	4.88
146.88									
148.60	0.44	2.03	58.64	0.44	0.25	0.057	0.12	37.79	96.06
150.60	12.67	0.52	51.98	0.20	0.13	2.82	6.30	24.64	62.64
153.33	4.11	0.20	57.50	0.24	0.13	0.91	2.18	34.24	87.05
157.35	0.07	1.18	58.73	1.12	0.47	0.010	0.036	38.03	96.68
160.40	0.08	0.98	58.48	1.32	0.54	0.009	0.017	37.90	96.35
163.45	0.09	0.88	58.67	1.18	0.49	0.008	0.014	38.02	96.64
166.85	0.11	2.51	57.55	2.02	0.83	0.008	0.014	37.35	94.94
169.55	0.23	5.75	55.25	2.46	0.94	0.018	0.017	35.74	90.86
172.60	0.15	3.66	56.92	2.02	0.83	0.011	0.015	36.89	93.77
175.65	0.10	1.47	58.73	1.12	0.46	0.012	0.018	38.07	96.76
178.70	0.10	1.71	58.47	1.07	0.47	0.009	0.018	37.85	96.21
181.75	0.09	1.66	58.54	0.94	0.39	0.009	0.017	37.92	96.40
184.80	0.07	1.22	58.91	1.07	0.43	0.008	0.015	38.18	97.06
187.85	0.07	1.35	58.82	1.15	0.46	0.008	0.017	38.13	96.92
190.90	0.09	1.87	58.56	1.04	0.43	0.007	0.015	37.95	96.46

250	80						
300		96.35		32.35	32.35	100.00	mostly light-brown ~ honey colour massive halite, with dense anhydrite bands (1~3 cm in thickness).
350	100	112.10	"	15.75	15.40	97.78	Halite; Smoky ~ gray massive halite, with anhydrite bands.
		113.00	•	0.90	0.90	100.00	Anhydrite; white gray massive, with anhydrite bands.
400	120	129.90	"	16.90	16.90	100.00	Halite; mostly honey ~ light-brown colour massive halite, with anhydrite, less than 1 %, with carnallite stringers as follows-at 114.50m, 115.25m ~ 116.35m, 122.10 ~ 122.65m.
		132.22	•	2.32	2.32	100.00	Carnallite; reddish carnallite with mudstone and halite as follows - 129.90m ~ 130.18m carnallite ~ 130.26m mudstone ~ 130.32m carnallite ~ 130.62m halite ~ 132.22m carnallite.
		133.15	•	0.93	0.93	100.00	
450	140	139.00	"	5.85	5.85	100.00	
		141.10	•	2.10	2.10	100.00	Mudstone; reddish-brown, with carnallite veins and halite.
		146.88	•	5.78	5.78	100.00	Mudstone; dark-gray mudstone interbedded with reddish-brown mudstone.
		148.59	•	1.71	1.71	100.00	Halite; with layer carnallite.
		150.20	•	1.61	1.61	100.00	Carnallite ~ Halite;
500		153.05	•	2.85	2.85	100.00	Halite; with carnallite layers.
550	160	166.10	"	13.05	13.05	100.00	Halite; smoky gray massive, with white anhydrite bands (thickness; less than 1cm).
600, 650	180, 200	210.00	"	43.90	43.90	100.00	Halite; Smoky gray massive halite, with anhydrite stringers.
700, 750, 800, 808.4	220, 240	246.40	"	36.40	36.40	100.00	Halite; mostly smoky massive halite, with anhydrite bands.

70.35	0.32	2.56	56.45	2.38	1.03	0.030	0.053	36.47	92.71
72.38	0.28	4.88	55.14	2.35	1.01	0.033	0.050	35.62	90.56
75.00	0.25	3.43	56.01	2.28	0.96	0.031	0.054	36.24	92.12
78.00	0.20	1.21	57.96	1.62	0.69	0.024	0.051	37.49	95.29
81.00	0.21	2.62	56.72	2.19	0.91	0.024	0.044	36.70	93.30
84.15	0.19	2.06	56.70	2.33	0.95	0.029	0.033	36.71	93.32
87.20	0.20	1.82	57.42	2.02	0.86	0.020	0.030	37.15	94.44
90.25	0.23	2.97	56.45	2.08	0.88	0.026	0.036	36.52	92.84
93.30	0.20	2.20	56.90	2.11	0.88	0.23	0.039	36.82	93.57
96.35	0.31	7.04	54.19	1.98	0.80	0.020	0.034	35.11	89.24
99.40	0.26	4.20	55.67	2.26	0.88	0.018	0.025	36.07	91.70
102.45	0.29	7.20	53.79	2.12	0.83	0.020	0.022	34.86	88.61
105.50	0.24	5.40	55.59	1.60	0.65	0.017	0.018	36.02	91.57
108.55	0.29	7.12	54.22	1.89	0.77	0.020	0.031	35.12	89.28
112.00	0.17	5.47	54.18	3.12	1.31	0.019	0.042	35.05	89.11
113.00									
114.40	0.20	0.77	59.15	1.31	0.55	0.028	0.106	38.23	97.17
116.59	5.43	0.09	56.63	0.56	0.26	1.12	2.47	33.12	84.18
118.61	0.18	0.16	59.26	0.85	0.35	0.024	0.12	38.31	97.38
120.75	0.42	0.14	59.43	0.62	0.30	0.068	0.20	38.25	97.22
123.00	1.28	0.25	58.30	1.15	0.47	0.33	0.90	36.67	93.20
124.99	0.28	0.11	59.43	0.65	0.28	0.048	0.18	38.32	97.41
127.57	0.18	0.25	59.61	0.69	0.29	0.027	0.068	38.56	98.01
130.20	0.24	0.29	59.78	0.46	0.21	0.032	0.073	38.66	98.26
132.21	34.68	3.53	37.69	0.11	0.11	8.01	12.45	1.55	4.88
146.88									
148.60	0.44	2.03	58.64	0.44	0.25	0.057	0.12	37.79	96.06
150.60	12.67	0.82	51.98	0.20	0.13	2.82	6.30	24.64	62.64
153.33	4.11	0.20	57.50	0.24	0.13	0.91	2.18	34.24	87.05
157.35	0.07	1.18	58.73	1.12	0.47	0.010	0.036	38.03	96.68
160.40	0.08	0.98	58.48	1.32	0.54	0.009	0.017	37.90	96.35
163.45	0.09	0.88	58.67	1.18	0.49	0.008	0.014	38.02	96.64
166.85	0.11	2.51	57.55	2.02	0.83	0.008	0.014	37.35	94.94
169.55	0.23	5.75	55.26	2.46	0.94	0.018	0.017	35.74	90.86
172.60	0.15	3.66	56.92	2.02	0.83	0.011	0.015	36.89	93.77
175.65	0.10	1.47	58.73	1.12	0.46	0.012	0.018	38.07	96.76
178.70	0.10	1.71	58.47	1.07	0.47	0.009	0.018	37.85	96.21
181.75	0.09	1.66	58.54	0.94	0.39	0.009	0.017	37.92	96.40
184.80	0.07	1.22	58.91	1.07	0.43	0.008	0.015	38.18	97.06
187.85	0.07	1.35	58.82	1.15	0.46	0.008	0.017	38.13	96.92
190.90	0.09	1.87	58.56	1.04	0.43	0.007	0.015	37.95	96.46
193.95	0.07	1.24	58.82	0.98	0.40	0.007	0.012	38.10	96.85
197.00	0.08	1.62	58.73	1.07	0.42	0.007	0.015	38.07	96.77
200.05	0.08	0.99	59.34	1.02	0.44	0.006	0.009	38.43	97.70
203.10	0.09	0.93	59.30	1.06	0.44	0.007	0.010	38.43	97.69
206.15	0.07	1.82	58.64	1.16	0.45	0.007	0.015	38.01	96.62
209.20	0.05	0.42	59.78	0.50	0.21	0.005	0.012	38.74	98.48
212.25	0.05	0.27	59.87	0.40	0.17	0.005	0.010	38.79	98.61
215.70	0.05	0.58	59.78	0.60	0.24	0.004	0.012	38.75	98.50
218.75	0.04	0.58	59.52	0.62	0.29	0.004	0.008	38.56	98.02
221.70	0.08	0.97	59.39	0.96	0.40	0.004	0.007	38.49	97.83
224.70	0.04	0.65	59.61	0.47	0.26	0.003	0.006	38.60	98.11
227.80	0.04	0.78	59.43	0.79	0.36	0.003	0.006	38.51	97.90
230.70	0.03	0.83	59.17	0.80	0.34	0.003	0.005	38.36	97.52
233.60	0.01	1.03	59.34	0.86	0.38	0.002	0.006	38.47	97.78
236.60	0.02	0.66	59.43	0.57	0.29	0.002	0.004	38.49	97.85
239.43	0.03	0.54	59.61	0.71	0.31	0.002	0.005	38.65	98.25
242.70	0.02	0.80	59.52	0.78	0.33	0.001	0.005	38.60	98.13
246.40	0.03	1.18	59.43	0.90	0.39	0.001	0.005	38.52	97.93

LOG RECORD AND CHEMICAL ANALYSIS DATA

OF

DRILL HOLE RS·2·20

LOCATION	Bamnet - Narong
COORDINATE	
ELEVATION	about 204^{m}
BEARING	
INCLINATION	90°
DRILLING DATE	started Sep. 23. 1979
	completed Oct. 20. 1979
TOTAL DEPTH	218^{m}.35

Appx. I (c)

(SCALE 1:500)

Depth (meter)	Core Diameter	Symbols	Thickness	Obtained Core Length	Core Recovery	Geological Description	Formation
3.00			3.00	—	—	Clay ; (Cuttings) mostly dark-gray clay and white sand.	
10.00			7.00	—	—	Sand ; (Cuttings) mostly yellowish-brown fine sand (unconsolidated).	
71.00						Sand ; (Cuttings) gray fine sandstone (unconsolidated).	
73.80	PQ size		63.80	18.80	29.47	Sand ; (Cuttings) dark gray ~ black sandstone (unconsolidated) with clayey sand.	
75.10			1.30	1.30	100.00	Anhydrite ; white gray layered anhydrite, bedding 40~50° to core axis.	
79.10			4.00	4.00	100.00	Halite ; with-gray ~ smoky-gray massive halite, with anhydrite stringers rarely.	
						Halite ; mostly transparent massive halite, white anhydrite stringers localy.	

Depth scale: feet 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600; meter 20, 40, 60, 80, 100, 120, 140, 160, 180

Result of Analysis

meter	H2O %	I.M %	Cl %	SO4 %	Ca %	Mg %	K %	Na %	NaCl %
75.10									
80.00	0.30	0.43	59.78	0.44	0.19	0.004	0.008	38.74	98.47
82.87	0.24	0.50	59.34	0.58	0.22	0.002	0.007	38.49	97.84
86.00	0.13	0.37	59.78	0.61	0.24	0.002	0.006	38.75	98.51
89.00	0.19	1.22	57.96	1.70	0.67	0.004	0.007	37.61	95.61
91.69	0.08	0.76	58.94	0.99	0.38	0.002	0.007	38.24	97.22
94.76	0.05	0.37	59.35	0.68	0.28	0.002	0.006	38.47	97.80
98.05	0.05	0.47	60.05	0.50	0.23	0.003	0.006	38.90	98.88
101.00	0.29	0.51	59.87	0.57	0.25	0.004	0.006	38.80	98.64
104.12	0.52	0.86	58.20	1.28	0.51	0.004	0.007	37.74	95.94
106.90	0.18	0.86	59.41	0.81	0.32	0.002	0.005	38.53	97.94
109.15	0.08	0.60	59.87	0.56	0.25	0.004	0.006	38.79	98.60
111.55	0.08	0.45	59.41	0.97	0.39	0.003	0.006	38.53	97.94
114.60	0.10	0.46	60.29	0.30	0.12	0.002	0.005	39.06	99.28
117.85	0.01	0.51	59.78	0.32	0.14	0.001	0.005	38.75	98.51
120.70	0.12	0.50	59.96	0.45	0.22	0.002	0.006	38.83	98.71
123.75	0.21	0.23	59.73	0.30	0.12	0.002	0.006	38.72	98.42
126.80	0.19	0.67	59.26	0.82	0.35	0.003	0.006	38.40	97.60
129.85	0.11	0.18	59.30	0.93	0.37	0.002	0.011	38.46	97.76
132.90	0.07	0.50	59.78	0.49	0.23	0.002	0.006	38.75	98.50
135.95	0.06	0.76	59.61	0.77	0.31	0.002	0.007	38.61	98.15
139.00	0.04	0.29	59.69	0.65	0.27	0.002	0.009	38.69	98.36
142.05	0.11	0.10	59.87	0.48	0.20	0.003	0.005	38.80	98.64
145.10	0.14	0.16	59.78	0.54	0.23	0.003	0.006	38.74	98.48
148.15	0.36	0.50	59.87	0.47	0.21	0.005	0.007	38.79	98.60
151.20	0.36	1.81	58.45	1.38	0.56	0.004	0.009	37.89	96.32
154.25	0.24	2.60	57.68	1.46	0.61	0.004	0.008	37.38	95.03
157.30	0.26	0.91	58.82	1.03	0.44	0.003	0.006	38.12	96.89
160.36	0.36	0.46	59.52	0.50	0.25	0.002	0.006	38.54	97.97
163.40	0.41	0.30	59.52	0.37	0.23	0.002	0.006	38.49	97.84
166.45	0.44	1.28	58.47	1.00	0.45	0.003	0.008	37.86	96.23
169.50	0.42	0.18	59.22	0.85	0.34	0.004	0.007	38.40	97.62
172.55	0.49	1.55	58.47	0.84	0.34	0.003	0.006	37.90	96.35
175.60	0.24	0.17	59.95	0.51	0.20	0.002	0.005	38.86	98.79
178.65	0.08	0.83	59.34	0.77	0.32	0.002	0.005	38.47	97.78
181.70	0.05	0.12	59.94	0.54	0.23	0.002	0.006	38.85	98.75
184.75	0.13	1.73	58.73	1.12	0.47	0.003	0.007	38.06	96.76

