NATIONAL ENERGY AUTHORITY

KINGDOM OF THAILAND

FEASIBILITY REPORT

NAM SAI YAI

No. 2 AND No. 3 HYDROELECTRIC PROJECTS

[APPENDIX]

SEPTEMBER 1968

OVERSEAS TECHNICAL COOPERATION AGENCY

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HYDROLOGICAL STUDY

A.1 RUN-OFF GAGING STATIONS AND METEOROLOGICAL STATIONS

In the project area, three streamflow gaging stations, two on the Sai Yai River and one on the Hanuman River downstream of the confluence of the Sai Yai and the Sai Noi, have been established. Water level reading is made by staff gage one to five times per day.

Wang Heo Gaging Station on the Sai Yai River, which has a catchment area of 295 sq.km, is in just as good a location as the proposed No.2 dam site. Discharge observation is made every other day by current meter, which has been in operation since January 1st, 1965.

Kao Keep Samut Gaging Station on the Sai Yai River, which has a catchment area of 420 sq.km, was located approximately 16 km below the Wang Heo Gaging Station from March 1964 until December 1964, but in January 1965, the station was moved to the Wang Heo Gaging Station.

Since difference in catchment area between Wang Heo and Kao Keep Samut is comparatively small, they will be considered to be interrelated gaging stations. Therefore, the catchment area of Kao Keep Samut is converted into that of Wang Heo and will be considered to come under Wang Heo.

Ban Sapanhin Gaging Station on the Hanuman River, which has a catchment area of 636 sq.km, is located at the Hanuman River downstream of the confluence with the Sai Yai and Sai Noi Rivers. Discharge observation is made every other day as at the Wang Heo by current meter which has been in operation since July, 1963.

For the development of the Prachantakham River, one gaging station on the Prachantakham River called Ban Takhro will be established in the near future.

Rainfall observations in the project area have daily records for a long period, and most of them are available.

Two new rainfall observatories, called R-2 and Ban Ta Sum, will be established in the near future at the locations shown in Fig. A-1.

The locations, catchment areas and existing data of gaging stations and rainfall observatories within the basin as well as related area are shown in Fig. A-1

A.2 CATCHMENT AREA OF PROPOSED SITES

The catchment areas of the proposed dam sites were estimated on the basis of a topographical map on a scale of 1:50,000 prepared by the Royal Thai Survey Department.

The catchment areas of the two proposed dam sites are as follows:

Proposed Dam Sites	Unit	Catchment Area	
		Total Area	Incremental Area
Nam Sai Yai No.2*1	sq.km	295	295
Nam Sai Yai No.2*2	sq.km	298	3 *3

*1 On Sai Yai River
*2 On Pla Kang River which is a tributary of the Sai Yai River
*3 Only Pla Kang River

A.3 VERIFICATION OF DATA

Verification of data was made by comparing simultaneous run-off data of the Wang Heo and the Ban Sapanhin.

The hydrographs of daily run-off of the two gaging stations from January 1964 through December 1967 are shown in Fig. A-1. It was revealed that the two hydrographs are similar except for one or two days and also that their quantitative and time-lag relations are quite reasonable. Fig. A-3 shows the rating curves which provide the basis for estimation by discharge of the Wang Heo in 1965, 1966 and 1967, and the Kao Keep Samut in 1964.

Fig. A-4 shows the rating curves which provide the basis for estimation of discharge of the Ban Sapanhin from 1964 through 1967. It can be seen that the Wang Heo, the Kao Keep Samut and the Ban Sapanhin Gaging Station rating curves have been made on the basis of an adequate number of direct measurements using a current meter and have been revised annualy to cope with river bed change due to flood flow. Moreover, since the plotting points in these figures generally are close together, these rating curves are considered to be very reliable. A correlation of monthly average specific run-off between Ban Sapanhin and Wang Heo from January 1964 through December 1967 is shown in Fig. A-5 (3). This correlation proves that there is a good correlation between the average monthly run-off of the two gaging stations, and verifies that this run-off is reliable.

Annual rainfall of Wang Heo, which was correlated on the basis of the annual rainfall in Bangkok from 1911 through 1952 and on the monthly rainfall of Kabinburi and Prachinburi from 1953 through 1967, is shown in Fig. A-5 (1). The average annual rainfall of Wang Heo from 1953 through 1967, from which estimation run-off at Wang Heo is possible, was 2,240 mm practically the same as from 1911 through 1967 which was 2,150 mm. Therefore, energy production estimated on the basis of run-off records from 1963 through 1967 can be considered to be the same as the energy production expected during the life of the project. It should be noted that the period from 1953 through 1967 which was used as the basis for studies on reservoir capacity includes a critical dry period of several years.

As the result of the abovementioned studies, it can be concluded that the run-off data of

Wang Heo and Ban Sapanhin Gaging Stations is very reliable, and the period from 1953 through 1967 is long enough to formulate a hydroelectric development scheme.

A.4 RIVER RUN-OFF

A.4-1 Method of Estimating Run-off

The equations for prediction of seasonal run-off from rainfall data have been developed on the basis of a paper entitled "prediction of seasonal run-off from rainfall" by Boonchob Kanchanalak, Hydrology Section, Survey Division, Royal Irrigation Department, September 1964.

According to this paper, the development of correlation has been derived as below.

The effective portion of basin rainfall which reflects run-off each month may be represented by the regression equation as follows.

$$Pe = aP_1 + bP_2 + cP_3 + dP_4 + \ldots\ldots\ldots\ldots + rP_n \qquad \text{(Formula A-1)}$$

where Pe is effective basin rainfall; $P_1, P_2, P_3 \ldots\ldots\ldots P_n$ are previous basin rainfall occuring at different periods; and a, b, c $\ldots\ldots\ldots$ r are weights of effectiveness.

For practical convernience, each period of previous rainfall adopted in this study is 15 days or the first half and the last half of a month.

In determining the weight of effectiveness, a trial and error method checking with the correlation line may be employed with success.

The seasonal monthly run-off are obtained multipling Pe by the run-off coefficient which is determined by the trial and error method with the correlation line as well as the weights of effectiveness.

The rainfall run-off correlations developed on the basis of rainfall and run-off data of Wang Heo and Ban Sapanhin from 1964 through 1967, employing the method as mentioned above, are as below:

(WANG HEO)

May: $Q_{May} = 0.10\,(0.5\,Pa16-30 + 1.0\,Pm1-15 + 0.5\,Pm16-31)$

June: $Q_{June-1} = 0.20\,(0.5\,Pm16-31 + 0.95\,Pj1-15 + 0.3\,Pj16-30)$
($Pe \leqq 400$mm)

: $Q_{June-2} = 0.25\,(0.5\,Pm16-31 + 0.95\,Pj1-15 + 0.4\,Pj16-30)$
($Pe > 400$ mm)

July: $Q_{July} = 0.40\,(0.05\,Pj\,1-15 + 0.6\,Pj16-30 + 0.9\,Pl1-15 + 0.4\,Pl\,16-31)$

Aug.: $Q_{Aug.-1} = 0.40\,(0.1\,Pl\,1-15 + 0.6\,Pl\,16-31 + 0.9\,Pg1-15 + 0.4\,pg16-31)$
($Pe \geqq 400$ mm)

$Q_{Aug.-2} = 0.60\,(0.1\,Pl\,1-15 + 0.6\,Pl16-31 + 0.9\,Pg1-15 + 0.4\,Pg16-31)$
($Pe > 400$ mm)

Sept.: $Q_{Sept.-1} = 0.45\,(0.1\,Pg1-15 + 0.6\,Pg16-31 + 0.75\,Ps1-15 + 0.20\,Ps16-30)$
($Pe \leq 400$ mm)

$Q_{Sept.-2} = 0.50\,(0.25\,Ps1-15 + 0.6\,Pg16-31 + 0.75\,Ps1-15 + 0.20\,Ps16-30)$
($Pe > 400$ mm)

Oct.: $Q_{Oct.} = 0.50\,(0.25\,Ps1-15 + 0.8\,Ps16-30 + 0.8\,Po1-15 + 0.3\,Po16-31)$

Nov.: $Q_{Nov.} = 0.45\,(0.20\,Po1-15 + 0.7\,Po16-31 + 1.0\,Pn1-30)$

(Formula A-2)

where: $Q_{May-Nov.}$ = Monthly run-off of Wang Heo in May - Nov. (mm)
Figures outside of parenthesis, such as 0.10, 0.20 .....0.45 = Run-off coefficient

Pa16 - 30 = Rainfall of Wang Heo from 16 to 30 in April (mm)
Pm1 - 15 = Rainfall of Wang Heo from 1 to 15 in May (mm)
Pm16 - 31 = Rainfall of Wang Heo from 16 to 31 in May (mm)
Pj1 - 15 = Rainfall of Wang Heo from 1 to 15 in June (mm)
Pj16 - 30 = Rainfall of Wang Heo from 16 to 30 in June (mm)
Pl 1 - 15 = Rainfall of Wang Heo from 1 to 15 in July (mm)
Pl 16 - 31 = Rainfall of Wang Heo from 16 to 31 in July (mm)
Pg1 - 15 = Rainfall of Wang Heo from 1 to 15 in Aug. (mm)
Pg16 - 31 = Rainfall of Wang Heo from 16 to 31 in Aug. (mm)
Ps1 - 15 = Rainfall of Wang Heo from 1 to 15 in Sept. (mm)
Ps16 - 30 = Rainfall of Wang Heo from 16 to 30 in Sept. (mm)
Po1 - 15 = Rainfall of Wang Heo from 1 to 15 in Oct. (mm)
Po16 - 31 = Rainfall of Wang Heo from 16 to 31 in Oct. (mm)
Pn1 - 30 = Rainfall of Wang Heo from 1 to 30 in Nov. (mm)

Values in parenthesis (Pe) = Effective basin rainfall represented by Wang Heo (mm)
Figures in front of Pe, such as 0.5, 1.0, 0.05 ..... 0.3 = Weight of effectiveness

(BAN SAPANHIN)

May: Q_{May} = 0.10 (0.5 Pa16 - 30 + 1.0 Pm1 - 15 + 0.5 Pm16 - 31)
June: Q_{June} = 0.30 (0.5 Pm16 - 31 + 0.95 Pj1 - 15 + 0.4 Pj16 - 30)
July: Q_{July} = 0.50 (0.05 Pj 1 - 15 + 0.6 Pj16 - 30 + 0.9 Pl 1 - 15 + 0.4 Pl 16 - 31)
Aug.: $Q_{Aug.-1}$ = 0.50 (0.1 Pl 1 - 15 + 0.6 Pl 16 - 31 + 0.9 Pg1 - 15 + 0.4 Pg16 - 31) (Pe ≦ 350 mm)
$Q_{Aug.-2}$ = 0.70 (0.1 Pl 1 - 15 + 0.6 Pl 16 - 31 + 0.9 Pg1 - 15 + 0.4 Pg16 - 31) (Pe > 350 mm)
Sept.: $Q_{Sept.}$ = 0.75 (0.1 Pg1 - 15 + 0.6 Pg16 - 31 + 0.75 Ps1 - 15 + 0.20 Ps16 - 30)
Oct.: $Q_{Oct.}$ = 0.55 (0.25 Ps1 - 15 + 0.8 Ps16 - 30 + 0.8 Po1 - 15 + 0.3 Po16 - 31)
Nov.: $Q_{Nov.}$ = 0.40 (0.2 Po1 - 15 + 0.7 Po16 - 31 + 1.0 Pn1 - 30)

(Formula A-3)

where: $Q_{May-Nov.}$ = Monthly run-off of Ban Sapanhin in May - Nov. (mm)
Figures outside of parenthesis, such as 0.10, 0.30 ..... 0.40 = Run-off coefficient

Pa16 – 30 = Average rainfall of Wang Heo and Ban Sapanhin from 16 to 30 in April (mm)
Pm1 – 15 = Average rainfall of Wang Heo and Ban Sapanhin from 1 to 15 in May (mm)
Pm16 – 31 = Average rainfall of Wang Heo and Ban Sapanhin from 16 to 31 in May (mm)
Ps 1 – 15 = Average rainfall of Wang Heo and Ban Sapanhin from 1 to 15 in June (mm)
Ps16 – 30 = Average rainfall of Wang Heo and Ban Sapanhin from 16 to 30 in June (mm)
Pl 1 – 15 = Average rainfall of Wang Heo and Ban Sapanhin from 1 to 15 in July (mm)
Pl 16 – 31 = Average rainfall of Wang Heo and Ban Sapanhin from 16 to 31 in July (mm)
Pg1 – 15 = Average rainfall of Wang Heo and Ban Sapanhin from 1 to 15 in Aug. (mm)
Pg16 – 31 = Average rainfall of Wang Heo and Ban Sapanhin from 16 to 31 in Aug. (mm)
Ps 1 – 15 = Average rainfall of Wang Heo and Ban Sapanhin from 1 to 15 in Sept. (mm)
Ps16 – 30 = Average rainfall of Wang Heo and Ban Sapanhin from 16 to 30 in Sept. (mm)
Po 1 – 15 = Average rainfall of Wang Heo and Ban Sapanhin from 1 to 15 in Oct. (mm)
Po16 – 31 = Average rainfall of Wang Heo and Ban Sapanhin from 16 to 31 in Oct. (mm)
Pn 1 – 30 = Average rainfall of Wang Heo and Ban Sapanhin from 1 to 30 in Nov. (mm)

Values in parenthesis (Pe) = Effective basin rainfall represented by average of Wang Heo and Ban Sapanhin. (mm)

Figures in fron of Pe, such as 0.5, 1.0, 0.95 ..... 0.3 = Weight of effectiveness

Formula 2, 3 was verified by the reliabilities with the correlation lines as shown in App. Fig. 4-6, which resulted in a good correlation between actual and correlated monthly run-off.

For the purpose of obtaining the effective basin rainfall above Wang Heo and Ban Sapanhin before 1964, two correlations of effective monthly rainfall: Wang Heo and Ban Sapanhin Vs. the average of Kabinburi and Prachinburi were developed as shown in Fig. A-7 (1), (2) and Formula A-4, 5.

$$Y-1 = 0.89X + 98 \quad (X + 30 \text{ mm}) \quad \text{..... (Formula A-4)}$$

$$Y-2 = 0.96X + 57 \quad (X + 50 \text{ mm}) \quad \text{..... (Formula A-5)}$$

where: Y – 1 = Effective monthly rainfall of Wang Heo (mm)
Y – 2 = Average effective monthly rainfall of Wang Heo and Ban Sapanhin (mm)
X = Average effective monthly rainfall of Kabinburi and Prachinburi (mm)

Run-off in dry season was estimated by employing the regression courves as shown in Fig A-7 and Formula A-6, 7.

	(Wang Heo)			(Ban Sapanhin)		
Dec.:	$Q_{Dec.}$	$= 0.30\ Q_{Nov.}$		$Q_{Dec.}$	$= 0.34\ Q_{Nov.}$	
Jan.:	$Q_{Jan.}$	$= 0.10\ Q_{Nov.}$		$Q_{Jan.}$	$= 0.16\ Q_{Nov.}$	
Feb.:	$Q_{Feb.}$	$= 0.08\ Q_{Nov.}$	(Formula A-6)	$Q_{Feb.}$	$= 0.12\ Q_{Nov.}$	(Formula A-7)
Mar.:	$Q_{Mar.}$	$= 0.06\ Q_{Nov.}$		$Q_{Mar.}$	$= 0.07\ Q_{Nov.}$	
Apr.:	$Q_{Apr.}$	$= 0.06\ Q_{Nov.}$		$Q_{Apr.}$	$= 0.05\ Q_{Nov.}$	

where: $Q_{Dec.}$ = Monthly Run-off in December

The comparison of actual monthly run-off and correlated monthly run-off, which were obtained according to the abovementioned methods, revealed that the correlated run-off have a considerable reliability as shown in Fig. A-9.

The monthly average run-off of Wang Heo and Ban Sapanhin Gaging Stations calculated employing the above methods are tabulated in A-1, 2.

A.4-2 Run-off at Proposed Dam Site

The run-off from 1953 through 1967 at the proposed dam sites will be calculated as follows:

(1) Run-off at dam sites in the basin above Wang Heo or at Wang Heo.

$$Qd = \frac{Ad}{Aw} \cdot Qw \quad \text{..... (Formula A-8)}$$

where: Qd = Monthly run-off of proposed dam site
Qw = Monthly run-off of Wang Heo as shown in A-1.
Ad = Catchment area of proposed dam site
Aw = Catchment area of Wang Heo as shown in A-1, 295 sq.km

(2) Run-off at dam sites in the basin between Wang Heo and Ban Sapanhin

$$Qd = \frac{Ad}{Ab - Aw} \cdot Qb - Qw \quad \text{..... (Formula A-9)}$$

where: Qd = Monthly run-off of proposed dam site
Qb = Monthly run-off of Ban Sapanhin as shown in A-2.
Qw = Monthly run-off of Wang Heo as shown in A-1.
Ad = Catchment area of proposed dam site
Ab = Catchment area of Ban Sapanhin as shown in A-2, 636 sq.km
Aw = Catchment area of Wang Heo as shown in A-1, 295 sq.km

A.5 FLOOD FLOW

The spillway flood discharge at No.2 proposed dam site was assessed by employing the following four methods.

1. Historical flood values
2. Enveloped curve flood in Thailand
3. Physical method
4. Statistical method

A.5.1 Historical Flood Values

Maximum peak flood ever recorded at Wan Heo was 180 c.m.s. at 13 hr on August 18th, in 1966, and the volume was 26 million cubic meters in 5 days from August 17 - 21, 1966.

A.5.2 Enveloped Curve Flood in Thailand

Two enveloped curves: as maximum enveloped curve flood-yield having a recurrent interval of 50 years for rivers in Thailand (Oct. 25, 1967) and a maximum flow for Southeast Asian rivers including rivers in Thailand (July 15, 1962) have been developed by Boonchob Kanchanalak who is Head in charge of the Hydrology Section of the Royal Irrigation Department.

Former Formula:

$$q50 - yr = 6.58\ A^{-0.282} \quad \text{..... (Formula A - 10)}$$

where:

q50 – yr = Specific yield of flood flow in a 50 year frequency (c.m.s. per sq.km)
A = Catchment area (sq.km)
(A<13,000 sq.km)

Latter Formula:

$$Qm = C\sqrt{A} \quad \text{..... (Formula A - 11)}$$

where:

Qm = Maximum flood flow (c.m.s.)
A = Catchment area (sq.km)
C = Coefficient
(8 – 40, for catchment area below 1,000 sq.km in Thailand)

According to the Formula A-10, the peak flood flow at a 50 year frequency at No.2 dam site, which has a catchment area of 295 sq.km, is 420 c.m.s.

On the other hand, calculated with Formula A-11 with a maximum coefficient of 40, the maximum flood flow is approximately 700 c.m.s.

A.5.3 Physical Method

The physical method gives the probable maximum precipitation that may occur if all factors contributing to the generation of precipitation were to reach their most critical condition simultaneously, from which the probable maximum flood can be obtained.

It is customary to consider dew point and wind speed as the factors which contribute to the generation of precipitation. Dew point is the amount of moisture that can be retained in a vertical column of air. It has been found by reliable research observations to vary almost directly according to surface dew point (air temperature). For the estimation of precipitable potential water, it is convenient to use diagrams prepared by the U.S. Weather Bureau. Wind movement is the measure required to replenish the air with the moisture that has been precipitated. The product of precipitable water in the atmosphere and wind speed is defined as "Moisture Inflow Index". Ordinarily, in the study of flood caused by monsoons, a maximum 12-hour persisting dew point and a maximum 14-hour average wind speed are used.

During a storm at the Nam Sai Yai No.2 and No.3 project sites, humidity is estimated to be close to 100%; therefore, air temperature can be used instead of dew point.

For wind speed, upper stratapheric wind speed observed in Bangkok and Korat was used.

The probable maximum precipitation in general can be calculated by the following formula:

$$P.M.P = D.D.A. \times \frac{M.I.I.\ for\ P.M.P.}{M.I.I.\ for\ H.S.} \quad \cdots\cdots\cdots\cdots \quad (Formula\ A - 12)$$

where P.M.P. Probable Maximum Precipitation

D.D.A. = Depth Duration Area (Effective basin rainfall above proposed dam site)

M.I.I. for P.M.P. = (Moisture Inflow Index for P.M.P.)
= (Precipitable water for maximum 12-hour persisting dew point (or air temperature for P.M.P.) x (Maximum 24-hour average wind speed for P.M.P.)

M.I.I. for H.S. = Moisture Inflow Index for Historical Storms
= [Precipitable water for maximum 12 hour persisting dew point (or air temperature) for H.S.) x (Maximum 24 hour average wind speed for H.S.]

Fig. A-10 shows the daily rainfall and 3 hour interval hydrograph of Wang Heo. 12 historical storms based on Fig. A-10 and shown in A-3 were studied.

The effective basin rainfall above the proposed No.2 dam site is represented by the maxi-

mum daily rainfall of Wang Heo as shown in A-3 as (1).

Base flow in A-3 as (5) was obtained on the basis of A-10.

Surface flow in column (2) of A-3 is defined as the flow greater than the base flow on the hydrograph.

Loss water in column (3) of A-3 is defined as the remainder which take the surface flow from the maximum daily rainfall.

For the purpose of prediction of the amount of loss water in maximum daily rainfall, the correlation between maximum daily rainfall and loss water as shown in Fig. A-11 was studied based on the 12 historical storms in A-3.

According to this figure, loss of water corresponding to maximum daily rainfall which has a value over 300 mm is constantly 150 mm, i.e. the maximum retention capacity in this basin is 150 mm.

A-3, column (6) a 12 hour persisting temperature dueing the storms was obtained for each storm from 3 hour interval temperature data at Prachinburi. To convert the temperature data at Prachinburi. To convert the temperature at Prachinburi to sea level (1,000 mmb), the saturated Adiabatic Laps rate, (temperature decrease at a rate of 0.6 degrees centigrade per 100 meter) was used.

Since the elevation at Prachinburi is around 12 m, the increment in temperature is about 0.1 degrees centigrade, Vd., column (7), A-3.

Precipitable potential water, column (8), A-3, corresponding to this temperature was obtained from Fig. A-12, assuming the barrier height of the catchment area to be about 700 m above mean sea level.

Upper wind speed shown in column (9) of A-3, was obtained on the basis of upper tropospheric wind speed data observed by radiosonde above Bangkok and Korat. The moisture inflow index for historical storms (10) is the product of precipitable water (8) multiplied by average upper wind speed (9).

The maximum moisture inflow index (11) was estimated to be 1640, which probably occurs in October as shown in Fig. A-12.

The maximizing factor (12) is the quotient of (11) divided by (10).

(13 - 1), maximum daily rainfall is the product of (11) multiplied by (12).

(13 - 2), probable maximum surface flow is obtained from (13 - 1) by using Fig. A-11.

(13 - 3), probable maximum total runoff is obtained by adding base flow (30 c.m.s. x 72

hours = 8 million cubic meter) to surface flow (13 - 2). The base flow of a probable maximum flood was assumed by adopting a past maximum value of 30 c.m.s.

(13 - 4), probable maximum peak flow is obtained by multiplying total runoff (13 - 3) by 13%, which is the ratio of peak flow to surface runoff derived from the hydrograph mentioned below.

The flood flow hydrograph was estimated from twelve past storms. Fig. A-14 shows the hydrograph of five typical past floods, and the flood shown as a heavy curve in this figure was adopted as the maximum probable flood flow.

From the result of the above studies, it was estimated that the probable maximum peak flood and flood volume are as follows:

Probable Maximum Peak Flood	780 c.m.s.
Prabable Maximum Flood Volume	71 million cu.m.

A.5.4 Statistical Method

In the statistical method, probability calculations should be made based on flood records covering many years. Since the runoff data in the project area is available for only four years, it is impossible to estimate maximum probable flood discharge based on the runoff data. Therefore, rainfall frequency was studied.

The rainfall data used in the study is shown in A-6 and explained below.

(1) From 1964 through 1968

Data actually observed at Wang Heo and Kao Keep Samut (for 1964)

(2) From 1952 through 1963

Data estimated at Wangh Heo on the basing of average daily rainfall at Kabinburi and Prachinburi.

In A-6, the greatest average rainfall at Kabinburi and Prachinburi during the same day was selected to estimate the maximum daily rainfall at Wang Heo, and the greatest average rainfall for each year was converted for Wang Heo, employing a correlation as shown in A-15.

The maximum daily rainfall arranged in the order of greatest volume is shown in A-7.

The probability calculation based on the maximum daily rainfall in A-7 was analysed according to Gumbel's Method with the computed formula $Rt = 67.6 + 30.8\ Yt$, and the Hazen - Foster Type 3 method with a computed variation coefficient of 0.41 and a skew factor coefficient of 3.58 as shown in Fig. A-16.

Probability rainfall was converted into peak flood and total flow valume, employing the following formula:

$$Qp = 0.13 (R24 - L) A + 30$$
$$Qv = (R24 - L) A + 8 \quad \ldots\ldots\ldots\ldots \text{(Formula A-13)}$$

where :

Qp = Peak flood of No.2 dam site (c.m.s.)
R_{24} = Maximum daily rainfall (mm)
L = Loss of Water (mm)
A = Catchment area of No.2 dam site, 295 sq.km
Qv = Total flood volume (10^6 cu.m.)
30.8 = Base flow

Note: This formula was made on the basis of the correlation between daily rainfall and loss of water as shown in Fig. A-11 and the flood hydrograph as shown in Fig. A-14.

The return period of the maximum daily rainfall, peak flood and total flood volume at Wang Heo are shown in A-8 and A-9.

A.5.5 Summary of the Results

The results are summarized as follows:

	Method	Peak flood (c.m.s.)	Total flood volume (10^6 cu.m.)
1.	Historical flood value Max. ever recorded flood (1966)	180	26
2.	Enveloped curve flood in Thailand	420 (50 year) 700 (Max.)	Not determined
3.	Physical method	780	71
4.	Statistical method 10,000-year return period	770	70

Estimates 3 and 4 are considered to concide with each other. Flood discharge of such an extremely rare frequency as once in 10,000 years will be regarded as practically the probable maximum. Therefore, for the flood to be used for the spillway design study, it was decided to adopt the result obtained physically in which the value is greatest.

The probable maximum flood hydrograph at Nam Sai Yai No.2 proposed dam site is as shown in Fig. A-17.

A.6 EVAPORATION

Average annual evaporation loss measured by Class A-Pan at Wang Heo from 1964 through 1967 was 1422 mm while the average annual precipitation and annual runoff at Wang Heo for a longer period were 2123 mm and 963 mm respectively. The runoff coefficient of the Sai Yai River is about 40% according to these values. Therefore, if the runoff coefficient for the proposed reservoir area is assumed to be equal to 40%,,the net balanced evaporation loss will be as follows.

Net balanced evaporation loss = Evapotranspiration - Evaporation loss from reservoir water surface
= Precipitation x (1 - 0.4) - 1442
= 2123 x 0.6 - 1442
= - 170

On the other hand, evapotranspiration calculated with the Blanney Criddle Formula with K as 0.6 was about 1260 mm. This value is considered to coincide well with the above value.

As above mentioned, although the net balanced evaporation loss is 170 mm, since there seemed to be other losses such as leakage from reservoir, 500 mm was adopted as the total loss from the reservoir caused by construction of reservoir for the sake of safety.

A.7 SEDIMENTATION

Since insufficient data is available concerning sedimentation in the project area, the sediment at the Nam Sai Yai No.2 Reservoir was estimated on the basis of past records of sedimentation observed in reservoirs in Japan.

Sedimentation of 52 reservoirs in Japan, with a total catchment area of over 60 square kilometers and storage capacity of over one million cu.m., was plotted in Fig. A-18, according to the geological characteristics, topographical feastures and rainfall in the catchment area. The geological characteristics of the catchment area are classified into three groups according to rock formation, namely:

A. Area consisting mainly of Paleozoic and Mesozoic sedimentary rocks
B. Area consisting mainly of acidic plutonic, hypabyssal and metamorphic rocks of granite and schist
C. Area consisting mainly of Cainozoic sedimentary rocks and effusive rocks.

Sedimentation for each group was plotted in Fig. A-18 as a function of the product of relief times maximum annual precipitation.

Relief is defined as an average of the Difference between the highest and lowest levels in each square grid, which is 16 sq.km. in area and was established by dividing up the entire catchment area.

As for the Nam Sai Yai No.2 catchment area, the basic values which govern sedimentation are as follows.

Geology:	"A" group
Maximum Annual Precipitation:	About 2670 mm
Relief:	About 120 m

(Maximum Annual Precipitation) x (relief) = 3×10^5 m. mm

Therefore, according to Fig. A-18, the sedimentation for a year is estimated as 300 cubic meters per sq.km, taking the volume in the upper range of A Group.

(Reference): Annual suspended sediment discharge measured at Wang Heo range from 40 to 60 tons per year per square kilometer.

TABLE A-1 Monthly Average Runoff at Wang Heo

(Unit c.m.s.)

YEAR	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar	Average
'53-'54	0.5	2.9	7.3	10.5	14.4	15.3	16.6	7.3	2.1	0.7	0.6	0.4	6.6
'54-'55	0.5	3.1	6.5	13.6	16.6	19.4	18.0	5.9	1.8	0.6	0.5	0.3	7.3
'55-'56	0.3	3.0	12.5	18.7	13.4	13.0	15.1	11.7	3.3	1.1	0.9	0.7	7.8
'56-'57	0.7	2.6	7.0	15.2	15.5	32.5	22.4	8.2	2.4	0.8	0.7	0.4	9.1
'57-'58	0.5	1.9	6.3	10.7	14.5	17.2	28.2	10.8	3.2	1.1	1.0	0.7	8.0
'58-'59	0.7	2.4	7.1	14.6	15.4	16.6	17.8	7.0	2.0	0.7	0.6	0.4	7.1
'59-'60	0.5	2.2	4.0	18.9	14.1	17.4	18.0	8.7	2.5	0.9	0.7	0.6	7.4
'60-'61	0.6	1.8	4.6	10.6	14.5	16.6	22.8	8.9	2.5	0.9	0.7	0.6	7.1
'61-'62	0.6	4.2	8.2	14.9	31.9	31.0	21.8	9.0	2.6	0.9	0.7	0.6	10.5
'62-'63	0.6	3.1	8.7	16.6	16.5	15.3	18.9	6.5	1.9	0.7	0.6	0.4	7.5
'63-'64	0.5	1.4	5.6	5.9	13.2	14.0	17.2	9.6	2.8	0.9	0.8	0.6	6.1
'64-'65	*0.2	*7.3	*5.9	*11.2	* 7.8	*12.4	*22.8	*6.4	*1.8	*0.8	*0.6	*0.6	6.5
'65-'66	*0.4	*1.9	*18.3	*12.7	*35.4	*34.0	*20.7	*7.0	*2.2	*0.6	*0.4	*0.2	11.2
'66-'67	*0.3	*4.9	* 8.2	*18.5	*30.5	*32.1	*16.9	*5.8	*1.4	*0.6	*0.4	*0.2	10.1
'67-'68	*0.4	*1.4	*10.3	*13.3	*22.3	*19.4	*21.2	*3.8	*1.1	*0.6	*0.4	*0.2	7.9
Average	0.5	2.9	8.1	13.7	19.5	20.0	19.9	7.8	2.2	0.8	0.6	0.5	8.0

Note:

(1) *Runoff actually observed

(2) Other values were estimated on the basis of Kabinburi and Prachinburi rainfalls

TABLE A-2 Monthly Average Runoff at Ban Sapanhin

(Unit c.m.s.)

YEAR	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Average
'53-'54	0.6	5.5	21.9	24.6	36.3	50.2	40.8	10.3	3.3	1.7	1.3	0.7	16.4
'54-'55	0.6	9.5	19.2	33.9	59.5	66.2	39.6	7.4	2.4	1.2	1.1	0.5	20.1
'55-'56	0.5	5.7	25.1	48.6	33.2	49.4	32.2	20.2	6.6	3.1	2.5	1.4	19.0
'56-'57	1.0	5.0	20.7	38.4	39.3	78.7	49.5	12.1	4.0	1.9	1.6	0.9	21.1
'57-'58	0.7	3.3	18.5	25.4	36.3	57.8	65.6	17.5	5.7	2.6	2.4	1.2	19.8
'58-'59	1.0	4.3	21.2	36.7	39.1	57.6	39.3	9.3	3.1	1.4	1.3	0.7	18.0
'59-'60	0.6	4.0	10.3	49.3	35.3	58.8	39.6	13.3	4.3	2.1	1.8	0.9	18.4
'60-'61	0.7	2.8	12.3	24.9	36.5	55.8	51.9	12.3	4.0	1.9	1.6	0.9	17.2
'61-'62	0.7	8.8	25.1	37.4	75.8	74.5	49.3	13.8	4.5	2.1	1.8	0.9	24.6
'62-'63	0.7	5.9	26.6	42.4	59.0	50.0	47.4	8.6	2.8	1.4	1.1	0.5	20.6
'63-'64	0.5	2.1	15.7	11.4	32.5	45.3	37.4	15.0	5.0	2.1	1.5	0.8	14.1
'64-'65	*0.5	*17.8	*14.7	*32.4	*27.9	*39.8	*68.4	*8.9	*2.4	*1.1	*1.1	*0.7	18.0
'65-'66	*0.5	* 2.2	*33.8	*24.2	*60.6	*82.9	*41.1	*9.3	*2.7	*1.6	*0.8	*0.4	21.6
'66-'67	*0.5	* 6.8	*20.7	*60.0	*85.7	*67.9	*29.3	*7.4	*2.2	*1.3	*0.8	*0.4	23.6
'67-'68	*0.6	* 4.7	*13.1	*38.7	*67.0	*57.7	*37.5	*6.2	*2.4	*1.2	*0.5	*0.4	19.2
Average	0.6	5.9	19.9	35.2	48.2	59.5	44.6	11.4	3.7	1.7	1.4	0.8	19.5

Note:

(1) * Runoff actually observed

(2) Other values were estimated on the basis of Kabinburi and Prachinburi rainfalls

TABLE A - 3 Storms used in driving probable maximum precipitation

Storms	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)				
													13-1	13-2		13-3	13-4
1. July 1965 3hr28th-13hr30th	62	9	53	44	8	27.4	27.5	84	7.8	655	1,640	2.50	155	39	1,066	20	170
2. Aug. 1965 0hr8th-19hr10th	39	19	20	80	28	29.0	29.1	99	6.0	594	1,640	2.76	108	22	599	15	110
3. Aug. 1965 7hr19th-7hr22nd	28	14	14	53	17	27.0	27.1	79	7.8	615	1,640	2.67	75	17	1,400	23	90
4. Sept. 1965 19hr14th-21hr16th	51	10	41	51	11	27.5	27.6	84	5.3	445	1,640	3.69	188	58	466	13	240
5. Sept. 1965 0hr19th-13hr22nd	58	25	33	97	19	26.0	26.1	74	5.9	436	1,640	3.77	218	78	2,131	31	310
6. July 1966 19hr26th-3hr29th	85	17	68	88	22	28.2	28.3	92	8.3	764	1,640	2.15	183	55	1,499	25	230
7. Aug. 1966 0hr17th-21hr21st	193	61	132	180	25	29.0	29.4	99	8.9	880	1,640	1.87	361	211	5,760	71	780
8. Sept. 1966 16hr8th-19hr11th	69	22	47	85	21	28.5	28.6	97	7.5	725	1,640	2.27	157	41	1,119	20	180
9. July 1967 21hr25th-7hr29th	45	14	31	43	20	-	-	-	-	-	-	-	-	-	-	-	-
10. Aug. 1967 19hr21st-16hr24th	33	8	25	50	20	-	-	-	-	-	-	-	-	-	-	-	-
11. Sept. 1967 19hr23rd-7hr27th	76	17	59	51	14	-	-	-	-	-	-	-	-	-	-	-	-
12. Oct. 1967 10hr2nd-21hr4th	50	24	26	100	30	-	-	-	-	-	-	-	-	-	-	-	-

Note: (1) Maximum Daily Rainfall (mm)
(2) Surface Flow (mm)
(3) Loss Water (mm)
(4) Peak Flow (c.m.s.)
(5) Base Flow (c.m.s.)
(6) 12-Hour Persisting Temperature at Prachinaburi (℃)
(7) Sea Level Temperature (℃)
(8) Precipitable Water (mm)
(9) Average Upper Wind Speed (m/sec)
(10) Moisture Inflow Index for Historical Storms = (8) x (9) (mm/sec)
(11) Maximum Moisture Inflow Index
(12) Maximizing Factor = (11)/(10)
(13) Probable Maximum
(13-1) : Maximum Daily Rainfall = (1) x (12) (mm)
(13-2) : Surface Flow = (13-1) - Loss Water (mm)
(13-3) : Total Runoff = Surface Flow + Base Flow
= (13-2) x 3 x 3,600 + 30 x 72 x 3,600 , (c.m.s. - 3hr, 10^6cu.m)
(13-4) : Peak Flow = (13-2) x 0.13 + 30 (c.m.s.)

TABLE A-4 Maximum 12-hour persisting temperature in Centigrade at Prachinburi

Year	Jul.	Aug.	Sept.	Oct.
1951	29.4	29.9	29.7	29.2
1952	29.7	29.0	29.1	28.9
1953	29.3	29.7	30.5	30.2
1954	30.3	29.8	29.2	29.4
1955	30.2	31.0	29.8	29.8
1956	30.3	29.4	29.8	29.6
1957	30.8	30.1	29.5	29.9
1958	29.7	31.2	29.7	29.8
1959	30.3	30.6	30.1	30.5
1960	31.2	30.3	30.4	30.3
1961	30.5	30.5	29.9	30.4
1962	30.4	30.4	30.4	30.6
1963	30.6	30.3	30.4	30.0
1964	31.2	29.9	30.8	30.2
1965	30.9	30.9	29.6	30.2
1966	30.5	30.1	30.5	30.6
Maximum	31.2	31.2	30.8	30.6
Maximum at 1000mb	31.3	31.3	30.9	30.7

TABLE A-5 Maximum upper wind speed in knot

Year	July			August			September			October		
	B.kk	Korat	Average	B.kk	Korat	Average	B.kk	Korat	Average	B.kk	Korat	Average
1955	17.6	16.3	17.0	16.2	13.5	14.8	16.0	10.7	13.4	23.0	17.3	20.2
	29.2	8.0	18.6	-	-	-	20.4	5.0	12.7	23.0	17.3	20.2
1956	18.0	15.5	16.8	15.3	20.5	17.9	17.2	16.5	16.9	19.0	30.5	24.8
	24.5	9.0	16.8	-	-	-	-	-	-	31.2	21.0	26.1
1957	21.8	21.5	21.7	17.3	25.3	21.3	4.5	12.3	8.4	11.6	24.5	18.1
	24.6	18.0	21.3	27.0	10.7	18.9	-	-	-	-	-	-
1958	22.8	17.5	20.2	19.8	9.5	14.7	17.2	9.2	13.1	14.2	9.0	11.6
	27.4	11.0	19.2	19.8	9.5	14.7	-	-	-	-	-	-
1959	14.2	13.7	14.0	23.4	18.5	21.0	18.0	15.0	16.5	14.2	11.7	13.0
	22.5	9.5	16.0	24.8	17.0	20.9	20.1	11.3	15.7	-	-	-
1960	13.2	15.5	14.4	16.4	19.0	17.7	13.0	11.0	12.0	14.8	9.0	11.9
	-	-	-	20.8	16.5	18.7	17.2	7.0	12.1	-	-	-
1961	20.4	26.5	23.5	15.8	25.5	20.7	19.6	17.5	18.6	13.4	16.5	15.0
	23.6	19.5	21.6	23.6	12.7	18.2	-	-	-	-	-	-
1962	13.8	13.7	13.8	11.4	20.0	15.7	15.0	15.0	15.0	10.6	13.5	12.1
	25.8	4.3	15.1	23.8	8.0	15.9	22.4	2.5	12.5	26.0	12.3	19.2
1963	24.6	16.7	20.7	13.8	16.5	15.2	12.4	27.7	20.1	13.8	17.7	15.8
	24.6	16.7	20.7	24.3	7.8	16.1	22.8	20.0	21.4	16.8	15.0	15.9
1964	9.8	16.5	13.2	15.6	22.5	19.1	22.0	18.5	20.3	14.6	18.0	16.3
	18.2	14.5	16.4	-	-	-	-	-	-	-	-	-
1965	21.0	16.5	18.8	20.0	13.3	16.7	12.4	11.5	12.0	16.8	14.0	15.4
	30.6	4.5	17.6	20.0	13.3	16.7	-	-	-	16.8	14.0	15.4
1966	15.6	22.5	19.1	17.4	17.0	17.2	18.0	17.0	17.5	18.6	13.0	15.8
	22.6	7.5	15.1	19.0	11.0	15.0	18.6	5.2	11.9	-	-	-
1967	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
Maximum	-	-	23.5	-	-	21.3	-	-	21.4	-	-	26.9

TABLE A-6 Main daily rainfall in past 16 years

Unit : mm

Date	Prachinburi	Kabinburi	Average	Wang Heo
July 24, 1952	66.6	-	66.6	* 73.3
Aug. 23, 1953	49.7	35.0	42.4	-
Sept. 29, 1953	49.5	42.2	45.9	* 50.5
Aug. 4, 1954	67.0	40.2	53.6	-
Aug. 27, 1954	18.0	99.3	58.7	* 64.5
July 8, 1955	5.4	123.6	64.5	* 71.0
Sept. 15, 1956	11.7	105.0	58.4	* 64.3
Sept. 21, 1956	74.6	27.5	51.1	-
Sept. 26, 1957	17.5	65.2	41.4	-
Oct. 6, 1957	89.7	49.7	69.7	* 76.7
Sept. 1, 1958	39.0	95.3	67.2	* 73.9
Aug. 29, 1959	37.2	70.8	54.0	* 59.3
Sept. 5, 1960	74.4	23.1	48.8	* 53.6
Sept. 24, 1960	38.2	43.2	40.7	-
July 25, 1961	142.3	55.4	98.9	* 108.5
Aug. 20, 1961	139.7	31.8	85.8	-
July 18, 1962	66.6	95.5	81.1	* 89.2
Oct. 25, 1963	70.6	-	70.6	* 77.5
Oct. 3, 1964	-	-	-	** 96.8
Sept. 29, 1965	-	-	-	65.8
Aug. 17, 1966	-	-	-	193.8
Aug. 16, 1967	-	-	-	95.0

Note:

(1) * Wang Heo Rainfall = 1.1 x Average Rainfall

(2) ** Kao Keep Samut Rainfall

TABLE A-7 Maximum daily rainfall in year at Wang He

No.	Date	Max. Daily Rainfall (mm)	Remarks
1	Aug. 17, 1966	193.8	* Estimated on the basis of
2	July 25, 1961	108.5 *	Kabinburi and Prachinburi maximum
3	Oct. 3, 1964	96.8 **	daily rainfall, employing a formula
4	Aug. 16, 1967	95.0	as follows:
5	July 18, 1962	89.2 *	
6	Oct. 25, 1963	77.5 *	
7	Oct. 6, 1957	76.7 *	Rw = 1.1 Ra
8	Sept. 1, 1958	73.9 *	Where:
9	July 24, 1952	73.3 *	Rw = Daily rainfall of Wang Heo
10	July 8, 1955	71.0 *	Ra = Average daily rainfall of
11	Sept.29, 1965	66.8	Prachinburi and Kabinburi
12	Aug. 27, 1954	64.5 *	
13	Sept.15, 1956	64.3 *	
14	Aug. 29, 1959	59.3 *	** Kao Keep Samut
15	Sept. 5, 1960	53.6 *	
16	Sept. 21, 1953	50.5 *	

TABLE A-8 Return period of maximum daily rainfall (R_{24}) of Wang Heo

Return Period in year	Hazen-Foster Type 3 method	Gumbels méthod	Average
	mm	mm	mm
2	80	80	80
5	120	120	120
20	165	159	162
50	200	188	194
100	220	210	215
200	260	230	245
1,000	330	280	305
10,000	363	354	359

TABLE A-9 Return period of peak flood and total flood volume of Wang Heo

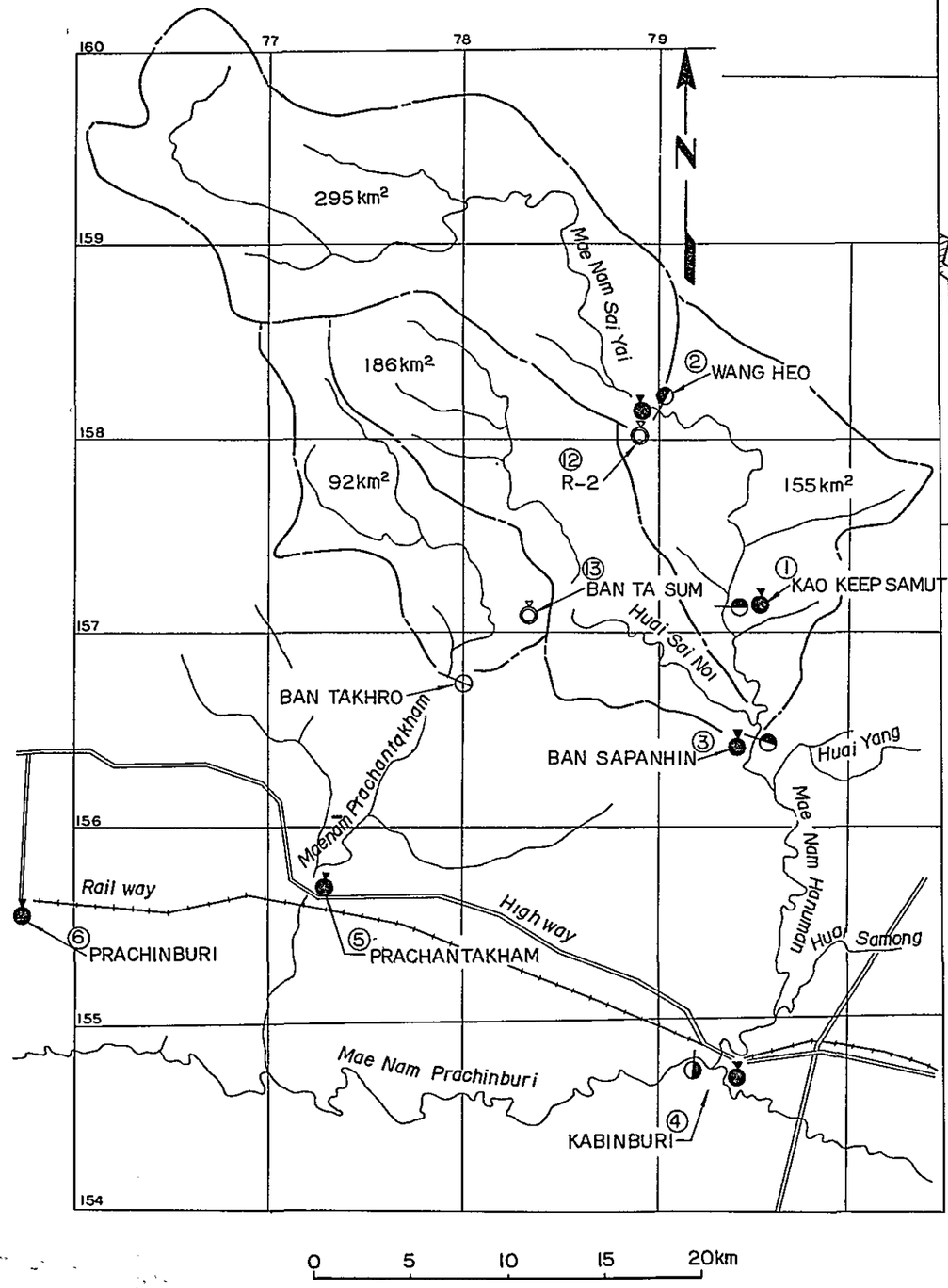
Return Period in year	Peak Flood (Q_p)	Total Flood Volume (Q_v)
	c.m.s.	10^6 cu.m
2	90	13
5	120	16
20	180	21
50	260	26
100	300	30
200	390	38
1,000	580	54
10,000	770	70

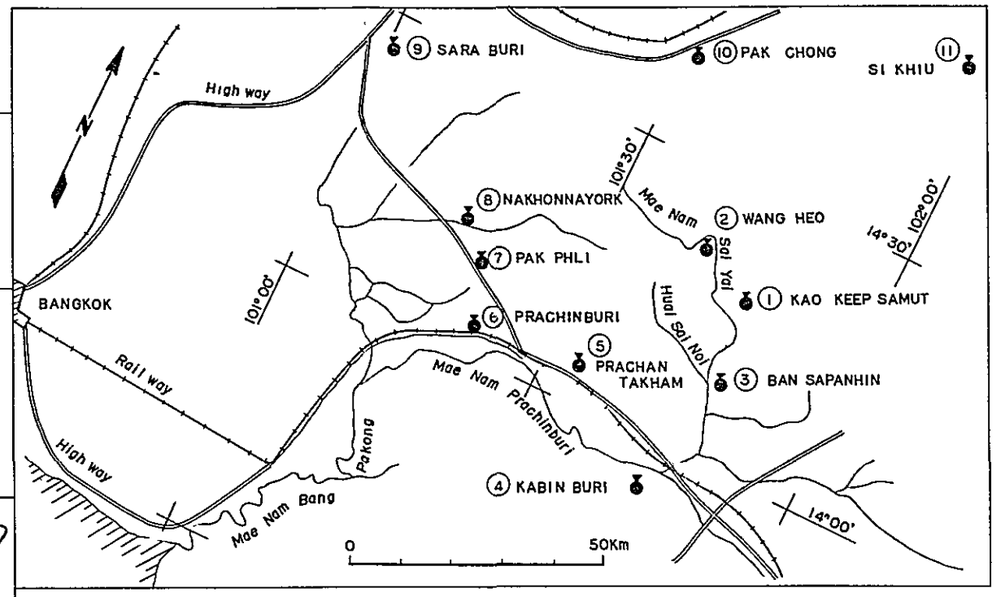
Note:

$Q_p = 3.54 (R_{24} - \text{Loss Water}) + 30$ (c.m.s.)

$Q_v = 0.295 (R_{24} - \text{Loss Water}) + 8$ (10^6 cu.m)

FIG. A-1 LOCATION MAP OF RAINFALL AND RUN-OFF GAGING STATION





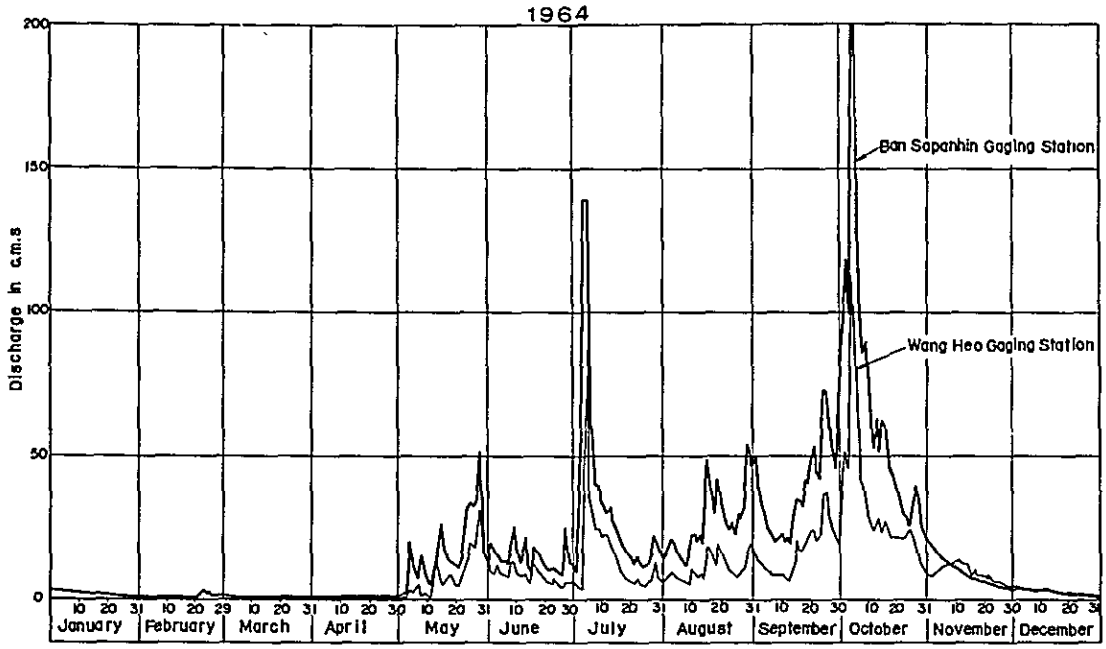
RUNOFF GAGING STATIONS AND EXISTING DATA (Daily Record)

STATION	RIVER	C. A.	'52	'53	'54	'55	'56	'57	'58	'59	'60	'61	'62	'63	'64	'65	'66	'67	'68
KAO KEEP SAMUT	SAI YAI	420 km²													Mar				
WANG HEO	〃	295														Moved			
BAN SAPANHIN	HANUMAN	636												July					
KABINBURI	PRACHIN BURI	7,502	–	–	——	——	——	–	–	——			——		–	–	–		
BAN TAKHRO	PRACHANTAKHAM	92	Proposed Gaging Station to be established																

RAINFALL OBSERVATORYS AND EXISTING DATA (Daily Record)

NO	STATION	'45	'46	'47	'48	'49	'50	'51	'52	'53	'54	'55	'56	'57	'58	'59	'60	'61	'62	'63	'64	'65	'66	'67	'68
1	KAO KEEP SAMUT																				Mar				
2	WANG HEO																					Moved			
3	BAN SAPANHIN																			July					
4	KABINBURI								——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	
5	PRACHANTAKHAM								——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	
6	PRACHINBURI								——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	
7	PAK PHLI													——	——	——	——	——	——	——	——	——	——	——	
8	NAKHON NAYORK								——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	
9	SARA BURI													——	——	——	——	——	——	——	——	——	——	——	
10	PAK CHONG													——	——	——	——	——	——	——	——	——	——	——	
11	SI KHIU													——	——	——	——	——	——	——	——	——	——	——	
12	R-2	Proposed Observatory to be established																							
13	BAN TA SUM	〃																							

FIG. A-2 (1) HYDROGRAPH OF WANG HEO AND BANG SAPANHIN



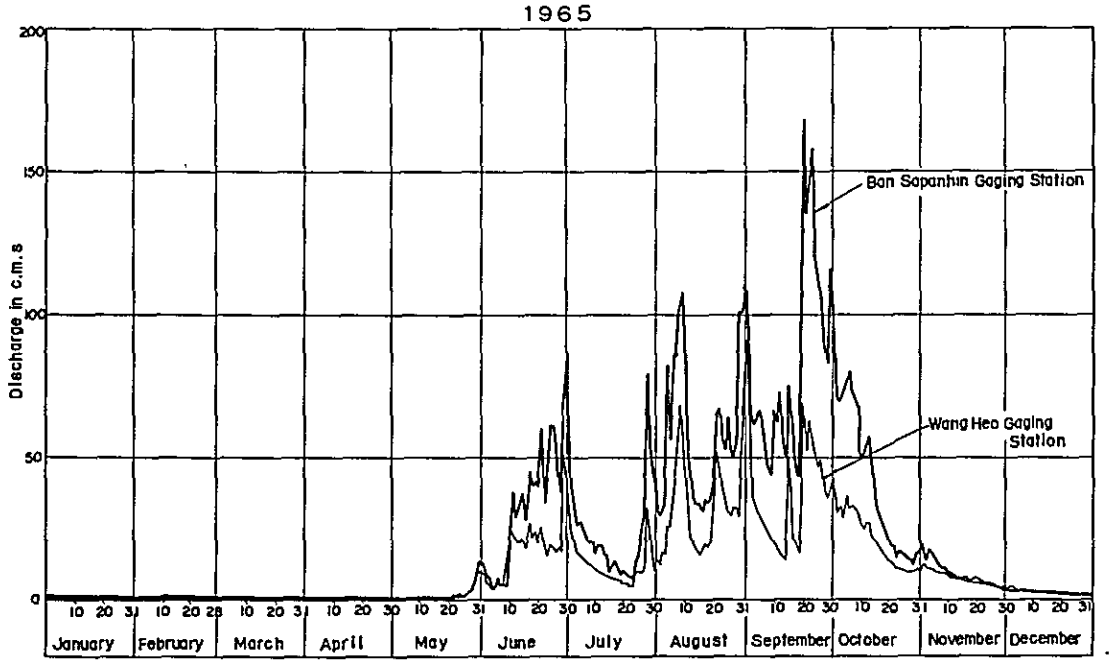
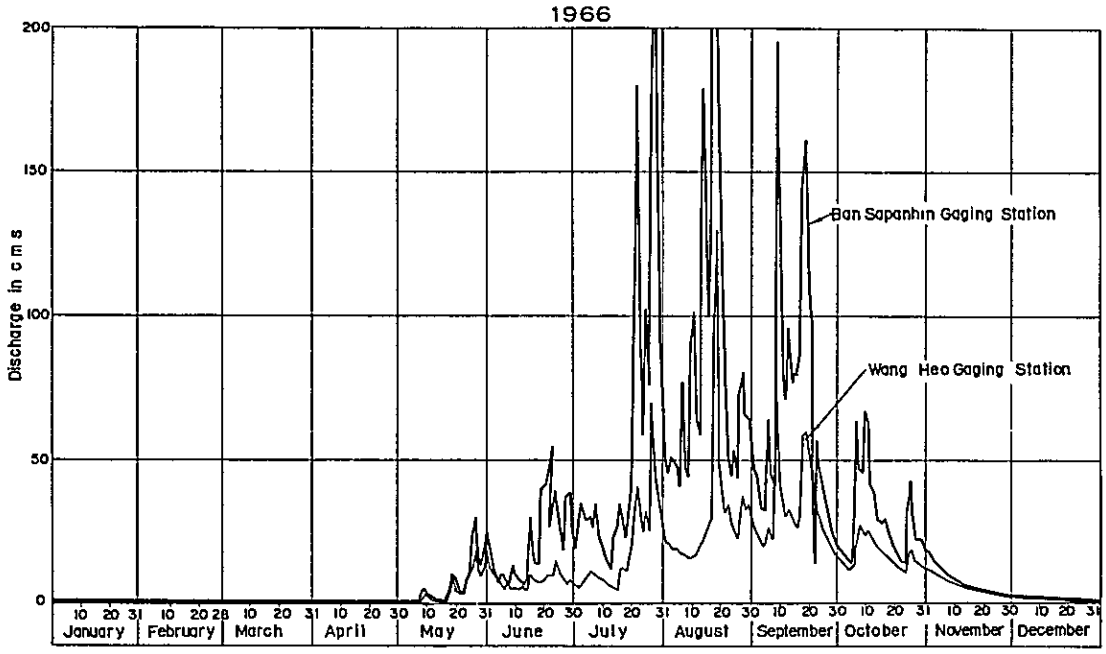