Depth scale (ft): 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 716.4

Depth scale (m): 40, 60, 80, 100, 120, 140, 160, 180, 200

71.00					Sand ; (Cuttings) dark gray ~ black sandstone (unconsolidated) with clayey sand.
73.80	PQ size	63.80	18.80	29.47	
75.10		1.30	1.30	100.00	Anhydrite ; white gray layered anhydrite, bedding 40~50° to core axis.
79.10		4.00	4.00	100.00	Halite ; with-gray ~ smoky-gray massive halite, with anhydrite stringers rarely.
					Halite ; mostly transparent massive halite, white anhydrite stringers localy.
216.61		137.51	135.40	98.47	
217.56		0.95	0.95	100.00	Anhydrite ; gray massive anhydrite.
218.10		0.54	0.54	100.00	Siltstone ; greenish gray (consolidated).
218.35		0.25	0.25	100.00	Sandstone ; reddish-brown (consolidated).

75.10									
80.00	0.30	0.43	59.78	0.44	0.19	0.004	0.008	38.74	98.47
82.87	0.24	0.50	59.34	0.58	0.22	0.002	0.007	38.49	97.84
86.00	0.13	0.37	59.78	0.61	0.24	0.002	0.006	38.75	98.51
89.00	0.19	1.22	57.96	1.70	0.67	0.004	0.007	37.61	95.61
91.69	0.08	0.76	58.94	0.99	0.38	0.002	0.007	38.24	97.22
94.76	0.05	0.37	59.35	0.68	0.28	0.002	0.006	38.47	97.80
98.05	0.05	0.47	60.05	0.50	0.23	0.003	0.006	38.90	98.88
101.00	0.29	0.51	59.87	0.57	0.25	0.004	0.006	38.80	98.64
104.12	0.52	0.86	58.20	1.28	0.51	0.004	0.007	37.74	96.94
106.90	0.18	0.86	59.41	0.81	0.32	0.002	0.005	38.53	97.94
109.15	0.08	0.60	59.87	0.56	0.25	0.004	0.006	38.79	98.60
111.55	0.08	0.45	59.41	0.97	0.39	0.003	0.006	38.53	97.94
114.60	0.10	0.46	60.29	0.30	0.12	0.002	0.005	39.06	99.28
117.85	0.01	0.51	59.78	0.32	0.14	0.001	0.005	38.75	98.51
120.70	0.12	0.50	59.96	0.45	0.22	0.002	0.006	38.83	98.71
123.75	0.21	0.23	59.73	0.30	0.12	0.002	0.006	38.72	98.42
126.80	0.19	0.67	59.26	0.82	0.35	0.003	0.006	38.40	97.60
129.85	0.11	0.18	59.30	0.93	0.37	0.002	0.011	38.46	97.76
132.90	0.07	0.50	59.78	0.49	0.23	0.002	0.006	38.75	98.50
135.95	0.06	0.76	59.61	0.77	0.31	0.002	0.007	38.61	98.15
139.00	0.04	0.29	59.69	0.65	0.27	0.002	0.009	38.69	98.36
142.05	0.11	0.10	59.87	0.48	0.20	0.003	0.005	38.80	98.64
145.10	0.14	0.16	59.78	0.54	0.23	0.003	0.006	38.74	98.48
148.15	0.36	0.50	59.87	0.47	0.21	0.005	0.007	38.79	98.60
151.20	0.36	1.81	58.45	1.38	0.56	0.004	0.009	37.89	96.32
154.25	0.24	2.60	57.68	1.46	0.61	0.004	0.008	37.38	95.03
157.30	0.26	0.91	58.82	1.03	0.44	0.003	0.006	38.12	96.89
160.36	0.36	0.46	59.52	0.50	0.25	0.002	0.006	38.54	97.97
163.40	0.41	0.30	59.52	0.37	0.23	0.002	0.006	38.49	97.84
166.45	0.44	1.28	58.47	1.00	0.45	0.003	0.008	37.86	96.23
169.50	0.42	0.18	59.22	0.85	0.34	0.004	0.007	38.40	97.62
172.55	0.49	1.55	58.47	0.84	0.34	0.003	0.006	37.90	96.35
175.60	0.24	0.17	59.95	0.51	0.20	0.002	0.005	38.86	98.79
178.65	0.08	0.83	59.34	0.77	0.32	0.002	0.005	38.47	97.78
181.70	0.05	0.12	59.94	0.54	0.23	0.002	0.006	38.85	98.75
184.75	0.13	1.73	58.73	1.12	0.47	0.003	0.007	38.06	96.76
187.80	0.11	1.12	58.73	1.12	0.46	0.003	0.007	38.06	96.76
190.85	0.11	0.94	58.73	1.10	0.47	0.003	0.006	38.05	96.72
193.90	0.22	1.12	58.50	1.19	0.51	0.003	0.006	37.91	96.35
197.00	0.20	0.56	59.15	0.84	0.36	0.002	0.006	38.33	97.44
200.05	0.15	1.88	58.03	1.41	0.58	0.004	0.007	37.62	95.62
203.10	0.09	0.58	59.51	0.55	0.24	0.002	0.005	38.56	98.03
206.15	0.10	0.63	59.25	0.84	0.34	0.002	0.006	38.41	97.63
209.20	0.14	0.26	59.69	0.62	0.26	0.002	0.006	38.69	98.36
212.25	0.09	0.78	59.70	0.78	0.30	0.003	0.005	38.70	98.38
216.61	0.23	1.06	59.42	0.80	0.31	0.003	0.005	38.52	97.91

LOG RECORD AND CHEMICAL ANALYSIS DATA

OF

DRILL HOLE RS·2·21

LOCATION	Bamnet – Narong
COORDINATE	
ELEVATION	about 204^{m}
BEARING	
INCLINATION	90°
DRILLING DATE	started Jan. 18, 1980
	completed Jan. 28, 1980
TOTAL DEPTH	260^{m}.90

Appx. I (d)

(geological data taken from DMR, APR. 1980)

(SCALE 1:500)

Depth (feet)	Depth (meter)		Core Diameter	Symbols	Thickness	Obtained Core Length	Core Recovery	Geological Description	Formation
50, 100, 150	20, 40	58.00						no core.	
200	60	68.72			10.72	—	—	Gypsum & Anhydrite ; 58.00m ~ 64.00m gypsum 64.00m ~ 68.20m anhydrite.	
250, 300, 350, 400, 450, 500, 550, 600	80, 100, 120, 140, 160, 180							Halite ; mostly transparent halite. from about 143.00m in depth, dark halite band increase. gypsum spots increase about 182.00m in depth.	

Result of Analysis

meter	H_2O %	I.M %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	NaCl %
69.00	-								
72.00	0.13	0.52	59.67	0.81	0.35	0.004	0.011	38.66	98.26
75.00	0.10	0.20	59.84	0.56	0.25	0.005	0.010	38.76	98.54
78.00	0.13	0.32	59.58	0.68	0.31	0.006	0.011	38.58	98.06
81.00	0.13	0.28	59.34	0.97	0.41	0.006	0.010	38.45	97.73
84.00	0.11	0.28	59.05	1.55	0.64	0.008	0.010	38.25	97.24
87.00	0.12	0.09	60.04	0.46	0.19	0.004	0.008	38.91	98.90
90.00	0.09	0.05	60.05	0.38	0.16	0.004	0.008	38.90	98.88
93.00	0.11	0.12	59.88	0.62	0.28	0.005	0.008	38.79	98.59
96.00	0.12	0.18	59.95	0.39	0.18	0.004	0.012	38.83	98.70
99.00	0.07	0.12	60.30	0.35	0.14	0.004	0.007	39.09	99.36
102.00	0.06	0.13	60.21	0.34	0.14	0.004	0.008	39.30	99.22
105.00	0.05	0.08	59.60	0.92	0.37	0.004	0.008	38.64	98.21
108.00	0.08	0.23	59.86	0.56	0.24	0.004	0.007	38.78	98.59
111.00	0.06	0.27	59.44	1.20	0.49	0.005	0.008	38.54	97.95
114.00	0.11	0.43	59.14	1.47	0.61	0.006	0.009	38.33	97.44
117.00	0.11	0.43	59.42	1.12	0.47	0.005	0.008	38.51	97.89
120.00	0.09	0.09	59.70	0.76	0.32	0.004	0.008	38.68	98.34
123.00	0.08	0.26	59.61	0.82	0.35	0.006	0.009	38.62	98.18
126.00	0.09	0.26	59.74	0.73	0.31	0.005	0.008	38.71	98.40
129.00	0.13	0.25	59.56	0.85	0.36	0.005	0.009	38.60	98.12
132.00	0.09	0.42	59.23	1.19	0.50	0.004	0.009	38.31	97.67
135.00	0.10	0.34	59.60	0.95	0.39	0.004	0.007	38.64	98.21
138.00	0.09	0.15	59.95	0.73	0.30	0.003	0.006	38.87	98.79
141.00	0.11	0.36	59.48	0.96	0.39	0.004	0.007	38.55	97.99
144.00	0.07	0.27	59.64	0.95	0.38	0.004	0.007	38.68	98.29
147.00	0.10	0.36	59.23	1.17	0.49	0.004	0.008	38.39	97.59
150.00	0.09	0.15	59.84	0.81	0.33	0.004	0.008	38.79	98.61
153.00	0.09	0.28	59.40	1.29	0.52	0.004	0.008	38.52	97.88
156.00	0.07	0.23	59.67	0.87	0.36	0.003	0.006	38.68	98.33
159.00	0.07	0.25	59.58	0.94	0.38	0.003	0.007	38.63	98.18
162.00	0.08	0.22	59.34	1.13	0.46	0.003	0.007	38.48	97.78
165.00	0.08	0.22	59.49	0.98	0.40	0.003	0.007	38.57	98.03
168.00	0.11	0.58	58.80	1.68	0.66	0.003	0.007	38.16	96.89
171.00	0.09	0.23	59.43	0.99	0.40	0.003	0.007	38.54	97.93
174.00	0.06	0.17	59.60	0.85	0.35	0.002	0.007	38.64	98.21
177.00	0.09	0.28	59.51	1.01	0.41	0.003	0.007	38.59	98.06
180.00	0.07	0.23	59.67	1.04	0.42	0.004	0.007	38.69	98.33
183.00	0.06	0.08	60.20	0.38	0.16	0.002	0.006	39.02	99.19
186.00	0.08	0.75	58.90	1.62	0.66	0.003	0.006	38.20	97.06
[illegible]	[illegible]								

Depth scale (ft): 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850

Depth scale (m): 80, 100, 120, 140, 160, 180, 200, 220, 240, 260

Depth (m)				Description
68.72	10.72	—	—	64.00^m ~ 68.20^m anhydrite.
				Halite ; mostly Transparent halite.
				from about 143.00^m in depth, dark halite band increase.
				gypsum spots increase about 182.00^m in depth.
258.70	189.98	189.98	100.00	
259.65	0.95	0.95	100.00	Anhydrite; massive anhydrite.
260.20				Siltstone ; green massive.
				Sandstone ; reddish brown massive fine sandstone.

69.00	-								
72.00	0.13	0.52	59.67	0.81	0.35	0.004	0.011	38.66	98.26
75.00	0.10	0.20	59.84	0.56	0.25	0.005	0.010	38.76	98.54
78.00	0.13	0.32	59.58	0.68	0.31	0.006	0.011	38.58	98.06
81.00	0.13	0.28	59.34	0.97	0.41	0.006	0.010	38.45	97.73
84.00	0.11	0.28	59.05	1.55	0.64	0.008	0.010	38.25	97.24
87.00	0.12	0.09	60.04	0.46	0.19	0.004	0.008	38.91	98.90
90.00	0.09	0.05	60.05	0.38	0.16	0.004	0.008	38.90	98.88
93.00	0.11	0.12	59.88	0.62	0.28	0.005	0.008	38.79	98.59
96.00	0.12	0.18	59.95	0.39	0.18	0.004	0.012	38.83	98.70
99.00	0.07	0.12	60.30	0.35	0.14	0.004	0.007	39.09	99.36
102.00	0.06	0.13	60.21	0.34	0.14	0.004	0.008	39.30	99.22
105.00	0.05	0.08	59.60	0.92	0.37	0.004	0.008	38.64	98.21
108.00	0.08	0.23	59.86	0.56	0.24	0.004	0.007	38.78	98.69
111.00	0.06	0.27	59.44	1.20	0.49	0.005	0.008	38.54	97.95
114.00	0.11	0.43	59.14	1.47	0.61	0.006	0.009	38.33	97.44
117.00	0.11	0.43	59.42	1.12	0.47	0.005	0.008	38.51	97.89
120.00	0.09	0.09	59.70	0.76	0.32	0.004	0.008	38.68	98.34
123.00	0.08	0.26	59.61	0.82	0.35	0.006	0.009	38.62	98.18
126.00	0.09	0.26	59.74	0.73	0.31	0.005	0.008	38.71	98.40
129.00	0.13	0.25	59.56	0.85	0.36	0.005	0.009	38.60	98.12
132.00	0.09	0.42	59.23	1.19	0.50	0.004	0.009	38.31	97.57
135.00	0.10	0.34	59.60	0.95	0.39	0.004	0.007	38.64	98.21
138.00	0.09	0.15	59.95	0.73	0.30	0.003	0.006	38.87	98.79
141.00	0.11	0.36	59.48	0.96	0.39	0.004	0.007	38.55	97.99
144.00	0.07	0.27	59.64	0.95	0.38	0.004	0.007	38.68	98.29
147.00	0.10	0.36	59.23	1.17	0.49	0.004	0.008	38.39	97.59
150.00	0.09	0.15	59.84	0.81	0.33	0.004	0.008	38.79	98.61
153.00	0.09	0.28	59.40	1.29	0.52	0.004	0.008	38.52	97.88
156.00	0.07	0.23	59.67	0.87	0.36	0.003	0.006	38.68	98.33
159.00	0.07	0.25	59.58	0.94	0.38	0.003	0.007	38.63	98.18
162.00	0.08	0.22	59.34	1.13	0.46	0.003	0.007	38.48	97.78
165.00	0.08	0.22	59.49	0.98	0.40	0.003	0.007	38.57	98.03
168.00	0.11	0.58	58.80	1.68	0.66	0.003	0.007	38.16	96.89
171.00	0.09	0.23	59.43	0.99	0.40	0.003	0.007	38.54	97.93
174.00	0.06	0.17	59.60	0.85	0.35	0.002	0.007	38.64	98.21
177.00	0.09	0.28	59.51	1.01	0.41	0.003	0.007	38.59	98.06
180.00	0.07	0.23	59.67	1.04	0.42	0.004	0.007	38.69	98.33
183.00	0.06	0.08	60.20	0.38	0.16	0.002	0.006	39.02	99.19
186.00	0.08	0.75	58.90	1.62	0.66	0.003	0.006	38.20	97.06
189.00	0.09	0.36	59.58	1.01	0.41	0.003	0.006	38.64	98.18
192.00	0.09	0.30	58.98	1.43	0.58	0.003	0.007	38.24	97.19
195.00	0.08	0.18	59.69	0.87	0.35	0.002	0.005	38.71	98.36
198.00	0.06	0.32	59.34	1.28	0.51	0.002	0.007	38.48	97.78
201.00	0.08	0.48	58.88	1.44	0.57	0.002	0.006	38.21	97.03
204.00	0.11	0.37	59.09	1.49	0.61	0.003	0.007	38.31	97.35
207.00	0.07	0.52	59.34	0.91	0.38	0.001	0.006	38.47	97.78
210.00	0.03	0.41	59.69	0.53	0.23	0.001	0.005	38.29	97.33
213.00	0.07	0.68	59.16	0.97	0.40	0.002	0.007	38.35	97.49
216.00	0.04	0.45	59.68	0.68	0.28	0.001	0.006	38.69	98.35
219.00	0.05	0.51	59.13	1.11	0.46	0.001	0.005	38.34	97.44
222.00	0.06	0.49	59.35	0.87	0.34	0.002	0.004	38.50	97.80
225.00	0.09	0.57	59.32	1.32	0.54	0.002	0.007	38.46	97.75
228.00	0.12	0.66	59.05	1.29	0.54	0.002	0.006	38.27	97.28
231.00	0.08	0.28	59.36	1.28	0.53	0.002	0.005	38.48	97.81
234.00	0.09	0.16	59.75	1.00	0.45	0.002	0.006	38.75	98.46
237.00	0.11	0.16	60.02	0.71	0.30	0.001	0.004	38.90	98.89
240.00	0.18	1.68	57.47	2.08	0.85	0.004	0.009	37.25	94.70
243.00	0.10	0.83	58.96	1.37	0.56	0.002	0.006	38.23	97.16
246.00	0.08	0.59	59.14	1.36	0.56	0.002	0.005	38.34	97.45
249.00	0.10	0.82	59.05	1.35	0.56	0.002	0.006	38.28	97.30
252.00	0.05	0.31	59.75	0.99	0.41	0.001	0.004	38.73	98.46
255.00	0.08	0.50	59.36	1.04	0.43	0.002	0.005	38.48	97.81
258.65	0.06	0.47	59.58	0.86	0.36	0.003	0.006	38.62	98.17

Appx. 2 (a) Chemical Analysis of Drill Hole, RS. 2. 18 (Main Components of Rock Salt)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
108.78 – 110.28	0	0.24	1.58	58.54	0.72	0.31	0.026	0.061	37.85	99.327	96.22	203
110.28 – 111.55	1	0.13	0.25	58.21	0.83	0.35	0.023	5.07	34.72	99.583	88.26	281
111.55 – 114.00	2	0.12	0.10	59.65	0.72	0.32	0.020	0.122	38.54	99.592	97.96	258
114.00 – 117.00	3	0.14	0.08	60.13	0.13	0.07	0.016	0.044	38.91	99.520	98.90	302
117.00 – 120.00	4	0.14	0.11	59.78	0.49	0.23	0.018	0.038	38.67	99.476	98.30	298
120.00 – 123.00	5	0.08	0.10	60.22	0.35	0.16	0.014	0.030	38.98	99.934	99.08	291
123.00 – 126.00	6	0.14	0.12	60.30	0.36	0.17	0.018	0.050	39.01	100.168	99.15	281
126.00 – 129.00	7	0.16	0.30	59.69	0.66	0.30	0.023	0.052	38.60	99.785	98.11	266
129.00 – 132.00	8	0.19	0.77	59.51	0.93	0.40	0.024	0.048	38.50	100.372	97.86	258
132.00 – 135.00	9	0.15	0.38	59.41	1.00	0.43	0.023	0.049	38.48	99.922	97.81	254
135.00 – 138.00	10	0.16	0.40	59.10	1.03	0.43	0.026	0.049	38.24	99.435	97.20	235
138.00 – 141.00	11	0.15	0.71	58.90	1.02	0.44	0.026	0.051	38.09	99.387	96.82	239
141.00 – 144.00	12	0.17	0.72	59.25	1.05	0.44	0.024	0.050	38.33	100.034	97.43	223
144.00 – 147.00	13	0.15	2.07	57.41	1.70	0.69	0.025	0.051	37.19	99.286	94.53	210
147.00 – 150.00	14	0.21	5.29	55.69	2.19	0.90	0.022	0.043	36.06	100.405	91.65	199

Appx. 2 (a) (continued)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
150.00 – 153.00	15	0.38	1.55	58.29	0.97	0.40	0.023	0.052	37.72	99.385	95.87	198
153.00 – 156.00	16	0.20	3.56	56.28	2.24	0.91	0.022	0.046	36.44	99.698	92.64	182
156.00 – 159.00	17	0.16	3.98	56.31	2.04	0.82	0.018	0.041	36.48	99.849	92.74	179
159.00 – 162.00	18	0.12	1.61	57.76	1.81	0.73	0.014	0.046	37.42	99.510	95.13	163
162.00 – 165.00	19	0.16	3.47	56.88	1.82	0.74	0.018	0.033	36.84	99.961	93.65	152
165.00 – 167.67	20	0.11	2.80	57.68	1.61	0.64	0.013	0.025	37.38	100.258	95.02	155
167.67 – 171.00	21	0.12	3.14	57.06	1.93	0.76	0.013	0.025	36.98	100.028	93.99	149
171.00 – 174.00	22	0.12	3.94	56.54	2.28	0.90	0.013	0.024	36.64	100.457	93.14	148
174.00 – 177.04	23	0.15	5.05	55.31	2.64	1.05	0.014	0.020	35.85	100.084	91.12	145
177.04 – 180.16	24	0.12	4.53	55.84	2.52	0.97	0.010	0.018	36.19	100.198	91.99	147
180.16 – 182.88	25	0.09	2.06	57.32	2.01	0.80	0.009	0.019	37.15	99.458	94.43	146
182.88 – 185.06	26	0.14	6.32	53.60	3.12	1.25	0.011	0.033	34.77	99.244	88.39	146
186.00 – 188.90	27	1.47	0.19	58.90	0.76	0.32	0.56	2.39	35.72	100.310	90.80	228
188.90 – 191.94	28	0.25	0.18	59.86	0.78	0.32	0.044	0.250	38.58	100.264	98.08	100
191.94 – 195.10	29	0.40	0.14	59.78	0.65	0.31	0.073	0.780	38.11	100.243	96.88	107

Appx. 2 (a) (continued)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
195.10 – 197.96	30	0.17	0.11	60.11	0.78	0.34	0.025	0.092	38.86	100.487	98.77	100
197.96 – 200.28	31	0.17	0.41	59.50	0.71	0.29	0.025	0.054	38.50	99.659	97.87	101
213.40 – 214.23	32	0.84	1.83	58.71	0.53	0.36	0.18	0.33	37.37	100.15	95.00	281
214.23 – 216.70	33	17.48	0.44	46.20	0.10	2.16	5.62	4.56	14.20	90.76	36.11	1,633
216.70 – 218.02	34	19.67	2.34	42.09	0.16	2.19	6.84	5.48	8.69	87.46	22.10	2,390
218.02 – 218.96	35	2.85	0.54	57.65	0.45	0.26	0.80	2.14	34.53	99.22	87.78	508
218.96 – 222.00	36	0.28	1.53	58.62	1.33	0.55	0.045	0.042	37.90	100.297	96.35	230
222.00 – 224.93	37	0.10	1.11	58.38	1.46	0.59	0.012	0.014	37.84	99.506	96.19	153
224.93 – 227.95	38	0.07	1.42	58.19	1.43	0.58	0.010	0.013	37.72	99.433	95.88	86
227.95 – 230.91	39	0.08	0.78	58.89	1.05	0.43	0.006	0.010	38.17	99.416	97.02	66
230.91 – 234.05	40	0.05	0.19	59.68	0.64	0.27	0.004	0.007	38.68	99.521	98.32	55
234.05 – 236.96	41	0.05	0.67	59.24	0.89	0.37	0.002	0.005	38.37	99.597	97.53	47
236.96 – 240.47	42	0.04	0.80	59.46	0.94	0.38	0.002	0.005	38.55	100.177	97.99	42