FIG. A-2 (2) HYDROGRAPH OF WANG HEO AND BANG SAPANHIN



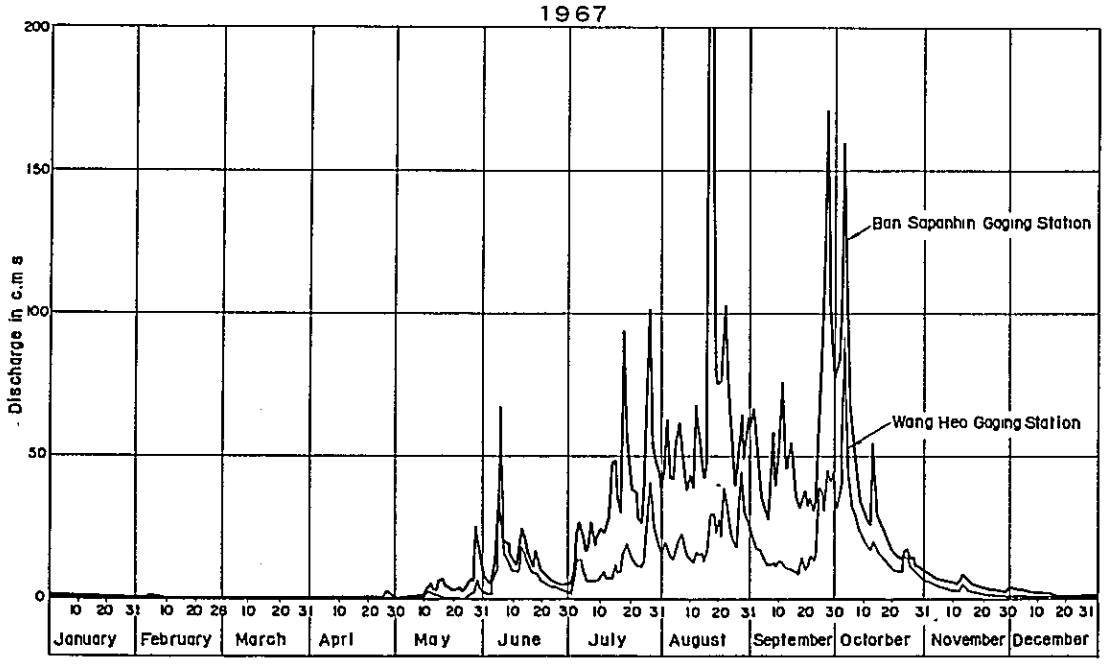
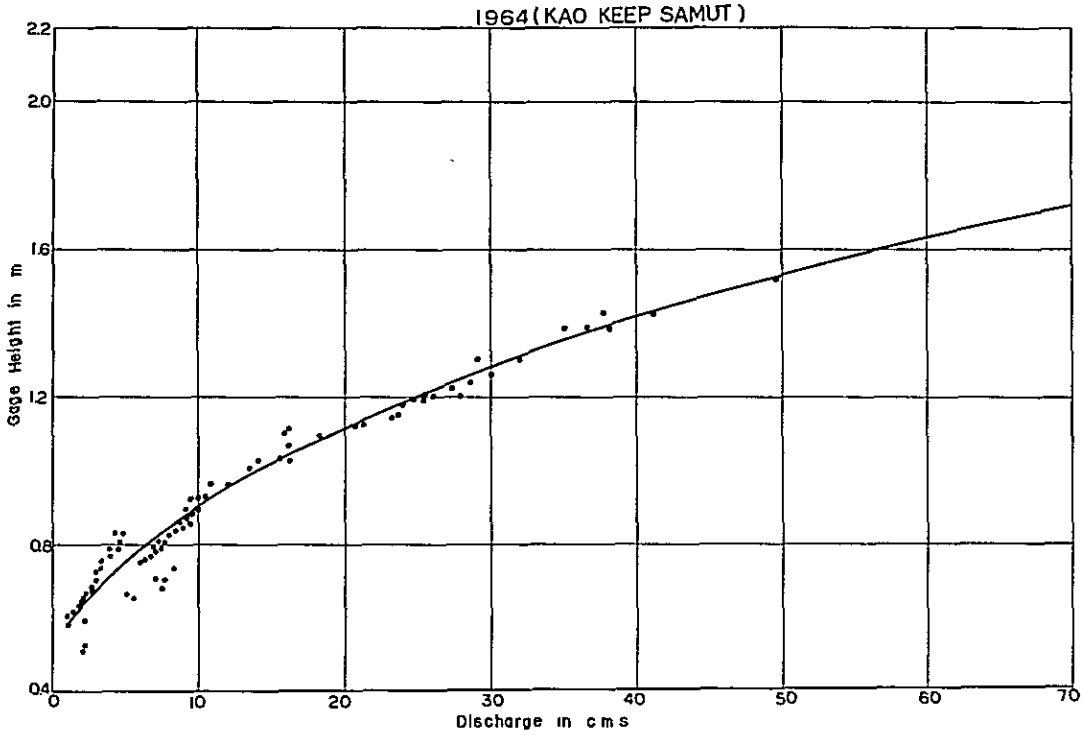


FIG. A-3 (1) RATING CURVES OF KAO KEEP SAMUT AND WANG HEO ON SAI YAI RIVER



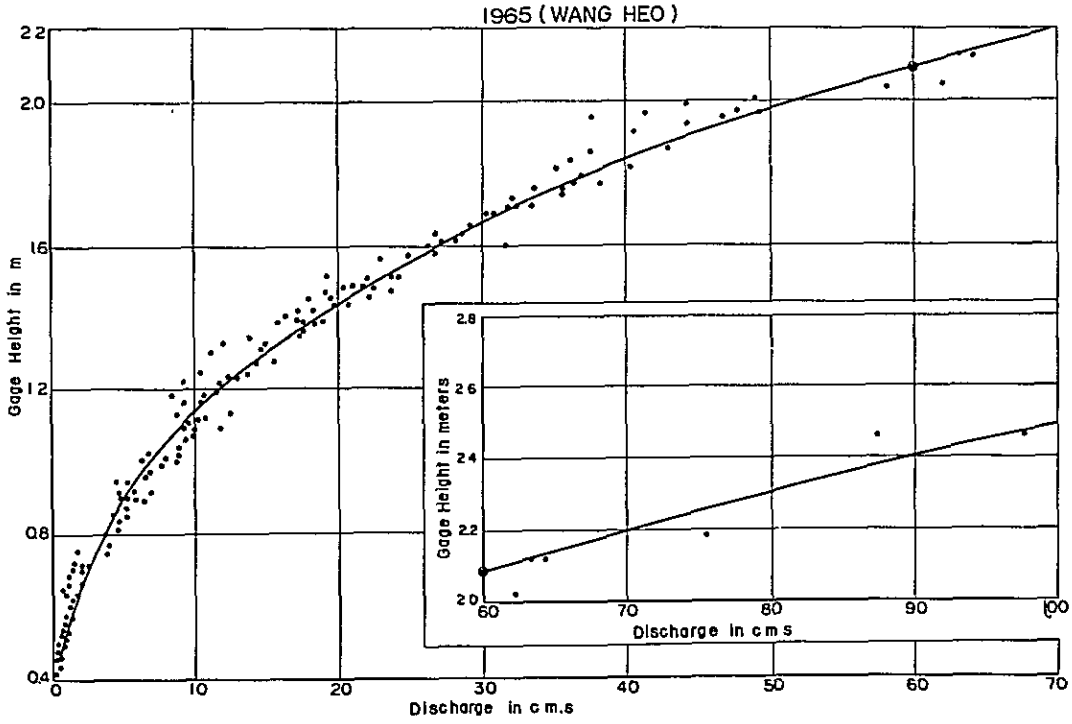
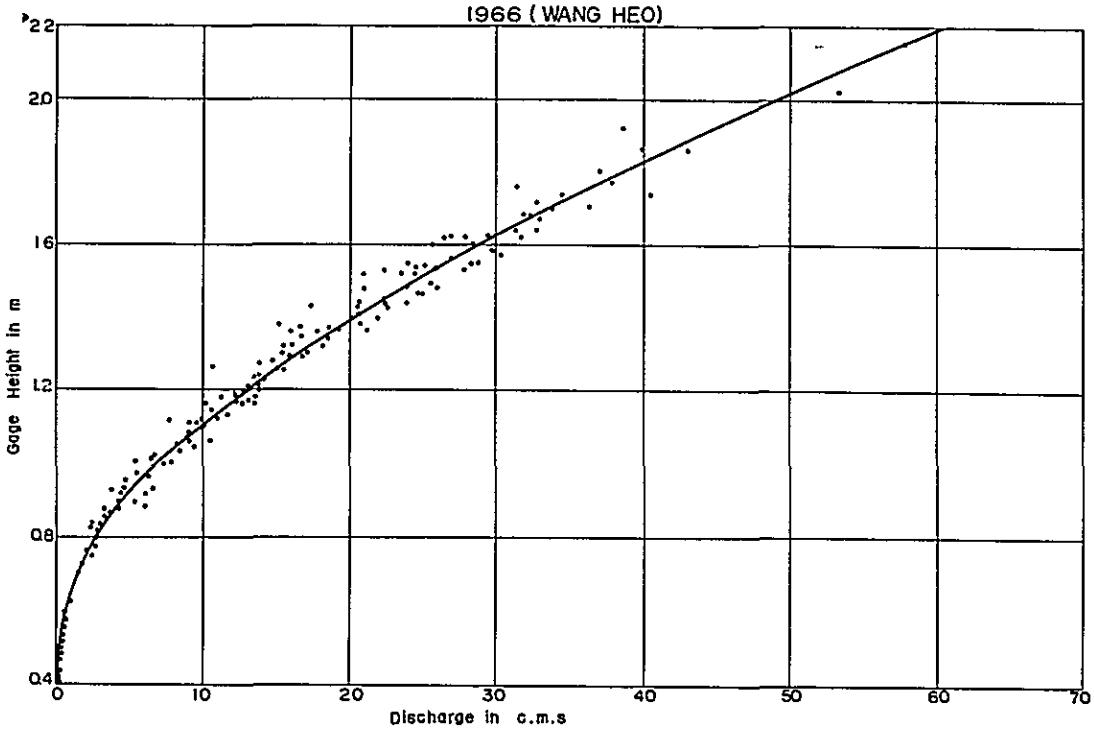


FIG. A-3 (2) RATING CURVES OF KAO KEEP SAMUT AND WANG HEO ON SAI YAI RIVER



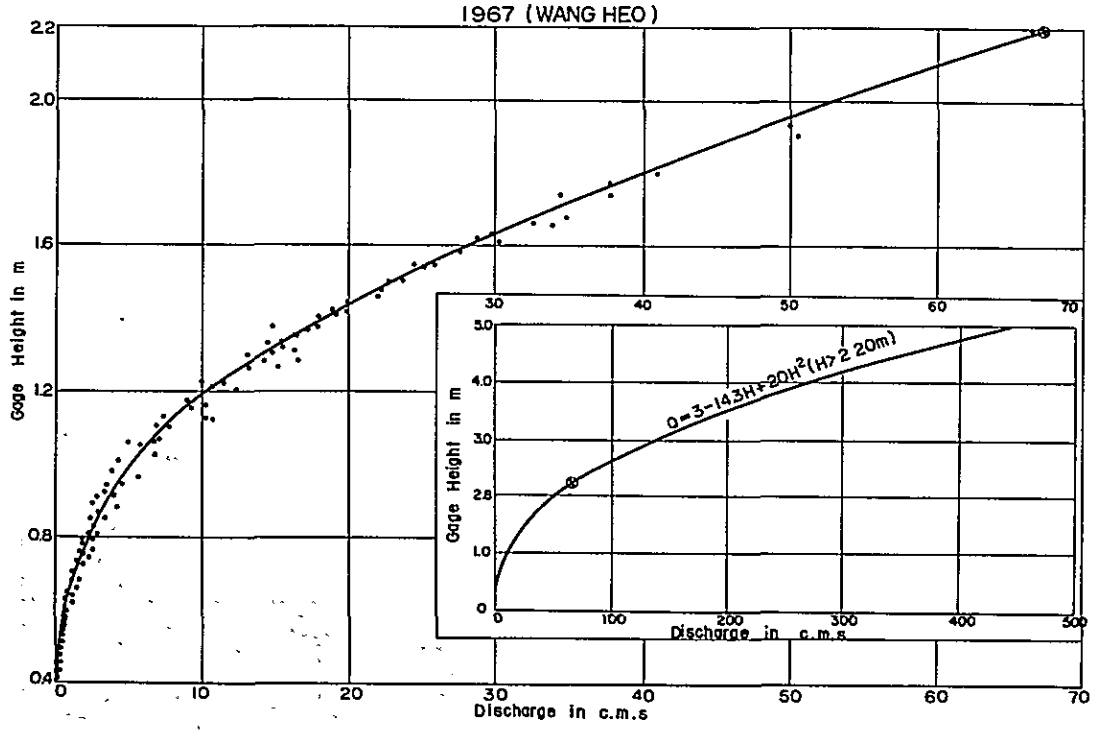
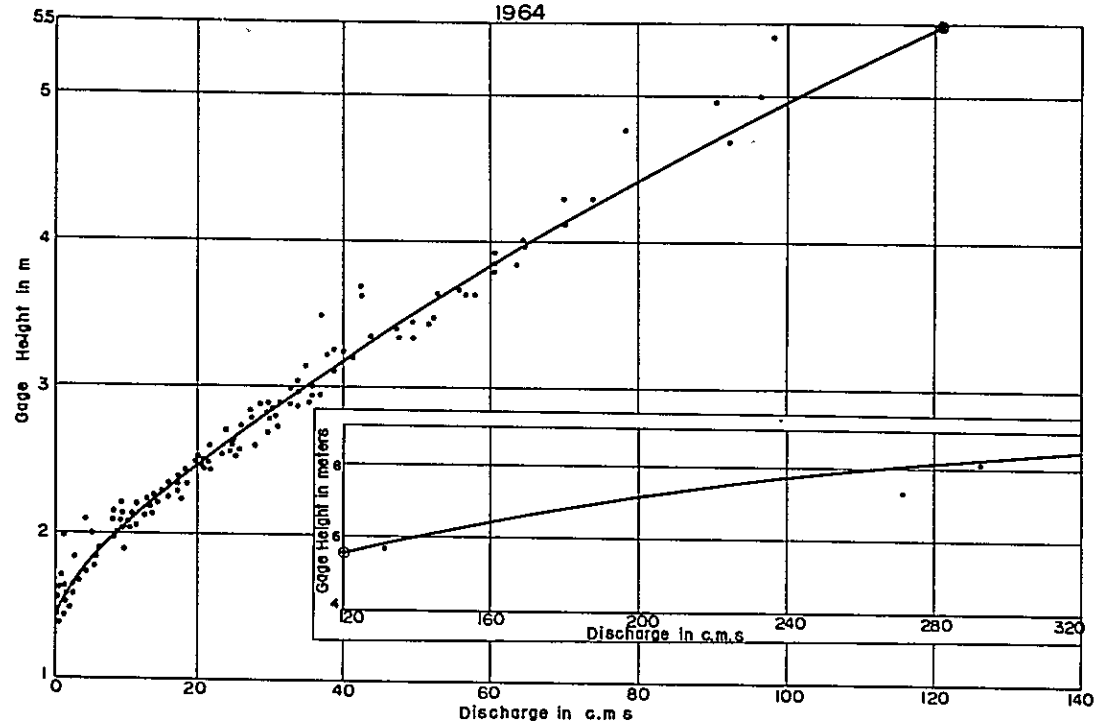


FIG. A-4 (1) RATING CURVES OF BAN SAPANHIN ON HANUMAN RIVER



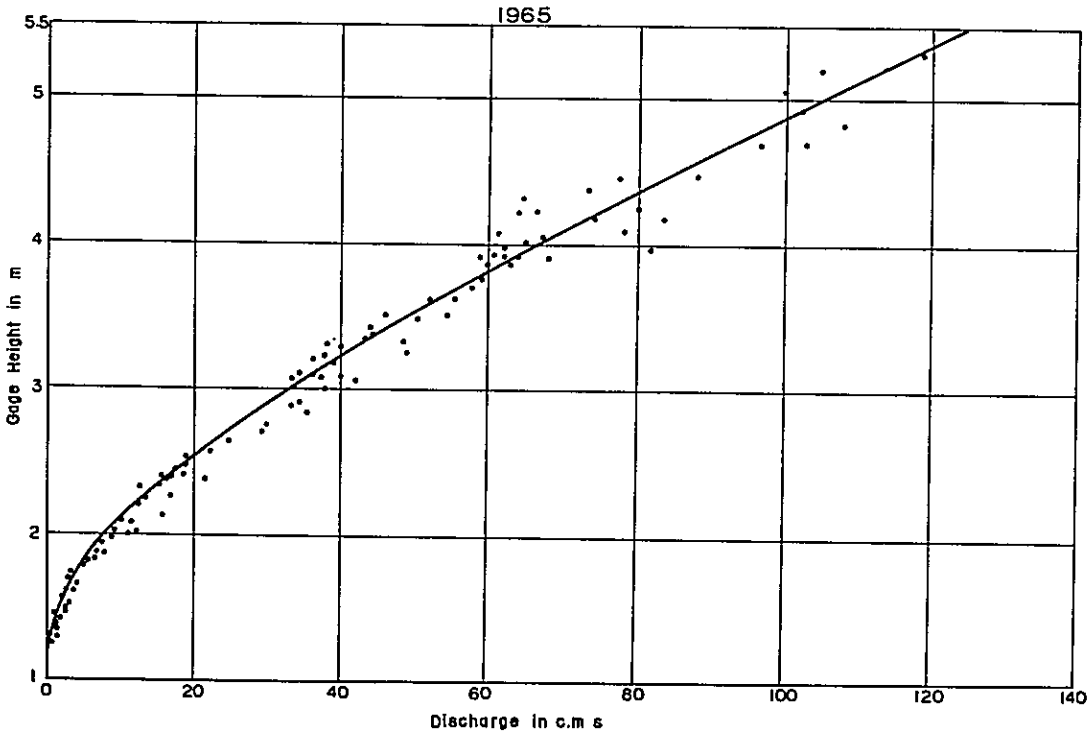
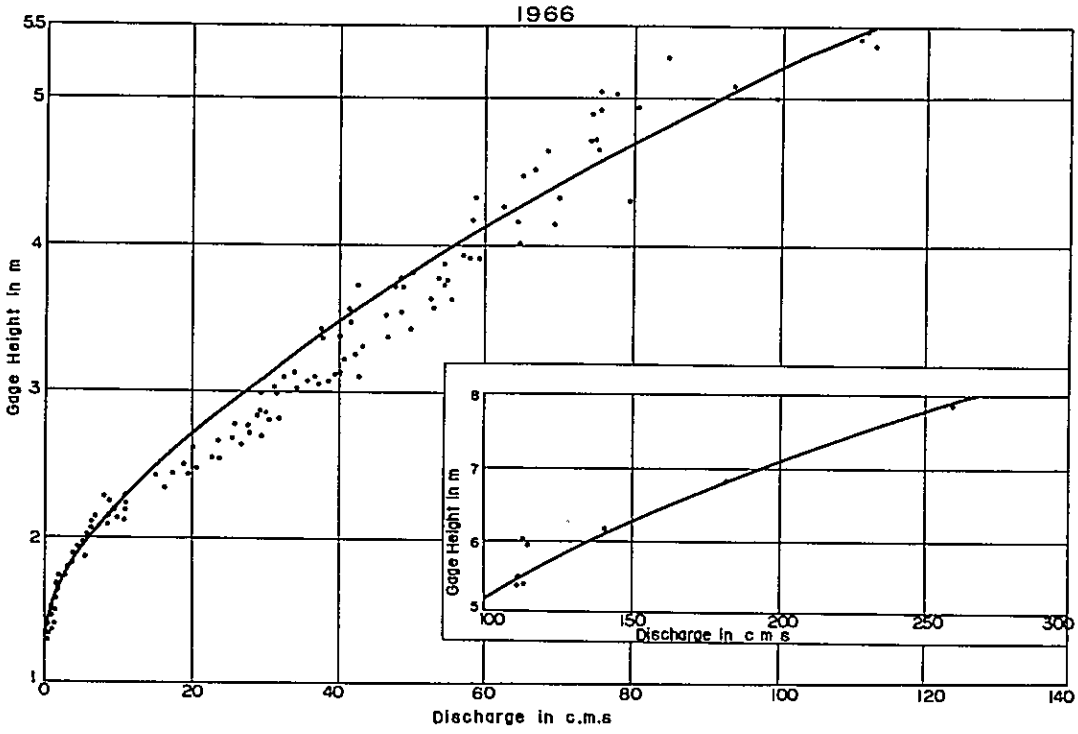


FIG. A-4 (2) RATING CURVES OF BAN SAPANHIN ON HANUMAN RIVER



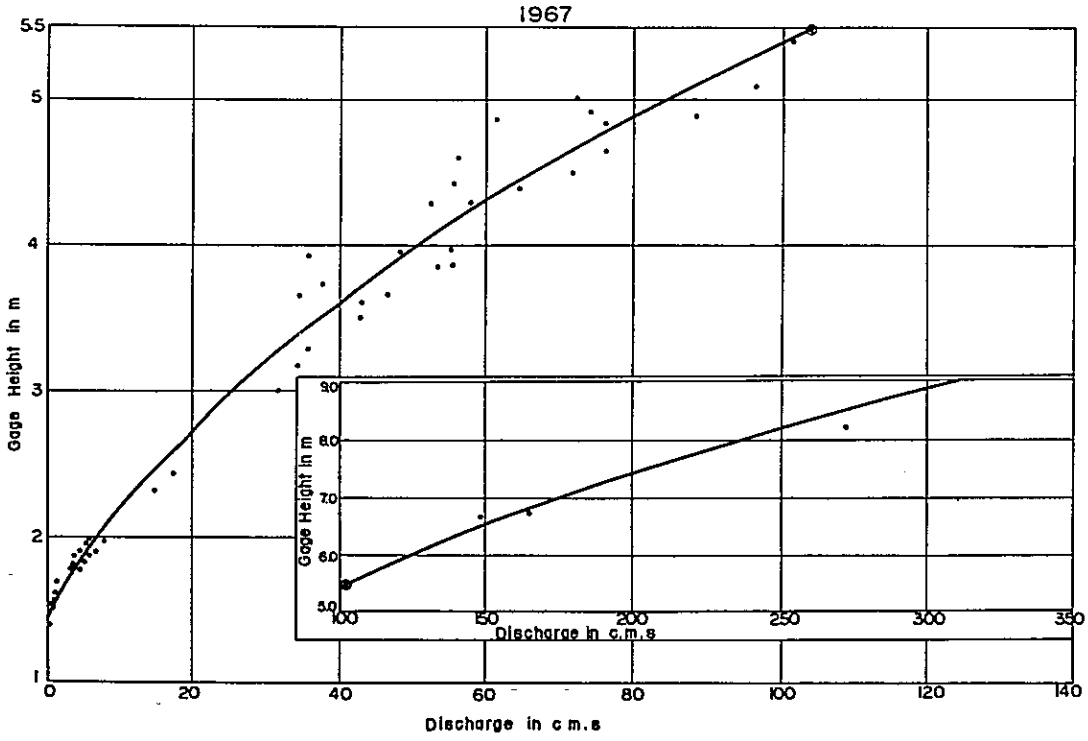


FIG. A-5 RAINFALL AND AVERAGE SPECIFIC RUN-OFF

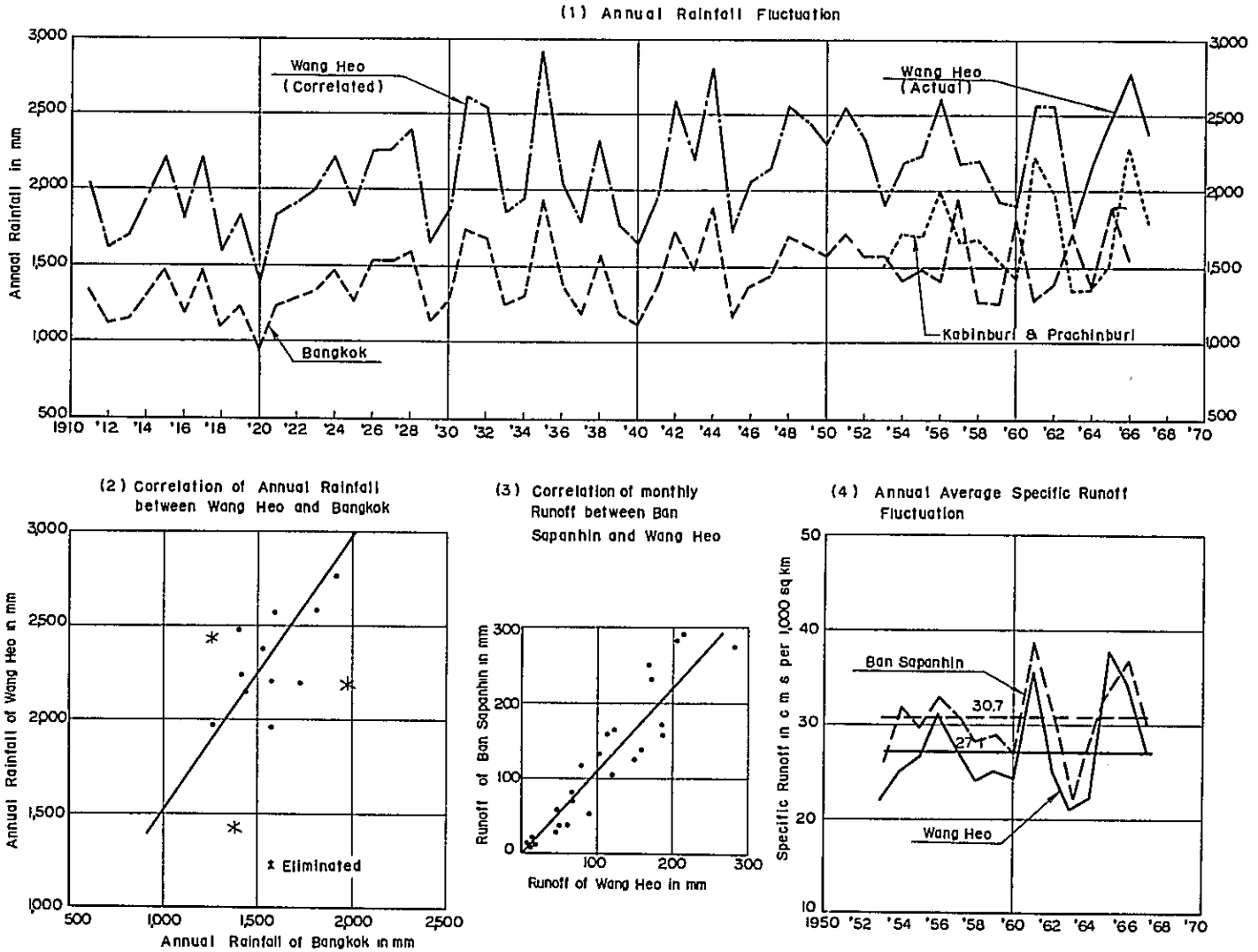
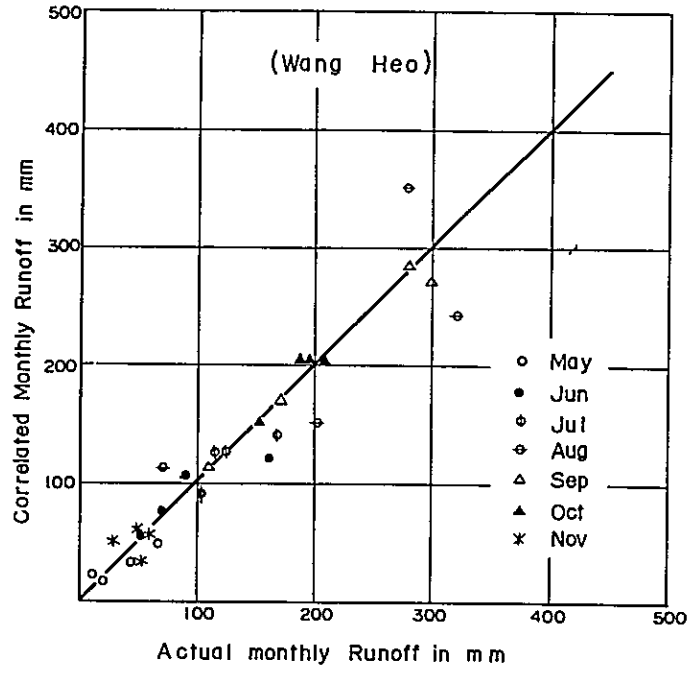


FIG. A-6 CORRELATION BETWEEN ACTUAL AND CORRELATED MONTHLY RUN-OFF



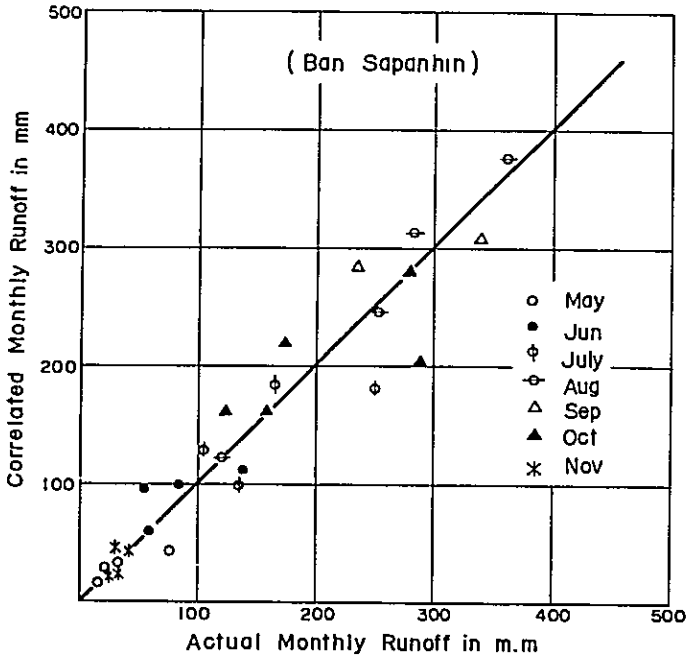
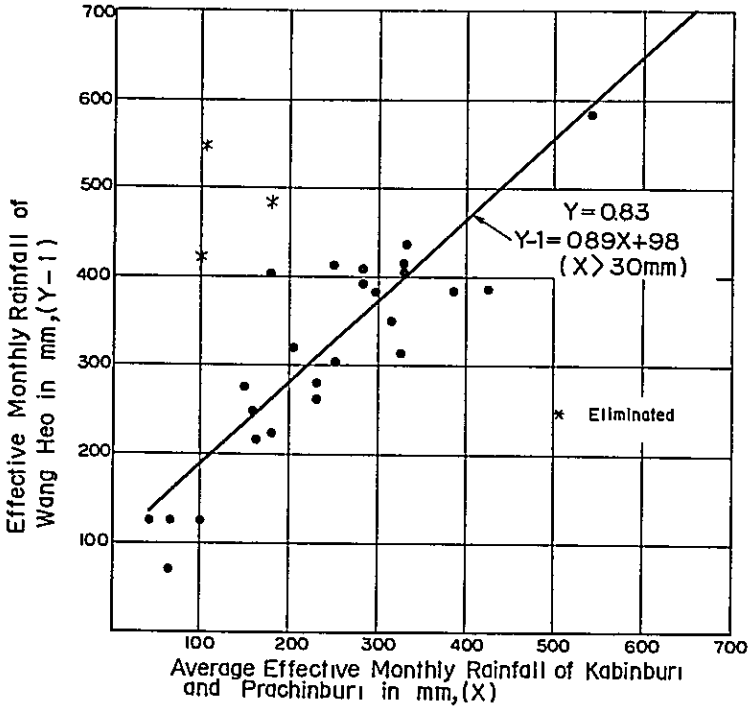


FIG. A-7 CORRELATION OF EFFECTIVE MONTHLY RAINFALL

(1) Wang Heo Vs. Average of Kabinburi and Prachinburi



(2) Average of Wang Heo and Ban Sapanhin Vs. Average of Kabinburi and Prachinburi

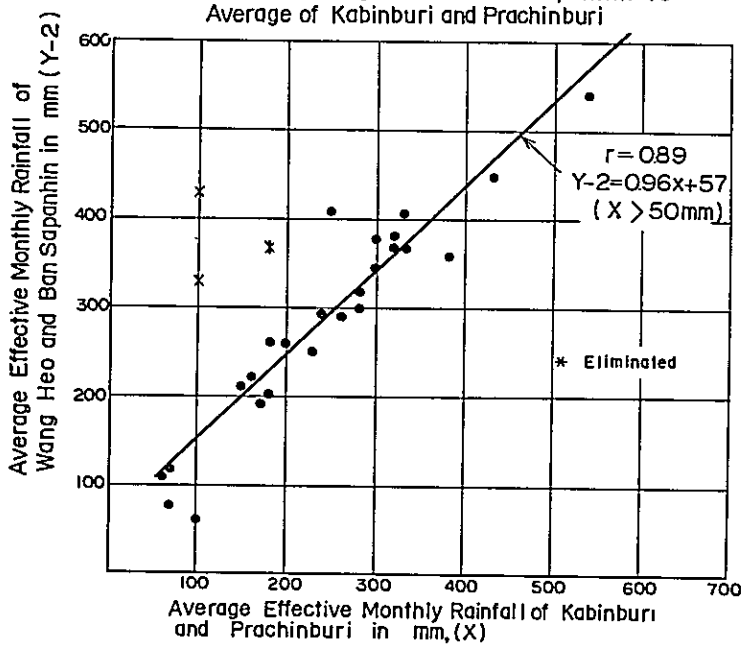
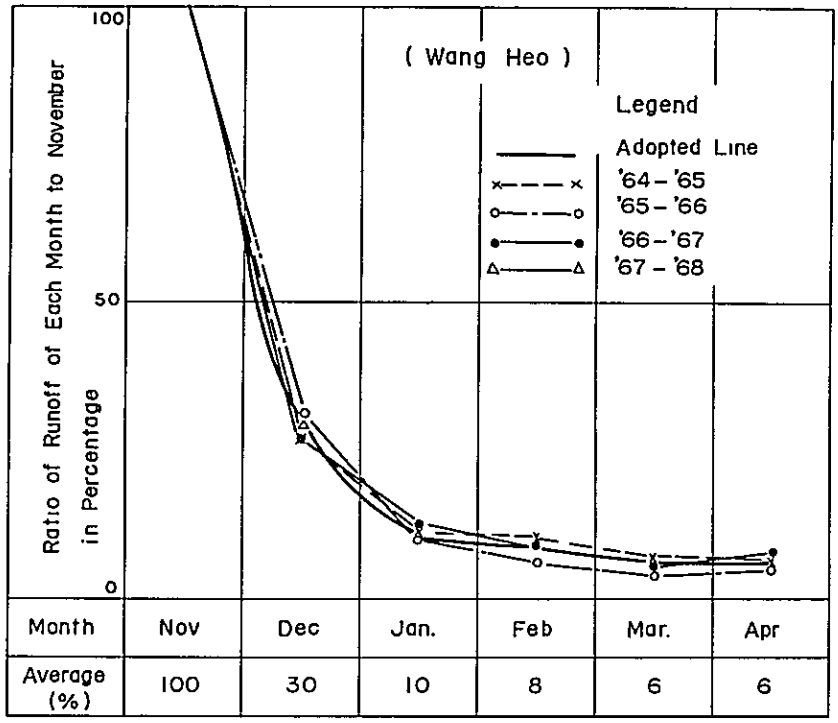
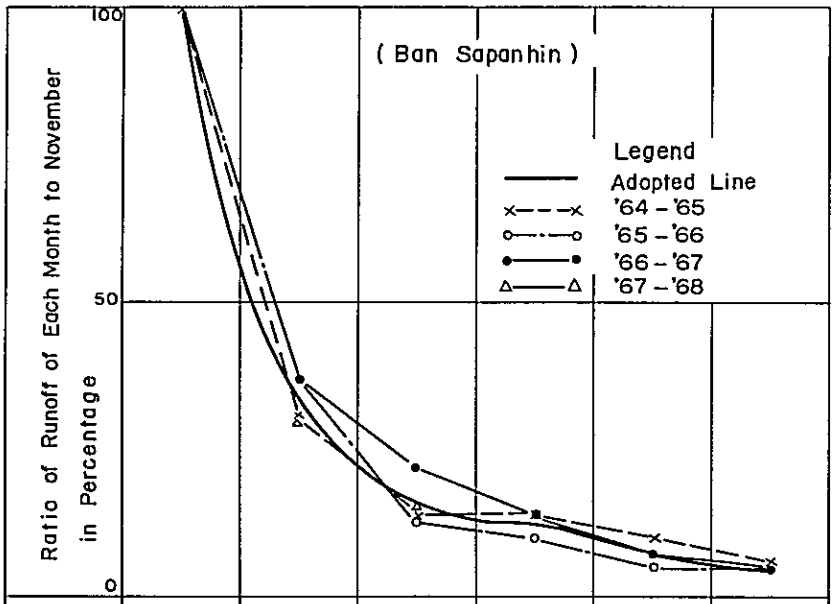


FIG. A-8 REGRESSION CURVES OF HYDROGRAPH



Month	Nov	Dec	Jan.	Feb	Mar.	Apr
Average (%)	100	30	10	8	6	6



Month	Nov.	Dec.	Jan.	Feb.	Mar	Apr
Average (%)	100	34	16	12	7	5

FIG. A-9 COMPARISON OF ACTUAL MONTHLY RUN-OFF AND CORRELATED MONTHLY RUN-OFF

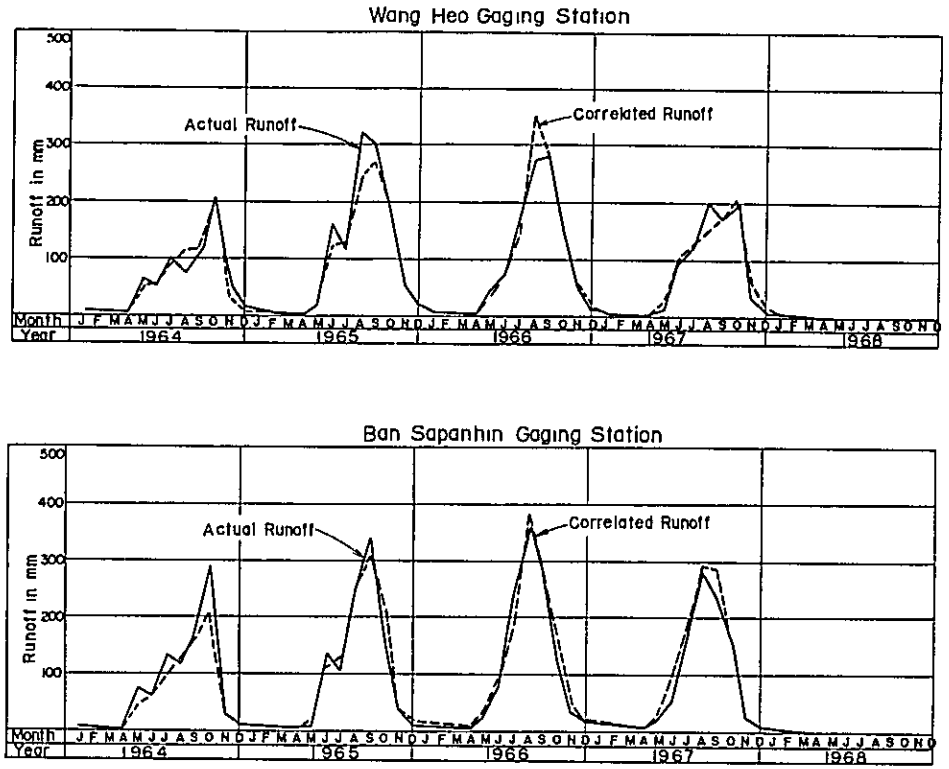
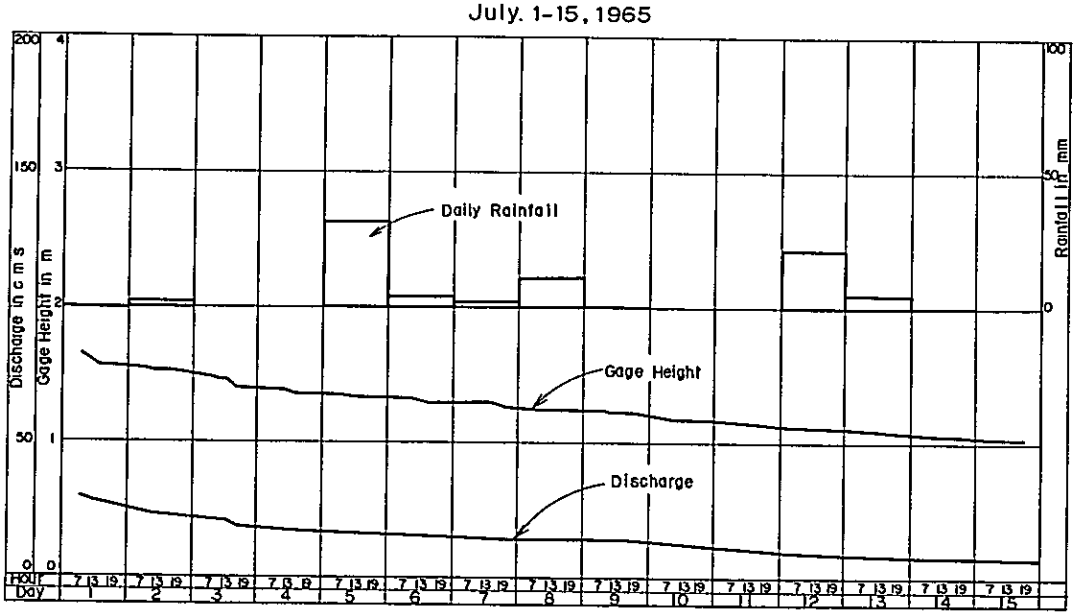


FIG. A-10 DAILY RAINFALL AND 3-HOUR-INTERVAL HYDROGRAPH OF WANG HEO



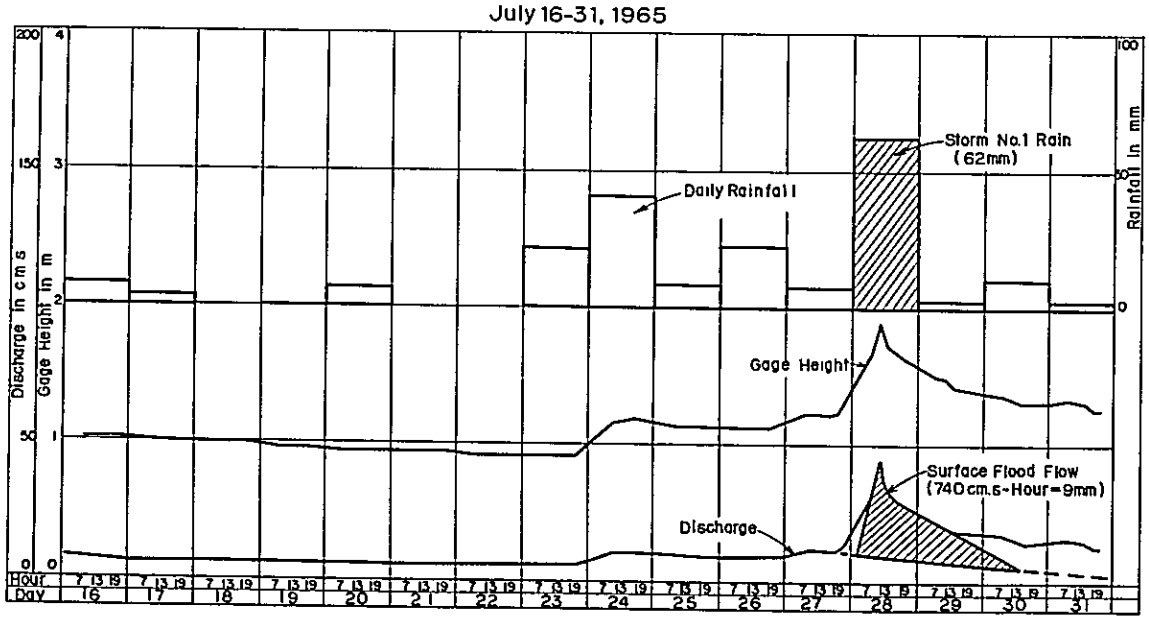
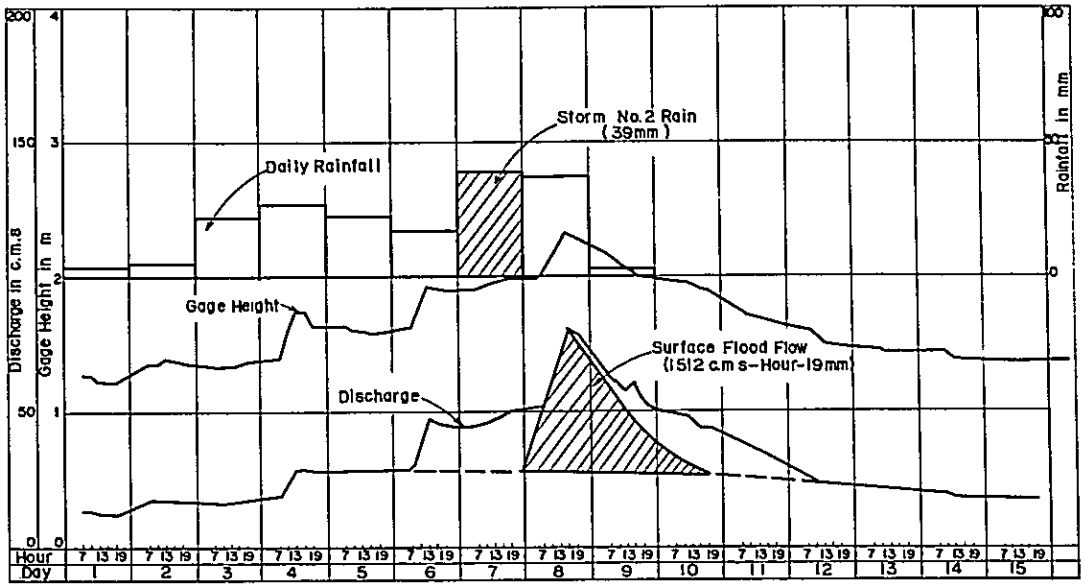


FIG A-10 (Continued)

Aug 1-15, 1965



Aug 16-31, 1965

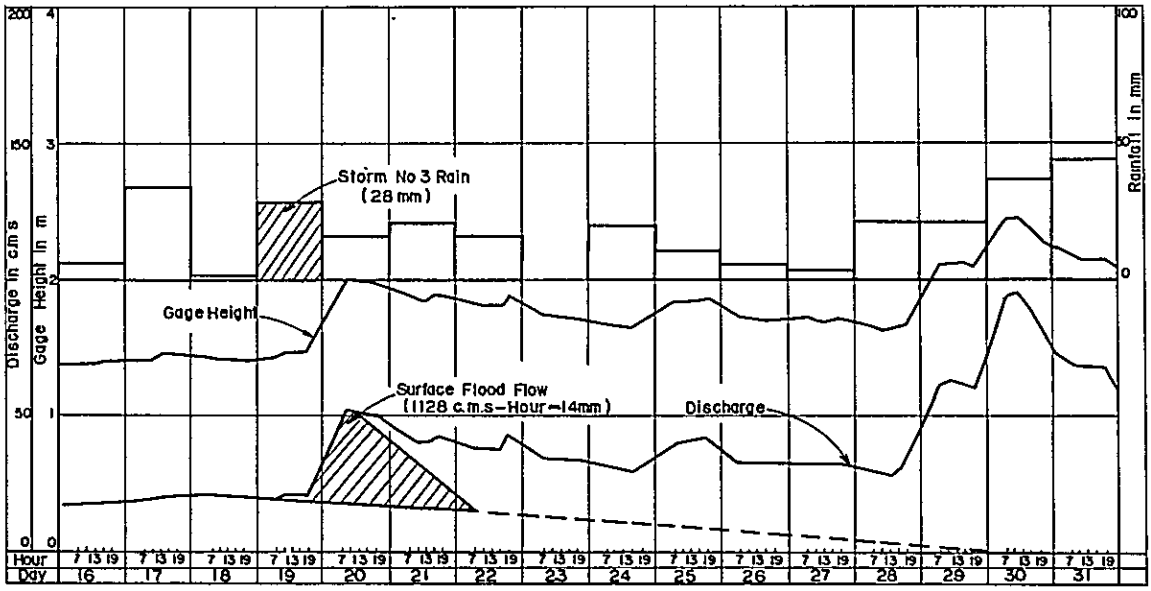
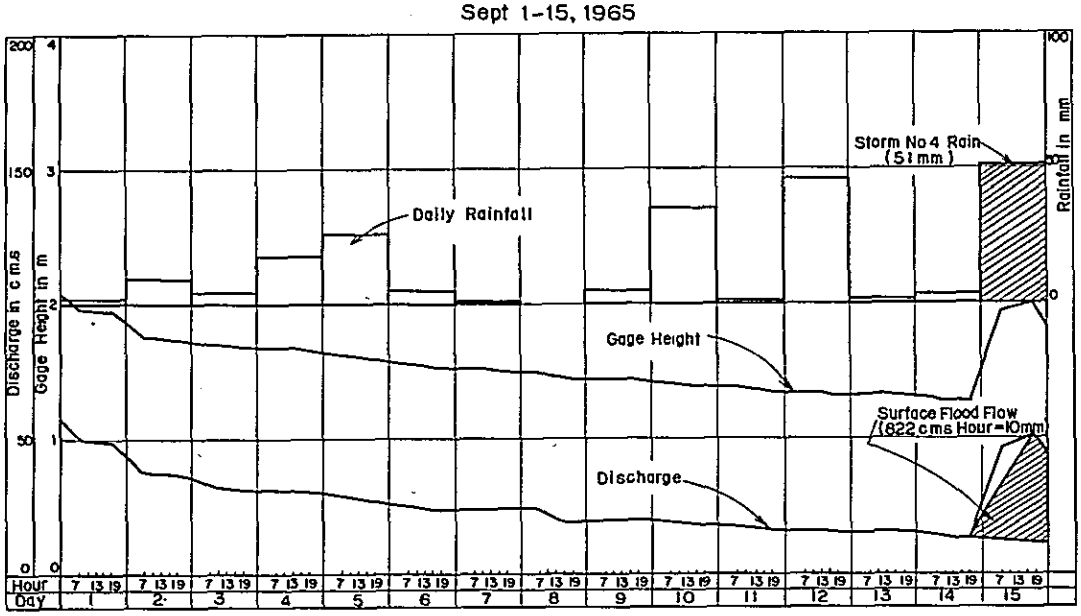


FIG A-10(Continued)

Sept 1-15, 1965



Sept. 16-30, 1965

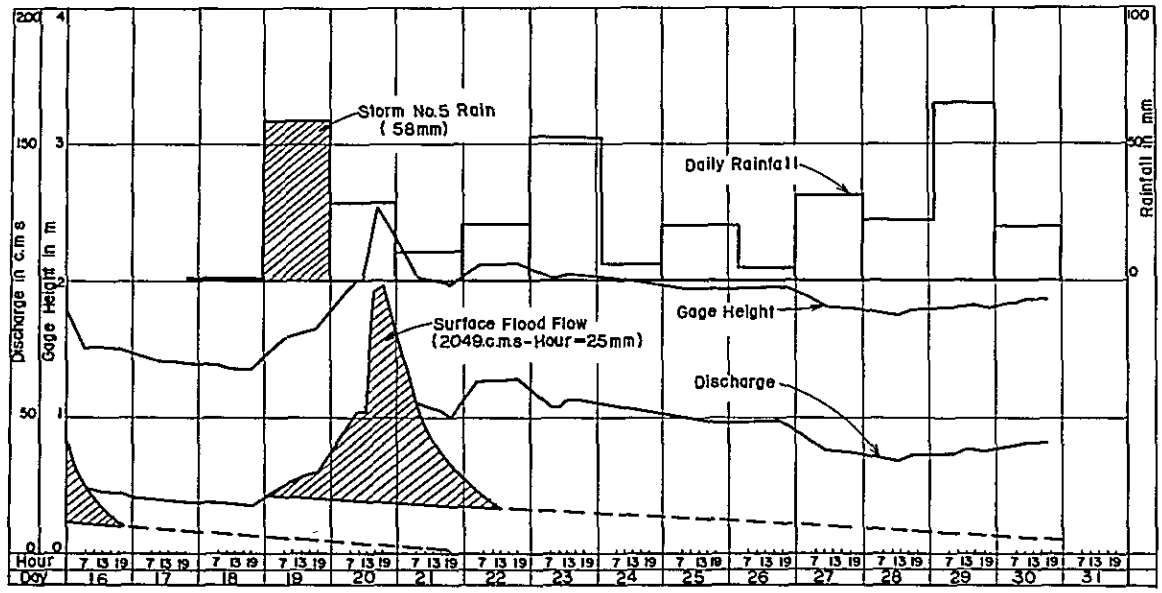
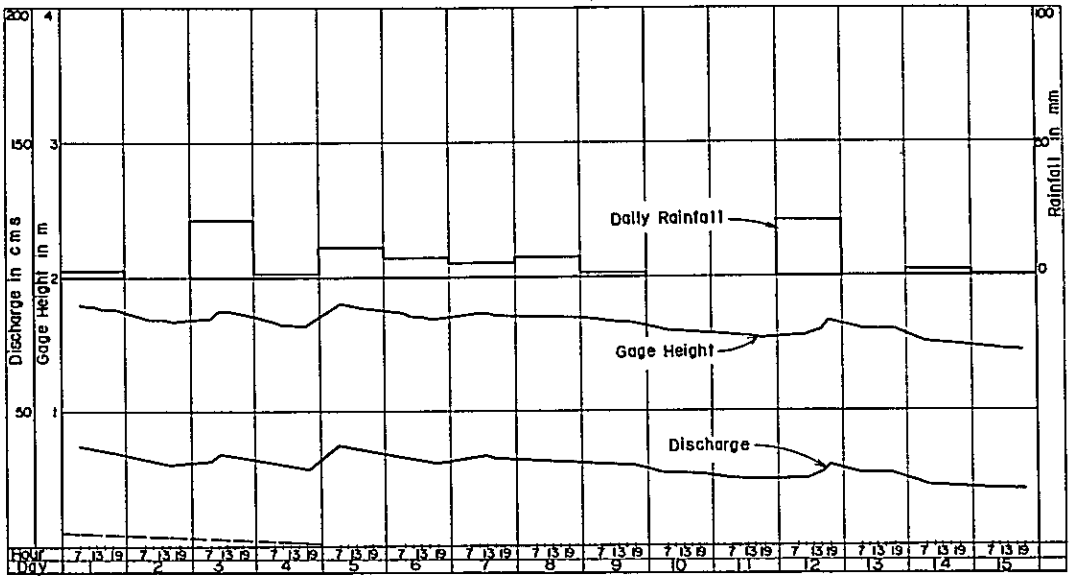


FIG A-10(Continued)

Oct -15, 1965



Oct. 16-31, 1965

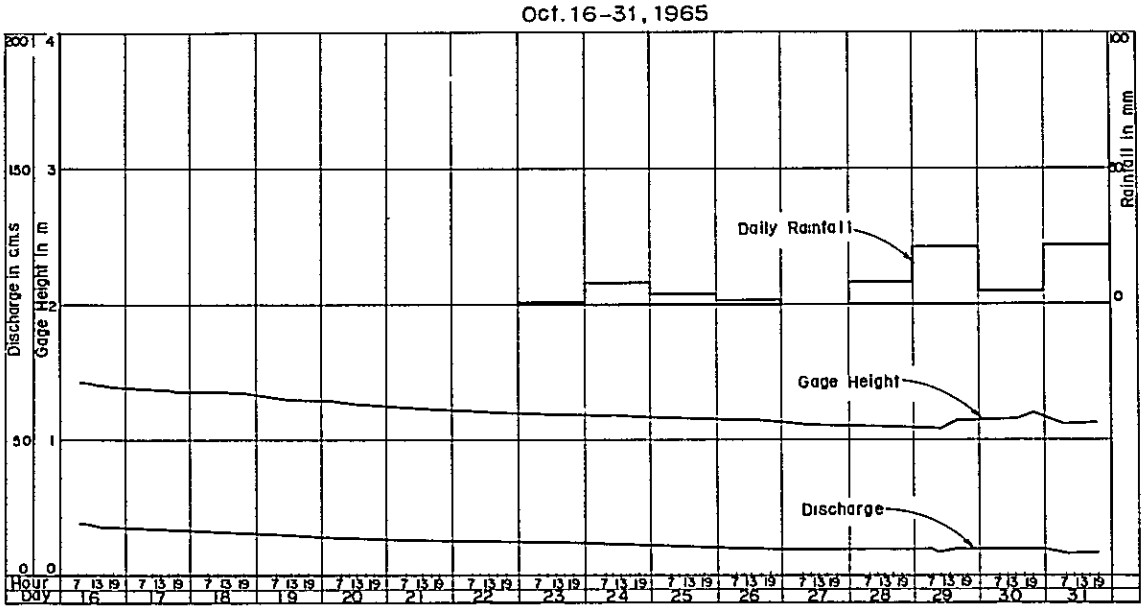
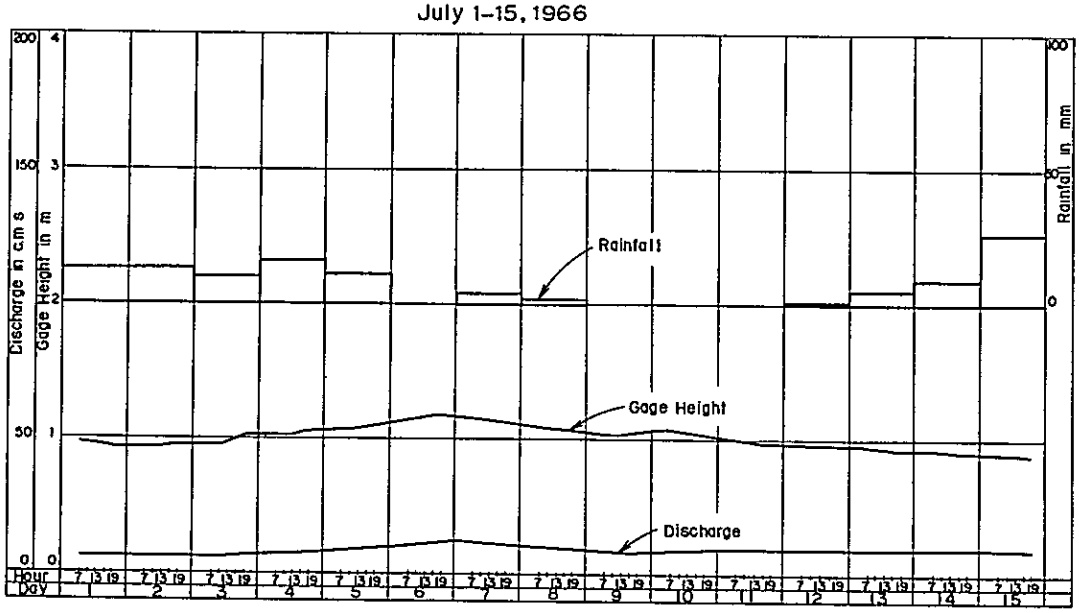


FIG A-10(Continued)