Appx. 2 (b) Chemical Analysis of Drill Hole, RS. 2. 19 (Main Components of Rock Salt)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
64.00 – 67.85	1	0.26	1.62	57.48	1.86	0.82	0.030	0.051	37.13	99.251	94.39	210
67.85 – 70.35	2	0.32	2.56	56.45	2.38	1.03	0.030	0.053	36.47	99.293	92.71	207
70.35 – 72.38	3	0.28	4.88	55.14	2.35	1.01	0.033	0.050	35.62	99.363	90.56	197
72.38 – 75.00	4	0.25	3.43	56.01	2.28	0.96	0.031	0.054	36.24	99.255	92.12	171
75.00 – 78.00	5	0.20	1.21	57.96	1.62	0.69	0.024	0.051	37.49	99.245	95.29	161
78.00 – 81.00	6	0.21	2.62	56.72	2.19	0.91	0.024	0.044	36.70	99.418	93.30	158
81.00 – 84.15	7	0.19	2.06	56.70	2.33	0.95	0.029	0.033	36.71	99.002	93.32	159
84.15 – 87.20	8	0.20	1.82	57.42	2.02	0.86	0.020	0.030	37.15	99.520	94.44	154
87.20 – 90.25	9	0.23	2.97	56.45	2.08	0.88	0.026	0.036	36.52	99.192	92.84	159
90.25 – 93.30	10	0.20	2.20	56.90	2.11	0.88	0.023	0.039	36.82	99.172	93.59	159
93.30 – 96.35	11	0.31	7.04	54.19	1.98	0.80	0.020	0.034	35.11	99.484	89.24	162
96.35 – 99.40	12	0.26	4.20	55.67	2.26	0.88	0.018	0.025	36.07	99.383	91.70	166
99.40 – 102.45	13	0.29	7.20	53.79	2.12	0.83	0.020	0.022	34.86	99.132	88.61	156
102.45 – 105.50	14	0.24	5.40	55.59	1.60	0.65	0.017	0.018	36.02	99.535	91.57	169
105.50 – 108.55	15	0.29	7.12	54.22	1.89	0.77	0.020	0.031	35.12	99.461	89.28	169

Appx. 2 (b) (continued)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
108.55 – 112.00	16	0.17	5.47	54.18	3.12	1.31	0.019	0.042	35.05	99.361	89.11	156
113.00 – 114.40	17	0.20	0.77	59.15	1.31	0.55	0.028	0.106	38.23	100.344	97.17	171
114.40 – 116.59	18	5.43	0.09	56.63	0.56	0.26	1.12	2.47	33.12	99.68	84.18	1,435
116.59 – 118.61	19	0.18	0.16	59.26	0.85	0.35	0.024	0.12	38.31	99.254	97.38	85
118.61 – 120.75	20	0.42	0.14	59.43	0.62	0.30	0.068	0.20	38.25	99.428	97.22	118
120.75 – 123.00	21	1.28	0.25	58.30	1.15	0.47	0.33	0.90	36.67	99.35	93.20	132
123.00 – 124.99	22	0.28	0.11	59.43	0.65	0.28	0.048	0.18	38.32	99.298	97.41	110
124.99 – 127.57	23	0.18	0.25	59.61	0.69	0.29	0.027	0.068	38.56	99.675	98.01	110
127.57 – 130.20	24	0.24	0.29	59.78	0.46	0.21	0.032	0.073	38.66	99.745	98.26	105
130.20 – 132.21	58	34.68	3.53	37.69	0.11	0.11	8.01	12.45	1.55	98.13	4.88	1,470
146.88 – 148.60	25	0.44	2.03	58.64	0.44	0.25	0.057	0.12	37.79	99.767	96.06	213
148.60 – 150.65	26	12.67	0.52	51.98	0.20	0.13	2.82	6.30	24.64	99.26	62.64	1,250
150.65 – 153.33	27	4.11	0.20	57.50	0.24	0.13	0.91	2.18	34.24	99.51	87.05	580
153.33 – 157.35	28	0.07	1.13	58.73	1.12	0.47	0.010	0.036	38.03	99.596	96.68	227
157.35 – 160.40	29	0.08	0.98	58.48	1.32	0.54	0.009	0.017	37.90	99.326	96.35	203

Appx. 2 (b) (continued)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
160.40 – 163.45	30	0.09	0.88	58.67	1.18	0.49	0.008	0.014	38.02	99.352	96.64	163
163.45 – 166.85	31	0.11	2.51	57.55	2.02	0.83	0.008	0.014	37.35	100.392	94.94	186
166.85 – 169.55	32	0.23	5.75	55.25	2.46	0.94	0.018	0.017	35.74	100.405	90.86	112
169.55 – 172.60	33	0.15	3.66	56.92	2.02	0.83	0.011	0.015	36.89	100.496	93.77	104
172.60 – 175.65	34	0.10	1.47	58.73	1.12	0.46	0.012	0.018	38.07	99.980	96.76	86
175.65 – 178.70	35	0.10	1.71	58.47	1.07	0.47	0.009	0.018	37.85	99.697	96.21	75
178.70 – 181.75	36	0.09	1.66	58.54	0.94	0.39	0.009	0.017	37.92	99.566	96.40	72
181.75 – 184.80	37	0.07	1.22	58.91	1.07	0.43	0.008	0.015	38.18	99.903	97.06	69
184.80 – 187.85	38	0.07	1.35	58.82	1.15	0.46	0.008	0.017	38.13	100.005	96.92	66
187.85 – 190.90	39	0.09	1.87	58.56	1.04	0.43	0.007	0.015	37.95	99.962	96.46	65
190.90 – 193.95	40	0.07	1.24	58.82	0.98	0.40	0.007	0.012	38.10	99.629	96.85	62
193.50 – 197.00	41	0.08	1.62	58.73	1.07	0.42	0.007	0.015	38.07	100.012	96.77	62
197.00 – 200.05	42	0.08	0.99	59.34	1.02	0.44	0.006	0.009	38.43	100.315	97.70	58
200.05 – 203.10	43	0.09	0.93	59.30	1.06	0.44	0.007	0.010	38.43	100.267	97.69	59
203.10 – 206.15	44	0.07	1.82	58.64	1.16	0.45	0.007	0.015	38.01	100.172	96.62	59

Appx. 2 (b) (continued)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
206.15 – 209.20	45	0.05	0.42	59.78	0.50	0.21	0.005	0.012	38.74	99.717	98.48	58
209.20 – 212.25	46	0.05	0.27	59.87	0.40	0.17	0.50	0.010	38.79	100.060	98.61	61
212.25 – 215.70	47	0.05	0.58	59.78	0.60	0.24	0.004	0.012	38.75	100.016	98.50	53
215.70 – 218.75	48	0.04	0.58	59.52	0.62	0.29	0.004	0.008	38.56	99.622	98.02	53
218.75 – 221.70	49	0.08	0.97	59.39	0.96	0.40	0.004	0.007	38.49	100.301	97.83	50
221.70 – 224.70	50	0.04	0.65	59.61	0.47	0.026	0.003	0.006	38.60	99.639	98.11	50
224.70 – 227.80	51	0.04	0.78	59.43	0.79	0.36	0.003	0.006	38.51	99.919	97.90	49
227.80 – 230.70	52	0.03	0.83	59.17	0.80	0.34	0.003	0.005	38.36	99.538	97.52	47
230.70 – 233.60	53	0.01	1.03	59.34	0.86	0.38	0.002	0.006	38.47	100.098	97.78	44
233.60 – 236.60	54	0.02	0.65	59.43	0.57	0.29	0.002	0.004	38.49	99.456	97.85	44
236.60 – 239.43	55	0.03	0.54	59.61	0.71	0.31	0.002	0.005	38.65	99.857	98.25	42
239.43 – 242.70	56	0.02	0.80	59.52	0.78	0.33	0.001	0.005	38.60	100.056	98.13	40
242.70 – 246.40	57	0.03	1.18	59.43	0.90	0.39	0.001	0.005	38.52	100.456	97.93	40

Appx. 2 (c) Chemical Analysis of Drill Hole, RS. 2. 20 (Main Components of Rock Salt)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
75.10 – 80.00	1	0.30	0.43	59.78	0.44	0.19	0.004	0.008	38.74	99.892	98.47	48
80.00 – 82.87	2	0.24	0.50	59.34	0.58	0.22	0.002	0.007	38.49	99.379	97.84	47
82.87 – 86.00	3	0.13	0.37	59.78	0.61	0.24	0.002	0.006	38.75	99.888	98.51	48
86.00 – 89.00	4	0.19	1.22	57.96	1.70	0.67	0.004	0.007	37.61	99.361	95.61	47
89.00 – 91.69	5	0.08	0.75	58.94	0.99	0.38	0.002	0.007	38.24	99.389	97.22	47
91.69 – 94.76	6	0.05	0.37	59.35	0.68	0.28	0.002	0.006	38.47	99.208	97.80	49
94.76 – 98.05	7	0.05	0.47	60.05	0.50	0.23	0.003	0.006	38.90	100.209	98.88	49
98.05 – 101.00	8	0.29	0.51	59.87	0.57	0.25	0.004	0.006	38.80	100.300	98.64	48
101.00 – 104.12	9	0.52	0.86	58.02	1.28	0.51	0.004	0.007	37.74	98.941	95.94	48
104.12 – 106.90	10	0.18	0.86	59.41	0.81	0.32	0.002	0.005	38.53	100.117	97.94	49
106.90 – 109.15	11	0.08	0.60	59.87	0.56	0.25	0.004	0.006	38.79	100.160	98.60	49
109.15 – 111.55	12	0.08	0.45	59.41	0.97	0.39	0.003	0.006	38.53	99.839	97.94	49
111.55 – 114.60	13	0.10	0.46	60.29	0.30	0.12	0.002	0.005	39.06	100.337	99.28	49
114.60 – 117.85	14	0.01	0.51	59.78	0.32	0.14	0.001	0.005	38.75	99.516	98.51	48
117.85 – 120.70	15	0.12	0.50	59.96	0.45	0.22	0.002	0.006	38.83	100.088	98.71	49

Appx. 2 (c) (continued)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
120.70 – 123.75	16	0.21	0.23	59.73	0.30	0.12	0.002	0.006	38.72	99.318	98.42	49
123.75 – 126.80	17	0.19	0.67	59.26	0.82	0.35	0.003	0.006	38.40	99.699	97.60	49
126.80 – 129.85	18	0.11	0.18	59.30	0.93	0.37	0.002	0.011	38.46	99.363	97.76	47
129.85 – 132.90	19	0.07	0.50	59.78	0.49	0.23	0.002	0.006	38.75	99.828	98.50	47
132.90 – 135.95	20	0.06	0.76	59.61	0.77	0.31	0.002	0.007	38.61	100.129	98.15	47
135.95 – 139.00	21	0.04	0.29	59.69	0.65	0.27	0.002	0.009	38.69	99.641	98.36	46
139.00 – 142.05	22	0.11	0.10	59.87	0.48	0.20	0.003	0.005	38.80	99.568	98.64	49
142.05 – 145.10	23	0.14	0.16	59.78	0.54	0.23	0.003	0.006	38.74	99.599	98.48	49
145.10 – 148.15	24	0.36	0.50	59.87	0.47	0.21	0.005	0.007	38.79	100.212	98.60	49
148.15 – 151.20	25	0.36	1.81	58.45	1.38	0.56	0.004	0.009	37.89	101.363	96.32	50
151.20 – 154.25	26	0.24	2.60	57.68	1.46	0.61	0.004	0.008	37.38	99.982	95.03	49
154.25 – 157.30	27	0.26	0.91	58.82	1.03	0.44	0.003	0.006	38.12	99.589	96.89	49
157.30 – 160.36	28	0.36	0.46	59.52	0.50	0.25	0.002	0.006	38.54	99.638	97.97	49
160.37 – 163.40	29	0.41	0.30	59.52	0.37	0.23	0.002	0.006	38.49	99.328	97.84	48
163.40 – 166.45	30	0.44	1.28	58.47	1.00	0.45	0.003	0.008	37.86	99.511	96.23	49

Appx. 2 (c) (continued)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
166.45 – 169.50	31	0.42	0.18	59.22	0.85	0.34	0.004	0.007	38.40	99.421	97.62	48
169.50 – 172.55	32	0.49	1.55	58.47	0.84	0.34	0.003	0.006	37.90	99.599	96.35	49
172.55 – 175.60	33	0.24	0.17	59.95	0.51	0.20	0.002	0.005	38.86	99.937	98.79	49
175.60 – 178.65	34	0.08	0.83	59.34	0.77	0.32	0.002	0.005	38.47	99.817	97.78	47
178.65 – 181.70	35	0.05	0.12	59.94	0.54	0.23	0.002	0.006	38.85	99.738	98.75	45
181.70 – 184.75	36	0.13	1.73	58.73	1.12	0.47	0.003	0.007	38.06	100.250	96.76	46
184.75 – 187.80	37	0.11	1.12	58.73	1.12	0.46	0.003	0.007	38.06	99.610	96.76	45
187.80 – 190.85	38	0.11	0.94	58.73	1.10	0.47	0.003	0.006	38.05	99.409	96.72	45
190.85 – 193.90	39	0.22	1.12	58.50	1.19	0.51	0.003	0.006	37.91	99.459	96.35	45
193.90 – 197.00	40	0.20	0.56	59.15	0.84	0.36	0.002	0.006	38.33	99.448	97.44	45
197.00 – 200.05	41	0.15	1.88	58.03	1.41	0.58	0.004	0.007	37.62	99.681	95.62	45
200.05 – 203.10	42	0.09	0.58	59.51	0.55	0.24	0.002	0.005	38.56	99.537	98.03	45
203.10 – 206.15	43	0.10	0.63	59.25	0.84	0.34	0.002	0.006	38.41	99.578	97.63	45
206.15 – 209.20	44	0.14	0.26	59.69	0.62	0.26	0.002	0.006	38.69	99.668	98.36	44
209.20 – 212.25	45	0.09	0.78	59.70	0.73	0.30	0.003	0.005	38.70	100.308	98.38	44

Appx. 2 (c) (continued)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
212.25 – 216.61	46	0.23	1.06	59.42	0.80	0.31	0.003	0.005	38.52	100.348	97.91	44

Appx. 2 (d) Chemical Analysis of Drill Hole, RS. 2. 21 (Main Components of Rock Salt)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
69.00 – 72.00	1	0.13	0.52	59.67	0.81	0.35	0.004	0.011	38.66	100.155	98.26	62
72.00 – 75.00	2	0.10	0.20	59.84	0.56	0.25	0.005	0.010	38.76	99.725	98.54	62
75.00 – 78.00	3	0.13	0.32	59.58	0.68	0.31	0.006	0.011	38.58	99.617	98.06	61
78.00 – 81.00	4	0.13	0.28	59.34	0.97	0.41	0.006	0.010	38.45	99.596	97.73	60
81.00 – 84.00	5	0.11	0.28	59.05	1.55	0.64	0.008	0.010	38.25	99.898	97.24	59
84.00 – 87.00	6	0.12	0.09	60.04	0.46	0.19	0.004	0.008	38.91	99.822	98.90	59
87.00 – 90.00	7	0.09	0.05	60.05	0.38	0.16	0.004	0.008	38.90	99.642	98.88	58
90.00 – 93.00	8	0.11	0.12	59.88	0.62	0.28	0.005	0.008	38.79	99.813	98.59	58
93.00 – 96.00	9	0.12	0.18	59.95	0.39	0.18	0.004	0.012	38.83	99.666	98.70	56
96.00 – 99.00	10	0.07	0.12	60.30	0.35	0.14	0.004	0.007	39.09	100.081	99.36	57
99.00 – 102.00	11	0.06	0.13	60.21	0.34	0.14	0.004	0.008	39.03	99.922	99.22	56
102.00 – 105.00	12	0.05	0.08	59.60	0.92	0.37	0.004	0.008	38.64	99.672	98.21	57
105.00 – 108.00	13	0.08	0.23	59.86	0.56	0.24	0.004	0.007	38.78	99.761	98.59	56
108.00 – 111.00	14	0.06	0.27	59.44	1.20	0.49	0.005	0.008	38.54	100.013	97.95	56
111.00 – 114.00	15	0.11	0.43	59.14	1.47	0.61	0.006	0.009	38.33	100.105	97.44	56

Appx. 2 (d) (continued)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
114.00 – 117.00	16	0.11	0.43	59.42	1.12	0.47	0.005	0.008	38.51	100.073	97.89	54
117.00 – 120.00	17	0.09	0.09	59.70	0.76	0.32	0.004	0.008	38.68	99.652	98.34	54
120.00 – 123.00	18	0.08	0.26	59.61	0.82	0.35	0.006	0.009	38.62	99.755	98.18	56
123.00 – 126.00	19	0.09	0.26	59.74	0.73	0.31	0.005	0.008	38.71	99.853	98.40	55
126.00 – 129.00	20	0.13	0.25	59.56	0.85	0.36	0.005	0.009	38.60	99.764	98.12	55
129.00 – 132.00	21	0.09	0.42	59.23	1.19	0.50	0.004	0.009	38.31	99.753	97.57	56
132.00 – 135.00	22	0.10	0.34	59.60	0.95	0.39	0.004	0.007	38.64	100.031	98.21	55
135.00 – 138.00	23	0.09	0.15	59.95	0.73	0.30	0.003	0.006	38.87	100.099	98.79	55
138.00 – 141.00	24	0.11	0.36	59.48	0.96	0.39	0.004	0.007	38.55	99.861	97.99	54
141.00 – 144.00	25	0.07	0.27	59.64	0.95	0.38	0.004	0.007	38.68	100.001	98.29	53
144.00 – 147.00	26	0.10	0.36	59.23	1.17	0.49	0.004	0.008	38.39	99.752	97.59	53
147.00 – 150.00	27	0.09	0.15	59.84	0.81	0.33	0.004	0.008	38.79	100.022	98.61	52
150.00 – 153.00	28	0.09	0.28	59.40	1.29	0.52	0.004	0.008	38.52	100.112	97.88	52
153.00 – 156.00	29	0.07	0.23	59.67	0.87	0.36	0.003	0.006	38.68	99.889	98.33	53
156.00 – 159.00	30	0.07	0.25	59.58	0.94	0.38	0.003	0.007	38.63	99.86	98.18	52

Appx. 2 (d) (continued)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
159.00 – 162.00	31	0.08	0.22	59.34	1.13	0.46	0.003	0.007	38.48	99.72	97.78	52
162.00 – 165.00	32	0.08	0.22	59.49	0.98	0.40	0.003	0.007	38.57	99.75	98.03	53
165.00 – 168.00	33	0.11	0.58	58.80	1.68	0.66	0.003	0.007	38.16	100.0	96.89	52
168.00 – 171.00	34	0.09	0.23	59.43	0.99	0.40	0.003	0.007	38.54	99.69	97.93	52
171.00 – 174.00	35	0.06	0.17	59.60	0.85	0.35	0.002	0.007	38.64	99.679	98.21	51
174.00 – 177.00	36	0.09	0.28	59.51	1.01	0.41	0.003	0.007	38.59	99.9	98.06	52
177.00 – 180.00	37	0.07	0.23	59.67	1.04	0.42	0.004	0.007	38.69	100.131	98.33	52
180.00 – 183.00	38	0.06	0.08	60.20	0.38	0.16	0.002	0.006	39.02	99.908	99.19	51
183.00 – 186.00	39	0.08	0.75	58.90	1.62	0.66	0.003	0.006	38.20	100.219	97.06	51
186.00 – 189.00	40	0.09	0.36	59.58	1.01	0.41	0.003	0.006	38.64	100.099	98.18	50
189.00 – 192.00	41	0.09	0.30	58.98	1.43	0.58	0.003	0.007	38.24	99.63	97.19	51
192.00 – 195.00	42	0.08	0.18	59.69	0.87	0.35	0.002	0.005	38.71	99.887	98.36	51
195.00 – 198.00	43	0.06	0.32	59.34	1.28	0.51	0.002	0.007	38.48	99.999	97.78	50
198.00 – 201.00	44	0.08	0.48	58.88	1.44	0.57	0.002	0.006	38.21	99.668	97.03	51
201.00 – 204.00	45	0.11	0.37	59.09	1.49	0.61	0.003	0.007	38.31	99.99	97.35	52

Appx. 2 (d) (continued)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
204.00 – 207.00	46	0.07	0.52	59.34	0.91	0.38	0.001	0.006	38.47	99.797	97.78	48
207.00 – 210.00	47	0.03	0.41	59.69	0.53	0.23	0.001	0.005	38.29	99.186	97.33	49
210.00 – 213.00	48	0.07	0.68	59.16	0.97	0.40	0.002	0.007	38.35	99.639	97.49	50
213.00 – 216.00	49	0.04	0.45	59.68	0.68	0.28	0.001	0.006	38.69	99.827	98.35	49
216.00 – 219.00	50	0.05	0.51	59.13	1.11	0.46	0.001	0.005	38.34	99.606	97.44	51
219.00 – 222.00	51	0.06	0.49	59.35	0.87	0.34	0.002	0.004	38.50	99.616	97.80	49
222.00 – 225.00	52	0.09	0.57	59.32	1.32	0.54	0.002	0.007	38.46	100.309	97.75	48
225.00 – 228.00	53	0.12	0.66	59.05	1.29	0.54	0.002	0.006	38.27	99.938	97.28	48
228.00 – 231.00	54	0.08	0.28	59.36	1.28	0.53	0.002	0.005	38.48	100.017	97.81	47
231.00 – 234.00	55	0.09	0.16	59.75	1.00	0.45	0.002	0.006	38.75	100.208	98.46	50
234.00 – 237.00	56	0.11	0.16	60.02	0.71	0.30	0.001	0.004	38.90	100.205	98.89	46
237.00 – 240.00	57	0.18	1.68	57.47	2.08	0.85	0.004	0.009	37.25	99.523	94.70	54
240.00 – 243.00	58	0.10	0.83	58.96	1.37	0.56	0.002	0.006	38.23	100.058	97.16	48
243.00 – 246.00	59	0.08	0.59	59.14	1.36	0.56	0.002	0.005	38.34	100.077	97.45	48
246.00 – 249.00	60	0.10	0.62	59.05	1.35	0.56	0.002	0.006	38.28	99.968	97.30	48

Appx. 2 (d) (continued)

Interval (m)	Sample No.	H_2O %	I.M. %	Cl %	SO_4 %	Ca %	Mg %	K %	Na %	Total %	NaCl %	Br ppm
249.00 – 252.00	61	0.05	0.31	59.75	0.99	0.41	0.001	0.004	38.73	100.245	98.46	48
252.00 – 255.00	62	0.08	0.50	59.36	1.04	0.43	0.002	0.005	38.48	99.897	97.81	49
255.00 – 258.65	63	0.06	0.47	59.58	0.86	0.36	0.003	0.006	38.62	99.959	98.17	48

Appx. 3 (a) Concentration of Heavy Metal in Rock Salt Samples (Drill-hole 2-18)

Interval (m)	Sample No.	Cd ppm	Cr ppm	Hg ppm	Fe ppm	Cu ppm	Zn ppm	Pb ppm	As ppm	V ppm	Mn ppm
108.78 – 109.71	18 – 0	0.00	0.35	0.00	224	10.6	1.3	0.7	1.20	1.10	16.31
135.00 – 138.00	10	0.00	0.32	0.00	13.0	2.7	1.6	1.1	0.01	0.07	0.09
165.00 – 167.67	20	0.00	0.70	0.00	15.4	4.6	2.0	1.8	0.18	0.03	0.31
195.10 – 197.96	30	0.00	0.64	0.00	18.3	7.1	1.4	0.7	0.22	0.08	0.31
230.91 – 234.05	40	0.00	0.30	0.00	16.0	2.5	1.3	0.5	0.03	0.07	0.53

Appx. 3 (b) Concentration of Heavy Metal in Rock Salt Samples (Drill-hole 2-19)

Interval (m)	Sample No.	Cd ppm	Cr ppm	Hg ppm	Fe ppm	Cu ppm	Zn ppm	Pb ppm	As ppm	V ppm	Mn ppm
64.00 – 67.85	19 – 1	0.00	0.23	0.00	17.7	1.0	1.7	0.6	0.06	0.07	0.62
93.30 – 96.35	11	0.00	0.19	0.00	13.3	4.8	0.7	0.3	0.09	0.04	0.35
120.75 – 123.00	21	0.00	0.43	0.00	18.1	11.7	1.8	0.6	0.10	0.04	0.26
163.45 – 166.85	31	0.00	0.75	0.00	12.3	4.1	1.2	0.6	0.20	0.06	0.22
193.95 – 197.00	41	0.00	0.63	0.00	10.1	2.2	1.7	0.3	0.14	0.02	0.48
224.70 – 227.80	51	0.00	0.68	0.00	10.7	1.9	2.1	0.7	0.25	0.10	0.62
130.20 – 132.21	58	0.00	0.01	0.00	938	4.0	2.0	0.6	0.06	1.74	4.24

Appx. 3 (c) Concentration of Heavy Metal in Rock Salt Samples
(Drill-hole 2-20)