July 1-15, 1966



July. 16-31, 1966

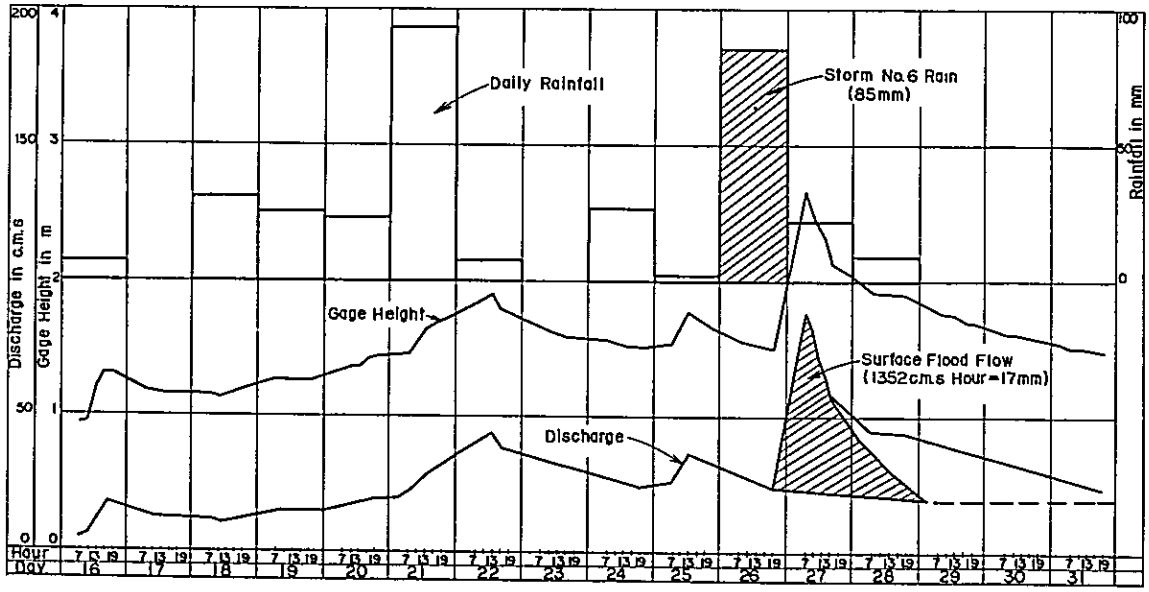
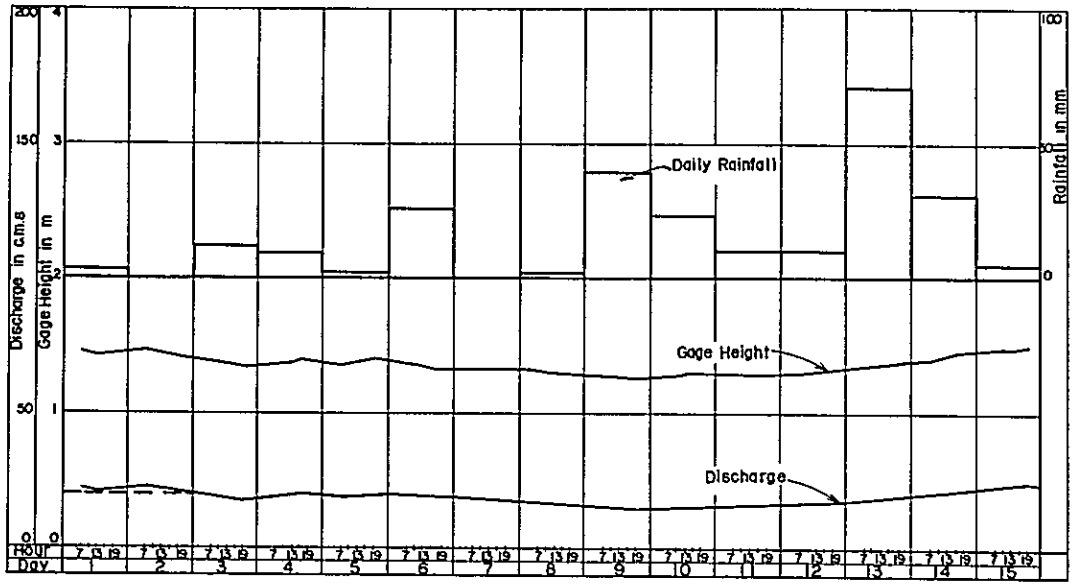


FIG A-10 (Continued)

Aug 1-15, 1966



Aug 16-31, 1966

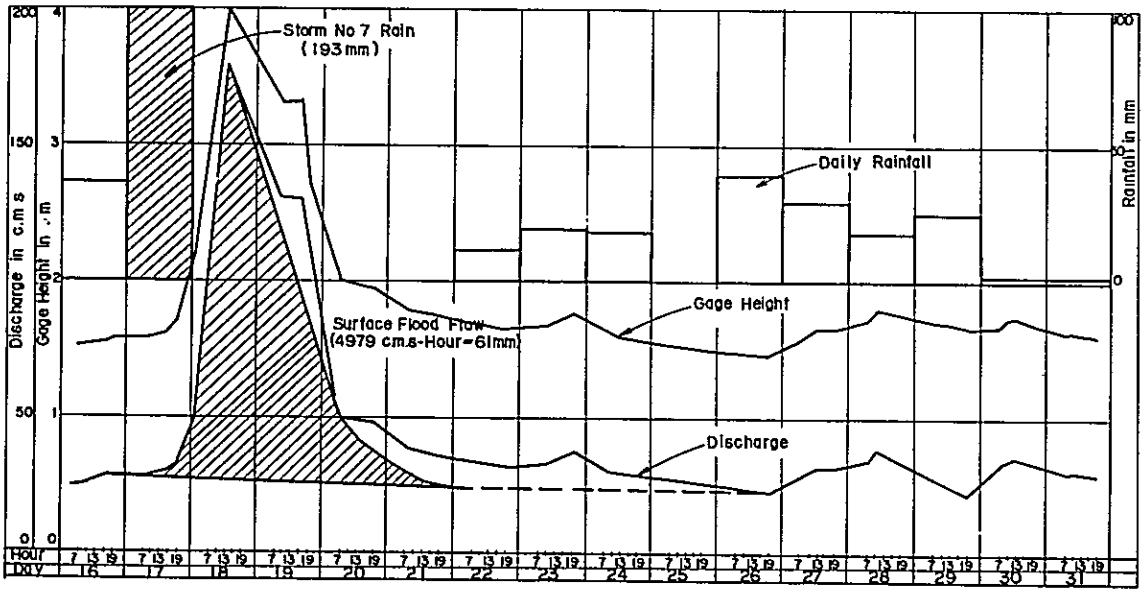
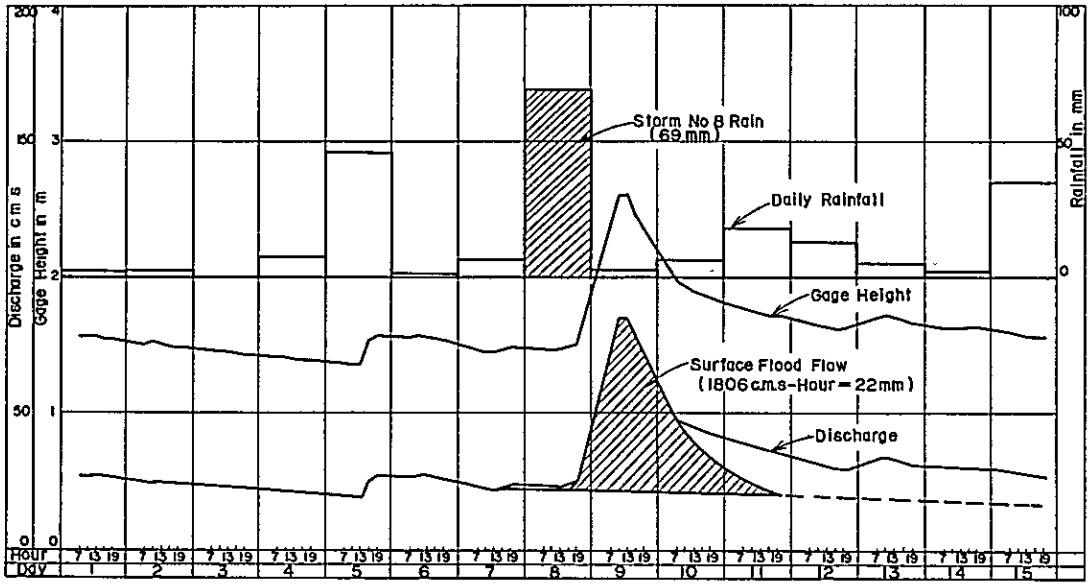


FIG A-10(Continued)

Sept. 1–15, 1966



Sept. 16–30, 1966

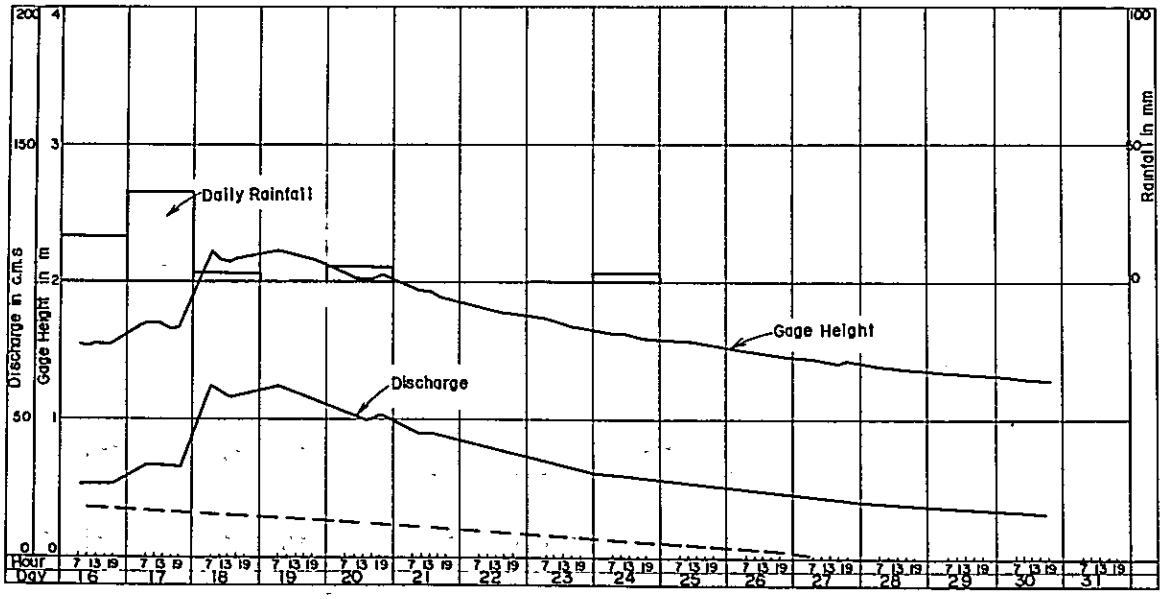
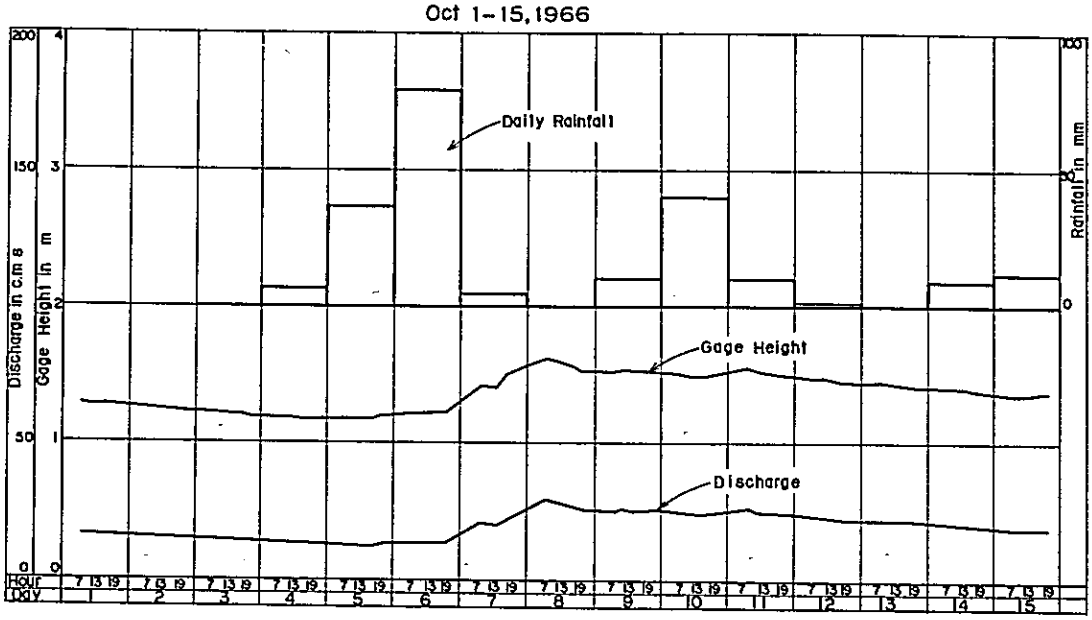


FIG A-10(Continued)

Oct 1-15, 1966



Oct 16-31, 1966

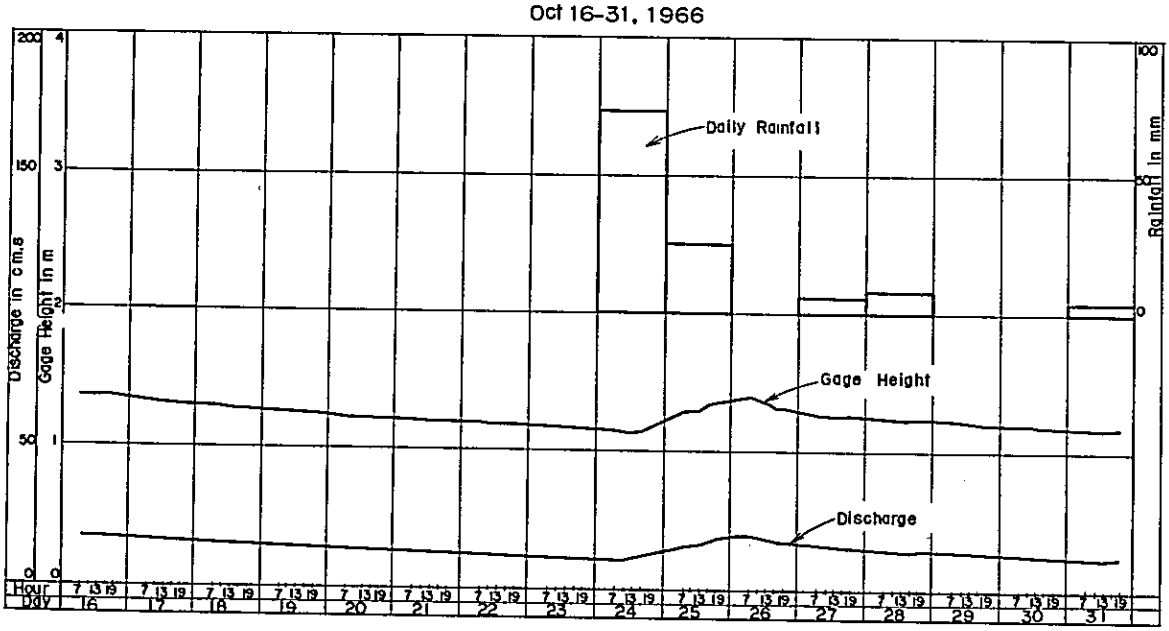
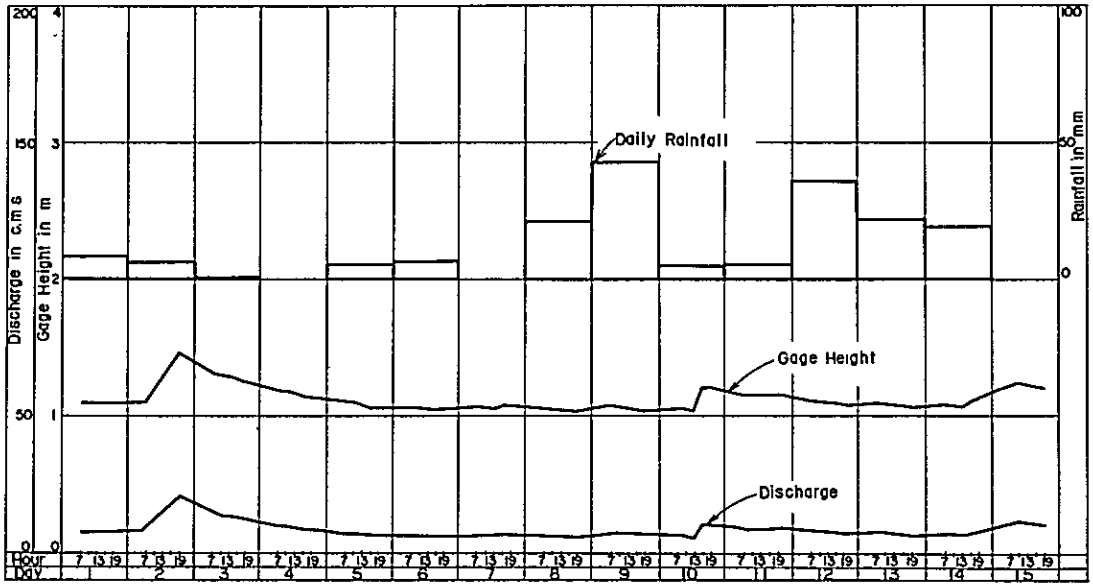


FIG A-10 (Continued)

July. 1-15, 1967



July. 16-31, 1967

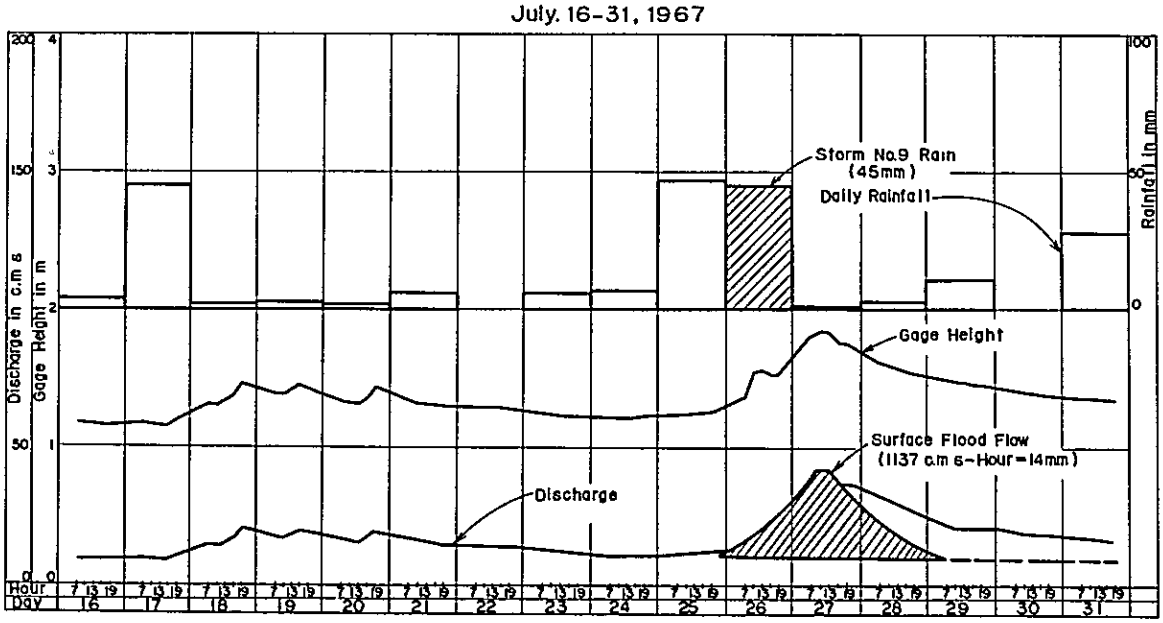
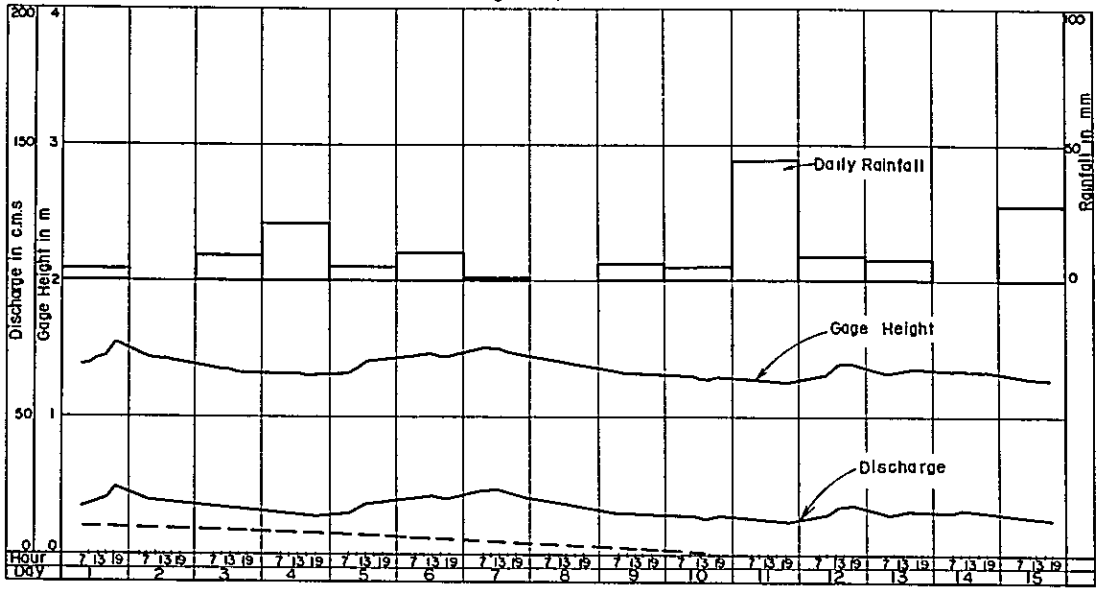


FIG A-10 (Continued)

Aug 1-15, 1967



Aug 16-31, 1967

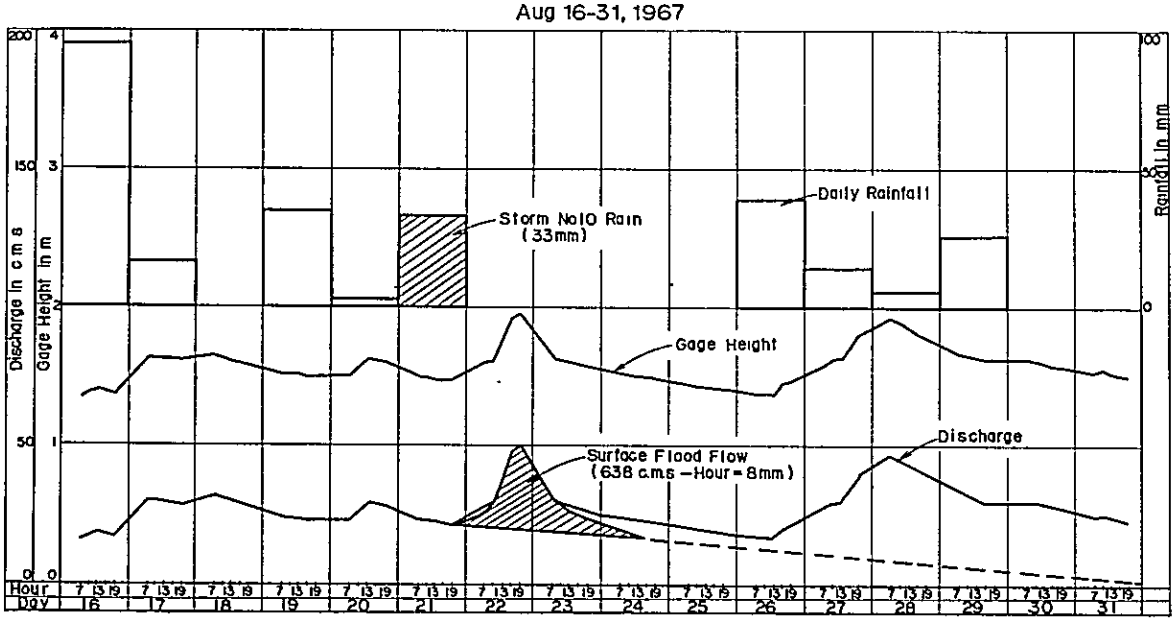
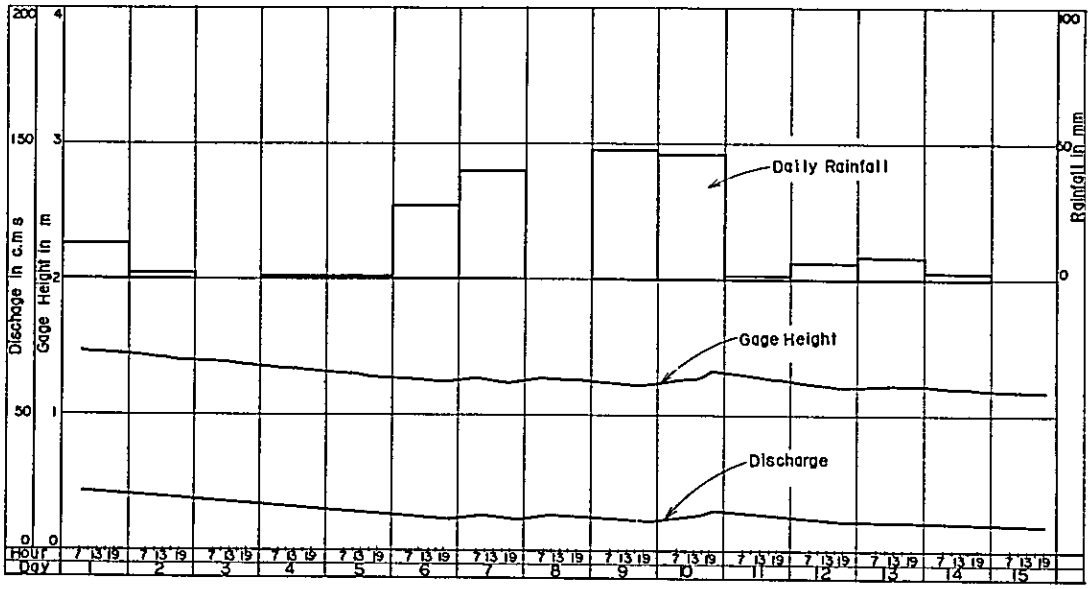


FIG A-10(Continued)

Sept. 1–15, 1967



Sept. 16-30, 1967

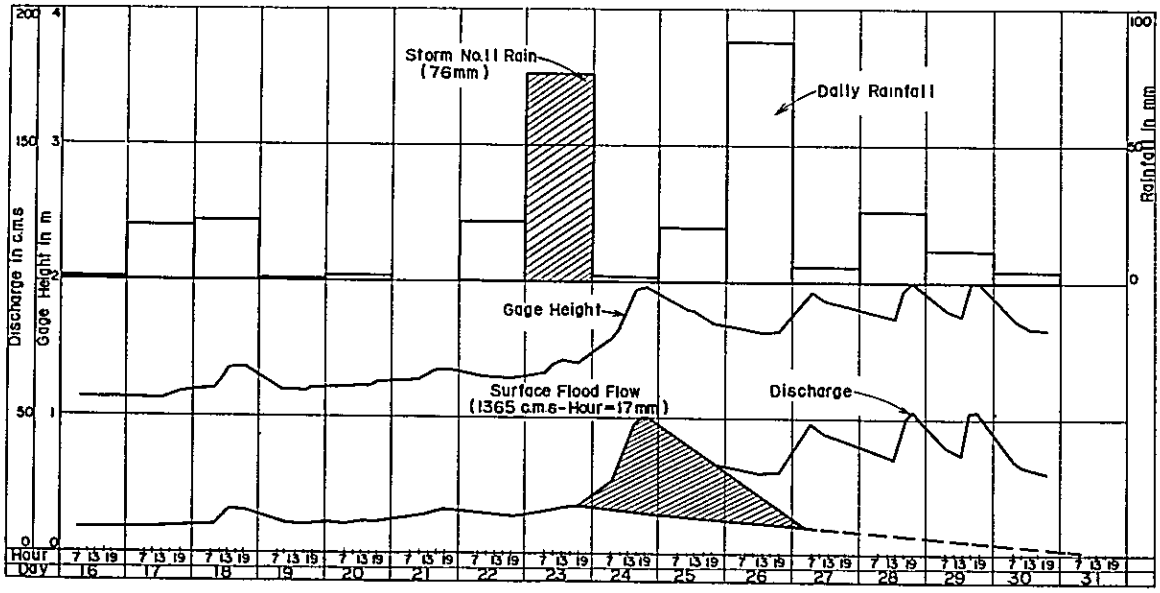
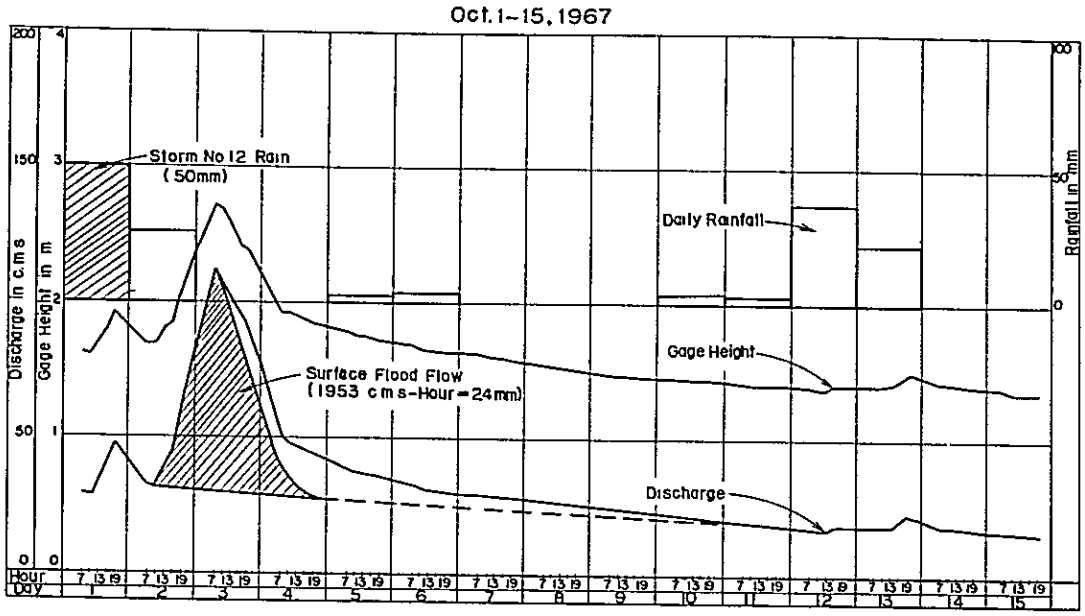


FIG A-10(Continued)



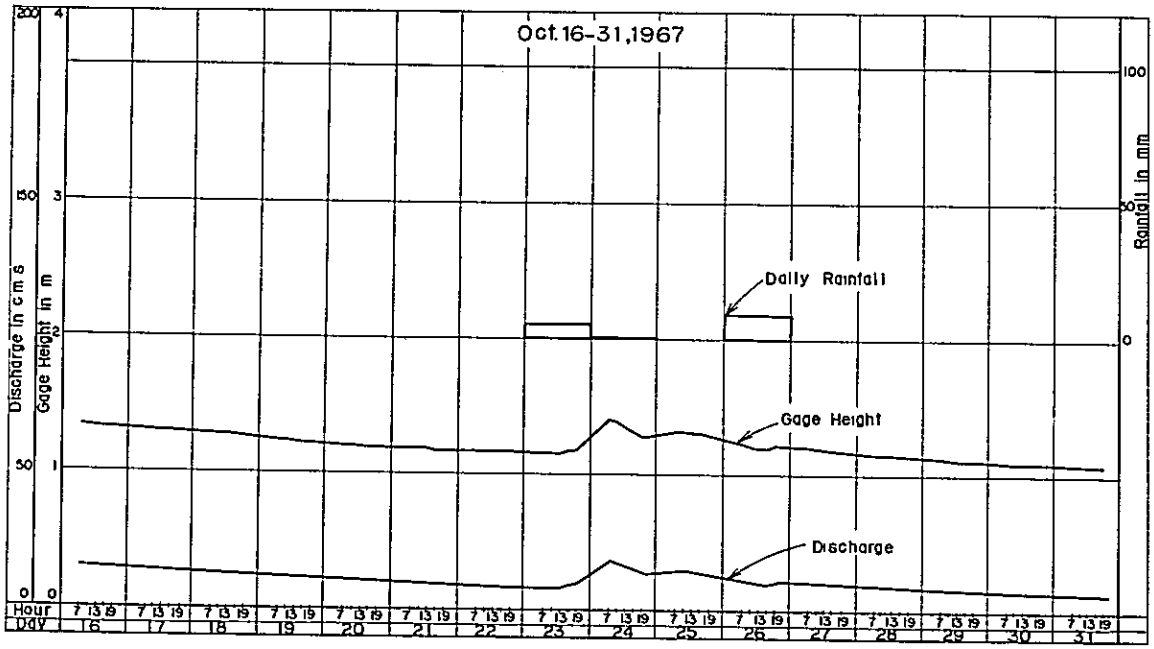


FIG. A-11 CORRELATION BETWEEN MAXIMUM DAILY RAINFALL AND LOSS WATER DURING FLOOD TIME

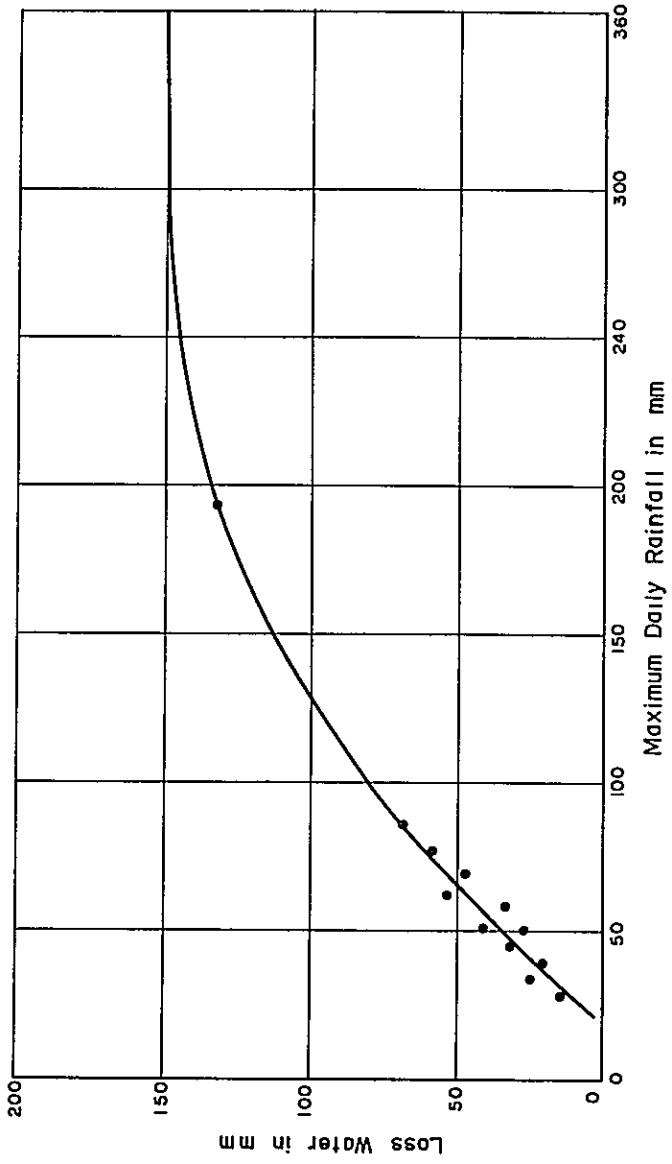


FIG. A-12 PRECIPITABLE WATER DIAGRAM

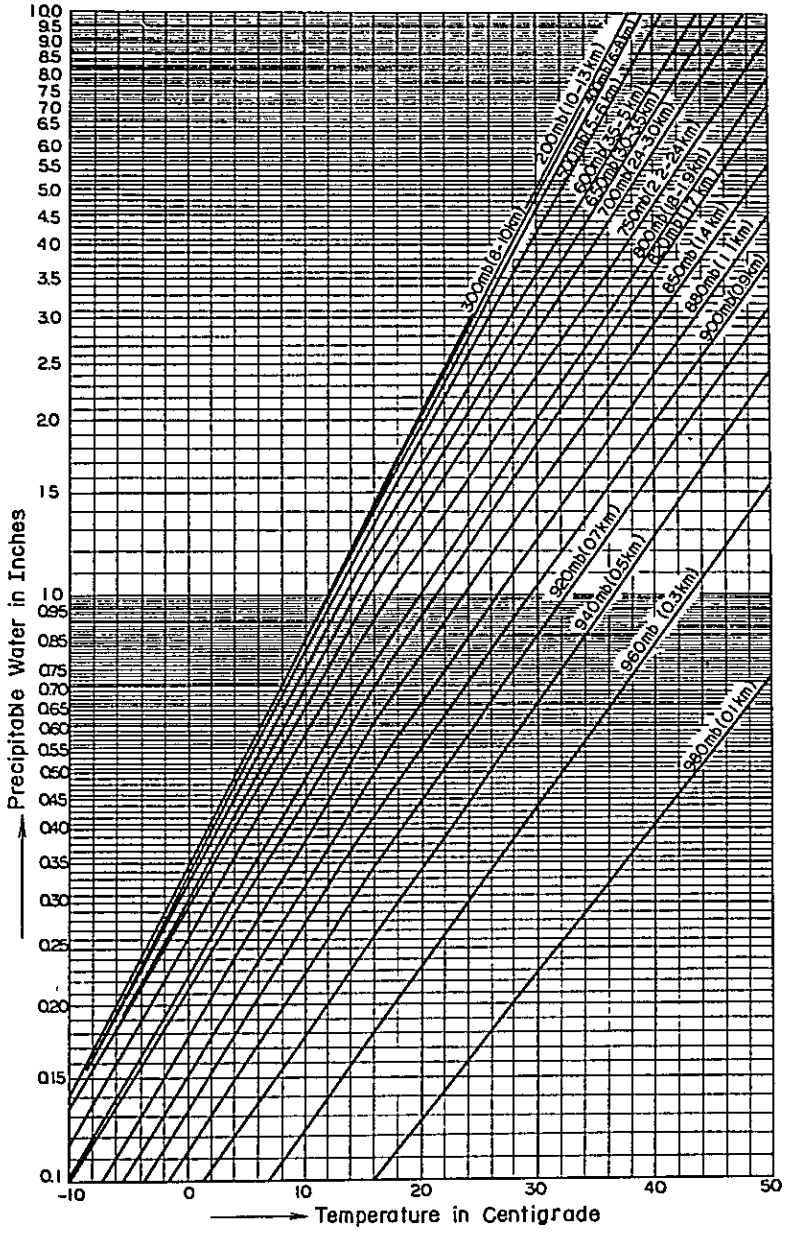


FIG. A-13 SEASONAL VARIATION OF SEVERAL FACTORS OF PROBABLE MAXIMUM PRECIPITATION

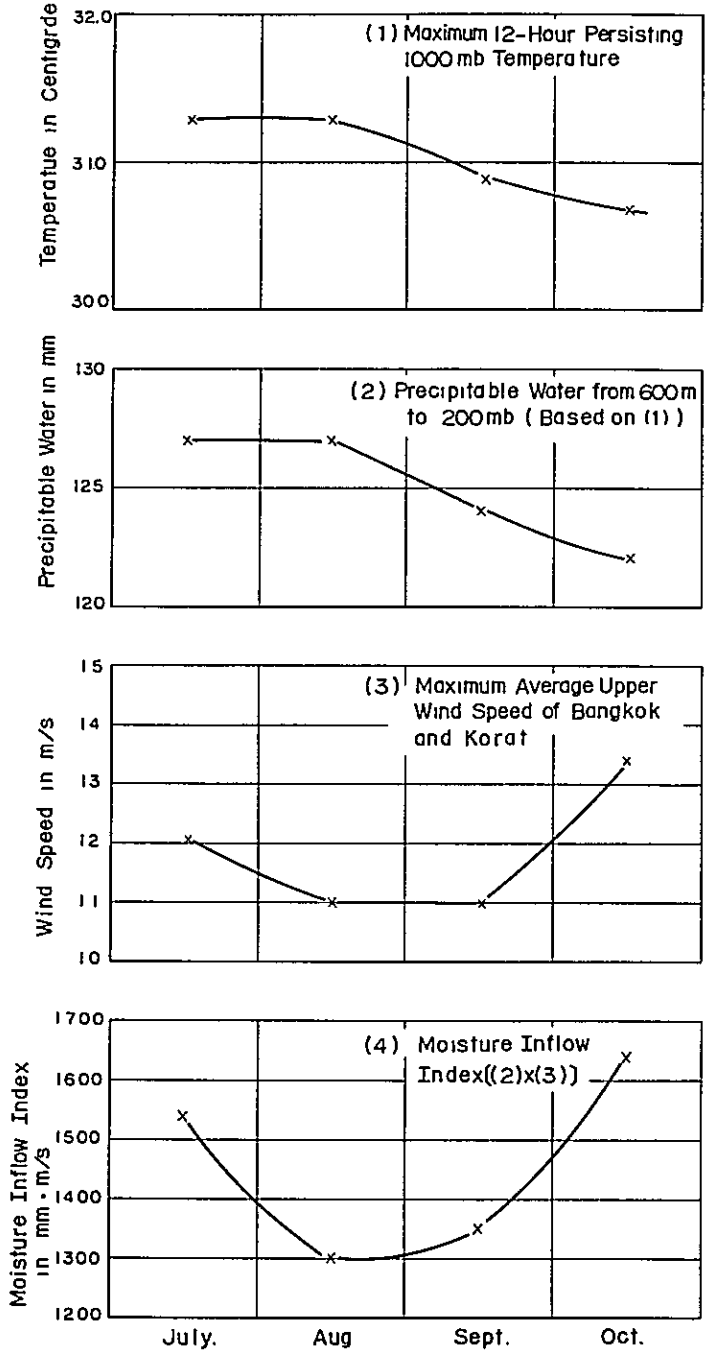


FIG. A-14 FLOOD HYDROGRAPH IN PERCENTAGE TO FLOOD VOLUME

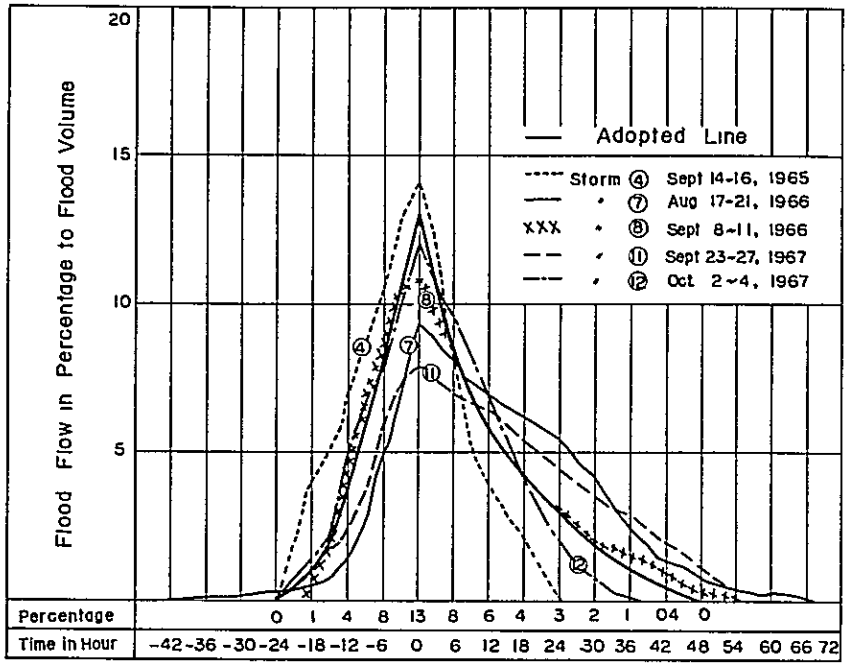


FIG. A-15 CORRELATION OF MAXIMUM DAILY RAINFALL BETWEEN WANG HEO AND AVERAGE OF KABINBURI AND PRACHINBURI

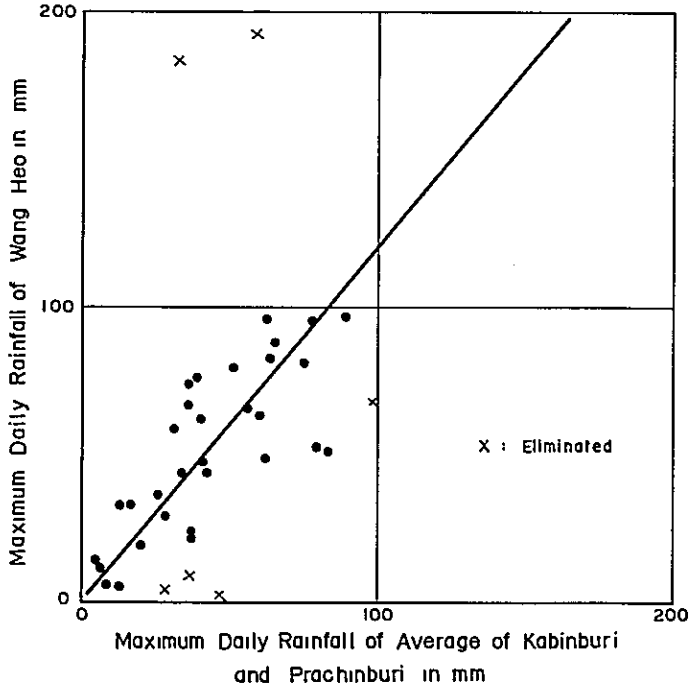
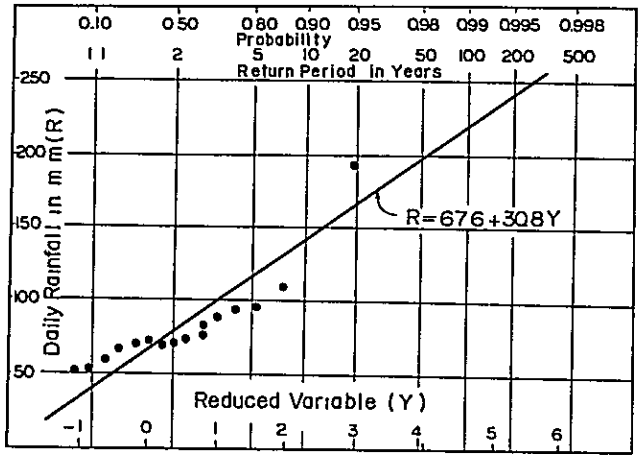


FIG. A-16 MAXIMUM DAILY RAINFALL FREQUENCY OF WANG HEO

(Gumbel's Method)



(Foster Type III & Hazen Method)

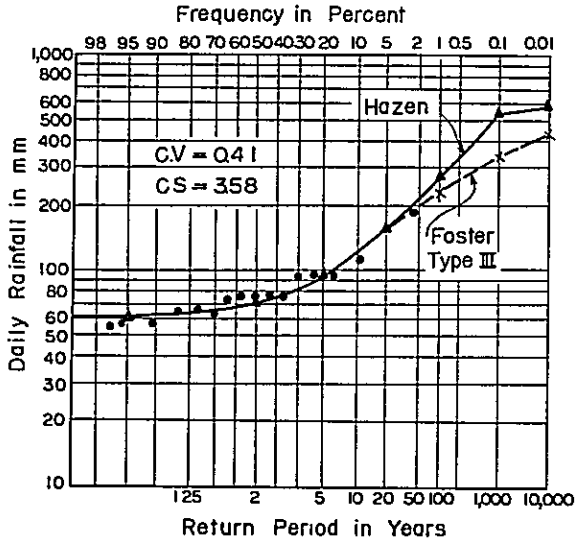


FIG. A-17 PROBABLE MAXIMUM FLOOD HYDROGRAPH OF NAM SAI YAI NO.2 DAM SITE

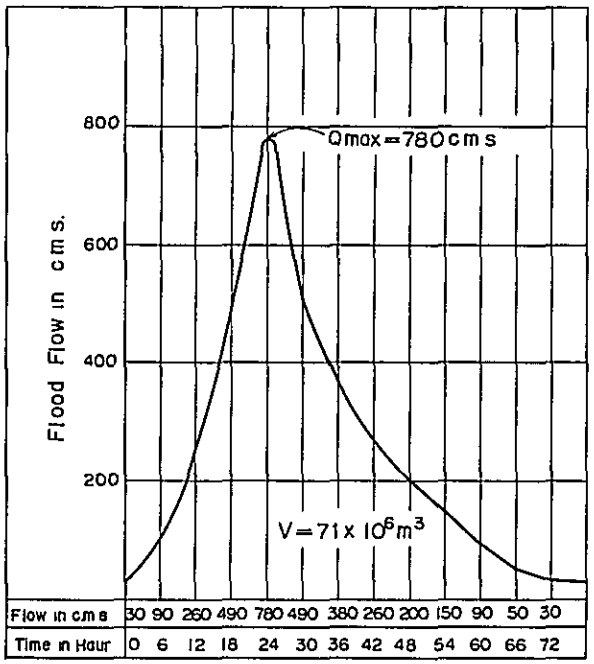
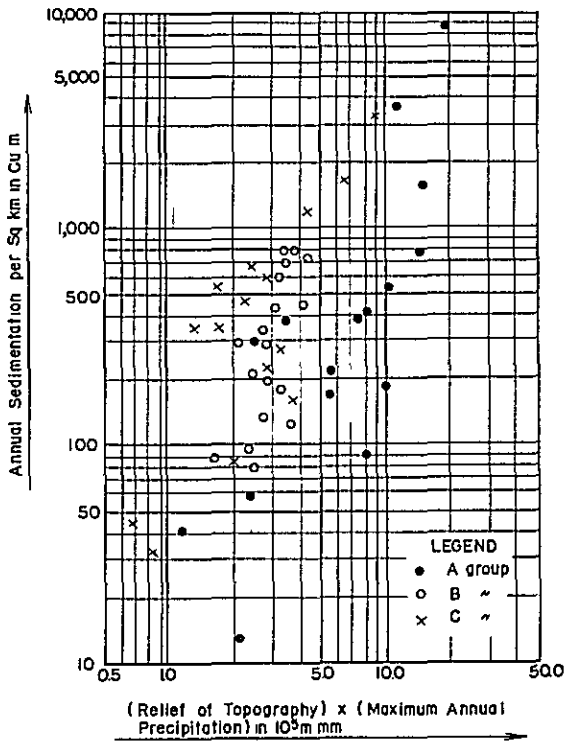


FIG. A-18 CORRELATION BETWEEN SEDIMENTATION IN RESERVOIRS AND RELIEF AND MAXIMUM ANNUAL PRECIPITATION



HYDROLOGICAL DATA

AD 3-10 Pak Chong
From Jan. 1952 to Dec. 1967

AD 3-11 Sikhiu
From Apr. 1953 to Dec. 1967

AD 4 Correlation of Monthly Rainfall

AD 5 Monthly Evaporation

AD 5-1 Wang Heo
From Apr. 1964 to Dec. 1967

AD 5-2 Ban Sapanhin
From Apr. 1964 to Dec. 1967

AD 6 Upper Wind Speed

AD 6-1 Bangkok
From 1955 to 1966 (July - October)

AD 6-2 Korat
From 1955 to 1966 (July - October)

AD 7 Monthly Average Temperature of Prachinburi

AD 7-1 Maximum

AD 7-2 Minimum

AD 7-3 Mean

AD 8 Monthly Mean, Minimum and Maximum Temperature in Central Region

AD 9 Isohyetal Map of Mean Annual Rainfall
(period 1906 - 1960)

AD 10 Map of Specific Runoff in Various Region of Thailand

DATA LIST

AD 1 Daily Gage Height and Discharge

- AD 1-1 Kao Keep Samut on the Sai Yai River
  From Apr. 1, 1964 to Dec. 31, 1964
- AD 1-2 Wang Heo on the Sai Yai River
  From Jan. 1, 1965 to Dec. 31, 1967
- AD 1-3 Ban Sapanhin on the Hanuman River
  From Apr. 1, 1964 to Dec. 31, 1967

AD 2 Daily Rainfall

- AD 2 Kao Keep Samut
  From Mar. 1, 1964 to Dec. 31, 1964
- AD 2 Wang Heo
  From Jan. 1, 1965 to Dec. 31, 1967
- AD 2-3 Ban Sapanhin
  From July 1, 1963 to Dec. 31, 1967
- AD 2-4 Kabinburi
  From Jan. 1, 1952 to Dec. 31, 1967
- AD 2-5 Prachinburi
  From Jan. 1, 1963 to Dec. 31, 1967

AD 3 Monthly Rainfall

- AD 3-1 Wang Heo
  From Apr. 1953 to Mar. 1968 (Including estimated value)
- AD 3-2 Average of Wang Heo and Ban Sapanhin
  From Apr. 1953 to Mar. 1968 (Including estimated value)
- AD 3-3 Average of Kabinburi and Prachinburi
  From Apr. 1953 to Mar. 1968
- AD 3-4 Kabinburi
  From Apr. 1953 to Dec. 1967
- AD 3-5 Prachinburi
  From Apr. 1953 to Dec. 1967
- AD 3-6 Prachantakham
  From Jan. 1953 to Dec. 1967
- AD 3-7 Pak Phli
  From Jan. 1957 to Dec. 1967
- AD 3-8 Nakhon Nayork
  From Apr. 1953 to Dec. 1967
- AD 3-9 Sara Buri
  From Jan. 1955 to Dec. 1967

AD1-1. MONTHLY AVERAGE DISCHRGE AT KAO KEEP SAMUT ON SAI YAI RIVER IN THE BASIN OF HANUMAN

WATER YEAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	AVERAGE
1963 - 1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.21	0.21
1964 - 1965	0.27	8.83	8.34	15.92	11.15	17.71	32.44	9.06	2.45	0.0	0.0	0.0	11.84
MEAN	0.27	8.83	8.34	15.92	11.15	17.71	32.44	9.06	2.45	0.0	0.0	0.21	6.03

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. KAO KEEP SAMUT C.A. 420.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1963-1964(2/2)

DATE	OCT H	OCT Q	NOV H	NOV Q	DEC H	DEC Q	JAN H	JAN Q	FEB H	FEB Q	MAR H	MAR Q
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15											0.28	0.26
16											0.26	0.24
17											0.26	0.24
18											0.25	0.22
19											0.24	0.21
20											0.24	0.21
21											0.24	0.21
22											0.24	0.21
23											0.23	0.20
24											0.23	0.20
25											0.24	0.21
26											0.24	0.21
27											0.24	0.21
28											0.24	0.21
29											0.24	0.21
30											0.23	0.20
31											0.23	0.20
SUM												3.65
MEAN												0.21
MAX												0.26
MIN												0.20

TOTAL = 3.65 MEAN = 0.21 MAX = 0.26 MIN = 0.20

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. KAO KEEP SAMUT C.A. 420.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1964-1965(1/2)

DATE	APR H	APR Q	MAY H	MAY Q	JUN H	JUN Q	JUL H	JUL Q	AUG H	AUG Q	SEP H	SEP Q
1	0.23	0.20	0.35	0.62	0.79	9.32	0.65	4.80	0.80	7.28	1.00	14.50
2	0.23	0.20	0.38	0.71	0.79	9.32	0.63	4.20	0.84	8.64	0.98	13.60
3	0.23	0.20	0.36	0.65	0.85	11.80	0.64	4.50	0.86	9.32	0.95	12.20
4	0.22	0.18	0.61	3.61	0.79	9.32	1.37	44.10	0.83	8.30	0.92	10.90
5	0.22	0.18	0.57	2.68	0.78	8.98	1.79	86.40	0.81	7.62	0.91	10.40
6	0.22	0.18	0.60	3.37	0.77	8.64	1.26	35.20	0.79	6.94	0.86	8.64
7	0.20	0.16	0.67	5.40	0.77	8.64	1.20	30.80	0.77	6.30	0.85	8.30
8	0.20	0.16	0.50	1.25	0.89	13.60	1.11	25.00	0.76	6.00	0.85	8.30
9	0.20	0.16	0.56	2.45	0.89	13.60	1.10	24.40	0.74	5.40	0.86	8.64
10	0.20	0.16	0.51	1.30	0.82	10.40	1.06	22.20	0.89	10.40	0.86	8.64
11	0.19	0.16	0.48	1.15	0.78	8.98	1.07	22.80	0.85	8.98	0.84	7.96
12	0.19	0.16	0.77	8.64	0.78	8.98	1.06	22.20	0.82	7.96	0.80	6.60
13	0.19	0.16	0.91	14.50	0.77	8.64	0.99	18.50	0.85	8.98	0.87	8.98
14	0.18	0.15	0.73	7.28	0.71	6.60	0.96	17.00	0.80	7.28	0.96	12.70
15	0.24	0.21	0.68	5.70	0.69	6.00	0.91	14.50	1.05	18.00	1.12	20.60
16	0.21	0.17	0.71	6.60	0.89	13.60	0.88	10.00	1.04	17.50	1.05	17.00
17	0.20	0.16	0.75	7.96	0.82	10.40	0.86	9.32	1.00	15.50	1.05	17.00
18	0.18	0.15	0.78	8.98	0.81	10.00	0.82	7.96	0.95	13.20	1.10	19.50
19	0.21	0.17	0.70	6.30	0.76	8.30	0.79	6.94	1.07	19.00	1.14	21.70
20	0.23	0.20	0.65	4.80	0.72	6.94	0.77	6.30	1.01	16.00	1.18	23.90
21	0.23	0.20	0.66	5.10	0.71	6.60	0.76	6.00	0.96	13.60	1.18	23.90
22	0.23	0.20	0.82	10.40	0.69	6.00	0.80	7.28	0.91	11.40	1.12	20.60
23	0.20	0.27	0.87	12.70	0.72	6.94	0.75	5.70	0.88	10.00	1.15	22.20
24	0.29	0.27	0.88	13.20	0.68	5.70	0.73	5.10	0.86	9.32	1.37	36.80
25	0.32	0.32	1.02	20.00	0.66	5.10	0.76	6.00	0.83	8.30	1.37	36.80
26	0.37	0.68	0.98	18.00	0.65	4.80	0.76	6.00	0.84	8.64	1.27	29.60
27	0.37	0.68	0.99	18.50	0.68	5.70	0.78	6.60	0.88	10.00	1.21	25.60
28	0.36	0.65	1.21	31.50	0.69	6.00	0.93	12.20	0.92	11.80	1.16	22.80
29	0.37	0.68	1.07	22.80	0.69	6.00	0.81	7.62	1.03	17.00	1.12	20.60
30	0.37	0.68	0.93	15.50	0.67	5.40	0.80	7.28	1.07	19.00	1.31	32.20
31			0.86	12.20			0.78	6.60	1.05	18.00		
SUM		8.10		273.85		250.30		493.50		345.66		531.16
MEAN		0.27		8.83		8.34		15.92		11.15		17.71
MAX		0.68		31.50		13.60		86.40		19.00		36.80
MIN		0.15		0.62		4.80		4.20		5.40		6.60

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. KAO KEEP SAMUT C.A. 420.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1964-1965(2/2)