Interval (m)	Sample No.	Cd ppm	Cr ppm	Hg ppm	Fe ppm	Cu ppm	Zn ppm	Pb ppm	As ppm	V ppm	Mn ppm
75.10 – 80.00	20 – 1	0.00	0.75	0.00	35.3	1.8	0.8	0.3	0.12	0.11	0.57
106.90 – 109.15	11	0.00	0.29	0.00	7.7	1.4	1.5	0.5	0.14	0.06	0.75
135.95 – 139.00	21	0.00	0.37	0.00	6.9	1.6	0.8	2.8	0.07	0.03	0.31
166.45 – 169.50	31	0.00	0.38	0.00	18.3	1.2	1.6	0.5	0.07	0.11	0.80
197.00 – 200.05	41	0.00	0.44	0.00	8.5	2.5	1.9	1.1	0.09	0.12	0.93

Appx. 4 (a) Chemical Analysis of Rock Salt Samples (Sample Collected by DMR) (RS.1.3)

Interval (ft)	Cl %	SO_4 %	Ca %	Mg %	Kg %	NaCl %
490 – 495	58.77	1.13	0.46	0.006	0.006	96.84
495 – 500	59.99	0.44	0.17	0.003	0.005	98.85
500 – 505	60.10	0.25	0.10	0.002	0.004	99.03
505 – 510	60.08	0.29	0.11	0.002	0.006	99.00
510 – 515	60.28	0.20	0.07	0.002	0.004	99.33
515 – 520	59.99	0.24	0.10	0.002	0.004	98.84
520 – 525	60.10	0.32	0.12	0.002	0.005	99.03
525 – 530	59.82	0.53	0.19	0.003	0.005	98.57
530 – 535	59.35	0.74	0.29	0.002	0.004	97.79
535 – 540	59.40	0.72	0.32	0.003	0.006	97.87

Appx. 4 (b) Chemical Analysis of Rock Salt Samples (Sample Collected by DMR) (RS.1.6)

Interval (ft)	Cl %	SO_4 %	Ca %	Mg %	Kg %	NaCl %
490 – 495	58.99	0.92	0.37	0.008	0.008	97.21
495 – 500	59.04	0.96	0.38	0.008	0.008	97.29
500 – 505	58.99	0.97	0.38	0.007	0.007	97.21
505 – 510	59.28	0.71	0.30	0.008	0.010	97.63
510 – 515	58.64	1.08	0.42	0.008	0.010	96.63
515 – 520	59.15	0.56	0.21	0.007	0.009	97.47
520 – 525	59.19	0.61	0.23	0.008	0.009	97.54
525 – 530	59.24	0.53	0.20	0.009	0.009	97.62
530 – 535	59.15	0.70	0.27	0.008	0.008	97.47
535 – 540	59.33	0.59	0.23	0.008	0.008	97.77

Appx. 4 (c) Chemical Analysis of Rock Salt Samples (Sample Collected by DMR) (RS.2.2)

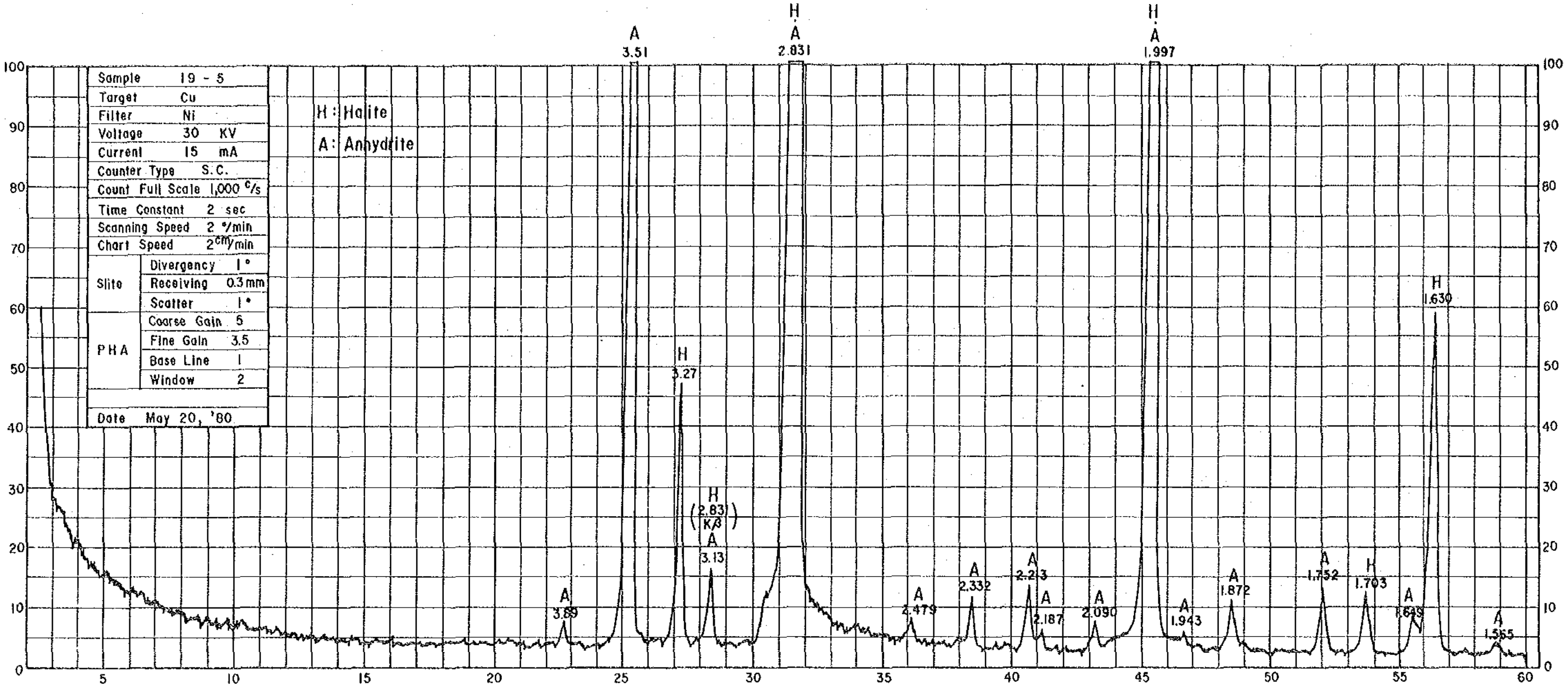
Interval (ft)	Cl %	SO_4 %	Ca %	Mg %	Kg %	NaCl %
490 – 495	58.79	0.72	0.28	0.010	0.011	98.87
495 – 500	58.33	1.22	0.47	0.012	0.013	96.11
500 – 505	58.65	0.88	0.34	0.011	0.011	96.64
505 – 510	58.96	0.81	0.35	0.009	0.010	97.09
510 – 515	58.37	0.85	0.35	0.011	0.012	96.14
515 – 520	59.06	1.06	0.43	0.010	0.012	97.29
520 – 525	58.71	1.25	0.50	0.010	0.011	96.73
525 – 530	58.91	1.04	0.43	0.010	0.011	97.02
530 – 535	59.46	0.84	0.33	0.006	0.009	97.98
535 – 540	59.11	0.97	0.38	0.007	0.009	97.40

Appx. 4 (d) Chemical Analysis of Rock Salt Samples (Sample Collected by DMR) (RS.2.5)

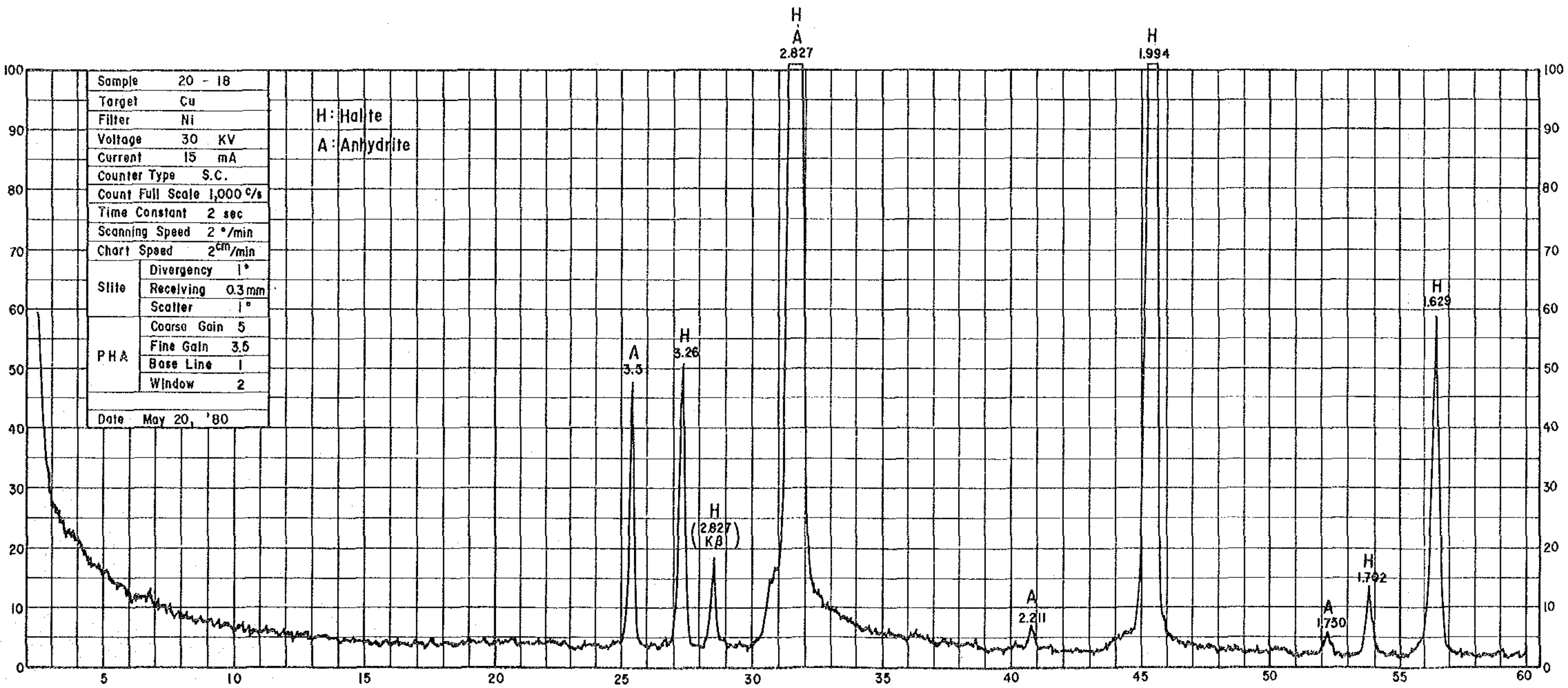
Interval (ft)	Cl %	SO_4 %	Ca %	Mg %	Kg %	NaCl %
491 – 496	59.40	0.53	0.23	0.008	0.010	97.82
496 – 501	59.44	0.40	0.15	0.003	0.007	97.95
501 – 506	59.20	0.65	0.26	0.006	0.009	97.55
506 – 511	59.15	0.68	0.28	0.006	0.009	97.45
511 – 516	59.97	0.25	0.10	0.003	0.006	98.82
516 – 521	59.48	0.48	0.18	0.004	0.007	98.01
521 – 526	59.79	0.34	0.13	0.005	0.007	98.52
526 – 531	59.61	0.34	0.14	0.004	0.006	98.21
531 – 536	59.27	0.64	0.31	0.004	0.007	97.52
536 – 541	59.06	0.74	0.32	0.004	0.008	97.27

Appx. 4 (e) Chemical Analysis of Rock Salt Samples (Sample Collected by DMR) (RS.2.9)

Interval (ft)	Cl %	SO_4 %	Ca %	Mg %	Kg %	NaCl %
491 – 496	59.06	0.84	0.32	0.004	0.008	97.32
496 – 501	59.82	0.39	0.15	0.003	0.006	98.57
501 – 506	58.70	0.87	0.36	0.004	0.007	96.72
506 – 511	59.75	0.49	0.19	0.003	0.006	98.46
511 – 516	59.68	0.53	0.21	0.003	0.006	98.34
516 – 521	58.93	0.79	0.56	0.009	0.007	97.09
521 – 526	59.59	0.60	0.45	0.007	0.006	97.58
526 – 531	59.88	0.46	0.32	0.008	0.006	98.26
531 – 536	59.70	0.49	0.35	0.006	0.006	97.93
536 – 541	59.84	0.29	0.22	0.006	0.005	98.28

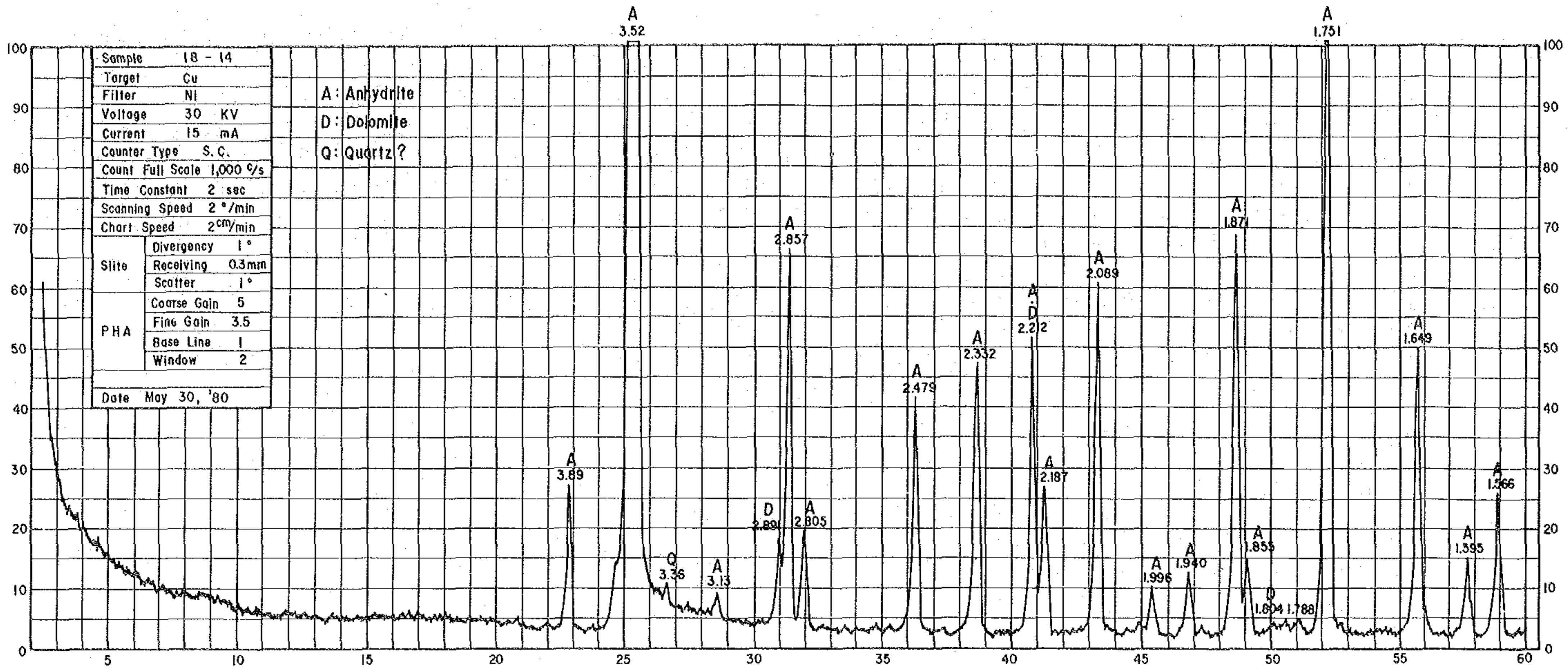


(a)
Sample 19-5

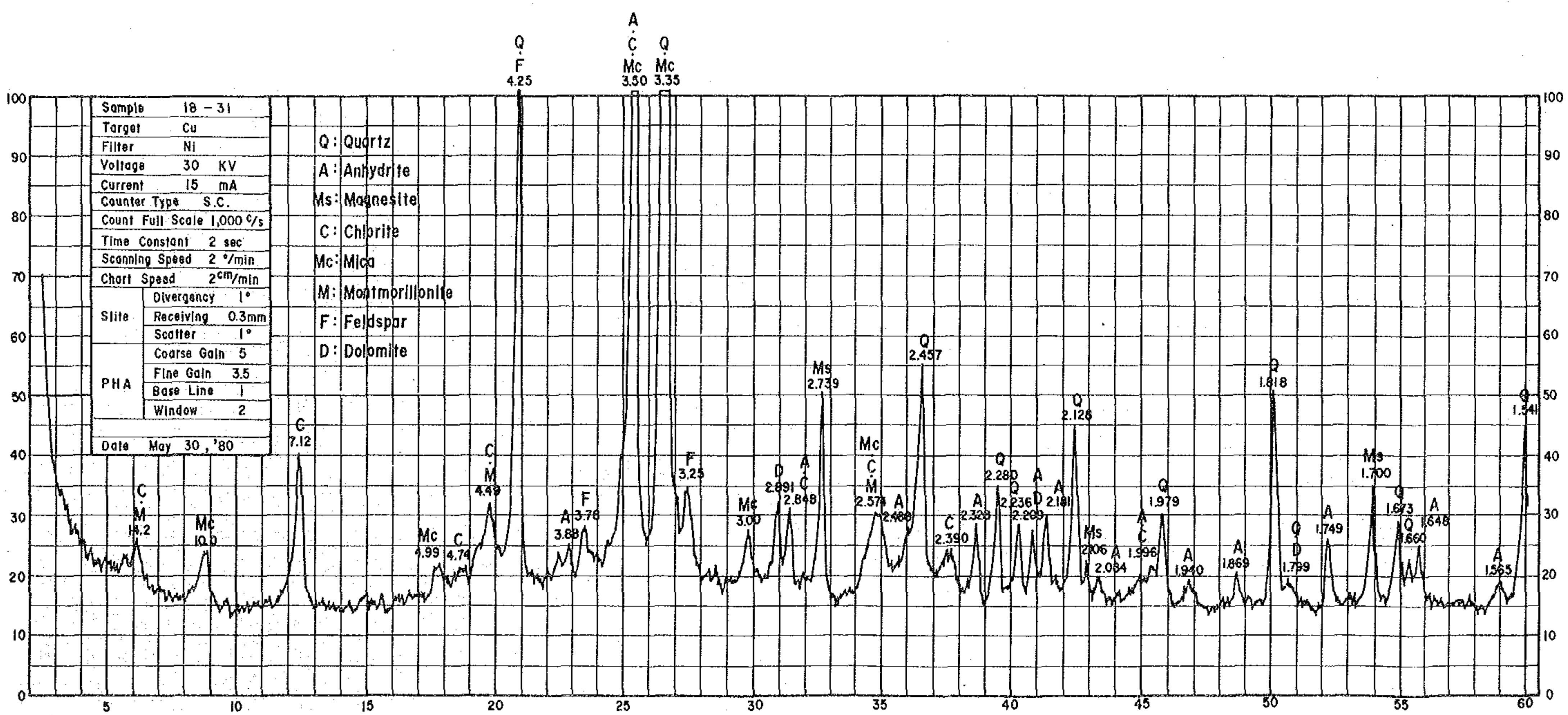


(b)
Sample 20-18

Appx. 5 X-ray diffraction chart of rock salt

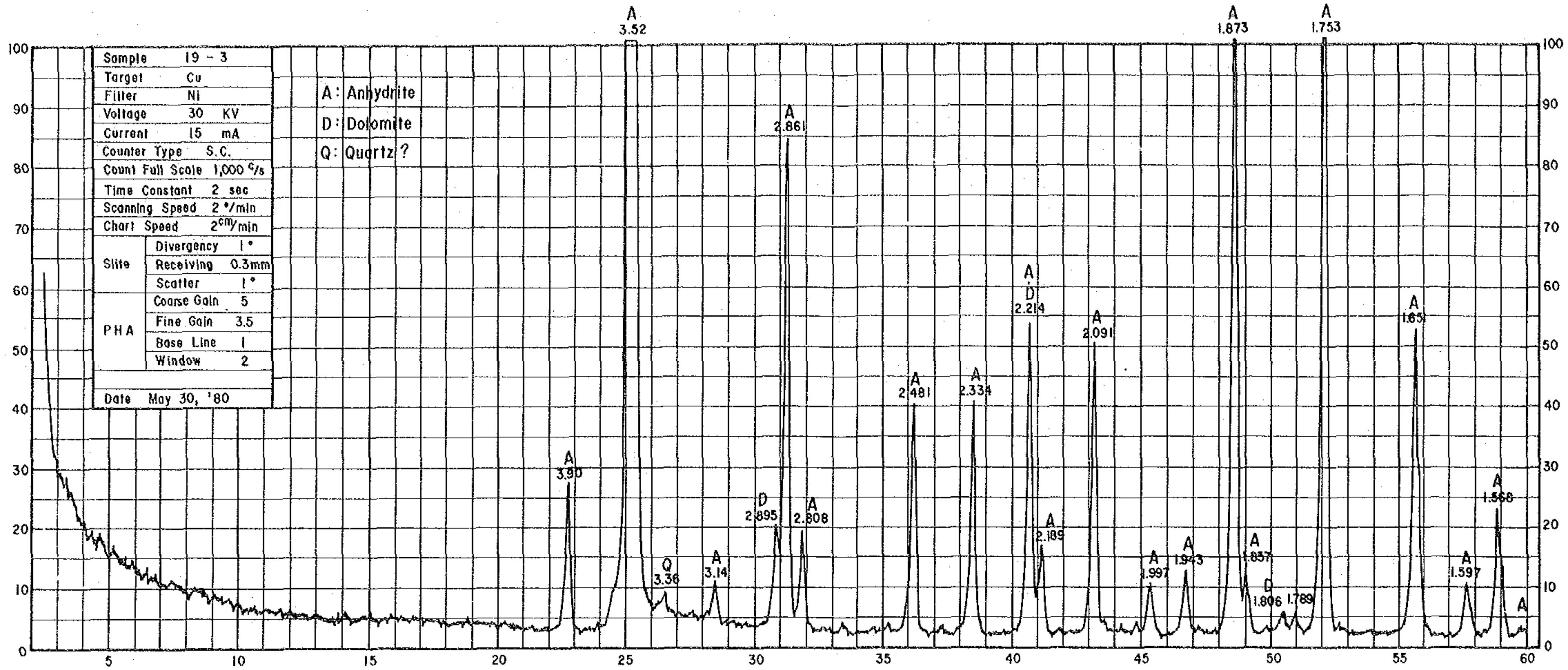


(a)
Sample 18-4

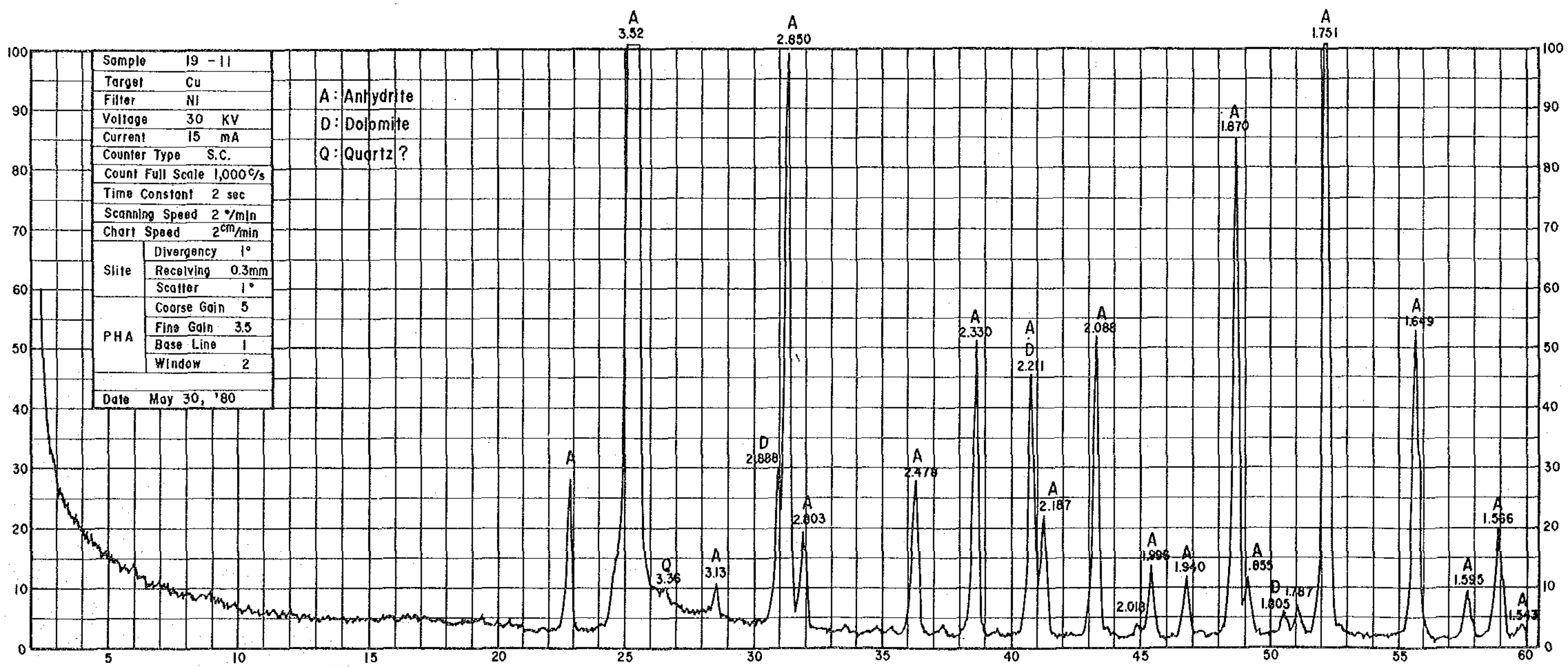


(b)
Sample 18-31

Appx. 6 X-ray diffraction chart of water insolubles

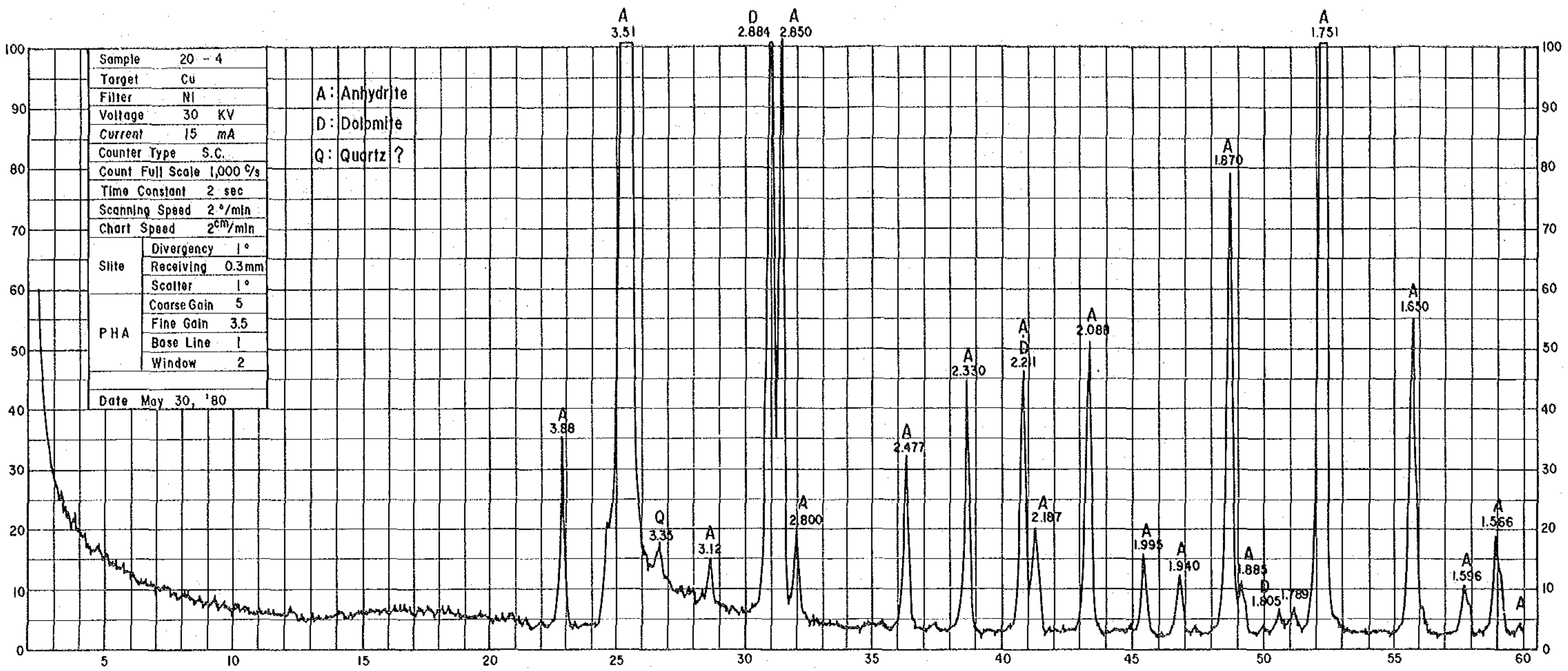


(c)
Sample 19-3



(d)
Sample 19-11

Appx.6 X-ray diffraction chart of water insolubles



(e)
Sample 20-4

Appx.6 X-ray diffraction chart of water insolubles

Summarized table of Rock Mechanics test Results

Test piece No.	Depth	Measurement			Uniaxial Comprssion test					Brazilian test			Creep test		Triaxial compression test			Remarks
		Density	P-wave velocity	Shore hardenss	Compression strength	Young's Modulus		Poisson's ratio		Sub No. of test piece	Density	Tensile strength	Elasticity	Viscosity	Axial strain	Confining pressure	strength	
		ρa	Vp	Hs	Sc	E (tan)	E (80%sec)	ν (tan)	ν (80%sec)		ρa	S_t	E_1 E_2 E_3	η_1 η_2 η_3	ϵ	σ_3	σ_1	
		g/cm³	x10³m/sec		kg/cm²	x10³kg/cm²	x10³kg/cm²				g/cm³	kg/cm²	x10⁴kg/cm²	kg-min/cm²	%	kg/cm²	kg/cm²	
18-3		2.2	4.5		297	45.8	11.4	0.28	0.54	18-3-1	2.2	17.8						Halite-B
4		2.2	4.4		315	34.4	12.9	0.33	0.57	4-1	2.2	20.0						"
										4-2	2.2	16.8						
													2.51	2.39×10^8				
6		2.2											4.5	8.7×10^6				
7		2.2	4.2	10.2±1.3	338	53.9	12.8	0.27	0.69	7-1	2.2	25.1						"
										7-2	2.2	18.3						"
8		2.2	4.4		343	41.2	10.6	0.32	0.57	8-1	2.2	17.8						"
										8-2	2.3	28.7						"
18		2.2	3.7		298	36.5	10.0	0.24	0.87	18-1	2.2	19.2						Halite-A
										18-2	2.2	18.5						in D-area
										18-3	2.0	15.6						"
19		2.2	3.8	9.7±1.2	320	51.0	9.68	0.40	0.40	19-1	2.2	20.5						"
										19-2	2.2	21.2						"
20		2.2	3.9		286	25.3	11.0	0.19	0.81	20-1	2.2	19.4						"
										20-2	2.2	21.0						"
21		2.2	3.7		303	20.7	8.66	0.24	0.68	21-1	2.2	20.1						"
										21-2	2.2	13.3						"
19-4		2.2	4.0		275	35.9	13.0	0.20	0.79	19-4-1	2.2	11.9						Halite-B
										4-2	2.2	19.6						"
5		2.2	3.7		284	28.6	8.94	0.44	0.72	5-1	2.2	25.1						"
										5-2	2.2	19.7						"
9		2.2	4.2	10.1±1.1	293	53.2	16.6	0.15	0.61	9-1	2.1	22.9						"
										9-2	2.3	18.1						"
10		2.2	4.1		261	59.7	16.3	0.23	0.67	10-1	2.2	25.1						"
											2.2	24.8						"
14		2.1											0.599	4.7×10^8				"
													1.57	1.00×10^7				
													8.66	5.04×10^6				
15		2.2	3.9		280	25.7	10.6	0.22	0.67	15-1	2.2	18.8						Halite-A
										15-2	2.2	17.8						in D-area

Appx. 7 (cont'd)

Summarized table of Rock Mechanics test Result

Test piece No.	Depth	Measurement			Uniaxial Comprssion test					Brazilian test			Creep test		Triaxial compression test			Remarks
		Density	P-wave velocity	Shore hardenss	Compression strength	Young's Modulus		Poisson's ratio		Sub No. of test piece	Density	Tensile strength	Elasticity	Viscosity	Axial strain	Confining pressure	strength	
		ρa	Vp	Hs	Sc	E (tan)	E (80%sec)	ν (tan)	ν (80%sec)		ρa	S_t	E_1 E_2 E_3	η_1 η_2 η_3	ϵ	σ_3	σ_1	