DATE	OCT H	OCT Q	NOV H	NOV Q	DEC H	DEC Q	JAN H	JAN Q	FEB H	FEB Q	MAR H	MAR Q
1	1.48	45.80	0.85	8.30	0.72	4.20						
2	1.53	50.40	0.86	8.64	0.74	4.80						
3	1.48	45.80	0.88	9.32	0.73	4.50						
4	2.11	112.00	0.92	10.90	0.72	4.20						
5	1.92	90.60	0.94	11.80	0.71	3.90						
6	1.75	72.80	0.94	11.80	0.70	3.60						
7	1.43	41.60	0.95	12.20	0.70	3.60						
8	1.42	40.70	0.95	12.20	0.70	3.60						
9	1.38	37.50	0.95	12.20	0.69	3.37						
10	1.28	30.20	0.97	13.20	0.69	3.37						
11	1.21	25.60	0.97	13.20	0.68	3.14						
12	1.19	24.40	0.96	12.70	0.68	3.14						
13	1.23	27.00	0.96	12.70	0.65	2.45						
14	1.24	27.60	0.95	12.20	0.66	2.68						
15	1.18	23.90	0.86	8.64	0.65	2.45						
16	1.25	28.20	0.88	9.32	0.65	2.45						
17	1.19	24.40	0.86	8.64	0.65	2.45						
18	1.14	21.70	0.86	8.64	0.63	1.99						
19	1.14	21.70	0.87	8.98	0.62	1.76						
20	1.13	21.20	0.83	7.62	0.62	1.76						
21	1.13	21.20	0.82	7.28	0.61	1.53						
22	1.13	21.20	0.81	6.94	0.60	1.30						
23	1.14	21.70	0.80	6.60	0.59	1.25						
24	1.15	22.20	0.79	6.30	0.57	1.15						
25	1.18	23.90	0.78	6.00	0.56	1.10						
26	1.14	21.70	0.77	5.70	0.56	1.10						
27	1.06	17.50	0.75	5.10	0.55	1.05						
28	0.97	13.20	0.74	4.80	0.55	1.05						
29	0.93	11.40	0.73	4.50	0.53	0.95						
30	0.89	9.66	0.76	5.40	0.54	1.00						
31	0.87	8.98			0.53	0.95						
SUM		1005.74		271.82		75.84						
MEAN		32.44		9.06		2.45						
MAX		112.00		13.20		4.80						
MIN		8.98		4.50		0.95						

TOTAL = 3255.96 MEAN = 11.84 MAX = 112.00 MIN = 0.15

ADI-2. MONTHLY AVERAGE DISCHRGE AT WANG HEO ON SAI YAI RIVER IN THE BASIN OF HANUMAN

WATER YEAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	AVERAGE
1964 - 1965	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.76	0.64	0.50	0.63
1965 - 1966	0.39	1.89	18.25	12.71	35.35	33.98	20.65	7.00	2.20	0.52	0.35	0.23	11.17
1966 - 1967	0.30	4.90	8.16	18.52	30.50	32.06	16.91	5.78	1.40	0.59	0.36	0.17	9.69
1967 - 1968	0.41	1.42	10.25	13.33	22.30	19.38	21.22	3.79	1.13	0.0	0.0	0.0	10.29
MEAN	0.37	2.74	12.22	14.85	29.38	28.47	19.59	5.52	1.57	0.62	0.45	0.30	7.95

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. WANG HEO C.A. 295.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1964-1965(2/2)

DATE	OCT H	OCT Q	NOV H	NOV Q	DEC H	DEC Q	JAN H	JAN Q	FEB H	FEB Q	MAR H	MAR Q
1							0.57	1.02	0.49	0.56	0.52	0.72
2							0.56	0.96	0.49	0.56	0.52	0.72
3							0.56	0.96	0.49	0.56	0.51	0.66
4							0.56	0.96	0.48	0.52	0.50	0.60
5							0.56	0.96	0.48	0.52	0.49	0.56
6							0.56	0.96	0.48	0.52	0.48	0.52
7							0.55	0.90	0.49	0.56	0.49	0.56
8							0.55	0.90	0.49	0.56	0.55	0.90
9							0.55	0.90	0.49	0.56	0.59	1.14
10							0.55	0.90	0.50	0.60	0.54	0.84
11							0.54	0.84	0.49	0.56	0.51	0.66
12							0.54	0.84	0.51	0.66	0.50	0.60
13							0.53	0.78	0.54	0.84	0.49	0.56
14							0.53	0.78	0.55	0.90	0.48	0.52
15							0.53	0.78	0.54	0.84	0.46	0.44
16							0.52	0.72	0.54	0.84	0.46	0.44
17							0.52	0.72	0.52	0.72	0.45	0.40
18							0.52	0.72	0.50	0.60	0.44	0.36
19							0.52	0.72	0.49	0.56	0.45	0.40
20							0.51	0.66	0.49	0.56	0.45	0.40
21							0.51	0.66	0.48	0.52	0.44	0.36
22							0.51	0.66	0.48	0.52	0.45	0.40
23							0.51	0.66	0.49	0.56	0.45	0.40
24							0.50	0.60	0.49	0.56	0.44	0.36
25							0.50	0.60	0.50	0.60	0.42	0.28
26							0.50	0.60	0.55	0.90	0.43	0.32
27							0.50	0.60	0.55	0.90	0.42	0.28
28							0.50	0.60	0.52	0.72	0.42	0.28
29							0.49	0.56			0.42	0.28
30							0.49	0.56			0.41	0.24
31							0.49	0.56			0.42	0.28
SUM								23.64		17.88		15.48
MEAN								0.76		0.64		0.50
MAX								1.02		0.90		1.14
MIN								0.56		0.52		0.24

TOTAL = 57.00 MEAN = 0.63 MAX = 1.14 MIN = 0.24

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. WANG HEO C.A. 295.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1965-1966(1/2)

DATE	APR H	APR Q	MAY H	MAY Q	JUN H	JUN Q	JUL H	JUL Q	AUG H	AUG Q	SEP H	SEP Q
1	0.44	0.36	0.42	0.28	1.07	8.80	1.59	26.60	1.24	12.80	1.96	49.10
2	0.42	0.28	0.42	0.28	0.97	6.83	1.52	23.50	1.37	17.30	1.75	34.80
3	0.44	0.36	0.42	0.28	0.91	5.69	1.44	20.10	1.35	16.60	1.69	31.50
4	0.48	0.52	0.44	0.36	0.85	4.65	1.37	17.30	1.58	26.10	1.67	30.50
5	0.46	0.44	0.45	0.40	0.90	5.50	1.34	16.20	1.59	26.60	1.61	27.50
6	0.44	0.36	0.49	0.56	0.98	7.02	1.31	15.00	1.83	39.50	1.55	24.80
7	0.44	0.36	0.51	0.66	0.91	5.69	1.29	14.30	1.95	48.20	1.51	23.00
8	0.44	0.36	0.54	0.84	0.90	5.50	1.24	12.80	2.18	68.20	1.47	21.40
9	0.48	0.52	0.56	0.96	1.14	10.30	1.22	12.20	2.08	59.40	1.44	20.10
10	0.49	0.56	0.56	0.96	1.60	27.00	1.18	11.20	1.94	47.40	1.40	18.50
11	0.48	0.52	0.55	0.90	1.52	23.50	1.15	10.50	1.68	31.00	1.36	16.90
12	0.48	0.52	0.54	0.84	1.48	21.80	1.12	9.84	1.52	23.50	1.33	15.80
13	0.49	0.56	0.53	0.78	1.45	20.60	1.09	9.20	1.44	20.10	1.33	15.80
14	0.49	0.56	0.54	0.84	1.47	21.40	1.06	8.60	1.40	18.50	1.28	14.00
15	0.49	0.56	0.53	0.78	1.43	19.70	1.04	8.20	1.37	17.30	1.97	49.90
16	0.47	0.48	0.51	0.66	1.41	18.90	1.02	7.80	1.39	18.10	1.51	23.00
17	0.47	0.48	0.50	0.60	1.60	27.00	1.00	7.40	1.44	20.10	1.41	18.90
18	0.46	0.44	0.51	0.66	1.48	21.80	0.99	7.21	1.42	19.30	1.36	16.90
19	0.46	0.44	0.58	1.08	1.53	23.90	0.96	6.64	1.47	21.40	1.61	27.50
20	0.45	0.40	0.60	1.20	1.46	21.00	0.94	6.26	2.00	52.40	2.18	68.20
21	0.44	0.36	0.58	1.08	1.57	25.70	0.94	6.26	1.87	42.10	2.00	52.40
22	0.44	0.36	0.70	2.30	1.43	19.70	0.90	5.50	1.83	39.50	2.12	62.90
23	0.43	0.32	0.63	1.53	1.34	16.20	0.90	5.50	1.73	33.60	2.03	55.00
24	0.42	0.28	0.62	1.42	1.43	19.70	1.15	10.50	1.68	31.00	1.99	51.60
25	0.41	0.24	0.63	1.53	1.41	18.90	1.12	9.84	1.66	30.00	1.93	46.50
26	0.41	0.24	0.70	2.30	1.39	18.10	1.12	9.84	1.71	32.60	1.96	49.10
27	0.41	0.24	0.67	1.97	1.40	18.50	1.23	12.50	1.71	32.60	1.81	38.20
28	0.40	0.20	0.76	3.20	1.38	17.70	1.72	33.10	1.65	29.50	1.77	35.80
29	0.41	0.24	1.08	9.00	1.97	49.90	1.43	19.70	2.12	62.90	1.81	38.20
30	0.41	0.24	1.14	10.30	1.78	36.40	1.33	15.80	2.41	91.00	1.86	41.50
31			1.13	10.10			1.30	14.60	2.17	67.30		
SUM		11.80		58.65		547.38		393.99		1095.90		1019.40
MEAN		0.39		1.89		18.25		12.71		35.35		33.98
MAX		0.56		10.30		49.90		33.10		91.00		68.20
MIN		0.20		0.28		4.65		5.50		12.80		14.00

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. WANG HEO C.A. 295.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1965-1966(2/2)

	OCT		NOV		DEC		JAN		FEB		MAR	
DATE	H	Q	H	Q	H	Q	H	Q	H	Q	H	Q
1	1.77	35.80	1.24	12.80	0.77	3.35	0.60	0.70	0.50	0.35	0.52	0.42
2	1.67	30.50	1.18	11.20	0.76	3.20	0.60	0.70	0.49	0.33	0.52	0.42
3	1.72	33.10	1.17	10.90	0.76	3.20	0.59	0.66	0.49	0.33	0.51	0.38
4	1.64	29.00	1.16	10.70	0.75	3.05	0.59	0.66	0.53	0.46	0.49	0.33
5	1.78	36.40	1.13	10.10	0.75	3.05	0.59	0.66	0.52	0.42	0.49	0.33
6	1.70	32.00	1.12	9.84	0.74	2.90	0.58	0.63	0.52	0.42	0.48	0.31
7	1.72	33.10	1.11	9.62	0.73	2.75	0.58	0.63	0.52	0.42	0.47	0.28
8	1.70	32.00	1.10	9.40	0.72	2.60	0.58	0.63	0.51	0.38	0.47	0.28
9	1.67	30.50	1.09	9.20	0.72	2.60	0.57	0.60	0.51	0.38	0.46	0.26
10	1.59	26.60	1.03	8.00	0.72	2.60	0.57	0.60	0.50	0.35	0.45	0.24
11	1.55	24.80	1.02	7.80	0.71	2.45	0.57	0.60	0.50	0.35	0.44	0.22
12	1.59	26.60	1.01	7.60	0.71	2.45	0.56	0.56	0.49	0.33	0.44	0.22
13	1.60	27.00	0.99	7.21	0.71	2.45	0.56	0.56	0.49	0.33	0.44	0.22
14	1.50	22.60	0.97	6.83	0.70	2.30	0.56	0.56	0.49	0.33	0.43	0.20
15	1.46	21.00	0.95	6.45	0.70	2.30	0.55	0.52	0.52	0.42	0.43	0.20
16	1.41	18.90	0.93	6.07	0.68	2.08	0.55	0.52	0.52	0.42	0.43	0.20
17	1.37	17.30	0.92	5.88	0.68	2.08	0.55	0.52	0.51	0.38	0.44	0.22
18	1.36	16.90	0.92	5.88	0.67	1.97	0.54	0.49	0.50	0.35	0.43	0.20
19	1.30	14.60	0.91	5.69	0.66	1.86	0.54	0.49	0.49	0.33	0.42	0.17
20	1.27	13.70	0.90	5.50	0.66	1.86	0.54	0.49	0.48	0.31	0.40	0.13
21	1.24	12.80	0.89	5.33	0.66	1.86	0.53	0.46	0.48	0.31	0.44	0.22
22	1.20	11.60	0.87	4.99	0.65	1.75	0.53	0.46	0.48	0.31	0.43	0.20
23	1.19	11.40	0.86	4.82	0.65	1.75	0.53	0.46	0.47	0.28	0.43	0.20
24	1.18	11.20	0.85	4.65	0.64	1.64	0.52	0.42	0.47	0.28	0.42	0.17
25	1.16	10.70	0.84	4.48	0.64	1.64	0.52	0.42	0.46	0.26	0.42	0.17
26	1.15	10.50	0.82	4.14	0.63	1.53	0.52	0.42	0.46	0.26	0.41	0.15
27	1.11	9.62	0.81	3.97	0.63	1.53	0.51	0.38	0.51	0.38	0.41	0.15
28	1.10	9.40	0.80	3.80	0.62	1.42	0.51	0.38	0.52	0.42	0.40	0.13
29	1.12	9.84	0.79	3.65	0.62	1.42	0.51	0.38			0.40	0.13
30	1.17	10.90	0.78	3.50	0.61	1.31	0.50	0.35			0.40	0.13
31	1.12	9.84			0.60	1.20	0.50	0.35			0.40	0.13
SUM		640.20		210.00		68.15		16.26		9.89		7.01
MEAN		20.65		7.00		2.20		0.52		0.35		0.23
MAX		36.40		12.80		3.35		0.70		0.46		0.42
MIN		9.40		3.50		1.20		0.35		0.26		0.13

TOTAL = 4078.62 MEAN = 11.17 MAX = 91.00 MIN = 0.13

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. WANG HEO C.A. 295.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1966-1967(1/2)

DATE	APR H	APR Q	MAY H	MAY Q	JUN H	JUN Q	JUL H	JUL Q	AUG H	AUG Q	SEP H	SEP Q
1	0.43	0.20	0.43	0.20	1.20	13.10	0.95	6.26	1.43	21.50	1.55	26.60
2	0.50	0.35	0.44	0.22	1.11	10.40	0.93	5.79	1.43	21.50	1.50	24.40
3	0.54	0.49	0.44	0.22	1.04	8.52	0.97	6.74	1.36	18.80	1.44	21.90
4	0.54	0.49	0.45	0.24	1.02	7.99	1.03	8.25	1.37	19.20	1.39	19.90
5	0.54	0.49	0.45	0.24	0.97	6.74	1.08	9.57	1.38	19.50	1.43	21.50
6	0.50	0.35	0.51	0.38	0.93	5.79	1.16	11.90	1.34	18.00	1.55	26.60
7	0.47	0.28	0.54	0.49	1.00	7.46	1.14	11.30	1.33	17.60	1.45	22.40
8	0.46	0.26	0.82	3.41	0.92	5.55	1.08	9.57	1.30	16.50	1.47	23.20
9	0.45	0.24	0.90	5.07	0.92	5.55	1.05	8.78	1.27	15.50	2.47	76.80
10	0.44	0.22	0.78	2.71	0.92	5.55	1.05	8.18	1.29	16.20	1.90	44.00
11	0.44	0.22	0.71	1.68	0.90	5.07	0.99	7.22	1.29	16.20	1.73	35.10
12	0.43	0.20	0.63	0.95	0.94	6.03	0.96	6.50	1.32	17.30	1.64	30.70
13	0.42	0.17	0.59	0.66	0.90	5.07	0.94	6.03	1.36	18.80	1.69	33.10
14	0.42	0.17	0.56	0.56	0.92	5.55	0.92	5.55	1.43	21.50	1.63	30.20
15	0.42	0.17	0.54	0.49	1.12	10.70	0.90	5.07	1.49	24.00	1.58	27.90
16	0.42	0.17	0.53	0.46	1.05	8.78	1.15	11.60	1.55	26.60	1.54	26.20
17	0.42	0.17	0.78	2.71	1.03	8.25	1.18	12.50	1.62	29.80	1.68	32.60
18	0.44	0.22	0.94	6.03	1.00	7.46	1.16	11.90	2.50	78.60	2.17	59.00
19	0.48	0.31	1.10	10.10	1.00	7.46	1.26	15.10	3.30	132.00	2.19	60.10
20	0.48	0.31	0.93	5.79	1.02	7.99	1.39	19.90	1.97	47.80	2.02	50.50
21	0.53	0.46	0.84	3.83	1.09	9.84	1.60	28.80	1.76	36.70	1.91	44.50
22	0.50	0.35	0.78	2.71	1.06	9.04	1.83	40.30	1.66	31.70	1.78	37.70
23	0.46	0.26	0.83	3.62	1.11	10.40	1.60	28.80	1.71	34.10	1.68	32.60
24	0.45	0.24	1.03	8.25	1.26	15.10	1.53	25.70	1.59	28.40	1.61	29.30
25	0.51	0.38	1.06	9.04	1.13	11.00	1.68	32.60	1.52	25.30	1.55	26.60
26	0.55	0.52	1.18	12.50	1.07	9.31	1.53	25.70	1.46	22.80	1.48	23.60
27	0.52	0.42	1.34	18.00	1.02	7.99	2.35	69.50	1.63	30.20	1.42	21.10
28	0.48	0.31	1.14	11.30	1.01	7.72	1.92	45.10	1.77	37.20	1.38	19.50
29	0.46	0.26	1.10	10.10	1.04	8.52	1.75	36.20	1.68	32.60	1.33	17.60
30	0.45	0.24	1.18	12.50	0.98	6.98	1.60	28.80	1.72	34.60	1.30	16.50
31			1.32	17.30			1.51	24.80	1.62	29.80		
SUM		8.92		151.76		244.91		574.01		940.30		961.70
MEAN		0.30		4.90		8.16		18.52		30.20		32.06
MAX		0.52		18.00		15.10		69.50		78.60		76.80
MIN		0.17		0.20		5.07		5.07		13.20		16.50

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. WANG HEO C.A. 295.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1966-1967(2/2)

	OCT		NOV		DEC		JAN		FEB		MAR	
DATE	H	Q	H	Q	H	Q	H	Q	H	Q	H	Q
1	1.27	15.50	1.17	12.20	0.76	2.41	0.60	0.77	0.52	0.47	0.46	0.26
2	1.23	14.10	1.13	11.00	0.75	2.26	0.60	0.77	0.52	0.47	0.46	0.26
3	1.20	13.10	1.10	10.10	0.74	2.12	0.59	0.73	0.52	0.47	0.45	0.23
4	1.17	12.20	1.09	9.84	0.73	1.97	0.58	0.69	0.52	0.47	0.45	0.23
5	1.18	12.50	1.07	9.31	0.72	1.82	0.58	0.69	0.51	0.43	0.46	0.26
6	1.22	13.80	1.05	8.78	0.72	1.82	0.58	0.69	0.50	0.39	0.45	0.23
7	1.45	22.40	1.02	7.99	0.72	1.82	0.58	0.69	0.52	0.47	0.44	0.21
8	1.58	27.90	1.01	7.72	0.71	1.68	0.57	0.66	0.50	0.39	0.44	0.21
9	1.53	25.70	1.00	7.46	0.71	1.68	0.57	0.66	0.50	0.39	0.43	0.18
10	1.49	24.00	0.98	6.98	0.70	1.53	0.57	0.66	0.50	0.39	0.43	0.18
11	1.52	25.30	0.96	6.50	0.70	1.53	0.56	0.62	0.50	0.39	0.43	0.18
12	1.47	23.20	0.95	6.26	0.69	1.45	0.56	0.62	0.50	0.39	0.43	0.18
13	1.43	21.50	0.92	5.55	0.68	1.36	0.56	0.62	0.49	0.36	0.42	0.16
14	1.40	20.30	0.92	5.55	0.67	1.28	0.55	0.58	0.49	0.36	0.42	0.16
15	1.36	18.80	0.90	5.07	0.67	1.28	0.55	0.58	0.48	0.34	0.42	0.16
16	1.36	18.80	0.90	5.07	0.67	1.28	0.55	0.58	0.48	0.34	0.42	0.16
17	1.32	17.30	0.88	4.66	0.67	1.28	0.54	0.54	0.47	0.31	0.42	0.16
18	1.29	16.20	0.87	4.45	0.67	1.28	0.54	0.54	0.47	0.31	0.42	0.16
19	1.26	15.10	0.86	4.24	0.66	1.20	0.54	0.54	0.47	0.31	0.42	0.16
20	1.23	14.10	0.86	4.24	0.66	1.20	0.53	0.50	0.46	0.29	0.42	0.16
21	1.20	13.10	0.84	3.83	0.65	1.12	0.53	0.50	0.46	0.29	0.42	0.16
22	1.18	12.50	0.83	3.62	0.66	1.20	0.53	0.50	0.46	0.29	0.41	0.13
23	1.16	11.90	0.82	3.41	0.66	1.20	0.53	0.50	0.46	0.29	0.41	0.13
24	1.14	11.30	0.81	3.21	0.66	1.20	0.53	0.50	0.47	0.31	0.40	0.12
25	1.32	17.30	0.80	3.00	0.65	1.12	0.53	0.50	0.47	0.31	0.40	0.12
26	1.35	18.40	0.79	2.85	0.64	1.03	0.53	0.50	0.46	0.29	0.40	0.12
27	1.26	15.10	0.79	2.85	0.63	0.95	0.53	0.50	0.46	0.29	0.39	0.12
28	1.24	14.50	0.78	2.71	0.62	0.87	0.53	0.50	0.46	0.29	0.39	0.12
29	1.21	13.40	0.77	2.56	0.62	0.87	0.53	0.50			0.38	0.11
30	1.19	12.80	0.76	2.41	0.61	0.78	0.52	0.47			0.38	0.11
31	1.17	12.20			0.61	0.78	0.52	0.47			0.38	0.11
SUM		524.30		173.42		43.37		18.17		10.10		5.24
MEAN		16.91		5.78		1.40		0.59		0.36		0.17
MAX		27.90		12.20		2.41		0.77		0.47		0.26
MIN		11.30		2.41		0.78		0.47		0.29		0.11

TOTAL = 3537.39 MEAN = 9.69 MAX = 78.60 MIN = 0.11

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. WANG HEO C.A. 295.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1967-1968(1/2)

	APR		MAY		JUN		JUL		AUG		SEP	
DATE	H	Q	H	Q	H	Q	H	Q	H	Q	H	Q
1	0.38	0.11	0.53	0.50	0.76	1.92	1.09	7.38	1.44	20.30	1.46	21.20
2	0.38	0.11	0.51	0.43	0.76	1.92	1.28	13.50	1.41	18.80	1.41	18.80
3	0.38	0.11	0.48	0.34	1.34	15.90	1.28	13.50	1.34	15.90	1.38	17.50
4	0.37	0.10	0.46	0.29	1.18	9.92	1.16	9.34	1.31	14.70	1.33	15.50
5	0.37	0.10	0.46	0.29	2.19	67.10	1.08	7.16	1.38	17.50	1.29	13.90
6	0.36	0.10	0.47	0.31	1.45	20.80	1.05	6.50	1.45	20.80	1.25	12.40
7	0.36	0.10	0.46	0.29	1.34	15.90	1.07	6.94	1.49	22.70	1.26	12.80
8	0.37	0.10	0.50	0.39	1.30	14.30	1.05	6.50	1.40	18.30	1.27	13.20
9	0.37	0.10	0.62	0.89	1.21	10.90	1.06	6.72	1.32	15.10	1.23	11.60
10	0.38	0.11	0.76	1.92	1.13	8.47	1.12	8.18	1.29	13.90	1.28	13.50
11	0.38	0.11	0.84	2.77	1.14	8.76	1.16	9.34	1.26	12.80	1.28	13.50
12	0.37	0.10	0.78	2.10	1.20	10.50	1.10	7.60	1.36	16.70	1.22	11.30
13	0.36	0.10	0.73	1.64	1.40	18.30	1.09	7.38	1.34	15.90	1.22	11.30
14	0.36	0.10	0.71	1.46	1.32	15.10	1.10	7.60	1.34	15.90	1.20	10.50
15	0.36	0.10	0.67	1.19	1.23	11.60	1.22	11.30	1.29	13.90	1.18	9.92
16	0.36	0.10	0.62	0.89	1.16	9.34	1.16	9.34	1.38	17.50	1.16	9.34
17	0.37	0.10	0.60	0.77	1.16	9.34	1.17	9.63	1.62	29.40	1.15	9.05
18	0.40	0.12	0.59	0.73	1.13	8.47	1.36	16.70	1.62	29.40	1.31	14.70
19	0.44	0.21	0.58	0.69	1.07	6.94	1.42	19.30	1.51	23.70	1.20	10.50
20	0.47	0.29	0.58	0.69	1.04	6.28	1.36	16.70	1.59	27.80	1.24	12.00
21	0.50	0.39	0.60	0.77	1.01	5.62	1.32	15.10	1.49	22.70	1.32	15.10
22	0.53	0.50	0.59	0.73	0.96	4.64	1.29	13.90	1.78	38.60	1.30	14.30
23	0.56	0.62	0.60	0.77	0.93	4.07	1.24	12.00	1.60	28.30	1.39	17.90
24	0.53	0.50	0.61	0.83	0.91	3.69	1.23	11.60	1.50	23.20	1.80	39.80
25	0.75	1.82	0.69	1.31	0.90	3.50	1.25	12.40	1.43	19.80	1.77	38.00
26	0.75	1.82	0.73	1.64	0.87	3.13	1.51	23.70	1.41	18.80	1.64	30.50
27	0.77	2.01	0.80	2.28	0.86	3.01	1.81	40.40	1.67	32.20	1.87	44.40
28	0.64	1.01	1.07	6.94	0.86	3.01	1.57	26.80	1.86	43.70	1.83	41.80
29	0.58	0.69	0.96	4.64	0.83	2.65	1.48	22.20	1.65	31.10	1.87	44.40
30	0.55	0.58	0.86	3.01	0.82	2.52	1.40	18.30	1.60	28.30	1.68	32.80
31			0.82	2.52			1.35	16.30	1.52	24.20		
SUM		12.31		44.02		307.60		413.31		691.90		581.51
MEAN		0.41		1.42		10.25		13.33		22.30		19.38
MAX		2.01		6.94		67.10		40.40		43.70		44.40
MIN		0.10		0.29		1.92		6.50		2.94		9.05

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. WANG HEO C.A. 295.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1967-1968(2/2)

	OCT		NOV		DEC		JAN		FEB		MAR	
DATE	H	Q	H	Q	H	Q	H	Q	H	Q	H	Q
1	1.71	34.50	1.06	6.50	0.75	1.73						
2	1.84	42.40	1.04	6.06	0.74	1.64						
3	2.56	97.30	1.02	5.62	0.73	1.55						
4	1.89	45.60	1.00	5.21	0.73	1.55						
5	1.75	36.80	0.98	4.83	0.72	1.46						
6	1.66	31.70	0.96	4.45	0.72	1.46						
7	1.61	28.90	0.94	4.07	0.71	1.37						
8	1.54	25.20	0.93	3.88	0.70	1.31						
9	1.48	22.20	0.92	3.69	0.70	1.31						
10	1.44	20.30	0.90	3.38	0.70	1.31						
11	1.41	18.80	0.89	3.26	0.68	1.19						
12	1.39	17.90	0.93	3.88	0.68	1.19						
13	1.44	20.30	1.01	5.40	0.67	1.13						
14	1.41	18.90	0.96	4.45	0.67	1.13						
15	1.36	16.70	0.91	3.50	0.66	1.07						
16	1.33	15.50	0.89	3.26	0.66	1.07						
17	1.31	14.70	0.87	3.01	0.66	1.07						
18	1.28	13.50	0.86	2.89	0.65	1.01						
19	1.24	12.00	0.85	12.77	0.65	1.01						
20	1.21	10.90	0.84	2.65	0.64	0.95						
21	1.19	10.20	0.83	2.52	0.64	0.95						
22	1.17	9.63	0.82	2.40	0.64	0.95						
23	1.17	9.63	0.81	2.28	0.63	0.89						
24	1.34	15.30	0.80	2.19	0.63	0.89						
25	1.31	14.70	0.79	2.10	0.62	0.83						
26	1.22	11.30	0.78	2.01	0.62	0.89						
27	1.19	10.20	0.78	2.01	0.61	0.83						
28	1.16	9.34	0.77	1.92	0.61	0.83						
29	1.13	8.47	0.76	1.82	0.60	0.77						
30	1.10	7.60	0.76	1.82	0.60	0.77						
31	1.09	7.38			0.60	0.77						
SUM		657.75		113.83		34.88						
MEAN		21.22		3.79		1.13						
MAX		97.30		12.77		1.73						
MIN		7.38		1.82		0.77						

TOTAL = 2830.64 MEAN = 10.29 MAX = 97.30 MIN = 0.10

ADI-3. MONTHLY AVERAGE DISCHRGE AT BAN SAPANHIN ON SAI YAI RIVER IN THE BASIN OF HANUMAN

WATER YEAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	AVERAGE
1963 - 1964	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.07	1.43	0.81	1.44
1964 - 1965	0.50	17.71	14.67	32.35	27.86	39.78	68.40	8.89	2.36	1.08	1.09	0.67	18.11
1965 - 1966	0.45	2.22	33.79	24.16	60.63	82.88	41.09	9.29	2.71	0.95	0.66	0.36	21.66
1966 - 1967	0.47	6.78	20.72	60.04	85.65	67.91	29.27	7.32	2.22	1.30	0.81	0.35	23.75
1967 - 1968	0.57	4.65	13.05	38.70	67.03	57.66	37.45	6.15	2.32	0.0	0.0	0.0	23.37
MEAN	0.50	7.84	20.56	38.81	60.29	62.06	44.05	7.91	2.40	1.35	1.00	0.55	18.07

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. BAN SAPANHIN C.A. 636.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1963-1964(2/2)

DATE	OCT H	OCT Q	NOV H	NOV Q	DEC H	DEC Q	JAN H	JAN Q	FEB H	FEB Q	MAR H	MAR Q
1							1.65	3.08	1.48	1.16	1.52	1.26
2							1.64	2.95	1.48	1.16	1.51	1.16
3							1.65	3.08	1.48	1.16	1.50	1.06
4							1.65	3.08	1.47	1.06	1.49	0.97
5							1.64	2.95	1.46	0.97	1.49	0.97
6							1.64	2.95	1.46	0.97	1.49	0.97
7							1.63	2.82	1.46	0.97	1.49	0.97
8							1.62	2.70	1.46	0.97	1.49	0.97
9							1.61	2.58	1.45	0.88	1.48	0.88
10							1.60	2.45	1.45	0.88	1.49	0.97
11							1.59	2.34	1.44	0.78	1.50	1.06
12							1.58	2.23	1.44	0.78	1.50	1.06
13							1.58	2.23	1.44	0.78	1.51	1.16
14							1.58	2.23	1.43	0.68	1.50	1.06
15							1.57	2.12	1.43	0.68	1.49	0.97
16							1.56	2.01	1.42	0.59	1.48	0.88
17							1.55	1.90	1.42	0.59	1.47	0.78
18							1.54	1.79	1.41	0.50	1.46	0.68
19							1.54	1.79	1.41	0.50	1.46	0.68
20							1.53	1.68	1.42	0.32	1.46	0.68
21							1.53	1.68	1.90	6.36	1.45	0.59
22							1.52	1.57	1.79	4.60	1.45	0.59
23							1.52	1.57	1.70	3.32	1.44	0.50
24							1.51	1.46	1.65	2.70	1.44	0.50
25							1.50	1.35	1.61	2.23	1.44	0.50
26							1.50	1.35	1.58	1.90	1.44	0.68
27							1.50	1.35	1.53	1.35	1.43	0.59
28							1.49	1.26	1.53	1.35	1.43	0.59
29							1.49	1.26	1.53	1.35	1.42	0.50
30							1.49	1.26			1.42	0.50
31							1.48	1.14			1.42	0.50
SUM								64.21		41.54		25.23
MEAN								2.07		1.43		0.81
MAX								3.08		6.36		1.26
MIN								1.14		0.32		0.50

TOTAL = 130.98 MEAN = 1.44 MAX = 6.36 MIN = 0.32

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. BAN SAPANHIN C.A. 636.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1964-1965(1/2)

DATE	APR H	APR Q	MAY H	MAY Q	JUN H	JUN Q	JUL H	JUL Q	AUG H	AUG Q	SEP H	SEP Q
1	1.42	0.50	1.53	1.57	2.46	19.80	2.05	10.00	2.28	15.50	3.51	49.80
2	1.42	0.50	1.55	1.79	2.40	18.20	2.67	25.20	2.38	18.00	3.16	39.30
3	1.41	0.40	1.59	2.23	2.34	16.80	3.84	60.30	2.50	21.00	2.96	33.40
4	1.41	0.40	2.45	19.50	2.27	15.00	5.90	139.00	2.43	19.20	2.85	30.20
5	1.41	0.40	2.14	11.90	2.22	13.80	5.90	139.00	2.34	17.00	2.73	26.80
6	1.40	0.32	2.03	9.36	2.21	13.50	3.92	63.00	2.28	15.50	2.63	24.20
7	1.40	0.32	1.91	7.06	2.18	12.80	3.52	50.10	2.23	14.20	2.58	23.00
8	1.42	0.50	2.27	15.20	2.36	17.20	3.18	39.90	2.19	13.30	2.50	21.00
9	1.41	0.40	2.02	9.36	2.66	24.80	3.17	39.60	2.32	16.50	2.52	21.50
10	1.41	0.40	1.94	7.46	2.40	18.20	3.00	34.60	2.57	22.80	2.58	23.00
11	1.41	0.40	1.82	5.36	2.29	15.50	2.90	31.70	2.54	22.80	2.46	20.00
12	1.40	0.32	1.98	8.28	2.20	13.50	2.86	30.50	2.50	21.00	2.50	21.00
13	1.40	0.32	2.87	6.19	2.14	21.10	2.92	32.30	2.54	22.00	2.43	19.20
14	1.39	0.32	2.42	18.80	2.09	11.00	2.75	27.40	2.45	19.80	2.80	28.80
15	1.39	0.32	2.71	26.00	2.06	10.30	2.66	25.00	3.47	48.60	3.01	34.90
16	1.38	0.24	2.38	17.80	2.39	18.20	2.54	22.00	3.32	44.10	2.99	34.30
17	1.38	0.16	2.23	14.00	2.33	16.80	2.46	20.00	3.07	36.60	2.94	32.90
18	1.39	0.24	2.26	14.80	2.27	15.20	2.38	18.00	2.86	30.50	3.22	41.10
19	1.39	0.24	2.20	13.30	2.20	13.50	2.30	16.00	3.24	41.70	3.20	40.50
20	1.40	0.32	2.15	12.10	2.11	11.40	2.25	14.80	2.97	33.70	3.42	47.10
21	1.40	0.32	2.14	11.90	2.08	10.70	2.16	12.60	2.84	30.00	3.60	52.50
22	1.41	0.40	2.28	15.20	2.06	10.30	2.27	15.20	2.72	26.60	3.30	43.50
23	1.42	0.50	2.71	26.00	2.10	11.20	2.17	12.80	2.62	24.00	3.25	42.00
24	1.44	0.68	2.94	32.60	2.05	10.00	2.13	11.90	2.70	26.00	4.20	72.40
25	1.45	0.78	2.96	33.20	2.00	8.90	2.16	12.60	2.60	23.50	4.19	72.10
26	1.48	1.06	2.94	32.60	1.97	8.28	2.18	13.00	2.82	29.40	3.86	61.00
27	1.47	0.97	3.04	35.50	2.64	24.50	2.26	15.00	2.79	28.50	3.63	53.50
28	1.47	0.97	3.55	50.70	2.28	15.50	2.54	22.00	2.89	31.40	3.55	51.00
29	1.52	1.46	3.24	41.40	2.17	12.80	2.41	18.80	3.64	53.80	3.34	44.70
30	1.45	0.78	2.70	25.80	2.11	11.40	2.32	16.50	3.58	51.90	4.65	88.60
31			2.56	22.20			2.22	14.00	3.34	44.70		
SUM		14.94		549.16		440.18		1002.80		863.60		1193.30
MEAN		0.50		17.71		14.67		32.35		27.86		39.78
MAX		1.46		50.70		24.80		139.00		53.80		88.60
MIN		0.16		1.57		8.28		10.00		13.30		19.20

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. BAN SAPANHIN C.A. 636.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1964-1965(2/2)

DATE	OCT H	OCT Q	NOV H	NOV Q	DEC H	DEC Q	JAN H	JAN Q	FEB H	FEB Q	MAR H	MAR Q
1	4.88	97.20	2.42	19.00	1.70	3.70	1.47	1.45	1.35	0.72	1.40	0.94
2	5.40	118.00	2.36	17.50	1.70	3.70	1.46	1.39	1.35	0.72	1.40	0.94
3	4.94	99.60	2.31	16.20	1.69	3.58	1.46	1.39	1.35	0.72	1.39	0.89
4	7.99	265.00	2.26	15.00	1.68	3.45	1.46	1.39	1.35	0.72	1.39	0.89
5	7.18	201.00	2.22	14.00	1.66	3.20	1.45	1.32	1.34	0.62	1.39	0.89
6	5.61	126.00	2.19	13.30	1.65	3.08	1.45	1.32	1.34	0.62	1.39	0.89
7	4.94	99.60	2.17	12.80	1.63	2.82	1.45	1.32	1.45	1.26	1.38	0.83
8	4.56	85.20	2.14	12.10	1.62	2.70	1.45	1.32	1.45	1.26	1.38	0.83
9	4.68	89.70	2.11	11.40	1.62	2.70	1.44	1.26	1.46	1.32	1.38	0.83
10	4.37	78.20	2.08	10.70	1.62	2.70	1.44	1.26	1.46	1.32	1.38	0.83
11	3.93	63.30	2.05	10.00	1.65	3.08	1.43	1.20	1.46	1.32	1.38	0.83
12	3.60	52.50	2.03	9.59	1.67	3.32	1.43	1.20	1.46	1.32	1.37	0.78
13	3.91	62.60	2.01	9.13	1.65	3.08	1.43	1.20	1.46	1.32	1.37	0.78
14	3.56	51.30	1.97	8.28	1.62	2.70	1.42	1.13	1.46	1.32	1.37	0.78
15	3.89	62.00	1.95	7.88	1.62	2.70	1.42	1.13	1.46	1.32	1.36	0.72
16	3.84	60.30	1.93	7.46	1.59	2.34	1.41	1.07	1.45	1.26	1.36	0.72
17	3.60	52.50	1.92	7.26	1.57	2.12	1.41	1.07	1.45	1.26	1.35	0.67
18	3.38	45.90	1.90	6.85	1.56	2.01	1.40	1.00	1.45	1.26	1.35	0.67
19	3.34	44.70	1.88	6.52	1.55	1.90	1.40	1.00	1.44	1.20	1.34	0.62
20	3.20	40.50	1.86	6.19	1.54	1.79	1.39	0.94	1.44	1.20	1.34	0.62
21	3.04	35.80	1.84	5.86	1.54	1.79	1.39	0.94	1.44	1.20	1.33	0.56
22	2.95	33.20	1.82	5.53	1.54	1.79	1.38	0.89	1.43	1.13	1.32	0.51
23	2.83	29.70	1.80	5.20	1.53	1.68	1.38	0.89	1.43	1.13	1.31	0.45
24	2.77	28.00	1.77	4.75	1.53	1.68	1.38	0.89	1.42	1.07	1.30	0.40
25	2.70	26.00	1.76	4.60	1.52	1.57	1.37	0.83	1.42	1.07	1.30	0.40
26	2.94	32.90	1.74	4.30	1.51	1.46	1.37	0.83	1.41	1.00	1.30	0.40
27	3.16	39.30	1.72	4.00	1.50	1.35	1.37	0.83	1.41	1.00	1.30	0.40
28	2.92	32.30	1.71	3.85	1.50	1.35	1.36	0.78	1.40	0.94	1.30	0.40
29	2.67	25.20	1.70	3.70	1.50	1.35	1.36	0.78			1.30	0.40
30	2.56	22.50	1.70	3.70	1.48	1.16	1.36	0.78			1.30	0.40
31	2.48	20.50			1.48	1.16	1.36	0.78			1.32	0.51
SUM		2120.50		266.65		73.01		33.58		30.60		20.78
MEAN		68.40		8.89		2.36		1.08		1.09		0.67
MAX		265.00		19.00		3.70		1.45		1.32		0.94
MIN		20.50		3.70		1.16		0.78		0.62		0.40

TOTAL = 6609.08 MEAN = 18.11 MAX = 265.00 MIN = 0.16

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. BAN SAPANHIN C.A. 636.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1965-1966(1/2)

DATE	APR H	APR Q	MAY H	MAY Q	JUN H	JUN Q	JUL H	JUL Q	AUG H	AUG Q	SEP H	SEP Q
1	1.33	0.56	1.26	0.24	2.22	12.50	3.42	46.90	2.94	31.80	4.50	86.00
2	1.33	0.56	1.26	0.24	2.01	8.29	3.19	39.60	2.90	30.60	3.92	64.20
3	1.33	0.56	1.25	0.20	1.99	7.93	2.94	31.80	3.03	34.60	3.83	61.00
4	1.32	0.51	1.25	0.20	1.80	4.77	2.76	26.40	4.40	82.10	3.93	64.60
5	1.32	0.51	1.27	0.36	1.83	5.26	2.80	27.60	3.99	66.60	4.00	67.00
6	1.32	0.51	1.29	0.45	1.96	7.42	2.72	25.30	4.51	86.40	3.81	60.40
7	1.32	0.51	1.34	0.72	1.86	5.75	2.66	23.60	4.50	86.00	3.60	53.00
8	1.32	0.51	1.32	0.62	1.87	5.91	2.57	21.20	4.90	102.00	3.44	47.50
9	1.32	0.51	1.36	0.83	1.82	5.10	2.53	20.10	5.06	108.00	3.33	44.00
10	1.32	0.51	1.43	1.26	2.79	27.30	2.39	16.60	4.55	88.00	3.99	66.60
11	1.32	0.51	1.43	1.26	3.13	37.70	2.52	19.80	3.60	53.00	3.87	62.10
12	1.32	0.51	1.43	1.26	2.87	29.70	2.50	19.30	3.35	44.60	4.16	72.40
13	1.32	0.51	1.41	1.13	2.94	31.80	2.40	16.80	3.14	38.00	3.70	56.20
14	1.32	0.51	1.40	1.07	3.11	37.10	2.33	15.10	3.02	34.30	3.52	49.80
15	1.32	0.51	1.42	1.20	3.04	34.90	2.23	14.70	3.01	34.00	4.21	74.30
16	1.32	0.51	1.40	1.07	2.84	28.80	2.25	13.20	2.93	31.50	3.88	62.40
17	1.31	0.51	1.37	0.89	3.37	45.20	2.28	13.90	3.05	35.20	3.47	48.20
18	1.32	0.51	1.38	0.94	3.21	40.20	2.17	11.40	3.04	34.90	3.32	43.30
19	1.31	0.45	1.37	0.89	3.24	41.10	2.09	9.81	3.06	35.60	3.86	61.80
20	1.31	0.45	1.37	0.89	3.18	39.30	2.14	10.80	3.30	43.00	6.50	168.00
21	1.31	0.45	1.47	1.52	3.82	60.70	2.07	9.43	3.96	65.60	5.76	136.00
22	1.30	0.40	1.47	1.52	3.38	45.60	2.02	8.48	4.00	67.00	6.08	149.00
23	1.30	0.40	1.58	2.37	3.03	34.60	2.00	8.10	3.74	57.90	6.30	158.00
24	1.29	0.36	1.54	2.05	3.87	62.40	2.27	13.70	3.60	53.00	5.37	120.00
25	1.29	0.36	1.50	1.74	3.87	62.40	2.37	16.10	3.92	64.20	5.21	114.00
26	1.28	0.32	1.51	1.82	3.65	54.80	2.61	22.30	3.62	53.70	4.88	101.00
27	1.28	0.32	1.63	2.88	3.34	44.30	2.87	29.70	3.53	50.60	4.61	89.90
28	1.27	0.28	1.69	3.54	3.15	38.40	4.32	79.00	3.67	55.40	4.45	83.70
29	1.26	0.24	2.00	8.48	4.01	67.40	3.64	54.40	4.88	101.00	5.25	116.00
30	1.26	0.24	2.26	13.40	4.53	87.20	3.36	44.90	4.87	101.00	5.00	106.00
31			2.28	13.90			3.17	39.00	5.11	110.00		
SUM		13.60		68.94		1013.83		749.02		1879.60		2486.40
MEAN		0.45		2.22		33.79		24.16		60.63		82.88
MAX		0.56		13.90		87.20		79.00		110.00		168.00
MIN		0.24		0.20		4.77		8.10		30.60		43.30

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. BAN SAPANHIN C.A. 636.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1965-1966(2/2)

	OCT		NOV		DEC		JAN		FEB		MAR	
DATE	H	Q	H	Q	H	Q	H	Q	H	Q	H	Q
1	4.51	86.40	2.52	19.80	1.75	3.95	1.51	1.22	1.39	0.63	1.37	0.55
2	4.13	71.70	2.40	16.80	1.75	3.95	1.51	1.22	1.39	0.63	1.37	0.55
3	4.06	69.20	2.28	13.90	1.74	3.81	1.51	1.22	1.39	0.63	1.36	0.51
4	4.15	72.40	2.41	17.00	1.72	3.54	1.50	1.17	1.39	0.63	1.36	0.51
5	4.22	75.10	2.40	16.80	1.72	3.54	1.50	1.17	1.38	0.59	1.35	0.48
6	4.34	79.80	2.33	15.10	1.73	3.67	1.49	1.12	1.43	0.82	1.35	0.48
7	4.21	74.70	2.24	13.00	1.72	3.54	1.49	1.12	1.43	0.82	1.34	0.44
8	4.11	71.00	2.19	11.80	1.70	3.30	1.49	1.12	1.42	0.77	1.34	0.44
9	4.03	68.10	2.16	11.20	1.70	3.30	1.48	1.07	1.41	0.72	1.33	0.40
10	3.73	57.60	2.10	10.00	1.68	3.09	1.48	1.07	1.44	0.87	1.32	0.36
11	3.51	49.80	2.08	9.62	1.66	2.88	1.48	1.07	1.44	0.87	1.32	0.36
12	3.62	53.70	2.05	9.05	1.66	2.88	1.47	1.02	1.43	0.82	1.32	0.36
13	3.74	57.90	2.03	8.67	1.66	2.88	1.47	1.02	1.42	0.77	1.31	0.32
14	3.27	42.10	1.99	7.93	1.65	2.78	1.47	1.02	1.41	0.72	1.32	0.36
15	3.14	38.00	1.96	7.42	1.65	2.78	1.46	0.97	1.40	0.67	1.32	0.36
16	2.95	32.20	1.94	7.08	1.64	2.68	1.46	0.97	1.40	0.67	1.32	0.36
17	2.86	29.40	1.94	7.08	1.63	2.58	1.46	0.97	1.40	0.67	1.32	0.36
18	2.77	26.70	1.92	6.91	1.62	2.47	1.45	0.92	1.39	0.63	1.32	0.36
19	2.66	23.60	1.95	7.25	1.62	2.47	1.45	0.92	1.38	0.59	1.32	0.36
20	2.57	21.20	1.97	7.59	1.60	2.29	1.44	0.87	1.37	0.55	1.32	0.36
21	2.49	19.00	1.95	7.25	1.59	2.21	1.43	0.82	1.37	0.55	1.32	0.36
22	2.42	17.30	1.92	6.91	1.59	2.21	1.42	0.77	1.36	0.51	1.31	0.32
23	2.30	14.40	1.88	6.07	1.58	2.13	1.42	0.77	1.36	0.51	1.30	0.28
24	2.41	17.00	1.86	5.75	1.58	2.13	1.42	0.77	1.35	0.48	1.30	0.28
25	2.38	16.30	1.85	5.58	1.57	2.05	1.42	0.77	1.35	0.48	1.30	0.28
26	2.35	15.60	1.84	5.42	1.56	1.98	1.42	0.77	1.36	0.51	1.30	0.28
27	2.29	14.20	1.81	4.93	1.55	1.90	1.41	0.72	1.40	0.67	1.29	0.24
28	2.28	13.90	1.79	4.50	1.54	1.82	1.41	0.72	1.38	0.59	1.29	0.24
29	2.23	12.70	1.76	4.08	1.53	1.74	1.41	0.72			1.29	0.24
30	2.37	16.10	1.76	4.08	1.53	1.74	1.40	0.67			1.29	0.24
31	2.40	16.80			1.52	1.66	1.40	0.67			1.29	0.24
SUM		1273.90		278.57		83.95		29.42		18.37		11.28
MEAN		41.09		9.29		2.71		0.95		0.66		0.36
MAX		86.40		19.80		3.95		1.22		0.87		0.55
MIN		12.70		4.08		1.66		0.67		0.48		0.24

TOTAL = 7906.85 MEAN = 21.66 MAX = 168.00 MIN = 0.20

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. BAN SAPANHIN C.A. 636.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1966-1967(1/2)

	APR		MAY		JUN		JUL		AUG		SEP	
DATE	H	Q	H	Q	H	Q	H	Q	H	Q	H	Q
1	1.28	0.20	1.32	0.44	2.64	18.20	2.66	19.10	3.87	51.30	3.75	47.50
2	1.33	0.40	1.30	0.36	2.39	13.00	2.96	26.30	3.71	46.30	3.51	40.40
3	1.34	0.51	1.31	0.40	2.21	9.59	3.31	35.30	3.86	51.00	3.38	36.70
4	1.32	0.44	1.30	0.36	2.12	7.88	3.16	31.30	3.80	49.00	3.24	32.90
5	1.33	0.48	1.31	0.40	2.25	10.40	3.10	29.80	3.77	48.10	3.23	32.60
6	1.35	0.55	1.32	0.44	2.26	10.50	3.13	30.60	3.51	40.40	4.25	63.90
7	1.40	0.77	1.38	0.67	2.16	8.64	2.97	26.60	4.60	76.60	3.66	44.80
8	1.44	0.97	1.40	0.77	2.08	7.12	3.28	34.50	3.76	47.80	3.54	41.30
9	1.39	0.72	1.78	2.92	2.42	13.60	2.85	23.70	3.66	44.80	7.03	195.00
10	1.36	0.59	1.85	3.82	2.26	10.50	2.73	20.80	5.00	92.00	5.79	128.00
11	1.34	0.51	1.79	3.05	2.18	9.40	2.54	16.40	5.22	101.00	4.68	79.60
12	1.33	0.48	1.71	2.47	2.11	8.07	2.42	14.00	4.25	63.90	4.48	72.20
13	1.32	0.46	1.63	1.87	2.03	6.55	2.34	12.40	4.12	59.60	4.84	85.60
14	1.30	0.36	1.56	1.49	2.12	8.26	2.84	23.40	6.75	178.00	4.61	77.00
15	1.30	0.36	1.52	1.28	3.10	29.80	2.99	27.00	6.14	145.00	4.71	80.70
16	1.30	0.36	1.51	1.22	2.59	17.50	3.29	34.80	5.20	100.00	4.68	79.60
17	1.29	0.32	1.56	1.49	2.43	14.20	3.10	29.80	5.94	135.00	4.88	87.20
18	1.29	0.32	1.90	4.20	2.42	14.00	2.81	22.70	7.93	262.00	6.31	154.00
19	1.28	0.28	2.26	10.50	3.42	38.40	3.22	32.90	6.96	191.00	6.44	161.00
20	1.29	0.32	2.19	9.21	3.52	41.30	3.45	39.30	6.08	142.00	5.46	111.00
21	1.32	0.44	2.01	5.79	3.53	41.60	5.10	96.00	5.67	122.00	4.92	88.80
22	1.32	0.44	1.89	4.07	2.98	26.80	6.76	179.00	4.65	78.40	2.46	14.30
23	1.33	0.48	1.86	3.69	3.95	54.60	4.97	90.80	3.91	52.60	4.03	56.60
24	1.33	0.48	2.16	8.64	3.42	38.40	4.11	59.20	3.66	44.80	3.71	46.90
25	1.33	0.48	2.28	10.90	3.10	29.80	5.26	102.00	3.93	53.30	3.57	42.70
26	1.32	0.44	2.90	24.40	2.83	23.20	4.60	76.60	3.64	44.20	3.32	35.60
27	1.33	0.48	3.09	29.00	2.64	18.70	6.49	164.00	4.47	71.80	3.12	30.30
28	1.34	0.51	2.59	17.10	3.37	37.00	7.54	231.00	4.68	79.60	2.97	26.60
29	1.34	0.51	2.42	13.60	3.06	28.80	6.61	171.00	4.30	65.60	2.83	23.20
30	1.32	0.44	2.67	18.90	2.94	25.80	5.08	95.20	4.28	64.90	2.75	21.30
31			3.00	26.80			4.30	65.60	3.93	53.30		
SUM		14.08		210.25		621.61		1861.10		2655.30		2037.30
MEAN		0.47		6.78		20.72		60.04		85.65		67.91
MAX		0.97		29.00		54.60		231.00		262.00		195.00
MIN		0.20		0.36		6.55		12.40		40.40		14.30

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. BAN SAPANHIN C.A. 636.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1966-1967(2/2)

DATE	OCT H	OCT Q	NOV H	NOV Q	DEC H	DEC Q	JAN H	JAN Q	FEB H	FEB Q	MAR H	MAR Q
1	2.67	19.40	2.66	18.70	1.78	2.79	1.59	1.80	1.48	0.94	1.43	0.53
2	2.61	18.00	2.56	16.40	1.77	2.73	1.58	1.72	1.48	0.94	1.43	0.53
3	2.54	16.40	2.47	14.50	1.76	2.66	1.58	1.72	1.48	0.94	1.42	0.53
4	2.48	15.10	2.41	13.40	1.75	2.60	1.57	1.64	1.52	1.24	1.42	0.53
5	2.45	14.50	2.36	12.40	1.74	2.54	1.57	1.64	1.52	1.24	1.42	0.53
6	2.68	19.60	2.30	11.30	1.74	2.54	1.56	1.56	1.49	1.01	1.41	0.46
7	4.22	63.60	2.26	10.50	1.73	2.47	1.56	1.56	1.49	1.01	1.41	0.46
8	3.70	46.60	2.22	9.78	1.72	2.41	1.55	1.48	1.49	1.01	1.40	0.39
9	3.67	45.70	2.17	8.83	1.72	2.41	1.55	1.48	1.48	0.94	1.40	0.39
10	4.31	66.70	2.14	8.26	1.72	2.41	1.54	1.40	1.48	0.94	1.40	0.39
11	4.19	62.50	2.10	7.50	1.70	2.28	1.54	1.40	1.48	0.94	1.40	0.39
12	3.54	41.80	2.08	7.12	1.70	2.28	1.54	1.40	1.47	0.87	1.39	0.35
13	3.45	39.30	2.05	6.55	1.68	2.16	1.53	1.32	1.47	0.87	1.39	0.35
14	3.18	31.80	2.03	6.17	1.68	2.16	1.53	1.32	1.46	0.80	1.39	0.35
15	3.05	28.60	2.02	5.98	1.68	2.16	1.53	1.32	1.46	0.74	1.38	0.32
16	3.04	28.30	1.99	5.46	1.68	2.16	1.52	1.24	1.46	0.74	1.38	0.32
17	3.09	29.60	1.98	5.32	1.70	2.28	1.52	1.24	1.45	0.67	1.38	0.32
18	2.96	26.30	1.96	5.04	1.68	2.16	1.52	1.24	1.45	0.67	1.38	0.32
19	2.80	22.50	1.95	4.90	1.68	2.16	1.51	1.16	1.45	0.67	1.38	0.32
20	2.70	20.10	1.94	4.76	1.68	2.16	1.51	1.16	1.44	0.60	1.38	0.32
21	2.61	18.00	1.92	4.48	1.66	2.05	1.51	1.16	1.44	0.60	1.37	0.28
22	2.54	16.40	1.90	4.20	1.71	2.34	1.50	1.08	1.44	0.60	1.37	0.28
23	2.47	14.90	1.87	3.82	1.69	2.22	1.50	1.08	1.44	0.60	1.37	0.28
24	2.45	14.50	1.90	4.20	1.66	2.05	1.50	1.08	1.44	0.60	1.36	0.24
25	3.22	32.90	1.88	3.94	1.66	2.05	1.50	1.08	1.44	0.60	1.36	0.24
26	3.56	42.40	1.85	3.56	1.64	1.93	1.50	1.08	1.44	0.60	1.36	0.24
27	2.97	26.60	1.83	3.30	1.62	1.82	1.49	1.01	1.44	0.60	1.36	0.24
28	2.80	22.50	1.82	3.18	1.61	1.76	1.49	1.01	1.44	0.60	1.35	0.20
29	2.83	23.20	1.81	3.05	1.61	1.76	1.49	1.01			1.35	0.20
30	2.76	21.50	1.80	2.92	1.60	1.70	1.48	0.94			1.35	0.20
31	2.63	18.00			1.60	1.70	1.48	0.94			1.35	0.20
SUM		907.30		219.52		68.90		40.27		22.58		10.70
MEAN		29.27		7.32		2.22		1.30		0.81		0.35
MAX		66.70		18.70		2.79		1.80		1.24		0.53
MIN		14.50		2.92		1.70		0.94		0.60		0.20

TOTAL = 8668.89 MEAN = 23.75 MAX = 262.00 MIN = 0.20

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. BAN SAPANHIN C.A. 636.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1967-1968(1/2)

	APR		MAY		JUN		JUL		AUG		SEP	
DATE	H	Q	H	Q	H	Q	H	Q	H	Q	H	Q
1	1.35	0.20	1.48	0.94	1.90	5.78	2.16	9.76	3.83	45.90	4.54	67.20
2	1.35	0.20	1.46	0.80	1.85	5.05	2.96	24.70	4.38	62.40	4.20	56.70
3	1.35	0.20	1.45	0.74	2.23	10.90	3.07	27.00	3.72	42.80	3.81	45.00
4	1.35	0.20	1.42	0.53	2.36	13.20	2.90	23.40	3.72	42.80	3.50	36.80
5	1.35	0.20	1.42	0.53	3.75	43.60	2.59	17.30	4.18	56.40	3.30	32.00
6	1.35	0.20	1.42	0.53	3.08	27.30	2.68	19.00	4.37	62.10	3.17	29.00
7	1.34	0.17	1.43	0.60	2.77	20.80	3.05	26.60	4.08	53.40	3.89	47.40
8	1.34	0.17	1.41	0.46	2.66	18.60	2.66	18.60	3.86	46.80	4.26	58.50
9	1.35	0.20	1.46	0.80	2.49	15.50	2.85	22.40	3.57	38.80	3.64	40.40
10	1.35	0.20	1.59	1.80	2.35	13.00	2.96	24.70	3.75	43.60	4.15	55.20
11	1.35	0.20	1.78	4.06	2.31	12.30	2.90	23.40	3.58	39.10	4.77	75.50
12	1.35	0.20	1.84	4.90	2.58	17.10	2.97	24.90	4.55	68.00	4.06	52.50
13	1.35	0.20	1.76	3.79	2.96	24.70	3.60	39.60	4.24	58.20	3.83	45.60
14	1.36	0.24	1.71	3.13	2.79	21.20	3.92	48.60	3.95	49.50	4.15	55.20
15	1.36	0.24	1.96	6.67	2.55	16.60	3.92	48.60	3.71	42.50	3.85	46.20
16	1.36	0.24	2.03	7.72	2.40	13.90	3.45	35.80	3.88	47.40	3.50	36.80
17	1.36	0.24	1.90	5.78	2.27	11.60	3.23	30.60	8.23	251.00	3.33	32.70
18	1.40	0.39	1.80	4.32	2.58	17.10	5.24	93.60	6.95	172.00	3.43	35.10
19	1.38	0.32	1.74	3.53	2.34	12.80	4.24	58.20	4.91	81.10	3.56	38.40
20	1.37	0.28	1.70	3.00	2.19	10.20	3.73	43.00	4.76	75.50	3.34	33.20
21	1.38	0.32	1.73	3.40	2.10	8.80	3.55	38.40	4.79	76.60	3.43	35.40
22	1.40	0.39	1.77	3.92	2.02	7.57	3.52	37.60	5.47	103.00	3.27	31.50
23	1.44	0.67	1.68	2.78	1.96	6.67	3.12	28.10	4.90	80.70	3.44	35.60
24	1.51	1.16	1.74	3.53	1.92	6.08	3.08	27.30	4.40	63.00	4.42	63.60
25	1.49	1.01	1.87	5.34	1.89	5.63	3.65	40.90	3.91	48.30	4.77	75.90
26	1.58	1.72	1.96	6.67	1.87	5.34	4.58	69.00	3.58	39.10	5.87	121.00
27	1.66	2.55	1.91	5.93	1.84	4.90	5.42	101.00	3.96	49.80	6.92	171.00
28	1.63	2.22	2.98	25.10	1.85	5.05	4.45	64.60	4.44	64.30	5.56	106.00
29	1.56	1.56	2.53	16.20	1.83	4.76	3.93	48.90	3.94	49.20	5.19	91.60
30	1.51	1.16	2.15	9.60	1.87	5.34	3.82	45.60	4.41	63.30	4.85	78.80
31			1.99	7.11			3.55	38.40	4.35	61.20		
SUM		17.25		144.21		391.37		1199.56		2077.80		1729.80
MEAN		0.57		4.65		13.05		38.70		67.03		57.66
MAX		2.55		25.10		43.60		101.00		251.00		171.00
MIN		0.17		0.46		4.76		9.76		38.80		29.00

GATE HEIGHT(H) AND DISCHARGE(Q)

NAME OF G.S. BAN SAPANHIN C.A. 636.000 S.Q KM QUAE YAI ,THAILAND

SAI YAI RIVER IN THE BASIN OF HANUMAN UNITH(M),Q(C.M.S) FOR THE WATER YEAR OF 1967-1968(2/2)

DATE	OCT H	OCT Q	NOV H	NOV Q	DEC H	DEC Q	JAN H	JAN Q	FEB H	FEB Q	MAR H	MAR Q
1	4.99	84.00	2.13	9.44	1.77	4.06						
2	5.35	98.00	2.10	8.96	1.76	3.92						
3	6.69	160.00	2.06	8.34	1.75	3.79						
4	5.47	103.00	2.02	7.72	1.74	3.66						
5	4.49	66.20	2.01	7.57	1.72	3.26						
6	4.10	54.30	1.99	7.26	1.71	3.13						
7	3.90	48.30	1.98	7.11	1.69	2.89						
8	3.65	41.20	1.95	6.67	1.68	2.78						
9	3.39	34.60	1.92	6.22	1.68	2.78						
10	3.22	30.60	1.90	5.93	1.66	2.55						
11	3.14	28.80	1.89	5.78	1.65	2.44						
12	3.05	26.80	1.99	7.26	1.63	2.22						
13	4.11	54.60	2.11	9.12	1.63	2.22						
14	3.38	34.40	2.03	7.88	1.62	2.10						
15	3.16	29.20	1.98	7.11	1.61	1.99						
16	3.02	26.20	1.92	6.22	1.60	1.88						
17	2.96	24.90	1.90	5.93	1.60	1.88						
18	2.80	21.60	1.87	5.49	1.60	1.88						
19	2.68	19.20	1.86	5.34	1.60	1.88						
20	2.61	17.90	1.85	5.20	1.60	1.88						
21	2.52	16.20	1.83	4.90	1.60	1.88						
22	2.46	15.20	1.82	4.76	1.60	1.88						
23	2.42	14.40	1.81	4.61	1.59	1.80						
24	2.61	17.90	1.80	4.47	1.58	1.72						
25	2.62	18.10	1.78	4.19	1.58	1.72						
26	2.46	15.10	1.78	4.19	1.58	1.72						
27	2.42	14.40	1.76	3.92	1.58	1.72						
28	2.34	13.00	1.75	3.79	1.58	1.72						
29	2.28	11.90	1.80	4.47	1.57	1.64						
30	2.22	10.90	1.81	4.61	1.56	1.56						
31	2.17	10.10			1.55	1.48						
SUM		1161.00		184.46		72.03						
MEAN		37.45		6.15		2.32						
MAX		160.00		9.44		4.06						
MIN		10.10		3.79		1.48						

TOTAL = 6977.46 MEAN = 25.37 MAX = 251.00 MIN = 0.17

AD 2-1

Daily Rainfall Station Kao Keep Samut Sai Yai, Thailand
Sai Yai River in the Basin of Sai Yai Elevation Unit mm Year. 1964

Date	Jan	Feb	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1					34 0			14.8		13.0		
2					49.0	2.8	14.6	19.6		15.4		
3					184.4	1.0	24.6	0.6		96.8		
4				3.2	0 8		58.8		14.2	2.6		
5					5 2	11.4				4.6		
6					1.8			0.2		1.2		
7					33.4	67.2			0.4			
8					4.0	5.6	6.2	20.0	T	26.0		
9					4.8	5.2		20.0	32.8	0 8		
10					1.6	T		2.6	T			
11					14.4	2.4		7.0	5.6			
12							11.8	4 0		24.6		
13					35.2		6.6	3.0	80 2	0.8		
14				1.2	16.2	7.2		62.8	16.0	55.0		
15					0.4	0.6		6.6	0.6	12.2		
16						2 4		3.2	11.0	5.8		
17				0.4		1.6	6 6	2.6	5.0			
18			1.0		3.5			16.8	14.2	2.4		
19					13.8			3.2	2.0	8.8		
20					7.0	1.2	T	0.8	22.8			
21				2.6	1.8	30.4	67.8	6.4	0.2			
22				1 4	80 4	12.2		T	12.4			
23					41.4	0 4		12.4	52.2			
24			6.4	0.4	10.2		1.4	1.6	9.0			
25				4.4	42.8	4.0		25.2		12.2		
26				10.6	14.8	34.0	1.6	15.6	2.4	1.0		
27					56.2	12.8	11.6	8.0	11.0			
28				13.4	0.6	10.8	17.2	30.2	21.8	4.0		
29				2.6		2.4	0.4	5.4	21.6			
30				33.4		T		13 2	13.2			
31								4.6				
Total	0	0	7.4	73.6	657.7	215.6	229 2	310.4	348.6	287.2	0	0

Annual Total (mm)

Daily Rainfall Station Wang Hko Sai Yai, Thailand
Sai Yai River in the Basin of Sai Yai Elevation Unit mm Year 1965

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1				22.2		4.4	0.2	3 6	2.0	2.8	1.0	
2							1.6	5.0	9.4		19.6	
3					5.6			22.4	4.2	21.0		
4				4.6		8.4		27.8	18.0	1.0		
5		0 6			7.2	9.4	31.6	23.4	26.0	11.6		
6		8.8	1 8		45.6	3.6	4.2	18.4	5.0	7.8	32 8	
7		4.0	20 6	0.6		13.4	2.4	39.2	1.0	5 6		
8					2.6	15.6	6.0	38.8		7.8		
9		5.2		0.2	13.4	7.4	0.8	3.4	5.2	1 8		
10		0.3		3.2		19.4			35.8			
11		1.8				74.2			1.2			0.2
12						50 6	21.6		46.2	21.4		1.6
13		3.8			2 2	24.0	4.8		1.2	0.2		1.4
14		7.8			24.2	38.2	0.6		3.2	2.6		
15				0.8	0.6	8.0			50.6	0.8		
16			1.2			12.8	8.0	6.4				
17					22.2	17.8	4.0	33.8			0.6	
18				0.6	8.8	17.0		1.4	0.8		0.4	
19						7.4	0.4	28.0	57.8		9.6	
20						15.8	7.0	16 2	28.8		1.4	
21					9.0	56.4		21.0	10.4			
22		8.2			0.4	1.0		16.6	20.6			
23		0.8			1.0	3.2	21.2		52.6	0.8		
24		0 4			5.6	38 8	40.6	20.8	6.2	8.0		
25		0.2			11.8	15.0	8.2	11.8	20.6	3.8		
26		0.8			1.6	6.2	22 2	6.2	4 0	1.0		
27					28 0	1.6	7.4	4.0	31.6			
28					15 6	2.2	62.0	22.0	23.4	7 8		
29					59.8	74.0	2.8	22.0	65.8	21.2		
30			0.6		29.2	2.8	10.4	37.8	20.0	4.6		
31			6.4		35.8		2.8	44.6		21.8		
Total	0	42.7	30.6	32.2	330.2	548.6	270.8	474.6	552.6	153.4	65.4	3.2

Annual Total (mm) 2,504.3

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station Wang Heo Elevation Unit : mm

Sai Yai, Thailand
Year: 1966

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1				29.8	0.3		12.4	2 6	2.0			
2		1.8		2.6	26.6		12 8	0.2	1.8			
3					7.8		9 8	11.8	0.4	0 2		
4					12.8	5.2	16.0	9.2	6.8	6.2		
5		4.2			29.6	11.0	11 0	2.0	46.2	36 4		
6				5.6	4.8	9.2		26.4	1.0	79 4		
7				14.4	35.4	1.6	3.8	0.4	5.8	4.4		
8					2 8	44.2	2.2	1.8	69.2	0.4		
9					30 8	0.6		38.8	2.4	9.8		
10					2.2	2.2		23.4	6.4	39.4		
11						7.8		10.2	18.0	10.0		
12		2 0				1.2	0.6	10.6	13.2	1.4		
13						15.2	5.0	70.6	5.2			
14						52.2	8.6	30.8	1.8	8.8	0.6	
15			5.2		4.3		25.8	4.6	34.8	11.6		1.6
16					4.8		7.2	36.6	16.4			2.8
17					24.4	38.6		193 8	31.6	0 2		
18				26.0	17.0	13.6	30.8	12.2	2.6		5.2	
19				12.8	20.0	34.8	24.6	1.8	0.2		0.4	
20			4.6	21.2	13.2	27.4	23.2		4.8			
21					3.6	0.4	92 8					34.2
22					36.0	29.2	7.2	11.4				13.2
23					15.8			18.8	0.4			
24				36.2	8.8	0.2	25.6	18.2	2.6	73.2		
25					95.4	5.2	1.6	0.4		25.2		
26		0.4			23.0		84.8	38.8			2.4	
27					26.2	17.6	20.2	29.0		5.8		
28					30.6	1.0	9.2	17.6		7.8		
29			1.8		17.8	18.8		24.8				
30					10.4	1.0		1.6			0.6	
31			29 8		4 6			1.6		4.0		
Total	0	8.4	41.4	148.6	509.0	338.2	435.2	650.0	273.6	324 2	9.2	51.8

Annual Total (mm) 2,789.6

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station Wang Heo Elevation Unit: mm

Sai Yai, Thailand
Year 1967

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug	Sep.	Oct.	Nov.	Dec.
1						10.6	8.3	3.5	13.2	49.8		
2						34.0	6.5		2 2	25.8		
3	0.2					33.4	0.5	8.6				
4	0.4					76.6		20.5	1.3			
5					2.8	3.0	5.2	5.0	1.0	2.6		
6						34.6	6.4	9.5	26.6	4.2		
7		14.0		30.0	0.1	3.2		0.8	40.4			
8					50.8	25.2	21.2				5 0	
9					0.2	3.0	42.8	5.6	48.2	1.3		
10					18.2	19.8	5.2	5.3	46.0	3.8		
11					13.6	28.8	5.6	44.0	0.6	2.7	24.4	
12				15.6		35.2	35 8	8.6	5.8	37.2	48.4	
13					1.0		22.5	8.0	8.1	22.4	2.4	
14				0.4	25.6	T	18.5		2.3			
15				1.0	13.0	T		27.8				
16					4.4		4.2	95.0	0.6			
17				16.6	20.8	9.0	45.2	16.4	19.8			
18				1.0	0.2		1.8		22.2			
19					7.4	3.6	2.5	35.3	0.8			
20				13.4	51.4		2.4	3.0	2.2			
21					1.2	1.8	6.4	32.7	0.2			
22				43.6	2.8			0.1	22.0			
23				5.4	8 0		5.6		75.6	4.5		
24					47.2		6.6		1.5	0 4		
25					17.4		46 8		19.5			
26					2.8		46.2	38.7	88.2	9.3		
27					21.6	2.0	0 5	14.2	5.5			
28				3.8	4.0		2.5	6.0	25.5		6.2	
29					2.8	41.0	11.0	25.7	11.7			
30						33.0			3.9			
31	12.8						28.0					
Total	13.4	14.0	0	130.8	317.3	397.8	387.2	414.3	494.9	164.0	86.4	0

AD 2-3

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station Ban Sapanhin
Elevation

Unit mm

Sai Yai, Thailand
Year 1963

Date	Jan	Feb.	Mar.	Apr	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1							10.8	5.8	35.2	8.5		
2							8.2	46.4	0.8	13.2	T	
3							15 2	14.4	44.2	14.3	11.7	
4							60.5	33.8	2.2	8.0	3.2	
5							26.4	6 4	16.2	3.8	1 2	
6							5.8	2.0	2.2	51.1	1.0	
7							90.6	22.0		1.4	45.4	
8							T	35.0	7.0	3.2	21.2	
9							T	33.6	2.5		0.2	
10							9.8	13.0			15 5	T
11							T	2.8	0.8	20.4		
12							24 8	30.2	0.8	4.3		
13							2.8	22.0	13 0		2.0	
14							13.6	2.8	12.0			
15							18.4	T	2.8	30.0	T	
16							1.4		1.8	0.8		
17							T	44.0	2 4	59.0		
18							8.2	6 6	T			
19							4.8	44 6				
20							4.0	3.5	30.0			
21							55.4	T	10.0			
22							19.6	T	1.2			
23							10.2	38 5	40.4			
24							52.9	3 6	36.0	T		
25							19.8	1.4	8.5	21 8		
26							22.0	8.0	6.4	3 0		
27							8 4	7.0	1.8			
28							2.4	40.4	3.0	4.6		
29								8.6	35.0	3.0		
30							T	2 2	22.4	7.0		
31							14.0	18.8		54.0		
Total							510.4	497.4	338.6	311.4	101.4	0

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station Ban Sapanhin
Elevation

Unit mm

Sai Yai, Thailand
Year: 1964

Date	Jan	Feb.	Mar.	Apr.	May	Jun.	Jul	Aug.	Sep.	Oct	Nov.	Dec.
1					1.4			2.0		20.8		
2	2.0				9.8			7.2		8.0		
3	6.0				96.4		28.0			128.0		
4				T	1.4	T	38.2			1.8		
5					4 5	11.0						
6					0 8	1.0		5.0	4.6	15.0		
7				5.2	37.0	0.4			1.6			
8					0 6	3.2	4.0	35.0	0 6	11 0		
9			T		11.4	2 8		17.2	5 2	0 6	5 1	
10			0.4		1.6			4.0	T			
11		T	0 6		27.8			18.2	12 0			
12							3.0	4.4		15.8	1 0	
13					23.2		2.2	7.0	6.0	T		
14				1.2	10.2	5.0	4.2	31.6	5.4			
15					2.8	0.6	0.4	7.0	4.8	5.4		
16						3.2	0.2	10.4	16.6	1.6		
17				2.2	2.0	0.8			5 4			
18			1.0	2.4	9.6			24.0	3.0			
19				T	6.8		T	3.2	3.8			
20		6.4			T	20.8	5.0	1.6	6.6			
21		66.6		3.0		2.2	11.4	10.4	T	15 0		
22				6.8	42 4	33.0		1.2	11.4			
23			T		14 0	0.6	T	21.2	37 0			
24					15 2		12.5	2.6	4.0	T		
25			1.2	11.8	6 4	5.6	0.6	20.6	0.4	23.2		
26				12.2	4.0	12.0	2.6	20.0	2 0	3.0		
27					15.8	31.4	0.2	4.8	14.0			
28				11.2	T	2.2	7.6	22.2	0.8			
29				0.5	0.2	12.4	T	5.0	60.0			
30			5.0	28.2		2.4			7.6			
31					T		2.6	9.8				
Total	8.0	73.0	8.2	84.7	345.3	150.6	122 7	295.6	212.8	249.2	6.1	0

Annual Total (mm) 1,606.0

No rain all this month

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station Ban Sapanhin Elevation·

Unit mm

Sai Yai, Thailand
Year: 1965

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1						10.0						
2								2.2	4.8		7.0	
3								14.0	3.0	16.0	T	
4					4.4	12.3		92.8	34.0	3 4	5.2	
5		5 0					14.0	3.0	20.3	1.8	7.0	
6		58.2					26.0	48.0	12.0	69.2		5.0
7							7 0		9.6			
8					29.2					7.2		
9		31.0			6.4	2.1			17.2			
10						33.2			57.2			
11		8.0				13 0	20.0		30.6			
12					4.0	13.0	22 0		27.2	20.0		4.0
13		4.0				10.0				5.0		5.4
14						4.0			47.2			
15						T		13.2	18.2			
16						38.1		2.0			T	
17					15.1	5.2	15.0					
18						40.0		51.2				
19					41.3	20.1		3.0	26.6		12.0	
20					7.3	46.0		11.0	54.4			
21								22.0	11.6			
22						12.2		2.0	38.2			
23						26.1			36.2	5.3		
24					4.1	18.4	3.3	21.4	2.6	6.6		
25				11.2	19.9	16.3	2.1	9.0	7.6	5.0		
26					2.2	T	15.2	23.2	26.8			
27					24.2		6.0	8.0	15.8			
28					49.1	4.2	39.0	12.3	5.2			
29					7.4	T	8.0	3.3	55.0			
30			11.2		45.1	T	22.0	5.4	2.6			
31			50.8					8.2				
Total	0	106.2	62.0	11.2	258.9	324.2	199.6	355.2	563 9	139.5	31.2	14 4

Annual Total (mm) 2,046.3

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station· Ban Sapanhin Elevation

Unit. mm

Sai Yai, Thailand
Year. 1966

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug	Sep.	Oct.	Nov.	Dec.
1		5.2		32.6			27.2	1.0				
2			1.6	6.4	16.0		1.2	40.6	2.2			
3					2.6			9.6				
4		45.2			13.4	20.6	4.2	30.2	1.3	3.6		
5					25.0	16.4	7.0		30.6	40.8		
6				8.0	52.0	4.6	0.6	62.6	5.0	22.0		
7				10.8	16 4			0.8	8.4	3.6		
8					38 0	9.0	12.8	6 8	78.4			
9					14 4	2.6		69.4	22.2	65.0		
10			T		7.0			25.0	2 2	0.2		
11				3 0				26.2	1.8			
12							2.6	3.6	18.8	8.6		
13			T			6.0	37.0	85.0	3.8			
14			T			6.2	38.0	36.4	70.6		18 0	
15	2.0	T			18.4		32.2	14.2	11.2			11.8
16			1.0		24.6		0.4	15.2	13.2	16.6		0.6
17					31.2	4.2		6.2	40.8	4 2	1.0	
18					33.4	46.0	12 0	0.2	35.6			
19				T	4.2	35.8	18.0		1.2			0.4
20				1.0	T	3.4	64.6		2.8			
21					1.4	4.4	44.4		0.6			7.0
22					2.0	28.2	9.6	6.6				
23					48.2	7.6		3.2		1.2		
24					14.6	12.0	66.0	13.6	15.2	36.4		
25					23.8		25.0	1.0				
26					4.8	13.4	1.2	15.6				
27					T	29.4	87.4	21.6				
28					T	4 4	16.0	7.4				
29					52.8	2.8		19.4			8 0	
30			5.0		7.4			0.4				
31					13.8			2.6		7.6		
Total	2.0	50.4	7.6	61.8	465.0	257.4	507.4	524.6	365.9	209.8	27.0	19.8

Annual Total (mm) 2,549.1

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station Ban Sapanhin Elevation Unit mm

Sai Yai, Thailand
Year 1967

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul	Aug.	Sep.	Oct.	Nov.	Dec
1						1.0	18.2	35.2	29.2	28.4		
2						19.6	34.2	2.8	2.0			
3						9.8	2.4	30.0	0.8			
4						5.0	28.2	21.8				
5				T		8.2	4.8	2.2		5.4		
6				T	17.6	14.2	6.0	15.2	3.0			
7						1.2	13.2	17.8	68.2			
8					60 2	1.0	28.2	9.4	3.6			
9						0.4	9.2	27.2	20.4			
10					31.0	5.2	15.6	0.4	13.8	2 4		
11					12.6	36.0	3.0	26.2	13.0		14.8	
12						3.0	32.8	10.4	1.4		1.6	
13				T		1.0	19.0	17.8	16.0			
14				T	54.4		31.0	5.0	16.8			
15				1.4	13.8		17.6	5.4	2.2			
16				1.6	1.8		3.4	70.0				
17				50.0	10.4	22.6	123.8	9.6	7.4			
18					10.6	4 8		4.4	17.0			
19				3.8	3.6		6 6	17.0				
20				18 0	9.8		2.2	29.2	13.8			
21					15.4		1.8	37.4				
22					0.2		0.6	2.0	5.6			
23				5.8	14.6	7.2	11.8	24.4	24.4			
24				13.6	20.0		51.6		20.2		1.0	
25					16.8		20.8		45.4	6.8		
26					2.0		30 0	12.2	18.8			
27				T	63.4	29.2	0.2	14.6				
28					1.2			1.2	1.0			
29					3.6	20.4	3.4	38.0	6.8			
30						40.2	8.4	43.0				
31					3.4		16.0					
Total	0	0	0	94.2	366.4	230.0	544.0	529.8	350.8	43.0	17 4	0

Annual Total (mm)

AD 2-4

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station Kabinburi

Elevation:

Unit, mm

Sai Yai, Thailand
Year 1952

Date	Jan.	Feb.	Mar.	Apr.	May	Jun	Jul.	Aug.	Sep.	Oct	Nov.	Dec.
1			T	4.5			9.6					
2							16.5					
3			T		T	2.4	8.5					
4					T							
5					4 8	T	11.2					
6						4.8	20.4					
7						3 7	T					
8						6.0	14.1					
9					T	32.2	16.4					
10			4.4		9.9	3.2	12.2					
11						30.0	T					
12						T	1.1					
13	0.6	2 7	1.3	19 8	T	T	1.9					
14						T	10.2					
15						65 0	T			No Record		
16						T	T					
17					5.1	9.7						
18		4.1		2.4	2.4		4.1					
19					4.4	3.8	1.6					
20						21.8						
21					12.6		T					
22					11.7		T					
23			T		8.8	7.4	18.8					
24			18.2		7.2		66.6					
25			7.9		5.5	T						
26		1.9		6.6	4.9	16.7	2.8					
27			T	0.4	T	33.8	2.7					
28						6.6	6.9					
29				T		1.8	10.3					
30			14.2	T		28.7	17.3					
31			17.1				12.7					
Total	0.6	8.7	63.1	33 7	77.3	277.6	265.9					

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station. Kabinburi

Elevation.

Unit. mm

Sai Yai, Thailand
Year. 1953

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1				T						38.8	T	
2		31.6		8.9					T	2.2		
3			8.4					8.5	T	T	T	
4		20.1	23.3			17.8	4.9	9.3	T	T	T	
5						T	15.3	28.7	T		T	
6				3.2		32.4	38.4	T				
7						15.5						
8			1.5		11.4					18.5		
9				0.3	18.8	16.4				T		
10					4.5			T				
11								6.1		T		
12				T	6.6			3.7		6.4		
13								7.1	5.5			
14					9.2			T	34.8			
15				T	8.0	18.6	T	4 8				
16				10.5	5.9	37.9	21.2	4.2	12.3	T		
17					6.1				T	T		
18					16.9	T	T	19.1		9.5	14.1	
19	3.3					29.1	17.2	23.3		6.8		
20					5.5	11.3			9.7			
21							T	4.0	48.5	18.1		
22							12.0	8.8	33.1	3.7		
23						T	T	49.7	36.3	2.3		
24			0.8	24.6	T		4.7		3.1			
25					13.9		14.8	6.0	4.7		T	
26					11.2		T		T	3.0	5.0	
27	17.7				18.8	16.9	18.5		5.1			
28					44.7	6.4	29.7		9.1			
29				4.5	27.3		24.8	34.9	43.5			
30				9.5	34.5	26.7	19.6		11.2			
31							21.1					
Total	21.0	51.7	34.0	61.5	243.3	229.0	242.3	218.2	257.9	109.3	19.1	0

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station: Kabinburi | Elevation: | Unit: mm | Sai Yai, Thailand | Year: 1954

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1					15.8		25.4	14.6	15.1	5.6		
2					5.9	21.7	32.9	22.8	5.1	6.6		T
3					T	6.6	26.1	T	17.4	19.4		
4				4.1		T		67.0	11.6	2.3		
5				T	T	35.0	14.1	14 1	16.7			
6			T		T	14.8	46.7	T				
7						8.7	10.9					T
8						T	3.4	16.4				
9						8.8	7.1	T		10.3		
10					T	27.9	1.6		12.9	2.1		
11					37.1			T	7.6			
12					1.0		6.1	18.3	50.3	T		
13			3.9					16.9	8.9	T		
14			T			9.0		00.8	49.8			
15					14.5		10.5	6.3	5.5			
16					T		7.0		1.4	2.1		
17									T			
18				T				7.2	6.1			
19		T		T				6.1	10.7	4.0		
20				44.3			3.4	3.8	36.9			
21	T				34.7	T		30.3	20.2			
22		T						3.2	10.0			
23					18.7			3.5	21.8			
24					22.4	4.7			60.8			
25				T	2.4				10.7			
26					6.5	T	T	2.8		›		
27				44.7	5.7	8.3	2.7	18.0	8.8	0.3'		
28				61.6	5.3			8.2	2.3	6.0		
29			47.8	6.7				2.0	50.8			
30			T	21.4		32.4		T				
31							8.8	3.7				
Total	0	0	51.7	182.8	170.0	142.9	229.6	267.9	441.3	58.7	0	0

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station: Kabinburi | Elevation | Unit: mm | Sai Yai, Thailand | Year: 1955

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug	Sep.	Oct.	Nov	Dec.
1					T	3.5				T		
2						T			2.3	5.3	3.5	
3									0.2	2.1	2.8	
4	T			2.1		7.8	11.0					
5							0.9		14.3			
6						22.0	T		14.2	T		
7				53.5		T	5.4	24.1	22.9	T	1.6	
8						17.1	1.5		28.1	28.3	12.3	
9				T		1.7	T	17.7	3.6	6.1	21.3	
10				14.7		7.5	0.6	6.6	1.2		33.4	
11		3.1			6.1	3 6	0.3		T			
12		7.3		T		4.4	0.4	T				
13					22.4	0.8	T	1.8		T		
14					15.3	5.1		T	21 7			
15					11.4	6.7	2.0		4.4		T	
16						1.7	12.4	48.5	3.1			
17								14.3	19.7	7.4		
18			T		17.6	1.7	4.3	15.1	4.3	55.9		
19				42.6			13.0		13.0			
20			T			4.7	29.5	5.1	29.6			
21			0.2	1.2	9.5	3.9	12.0	5.5	T	T		
22				14.6	19.1	8.2		46.3	12.5	12.5		
23			3.5	4.5	3.2	5.1	6.9	T	4.0			
24				1.2	1.3	54.3				4.0		
2			T		3.3	3.4	4.4	28.7	T			
26						T		17.7		T		
27				16.1	10.4	55.9	T		18.3			
28			34.4		16.5	0.4		18.2	T	T		
29				T		T		T		7.9		
30				T		13.1	20.5	11.2				
31					T			3.5				
Total	0	10.4	38.1	150.5	136.1	239.2	125.1	264.3	217.3	129.5	74.9	0

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station : Kabinburi

Elevation

Unit mm

Sai Yai, Thailand
Year 1956

Date	Jan.	Feb.	Mar.	Apr.	May	Jun	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1				7 3	10.8			9.3	14.4	7.9		
2				6.9		17.9	36.1	T		6.5		
3	5.4				28.0		12.3	16.4				
4	T			21.5	T	42.8		6.5	44 3			
5							5.1	31.0				
6						17.6	1.1	8.4	8.1		9.8	
7	3.2		T				8 6	0.3	14.0			
8			T	T		22.6		5 2	T	27.3		
9		T			4.6		19.7	12.7				
10		T			1.8	4.6	5.7		40.1			
11				3.1	T				32.2	T		
12		T			5.3			7.8	57.7	T		
13				7.0	T	T			T		9.9	
14				T	T			2.1	15.0	69.0	12.5	
15					11.3			T	11.7	10.3		
16					13.3		14.1	0.8	3.7	2.8		
17					T		65.1		T			
18					9.2		18.1		T			T
19		T			T		3.5		7.5			
20				1.3	12.4	50.2			48.8			
21				T	19.1	11.4	T		74.6			
22				11.6	16.0		T		T			
23					T		23.7		T			
24						12.2	0		40.6			
25				4.8	12.2	13.6	3.0		60.3			
26				T		10.7			0.7			
27			T			48.3	4.7		20.8			
28			T							T		
29				5.0		4.7	1.2	81.7				
30				39.4	T	T		T				
31					T		9.6					
Total	8.6	0	0	107.9	144.0	257.7	231.6	182.2	494.5	123.8	32.2	0

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station Kabinburi

Elevation

Unit: mm

Sai Yai, Thailand
Year 1957

Date	Jan	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec
1										36.1		
2				1.3	T					1.3		
3				4.3	24.4	10.3		T		14.4		
4				2.2		40.7				T		
5				2.7				11.4	3.7	T		
6					48.6	T			7.0	89.7		
7						9.7				T		
8					T	11.4			48.8	24.0		
9			6.5			6.8			T	T		
10				T	29.3	30.1		3.4		40.5		
11					T	8.6			26.7		T	
12			10.7					1.9	3.4			
13				T				26.6	6.5			
14			38.1	8.6					2.7			
15			T				T	16 3			T	
16				T			81.4		9.1			
17			T				34.3		23.5			
18			T	T			12.8					
19		21.6	28.4					8.9	5.6			
20		T			0.8			24.1	T	16.5		
21					16.6				21.3			
22					16.2		T		T			
23								6.1	27.8			
24					T		T	T				
25					T							
26								14.5	17.5			
27					T		14.7		1.0			
28										37.8		
29							4.8	80.9	44.8			
30			12.3				T	T	8.7			
31					T		T	4.4				
Total		21.6	96.0	19.1	35.9	117.6	148.0	198.5	258.1	260.3	0	0

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station: Kabinburi

Elevation·

Unit: mm

Sai Yai, Thailand
Year: 1958

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1						T	12.6		39.0			
2						T			4.2			
3						7.4	35.8			T		
4							21.5	31.1		7.0		
5							18.7		T			
6									T			
7								38.0	T	12.2		
8							8.4	24.4	45.9			
9												
10								T		6.7		
11						50.8	21.2	T				
12				T	T							
13								13.3		4.9		
14						19.1		17.3		T	T	
15							T		T			
16									T	2.6		
17	0.7					T	15.5		26.2			
18				4.8	T	9.5	10.1					
19						5.0		T		31.4		
20										7.9		
21		T						11.8	34.8			
22								21.4	T	9.6		
23					22.2		17.1		28.4			
24		18.2			77.4			54.3	22.4			
25					13.1		5.4	T	30.1			
26						25.8	70.0		18.8			
27				66.2					29.7			
28			2.4			22.0			14.5			
29												
30								T				
31	27.4							67.0				
Total	28.1	18.2	2.4	71.0	112.7	139.6	236.3	279.6	302.7	82.3	0	0

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station Kabinburi

Elevation:

Unit mm

Sai Yai, Thailand
Year 1959

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul	Aug.	Sep.	Oct.	Nov.	Dec.
1						T						
2											2 7	
3						6.3			17.1		14.4	
4							T	3.8	6.4	T		
5				T	T					21.8		
6							43.6			15.8		
7					T		38.3			T		
8							T			4.6		
9		T	T				6.2	2 7			31.4	
10					8.0		T		50.2			
11			11.3		13.0		12.9		28.7			
12							8.9		4.6			
13							31.7			76 8		
14							24.3					
15			T	T			T	T		6.3		
16				T				25.8				
17							4.8			10.0		
18								14.0	T		28.8	
19				T			8.2					
20				71.8				2.6				
21				T			T	29.2			T	
22							15.7	12.7	T			
23			9.5		18.0				12.8			
24			3.5			T	18.4	46.3	9.6			
25		5.8	T			5.5	21.6	8.7	8.3			
26		6.0	T		12.4	T	20.3		17.7			
27		20.0		53.8	19.1	1.6	38.6	1.8	11.8			
28						6.0	16.5	20.8	22.1			
29						27.7	13.5	37.2				
30						T	1.8	8.8	8.8			
31												
Total	0	31.8	24.3	125.6	70.5	47.1	324.8	214.4	198.1	135.3	77.3	0

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station: Kabinburi

Elevation

Unit: mm

Sai Yai, Thailand
Year 1960

Date	Jan.	Feb.	Mar	Apr.	May	Jun.	Jul.	Aug	Sep.	Oct.	Nov.	Dec.
1			14.0	17.3		8.7	3.8	75.8	6.7	T		
2					T		7.1	8.3		61.3		
3					6 0		3.5	27.3	4.7	65.8		
4						40.2	2.8	2.2	40.8	T		
5						4.1		16.6	74.4	53.8		
6								T	21.5			
7								53.8	4.8			
8								T				
9					18 2							
10							18.8	6.1	T			
11							T					
12								T	T			
13								T	T			
14							6.4				T	
15					T	17.2	15.3	4.5	5.0	T		
16						19.9	T		12.6			
17							1.3	25.3	8.1	T	T	
18				7.6		53.7			T	T	T	
19					4.6				T			
20						T			6.6		T	
21					0.8	3.8			18.3			
22							3 8	7.4	3.7			
23					8 3		7.2		38.4			
24					9.3		16.6	12.8	5.2		T	
25							15.1	7.3	2.1	T	T	
26					7.7	4.2		15.1	13.9	T		
27		T	13.2			3.8		19.8	9.9			
28			4.6	T		20.3	27.1					
29						15.4	T			T		
30					T	6.6	12.2	6.3				
31					42.6		2.3	T				
Total	0	0	31.8	24.9	97.5	192.9	143.3	288.6	321.7	180.9	0	0

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station: Kabinburi

Elevation

Unit: mm

Sai Yai, Thailand
Year: 1961

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1		T				22.0	11.7	T	11.2			
2			T					7.3	30.0	4.4		
3						19.8		9.0				
4						35.8	32.9			35.6		
5					49.8	T	8.3	4.4				
6	T				13.0		6.3	10.1				
7			31.6	29.0	37.7	60.9	32.2	5.0	T	68.7		
8					7.4	33.6	1.6	3.5		42.4		
9			9.2		2.1	T	T	77 9	7.5			
10					7.8			T	20.2			
11			1.0			8.4		T	T			
12					32.8	T	T	40.3				
13					68.6			T	21.8			
14			18.0					108.8	16.8			
15								20.9	56.1	T		
16			1.4				T	4.8				
17				4.0		T	23.8	31.8				
18				33.3		T	13.1	17.4	T			
19					32.7	13.9	26.6		44.5			
20					T			139.7	21.3	33.0		
21					20.3		34.2	15.8				
22					3.8	14.4						
23					T			6.5	24.3			
24					19.0			39.6	17.6			
25					20.5		142.3	7.7	T			
26				42.6	T		48.3					
27					42.6		25.0					
28					74.4	12.8	5.1					
29				4.4	T	24.5	13.4	28.8	34.8			
30						23.5		31.1				
31	T				15.4							
Total	0	0	61.2	113.3	447.9	269.6	424.8	610.4	306.1	184.1	0	0

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station: Kabinburi | Elevation: | Unit mm | Sai Yai, Thailand | Year: 1962

Date	Jan.	Feb.	Mar.	Apr.	May	Jun	Jul.	Aug.	Sep.	Oct	Nov.	Dec.
1						4.2		5.2	20 4	30.5		
2						8.5	20.0		4.0	40.3		
3								6.3				
4						43.5		14.4				
5						7.0		8.3	33.0			
6					85.6	6.0			40.4			
7				10.8		18.2			25.3			
8				13.8		20.2	12 4					
9						30.0		14.4	10.4			
10						20.4		20.2	15.0			
11						8.1	12.6		10 2			
12						4.0	32.2			60.1		
13							74 5		20.0			
14				31.8		4.8	15.4		10.7			
15										40.2		
16						4.3						
17							30.4		24.0			
18				4.0	20.0	5.2	66.6		40.0			
19				13.4	5.7	30.2	35.4	5.2				
20						10.4						
21					3.6	10.4						
22			66.6									
23							10.2					
24					3 8		5.0					
25						32.2		5.0	10.5			
26							5.2	10.4	40.0			
27									30.6			
28									55 2			
29												
30					9.4		10.0					
31												
Total	0	0	66.6	73.8	128.1	267.6	329.9	89.4	389.7	171.1	0	0

Annual Total (mm) 1,574.2

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station: Kabinburi | Elevation | Unit: mm | Sai Yai, Thailand | Year: 1963

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul	Aug	Sep.	Oct.	Nov.	Dec.
1									10.6	0.9	0.6	
2						10.1		20 7	10.6	0.4	0.9	
3						10.2		8 0	20.4	35.0		
4						50.1		30.2	50.2	10.0		
5						10.2		20.2	0.3	0 4	0 7	
6									10.1	69.0		
7										0.6	0.8	
8								20.8				
9								20.8				
10						30 2		20.5			32 0	
11						0.6		0.3				
12								30.7			10.0	
13						0.6		23.0				
14									0.9			
15			No Record			15.0			0.4			
16						0.3		0.9	10.3			
17						0.4		40.8				
18								0.4				
19								0.4				
20						0.3		0.3				
21						3.8						
22								20.4				
23								10.7	40.4			
24						0.9		0.7	10.6			
25								0.3	10.5	70 6		
26						52.0		0.2	20.6			
27										0.6		
28								10.2				
29									20.0			
30									0.9			
31								40.3				
Total						184.7		320.8	216.8	197 5	45.0	0

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station. Kabinburi
Elevation·
Unit· mm

Sai Yai, Thailand
Year: 1964

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1										60.0		
2					T							
3					T		10.7			72.0		
4					T		30.3			10.0		
5					T	T						
6					T							
7					T				6.1			
8												
9								10.2				
10								20.5				
11					3.7					12.0		
12					T					16.0		
13					30 3			70.7	3.2			
14					10.5	2.5		60.4		4.0		
15		No Record						30.2		6.0		
16						30.3		20.6	25.0			
17									4.3	0 3		
18									21.1			
19					2.1			T				
20					T	20.8	T		4.8			
21							T			11.0		
22					0.8				13.0	0.2		
23					20 5			32.2	24.0			
24					5.3			10.4	14.0			
25					6.2	20 6				17.0		
26					1.2	20.4		20.1		4.0		
27						10.4			25 0			
28							3.2	40.2				
29						10.8			79.0			
30									12.0			
31								20.6				
Total					80.6	115.8	44.2	336.1	231.5	212.5	0	0

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station : Kabinburi
Elevation·
Unit· mm

Sai Yai, Thailand
Year : 1965

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1								1.7	0.4			
2								1.3	4.2	3.5		
3								8.1	30 2	20.2	32.0	
4								7.5	9.3	0.7		
5								10.6	11.9	1.1		
6							3 4		2.9		3 7	
7								0.5	2.6	2.3		T
8							2.1		8.9	0.2		
9							2.4		24.0			
10									12.8			
11				30.7					0.9	38.2		0.9
12								8.0		6.8		
13								2.3	10.1	3.4		
14								3.4	14.4			
15								1.5				
16						22.2					4.2	
17						12.4		7.2				
18						8.2		0.7	23.1			
19						22.7		7.8	46.0			
20						22.8	3.5	18.9				
21						0.8	1.5	10.5	36.4			
22						17.3	0.5		1.8	1.1		
23						25.2	0.7	6.9	2.8	3.1		
24						11.5	2.2	2.5	13.4	2.2		
25						7.9	4.6	11.0	0.4	3.1		
26		40.9				17.1	7.5	1.0				
27							28.7	13.8		8.3		
28							4.7	12.7	31.9	4.6		
29						2.0	34.6		16.6			
30							0.4	1.9		7.1		
31												
Total	0	40.9	0	30.7	0	170.1	96.8	139.8	305.0	105.9	39.9	0.9

Annual Total (mm)

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station: Kabinburi

Elevation

Unit mm

Sai Yai, Thailand
Year 1966

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1				13.9			11.4	47.0	0.2	T		
2		19.2			18.2		1.9	20.3	4.3	0.8		
3			1.6				1.4	7.1	8.8	11.2		
4					16.0	28.0		26.0	6.8	8.7		
5		10.8			11.1	9.8		30.2	91.1	21.9		
6					7 1	25.9		53.6	11.6	8.7		
7					19 6	T		8.9	1.3	3.2		
8					38.9		4.5	T	13.6			
9			2.4				T	41.4	15.9	51.9		0.9
10					28.1		2.3	6.9	3.0			
11				24.2				6.5				
12				0.5				30.5	12.7			
13			T				3.6	26.6	43.5			
14						0.6	52.0	37.6	13.1		16.4	
15	2.2				51.4		26 3	T	0.5		T	0.5
16					2.7		23.0	9.0	0.1	T		5.6
17			0.3		4.5	6.3		47.4	41.4	38.2	1.2	1.0
18			3.3		37.7	25.2	16 9	13.4	4.7	10.8	6.6	
19						24.2	5 6	11.3	11.8		0.8	
20					17.4	T	31.8					
21					24.9	1.6	11.7	6.6	T	T		T
22		2.4		0.4	16.7	44.7	22.0	0.6		0.1		T
23		46.2			49.4	1.5			T	0.4		
24				11.0	25.3	6.9	26.3	T		26.2		3.5
25					18.2	35.5	13.2			0 4		
26		0.2			2.5	9.1	2.3	2.5				0.2
27		1.0			2.9	18.3	74.6	50.3			T	
28	0.8					2.0	14.0	T	0.5	1.9	T	
29				4.2	2.9			9.0	T		T	
30					6.6	9.2		33.4		0.2		
31			15.1		15.6			1.9		3.6		
Total	3.1	79.8	22.7	54.2	417.7	248.8	344 8	528.0	284.9	188.8	25.0	11.7

Annual Total (mm) 2, 208.8

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station Kabinburi

Elevation

Unit mm

Sai Yai, Thailand
Year 1967

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul	Aug.	Sep.	Oct.	Nov.	Dec.
1		T				T	39.6	10.5	T	96.1		
2						4.9	20.3	37.0	12 4	32.8		
3						0.9	12.2	7.2	0.2	3.3		
4	0 2					0.7	11.9	23.5	14.3			
5				T	6.8	T	36.4	15.0		T		
6	T					T	29.2	1.5	11.5	14.5		
7		T			80.4		0.2	28.7	0.1			
8	T				20.9	1.0	13.6	7.8	36.3			
9					0.1	4.7	30 4	69.7		T		T
10					1.0	7.0	19.7	10.6	7.1	15.3		
11					12.1	0.1		1.9	14.4	1.8	21.0	
12				T		0.9	47.6	14 8	6.0		0.6	
13				1.1		1.2	0.2	0.9				
14					64.7	T	9.6	5 5	8.8			
15				1.2	11.4		21.2	15.4	7.5			
16				T	11.9		12.7	4.4	3.8	0.9		
17				23.4	3.0	5.5	23.3	45.4	0.5	T		
18				3.6	1.8	1.2		4.0	0.7			
19				10.7	4.7	9.3	6.2		16.2			
20	T				16.9	T	5.0	T	1.2			
21	T						T	5.5	18.8	0.7		
22							T	76.6				
23			T	16.5	1.7		10.9	0.3	T			
24		10.8		16.2	8.6		30.7	13.6	18.5	46.3		
25	T					T	24.4		9.8		T	
26				T	T		13.0		2.5	1.3		
27					4.8	13.7	11.6	9.2	4.6			
28				0.1	0 5	4.0	0.9	18.8			T	
29					3 2	16.0	T	T			T	
30	T				T	13.3	1.0	32.6	1.3		T	
31	6.2				T		10.5	3.7				
Total	6.4	10.8	0	72.8	254.5	84.4	442.3	464.1	199.5	213.0	21.6	0

Annual Total (mm)

AD 2-5

Daily Rainfall — Station Prachinburi — Sai Yai, Thailand
Sai Yai River in the Basin of Sai Yai — Elevation· — Unit mm — Year· 1953

Date	Jan	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug	Sep	Oct.	Nov.	Dec.
1		2.8			9.0				2.4		2 1	
2					16.2			7.0				
3		13.0			9.0		4 0	69.8	13.5			
4		17 3	15.2			2.0	4.8	60.4		4.2		
5						2.0	5.0	3.8	11.8			
6		9.1	126.0			44.1	34.2	4.2	2.0			
7		0.4				19.0	5.2					
8			0.4	1.0	2.8	2.2			8.2			
9			7.2	17.0	0 6	0.5			19.9			
10					0.5	0.4		2.0		19.0	5 1	
11					11.8						0.6	
12						73.8	11.2		15.2	0.6	0 5	
13						0.8		2.0	58.8			
14					39.2	4 0		0 2	17.2	14.9		
15					1.1	9 8	3.2	3 0	28.0	0.6		
16					5.2		9.1	9.0	21.9	0.5		1 8
17		43.8			12.1				16.2	14.2	0.4	
18		8.0				1.9		2.1	15.8	0.4		
19						30 0		10.2		0.6		
20						7.2		8.2	0.5	0.4		
21				0.4		1.8	5.8	10 0	42.2	10.0		
22					17.2			10.2	30.0	0.6		
23			3.2	5.1	20 8		4.2	35.0	32.8			
24				13.8	10.2	8.1	0.6	4.0	24.0			
25				7.8	8.1		2.1	20.2				
26	0.8	84.0		0.4	11.1	3.2	10.1		25 1			
27				0.4	19.1		20 0		8.2			
28				2.8	6.9	23.2	18.2		6.2			
29	0.6			1.2	4.8		24.2	21.8	19 9			
30	0 2			1.0	34.9	9.8	30.0		8.8			
31							13.9	0.6				
Total	1.6	178.4	152.0	50.9	240.6	243.8	205.8	283.7	428.6	66.0	8 7	1.8

Annual Total (mm) 1,862.1

Daily Rainfall — Station· Prachinburi — Sai Yai, Thailand
Sai Yai River in the Basin of Sai Yai — Elevation — Unit mm — Year : 1954

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep	Oct	Nov.	Dec.
1					54.8	15.0	19.8		2.4	8.1		
2					3.2	37.8	50.2	31.1	7.1	36.0		
3					4.8	7.8	28.2	24.2	30.0	9.6		
4					0.4	28.2	19.8	40.2	33 0	14.5		
5					4.8	8.0		11.8	12.8			
6				4.8		7.0	20.8	0.6				
7			12.0		0.4	7.8	18.2			0.2		
8				16.2	9.0	14.8	22.1	30.0				
9						1.0	24.0					
10						23.9	4.8		20.7	1.7		
11						9.8	8.0		2.3		1.2	
12			18 0		14 8	34.2	6.0	55.2	30.3			
13			14.2		2.0	1.0	3.0	40.2	20.9			
14			4.0		0.4	0.6		2.5	49.0			
15					13.0			2.3	6.3			
16					24.0		24.0	0.8	1.4			
17		1.2				19.8	12.2	0.9		6.9		
18							26.2		0.3			
19	6.0							0.9	3.1			
20		0.4		9.2				2.1	12.3			
21				6.7			8.2	17.6	6.8			
22		0.6			2.8			10.8	7.7			
23	0.6			2.7			2.1	9.3	25.6			
24					52.2	0.6		2.3	40.5			
25		0.6		3.0	24.8				23.3			
26					13.8	0.6	20.1	6.4	17.3			
27		0.8		0.6			10.2	99.3	7.4			
28				3.0	8.2		2.0	43.6				
29				4.0		2.0		40.0	0.9	0.2		
30				4.8	11.0	0.6						
31			3.0				8.2	21.4				
Total	6.6	3.6	51.2	55.0	244.4	220.5	338.1	493.5	361.4	77.2	1.2	

Annual Total (mm) 1,852 7

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station: Pruchinburi
Elevation

Unit mm

Sai Yai, Thailand
Year 1955

Date	Jan.	Feb.	Mar	Apr.	May	Jun.	Jul.	Aug	Sep.	Oct.	Nov	Dec.
1					2.0	5.7			4.6	27.8		
2						3.7			5.9	1.6	1.7	
3						3 4	10.4	0.4		11 2		
4				17.6	1.2	6.8	0.5			0.3		
5						7.8	1.1		58.4			
6						17.9		21.0	4 4	7.5		
7						6.8	108.5	79.6	20.5	4 4	0.6	
8						51.6	123.6	4.3	3.8	42 4	28.0	
9				23.7		22 7	1.7	6 8		3 6	63.7	
10							2.1	2.8		0.2	30.7	
11		4.1			8 5	12 0	5.0		0.4			
12		36.8			21.6	2.7	9.1	0.2				
13					40.0	4.4	5.9	0.3				
14						22 7	0.3		4.2			
15					22.0	12 4	5.1	19 3	24.3			
16						0.8	36.6	22.8	0 2			
17						0.2		3.1	1.1	4.1	0.2	
18					8.2		40 4	0.8	26.5	20.7		
19				38.7		31.1	3 6	1.8				
20			15.2		5.9		15.0	3.7				
21			10.0		2.8	43.4	2.2	1.4	10 5			6.7
22					25.1		0.2	14.8	5.3			
23				2.2	7.2	70.8		0.2	8.2	0 8		
24						27.2		6.5	0.3			
25			7.6	2.9	22.2		5.6	8.4	15.6	3.1		
26					13.7			21.8	1 2			
27				32.0	62.7	66.7	8.3	1.6	0 8			
28			35.9		38.7	44.5	0.9		18.0			
29					20.1	16.6		4.7	29.2	0 6'		
30					1.2		7.5	4.1	12.3			
31					21.8		4.1	16.3				
Total	0	40.9	68.7	117.1	324.9	481.9	398.7	246.7	255.7	128.3	124.9	6.7

Annual Total (mm) 2,197.1

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station Prachinburi
Elevation

Unit mm

Sai Yai, Thailand
Year 1956

Date	Jan.	Feb	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep	O t.	Nov.	Dec.
1				18.0	11.2	2.7	8 9	37.0	10.3	3.6		
2				7.0		24.8	17.2	1.2	0.4	2 9		
3				3.8	8.3		11 0	4.4	0.1			
4				17.8	4.0	49.1	1 0	13.3	0.5'			
5					2 9		7.8	12.6	69.3	18.8	6 8	
6				1.8	1.7	6.5		4.4	2.0		12.5	
7	36 8					4.6	6.8	6.1	11.5			
8			50 6	0.8		13.4		9.8	41.6	16.5		
9					17.4	0.2	3 9	23.6	0 1	10 2		
10					19.2	8.5	31 1	11.5	82.2	6.5		
11				2.1	9.4		11.3	11.0	50.7	42.3		
12					4.0		69.6	13.9	27.2	0.1		
13				4.9	8.1	10.5	1.1	4.2	6.7	11.3	8.3	
14				14.1		13.1	0 8	4.7	15 9	17.1	9 7	
15					4.2		5 4	8.2	105 0	7.7	0 2	
16			0 8	4.0	2.8	43.3	17 4	4.6	13.1	0 1		
17				1.7	23.6	8.5	30.3	0.6	14 0			
18				0.9	37.6		35 1	27.0	15.9			
19				0.1	17.6		25 0	28.9	3 0			
20					15.3	0.9		0.1	23 9			
21				0.4	5.4	19.7	0.3	7.9	12.2			
22				2.1	3.2		7 2		27.5			
23					2.1		0 3	21.4	2.6			
24				4.6	4.8				19.7			
25					2.3		5.7	30.2				
26				4.3			14.3					
27			8.0			42.9	26.8	13.6	60.1			
28								30.7		13.6		
29				0.3		7.7	5.5	6.0	1.0	6.9		
30				14 1	20 9	9.1		3.1	7.7			
31					26.5		28.0					
Total	36.8	0	59.4	102.8	252 5	265.5	371.8	340.0	624.2	157.6	37.5	

Annual Total (mm) 2,248.1

Daily Rainfall
Sai Yai River, in the Basin of Sai Yai

Station Prachinburi
Elevation

Unit . mm

Sai Yai, Thailand
Year : 1957

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1		23.1					1.2	3 7	6.4	17.7		
2				8.7			18.6	31.2	30.9	13.1		
3				32.8	11.1	4.8	5 6	9.8		37.8		
4				7.3		45 6	0 4	47.8				
5								7.3	3.6	4.1		
6					1.2		3.8	0 3	20.0	49.7		
7						1.3	0.4	0.7	0.9	47.4		
8					1.2	23.9			8.6	40.7		
9						17.0	63.2		5.5	10.2		
10				0.2	11.6	24.3	5.6	22.9	33.1	31.0	42.7	
11					6.5	43.0	32.7	0.1	28.0			
12	3.4		2.5		2.4	13.6	2.3	1 6	18.4			
13			0.8		0.2	12.9	0.2	14.4	19.8	0.1	5.6	
14			14.9			0.2	3.5	24.3	8.6		10.7	
15			18.0			40.4	11.4	27.1	6.4	1.4		
16	0.6		1.7			1.9	24.0	16 3	35.0	0.3	9.8	
17			5.3				0.3	0.1	0 9			
18			47.1			0.6	0.3		30.2	38.3		
19			0.1			0.7	16.3	5.9	37 4			
20						2.6	0.1	13.3	1.1	12.7		
21								1.6	6 8			
22						0.2			41.3			
23						7.9	0.7	0.3	63.6			
24					2.4	9.9	6.6		0 7			
25				2.1	17.0	1.8		3.9	6.8			
26			24.3		0.6			44.0	65.2	2.1		
27				2.9	1.3	0 4		0.7	18.1		4 0	
28						7.8	4.5	12.3	6.0	28.5		
29					4.1	13.5	0.3	29.2	54.8	2.8		
30				2.3		61.1	4.3	13.7	32.4			
31	1.4		10.5		1.0		58.8	19.8				
Total	5 4	23.1	125.2	56.3	60 6	335.4	265.1	352.3	590.5	337.9	72.8	0

Annual Total (mm) 2,224.6

Daily Rainfall
Sai Yai River, in the Basin of Sai Yai

Station Prachinburi
Elevation

Unit mm

Sai Yai, Thailand
Year 1958

Date	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1		48.0			0.5	15.3			95.3	3.6		
2						1.3			13.1			
3		0.2			2.5	4.9	2.3			11 0		
4					1.0	8.0	32.8		5.5	1.2		
5						5.0	12.9	11.5	16.2			
6					8.0	1.4			6.0			
7		4.9	0.5	1.7	0.5		6.2	8.4	20.6			
8							21.2		20.4	4.4		
9					19.6	1.9	5.6	47.0	10.5	0.8		
10						3 0	13.0		4.6			
11						4.3	83.8			9.2		
12				14.3	0.3	43.1				4.2		
13					0.1	33.4		31.0		6.2		
14					0.9	33.3	0.8	31.2				
15				1.7		2.3	4.6	16.2	30.6	14.2		
16									13.8			
17					0.9	4.2	16.7	10.4	30.1	8.0		
18				18.7	8.7	36.5	40.9	26.3				
19					0.5	34.2	1.0	8.2		20.0		
20						3.2	4.5	2.4		8 2		
21		1.3					17.1	2.4	24.3	2.3		
22							3.3	20.2				
23					30.0		8.3		14.8			
24		37.0			12.4		3.5	34.5	37.9			
25		0.1			125.0		42.1	16.3				
26					38 8	29.8	2.4	20.6	55.4			
27				20.4		8.0	1.2		17.8			
28			8.2		14.2	1.6	5.4	3.9	11.7			
29				2.5		7.3		4.3	2.8			
30						6.1	3.3	0.3	0.6			
31					6.0		29.5					
Total	0	91.5	8.7	59.3	269.9	288.1	372.4	295.1	432.0	93.3	0	0

Annual Total (mm) 1993.1

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station Prachinburi
Elevation

Unit mm

Sai Yai, Thailand
Year 1959

Date	Jan.	Feb.	Mar.	Apr.	May	Jun	Jul.	Aug	Sep.	Oct.	Nov.	Dec.
1					4.1		12.8	5.2	15.1			
2							7.8					
3						15.4	2.2		27.0	2.4	0.6	
4						5.4	11.7	20.3	19.2			
5				0.4					2.4	5.6		
6						3.5	51.1			37.6		0.6
7							69.8		22.8	37.9		
8					2.5			2.0	4.2	14.4		
9		13.4					8.2	22.4			2.3	
10			8.6		3.4			1.2	4.8	60.6		
11					4.3		20.4	4.4	64.2	3.0		
12							42.2		41.4	13.6		
13							31.8		27.8	9.3		
14				0.1	7.9		40.8	0.5		3.5		
15			16.4				2.1			6.4		
16						25.7				1.5		
17				0.4			4.6	1.4				
18				22.6		11.3		6.8	12.8		3.5	
19				10.3	23.2	5.6	4.2	12.6				
20				21.1	1.4	2.7	10.6	5.3	0.5			
21					0.7		12.6	25.6				
22					4.9	2.8	9.7	12.1				
23			34.7			10.6	0.4	9.4	19.0			
24			17.4		9.8		50.7	2.9	2.8		3.2	
25				9.5	2 1	29.5	15.9	26.5	6.6			
26		21.2			3.3		8.9					
27		17.4		43.1	28.3	7.0	16.0		47.8			
28		1.6	0.8		22.4	10.6	40.1	18.2	14.8			
29						19.8	16.9	70.8	14.7			
30					0.6	7.0	19.6	10.2	2.6			
31							7.0					
Total	0	53.5	77.9	107.5	118.9	156.9	518.1	257.8	350.5	195.8	9.6	0.6

Annual Total (mm) 1747.3

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station. Prachinburi
Elevation

Unit. mm

Sai Yai, Thailand
Year: 1960

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1		0.5		41.6		16.5	3 8	26.5	32.4	15.5		
2			2.4	1.0		1.5	0.6	10.0		27.4		
3			5.5				23.1	61.0	69.1	35.5		
4			5.6	3.8		20.4	2.6	5.8	23.1	8.1		T
5			5.8			6.3	5.4	12.0	8.6	37.8		
6			T				2.4	5.0	5.6	8.6		
7			19.4		7.0	T		42.7	9.4	75.7		
8					T			0.6		15.7		
9					5.8			0.8	0.5	2.2		
10				9.3			8.9	T				
11						5.8	T		8.3			
12				T	T	T	20.8		8.7	1.1	T	
13				3.7	1.9	1.2		2.2	24.7	27.8	1.0	
14									1.7	15.0	9 1	
15				0.5	0.7	34.5	4.3	14.4	4.8		T	
16					3.8	10.5	1.4		35.4	T		
17				7.4	2.7	10.0	3.2	4.8	7.5	5.5	1.4	
18					9.9	0 9	0	0.7	7.1	4.1	6.7	
19					1.3	5.5		2.6	1.6	T		
20					3.3	4.8		32.8		T	2.5	
21						8.8	1.0		13.3	3.3		
22					8.2		2.9	4.0	T			
23					33.5		4.6	1.2	3.7	T	3.5	
24					16.8		7.4	12.1	43.2			
25						2.7	31.5		19.0	1.8	0.6	
26				12.5	T	20.3	0.5		20.5			
27			10.9		T	2.1		5.4	9.4	T	1.2	
28						3.0	16.6		9.8		2.2	
29				0.7		18.0	1.3		15.0	T	41.1	
30				0.4	10.2	1.5		28.4			T	
31					13.0		3.6					
Total	0	0.5	49.6	80.9	118.1	174.3	145.8	273.0	382.4	285.1	69.3	T

Annual Total (mm) 1,579.3

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station. Prachnburi
Elevation.