		g/cm^3	$x10^3 m/sec$		kg/cm^2	$x10^3 kg/cm^2$	$x10^3 kg/cm^2$				g/cm^3	kg/cm^2	$x10^4 kg/cm^2$	$kg\text{-}min/cm^2$	%	kg/cm^2	kg/cm^2	
16		2.2	3.4	9.6±2.0	303	27.6	9.68	0.26	0.72	16-1	2.0	12.4						"
17(1)		2.2	3.8		295	14.9	9.44											"
17(2)		2.2	3.7		300	21.3	10.7	0.32	0.73									"
18		2.2	3.8		290	25.1	10.6	0.27	0.57	18-1	2.2	15.1						"
										18-2	2.2	15.4						"
										18-3	2.1	18.3						"
20-5		2.2	3.9		198	20.3	10.7	0.31	1.0	220-5-1	2.3	11.1						Halite-A
				9.4±1.4						5-2	2.2	15.5						in S-area
6		2.2	3.6		191	20.0	13.4	0.30	0.95	6-1	2.1	10.9						"
										6-2	2.2	12.9						"
14		2.2	2.7		153	9.34	8.24	0.17	0.73	14-1	2.1	10.5						"
										14-2	2.2	10.8						"
15		2.2	2.2	10.3±2.0	186	8.02	5.23	0.50		15-1	2.2	12.3						"
										15-2	2.1	14.0						"
18		2.1	2.9		240	21.3	10.1	0.23	0.75	18-1	2.2	16.2						"
										18-2	2.2	21.6						"
19		2.2	3.6		245	30.6	13.9	0.16	0.77	19-1	2.2	17.6						"
										19-2	2.2	17.4						"
21-7		2.1	2.9		237	16.2	10.4	0.24	0.61	21-7-1	2.2	13.8			14.1	30	544	"
8		2.1	N.D.		191	8.4	3.8	0.06	0.52	8-1		12.1						"
										8-2		7.4						"
9		2.1	N.D.		135	6.4	3.3	0.23	0.73									"
10										10-1	2.2	13.8			7.86	20	451	"
										10-2	2.2	11.2			9.20	20	424	"
										10-3		14.2						"
										10-4		18.5						..
11-1		2.1	2.3		200	10.2	5.6	0.36	0.71	11-1		8.2	0.272	1.10×10^9				
													0.255	0.968×10^6				
12											2.2	10.5			9.09	20	448	"
13												8.3	0.407	1.65×10^9				"
													6.92	6.17×10^6				
14										14-2	2.2	12.7			25.2	70	822	"
15										15-1		10.0						"

Appx. 7 (cont'd)

Summarized table of Rock Mechanics test Result

Test piece No.	Depth	Measurement			Uniaxial Comprssion test					Brazilian test			Creep test		Triaxial compression test			Remarks
		Density	P-wave velocity	Shore hardenss	Compression strength	Young's Modulus		Poisson's ratio		Sub No. of test piece	Density	Tensile strength	Elasticity	Viscosity	Axial strain	Confining pressure	strength	
		ρa	Vp	Hs	Sc	E (tan)	E (80%sec)	ν (tan)	ν (80%sec)		ρa	S_t	E_1 E_2 E_3	η_1 η_2 η_3	ϵ	σ_3	σ_1	
		g/cm³	x10³m/sec		kg/cm²	x10³kg/cm²	x10³kg/cm²				g/cm³	kg/cm²	x10⁴kg/cm²	kg-min/cm²	%	kg/cm²	kg/cm²	
										15-2	2.2	9.7			11.03	20	463	”
16										16-1	2.2	13.1			25.4	70	817	”
										16-2		13.8						”
17										17-1	2.1	11.1			18.2	50	678	”
										17-2		11.7						”
										17-3		7.2						”
18										18		12.3						”
										18-2	2.1				18.6	50	646	”
19										19-1		8.6						”
										19-2		8.9						
										19-3		13.2						
20										20-1		13.8						”
										20-2	2.2	13.6			15.4	30	596	”
21										21-1		15.8						”
										21-2	2.2	6.5			13.2	30	514	”
										21-3		6.8						”
22										22		8.9						”
24		2.1	N.D.		247	13.2	6.6	0.32	0.51	24-1		14.8						”
25		2.1	2.3		265	13.9	7.8	0.09	0.45	25-1		11.2						”
										25-2		14.9						”
										25-3		12.8						”
32		2.1	2.6		254	14.2	8.0	0.17	0.43	32-1		13.6						”