Unit· mm

Sai Yai, Thailand
Year. 1961

Date	Jan.	Feb	Mar.	Apr.	May	Jun.	Jul.	Aug	Sep.	Oct.	Nov.	Dec.
1			0.2		16.9	0.5	1.8		8.9	4.0		
2			24.6		2.6	1.2	0.5	1 7	26.7	32.5		
3					1.5	8.9		16.4		47.0		
4						8.8	30.5			24.6		
5					57.1	0.6	11 6	0.5		0.7		
6	2.2		20.1		2.2	0.5	14.4	15.0	44.7	3.8		
7			1 5	7.2	15.1	96.5	3.4	26.2		65.6		
8			15.6		7.5	14.5	34.1	13.3	1.8	13.0		
9				0.7	15.3	1.2	13.6	10.6	7.5	8.0	1.4	
10			1.6				0.2		9.7	2.1	18.3	
11			0.7			4.5	1.3	0.6	11.1			
12						1.5	70.5	42.1				
13			3.2		31.2			23.4	19.8		13.4	
14			6 5	5.2			0.4	42.7	12.5			
15					1.8		3.5	33.8	70.4	2.6		
16							5.4	5.9	5.1			
17			5.5	15.8			4.3	22.0				
18		1.5		20.0		0.6	21.1	10.0				
19		16.7		33.6	2.1	10.5	15.1	2.5	37.2			
20					18.4	16.9		24.4	5.0	32.5		
21					0.6	0.5	43.1	31.8		8.9		
22					1.0	76.3	0.9			2.8		
23					3.0	9.3		7.9	28.8	0 6		
24					25.2		1.0	30.6	77.6			
25					6.4	0.8	55.4	32.4				
26				29.7	3.3	1.2	54.1		3.4			
27				9.1	13.0		5.2		0.9			
28					33 5	17.3	0.5			13.1		
29					17.5	50.4	13.0	1.8		3.5		
30						4.2	6.8	35.1	39.4			
31							2.9	10.0				
Total	2.2	18.2	79.5	121.3	275.2	326.7	414.6	440.7	410.5	365.3	33.1	0

Annual Total (mm) 2,487.4

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station Prachinburi
Elevation

Unit : mm

Sai Yai, Thailand
Year ; 1962

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul	Aug.	Sep.	Oct.	Nov.	Dec.
1			28.8		38.9	1.3		32.2	5.8	38 6		
2						8.1	4.7	4.8	5.9	14.4		
33							12.4	3.8	3.6	1.2	0.9	
4					1.1	54.3	1.7	44.4	2.6			
5						3.0		9.8	44.6			
6				32.6	25 0			9.2	78.1			
7				32.9		47.8	5.8	2.8	28.1			
8						43.2			3.7	2.1		
9						17.1		88.2	0.9			
10					0.5	52.5	68.9	33.6	8.4			
11							44 2	6.9	2.9	2.8		
12			0.8	52.4		21.3	75.0	4.2	5.2	42.4		
13		2.4				3.0	24.8		26.7			
14		1.0				13.8	1.1					
15			29.6				5.2		9.6	24.6		
16						4.7	24.4					
17					3.2		95.5		12.8			
18				109.0	2.6	29.3	37.6		11.0			
19				13.8	29.7	15.3	14.6	1.2	9.1			
20				0.8		16.0	5.6	1.8				
21						4.2	12.2					
22					3.4		84.3					
23			1.0				16.6					
24					25.4			5.0	22.2			
25				0.8	11.2	32.4		17.1	6.6		0.4	
26					2.2		2.4		26.3			
27					8.5				21.8			
28				101.3	29.9		2.1		49.9			
29			10.2		11.6				12.4			
30			3.9		87.9	15.6	12.2					
31								3.2				
Total	0	3.4	74.3	343.6	281.1	382.9	551.3	268.2	398.2	126.1	1.3	0

Annual Total· 2,430.4

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station: Prachinburi
Elevation:

Unit: mm

Sai Yai, Thailand
Year: 1963

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1												
2				W	17.2							
3					1.5							
4				34 0	W							
5				W	4.1							
6												
7				41.7								
8			8.9	27.0								
9												
10												
11												
12		3.6	35.6									
13		W										
14												
15					14.0			No Record				
16					W							
17					1.6							
18												
19					42.1							
20					0.4							
21					W							
22					2.2							
23												
24			22.8	W								
25					W							
26				W	W							
27				1.6								
28			31.7	4.1	8.9							
29												
30												
31					12.5							
Total	0	3.6	99.0	108.9	104.5							

Annual Total: (mm) 316.0

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station: Prachinburi
Elevation

Unit: mm

Sai Yai, Thailand
Year 1964

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug	Sep.	Oct.	Nov.	Dec.
1					3.1	11.0		2.0		106.0		
2					10.0	14.6		21.7		4 2		
3	T				10.2	1.9	8.2	T		66.2		
4					26.5		42 4	0.6		3.2		
5					0 6	12.8			2.4	T		
6					1.6	16.7		2.9				
7				4.7	0.9		1.0	2.5				
8					T	T		49.3		4.8		
9			18.2		1.0	T		7.4	T	0.6		
10		T	3.2		1.1	T		3.2		15.2		
11					6 6	9.8			2.1	11.2		
12							0.1	15.8	2.4	7.6		
13				5.2	0.6		0.6	4.1	5.7	2.4		
14				13.0	0.2		23.0	15.6	9 6	5.0		
15				2.4		2.1	2.2	5 6	4 5	14.4		
16						10.0		40 4	16 4	1.5		
17					3.3	0.6	1.3	2.5	1.6	7.3		
18								0.6	21.7			
19					0.6				T	T		
20		60.7			36.9	59.2			28.3			
21		T		29.0	0.6	2.6	19.4	7.5	4.0	T		
22				9.4	17.2			4.3	10.3	T		
23			1.6	1.2	3.6			12.4	30.2	T		
24					9.2	2.2	T	1.2	3.6	5.2		
25					16.9	168.0				6 7		
26				0.6	6.8	3.0	0.9	40.3	T	8.2		
27					1.9	2.0		7.3	52.2			
28				9.5			27.9	21.7	1.2	4.1		
29				0.3		23.8	19.2	8.1	69.5			
30				3.1	8.5			T	14.0			
31					1.2		1.4	16.8				
Total	T	60.7	23.0	78.4	169.1	340.3	147.6	293.8	279.7	273.8	0	0

Annual Total: (mm) 1,666.4

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station: Prachinburi
Elevation:

Unit: mm

Sai Yai, Thailand
Year: 1965

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul	Aug.	Sep.	Oct.	Nov.	Dec.
1						26.7		1.1	T	4.7		
2				T	0.8			7.6	21.8			
3						4.2	1.2	1.9	2.1	2.3		
4					4.2	10.6		0.9	4.2			
5			13.1		5.2		6.3	43.5	9.6	11.8		
6						T	24.8		1.8	2.8		
7		12.0			0.7	2.2		1.6	1.6			
8					3 1		1.8		1.6			
9		18.1			36.8		1.0	3.0	24.2	4.6		
10		T		0.6	12.0	2.4	T		5.4			
11				13.5	48.3	1.7	0.9	1.6	14.4	36.5		
12					6.2	0.2	34.2			7.6		
13				0.6		0.6	T	4.1	65.2	4.2		
14				1.2	2.8	2.8		0.6	4.1			
15			6.4				13.0	T	0.6		T	
16					31.7	8.5	0.9	18.6	3.1			
17					14.7	35.9	1.4	7.5	1.8			
18				33.2		25.5		7.8	24.9			
19					3.6	39.5	30.5	1.8	20.8			
20					T	18.7	28.2	1.3	19.1			
21			13.3	T	6.0	0.8	2.8	31.9	53.0			
22					15.9	6.6	T		17.2	T		
23				38.0	48.4	33.0	2 1	65.6	9.7	3.9		
24		18.0			5.2	48.5	2.2	5.0	8.6	3.6		
25		31.1		45.2	7.3	0.8	0.6	0.6		1.2		
26					55.7		2.6	11.0	0.6			
27					62.5		46.8	11.8		3.4		
28					19 7	T	5.3	9.8	14.6			
29					11.6	0.6	4.9	0.4	6.8			
30			28.7		19.8	T	1.0	8.6	1.3	15.5		
31			39.4					1.2				
Total	0	79.2	100.9	132.3	422.2	269.8	212.5	248.8	338.1	102.1	T	0

Annual Total (mm) 1,905.9

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station: Prachinburi
Elevation

Unit: mm

Sai Yai, Thailand
Year. 1966

Date	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul	Aug.	Sep.	Oct.	Nov.	Dec.
1				23.2			7.8		3.4			
2					5.0	T	T	49.8	3 0			
3		5.4	3.4		T	T	3.1	33.0	12.0	20.8		
4					63.2	97.3		T	0.8	T		
5					73 6	8.0	T	T	46.1	23.6		
6				9.6	31.9	10.0		65.2	35.0	46.1		
7					29.4	T	11.9		6 9	2.0		
8					30.5	T	14.0	62.2	6.4	2.4		
9					T		12.8	98.1	9.0	8.2		
10				14.0	20.9		52.4	30.6	3.5	4.2	0.1	
11				3.6			T	27.4	2.0	2.0		
12		T					T	4.3	6.9	1.3		
13							6.6	21.8	48.9			
14					1.2	T	9.0	40.0	18.8			
15					64.3		23.5	4.7	55.8			
16					1.3	T	2.4	13.3	5.8			T
17			27.8		10.6	13 0		T	58.2	24.2	7.2	5.8
18			5.2		38.7	114.8	21.6		15.9	1.5	T	
19					7.2	38.2	17.2	5.8	54.6			12.5
20		7.2		4.4	6.2	1.0	8.9		29.3			16.6
21		0.8		T	13.6	6.5	23.5	0.6	T			
22				13.6	20.0	19.6	13.0	5.4				
23				T	5.6	4.1	T	0.2		1.0		
24				27.8	17.3	25.7	20.6	4.9	T	48.6		
25				1.9	48.4	5.9	21.4	T		0.6		
26					14.7	3.6	T	3.3			T	
27					9.2	2.6	6.4	33.1			T	
28				1.6	1.4	T	8.7	0.6	11.4	0.6		
29					3.4		11.7	7.2				
30					25.4	15.0		26.0				
31			40.1					5.6		1.2		
Total	0	13.4	76.5	99.7	543.0	365.2	296.5	543.1	433.7	188.3	7.3	34.9

Annual Total (mm) 2,220.0

Daily Rainfall
Sai Yai River in the Basin of Sai Yai

Station. Prachinburi
Elevation:

Unit: mm

Sai Yai, Thailand
Year: 1967

Date	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1							18.8	34.4	23.4	18.2		
2						1.5	2.7	20.2	0.3	24.4		
3							0.1	34.0		2.2		
4							6.0	18.1				
5	T						T		29.5			
6	T			T	2.1	3.4		57.0	5.5	9 3		
7					85.6	2.6	19.8	2.2	27.0	11.4		
8				1.2	2.8	T	21.0	25.4		T		
9					T	12.7	22.3	79.6	95.4	1.2		
10					T	10.7	T	7.4	28.4	4.6		
11					9.6			0.6	38.6	28.8	1.5	
12						1.7	31.4	2.4	7.4	21.8	59.5	
13						2.0	32.9	28.5	27.2	17.8		
14					4.3		9.7	9.5	0.9	1.8		
15				0.5	7.1		11.2	2.0				
16				0.1	11.6		3.2	8.8		2.2		
17				44.4	5.6		13.2	3.0	3.1			
18				T	4 0	7.3		T	6.8			
19					20.2	7.1	1.5	1.2				
20				16.5	6.3	6.8	0.5	0.9	15.7			
21					0.9		11.2	31.5				
22		T		10.0	13.4	0.1		T				
23				0.2	17.9		25.8	22.0	73.0			
24				1.2	1.6		30.6	1.0	7.8	23.4		
25	6.0			T	22.4		4.8	6.2	34.0	T		
26					10.0	0.6	15.2	22.6	12.9			
27					1.7	38.4	16.4		8.5	1.8		
28					1.8		1.6				4.6	
29				3.2		1.2	1.4	1.5				
30						62.5	7.2					
31					1.0			T				
Total	6.0	T	0	77.3	229.9	158.6	308.5	420.0	445.0	168.9	65.6	0

Annual Total (mm)

AD 3-1

Monthly Rainfall — Station Wang Heo — Elevation — Unit: mm — Sai Yai, Thailand

Year	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov	Dec.	Jan.	Feb.	Mar.	Annual
'53 - '54	80	320	310	290	325	440	120	10	0	0	0	65	1,960
'54 - '55	160	260	230	360	480	520	90	0	0	0	40	65	2,205
'55 - '56	120	300	470	340	340	310	170	130	0	25	0	40	2,245
'56 - '57	140	260	340	390	340	730	180	40	0	0	25	140	2,585
'57 - '58	50	130	300	260	370	550	390	50	0	10	65	0	2,175
'58 - '59	180	260	275	390	380	480	120	0	0	0	50	65	2,200
'59 - '60	155	130	130	615	350	210	220	50	0	0	0	65	1,925
'60 - '61	65	140	235	195	365	460	300	50	0	0	0	90	1,900
'61 - '62	155	370	510	370	300	460	300	25	0	0	0	90	2,580
'62 - '63	260	260	430	575	235	525	195	0	0	0	0	65	2,545
'63 - '64	65	80	235	**340	420	285	260	25	0	0	40	*7.4	1,757.4
'64 - '65	*73.6	*657.7	*215.6	*229.2	*310.4	*348 6	*287.2	*0	*0	*0	*42.7	*30.6	2,198.6
'65 - '66	*32.2	*330.2	*548 6	*270.8	*474.6	*552.6	*153.4	*65.4	*3.2	*0	*8.4	*41.4	2,480.9
'66 - '67	*148.6	*509.0	*338.2	*435.2	*650.0	*273.6	*324.2	*9.2	*51.8	*13 4	*14.0	*0	2,767.2
'67 - '68	*130.8	*317.3	*397.8	*387.2	*414 3	*494.9	*164.0	*86.4	*0	*1.5	*0	*0	2,394 2
Average	121.0	288.3	331.0	340.5	383 6	442.6	218.3	36.1	3.7	3.3	19.0	51.0	2,238.4

Note: (1) * Rainfall observed actually
(2) Another values were estimated on the basis of Kabinburi and Prachinburi Rainfall employing AD4
** Average value

AD 3-2

Monthly Rainfall — Station Ban Sapanhin & Wang Heo — Elevation — Sai Yai, Thailand — Unit : mm

Year	Apr.	May	Jun.	Jul.	Aug.	Sep	Oct	Nov.	Dec	Jan.	Feb.	Mar.	Annual
'53 - '54	80.0	290 0	290 0	270.0	305 0	420.0	110.0	15.0	0	0	0	65.0	1,845.0
'54 - '55	150.0	260 0	220 0	340.0	450 0	490 0	90 0	0	0	0	40.0	65.0	2,105.0
'55 - '56	110.0	280 0	440 0	320.0	320 0	295.0	160 0	125.0	0	30.0	0	40.0	2,120.0
'56 - '57	135.0	245.0	320 0	370.0	320 0	680.0	175 0	40 0	0	0	30 0	135.0	2,450.0
'57 - '58	50.0	125.0	280.0	260 0	340.0	510.0	365 0	50.0	0	12 0	65 0	0	2,057.0
'58 - '59	170.0	230 0	255 0	370.0	355.0	450.0	110.0	0	0	0	50 0	65.0	2,055.0
'59 - '60	250 0	110.0	125.0	570.0	295.0	330.0	210 0	50.0	0	0	0	50 0	1 990.0
'60 - '61	65.0	135 0	220 0	170.0	345.0	425.0	280.0	40.0	0	0	12 0	90 0	1,782 0
'61 - '62	150.0	440 0	370 0	330.0	645 0	425 0	270 0	25 0	0	0	0	90 0	2,745.0
'62 - '63	260 0	245 0	405.0	535.0	220 0	490.0	185 0	0	0	0	0	65.0	2,405.0
'63 - '64	65 0	80 0	220 0	**326.0	390 0	270.0	245 0	25.0	0	0	40 0	12.0	1,673.0
'64 - '65	*69.2	*501.6	*183.1	*176.0	*303 0	*280.7	*268 2	**3 1	*0	*0	*74 5	*46.3	1,905.7
'65 - '66	*21 7	*294 6	*386.4	*235.2	*414 9	*558.3	*146 5	*48.3	*8.8	*1.0	*29.4	*24 6	2,169.7
'66 - '67	*105.2	*487 2	*297.8	*471.3	*503 3	*319.8	*267 0	*18 1	*35 8	*6.7	*7.0	*0	2,519.2
'67 - '68	*112.5	*341.9	*313 9	*465.7	*472.1	*422.9	*90 7	*43.2	*0	**0 8	*0	*0	2,263.7
Average	119.6	271 2	288.4	325.5	378 6	424.4	198 2	32 2	8.3	3.4	23 2	49.9	2,122.9

Note: (1) Rainfall observed actually
(2) Another values were estimated on the basis of Kabinburi and Prachinburi Rainfall employing AD-4.
** Average Value

AD 3-3

Monthly Rainfall — Station Kabinburi & Prachinburi — Elevation· — Sai Yai, Thailand — Unit· mm

Year	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct	Nov.	Dec	Jan.	Feb.	Mar.	Annual
'53 - '54	57.2	242.0	236.5	224 1	251.0	343.3	86.7	14.0	0.9	3.3	1.8	51.9	1,512 7
'54 - '55	119.0	207 3	181.7	283.9	371.0	401.4	68.0	0.6	0	0	25.7	53.4	1,712 2
'55 - '56	90.6	230.6	360.6	261.9	256 0	236.5	128.9	99.9	3.4	22.7	0	29.7	1,720.8
'56 - '57	105.4	198.3	261.7	301.8	261.1	559.4	140.7	34.9	0	2.7	22 4	110.6	1,999.0
'57 - '58	37.8	98.3	226.5	206.6	275.4	424.3	299.1	36.4	0	14.1	54.9	5.6	1,679.0
'58 - '59	144.8	191.3	213.9	304.4	287.4	367.4	87 8	0	0	0	42.7	51.2	1,690.9
'59 - '60	116.6	94.7	102 0	471.5	236.2	274.4	165.6	43.5	0.3	0	0.3	40.8	1,545.9
'60 - '61	50.4	107 8	183 6	144 6	280.8	352.1	233.1	34 7	0	1.1	9.1	70 4	1,467 7
'61 - '62	117.4	361 6	298.2	270.7	525.6	353.4	224.7	16.6	0	0	1.7	70.5	2,240.4
'62 - '63	208.8	204.7	325.3	·440.7	178.9	394 0	148.6	0.7	0	0	1.8	49.6	1,953.1
'63 - '64	54.3	57.3	184.7	*257.0	320.8	216.8	197 5	22.5	0	0	30.4	11.5	1,352.8
'64 - '65	39.3	124.9	228.1	95.0	315.0	205.4	243.2	0	0	0	60.1	50.5	1,361.5
'65 - '66	81.5	211.2	220 0	154.7	194.1	421.6	104.1	20.0	0.5	1.5	46.6	49.6	1,505.4
'66 - '67	77.0	480.4	307.1	315.7	535.6	359.4	153.3	16.2	23.3	6.2	5.4	0	2,279.6
'67 - '68	75.1	242.3	121.5	375.4	442.1	322.4	191.0	43.6	0	0	0	0	1,813.4
Average	86.7	203 5	230.1	273.8	315.4	348 8	164.8	25.6	1.9	3.4	20.2	43.0	1,722.3

Note All of values were calculated on the basis of monthly rainfall which observed at Kabinburi and Prachinburi
* Average value

AD 3-4

Monthly Rainfall — Station Kabinburi — Elevation — Sai Yai, Thailand — Unit mm

Year	Apr.	May	Jun	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Annual
'53 - '54	61.5	243.3	229.0	242.3	218.2	257.9	109.3	19 1	0	0	0	51.7	1,432.3
'54 - '55	182.8	170.0	142.9	229.6	267.9	441.3	58.7	0	0	0	10.4	38 1	1,541.7
'55 - '56	150.5	136.1	239.2	125.2	264.3	217.3	129.5	74.9	0	8.6	0	0	1,345.5
'56 - '57	107.9	144.0	257.7	231.6	182.2	494.5	123.8	32.2	0	0	21.6	96.0	1,691.5
'57 - '58	19.1	135.9	117.6	148.0	198.5	258.1	260.3	0	0	28.1	18 2	2.4	1,186.2
'58 - '59	71.0	112.7	139.6	236.3	279.6	302.7	82.3	0	0	0	31.8	24.3	1,280.3
'59 - '60	125.6	70.5	47.1	324.8	214.4	198 1	135.3	77.3	0	0	0	31 8	1,224.9
'60 - '61	24.9	97.5	192.9	143.4	288.6	321.7	180.9	0	0	0	0	61.2	1,311.1
'61 - '62	113.3	447.9	269.6	424.8	610.4	306 1	184.1	0	0	0	0	66.6	2,422.8
'62 - '63	73.8	128.1	267.7	329.9	89.4	389.7	171.1	0	0	*0	*10.6	*76.5	1,536.7
'63 - '64	*83.3	*80.3	184.7	*445.0	320.8	216.8	197.5	45.0	0	*0	*50.0	*24.0	1,647.4
'64 - '65	*62.3	80.6	115.8	44.2	336.1	231 5	212.5	0	0	0	40.9	0	1,123.9
'65 - '66	30.7	0	170.1	96.8	139.8	305.9	105.9	39.9	0.9	3.0	79.8	22.7	994.6
'66 - '67	54.2	417.7	248.8	344.8	528.0	284.9	188.8	25.0	11.7	6.4	10.8	0	2,121.1
'67 - '68	72.8	254.5	84.4	442.3	464.1	199.5	213.0	21.6					1,752.2
Total	1,233.7	2,519.1	2,707.0	3,808.9	4,402.3	4,425.1	2,353.0	335.0	12 6	46.1	274.1	495.3	22,612.2
Average	82.2	167.9	180.5	253.9	293.5	295.0	156 9	22.3	0.8	3.1	18.3	33.0	1,507.5

Note· * Estimated on the basis of Kabinburi and Prachinburi Rainfall

AD 3-5

Monthly Rainfall — Station Prachinburi — Elevation — Sai Yai, Thailand — Unit : mm

Year	Apr.	May	Jun.	Jul.	Aug.	Sep	Oct.	Nov.	Dec.	Jan.	Feb.	Mar	Annual
'53 - '54	50.9	240.6	243.8	205.8	283.7	428.6	66.0	8.7	1.8	6.6	3.6	51.2	1,591.3
'54 - '55	55.0	244.4	220.5	338.1	493.5	361.4	77.2	1.2	0	0	40.9	68 7	1,900.9
'55 - '56	117.1	324 9	481.9	398.7	246.7	255.7	128.3	124.9	6.7	36.8	0	59.4	2,181.1
'56 - '57	102.8	252.5	265.5	371.8	340.0	624 2	157.6	37.5	0	5.4	23 1	125.2	2,305.6
'57 - '58	56.3	60.6	335.4	265 1	352.3	590.5	337.9	72.8	0	0	81.5	8.7	2,171.1
'58 - '59	59.3	269.9	288.1	372.4	295.1	432.0	93.3	0	0	0	53.5	77.9	1,941.5
'59 - '60	107.5	118.9	156 9	518.1	257.8	350.5	195.8	9.6	0 6	0	0.5	49.6	1,765.8
'60 - '61	80.9	118.1	174.3	145.8	273.0	382.4	285.1	69.3	0	2.2	18.2	79.5	1,628.8
'61 - '62	121.3	275.2	326.7	414.6	440.7	410.5	365.3	33.1	0	0	3.4	74.3	2,465.1
'62 - '63	343.6	281 1	382.9	551.3	268.2	398.2	126.1	1.3	0	0	3.6	99.0	2,455.3
'63 - '64	108.4	104.5	0	0	0	0	0	0	0	0	60.7	23.0	296 6
'64 - '65	78.4	169.1	340.3	147.6	293.8	279.7	273.8	0	0	0	79.2	100.9	1,762.8
'65 - '66	132.3	422.2	269.8	212.5	248.8	338.1	102.1	0	0	0	13.4	76.5	1,815.7
'66 - '67	99.7	543.0	365.2	296.5	543.1	433.7	188.3	7.3	34.9	6.0	0	0	2,517.7
'67 - '68	77.3	229.9	158.6	308.5	420 0	445.4	168.9	65.6					1,874.2
Average	106.1	243 7	267.3	303.1	317.1	382.1	171.0	28.8	2.9	3.8	26 1	59.6	1,911 6

AD 3-6

Monthly Rainfall — Station Prachantakham — Elevation — Sai Yai, Thailand — Unit mm

Year	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Annual
'52 - '53										0	85.2	125.3	210.5
'53 - '54	65.3	118.1	227.8	215.7	154.3	331.9	77.8	0	0	0.3	0.2	62.9	1,254.3
'54 - '55	186.7	119.9	69.3	192.4	184.3	189.6	60.0	3.0	0	0	16.8	27.2	1,049.2
'55 - '56	77.3	212.5	375.8	310.8	274 8	198.3	124.5	96.1	0	55.2	0	35.6	1,760.9
'56 - '57	89.9	207.5	177.8	319.0	101.4	408.8	107.4	38.5	0	0	0.9	135.7	1,586.9
'57 - '58	19.2	194.5	356.7	57.4	212.4	199 2	143.6	0	0	3.2	3.3	6.8	1,196.3
'58 - '59	8.3	47.7	97.0	143.6	99.0	167.9	11.6	0	0	0	10.5	37.4	623.0
'59 - '60	126.5	109.8	136.0	400.6	103.7	201.1	168.7	5.9	2.3	0	0	54.3	1,308.9
'60 - '61	44.5	217.2	389.7	241.9	386.6	348.3	428.5	71.9	0	0	0	36.2	2,164.8
'61 - '62	109.9	321.3	379.0	161.8	389.3	198.6	165.4	25.0	6.3	0	5.6	18.9	1,781.1
'62 - '63	69.6	147.9	284.3	417.5	166.0	353.5	96.3	2.2	0	0	0	86.3	1,623.6
'63 - '64	101.7	77.5	118.6	374.7	214.8	250.5	118.3	32.9	2.1	0	18.8	28.3	1,338.2
'64 - '65	114.2	217.9	120.6	168.8	472.8	272.4	180.9	0	0	0	134.4	94.4	1,776.4
'65 - '66	48.1	383 1	214.9	115.2	306.5	181.5	43.5	4.1	0	0	9.7	14.6	1,321.2
'66 - '67	51.5	392.5	107.6	258.0	500.7	476.9	165.0	6.7	15.1	35.5	0	0	2,009.5
'67 - '68	88.0	286.3	151.4	388.3	343.4	448.9	41.3	32.8	0				1,780.4
Average	80.0	203.6	213.8	251.0	260.7	281.8	128.9	212.6	1.7	6.3	19.0	50.9	1,710.4

AD 3-7

Monthly Rainfall

Station: Pak Phli Elevation

Sai Yai, Thailand
Unit : mm

Year	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Annual
'56 - '57										0.3	0	38.0	38.3
'57 - '58	25.1	44.5	415.6	377.6	799.5	355.9	439.3	8.5	0	0	0	35.1	2,501.1
'58 - '59	0	72.7	269.4	302.8	262.2	292.6	40.7	0	0	0	25.5	13.5	1,279.4
'59 - '60	76.4	125.7	142.1	466.3	298.9	444.8	155 1	62.3	3.2	0	0	33.2	1,808.0
'60 - '61	7.0	227.7	270.0	174.1	350.0	531.5	350.6	169.3	0	0	31.7	36.6	2,148.5
'61 - '62	124.4	325.3	370.2	353.9	569.1	371.6	495.4	10.9	0	0	21.2	0	2,642.0
'62 - '63	0	183.2	99.4	234.1	69.7	86 7	71.1	0	0	0	0	67.6	821.8
'63 - '64	53.1	219.5	236.2	247.1	488.3	292.9	284.8	63.1	26 4	0	41.7	19.3	1,972.4
'64 - '65	67.9	108.5	0	146.1	41.4	276.0	176.3	0	0	0	0	0	816.2
'65 - '66	0	422.4	55.5	271.1	171.8	457.7	111.7	0	0	0	0	37.5	1,527.7
'66 - '67	71.6	502.5	294.0	320.3	666.0	447.1	171.3	51.8	29.3	6.5	0	0	2,560.4
'67 - '68	92 5	137.0	233.4	0	370.2	564.9	213.9	93.3	0				1,705.2
Average	47.1	215.3	216.9	263.0	371.6	375.6	228.2	41.7	5.4	0.6	10.9	25.5	1,801.8

AD 3-8

Monthly Rainfall

Station: Nakhon Nayok Elevation

Sai Yai, Thailand
Unit mm

Year	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Annual
'53 - '54	67.1	273.6	297.9	370.0	296 6	337.0	145.9	85.0	7.4				1,880.5
'54 - '55										0	31 1	50 8	81.9
'55 - '56	140.9	377.1	495 0	282.2	231.7	356.8	172.5	78.6	0				2,134 8
'56 - '57										5.3	3.6	32 2	41.1
'57 - '58	98.3	159.9	307.4	318.5	658.2	660 4	527.8	52.6	0	0	109 3	4.0	2,896 4
'58 - '59	109.3	54.6	379.2	282.4	243.9	446 4	180 0	0	0	0	24.9	49.4	1,770 1
'59 - '60	196.6	127.1	136 4	397.9	284.7	441.3	238.0	18.4	7.8	0	0	57.6	1,905 8
'60 - '61	18.6	144 0	442.4	323.1	314.0	434.6	306.0	94.1	0	0	21.4	59.3	2,157.5
'61 - '62	119.9	358.1	315.6	246.0	681.2	450.7	322.2	26.5	0.9	0	8.9	0	2,530.0
'62 - '63	142.4	286.1	480.4	424.1	239.0	409.8	201.9	1.3	0	0	22.4	35.9	2,243 3
'63 - '64	44.4	77.9	178.0	319.8	485.4	385.7	214.7	42.8	1.9	0	4.0	3.2	1,757.8
'64 - '65	38.2	273 2	106 2	210.5	207.4	195.3	239.3	0.1	0	0	15.1	8.4	1,293.7
'65 - '66	0 5	272.9	251.9	171.4	126 3	211.6	66.9	27.9	0	0	0.2	0.3	1,129.9
'66 - '67	15.2	404.4	207.6	313.0	601 2	315.7	192.7	7.3	62.1	0	0	0	2,119.2
'67 - '68	22.9	138.4	184 6	383.1	327.6	341.3	216.6	76.8	0				1,691.3
Average	70.5	211.8	274.1	294 4	341.2	362.0	219.3	53.2	5.3	2 3	23 1	36.9	1,894.1

AD 3-9

Monthly Rainfall — Station Saraburi — Elevation — Sai Yai, Thailand — Unit mm

Year	Apr.	May	Jun.	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Annual.
'55 - '56										0	0	0	0
'56 - '57	0	0	0	0	0	257.4	148 2	40.5	0	43.7	1.8	52.6	544.2
'57 - '58	142.7	28 6	234.3	217.7	0	0	0	0	0	0	0	0	623.3
'58 - '59	0	0	232.0	284.8	368.2	508.5	47.0	0	0	0	16.7	90.9	1548 1
'59 - '60	105.7	139.7	36.7	326.1	201.6	549.9	199.9	15.1	0	0	0	0	1574.7
'60 - '61	18.5	123.1	131 8	265.6	170.8	211.0	209.4	96.0	0	0	13.2	40.3	1279.7
'61 - '62	148.8	179.4	170.4	187.5	284.5	241.1	171.4	21 4	8.7	0	2.8	0	1416.0
'62 - '63	210.9	114 9	182.7	300.3	180.2	561.2	139.9	0	0	0	0	8.5	1698.6
'63 - '64	24.5	7.1	281.5	228.2	290.1	268.5	189.4	131.1	0	0	39.8	0	1458.2
'64 - '65	24.1	281.6	87.8	165.1	191.1	239.6	107.0	0	10.2	0	39.5	17.8	1163.8
'65 - '66	23.8	285.4	194.0	132.3	332.7	296.6	74.9	58.6	0	0	27.8	46 8	1472.9
'66 - '67	52.6	405.0	245.7	320.0	397.7	224.8	295.4	42.0	36.4	0	0	0	2028.6
'67 - '68	58.0	126.4	105.4	183.3	185.2	335.4	106.3	21.5	0				1121.5
Average	67.5	140.9	158.5	218.3	216.8	307.8	140.6	35.5	4 6	3.6	11.8	21.4	1327.3

AD 3-10

Monthly Rainfall — Station Pak Chong — Elevation — Sai Yai Thailand — Unit· mm

Year	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Annual
'52 - '53										14.1	91.7	97.2	203.0
'53 - '54	102.9	100.5	88.1	69.6	76.0	216.1	145.1	15.3	0	13.9	29.0	93.9	950.4
'54 - '55	60.2	236.3	119.5	104.4	82.4	203.0	44.1	0	0	0	29.5	90.6	970.0
'55 - '56	123.8	94.8	107.4	71.6	131.4	248.8	20.2	101.3	0	0	71.5	118.7	1089.5
'56 - '57	134.4	57.1	59.5	78.7	167.4	116.9	139.6	39.9	0	3.6	7.9	184.9	989.9
'57 - '58	69.6	45.6	184.3	104.6	160.5	298.2	282.1	37.4	0	30.5	15.0	99.0	1326.8
'58 - '59	38.6	0	0	0	0	0	0	0	0	0	57.9	49.9	146.4
'59 - '60	75.5	77.2	46.9	112.5	57.3	343.1	0	0	0	0	0	0	712.5
'60 - '61	0	0	0	0	0	0	0	0	0	7.2	65.0	40.3	112.5
'61 - '62	159 3	145.3	107.3	92.0	98.5	78 7	113.7	0	0	7.0	24.0	74.2	900 0
'62 - '63	74.3	62.3	96.6	226.3	100.8	320.5	52.8	25 2	0	0	12.7	95 6	1067.1
'63 - '64	118.7	140.4	100.5	91.2	104.2	215.0	208.8	19.5	0	0	35.0	25.0	1058.3
'64 - '65	160.6	308.8	0	59.6	172.5	326.4	126.2	0	0	0	115.9	72 6	1342.6
'65 - '66	118.3	219.9	102.5	6.0	175.8	168.5	152.1	30.1	0	3.1	0	31.1	1007.4
'66 - '67	0	0	0	0	0	0	0	0	0	0	36.9	0	36.9
'67 - '68	164.0	125.2	71.0	102.8	31.0	147.0	0	0	0				641.0
Average	93.3	107.6	72 2	74.6	90.5	178.8	85.6	17.9	0	2.0	39.5	71.5	833.5

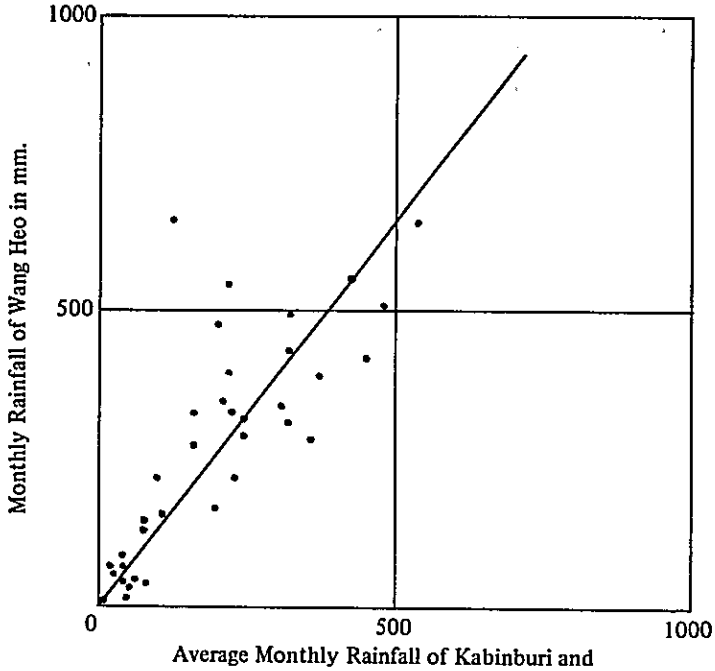
AD 3-11

Monthly Rainfall — Station: Sikhiu — Elevation: — Sai Yai, Thailand — Unit mm

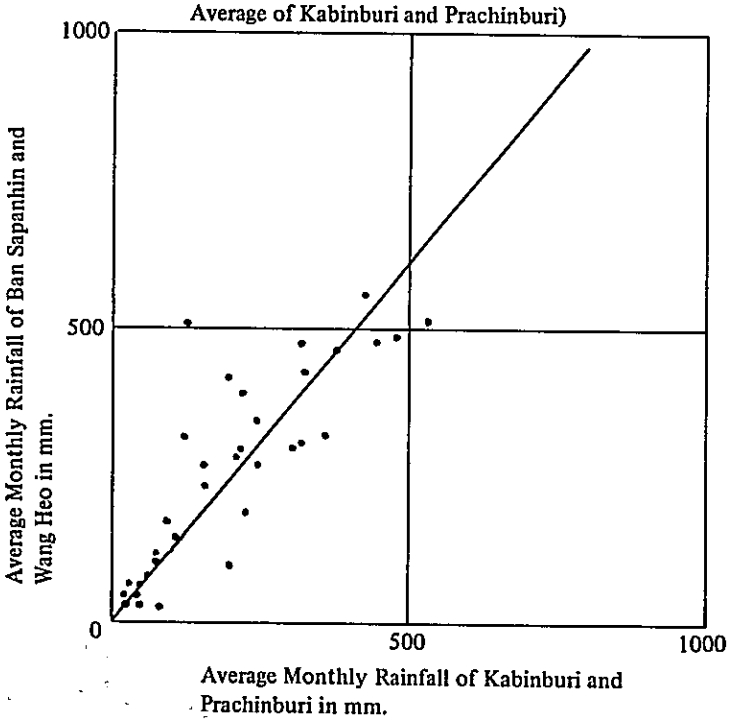
Year	Apr.	May	Jun.	Jul	Aug.	Sep.	Oct.	Nov.	Dec	Jan	Feb.	Mar.	Annual
'53 - '54	208.1	225.3	166.2	137.1	237.4	299.9	146.4	34.1	0	41.9	16.6	15.6	1,528.6
'54 - '55	63.9	250.5	97.0	79.5	106.2	249 4	50.7	0	0	0	25.9	0	923.1
'55 - '56	80.0	40.5	188.0	65.0	99.1	222.2	65.4	66.7	0	0	44.3	14.3	885.5
'56 - '57	119.1	117.5	70.9	270.6	81.4	264.0	161.8	0	0	43.5	17.3	50.8	1,196.9
'57 - '58	110.6	106.9	109.0	108.6	152.2	206.4	194.7	0	0	0	16.0	102.9	1,107.3
'58 - '59	24.7	99.5	147.3	78.7	143.0	324.2	85.9	0	0	0	46.2	49.3	998.8
'59 - '60	40.7	98.1	18.7	127.7	107.7	408.4	301.2	0	0	0	0	76.4	1,178.9
'60 - '61	66.9	176.6	122.0	109.8	55 0	195.4	290.0	28.0	0	0	0	38.3	1,083.0
'61 - '62	62.5	0	94.4	105.2	33.9	63.1	129.8	0	0	0	0	4.2	493.1
'62 - '63	187.6	107.2	47.6	69.1	95.2	540.0	174.3	0	0	0	0	14.7	1,236 7
'63 - '64	54 1	134.0	112.4	62.1	137.6	271.5	185.6	136.6	0	0	0	34.6	1,128.5
'64 - '65	48.8	251.5	0	0	101.4	204.7	217.0	22.7	0	0	15.9	60.1	922 1
'65 - '66	141.1	274.3	9.7	81.5	176.4	257.8	69.5	35 7	0	0	19.3	7.4	1,072.7
'66 - '67	51.1	253.8	0	116.7	26.0	89.1	154.3	9.3	19.2	14.2	8.6	28.1	770.4
'67 - '68	80.1	238.6	147.9	0	35.0	46.1	0	51.1	0	-	-	-	598.8
Average	85.1	161.8	85.3	89.3	102.8	232.0	161.8	24.0	1.2	8.1	21.9	47.2	1,020.5

AD-4 CORRELATION OF MONTHLY RAINFALL

(Wang Heo vs. Average of Kabinburi and Prachinburi)



(Average of Ban Sapanhin and Wang Heo vs. Average of Kabinburi and Prachinburi)



AD 5-1

Monthly Evaporation — Station: Wang Heo — Elevation: — Sai Yai, Thailand — Unit : mm

Year	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Annual
'64 - '65	160	127	115	119	96	88	88	0	0	0	59	114	(966)
'65 - '66	144	113	57	107	82	64	98	109	119	134	113	168	1,308
'66 - '67	184	110	147	111	104	103	108	124	120	127	126	175	1,539
'67 - '68	140	157	135	107	107	116	128	112	121	-	-	-	(1,123)
Average	157	127	114	111	97	93	106	135	120	131	99	152	1,442

AD 5-2

Monthly Evaporation — Station: Ban Sapanhin — Elevation: — Sai Yai, Thailand — Unit: mm

Year	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Annual
'64 - '65	191	136	140	137	119	114	108	145	164	0	163	197	1,614
'65 - '66	203	154	104	140	115	127	130	139	156	160	136	189	1,753
'66 - '67	182	120	138	120	100	120	138	150	129	134	135	185	1,651
'67 - '68	167	149	136	118	127	97	123	115	117	-	-	-	(1,149)
Average	186	140	130	129	115	115	125	137	142	98	145	190	1,652

AD 6-1 Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, July, 1955

Date	Surface		2 km		5 km		8 km		12 km		Average of
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel	Dir.	Vel.	Dir.	Vel.	Velocity
1	24	08	31	20	11	04	17	14	08	32	15.6
2	21	08	29	18	28	18	12	14	07	28	17.2
3	11	04	26	14	24	14	19	05	04	18	11.0
4	24	02	27	14	18	03	11	04	04	26	9.8
5	27	06	23	08	28	02	02	06	01	14	7.2
6	27	06	32	12	28	12	08	14	06	24	13.6
7	23	02	29	20							11.0
8	24	10	28	10	14	16	07	10	07	34	16.0
9	28	06	27	04	09	04	17	06			5.0
10	24	06	27	12	20	08	23	06	11	16	9.6
11	27	10	26	12	20	12	26	04			9.5
12	24	04	26	09	26	09	17	03	07	20	9.0
13	22	06	25	12	28	09	32	10	08	20	11.4
14	21	12	24	18	31	20	24	08	10	30	17.6
15	18	08	30	28	25	22	03	08	09	30	19.2
16	24	06	29	22	28	12	34	06	07	40	17.6
17	27	08	27	34	26	12	34	10	06	26	17.6
18	18	06	28	20	27	26	36	08	06	28	17.6
19	19	06	28	14	28	18	17	08	08	36	16.4
20	18	06	22	12	23	06	17	06	07	36	13.2
21	17	06	20	19	20	04	09	08	07	30	13.4
22	19	06	23	12	19	09	10	16	07	38	16.2
23	20	04	21	18	14	08	09	20	11	26	15.2
24	18	02	19	06	11	18	13	16	09	52	18.8
25	27	02	20	05	06	14	09	38	05	60	29.2
26	28	04	26	03	01	09	09	18	09	38	14.4
27	20	08	30	06	26	06	14	12	10	36	13.6
28	20	08	28	13	17	11	11	08	04	46	17.2
29	00	00	24	08	13	10	09	24	08	32	14.8
30	00	00	27	06	12	16	09	16	08	40	15.6
31	00	00	35	08	20	20	09	08	09	26	12.4
Average	-	5.4	-	13.5	-	11.7	-	11.5	-	31.5	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station . BANGKOK Time of Observation 0700, Aug. 1955

Date	Surface		2 km		5 km		8 km		12 km		Average of
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir	Vel.	Velocity
1	00	00	12	02	18	17					5.8
2	00	00	16	10	16	22	08	10	11	19	12.2
3	00	00	15	11	13	08	09	10	07	33	13.6
4	00	00	18	09	02	07	10	06	08	33	11.0
5	00	00	14	06	27	16	08	13	07	32	13.4
6	24	02	24	10	26	11	06	08	04	32	12.6
7	24	04	27	10	24	15	12	03	08	24	11.2
8	00	00	23	16	26	14	07	09	07	20	11.8
9	00	00	20	09	23	08	06	03	07	29	9.8
10	00	00	09	06	17	14	12	18	08	26	12.8
11	09	04	13	04	12	19	10	40	06	50	25.4
12	13	04	09	07	09	33	07	33	05	34	22.2
13	13	08	12	14	14	10	06	19	07	30	16.2
14	21	02	16	07	18	06	12	11	06	27	10.6
15	17	10	21	10	18	04	05	08	07	19	10.2
16	19	06	23	08	26	07	24	06	03	36	12.6
17	23	06	25	14	25	14	09	08	05	27	13.8
18	20	06	26	16	25	08	07	06	07	23	11.8
19	24	08	24	23	13	06	08	18	07	36	18.2
20	20	06	26	10	12	22	09	23	08	42	20.6
21	28	04	29	11	12	19	07	23	07	52	21.8
22	27	04	31	08	07	17	08	20	07	21	14 0
23	23	04	34	06	12	12	10	22	06	27	14.2
24	24	04	28	08	16	02	09	07	10	29	10.0
25	18	04	29	15	09	04	04	11	06	40	14.8
26	20	08	28	26	26	17	06	14	06	24	17.8
27	27	06	29	39	29	12	01	11	06	37	21.0
28	21	04	28	31	35	11	32	03	03	32	16.2
29	23	08	28	20	26	13	32	08	08	45	18.8
30	20	06	27	32	23	22	08	11	07	30	20.2
31	25	06	25	16	23	11	09	04	08	42	15.8
Average	-	12.4	-	13.7	-	12.3	-	12.9	-	31.7	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station BANGKOK Time of Observation 0700, Sept. 1955

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	24	04	27	19	26	04	08	19	06	38	16.8
2	25	02	26	21	06	06	07	27	06	24	18 0
3	24	06	30	17	06	06	10	18	06	39	17.2
4	28	08	35	08	04	16	05	18	08	36	17.2
5	00	00	06	10	07	14	07	21	09	31	15.2
6	31	02	29	03	10	28	10	22	06	12	13.4
7	00	00	25	06	11	23	11	18	10	55	20.4
8	29	04	02	05	00	00	15	09	09	23	10 3
9	24	04	25	06	20	07	13	16	12	20	10.6
10	00	00	24	09	18	06	10	21	33	39	15.0
11	18	02	20	10	18	06	11	19	04	37	14.8
12	18	06	11	03	30	09	11	13	08	26	11.4
13	00	00	21	03	14	04	11	04	08	23	6.8
14	00	00	19	10	11	06	11	05	08	13	6.8
15	18	02	21	16	32	05	05	10	07	30	12.6
16	18	04	18	09	21	16	08	10	04	54	18.6
17	04	02	09	10	12	06	17	14	09	32	12.8
18	36	08	03	21	05	22	10	19	12	10	16.0
19	07	02	18	12	16	20	19	07	37	39	16.0
20	35	08	08	10	09	09	08	08	12	22	11.4
21	05	06	05	12	03	09	07	15	12	20	12.4
22	00	00	09	10	14	19	10	25	11	14	13.6
23	04	04	12	10	09	08	09	11	10	29	12.4
24	02	04	05	23	09	23	08	15	10	33	19.6
25	33	02	08	10	08	16	11	08	11	29	13.0
26	21	06	26	15	36	03	35	01	10	14	7.8
27	21	10	23	23	22	15	27	23	08	30	20.2
28	17	04	24	23	24	16	03	10	01	26	15.8
29	07	02	03	08	00	00	06	10	01	26	11.5
30	34	06	08	04	07	05	07	11	07	17	8.6
31											
Average	-	3.6	-	11.3	-	10.9	-	14.3	-	28.4	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station BANGKOK Time of Observation 0700, Oct. 1955

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	33	02	05	17	06	16					11.7
2	00	00	07	14	09	19	08	06	18	04	8.6
3	05	06	M		11	24	10	08	09	08	11.5
4	07	02	10	13	07	14	07	04	03	12	9.0
5	00	00	09	10	28	17	04	14	02	17	11.6
6	00	00	23	06	26	12	25	10	05	05	6.6
7	09	02	26	18	08	16	30	19	10	07	12.4
8	27	02	19	08	24	10	03	21	10	42	16.6
9	36	06	04	12	05	17	08	14	08	32	16.2
10	01	04	11	22	08	22	08	26	11	32	21.2
11	02	04	09	37	08	38	10	24	12	12	23 0
12	03	08	09	41	11	20	12	30	10	29	15.6
13	06	10	12	28	10	06	11	16	08	18	15.6
14	11	06	10	14	06	11	12	10	10	22	12.6
15	08	04	03	15	09	11	10	20	10	27	15.4
16	35	04	09	08	04	17	13	14	07	09	10 4
17	02	06	04	19	04	11	09	08	10	25	13.8
18	07	08	07	16	08	07	10	14	11	28	14.6
19	08	06	12	19	13	33	27	18	28	15	18.2
20	08	10	11	20	09	16	06	08	09	16	14.0
21	06	06	18	11	12	12	06	08	21	09	9.2
22	36	04	11	30	12	16	18	10	06	25	17.0
23	09	04	11	19	10	17	35	09	05	33	16.4
24	04	04	11	17	11	22	09	25	03	19	17.4
25	08	04	13	07	12	10	18	07	02	56	12.8
26	06	08	10	09	09	12	10	08	03	34	14.2
27	06	02	10	06	08	10	05	09	08	26	10.6
28	08	02	08	11	08	19	09	25	09	34	18.2
29	07	04	08	13	09	19	11	21			14.3
30	06	04	08	20	04	19	07	07	12	17	13.4
31	06	04	10	14	04	17	11	14	16	20	15.2
Average	-	4.3	-	16.5	-	16.2	-	14.2	-	21.2	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, July, 1956

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	22	04	27	26	27	15	01	08	05	22	15.0
2	00	00	31	24	32	15	04	19	05	35	24.5
3	27	10	31	21	35	19	08	06	06	28	16.8
4	25	06	30	23	35	12	13	08	07	35	16.8
5	28	05	29	21	27	06	35	02	08	22	11.2
6	11	06	31	16	27	15	10	15	07	29	16.2
7	24	16	28	26	27	02	08	17	08	39	18.0
8	27	10	28	28	32	09	-	-	-	-	15.7
9	No observation due to ground equipment failure										
10	19	04	26	19	-	-	-	-	-	-	11.5
11	24	04	29	17	-	-	-	-	-	-	10.5
12	27	10	31	12	25	12	35	16	12	38	17.6
13	27	08	01	06	11	04	12	06	10	17	8.2
14	27	06	27	10	18	09	12	05	11	31	16.2
15	00	00	27	12	24	05	10	08	07	08	13.8
16	00	00	21	14	23	11	13	10	07	23	14.5
17	17	06	25	15	27	10	10	18	07	37	17.2
18	18	02	25	11	28	18	02	10	07	25	11.0
19	19	06	26	12	24	07	02	02	13	19	9.2
20	18	02	26	07	21	14	02	09	06	35	13.4
21	32	02	18	04	21	09	08	18	07	99	11.4
22	12	04	14	10	15	03	08	13	07	19	9.8
23	28	04	31	10	30	08	28	14	28	26	12.4
24	18	06	36	07	35	07	10	03	-	-	5.8
25	14	04	-	-	-	-	-	-	-	-	4.0
26	26	02	25	04	05	03	34	03	09	05	3.4
27	24	04	26	15	19	11	08	23	13	28	16.2
28	13	04	28	17	20	05	06	15	06	37	15.6
29	26	06	28	22	-	-	-	-	-	-	14.0
30	24	06	28	24	27	10	32	04	07	34	15.6
31	21	06	-	-	-	-	-	-	-	-	6.0
Average	4	7.7	15	46	9	56	10	50	30	0.4	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station BANGKOK Time of Observation 0700, Aug. 1956

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir	Vel.	Dir	Vel.	Dir.	Vel.	Dir.	Vel.	
1	24	06	30	06	04	03	11	07	02	48	14 0
2	27	04	26	25	24	14	36	18	-	-	15 3
3	22	02	27	42	25	24	36	23	06	17	21.6
4	26	02	30	29	29	23	07	17	07	32	20.6
5	25	06	29	29	30	47	06	11	08	24	23.4
6	18	04	29	05	27	02	10	04	09	41	11.2
7	25	04	28	16	29	08	13	07	06	26	12.2
8	24	02	28	12	21	09	29	04	27	23	10.0
9	21	10	30	15	28	09	08	06	08	48	17.6
10	26	08	32	12	26	08	09	16	07	43	17.4
11	25	06	28	11	12	02	09	08	10	08	7.0
12	13	02	30	15	34	06	05	04	10	39	13.2
13	23	04	27	25	24	15	36	06	04	10	11.8
14	19	10	25	24	23	30	34	15	08	19	19.6
15	23	10	26	23	26	17	08	06	08	31	17.4
16	18	08	25	14	26	10	03	06	07	39	15.4
17	24	06	28	09	31	17	06	22	09	33	17.4
18	21	06	30	12	05	06	07	11	10	47	16.4
19	18	04	28	14	25	06	11	12	11	36	14.4
20	24	08	26	17	19	04	07	18	07	40	17.4
21	19	06	24	08	27	08	10	16	07	46	16.8
22	00	00	30	10	20	05	16	08	09	37	12.0
23	26	02	30	12	03	04	08	07	08	29	10.8
24	23	04	29	15	11	10	06	06	09	29	12.8
25	27	08	36	02	11	08	15	16	15	24	11.6
26	27	10	29	07	07	10	08	11	09	28	13.2
27	27	06	05	03	04	08	10	12	10	22	10.2
28	00	00	24	06	16	12	12	08	08	18	8.8
29	05	02	11	08	27	03	11	15	07	44	14.4
30	13	02	27	04	11	16	11	11	08	24	11.4
31	27	10	29	15	x	x	35	12	09	36	18.3
Average	-	5.2	-	14.4	-	11.5	-	11.1	-	31.4	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station BANGKOK Time of Observation 0700, Sept. 1956

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	24	08	29	36	31	10	29	07	09	16	15.4
2	23	10	27	32	25	22	21	14	03	08	17.2
3	18	04	27	30	19	30	10	14	08	18	19.2
4	25	06	29	20	08	08	08	11	08	40	17.0
5	27	10	31	13	10	10	09	12	10	36	16.2
6	27	06	29	01	35	08	35	04	07	37	11.2
7	00	00	30	12	26	06	35	12	11	16	9.2
8	18	04	26	17	28	19	03	12	07	37	17 8
9	15	02	26	24	28	10	35	05	05	19	12.0
10	00	00	27	14	35	08	03	11	11	29	12.4
11	00	00	27	15	04	09	09	06	05	33	12.6
12	25	02	31	13	01	10	29	05	09	22	10.4
13	27	04	30	13	29	15	29	02	09	11	9.0
14	27	06	28	18	30	11	08	09	04	21	13 0
15	25	10	30	14	09	06	07	18	10	30	15.6
16	28	08	03	03	30	05	27	18	07	37	14.2
17	27	02	25	07	21	08	17	12	08	28	11.4
18	25	02	27	04	12	04	13	06	08	42	12.4
19	28	04	33	05	25	08	09	13	06	37	13.4
20	36	10	00	00	09	03	08	16	10	30	11.8
21	27	04	03	01	12	10	09	14	06	19	9.6
22	36	04	08	03	03	10	08	08	07	31	11.2
23	36	02	04	05	02	15	08	11	06	29	12.4
24	00	00	06	05	08	12	10	07	07	14	7.6
25	18	02	09	19	05	11	06	15	-	-	11.8
26	00	00	08	07	10	05	09	13	-	-	6.2
27	16	04	18	09	19	07	13	08	-	-	7.0
28	27	02	03	06	-	-	-	-	-	-	4.0
29	00	00	-	-	-	-	-	-	-	-	0.0
30	07	03	07	06	09	58	11	35	09	15	23.4
31	-	-	-	-	-	-	-	-	-	-	
Average	-	4.0	-	12.1	-	12.0	-	11.4	-	26.2	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station · BANGKOK Time of Observation 0700, Oct. 1956

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	11	04	13	24	11	19	10	17	09	31	19.0
2	03	02	12	17	11	17	06	22	06	27	17.0
3	06	02	12	15	12	12	11	22	03	31	16.4
4	06	04	08	09	07	15	08	16	31	14	11.6
5	36	07	09	08	09	19	11	10	23	20	12.8
6	19	02	08	11	11	15	12	24	17	21	12.4
7	36	06	07	16	11	16	08	14	08	08	12 0
8	09	06	09	15	09	17	10	15	14	11	12.8
9	07	08	13	18	16	32	15	18	09	12	17.6
10	36	02	12	11	13	13	08	08	06	16	10.0
11	36	08	08	15	09	23	07	04	04	06	11 2
12	33	04	07	14	14	35	14	10	-	-	15.8
13	36	02	06	14	05	17	12		-	-	12.3
14	27	02	-	-	-	-	-	-	-	-	2.0
15	07	06	11	10	15	14	09	11	08	16	11.4
16	09	04	-	-	-	-	-	-	-	-	4.0
17	09	10	12	17	-	-					13.5
18	05	04	-	-	-	-					4.0
19	07	10	09	18	-	-					14.0
20	06	10	10	11	10	18	08	08	03	34	16.2
21	06	12	07	11	11	11	25	09	-	-	10.8
22	36	08	23	02	09	06	19	06	09	14	7.2
23	09	04	01	15	03	04	12	05	10	15	8.6
24	04	04	08	12	13	06	11	21	15	04	9.4
25	36	06	10	11	10	07	15	04	24	06	6.8
26	06	05	11	15	11	22	-	-	-	-	14.0
27	06	02	11	11	11	11	20	-	-	-	11.0
28	10	04	10	20	12	10	10	03	35	17	10.8
29	07	04	10	23	-	-	-	-	-	-	13.5
30	07	10	11	12	13	07	08	11	08	32	14.4
31	09	08	08	15	09	59	17	79	12	35	31.2
Average	-	5.5	-	13.9	-	17.3	-	15.3	-	18.5	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station . BANGKOK Time of Observation 0700, July 1957

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir	Vel.	
1	25	02	29	41	28	12	05	16	05	24	17.0
2	20	04	27	31	27	25	29	38	10	23	24.2
3	02	03	28	28	29	28	02	15	08	35	21.8
4	25	04	30	28	31	24	29	05	11	36	19.4
5	25	06	28	33	30	28	29	08	08	48	24.6
6	22	04	26	28	26	27	31	10	09	41	22.0
7	00	00	27	12	16	13	32	06	05	17	9.6
8	18	01	27	05	17	04	11	22	11	22	10.8
9	28	04	25	10	04	11	09	09	07	55	17.8
10	00	00	29	10	18	08	10	06	07	24	9.6
11	18	04	29	12	15	04	06	11	09	35	13.2
12	06	07	25	10	18	04	13	12	06	23	11.2
13	00	00	27	14	20	15	21	05	09	21	11.0
14	18	02	29	23	25	08	01	09	08	19	12.2
15	25	08	30	22	28	18	13	05	08	36	15.8
16	24	04	28	19	29	06	03	08	08	30	13.4
17	24	04	27	23	28	23	03	12	04	31	18.6
18	23	04	28	25	29	18	02	12	05	35	18 8
19	22	06	30	04	27	37	02	03	07	44	18.8
20	00	00	11	03	13	03	07	03	06	37	9.2
21	04	02	22	06	18	06	12	06	17	20	8.0
22	00	00	12	03	12	09	04	09	03	19	8.0
23	00	00	10	04	06	09	23	05	20	07	5.0
24	00	00	11	05	10	10	17	10	24	04	5.8
25		-	-	-	-	-	-	-	-	-	-
26	13	06	14	08	10	08	10	14	08	25	12.2
27	04	02	10	10	05	19	10	04	13	19	12.8
28	00	00	09	09	06	10	09	17	10	17	10.6
29	27	08	27	04	24	18	15	22	06	31	16.6
30	15	08	19	10	23	17	06	03	12	16	11.2
31	21	04	22	p5	25	13	12	02	02	29	12.8
Ave-rage	-	32.3	-	15.0	-	14.3	-	9.9	-	27 4	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, Aug. 1957

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel	Dir.	Vel.	Dir	Vel.	Dir.	Vel	
1	13	02	01	06	10	07	11	21	05	20	11.2
2	29	05	33	03	05	13	07	24	10	33	15.6
3	29	04	31	08	05	11	05	21	10	16	12.0
4	27	04	36	06	36	15	04	17	10	20	12.4
5	26	05	01	05	08	12	08	14	08	25	12.2
6	26	06	33	05	12	22	10	14	11	10	12.6
7	00	00	26	16	19	17	13	17	07	37	17.4
8	29	02	29	07	17	12	09	18	07	27	13.2
9	27	04	33	05	07	11	07	27	10	11	11.6
10	00	00	33	03	12	18	09	17	09	19	11.4
11	24	04	27	04	09	14	08	14	08	37	14.6
12	08	02	22	10	15	07	08	12	08	16	9.4
13	00	00	29	13	09	02	12	09	07	22	9.2
14	23	06	28	08	35	04	05	10	08	28	11.2
15	27	09	29	19	07	08					12.0
16	24	04	29	14	04	10					9.3
17	28	06	32	23							16.5
18	27	04	29	50							27.0
19	24	06	-	-							6.0
20	00	00	27	50							25.0
21	18	04	25	32							18.0
22	25	08	27	38							23.0
23	25	08	29	29	24	23					20.0
24	24	04	-	-							4.0
25	00	00	26	19							9.5
26	31	02	28	17							9.5
27	26	04	29	29							16.5
28	00	00	27	23							11.5
29	22	04	25	24	25	24					17.3
30	23	04	28	22	24	27					17.7
31	18	06	27	17	24	23					15.3
Ave-rage	-	3.8	-	17.4	-	14.0	-	16.8	-	23.4	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station . BANGKOK Time of Observation 0700, Sept. 1957

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity'
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	12	06	28	11	26	21					12.7
2	14	04	27	06	20	15					8.3
3	05	02	24	07							4.5
4			Nil								-
5	17	04	32	05							4.5
6			Nil								-
7			"								-
8			"								-
9			"								-
10	00	00	08	08	08	02					3.3
11	32	02	33	05							3.5
12	19	06	-								6.0
13			Nil								-
14	00	00	23	12							6.0
15	27	02	28	18							10.0
16	28	04	29	20	30	11					11.7
17	27	02	31	11	34	17					10.0
18	27	04	35	08							6.0
19	28	02	26	11							6.5
20	11	02	26	23	36	07					10.7
21	00	00	28	20							10.0
22	27	04	31	14	07	07					8.3
23	26	04	25	05							4.5
24	00	00	27	07	26	05					4.0
25	12	02	22	06	27	06	07	14	07	22	10.0
26	27	04	27	10							7.0
27	00	00	29	20	08	13					11.0
28	00	00	25	07	02	02					6.5
29	00	00	30	13							6.5
30			Nil								
31											
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station· BANGKOK Time of Observation 0700, Oct. 1957

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	32	11							5.5
2	00	00	24	12	01	04					5.3
3	00	00	25	25							12.5
4	00	00	32	17							8.5
5	29	06	01	13	05	08					9.0
6	-	-	No observation due to rain								
7	32	06	00	00	15	05					3.7
8	30	08	35	03	24	17	26	12	06	08	9.6
9	35	04									4.0
10	33	02									2.0
11	-	-	No observation due to rain								-
12	30	04	09	04	10	07	08	16	11	27	11.6
13	31	02	04	16	31	08	22	03	08	22	10 2
14	14	04	35	18	30	07	23	08	16	18	11.0
15	19	02	28	11	29	07					6.7
16	00	00	32	08	29	08					5.3
17	13	04	08	09							6.5
18	27	03									3.0
19	09	05	11	13	11	09	18	10			9.3
20	02	04	10	10	13	06	20	11	15	26	11.4
21	36	06	09	12	06	12	07	04	21	15	9 8
22	34	03	08	11	09	09			30	04	6.8
23	08	02	11	15							8.5
24	36	02	11	16	07	07	09	21	33	12	11.6
25	00	00									0
26	28	02	08	11							6.5
27	00	00	03	10							5.0
28	00	00	10	10							5.0
29			No observation due to low clouds								-
30											
31	00	00									0
Average	-	2.6	-	11.5	-	8.1	-	10.6	-	16.5	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, July 1958

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	16	12	11	12	05	19	06	31	14.8
2	01	04	04	09	07	15	08	14	09	14	11.2
3	28	04	06	09	06	13	07	09	10	25	12.0
4	00	00	31	08	04	03	12	20	08	39	14.0
5	18	02	28	22	35	10	15	05	-	-	9.8
6	24	04	28	24	28	09	00	00	00	00	7.0
7	26	02	28	30	29	12	35	09	06	33	17.2
8	24	04	26	24	29	10	03	05	02	31	14.8
9	10	05	29	17	25	11	01	11	05	25	13.8
10	00	00	26	06	28	09	35	21	04	36	18.4
11	00	00	26	13	24	09	06	05	13	16	8.6
12	27	04	27	09	20	02	05	04	08	28	9.4
13	24	02	28	18	30	06	02	03	12	10	7.8
14	20	06	27	30	23	14	34	16	03	17	16.6
15	23	04	28	24	27	16	08	08	08	32	16.8
16	21	04	27	28	07	31	04	12	08	31	20.0
17	18	06	27	33	29	40	05	17	08	41	27.4
18	00	00	28	37	32	28	34	10	06	16	18.2
19	27	04	28	28	27	32	02	22	08	28	22.8
20	18	06	29	23	28	35	36	13	06	32	20.2
21	19	08	29	23	26	29	32	16	06	17	18.6
22	00	00	28	22	26	28	01	09	08	35	18.8
23	20	06	25	17	25	10	04	15	07	26	14.8
24	36	04	26	12	24	12	07	16	06	43	17.4
25	23	04	27	19	24	15	09	06	08	25	13.8
26	21	02	26	18	28	14	10	08	08	23	13.0
27	23	06	28	17	27	17	06	15	08	26	16 2
28	33	04	28	14	27	15	03	10	27	26	13.8
29	00	00	18	21	27	08	12	09	08	57	19.0
30	00	00	29	10	19	10	12	10	08	19	9.8
31	00	00	24	14	20	06	06	07	05	41	13 6
Average	-	3.1	-	19 1	-	15.5	-	11.1	-	27.5	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, August 1958

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	36	02	25	11	18	14	12	10	03	28	13.0
2	36	04	16	02	11	10	11	12	10	09	7.4
3	00	00	09	06	11	08	08	11	03	06	6.2
4	31	02	35	06	09	19	14	07	09	23	11.4
5	09	02	25	04	28	06	30	02	07	35	9.8
6	00	00	23	05	29	12	32	06	34	05	5.6
7	00	00	15	09	21	07	17	05	13	16	7.4
8	00	00	13	09	14	09	13	05	29	05	5.6
9	00	00	18	08	16	04	07	06	06	24	8.4
10	00	00	32	11	32	05	03	08	11	30	10.8
11	14	05	27	09	32	08	-	-	-	-	7.3
12	00	00	25	15	20	12	-	-	-	-	9
13											
14	09	02	29	09	23	02	06	04	04	22	7.8
15	00	00	31	14	27	04	12	05	06	25	9.6
16	27	04	34	08	21	07	11	07	08	30	11.2
17	00	00	12	06	18	07	06	11	07	38	12.4
18	03	02	08	12	13	24	04	11	04	19	13.6
19	27	06	10	08	10	28	08	10	25	13	13.0
20	03	11	08	08	08	10	10	14	10	11	10.8
21	28	02	08	09	10	05	08	19	09	28	12.6
22	27	06	28	06	06	18	08	12	12	25	13.4
23	26	04	27	12	04	04	04	06	06	11	7.4
24	23	06	28	09	04	12	07	14	10	35	15.2
25	27	02	01	12	04	17	28	03	08	24	11.6
26	27	04	30	15	29	11	02	01	08	26	11.4
27	21	06	32	20	34	17	06	09	05	21	14.6
28	21	02	30	20	34	02	06	13	08	35	14.4
29	27	05	28	30	28	17	36	13	06	17	16.4
30	24	08	28	37	30	14	03	18	05	22	19.8
31	00	00	31	22	31	22	27	12	10	14	14.0
Average	-	2.8	-	11.7	-	11.2	-	9.1	-	21.3	

Upper Wind Speed (Velocity) in Knot and Direcion in Degree

Station BANGKOK Time of Observation 0700, Sept. 1958

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	26	04	30	24	36	08	01	09	08	27	14.4
2	22	08	36	11	02	04	11	02	10	18	8.6
3	00	00	30	15	24	11	20	03	13	42	14.2
4	21	04	25	18	26	16	08	11	08	37	17.2
5	25	08	31	10	26	28	06	15	11	22	16.6
6	27	06	29	22	27	25	03	11	08	48	22.4
7	30	06	29	31	35	19	05	15	09	62	26.6
8	27	06	27	41	33	24	35	33	06	43	29.4
9	21	04	27	31	34	14	01	08	08	22	15.8
10	25	06	30	18	25	08	07	03	07	38	14.6
11	22	04	31	15	05	07	08	13	09	24	12 6
12	21	02	26	12	09	03	16	11	10	23	10.2
13	28	04	23	11	10	11	17	10	11	25	12.2
14	00	00	25	09	24	09	08	15	10	35	13.6
15	27	06	26	10	33	10	07	17	08	35	15 6
16	24	06	25	16	31	19	04	06	07	58	21.0
17	00	00	30	23	36	10	08	05	07	37	15.0
18	00	00	30	22	35	10	29	06	09	17	11.0
19	25	02	29	14	22	09	10	11	05	26	12.4
20	22	04	25	14	24	11	12	09	10	31	13.8
21	34	02	26	10	18	06	05	16	07	34	13.6
22	00	00	31	09	31	17	02	03	07	43	14 4
23	29	04	33	08	02	03	10	06	06	17	7.6
24	00	00	24	15	27	16	23	15	07	17	12.6
25	00	00	24	12	27	12	20	04	06	13	8.2
26	00	00	29	13	34	08	07	19	07	25	13 0
27	00	00	35	05	08	15	08	18	05	18	11.2
28	03	03	10	17	07	05	04	21	10	14	12.0
29	00	00	10	04	04	07	10	13	12	26	10.0
30	00	00	06	11	11	18	13	23	11	27	15 8
31											
Average	-	3.0	-	15.7	-	12.1	-	11.7	-	30.1	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station · BANGKOK Time of Observation 0700, October 1958

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel	Dir.	Vel.	
1	31	06	10	15	11	34	11	22	12	12	17.8
2	27	02	09	18	10	19	10	08	12	10	11.4
3	33	02	08	22	10	14	09	15	06	10	12.6
4	00	00	08	18	03	26	10	24	10	05	14.6
5	00	00	11	20	11	19	12	18	15	06	12.6
6	33	04	08	18	11	15	08	17	10	17	14.2
7	05	06	08	18	09	14	08	16	12	25	15.8
8	08	04	-	-	-	-	-	-	-	-	-
9	No observation due to raining										-
10	09	03	12	11	14	10	15	05	33	12	8.2
11	No observation due to raining										-
12	00	00	32	02	05	12	02	14	04	15	8.6
13	00	00	29	06	07	02	09	16	06	37	12.2
14	00	00	07	05	08	14	08	15	05	46	16 0
15	09	04	10	14	11	08	06	19	14	08	10.6
16	25	02	11	13	11	17	11	19	07	16	13.4
17	32	04	06	17	09	11	12	12	09	13	11.4
18	34	02	04	15	-	-	-	-	-	-	-
19	11	06	-	-	-	-	-	-	-	-	-
20	06	14	12	26	12	38	11	49	07	19	29.2
21	09	02	20	19	12	09	13	19	11	15	12.8
22	00	00	31	13	04	05	08	21	10	30	13.8
23	33	02	04	10	08	16	06	22	08	24	14 8
24	06	02	06	05	07	10	09	20	10	29	13.2
25	29	03	02	06	09	11	07	06	11	37	12 6
26	09	06	02	06	07	06	07	17	11	25	12 0
27	05	02	02	13	06	06	11	12	09	08	8.2
28	00	00	06	13	07	13	05	14	08	03	8.6
29	04	04	04	14	08	12	36	10	13	11	10 2
30	36	02	04	12	36	14	24	02	13	11	8 2
31	07	02	08	10	28	12	29	20	25	20	12.8
Average	-	2.8	-	13.2	-	14 1	-	16 6	-	17.8	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, July 1959

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	27	17	29	05	08	14	08	26	12.4
2	09	06	21	17	19	12	10	14			12.3
3	18	10	20	27	18	12	10	09	04	23	16.2
4	18	04	24	24	21	11	09	17	06	39	19.0
5	00	00	29	28	23	19	04	21	05	37	21.0
6	00	00	29	23	27	23	03	04	09	25	15.0
7	00	00	28	15	29	27	17	07	09	43	18.4
8	00	00	26	17	12	06					7.7
9	23	10	26	25	26	10	33	08	06	17	14.0
10	18	18	27	37							22.5
11	00	00	29	25	29	07					10.7
12	00	00	29	13	07	07					6.7
13	00	00	29	18	28	09	33	04			7.8
14	24	04	28	32							18.0
15	21	04	29	38	01	12	05	13			16.8
16	24	04	29	25	14	03	30	08	07	18	11.6
17	21	04	29	28	27	09	32	09	07	03	5.1
18	27	04	28	25	27	07	33	14	09	21	14.2
19	27	02	30	26	30	08	06	09	09	30	15.0
20	21	04	21	09	07	09	10	17	09	23	14.6
21	09	07	14	15	13	26	12	15	04	40	20.6
22	09	06	17	18	12	18	10	14	08	16	14.4
23	09	02	22	06	18	06	34	04	05	07	5.0
24	09	06	24	08	31	05	03	05	06	20	8.8
25	00	00	31	17	23	24	26	09	17	24	18.8
26	09	02	25	16	25	11	05	13	07	17	11.8
27	15	08	23	16	28	14	27	08			11.5
28	00	00	26	23	27	20	02	16	06	31	18.0
29	21	02	30	24	36	11	07	15	05	27	16 2
30	19	03	31	24	23	08	29	05	06	18	11.6
31	24	04	25	13	24	06	28	10	06	23	9.2
Average	-	3.4	-	21.0	-	12.5	-		-	24.2	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of observation 0700, August 1959

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	18	06	27	20	25	21	33	07	08	16	14.0
2	20	02	27	34	30	24	01	08	09	22	18.0
3	24	06	28	26	28	38	35	08	06	36	20.8
4	18	02	28	34	30	31	05	12	09	26	21.0
5	00	00	28	40	29	22	04	14	08	42	23.6
6	24	06	29	38	30	26	03	11	08	36	23.4
7	21	06	28	39	25	15	32	07	06	63	26 0
8	21	02	27	21	28	16	07	11	10	74	24.8
9	18	04	24	17	21	11	07	21	08	46	19.8
10	00	00	26	19	26	21	06	06	08	39	17.0
11	00	00	27	20	25	04	06	12	08	54	18.0
12	00	00	26	17	34	03	07	14	08	52	17.2
13	27	10	32	18	08	08	11	22	11	41	19.8
14	24	04	30	09	08	08	12	18	09	34	14.6
15	27	10	25	10	05	07	13	20	09	42	17.8
16	24	04	28	15	17	07	11	09	06	44	15.8
17	26	06	29	08	19	03	09	16	09	31	12.8
18	27	02	27	15	05	01	09	30			12.0
19	27	06	32	18	05	01	13	09	12	39	14.6
20	27	04	29	17	04	05	10	08	08	28	12.4
21	27	06	24	14	26	15	34	11	06	16	12.4
22	27	02	27	15	27	17	30	14			12 0
23	29	10	28	22	28	25	35	06	07	25	17.6
24	00	00	26	20	27	19	31	04			10.8
25	24	02	26	24	25	16	27	20	07	27	17.8
26	22	06	25	18	29	13	06	08	06	47	18.4
27	27	06	29	24	30	19	03	17	07	29	19.0
28	24	07	29	35	29	14	01	06	08	39	20.2
29	25	12	31	22	31	14	03	16	08	31	19.0
30	24	04	30	31	35	16	08	23	07	31	21.0
31	27	06	31	25	34	07	05	14	39	29	16.2
Average	-	4.5	-	22.1	-	14.7	-	13.1	-	37.1	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, Sept. 1959

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	27	14	32	15	09	04	11	12	10	33	15.6
2	24	06	30	12	06	03	17	03	09	33	11.4
3	21	02	28	17	27	05	05	08	05	26	11.6
4	00	00	26	24	23	26	27	04	04	23	15.4
5	00	00	25	23	23	25	33	10	07	36	18.0
6	27	05	30	18							11.5
7	25	03	36	15			B	1		1	9.0
8	27	04	32	14	25	15	35	07	09	16	11.2
9	27	02	30	33	24	26	34	06	04	29	19.2
10	26	06	30	26	29	38	22	13	08	22	20.1
11	27	06	30	19	30	12	35	18	07	13	13.6
12	00	00	28	18	22	09	04	09	04	32	13.6
13	00	00	28	13	28	05	05	05	06	30	10.6
14	00	00	26	20	24	23	08	06	07	37	17.2
15	27	02	25	74	25	09	05	06	14	03	18.8
16	00	00	27	07	22	03	09	22	08	44	15.2
17	00	00	20	08	23	03	11	12	10	35	11.6
18	00	00	25	09	12	03	08	08	07	39	11.8
19	00	00	26	11	23	05	33	09	11	35	12.0
20	18	02	24	07	20	17	36	04	07	27	11.4
21	18	04	18	09	21	07	11	11	06	26	14.3
22	00	00	16	03	05	07	08	20	10	20	10.0
23	00	00	03	06	08	22	06	18	12	21	13.4
24	27	02	33	05	11	16	11	13	06	20	11.2
25	13	07	25	14	20	11	17	07	08	05	8.8
26	00	00	25	19	24	26	21	06	06	18	13.8
27	18	02	21	19	25	34	21	04	09	12	14 3
28	18	06	31	04	27	10	06	09	06	20	9.8
29	00	00	30	05	30	09	08	18	05	30	12.4
30	31	10	32	04	05	07	12	15	08	22	14.5
31											
Average	-	2.8	-	13.7	-	13.4	-	10.1	-	25.3	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, Oct. 1959

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	21	06	16	08	10	18	07	27	11.8
2	00	00	29	08	07	16	4	11	09	25	16.2
3	31	02	03	25	21	08	9	16	10	44	19.0
4	03	08	08	20	09	16	9	28	16	20	18.4
5	09	10	27	05	18	12	10	20	06	18	13.0
6	27	02	29	09	18	02	11	24	08	16	10.6
7	36	05	32	08	14	07	10	15	05	15	10.0
8	27	04	32	04	11	04	13	10	10	13	7.0
9	04	02	01	05	33	08	12	08	04	17	8.0
10	00	00	31	07	09	10	29	02	20	03	4.4
11	00	00	30	07	08	05	28	05	02	07	4.8
12	00	00	35	03	22	07	10	02	18	07	3 8
13	00	00	11	06	20	06	17	05	12	09	5.2
14	00	00	03	07	27	10	30	05	16	08	6.0
15	36	04	05	13	10	05	12	07	08	09	7.6
16	11	10	13	19	09	06	11	12	08	14	14.2
17	09	04	11	14	14	07	14	08	02	17	10.0
18	05	02	09	15	06	06	34	06	08	14	8 3
19	03	02	04	14	05	10	02	09	06	06	8.2
20	36	04	13	11	08	08	03	05	12	08	7.2
21	36	04	09	10	15	10	18	06	17	17	9.4
22	05	04	08	09	12	06	15	06	23	20	9.0
23	36	04	11	13	11	13	19	10	22	12	10.4
24	05	02	10	08	10	10	13	07	13	10	7.4
25	05	04	11	04	15	09	20	04	22	11	6.4
26	36	06	09	11	11	24	21	10	21	23	14.2
27	05	02	12	13	14	12	13	07	16	16	10.0
28	30	02	11	17	14	17	15	11	21	03	10.0
29	00	00	13	15	13	10	13	15	01	19	11.8
30	14	05	12	12	33	06	14	14	03	29	13.2
31	00	00	18	04	15	16	13	13	03	32	13.0
Average	-	3.0	-	10.0	-	9.0	-	10.0	-	15.0	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, July 1960

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir	Vel.	Dir.	Vel.	Dir.	Vel	Dir.	Vel.	Dir.	Vel.	
1	18	06	27	33	24	12	01	12	07	38	20.2
2	18	04	28	16	24	09	34	16	04	37	15.4
3	00	00	30	11	28	11	04	09	06	18	9.8
4	00	00	32	15	03	06	07	18	07	26	13.0
5	00	00	22	12	18	24	16	04	06	27	13.4
6	24	02	20	15	19	22	12	07	02	22	13.6
7	09	02	22	08	06	03	13	10	02	10	6.6
8	00	00	27	06	15	12	10	10	08	09	7.4
9	27	01	13	07	12	13	10	10	08	12	8.6
10	00	00	19	09	16	07	17	05	06*	39	12.0
11	27	06	20	10	20	05	05	08	04	24	10.6
12	19	04	21	12	30	12	10	07	10	20	11.0
13	00	00	10	05	36	09	31	08	33	01	4.6
14	00	00	06	08	07	08	09	02	10	16	6.8
15	05	02	11	09	09	07	12	13	08	28	11.8
16	00	00	14	08	11	09	10	18	09	20	11.0
17	08	04	17	13	14	03	10	12	07	21	10.6
18	09	02	20	02	23	04	11	12	13	21	8.2
19	28	04	36	03	10	09	12	10	10	16	8.4
20	27	04	25	06	12	06	09	06	07	25	8.2
21	00	00	25	08	18	08	30	09	06	18	17.5
22	09	03	24	11	21	09	30	06	10	18	9.4
23	00	00	23	12	21	14	10	07	66	23	11.2
24	00	00	26	17	21	12	03	10	07	26	12.2
25	00	00	23	12	26	06	02	09	xx	xx	6 8
26	24	06	30	21	28	04	09	12	07	30	14.6
27	27	02	28	23	19	09	07	08	06	24	13.2
28	27	02	29	22	25	06	07	12	07	32	14.8
29	00	00	31	17	25	06	08	11	07	51	17.0
30	00	00	29	14	23	06	01	10	07	24	10.8
31	00	00	28	13	29	20	03	06	07	27	13.2
Average	-	1.7	-	12.2	-	9.4	-	9.5	-	23.4	

Upper Wind Speed (Velocity) in Kbot and Direction in Degree

Station : BANGKOK Time of Observation 0700, August 1960

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	27	17	31	11	02	05	07	31	12.8
2	00	00	27	16	34	14	04	04	07	36	14
3	21	03	26	23	01	02	11	16	06	23	13.4
4	24	06	29	20	04	13	08	14	09	28	16 2
5	24	07	30	17	25	08	06	05	04	32	12.8
6	24	05	25	21	29	14	26	08	09	15	12.6
7	00	00	29	10	30	13	26	07	08	32	12.4
8	27	02	26	15	28	23	29	20	06	14	14.8
9	00	00	28	24	27	11	01	06	03	45	17.2
10	27	06	29	32	28	14	29	05	09	21	15.6
11	24	02	27	35	29	16	28	09	06	10	14.4
12	26	04	27	37	26	19	34	04	07	21	17.0
13	18	07	27	31	30	15	25	12	05	17	16.4
14	24	04	29	32	25	20	03	07	09	35	19.6
15	21	06	30	20	26	19	16	10	06	24	15.8
16	24	06	29	30	27	17	31	14	07	32	19.8
17	24	02	30	25	29	22	33	04	07	31	16.8
18	25	06	30	23	32	13	16	01	09	32	15.0
19	24	04	29	17	28	15	25	14	10	11	12.2
20	21	06	28	34	24	24	09	04	06	36	20 8
21	18	06	27	30	26	21	19	19	04	19	19.0
22	24	02	27	21	31	05	01	10	07	21	11.8
23	24	02	28	16	23	20	06	26	08	38	20.4
24	00	00	26	09	Missing						4.5
25	00	00	27	11	21	18	31	08	08	25	12.4
26	23	02	23	15	19	16	06	06	06	32	14.2
27	00	00	25	14	18	12	07	17	08	40	16.6
28	00	00	28	16	17	08	06	16	08	42	16.4
29	24	04	29	18	24	12	12	18	08	47	19.8
30	24	04	27	21	26	04	05	10	07	46	17.0
31	23	06	29	13	25	04	03	08	09	48	15.8
Average	-	3.2	-	21.4	-	14.4	-	10.2	-	29.5	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, Sept 1960

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir	Vel.	Dir.	Vel.	Dir.	Vel.	
1	27	02	29	18	15	07	06	11	07	48	17.2
2	00	00	27	09	24	07	10	13	08	34	12.6
3	27	06	27	05	07	08	07	22	07	40	16 2
4	30	02	32	08	17	11	11	18	09	27	13.2
5	06	04	35	10	25	12	19	08	06	24	11.6
6	24	06	28	18	27	16	27	09	08	26	15.0
7	18	02	24	19	26	22	31	10	07	10	12 6
8	00	00	25	12	23	18	27	07	10	17	10.8
9	29	02	23	10	12	08	06	15	07	36	14 2
10	00	00	28	05	17	09	03	04	05	30	9.6
11	24	04	24	05	18	07	11	10	07	31	11.4
12	00	00	22	10	16	10	11	15	08	38	14.6
13	14	02	26	11	13	08	11	12	08	12	9 0
14	00	00	30	11	12	08	09	16	09	28	12.6
15	08	08	33	07	07	09	05	12	09	32	13.6
16	09	06	13	05	12	07	09	08	09	28	10.8
17	03	04	14	04	00	00	11	10	11	29	9.5
18	05	06	11	02	30	07	08	18	07	28	12.2
19	09	08	06	12	07	11	08	19	08	15	13.0
20	27	02	13	02	10	08	12	16	11	27	11.0
21	27	06	23	11	17	05	09	11	13	12	9.0
22	12	08	27	18	23	26	24	05	11	21	15.6
23	21	06	26	10	26	17	03	06	07	19	11.6
24	00	00	33	03	32	09	07	10	05	31	10.6
25	00	00	32	17	27	09	07	05	06	15	9.2
26	16	04	27	12	35	18	12	10	08	20	16.0
27	00	00	25	09	10	04	20	06	11	18	7.4
28	00	00	29	13	09	05	12	20	09	26	12.8
29	06	04	23	08	26	13	19	06	05	35	13 2
30	05	06	27	21	10	16	06	10	16	18	14 2
31											
Ave-rage	-	3.3	-	10.2	-	10.5	-	11.4	-	24 2	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station BANGKOK Time of Observation 0700, October 1960

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel	Dir	Vel.	
1	32	04	06	16	07	14	08	15	11	33	16 4
2	36	08	05	24	06	44					25 3
3	31	10	02	23	04	28	07	22	11	18	20.2
4	36	12	05	26	05	26	08	19	12	27	22.0
5	34	20	05	22	04	18	07	27	07	14	20.2
6	18	12	22	27	20	23	18	25	13	05	18.4
7	18	04	26	19	26	17	23	08	06	41	16.8
8	36	04	30	18	02	10	07	08	07	28	13.6
9	00	00	33	11	10	15	09	14	09	23	12.6
10	32	04	33	07	05	12	06	12	09	39	14.8
11	27	07	33	06	35	10	27	18	07	26	13 4
12	27	06	02	04	08	05	31	11	10	33	11.8
13	27	04	34	06	03	13	05	15	11	27	13.0
14	24	04	35	08	03	10	35	11	07	34	13.4
15	00	00	24	06	17	05	03	04	10	29	8.8
16	00	00	10	06	08	06	09	19	06	24	11.0
17	00	00	06	05	10	07	11	18	08	30	10.0
18	00	00	22	10	14	09	11	07	14	18	8.8
19	00	00	18	6	03	01	12	05	08	24	7 2
20	00	00	08	03	05	05	07	16	09	12	7 2
21	00	00	07	05	10	12	10	14	05	37	13 6
22	03	04	07	15	08	12	09	20	08	11	12.4
23	32	04	19	10	10	10	12	20	11	25	13 8
24	33	04	13	16	09	20	09	29	10	08	15 4
25	36	04	07	17	09	12	18	11	24	07	10.2
26	09	06	09	16	09	10	00	00	24	16	12.0
27	09	04	07	12	11	07	18	07	27	14	8 8
28	09	10	14	16	12	06	26	19	29	31	16 4
29	06	06	02	16	06	14	14	02	34	28	13 2
30	36	06	10	14	13	09	11	13	35	15	11.4
31	00	00	12	15	06	09	14	14	08	18	14 0
Ave-rage	-	4.7	-	13.1	-	12.9	-	14 0	-	23 3	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station · BANGKOK Time of Observation 0700, July 1961

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	24	10	27	27	28	18	36	17	08	30	20.4
2	00	00	27	33	30	30	34	15	04	18	19.2
3	27	04	28	28	33	21	36	17	08	48	23.6
4	27	02	29	23	34	06	12	09	07	34	14.8
5	00	00	31	14	03	10	05	09	06	34	13.4
6	24	04	30	22	30	09	07	12	06	20	13.4
7	27	02	30	29	23	04	03	07	08	21	12.6
8	19	04	28	20	29	08	33	07	06	27	13.2
9	24	04	26	20	28	20	36	12	04	14	14.0
10	18	08	29	14	27	07	24	06	08	20	11.0
11	25	04	29	20	22	09	06	14	06	25	14.4
12	27	04	26	16	26	12	10	10	11	31	14.6
13	30	02	25	17	32	14	17	09	08	33	15.0
14	28	06	30	21	26	07	02	22	07	31	17.4
15	18	08	22	22	27	16	34	15	02	14	15.0
16	22	04	28	29	28	29	36	17	11	31	22.0
17	25	05	29	36	30	30	04	10	06	31	22.4
18	24	08	31	37	30	16	35	06	09	35	20.4
19	27	10	30	28	11	06	05	04	21	19	13.4
20	21	05	26	26	27	18	27	08	06	25	16.4
21	21	02	28	19	30	17	09	14	09	31	13.8
22	27	04	33	31	14	09	10	23	10	25	16.4
23	27	04	10	02	14	29	11	27	11	26	19.6
24	09	04	21	06	16	15	13	13	09	30	13.6
25	27	02	23	07	21	18	08	37	09	26	18.0
26	00	00	28	15	33	16	11	21	10	11	12.6
27	00	00	24	13	25	10	30	03	03	16	8.4
28	25	04	26	23	26	15	31	14	07	31	17.4
29	00	00	29	13	30	32	12	08	04	49	20.4
30	24	06	28	32	22	14	03	10	09	28	18.0
31	23	06	29	25	24	12	03	09	08	35	17.4
Average	-	4.1	-	21.2	-	15 1	-	13.0	-	27.7	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station . BANGKOK Time of Observation 0700, August 1961

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	29	21	24	13	09	14	09	42	18
2	27	06	27	12	26	05	08	06	08	44	14.6
3	23	10	28	10	29	17	07	39	07	42	23.6
4	24	04	30	28	33	14	08	11	08	37	18.8
5	18	04	29	39	30	21	05	15	07	37	23.2
6	00	00	30	24	27	08	05	18	08	30	16.0
7	24	04	28	18	29	02	12	04	08	32	12.0
8	29	04	30	19	12	04	09	12	07	29	13.6
9	23	02	29	08	13	05	02	09	08	19	8.6
10	24	04	28	14	35	04	06	09	07	17	9.6
11	24	04	30	17	21	03	01	02	08	35	12.2
12	00	00	27	17	25	04	10	05	08	28	10.8
13	14	02	27	08	20	04	10	02	08	42	11.6
14	24	06	28	13	30	13	04	12	07	22	13.2
15	24	06	27	20	28	20	30	12	07	14	14.4
16	33	04	25	27	28	16	33	16	34	06	13.8
17	18	06	26	26	28	18	30	08	07	19	15.4
18	24	03	27	29	31	21	32	14	03	11	15.6
19	23	06	28	26	36	11	34	16	07	30	15.8
20	00	00	27	25	32	22	01	08	06	30	17.0
21	00	00	27	32	32	20	04	24	08	20	19.2
22	19	10	26	44	25	36	26	08	06	15	22.6
23	18	06	27	32	25	12	03	12	05	32	18.8
24	24	02	30	26	31	21	03	15	06	21	17.0
25	28	02	27	32	34	20	07	08	09	24	17.2
26	24	06	30	13	07	08	02	10	08	32	13.8
27	18	08	24	15	22	14	15	13	09	24	14.8
28	20	08	29	28	23	27	21	07	07	25	19.0
29	24	08	28	34	26	26	05	04	07	29	20.2
30	24	04	28	32	25	21	02	21	06	09	20.1
31	19	02	29	24	29	17	34	18			15.3
Average	-	40.2	-	23.0	-	14.7	-	12.2	-	27.1	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700 Sept. 1961

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	30	26	26	31	34	15	06	24	24.0
2	00	00	29	20	21	32	03	23	08	35	22 0
3	00	00	30	23	29	21	35	07	06	13	12 8
4	24	04	30	24	28	22	17	15	09	16	16.2
5	23	02	30	19	32	08	16	10	08	42	16.2
6	00	00	29	13	25	10	09	11			8.5
7	27	06	27	10	25	09	08	14	08	23	12.4
8	27	02	28	18	28	09	07	14	05	22	13 0
9	23	05	26	17	28	10	28	04	06	31	13.4
10	18	04	26	22	26	28	09	30	05	35	23.8
11	24	04	26	36	27	24	06	10	07	24	19.6
12	00	00	30	28	03	08	08	24	06	31	20.2
13	27	04	31	20	35	06	08	10	09	25	13.0
14	24	02	30	16	35	10	31	12	10	17	11.4
15	00	00	29	15	22	06	32	04	03	12	7.4
16	18	06	27	14	26	08	03	04	08	29	12.2
17	00	00	27	07	24	09	13	05	08	46	13.4
18	22	03	28	11	22	10	07	08	09	51	16.6
19	00	00	26	16	32	04	09	23	10	45	17.6
20	00	00	24	22	28	13	03	08	04	45	17.6
21	23	06	27	24	26	14	02	09	06	35	17.8
22	00	00	28	28	32	07	08	08	07	39	16.4
23	27	07	34	11	05	06	08	29	07	30	16.6
24	30	04	35	14	03	10	07	20	08	21	13.8
25	24	06	26	13	24	12	24	04	06	14	9.8
26	18	08	27	26	25	29	27	04	06	24	18.2
27	08	02	27	24	22	10	36	19	08	29	16.8
28	27	06	31	20	08	07	03	22	08	32	17.4
29	27	08	32	18	01	08	08	22	07	35	18.2
30	27	08	29	17	01	08	03	10	07	32	15 0
31											
Average	-	3.2	-	19.1	-	13.3	-	13.1	-	29.9	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station · BANGKOK Time of Observation 0700, October 1961

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel	Dir.	Vel.	
1	00	00	31	21	24	07	06	11	09	25	12.8
2	00	00	29	11	27	08	13	11	08	33	12.6
3	00	00	29	14	34	04	08	13	09	32	12.6
4	00	00	34	05	10	14	08	21	09	33	18.3
5	05	02	09	02	11	18	17	14	05	20	11.2
6	36	06	09	20	10	05	17	04	07	13	9.6
7	30	04	08	10	15	06	08	07	13	14	8.2
8	36	02	09	09	13	05	13	06	11	22	8.8
9	28	04	34	04	06	07	12	12	08	17	8.8
10	27	06	27	04	05	07	07	16	10	20	10.6
11	00	00	08	10	08	10	10	17	01	17	10.8
12	05	10	05	14	09	13	08	19	12	03	11.8
13	00	00	03	10	06	09	01	05	09	37	12.2
14	01	08	22	11	18	05	19	12	10	20	11.2
15	36	04	19	07	17	14	16	14	10	09	9.6
16	00	00	21	07	15	03	07	12	10	11	6.6
17	00	00	35	05	06	10	10	14	08	20	9.8
18	32	02	07	13	05	17	08	16	08	20	13.6
19	00	00	04	16	07	24	09	30	10	07	15.4
20	27	04	04	13	04	14	09	20	07	30	16.2
21	09	06	20	18	22	16	21	14	04	17	14.2
22	09	08	15	14	17	11	10	18	04	31	16.4
23	36	02	11	07	11	12	11	21	12	32	14.8
24	04	04	07	18	10	16	10	13	07	16	13.4
25	00	00	10	17	09	22	10	15	08	05	11.8
26	27	02	07	08	14	17	21	06	22	06	7.8
27	26	02	12	11	14	10	17	04	29	07	6.8
28	00	00	13	09	16	03	09	02	27	09	4.6
29	00	00	22	12	10	15	30	03	32	02	6.4
30	05	05	11	13	09	06	15	12	16	13	9.8
31	04	05	07	12	10	18	05	02	14	02	7.8
Average	-		-	10.8	-	11.2	-	12.4	-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, July 1962

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	28	06	27	10	29	12	07	14	10	25	13.4
2	24	02	28	11	32	06	09	15	11	28	12.4
3	23	06	28	12	17	05	10	21	09	47	18 2
4	00	00	26	07	05	06	19	15	06	49	15.4
5	00	00	31	17	10	12	11	16	12	23	13.6
6	27	08	29	08	09	09	09	20	09	18	12.6
7	22	04	27	14	14	04	09	17	07	16	10.6
8	23	04	27	24	30	06	30	05	05	15	10 8
9	24	06	27	56	30	11	05	08	05	14	19.0
10	00	00	29	25	29	14	25	08	06	18	13.0
11	27	04	29	26	04	06	05	13	07	21	14.0
12	24	02	28	35	30	23	32	15	07	19	18.8
13	18	04	27	24	25	41	22	30	29	11	22.0
14	18	10	24	19	25	29	21	23	12	16	19.4
15	00	00	25	18	18	13	08	11	08	36	15.6
16	24	02	27	11	31	20	05	08	05	19	12.0
17	27	02	30	26	34	24	29	15	-	-	16.8
18	18	04	29	26	34	12	32	18	32	09	13.8
19	21	12	26	30	25	26	00	00	05	13	20.3
20	18	02	27	32	24	30	01	04	09	22	18.0
21	00	00	26	32	27	26	06	15	05	23	19 2
22	21	02	27	26	29	18	34	09	07	26	16.2
23	21	08	28	37	30	13	36	10	08	37	20.1
24	21	02	28	53	30	12	02	30	08	32	25.8
25	21	02	28	37	22	17	01	08	04	31	19.0
26	21	08	28	27	32	16	02	32	08	30	22.6
27	26	04	29	40	30	13	35	16	06	26	19.8
28	24	04	28	29	30	16	05	08	07	41	19.6
29	27	06	30	27	31	07	07	05	07	24	13.8
30	00	00	29	34	35	20	01	13	09	35	20.4
31	27	10	28	32	29	12	36	21	06	33	21.6
Average	-	4.0	-	26.3	-	15.5	-	14.3	-	25 2	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station BANGKOK Time of Observation 0700, August 1962

Date	Surface		2 km		5 km		8 km		12 km		Aver Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	22	02	28	27	34	07	07	20	07	32	17.6
2	18	05	27	32	29	27	35	16	07	39	23.8
3	20	06	28	24	31	12	03	13	07	33	17.6
4	32	10	27	26	29	21	05	18	07	33	21.6
5	23	06	28	47	32	51	35	17	08	26	29.4
6	24	02	29	46	28	13	08	11	08	35	21 4
7	10	02	28	21	24	12	08	12	08	35	16.4
8	27	03	26	13	13	15	12	10	56	41	16.4
9	27	06	32	09	31	04	06	06	06	36	12.2
10	27	02	30	12	35	08	05	09	06	39	14 0
11	20	04	21	13	38	13	26	26	06	40	19.2
12	23	02	28	15	25	32	28	14	05	24	17.4
13	00	00	29	12	36	09	02	15	02	47	16.6
14	00	00	34	10	16	17	10	11	09	14	10.4
15	24	02	16	13	16	17	15	17	18	16	13.0
16	27	02	17	13	14	08	09	05	03	08	7.2
17	00	00	21	09	14	08	13	04	08	16	7.4
18	27	02	27	08	01	08	07	10	09	29	11.4
19	27	02	30	10	28	13	28	03	17	29	11.4
20	23	04	29	15	27	16	36	15	08	48	19.6
21	27	06	29	12	27	06	07	16	09	23	12.6
22	24	07	31	12	25	06	10	15	07	25	15.0
23	28	06	33	15	07	06	08	18	10	31	15.2
24	00	00	03	11	09	12	11	24	09	27	14.8
25	00	00	19	11	13	14	11	16	09	20	12.2
26	15	03	24	17	24	39	33	06	07	39	20.8
27	00	00	22	09	23	07	10	05	07	24	9.0
28	00	00	14	04	08	11	07	15	07	22	10.4
29	18	06	09	15	10	16	10	37	10	42	23.2
30	00	00	09	09	09	14	07	07	10	10	8.0
31	18	02	18	05	23	04	08	12	08	38	12.2
Average	-	3.0	-	16.0	-	13.2	-	13.6	-	29.8	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, September 1962

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	21	05	26	07	25	09	12	08	04	22	10.2
2	00	00	29	18	25	16	33	09	05	13	11.2
3	00	00	29	15	25	12	28	02	06	20	9.8
4	27	02	30	16	27	23	28	14	07	37	18 4
5	27	03	31	18	29	15	31	09	07	30	15.0
6	00	00	28	17	05	02	06	18	06	12	9.8
7	09	12	10	12	19	03	14	11	12	25	12.6
8	09	12	24	04	20	29	27	10	09	17	14 4
9	00	00	10	02	13	16	08	13	08	19	10.0
10	33	04	17	06	10	12	08	22	09	29	14 6
11	00	00	12	12	14	14	09	12	04	08	9.2
12	18	06	16	14	20	12	16	08	08	16	11.2
13	00	00	04	07	11	09					5.3
14	00	00	30	10	11	13	09	16	06	24	12.6
15	00	00	28	04	13	04	06	08	06	09	5.0
16	27	08	07	21	07	31	07	21	07	31	22.4
17	26	10	30	24	31	29	33	13	04	26	20 4
18	18	02	28	27	23	24	26	07	02	21	16.2
19	09	04	25	12	25	19				11	11.7
20	00	00	30	13	23	06	05	03	15	09	6 2
21	27	10	30	19	33	13	35	10	08	14	13 2
22	27	06	30	10	34	16	01	15	09	19	13 2
23	24	06	27	11	09	05	03	09	10	14	9 0
24	00	00	29	14	23	03	17	12			7.3
25	00	00	28	10	24	07	06	07	08	31	11.0
26	31	02	26	11	07	08	08	22	07	39	16.4
27	26	04	28	10	03	17	07	24	09	28	16 6
28	24	04	26	16	02	13	03	08			10 3
29	12	06	27	13	29	04	33	09	09	23	11.0
30	10	06	28	06	14	06	12	18	08	22	11.6
31											
Average	-	3 7	-	12.6	-	13.0	-	12 0	-	21.5	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station · BANGKOK Time of Observation 0700, October 1962

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel	Dir.	Vel.	Dir	Vel.	Dir.	Vel.	
1	00	00	33	07	10	11	10	11	11	12	8.2
2	33	06	07	16	11	08	09	11	07	12	10.6
3	30	04	10	17	05	02	35	06	10	11	8.0
4	06	03	16	06	18	10	15	04	09	23	9.2
5	00	00	23	05	24	10	22	06	08	27	9.6
6	00	00	24	07	25	09	27	09	10	05	6.0
7	14	04	17	06	30	08	31	10	05	16	11.3
8	00	00	24	02	29	14	02	06	03	21	8 6
9	00	00	25	04	19	09	11	09	07	19	7.6
10	07	04	12	04	17	13	15	10	03	18	9.8
11	02	04	10	07	16	12	11	15	03	16	10.8
12	36	06	09	08	19	07	06	05	02	10	7 2
13	00	00	10	05	07	04					3.0
14			10	06	06	06	07	05	17	10	6.8
15	09	06	10	18	08	08	03	07	06	11	10.0
16	34	05	12	11	23	08	08	13	08	32	13.8
17	36	04	09	08	12	08	13	19	20	13	10.4
18	35	20	10	11	10	18	07	08	03	03	10.6
19	05	02	10	12	07	23	10	18	14	17	14.4
20	03	06	10	38	11	17	18	23	17	17	20.2
21	07	05	09	26	09	18	14	08	26	06	12.6
22	09	06	12	22	07	10	34	04	20	11	10.6
23	36	04	09	14	12	12	15	09	16	10	9.8
24	36	06	05	17	08	11	08	08	15	11	10.6
25	05	02	06	18	10	30	12	19	10	14	16.6
26	06	10	10	35	11	37	14	25	13	23	26 0
27	09	10	16	21	13	27	10	06	08	27	18.2
28	07	06	11	07	11	14	12	14	04	20	12.2
29	00	00	09	08	15	06	18	15	06	23	10.4
30	00	00	31	04	16	14	13	23	10	17	11.6
31	16	04	26	04	21	06	15	21	12	28	12 6
Average	-	3.5	-	12.1	-	12.2	-	11.6	-	16.1	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, July 1963

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	20	04	25	34	25	19	02	05	07	33	19.0
2	25	04	28	37	26	35	07	10	07	37	24.6
3	23	02	29	35	27	18	36	08	06	32	19 0
4	24	04	27	24	31	19	34	13	06	39	19.8
5	19	08	26	28	27	21	04	19	01	30	21.2
6	23	04	26	36	27	37	01	11	03	26	22.8
7	23	06	29	28	30	16	33	17	01	17	16.8
8	27	06	30	35	29	15	02	08	13	11	15 0
9	26	04	30	39	25	10	13	18	11	33	20.8
10	25	06	28	17	36	06	11	19	12	20	13.6
11	27	07	28	29	16	04	04	13	08	35	17.6
12	22	04	28	20	31	19	04	11	08	20	14.8
13	00	00	29	25	28	29	13	04	07	52	22.0
14	00	00	27	18	27	14	08	08	08	35	15.0
15	00	00	28	16	29	27	30	04	06	14	12.2
16	00	00	29	29	28	23	30	12	06	32	19.2
17	29	08	30	18	29	25	36	16	-	-	16 8
18	30	02	28	25	25	17	26	07	08	37	17.6
19	00	00	27	21	28	13	03	06	07	27	13.4
20	00	00	29	26	26	16	14	04	08	38	16.8
21	21	04	28	23	27	12	11	05	07	33	15.4
22	22	05	27	18	-	-	-	-	-	-	12.5
23	23	08	26	28	27	23	03	03	05	22	16.8
24	22	06	25	21	31	23	27	10	07	22	16.4
25	20	05	26	50	29	16	36	08	30	22	20.2
26	22	05	30	30	25	24	30	16	06	31	20.1
27	19	08	26	30	22	16	23	10	29	18	16.4
28	18	06	21	17	27	26	27	07	30	20	15.2
29	10	04	23	04	12	07	07	05	02	29	9.8
30	27	04	24	02	07	10	04	14	07	19	9.8
31	01	02	27	04	02	09	03	10	08	19	8.8
Average	-	4.1	-	24 7	-	20.8	-	10.0	-	27.7	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, August 1963

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	27	06	07	05	07	10	10	18	7.8
2	10	04	26	10	32	08	12	04	08	26	10.4
3	15	04	21	14	21	06	05	73	-	-	24.3
4	24	08	22	14	04	08	10	12	05	21	12.6
5	00	00	27	20	25	16	30	08	02	24	13.6
6	27	08	29	23	25	15	28	14	35	17	15.4
7	00	00	28	35	25	22	30	08	08	24	17.8
8	22	04	29	23	31	15	29	10	06	27	15.8
9	22	06	28	30	31	22	01	07	06	24	17.8
10	00	00	29	25	01	18	35	10	05	16	13.8
11	27	04	31	25	33	07	35	05	09	30	14.2
12	27	09	31	20	32	04	13	07	09	27	13.4
13	00	00	30	14	35	06	02	08	-	-	7.0
14	27	02	28	21	33	05	02	05	10	17	10.0
15	27	06	30	34	28	08	04	11	05	23	16.4
16	27	06	29	24	34	06	03	14	09	30	16.0
17	24	04	29	26	04	04	17	08	11	17	11.8
18	00	00	26	16	16	08	11	08	06	29	10.4
19	11	02	30	11	31	04	11	19	10	32	17.0
20	00	00	27	10	13	07	06	16	07	31	12.8
21	28	06	29	13	03	12	09	10	07	35	15.2
22	30	06	29	11	15	03	07	13	07	36	13.8
23	00	00	28	15	23	10	03	12	04	30	13.4
24	00	00	29	14	24	22	28	08	07	19	12.6
25	00	00	28	18	31	18	34	09	04	17	12.4
26	00	00	30	21	29	21	32	16	06	31	17.8
27	00	00	31	16	03	14	27	36	08	25	18.2
28	27	06	34	10	05	06	08	16	11	34	14.4
29	00	00	27	10	18	08	11	14	07	20	10.4
30	27	02	30	12	01	07	04	08	08	26	11.0
31	24	04	28	18	31	06	03	97	-	-	31.3
Average	-	3.0	-	18.0	-	10.7	-	11.1	-	25.0	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, Sept. 1963

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	27	02	07	09	29	04	15	07	09	37	11.8
2	14	04	22	02	06	12	05	08	06	14	8.0
3	26	02	30	06	02	02	07	07	11	09	7.2
4	30	10	32	08	02	12	05	10	09	35	15.0
5	33	08	28	14	02	09	09	15	10	15	12.2
6	00	00	24	21	20	16	12	13	06	29	15.8
7	22	08	24	18	27	28	21	09	08	25	17.6
8	20	12	25	30	25	24	36	13	06	32	22.2
9	19	08	26	38	25	24	29	11	05	44	25.0
10	22	06	26	28	26	24	29	08	04	41	21.4
11	26	06	28	30	24	23	35	10	06	45	22.8
12	22	08	25	21	25	22	29	11	06	25	17.4
13	21	06	28	24	27	24	28	10	06	21	17.0
14	25	04	29	17	27	21	22	05	06	19	13.2
15	00	00	26	13	21	07	00	00	03	19	7.8
16	27	03	28	19	25	10	32	06	10	24	12.4
17	30	10	27	15	25	22	16	09	-	-	14.0
18	00	00	25	16	28	15	26	06	-	-	9.3
19	28	02	27	08	15	04	09	06	-	-	5.0
20	00	00	07	08	10	10	09	20	10	28	13.2
21	09	02	07	08	09	13	09	16	08	16	11.0
22	31	04	04	10	10	11	07	10	11	35	14.0
23	36	06	04	12	04	32	05	24	02	36	22.0
24	27	04	21	05	19	13	14	08	07	19	9.8
25	13	08	20	06	12	12	14	18	14	14	11.6
26	00	00	24	10	20	08	13	09	-	-	6.8
27	13	04	26	09	15	09	09	08	08	25	11.0
28	00	00	28	09	12	10	09	22	10	37	15.6
29	22	02	02	11	05	13	06	28	10	28	16 4
30	26	03	04	14	35	06	11	08	09	28	11.8
31											
Average	-	4.4	-	15.6	-	14.7	-	11.2	-	26.9	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station · BANGKOK Time of Observation 0700, October 1963

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	30	06	06	13	08	11	32	07	10	17	18.0
2	29	04	10	06	12	17	11	15	07	26	13.6
3	10	02	24	10	14	21	14	25	07	11	13.8
4	19	07	20	20	16	05	18	07	05	12	10.2
5	11	02	28	09	33	09	08	13	-	-	8.3
6	23	04	29	15	29	06	05	17	12	29	14.2
7	10	08	26	20	24	08	06	12	-	-	12.0
8	00	00	15	04	11	08	08	32	08	39	16.6
9	00	00	03	08	08	17	11	18	13	30	14.6
10	02	02	08	09	10	14	10	10	11	14	9.8
11	00	00	08	11	10	19	09	24	07	15	13.8
12	00	00	09	20	11	17	12	28	05	19	16.8
13	-	-	-	-	-	-	-	-	-	-	
14	30	08	10	17	17	21	09	19	-	-	16.3
15	36	04	12	16	08	14	13	08	15	16	11.6
16	29	04	08	14	10	18	14	08	09	21	13.0
17	08	04	08	16	10	15	08	12	12	10	11.4
18	03	04	10	11	09	15	11	13	09	07	10.0
19	08	08	10	20	09	16	07	06	07	08	11.6
20	08	08	11	15	12	20	09	07	21	18	13.6
21	07	08	09	16	10	12	10	03	31	08	9.4
22	04	06	13	16	10	10	08	04	36	07	8.6
23	05	06	14	16	12	04	09	07	02	08	8.2
24	00	00	12	12	18	04	17	05	04	10	6.2
25	09	04	14	08	25	06	23	10	34	22	10.0
26	09	06	17	10	26	13	27	07	34	30	13.2
27	27	04	18	10	24	20	-	-	-	-	11.3
28	15	20	26	08	02	10	16	04	35	06	9.6
29	00	00	07	09	31	04	19	02	11	08	4.6
30	36	06	11	07	01	06	12	03	21	07	5 8
31	09	04	08	10	20	05	09	05	10	12	7.2
Average	-	4.0	-	12.5	-	12.2	-	10.7	-	15.8	

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station · BANGKOK Time of Observation 0700, July 1964

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	27	04	29	28	36	08	10	12	06	32	16.8
2	26	06	28	32	34	08	02	16	07	26	17.6
3	21	08	28	30	26	22	33	11	03	20	18.2
4	24	06	33	28	24	16	22	10	03	25	17.0
5	10	08	22	16	23	06	03	16	04	42	17.6
6	02	03	19	09	07	05	09	11	06	25	10.6
7	18	02	16	05	10	02	01	10	06	21	8.0
8	09	06	25	04	23	04	03	18	07	30	12.4
9	00	00	25	06	21	02	07	11	07	23	8.4
10	00	00	27	10	18	10	14	06	13	08	6.8
11	29	06	17	04	05	06	08	10	06	24	10.0
12	00	00	22	02	12	05	08	13	11	45	13.0
13	04	04	25	09	22	13	15	13	07	10	9.8
14	15	04	26	08	24	12	21	10	35	21	11.0
15	00	00	26	12	10	04	12	11	08	27	10 8
16	00	00	27	06	23	08	15	13	08	30	11.4
17	33	03	21	13	28	04	-	-	-	-	6.7
18	36	04	27	14*	18	23	08	17	04	17	15.0
19	28	06	23	08	12	06	06	13	11	17	10.0
20	27	04	20	06	08	10	07	13	09	20	10.6
21	10	10	08	01	01	10	31	09	-	-	7.5
22	09	02	23	04	22	11	13	06	03	27	10.0
23	01	06	15	10	18	25	17	05	07	13	11.8
24	35	04	12	11	10	11	09	15	09	05	9.2
25	00	00	11	11	08	13	11	11	10	11	9.2
26	28	04	09	08	14	12	10	06	08	33	12.6
27	27	06	15	05	11	04	15	10	12	16	8.2
28	00	00	29	08	25	07	05	05	10	15	7.0
29	12	02	30	12	21	12	22	02	09	17	9.0
30	00	00	26	15	18	14	12	13	09	22	12.8
31	00	00	25	07	23	08	09	14	09	19	9.6
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station . BANGKOK Time of Observation 0700, August 1964

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir	Vel.	Dir.	Vel.	Dir	Vel.	
1	24	06	26	15	01	08	05	14	10	32	15 0
2	00	00	28	32	31	14	04	16	09	37	19.8
3	24	08	28	30	27	04	06	23	06	35	20.0
4	20	06	30	36	35	04	08	21	09	47	22.8
5	28	04	29	36	36	10	07	10	09	30	18.0
6	28	08	30	29	36	10	04	12	09	30	17 8
7	27	08	31	37	33	45	04	13	09	43	28.2
8	25	10	31	23	35	08	06	08	09	22	14.2
9	24	08	28	29	25	16	27	03	09	20	15 2
10	00	00	26	28	24	25	05	04	06	21	15.6
11	18	06	25	22	09	06	22	02	07	26	12.4
12	14	04	30	18	29	16	27	05	09	24	13.4
13	00	00	28	11	32	06	03	16	06	39	14.4
14	00	00	04	10	34	08	04	16	09	36	14.0
15	00	00	27	12	25	15	33	06	08	20	10.6
16	28	04	29	24	29	23	32	09	06	31	18.2
17	27	06	29	24	27	08	32	11	11	18	13.4
18	24	05	52	18	31	20	18	08	09	33	16.8
19	00	00	27	14	24	08	15	10	11	26	11.6
20	00	00	30	27	25	10	11	07	08	34	15.6
21	27	04	31	22	28	10	14	04	08	39	15.8
22	27	18	29	21	26	11	03	08	08	34	18.4
23	00	00	28	26	29	14	08	13	07	38	18.2
24	31	04	30	25	36	08	36	11	06	46	18.8
25	00	00	30	23	02	09	00	04	08	40	15.2
26	24	06	30	17	18	04	11	17	08	34	15.6
27	00	00	32	14	05	31	09	23	10	35	20.6
28	27	08	02	05	09	18	11	18	07	29	15 6
29	00	00	23	12	18	14	11	16	08	26	13.6
30	00	00	20	08	19	12	10	12	07	30	12.6
31	00	00	24	05	03	08	06	14	08	29	11.2
Average	-		-		-		-		-		

Upper Wind Speed (velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, Sept. 1964

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	09	04	29	10	24	16	16	10	07	14	10 8
2	07	02	21	04	18	09	12	06	05	17	7.6
3	05	02	22	08	17	08	12	10	07	23	10.2
4	18	04	15	06	07	06	06	12	10	17	9.0
5	00	00	23	05	07	07	09	11	06	37	12.0
6	03	02	25	04	08	04	06	05	10	32	9 4
7	06	02	20	08	18	04	09	19	08	18	10.2
8	09	04	10	06	22	06	08	18	08	32	13.2
9	24	06	13	13	08	14	09	15	19	12	12.0
10	05	02	07	05	09	13	09	16	11	38	14.8
11	09	08	04	01	12	02	14	08	12	30	8.4
12	19	04	19	08	18	17	15	06	10	22	11.4
13	09	04	20	06	02	04	10	12	07	26	10 4
14	09	02	28	04	22	06	11	16	08	31	11.8
15	06	04	25	04	17	02	08	18	06	33	12.2
16	00	00	30	06	30	14	02	06	06	31	11.4
17	00	00	27	21	26	21	26	16	05	16	14.8
18	00	00	27	24	25	26	24	17	07	25	18.4
19	00	00	26	18	22	17	04	06	11	18	11.8
20	00	00	27	18	22	12	14	03	08	24	11.4
21	27	04	27	20	31	15	05	15	06	24	15.6
22	31	04	27	27	30	22	01	20	05	27	22.0
23	00	00	29	28	32	88	03	16	06	30	20.4
24	23	05	27	39	28	66	01	27	36	10	29.4
25	00	00	29	18	26	08	30	03	11	29	11.6
26	00	00	29	03	14	13	09	21	09	35	14 4
27	27	03	36	06	18	17	11	11	10	33	14 0
28	27	04	28	13	29	06	10	21	11	38	16.4
29	30	06	33	06	01	18	09	13	04	31	14 8
30	35	08	05	07	07	25	12	27	09	24	18 2
31											
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station · BANGKOK Time of Observation 0700, October 1964

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir	Vel.	
1	30	04	09	08	04	09	06	15	00	20	10.8
2	18	02	28	13	24	13	32	06	06	16	10.0
3	19	04	25	11	25	16	26	06	05	05	8.4
4	00	00	29	08	26	10	02	22	09	24	12.8
5	09	06	03	02	30	11	09	11	07	21	10.2
6	31	04	01	08	10	10	10	04	12	18	8.8
7	31	06	01	06	34	06	07	10	08	35	12.6
8	30	04	36	05	03	07	02	09	10	28	10 2
9	24	02	27	09	27	13	36	07	07	06	7.4
10	00	00	20	06	19	12	19	10	13	13	8.2
11	00	00	17	06	10	02	12	14	06	20	8.4
12	05	01	21	04	09	08	11	12	11	31	11.2
13	27	04	01	05	12	15	08	12	07	12	9.6
14	00	00	10	04	10	18	12	10	09	18	10.0
15	09	06	11	24	12	37	11	23	12	19	21.8
16	10	08	15	18	14	27	12	07	03	30	18.0
17	08	02	14	17	22	04	09	12	01	24	11.8
18	10	02	10	08	09	05	06	17	09	24	11.2
19	00	00	11	06	06	11	08	12	11	12	8.2
20	33	04	05	13	11	08	10	08	04	10	8.6
21	00	00	06	14	08	22	10	20	16	17	14.6
22	00	00	06	10	08	15	09	15	10	16	11.2
23	00	00	03	10	04	10	07	10	14	24	10.8
24	26	04	27	10	05	06	09	21	08	35	15.2
25	00	00	12	14	09	11	12	29	10	56	22.0
26	36	02	10	15	09	23	10	34	10	35	21.8
27	00	00	11	11	10	18	10	20	11	19	13.6
28	00	00	08	17	11	14	08	17	12	11	11.8
29	07	06	08	10	11	17	09	22	13	35	18.0
30	00	00	08	18	08	21	10	12	13	22	14.6
31	00	06	03	15	10	08	08	14	14	13	11.2
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, July 1965

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	25	05	30	06	07	12	07	29	10.4
2	00	00	22	04	33	02	07	13	11	18	7.4
3	29	04	26	10	08	08	10	14	10	43	15.8
4	30	04	27	07	03	04	08	12	08	24	9.4
5	24	06	30	15	33	10	13	06	10	30	13.4
6	00	00	30	13	23	04	05	11	09	49	30.6
7	00	00	29	23	29	19	07	11	09	44	19.4
8	00	00	24	18	34	14	11	04	09	16	10.4
9	24	04	29	18	36	04	07	07	07	23	11.2
10	27	04	30	21	31	11	05	16	09	22	14.8
11	26	02	28	28	36	08	01	06	01	06	10.0
12	00	00	28	29	30	15	34	04	09	29	15.4
13	24	08	29	33	26	18	05	08	07	34	20.2
14	30	06	30	30	32	12	05	14	09	40	20.4
15	26	08	31	30	33	16	06	10	08	34	19.6
16	25	02	30	5	31	10	28	29	-	-	18.5
17	12	02	27	16	16	12	11	21	10	28	15.8
18	00	00	26	04	16	09	11	16	11	14	8.6
19	29	06	26	02	13	16	11	12	09	18	10.8
20	27	02	27	08		Missing			06	21	10.3
21	24	06	33	16	35	06	1	14	09	29	14.2
22	23	06	30	12	20	04	34	08	09	13	8.6
23	27	08	27	10	23	25	25	22	31	12	15.4
24	24	02	30	33	27	37	34	17	02	26	21.0
25	22	06	27	35	28	20	32	08	02	24	18.6
26	20	08	28	25	27	12	01	13	04	20	15.6
27	23	06	25	24	26	19	36	10	06	35	18.8
28	22	02	27	14	36	14	30	08	05	35	14.6
29	00	00	30	32	35	20	06	10	09	40	20.4
30	27	02	30	30	21	04	08	02	07	22	12.0
31	20	04	28	13	26	13	34	03	05	23	11.2
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, August 1965

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir	Vel.	Dir.	Vel.	Dir	Vel.	Dir.	Vel.	Dir	Vel.	
1	20	08	24	19	26	20	03	04	06	32	16.6
2	18	10	25	24	23	20	14	08	08	38	20.0
3	18	05	25	18	27	22	06	09	08	24	15 6
4	21	04	29	11	27	15	33	04	09	39	14.6
5	25	02	28	16	02	05	04	04	10	39	13.2
6	00	00	29	15	21	11	14	02	08	34	12.4
7	19	02	25	10	26	11	33	06	09	33	12.4
8	15	02	29	08	22	11	09	18	08	28	13.4
9	00	00	20	10	13	11	11	18	08	41	16.0
10	36	05	18	10	33	06	10	15	09	29	13.0
11	00	00	36	02	09	10	10	12	08	26	10.0
12	06	00	21	02	14	06	09	13	10	37	11.6
13	00	00	18	08	16	11	24	04	08	44	13.4
14	00	00	26	06	24	03	10	16	07	41	13.2
15	14	08	06	03	01	19	09	11	05	24	13.0
16	00	00	15	05	07	08	15	10	09	24	9.4
17	29	06	21	07	17	06	06	12	10	20	10.2
18	27	04	26	08	07	14	10	11	08	22	11.8
19	00	00	34	06	08	05	07	07	06	34	10.4
20	09	06	22	17	23	16	13	07	06	21	13.4
21	17	04	20	14	22	22	06	08	07	20	13.6
22	09	04	26	14	26	12	06	03	03	34	13.4
23	20	00	25	07	24	16	07	13	05	28	12.8
24	27	02	07	03	07	19	06	11	03	19	10.8
25	00	00	06	10	11	12	09	20	09	32	14.8
26	00	00	20	02	09	09	10	11	09	18	8.0
27	04	02	34	05	19	05	05	11	10	25	9.6
28	00	00	27	16	28	02	09	04	07	14	7.2
29	19	06	24	17	26	21	02	02	04	16	12.4
30	18	06	24	26	26	18	34	03	03	11	12.8
31	00	00	27	28	08	04	09	02	10	02	7.2
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station · BANGKOK Time of Observation 0700, Sept. 1965

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	26	10	32	25	04	03	06	10	09	35	16 6
2	27	16	36	10	36	13	05	17	10	37	18.6
3	25	02	27	20	28	11	14	13	06	26	14.4
4	21	02	27	16	23	15	27	10	08	27	14.0
5	26	02	29	16	32	16	34	11	11	17	12.4
6	23	02	30	20	32	12	25	03	09	24	12.2
7	25	02	27	15	28	06	07	02	09	29	10.8
8	26	02	28	11	25	07	05	06	09	35	12.2
9	27	06	30	13	26	09	05	13	08	34	15.0
10	00	00	28	10	21	04	06	12	08	43	13.8
11	00	00	26	17	25	04	06	11	08	33	13.0
12	27	02	28	11	14	07	09	19	10	18	11.4
13	31	04	27	11	11	09	09	23	10	39	17.2
14	23	06	33	12	13	06	11	36	07	33	18.6
15	30	04	03	13	08	09	09	10	07	38	14.8
16	33	02	06	08	08	14	07	16	06	30	14.0
17	29	02			09	11	09	15	09	21	12.3
18	00	00	04	05	09	03	15	09	08	13	6.0
19	06	04	08	12	27	06	29	08	07	13	8.6
20	36	02	17	13	24	19	24	03	04	20	11.4
21	00	00	15	10	25	16	02	05	09	10	8.2
22	28	06	27	14	06	04	14	06	06	10	8.0
23	00	00	36	11	33	02	19	08	13	26	9.4
24	00	00	30	08	02	08	09	11	03	23	10.0
25	00	00	36	06	08	08	09	04	35	21	7.8
26	00	00	13	07	12	06	14	07	27	21	8.2
27	00	00	15	13	20	13	23	13	09	11	10.0
28	10	02	25	12	21	14	12	09	02	06	8.6
29	19	02	24	17	18	16	20	06	11	08	9.8
30	18	02	26	17	21	14	12	09	12	27	13.8
31											
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station . BANGKOK Time of Observation 0700, Oct. 1965

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	29	12	22	05	07	10	12	24	10.2
2	00	00	30	04	32	06	09	17	07	32	11.8
3	27	04	34	10	35	04	12	16	09	27	12.2
4	00	00	08	11	11	18	12	12	12	15	11.2
5	00	00	08	02	16	07	13	16	05	15	8.0
6	00	00	18	04	12	10	12	11	08	15	8.0
7	00	00	07	10	06	04	15	02	08	13	5.8
8	25	02	24	06	10	04	14	08	12	19	8 2
9	16	04	12	15	15	07	07	02	23	06	6.8
10	35	02	11	16	12	13	06	08	11	14	10.6
11	00	00	10	15	13	16	15	13	13	10	10.8
12	34	06	10	15	12	11	11	12	12	21	13.0
13	29	07	07	10	10	10	11	07	12	12	9.2
14	00	00	08	16	09	18	10	11	14	04	9.8
15	36	04	10	21	09	17	12	02	12	04	9.6
16	36	02	11	20	09	16	13	05	16	14	11.4
17	00	00	09	07	08	25	09	15	15	09	11.2
18	08	16	08	30	09	20	12	12	20	06	16.8
19	08	08	10	15	10	19	11	16	08	06	12.8
20	09	04	09	12	11	13	12	14	15	06	9.8
21	05	04	12	12	10	17	06	10	12	+04	11.2
22	05	06	11	20	13	13	18	11	03	10	12.0
23	36	02	13	12	15	08	22	07	36	08	7.4
24	09	08	14	10	18	08	25	08	34	06	8.0
25	10	08	18	13	20	16	21	14	11	16	13.4
26	00	00	22	06	20	10	18	15	35	10	8.2
27			17	10	14	07	21	03	02	11	7.8
28	00	00	19	06	18	08	15	08	16	02	4.6
29	09	02	11	07	10	04	25	09	24	09	6.2
30	27	02	11	14	09	10	27	08	21	17	10.2
31	09	02	12	17	13	09	21	07	18	12	9.4
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, July 1966

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	27	15	29	05	18	07	02	16	8.6
2	00	00	28	22	25	09	17	08	06	27	13.2
3	00	00	27	27	25	14	23	04	07	21	13.2
4	20	04	26	19	25	22	01	06	04	31	16.4
5	00	00	26	21	24	27	21	06	-	-	13.5
6	22	02	25	21	14	12	09	25	09	31	18.2
7	00	00	27	10	08	07	-	-	-	-	5.7
8	00	02	01	06	09	21	10	21	08	31	16.2
9	00	00	18	08	15	16	07	21	05	46	18.2
10	31	00	18	04	13	04	08	12	09	40	12.0
11	30	02	27	05	34	05	11	12	-	-	6.0
12	27	06	30	11	36	07	06	07	08	26	11.4
13	27	02	28	08	36	07	09	10	09	32	11.8
14	27	01	30	14	34	02	10	12	07	40	13.8
15	00	00	27	14	23	05	28	05	07	08	6.4
16	19	02	25	28	30	12	29	09	06	32	16.6
17	00	00	29	31	27	02	06	09	07	32	14.8
18	00	00	32	07	05	07	08	17	08	27	11.6
19	25	02	33	11	10	07	11	19	08	34	14.6
20	00	00	30	13	00	00	06	10	06	24	9.4
21	26	00	25	18	31	10	05	04	01	10	8.4
22	00	00	27	71	29	21	10	06	08	15	22.6
23	00	00	23	10	29	28	33	16	09	16	14.0
24	00	00	28	19	30	13	34	08	09	23	12.6
25	00	00	26	24	33	10	04	12	08	24	14.0
26	18	02	26	28	27	18	33	07	07	28	16.6
27	00	00	28	30	27	18	31	08	05	22	15.6
28	30	04	25	21	27	08	01	11	04	24	13.6
29	00	00	28	26	29	11	10	15	02	22	14.8
30	32	02	29	28	30	10	34	10	03	23	14.6
31	29	04	31	22	24	16	02	12	08	08	12.4
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station . BANGKOK Time of Observation 0700, August 1966

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir	Vel.	Dir	Vel.	Dir	Vel.	Dir.	Vel.	
1	27	02	04	06	01	04	02	08	11	32	10.4
2	28	02	27	10	34	03	06	09	07	32	10.8
3	00	00	25	12	30	05	02	03	05	08	5.6
4	00	00	20	15	28	17	34	09	03	23	12.8
5	00	00	27	21	27	19	28	17	04	20	15.4
6	00	00	29	12	28	19	29	11	-	-	10.5
7	00	00	28	13	27	14	34	08	07	21	11.2
8	00	00	28	10	03	05	03	10	10	23	9.6
9	00	00	23	13	25	06	13	02	07	37	11.6
10	00	00	26	10	23	09	24	04	05	20	8.6
11	00	00	28	10	23	20	27	11	09	21	12.4
12	00	00	26	11	26	10	30	04	09	22	9.4
13	00	00	24	12	23	11	13	12	08	18	10.6
14	00	00	25	12	27	20	21	04	09	02	11.6
15	00	00	28	12	34	06	29	08	07	13	7.8
16	00	00	25	12	24	10	34	03	08	28	10.6
17	00	00	25	18	28	11	17	05	08	45	15.8
18	19	02	25	13	25	17	11	13	09	34	15.8
19	20	02	24	19	23	12	06	21	09	35	17.4
20	00	00	23	14	24	18	07	11	09	53	17.2
21	22	00	25	16	29	09	00	04	08	05	6 8
22	00	00	26	09	28	07	06	12	06	32	12 0
23	10	02	30	23	21	17	07	10	08	40	18.4
24	00	00	27	12	23	13	11	12	05	27	12.8
25	00	00	28	18	24	10	09	12	07	52	18.4
26	24	02	28	13	19	04	34	05	09	32	11.2
27	12	02	21	12	25	13	06	03	09	34	12.8
28	13	04	25	12	16	13	09	10	10	33	14.4
29	00	00	20	16	28	06	09	11	09	21	10.8
30	00	00	28	19	27	07	11	09	07	39	14.8
31	00	00	28	25	03	07	04	20	07	43	19.0
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : BANGKOK Time of Observation 0700, Sept 1966

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	29	28	01	12	03	20	06	30	18.0
2	27	06	30	23	01	05	02	15	08	28	15.4
3	00	00	30	25	34	11	07	12	08	35	16.6
4	29	03	34	19	01	17	08	15	10	30	16.8
5	00	00	33	13	04	14	11	11	09	26	12.8
6	24	02	35	11	25	24	21	06	09	22	13.0
7	28	02	31	16	30	20	30	20	07	29	17.4
8	27	02	33	21	30	23	34	07	07	29	16.4
9	00	00	30	25	27	18	36	11	03	16	14.0
10	00	00	28	20	25	32	27	25	12	16	18.6
11	00	06	26	17	26	15	12	03	12	18	11.8
12	00	00	31	14	30	04	15	08	05	24	10.0
13	00	00	29	12	25	02	08	24	09	21	11.8
14	16	04	28	13	02	17	36	07	09	21	12.4
15	00	00	31	15	26	16	11	08	08	32	14.2
16	00	00	30	18	29	05	23	13	10	29	13.0
17	00	00	32	08	31	10	14	08	09	08	6 8
18	00	00	29	10	09	16	11	14	07	25	13.0
19	00	00	24	07	19	04	12	23	05	19	10.6
20	11	02	31	11	27	05	03	15	13	17	10.0
21	00	00	31	08	35	10	05	02	14	15	7.0
22	00	00	10	06	01	11	03	12	09	17	9.2
23	00	00	04	05	06	09	10	13	10	20	9.4
24	00	00	10	25	13	19	12	15	10	14	14.6
25	00	00	11	22	13	09	10	16	12	14	12.2
26	00	00	11	08	08	12	11	13	16	05	7.6
27	00	00	11	11	04	23	19	04	19	02	8.0
28	29	03	09	09	20	12	28	06	23	17	8 8
29	00	00	36	05	23	02	33	06	32	26	7.8
30	00	00	03	07	03	03	02	10	34	45	13.0
31											
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station . BANGKOK Time of Observation 0700, October 1966

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	05	07	31	05	10	19	06	40	14.2
2	00	00	10	06	03	19	13	09	10	22	11.2
3	00	00	12	12	09	20	07	18	11	38	17.8
4	00	00	11	15	10	17	08	19	14	17	13.6
5	00	00	08	19	10	21	11	14	14	21	15.0
6	00	00	07	27	08	29	10	22	06	20	19.6
7	00	00	12	21	10	22	15	04	06	16	12.6
8	00	00	12	16	12	16	09	18	04	05	11.0
9	00	00	11	13	09	17	12	16	02	18	12.8
10	00	00	07	06	11	11	11	09	05	19	9.0
11	00	00	13	16	15	17	10	17	06	22	14.4
12	00	00	11	18	08	14	07	18	06	34	16.8
13	00	00	19	15	12	14	11	23	09	19	14.2
14	35	02	06	06	16	06	29	03	09	16	6.6
15	00	00	14	03	14	06	30	03	12	08	4.0
16	00	00	10	16	02	04	16	02	15	10	6.4
17	00	00	10	14	09	10	32	12	10	04	8.0
18	00	00	06	11	09	07	03	02	05	02	4.4
19	36	02	09	08	09	09	13	04	24	12	7.0
20	00	00	07	14	04	05	14	04	22	02	5.0
21	00	00	05	09	06	11	06	05	14	03	5.6
22	00	00	06	16	07	10	07	19	11	21	13.2
23	00	00	03	28	04	26	07	22	10	17	18.6
24	31	02	01	23	02	32	08	18	13	23	19.6
25	00	00	31	20	12	08	22	15	08	24	13.4
26	00	00	30	12	22	12	13	10	09	27	12.2
27	00	00	28	08	19	18	09	12	12	29	13.4
28	00	00	09	10	11	13	09	23	15	18	12.2
29	09	02	11	20	16	17	12	16	00	00	11.0
30	35	02	08	15	10	15	06	16	23	05	6.0
31	36	02	10	23	07	24	08	23	21	14	17.2
Average	-		-		-		-		-		

AD5-2 Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, July 1955

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	27	05	27	07	04	06					6.0
2	26	11	31	11	-	-					11.0
3	27	12	26	12	25	06					10.0
4	28	03	32	10	25	07					6 7
5	28	10	25	07	27	09					8.7
6	24	04	33	05	-	-					4.5
7	24	07	01	06	09	12					8.3
8	26	07	26	07	02	08					7.3
9	-	-	-	-	-	-					-
10	23	04	-	-	-	-					4.0
11	23	04	27	13	25	11					9.3
12	24	09	25	10	27	12					10.3
13	27	10	26	16	25	10					12.0
14	23	10	28	18	29	12					13.3
15	25	03	28	22	-	-					12.5
16	25	07	20	09	27	04					6.7
17	25	17	26	16	-	-					16.3
18	24	10	28	17	-	-					13.5
19	24	12	28	20	29	16					16 0
20	24	04	28	17	-	-					10.5
21	25	05			-	-					5.0
22	22	04	23	10	24	12					8.7
23	23	05	24	14	-	-					9.5
24	24	03	23	08	09	07					6.0
25	23	04	26	08	09	12					8.0
26	21	05	26	12	23	04					7.0
27	24	02	29	07	26	04					4.3
28	23	02	26	04	-	-					3.0
29	27	02	26	11	19	04					5.7
30	00	00	05	05	-	-					2.5
31	-	-	-	-	-	-					-
Average	-	7.0	-	8.9	-	8.7	-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, August 1955

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	17	09							4.5
2	32	01	17	12	17	10					7.7
3	00	00	18	08	08	02					3.3
4	00	00	16	06	02	10					5.3
5	00	00	25	09	28	07					5 3
6	00	00	25	11	26	09					6.7
7	28	01	27	06	26	08					5.0
8	25	07	26	17	25	10					11.3
9	-	-	-	-	-	-					-
10	-	-	-	-	-	-					-
11	-	-	-	-	-	-					-
12	-	-	-	-	-	-					-
13	-	-	-	-	-	-					-
14	-	-	-	-	-	-					-
15	-	-	-	-	-	-					-
16	-	-	-	-	-	-					-
17	-	-	-	-	-	-					-
18	24	10	26	15							12.5
19	24	04	25	08							6.0
20	00	00	24	08	10	10					6.0
21	02	04	21	04							4.0
22	27	09	08	07							8.0
23	27	02	10	08	09	16					8.7
24	27	05	22	02							3.5
25	27	10	26	10							10.0
26	26	10	26	16	26	04					10.0
27	26	07	26	15							11.0
28	27	09	31	18							13.5
29	29	02	28	21							11.5
30	26	07	26	20	24	20					15.7
31	27	04	24	12							8.0
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, September 1955

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	27	07	27	15	25	07					9.7
2	25	05	25	12							8.5
3	26	05	33	04	14	06					5.0
4	00	00	01	03	-	-					1.5
5	00	00	08	08	-	-					4.0
6	-	-	-	-	-	-					-
7	03	01	14	09	-	-					5.0
8	-	-	-	-	-	-					-
9	-	-	-	-	-	-					-
10	-	-	-	-	-	-					-
11	00	00	25	07	-	-					3.5
12	29	01	19	09	15	07					5.7
13	13	01	22	07	23	02					3.3
14	00	00	21	08	11	04					4 0
15	20	04	23	07	32	04					5.0
16	00	00	24	19	19	06					8.3
17	00	00	05	06	12	09					5.0
18	35	03	36	16	36	13					10.7
19	00	00	-	-	-	-					-
20	03	04	04	15	04	10					9.7
21	-	-	-	-	-	-					-
22	-	-	-	-	-	-					-
23	-	-	-	-	-	-					-
24	-	-	-	-	-	-					-
25	00	00	06	10	06	06					5.3
26	21	01	26	09	01	06					5.3
27	-	-	-	-	-	-					-
28	00	00	18	06	-	-					3.0
29	-	-	-	-	-	-					-
30	-	-	-	-	-	-					-
31	-	-	-	-	-	-					-
Average	-	1.7	-	9.4	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, October 1955

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir	Vel.	
1	02	02	06	05	07	03					3.3
2	04	06	07	12	07	20					12.7
3	00	00	-	-	-	-					0
4	04	03	-	-	-	-					1.5
5	09	03	08	10	08	10					7.7
6	00	00	01	04	29	09					4.3
7	00	00	03	01	-	-					0.5
8	-	-	03	06	-	-					6.0
9	-	-	-	-	-	-					-
10	-	-	-	-	-	-					-
11	06	16	09	19	08	17					17.3
12	-	-	-	-	-	-					-
13	03	03	09	15	-	-					9.0
14	07	05	04	18	06	07					10.0
15	06	05	06	19	-	-					12.0
16	01	04	09	05	08	12					7.0
17	02	06	03	14	-	-					10.0
18	-	-	-	-	-	-					-
19	04	03	09	19	-	-					11 0
20	09	10	06	16	07	07					11.0
21	03	12	11	10	-	-					11.0
22	03	06	10	10	-	-					8.0
23	06	05	07	12	08	04					7 0
24	04	04	11	08	10	06					6.0
25	04	04	07	04	-	-					4.0
26	02	01	14	04	12	04					3.0
27	05	03	02	08	06	06					5 7
28	03	03	13	06	05	04					4.3
29	05	02	08	10	-	-					6.0
30	05	05	04	21	06	17					14.3
31	09	08	19	11	10	10					9.7
Average	-	5.2	-	10.8	-	9.1	-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, July 1956

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1				No observation due to low clouds							
2	270	04	310	14	-	-					9.0
3	260	06	310	14	-	-					10.0
4				No observation due to rain							-
5				No observation due to rain							-
6	240	03	280	17	-	-					10.0
7	200	19	280	12	-	-					15.5
8	240	14	300	14	280	10					12.7
9	230	04	280	14	-	-					9.0
10	250	04	290	17	200	04					8.3
11	320	05	320	07	090	02					3.7
12	000	00	010	10	-	-					5.0
13	260	02	110	03	-	-					2.5
14	000	00	230	03	-	-					1.5
15	000	00	220	03	-	-					1.5
16	000	00	160	04	180	05					3.0
17	000	00	240	10	-	-					5 0
18	200	04	260	14	-	-					9.0
19	260	02	250	15	-	-					8.5
20	250	02	280	05	-	-					3.5
21	000	00	220	06	210	09					5.0
22	090	02	180	05	-	-					3.5
23	010	02	150	10	-	-					6.0
24	200	02	180	10	-	-					6.0
25	240	02	260	10	110	06					6.0
26	250	04	230	06	180	10					6.7
27	260	03	250	10	150	09					7.3
28	250	05	260	09	230	03					5.7
29	230	02	260	18	260	06					8.7
30	250	04	270	11	270	11					8.7
31	250	09	310	12	270	08					10.7
Average	-	03.7	-	10.4	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station . KORAT Time of Observation 0700, Aug. 1956

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	31	06	28	27	-	-					16.5
2	25	13	27	28	-	-					20.5
3	25	06	28	22	-	-					14.0
4	25	12	29	23	-	-					17 5
5	-	-	-	-	-	-					-
6	27	06	30	12	-	-					9.0
7	00	00	27	06	-	-					3.0
8	27	05	31	14	-	-					9.5
9	25	04	27	07	-	-					5.5
10	00	00	27	10	17	07					5.7
11	-	-	-	-	-	-					-
12	27	04	30	03	34	08					5.0
13	25	03	27	18	-	-					10.5
14	21	12	25	19	-	-					15 5
15	20	08	26	18	-	-					13 0
16	24	06	28	14	27	17					12.3
17	25	10	29	15	-	-					12.5
18	25	02	26	08	-	-					5.0
19	26	03	29	08	-	-					5.5
20	22	04	27	16	-	-					10.0
21	29	03	23	12	-	-					7.5
22	26	02	29	08	16	10					6.7
23	23	06	28	09	19	04					6.3
24	29	04	27	06	-	-					5.0
25	02	02	11	07	-	-					4 5
26	00	00	06	04	-	-					2.0
27	24	05	02	03	07	07					5.0
28	-	-	-	-	-	-					-
29	27	02	12	03	-	-					2.5
30	-	-	-	-	-	-					-
31	25	08	31	10	-	-					9.0
Average	-	5 0	-	11.2	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, Sept. 1956

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	24	10	29	19	30	17					13.3
2	21	09	25	24	-	-					16.5
3	23	10	27	06	-	-					8.0
4	25	10	32	22	35	07					13.0
5	27	10	28	11	-	-					10.5
6	16	01	29	11	-	-					6.0
7	00	00	26	08	-	-					4.0
8				No observation rain							-
9	00	00	25	17	-	-					8.5
10	23	03	27	15	-	-					9.0
11	25	03	32	14	-	-					8 5
12	27	06	01	09	-	-					7.5
13					Cloudy						-
14	24	02	28	06	10	07					5.0
15					Cloudy						-
16	28	02	33	09	19	02					4.3
17					Cloudy						-
18					Cloudy						-
19	00	00	04	04	-	-					2.0
20	00	00	07	04	-	-					7.0
21	00	00	07	10	-	-					5.0
22					Cloudy						-
23	00	00	02	06	11	08					4.7
24	00	00	05	06	-	-					3.0
25	00	00	08	12	30	09					7.0
26	00	00	08	17	-	-					8.5
27					Cloudy						-
28					Cloudy						-
29	00	00	08	17	-	-					8.5
30					Cloudy						-
31	-	-	-	-	-	-					-
Average	-	3.1	-	12.2	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, Oct. 1956

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	06	29	12	32	-	-					30.5
2				No observation cloudy							-
3				No observation cloudy							-
4	07	14	02	40	-	-					27 0
5	06	18	05	30	-	-					24.0
6	06	14	07	40	13	11					21.7
7	06	09	07	29	10	22					20.0
8				No observation cloudy							-
9				No observation cloudy							-
10				No observation cloudy							-
11				No observation cloudy							-
12	04	22	06	45	-	-					22.5
13				No observation cloudy							-
14				No observation cloudy							-
15				No observation cloudy							-
16				No observation cloudy							-
17				No observation cloudy							-
18	09	16	11	22	11	18					18.7
19	06	20	09	33	-	-					26.5
20	04	12	05	21	07	25					16.0
21	07	20	06	25	-	-					22.5
22	10	04	33	18	05	22					14 7
23	06	11	05	30	35	04					15.0
24	04	05	09	25	-	-					15.0
25	07	10	06	31	10	16					19.0
26	00	00	04	29	09	18					7.3
27	03	08	06	18	-	-					13.0
28	07	08	10	34	09	14					18.7
29				No observation cloudy							-
30	06	10	09	23	-	-					16.5
31	08	12	08	30	-	-					21.0
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, July 1957

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	29	36	-	-					18.0
2	00	00	28	38	-	-					19.0
3	00	00	27	43	-	-					21.5
4	00	00	28	29	-	-					14.5
5	24	11	27	36	-	-					18.0
6	00	00	24	36	-	-					18.0
7	00	00	25	29	-	-					14.5
8	00	00	36	07	-	-					3.5
9	00	00	25	07	05	07					4.7
10				No observation due to rain							-
11	00	00	21	04	-	-					2 0
12				No observation due to low clouds							-
13	00	00	26	07	18	07					4.7
14	00	00	28	14	-	-					7.0
15	00	00	30	16	-	-					8.0
16	23	02	28	25	26	12					13.0
17	22	08	26	40	-	-					24.0
18	20	00	28	40	-	-					20.0
19	00	00	27	29	-	-					14.5
20	00	00	24	11	-	-					5.5
21	00	00	12	02	-	-					1.0
22	00	00	06	04	-	-					2.0
23	00	00	06	09	07	09					6.0
24				No observation due to rain							-
25				No observation due to low cloudy							-
26	00	00	24	08	-	-					4.0
27	00	00	11	14	-	-					7.0
28	00	00	15	02	-	-					1.0
29	00	00	16	05	-	-					2.5
30	00	00	20	22	-	-					11.0
31				No observation due to rain							-
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station . KORAT Time of Observation 0700, August 1957

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	29	03	-	-					1.5
2	00	00	36	07	06	25					10.7
3	00	00	10	03	11	17					6.8
4	00	00	30	10	08	14					8.0
5	00	00	09	07	11	22					9.7
6	09	08	14	20	-	-					14.0
7	00	00	22	16	18	31					15.7
8	00	00	25	14	14	20					11.3
9	00	00	16	04	-	-					2.0
10	00	00	09	09	09	25					11.3
11	00	00	14	16	-	-					8.0
12	00	00	18	14	14	07					7.0
13	00	00	24	16	-	-					8.0
14	00	00	05	07	06	10					5.7
15	00	00	35	11	03	22					11.0
16	00	00	27	15	02	23					12.7
17	00	00	29	20	32	32					17.3
18	24	08	30	23	30	31					10.7
19				No observation due to rain							-
20	00	00	26	50	-	-					25.0
21	00	00	26	40	-	-					20.0
22	23	08	30	39	-	-					23.5
23	00	00	30	29	-	-					14.5
24	00	00	30	25	-	-					12.5
25	00	00	27	25	-	-					12.5
26	00	00	27	31	-	-					15.5
27	00	00	29	32	-	-					16.0
28	00	00	27	39	-	-					19.5
29	00	00	27	42	25	34					25.3
30				No observation due to rain							-
31	00	00	26	25	24	25					16.7
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, September 1957

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1				No observation due to rain							
2				No observation due to rain							
3	00	00	23	27	23	10					12.3
4	00	00	28	14	24	14					9.3
5	00	00	30	10	-	-					5.0
6				No observation due to low clouds							
7	00	00	10	19	-	-					9.5
8				No observation due to low clouds							
9				No observation due to low clouds							
10				No observation due to no gas							
11				No observation due to no gas							
12				"	"						
13				"	"						
14				"	"						
15				"	"						
16				"	"						
17				"	"						
18				"	"						
19				"	"						
20				"	"						
21				"	"						
22				"	"						
23				"	"						
24				"	"						
25				"	"						
26				"	"						
27				"	"						
28				"	"						
29				"	"						
30				"	"						
31				"	"						
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, October 1957

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1				No observation due to no gas							
2				"	"						
3				"	"						
4				"	"						
5				"	"						
6				"	"						
7				"	"						
8				"	"						
9				"	"						
10				"	"						
11	05	10	08	54	-	-					32.0
12	00	00	06	49	07	11					24.5
13	00	00	02	03	-	-					21 5
14				No observation due to cloudy							-
15	00	00	29	13	-	-					6 5
16	00	00	29	18	28	25					11.0
17	00	00	09	13	03	12					8.3
18				No observation due to cloudy							-
19	00	00	06	24	11	14					12.7
20	00	00	10	18	17	01					6.3
21	00	00	06	21	-	-					10.5
22	00	00	07	24	-	-					12.0
23	00	00	10	19	07	09					9.3
24	00	00	06	16	-	-					8.0
25	00	00	13	19	06	08					9.0
26	00	00	07	11	-	-					5.5
27				No observation due to cloudy							-
28	00	00	08	13	-	-					6 5
29	02	08	10	18	-	-					13.0
30	03	14	10	29	-	-					21 5
31	00	00	14	23	10	09					10.7
Average	-		-		-		-				

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, July 1958

Date	Surface		2 km		5 km		5 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	13	08	-	-					4.0
2	-	-	-	-	-	-					-
3	-	-	-	-	-	-					-
4	-	-	-	-	-	-					-
5	-	-	-	-	-	-					-
6	00	00	25	09	-	-					3.0
7	00	00	28	16	28	09					8.3
8	00	00	27	15	-	-					7.5
9	00	00	28	17	-	-					8.5
10	00	00	26	12	-	-					6.0
11	-	-	-	-	-	-					-
12	00	00	28	15	23	04					6.3
13	00	00	27	14	26	12					8.7
14	00	00	27	22	-	-					11.0
15	21	05	29	25	-	-					15.0
16	00	00	29	24	-	-					12.0
17	00	00	28	27	-	-					11.0
18	27	04	27	28	-	-					16.0
19	23	02	27	33	-	-					17.5
20	23	03	29	23	-	-					13.0
21	00	00	29	17	-	-					8.5
22	00	00	27	22	-	-					11.0
23	00	00	26	16	-	-					8.0
24	-	-	-	-	-	-					-
25	00	00	27	15	-	-					7.5
26	00	00	28	18	24	12					10.0
27	00	00	28	12	-	-					6 0
28	00	00	27	21	28	11					10.7
29	00	00	28	14	-	-					7.0
30	00	00	26	06	21	07					4.3
31	00	00	24	11	22	08					6.3
Average	-	00	-	17.4	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station . KORAT Time of Observation 0700, August 1958

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	24	07	17	16					7.7
2	00	00	14	05	16	01					2.0
3	00	00	35	01	09	04					1.7
4	00	00	28	06	10	13					6.3
5	00	00	24	06	-	-					3.0
6	00	00	17	07	23	09					5.3
7	00	00	17	07	23	09					5.7
8	00	00	14	06	21	11					-
9	-	-	-	-	-	-					-
10	-	-	-	-	-	-					-
11	00	00	31	10	-	-					5.0
12	-	-	-	-	-	-					-
13	-	-	-	-	-	-					-
14	00	00	25	01	13	06					2.3
15	00	00	25	07	22	04					5.5
16	00	00	21	04	-	-					2.0
17	-	-	-	-	-	-					-
18	00	00	13	116	-	-					8.0
19	00	00	11	08	08	09					5.7
20	00	00	11	11	-	-					5.5
21	00	00	10	15	-	-					7.5
22	00	00	11	06	08	14					6.7
23	00	00	24	07	-	-					3.5
24	00	00	27	04	03	09					4.3
25	00	00	28	04	04	11					5.0
26	00	00	31	14	-	-					7.0
27	00	00	31	11	-	-					5.5
28	00	00	31	09	-	-					3.0
29	00	00	28	16	-	-					8.0
30	00	00	27	19	-	-					9.5
31	00	00	30	17	-	-					8.5
Average	-	00	-	8.7	-		-		-		

Upper Wind (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, September 1958

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	35	12	-	-					6.0
2	-	-	-	-	-	-					-
3	00	00	27	09	28	08					5.7
4	00	00	25	17	24	10					9.0
5	23	02	27	15	-	-					8.5
6	00	00	31	14	25	10					8 0
7	00	00	31	15	-	-					7.5
8	-	-	-	-	-	-					-
9	-	-	-	-	-	-					-
10	00	00	06	09	-	-					3.0
11	00	00	02	12	-	-					6.0
12	00	00	31	02	-	-					1.0
13	00	00	26	11	21	09					6.7
14	00	00	29	09	29	05					4.7
15	00	00	29	10	-	-					5.0
16	00	00	28	12	-	-					6.0
17	27	03	32	14	32	04					7.0
18	00	00	29	12	19	05					8.5
19	00	00	26	09	25	06					5.0
20	00	00	20	08	18	08					5.3
21	00	00	27	04	24	04					2.7
22	-	-	-	-	-	-					-
23	-	-	-	-	-	-					-
24	-	-	-	-	-	-					-
25	-	-	-	-	-	-					-
26	00	00	22	02	-	-					1.0
27	00	00	11	10	-	-					5.0
28	00	00	07	12	-	-					6.0
29	00	00	05	05	-	-					2.5
30	00	00	10	05	15	12					5.7
31	-	-	-	-	-	-					
Average	-	02	-	9.9	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, October 1958

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	14	08	-	-					4.0
2	-	-	-	-	-	-					-
3	05	03	07	14	-	-					8.5
4	00	00	07	17	-	-					8.5
5	-	-	-	-	-	-					-
6	00	00	09	18	-	-					9.0
7	-	-	-	-	-	-					-
8	00	00	12	07	14	09					5.3
9	-	-	-	-	-	-					-
10	00	00	12	12	-	-					6.0
11	-	-	-	-	-	-					-
12	00	00	07	05	11	05					3.3
13	00	00	35	02	14	04					2.0
14	00	00	09	03	03	10					4.3
15	-	-	-	-	-	-					-
16	00	00	11	12	-	-					6.0
17	00	00	04	09	-	-					3.0
18	00	00	05	18	-	-					9.0
19	-	-	-	-	-	-					-
20	-	-	-	-	-	-					-
21	00	00	12	10	11	11					7.0
22	00	00	06	08	06	08					5.3
23	00	00	05	12	-	-					6.0
24	00	00	02	05	08	05					3.3
25	00	00	33	08	35	06					4.7
26	-	-	-	-	-	-					-
27	-	-	-	-	-	-					-
28	00	00	05	15	-	-					7.5
29	00	00	05	17	-	-					8.5
30	00	00	05	12	-	-					6 0
31	00	00	06	12	29	09					7.0
Average	-	0.14	-	10.7	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, July 1959

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	21	04	-	-					2.0
2	No observation due to rain										-
3	00	00	22	21	19	10					10.5
4	00	00	24	19	27	17					12.0
5	-	-	-	-	-	-					-
6	-	-	-	-	-	-					-
7	00	00	29	19	27	07					8.7
8	21	01	29	09	-	-					5.0
9	18	02	25	15	-	-					8.5
10	00	00	30	19	-	-					9.5
11	00	00	30	19	-	-					9.5
12	-	-	-	-	-	-					-
13	00	00	27	10	-	-					5 0
14	00	00	26	23	24	06	09	11			10.0
15	00	00	28	24	12	04	05	10			10.3
16	00	00	28	22	-	-					11.0
17	00	00	29	16	-	-					8.0
18	00	00	27	25	29	16					13.7
19	00	00	30	15	-	-					7.5
20	00	00	19	04	-	-					2.0
21	-	-	-	-	-	-					-
22	-	-	-	-	-	-					-
23	00	00	19	04	16	12	05	05			5.3
24	00	00	26	03	18	02	02	04	07	12	4.2
25	00	00	25	09	21	06					5 0
26	00	00	24	15	-	-					7.5
27	00	00	25	15	-	-					7.5
28	-	-	-	-	-	-					-
29	00	00	29	16	-	-					8.0
30	18	02	20	08	24	05					5.0
31	18	02	25	24	-	-					13.0
Average	-		-	15 0	-	7.9	-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, August 1959

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	-	-	-	-							-
2	24	08	26	25							16.5
3	-	-	-	-							-
4	27	10	29	18							14.0
5	05	08	31	17							12.5
6	22	19	27	18							18.5
7	24	05	27	20							12.5
8	24	16	25	18							17.0
9	-	-	-	-							-
10	27	10	28	22	24	16					16.0
11	23	04	27	17							10.5
12	21	10	25	09							9.5
13	32	07	23	03							5.0
14	23	05	17	06							5.5
15	12	06	23	06							6.0
16	-	-	-	-							-
17	34	01	28	02							1.5
18	12	02	18	07							4.5
19	29	02	11	04							3.0
20	23	05	26	06	16	10					7.0
21	-	-	-	-							-
22	25	11	26	21							16.0
23	24	06	24	23							14.5
24	-	-	-	-							-
25	-	-	-	-							-
26	18	08	26	22	26	16					15 5
27	22	06	28	26							16.0
28	24	08	28	15							12.5
29	-	-	-	-							-
30	26	05	29	20							12.5
31	30	05	28	11							8.0
Average	-	7.26	-	14.57	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, September 1959

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	33	02	09	11					4.3
2	00	00	28	06	10	08					3.0
3	00	00	27	05	-	-					2.5
4				No observation due to rain							-
5	00	00	25	25	25	20					15.0
6	24	01	32	11	-	-					6.0
7	00	00	32	06	-	-					3.0
8				No observation due to cloud							-
9					"	"	rain				-
10	00	00	31	14	27	20					11.3
11	00	00	28	14	-	-					7.0
12	00	00	27	18	-	-					9.0
13	00	00	27	16	21	09					8.3
14	00	00	27	21	-	-					10 5
15	-	-	-	No observation instrument trouble							-
16	00	00	17	05	-	-					2.5
17	00	00	23	06	25	05					3.7
18	00	00	29	-	-	-					5.5
19	00	00	25	-	-	-					5.5
20	00	00	21	10	-	-					5.0
21	00	00	14	05	21	06					3.7
22				No observation instrument trouble							-
23					"	due to low clouds					-
24					"		"	rain			-
25					"		"	low clouds			-
26	12	01	17	09	21	21					10.3
27				No observation due to low clouds							-
28					"		"	"			-
29					"		"	" rain			-
30					"		"	" Clouds			-
31											
Average	-		-	10.7	-	12.5	-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station KORAT Time of Observation 0700, October 1959

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1				No observation due to low cloud							-
2					"	"	rain				-
3					"	"	cloud				-
4	06	05	06	17							11.0
5	00	00	11	09							4.5
6	00	00	16	07							3.5
7				No observation due to rain							-
8					"	"	low clouds				-
9	00	00	34	06							-
10					"	"	to clouds				3.0
11	00	00	21	02							1.0
12			08	05	21	03					4.0
13				No observation due to low clouds							-
14					"	"	"				-
15					"	"	"				-
16					"	"	"				-
17	00	00	10	15							7.5
18	03	03	03	12	01	07					7.3
19	00	00	07	20	06	09	35	12	01	04	9.0
20	05	06	07	17	-	-	-	-	-	-	11.5
21	00	00	05	19	04	03	28	11	20	11	8.8
22	00	00	06	20	-	-	-	-	-	-	10.0
23	00	00	05	17	-	-	-	-	-	-	8.5
24	01	01	06	19	09	09	17	05	28	20	10.4
25	00	00	04	19	08	08	22	09			9.0
26	00	00	07	26	17	09					11.7
27	00	00	12	10	05	05					5.0
28	00	00	07	16							8.0
29	00	00	12	14	15	10					8.0
30	00	00	12	09	10	07					5.8
31	00	00	03	03							1.5
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, July 1960

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1				No observation due to low cloud							-
	23	01	28	17	-	-					9.0
3	16	01	31	20	-	-					10.5
4				No observation due to raining							-
5				No observation due to low cloud							-
6	19	05	21	14	22	11					10.0
7	00	00	25	15	12	06					7.0
8	19	03	27	09	15	10					7.3
9	20	06	19	09	-	-					7.5
10	17	01	24	07	23	08					5.3
11	15	02	26	12	-	-					7.0
12	23	04	23	12	-	-					8.0
13	30	04	27	08	-	-					6.0
14	36	01	06	01	-	-					1.0
15	07	03	08	06	-	-					4.5
16				No observation due to low clouds							-
17	00	00	24	05							2.5
18				No observation due to low clouds							-
19	24	20	24	03	-	-					11.5
20	17	03	20	06	-	-					4.5
21	17	03	21	11	-	-					7.0
22				No observation due to raining							-
23	23	07	26	10	22	15					10.7
24	24	11	28	14	-	-					12.5
25	24	06	26	14	-	-					10.0
26				No observation due to clouds							-
27	22	14	27	17	-	-					15.5
28				No observation due to cluds							-
29	29	06	28	19	-	-					12.5
30	27	08	27	16	06	06					10.0
31	24	11	29	08	-	-					9.5
Average	-	4.43	-	11.00	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, August 1960

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1				No observation due to raining							
2	18	05	29	26	35	16					15.7
3	00	00	30	18	29	01					6.3
4	23	06	29	10	-	-					8.0
5	00	00	28	13	26	02					5.0
6	00	00	25	12	36	09					7.0
7	00	00	27	05	-	-					2.5
8	00	00	27	12	-	-					6.0
9	00	00	27	18	24	12					10.0
10	00	00	30	22	-	-					11.0
11	00	00	31	29	30	13					14.0
12	24	09	29	26	-	-					17.5
13	21	05	26	39	30	13					19.0
14	00	00	27	34	26	22					18.7
15	00	00	28	31	24	17					16.0
16	23	01	27	22	-	-					11.5
17	00	00	30	26	-	-					13.0
18	25	01	30	26	-	-					13.5
19	00	00	28	13	-	-					6.5
20	19	01	27	32	-	-					16.5
21	00	00	26	28	24	19					15.7
22	00	00	28	26	-	-					13.0
23				No observation due to raining							-
24				No observation due to raining							-
25	00	00	24	16	21	20					12.0
26	00	00	23	12	21	19					10.3
27	00	00	26	20	22	20					13.3
28	24	02	28	20	-	-					7.3
29	00	00	26	20	21	10					10.0
30	00	00	26	15	26	07					7.3
31			27	15	21	10					8.3
Average	-	1.1	-	20.9	-	13.1	-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, September 1960

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	25	14	-	-					7.0
2	00	00	30	09	11	05					4.7
3	23	02	28	07	05	09					6.0
4				No observation due to raining							-
5				No observation due to raining							-
6	00	00	24	08	16	12					6.7
7	00	00	27	16	-	-					8.0
8	00	00	27	09	-	-					4.5
9	00	00	25	08	28	06					4 7
10	00	00	24	11	24	07					6 0
11	00	00	22	09	21	11					6 7
12	00	00	19	15	18	11					7 2
13	00	00	29	08	-	-					4.0
14	00	00	29	08	07	08					5.3
15	00	00	01	04	07	04					2.7
16	00	00	-	-	-	-					0
17	07	02	07	05	10	04					3.7
18	00	00	36	08	04	12					6 7
19	00	00	05	21	07	12					11.0
20	00	00	27	04	-	-					2.0
21				No observation due to low clouds							-
22	00	00	24	10	18	04					4.7
23	00	00	18	03	-	-					1.5
24	00	00	34	08	-	-					4.0
25				No observation due to raining							-
26	00	00	34	06	24	09					5.0
27	00	00	36	04	-	-					2.0
28	00	00	26	02	10	10					4.0
29	00	00	20	04	-	-					2.0
30	00	00	-	-	-	-					0.0
31											
Average	-		8	4	8	3	-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, October 1960

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	34	02									1.0
2	-			No observation due to raining							-
3					"		"				-
4					"		"				-
5					"		"				-
6				No observation due to low clouds							-
7				No observation due to raining							-
8				No observation due to raining							-
9	05	06	06	07	-	-					6.5
10	00	00	35	18	34	09					9.0
11	00	00	04	12	04	06					6.0
12	00	00	32	04	-	-					2.0
13	00	00	36	04	04	05					3.0
14	00	00	33	08	-	-					4.0
15	00	00	-	-	-	-					0
16	00	00	03	09	08	13					6.1
17	00	00	06*	02	-	-					1.0
18	00	00	19	08	18	09					8.5
19				No observation due to low clouds							-
20	00	00	33	07	03	09					5.3
21				No observation due to raining							-
22	02	04	06	14	-	-					9.0
23				No observation due to low clouds							-
24	02	06	09	12	-	-	09	24			-
25	00	00	07	12	-	-	-	-			
26	00	00	11	12	-	-	08	09			
27	04	09	08	15	-	-	-	-			
28	00	00	09	10	-	-	06	12			
29	36	03	13	15	-	-	-	-			
30	00	00	09	15	-	-	10	09			
31	00	00	14	08	-	-	08	07			
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, July 1961

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	28	29	-	-					14.5
2	21	04	27	45	-	-					24.5
3	21	02	29	37	-	-					19.5
4	00	00	29	30	-	-					15.0
5	22	01	29	30	33	12					21.5
6	23	03	32	12	16	05					10.0
7	00	00	28	17	22	02					6.3
8	00	00	26	16	24	06					7.3
9	00	00	27	19	-	-					9.5
10	00	00	27	31	-	-					15.5
11	00	00	27	32	-	-					16.0
12	00	00	26	20	-	-					10.0
13	22	04	25	18	-	-					11.0
14	22	04	26	25	06	16					22.5
15	00	00	30	32	-	-					16.0
16	00	00	25	30	26	18					16.0
17	21	07	27	33	-	-					20.0
18	22	06	29	34	-	-					20.0
19	No observation due to raining										-
20	00	00	26	24	-	-					12.0
21	00	00	-	-	-	-					0
22	00	00	35	15	10	20					11.7
23	00	00	07	10	-	-					5.0
24	-	-	-	-	-	-					-
25	00	00	19	07	-	-					3.5
26	-	-	26	05	20	13					9.0
27	-	-	26	19	-	-					19.0
28	-	-	24	34	-	-					34.0
29	-	-	29	21	26	32					26.5
30	00	00	27	30	26	14					14.7
31	00	00	25	20	20	09					9.7
Average	-	1.1	-	24.2	-	13.4	-	-	-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, August 1961

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	26	16	23	20					12.0
2	00	00	28	10							5.0
3	00	00	28	21	28	17					12.7
4	23	02	31	27							14.5
5	23	09	28	38							20.0
6	00	00	28	25							12.5
7	00	00	30	16							8.0
8	00	00	31	14	12	09					7.7
9	00	00	28	09							4.5
10	00	00	28	20							10.0
11	00	00	29	12							6 0
12	00	00	26	06							3.0
13	00	00	06	07							3.5
14	00	00	24	12							6.0
15	00	00	28	22							11 0
16	00	00	28	22							11.0
17	-	-	-	-							-
18	22	05	27	46							25.5
19	00	00	29	33							16.5
20	-	-	-	-							-
21	-	-	-	-							-
22	-	-	-	-							-
23	00	00	27	23	26	21					16.7
24	-	-	-	-							-
25	22	03	30	32							17.5
26	00	00	32	06							3.0
27	00	00	19	10							5.0
28	00	00	26	24							12.0
29	-	-	-	-							-
30	00	00	28	27							13.5
31	21	03	28	24							13.5
Average	-	0.6	-	20.4	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, September 1961

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1				No observation due to rain							-
2					"	"					-
3					"	"					-
4	00	00	31	18	-	-					9.0
5	00	00	29	16	-	-					8.0
6	00	00	24	11	21	08					6.3
7	00	00	26	11	-	-					5.5
8	18	07	27	12	-	-					9.5
9	00	00	21	15	24	14					9.3
10	19	16	27	28	-	-					22.0
11	20	08	27	29	-	-					17.5
12	24	04	27	14	-	-					9.0
13	23	06	31	09	-	-					7.5
14	00	00	32	08	-	-					4.0
15	00	00	27	14	27	16					10.0
16	00	00	27	17	-	-					8.5
17	00	00	20	08	-	-					4.0
18	00	00	23	12	20	13					8.5
19	00	00	26	16	-	-					8.0
20	00	00	25	13	-	-					6.5
21	00	00	27	13	-	-					6 5
22	00	00	-	-							0
23	00	00	-	-							0
24	-	-	-	-							
25	-	-	-	-							
26	00	00	25	34							17.0
27	00	00	27	15							7.5
28	00	00	32	17	10	09					8.7
29	00	00	33	09	02	07					5.3
30	00	00	30	08	32	05					4.3
31	00	00									0
Average	-	16	--	15.3	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, October 1961

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	30	09	24	10					6 3
2	00	00	20	07	-	-					3.5
3				No observation due to low clouds							-
4					"		"				-
5					"		"				-
6	00	00									0
7				No observation due to raining							-
8					"		"				-
9	00	00	03	03	02	08					3.7
10	00	00	19	02	-	-					1 0
11				No observation due to raining							-
12	00	00	07	19	-	-					9.5
13	00	00	06	15	-	-					7.5
14				No observation due to raining							-
15					"		"				-
16	00	00	13	03	09	03					2.0
17	00	00	04	04	06	06					3.3
18	00	00	08	10	-	-					5.0
19	00	00	06	15	-	-					7.5
20				No observation due to raining							--
21					"		"				-
22				No observation due to clouds							-
23					"		"				-
24	02	05	15	16	07	12					16.5
25	00	00	07	17	07	15					10.7
26	00	00	06	16	-	-					8.0
27	00	00	15	05	14	08					4.3
28	00	00	06	09	04	04					4.3
29	00	00	08	09	12	10					6.3
30				No observation due to raining							-
31	00	00	03	15	10	11					8.7
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station . KORAT Time of Observation 0700, July 1962

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	21	04							4.0
2	No observation due to raining										-
3	00	00	22	21	19	10					10.3
4	00	00	24	19	22	17					8.7
5	No observation due to low clouds										-
6	No observation due to low clouds										-
7	00	00	29	19	-	-					9.5
8	20	01	29	09	27	07					5.7
9	18	02	25	15	-	-					8.5
10	18	02	30	19	-	-					10.5
11	00	00	30	19	-	-					9.5
12	-	-	-	-	-	-					-
13	00	00	27	10	-	-					5 0
14	00	00	26	23	24	06					9.7
15	00	00	28	27	12	04					10.3
16	00	00	28	22	-	-					11.0
17	00	00	29	16	-	-					8.0
18	00	00	27	25	29	16					13.7
19	00	00	30	15	-	-					7.5
20	00	00	19	04	-	-					2.0
21	-	-	No observation due to low clouds								-
22	-	-	No observation due to low clouds								-
23	00	00	19	04	16	12					5 3
24	00	00	26	03	18	02					4.3
25	00	00	25	09	21	06					5 0
26	00	00	24	15	-	-					7 5
27	00	00	25	15	-	-					7.5
28	-	-	No observation due to Raining								-
29	00	00	29	16	-	-					8 0
30	18	02	20	08	24	05					5.0
31	18	02	25	24	-	-					13.0
Average	-		-	15	-	79	-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station KORAT Time of Observation 0700, August 1962

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel	Dir.	Vel.	Dir.	Vel.	Dir	Vel.	Dir.	Vel.	
1	-	-									-
2	24	08									8 0
3	-	-									-
4	27	10									10.0
5	25	08									8.0
6	22	19									19.0
7	24	05									5.0
8	24	16									16 0
9	-	-									-
10	27	10	24	16							13.0
11	23	04									4.0
12	21	10									10.0
13	32	07									7.0
14	23	05									5.0
15	12	06									6.0
16	-	-									-
17	34	10									10.0
18	12	20									20.0
19	29	02									2.0
20	23	05	16	10							7.5
21	-	-									-
22	25	11									11.0
23	24	06									6 0
24	-	-									-
25	-	-									-
26	18	08	26	16							12.0
27	22	06									6.0
28	24	08									8.0
29	-	-									-
30	26	05									5.0
31	30	05									5.0
Average	-	7.26	-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station KORAT Time of Observation 0700, Sept 1962

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir	Vel.	Dir.	Vel.	Dir	Vel.	Dir.	Vel	
1	00	00	23	20	09	11					10.3
2	00	00	28	04	10	08					4.0
3	00	00	27	05	-	-					2.5
4				No observation due to Raining							-
5	00	00	25	25	25	20					15.0
6	24	10	32	11	-	-					10.5
7	00	00	32	06	-	-					3 0
8				No observation due to low clouds							-
9				" to raining							-
10	00	00	31	14	27	20					8 0
11	00	00	28	14	-	-					7 0
12	00	00	27	18	-	-					8.0
13	-	-	27	16	21	09					12.5
14	-	-	27	21	-	-					21 0
15				No observation instrument trauble							
16	00	00	17	05	-	-					2.5
17	00	00	23	06	25	05					3.7
18	00	00	29	11	-	-					5 5
19	00	00	25	11	-	-					5 5
20	00	00	21	10	-	-					5 0
21	00	00	14	05	21	06					3.7
22				No observation instrument trauble							-
23					"	due to low clouds					-
24					"	" raining					-
25					"	" cloud					-
26	12	01	19	09	21	21					10 3
27	-	-	-	-	-	-					-
28				No observation due to low clouds							-
29					"	" "					-
30					"	" raining					-
31					"	" low clouds					
Average	-		-	10.7	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station KORAT Time of Observation 0700, Oct. 1962

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir	Vel	Dir.	Vel.	Dir.	Vel.	Dir.	Vel	
1				No observation due to low clouds							-
2					"		" Raining				-
3					"		" clouds				-
4	06	05	06	17							11.0
5	00	00	11	09							4.5
6	00	00	16	07							3.5
7				No observation due to Raining							-
8					"	" low clouds					-
9	00	00	34	06							3.0
10	-	-	-	-							-
11	00	00	21	02							1.0
12	00	00	08	05	21	03					2 7
13				No observation due to low clouds							-
14					"	" "					-
15					"	" "					-
16					"	" "					-
17	00	00	10	15							7.5
18	03	03	03	12	01	07					7.3
19	00	00	07	20	06	09	35	12	01	04	9.0
20	05	05	07	19	-	-	-	-	-	-	12.5
21	00	00	05	19	04	03	28	11	20	11	8.8
22	00	00	06	20	-	-	-	-	-	-	10.0
23	00	00	05	17	-	-	-	-	-	-	8.5
24	01	01	06	19	09	09	17	05	28	20	13.5
25	00	00	04	19	08	08	22	09			8 8
26	00	00	07	26	17	09					12.3
27	00	00	12	10	15	05					5.0
28	00	00	09	16							8.0
29	00	00	12	14	15	10					8 0
30	00	00	12	09	13	07					5.3
31	00	00	03	03							1.5
Average	-		-	13.4	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, July 1963

Date	Surface		2 km		5 km*		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	25	31	22	12					14.3
2	00	00	28	37	28	13					16.7
3	00	00	29	32	-	-					16.0
4	00	00	28	22	-	-					11.0
5				No observation due to rain							-
6				No observation due to rain							-
7	00	00	30	38		-					19.0
8	24	03	31	22	07	04					10.8
9	00	00	34	18	-	-					9.0
10	00	00	27	12	27	10					8.8
11	00	00	30	25	20	06					10.3
12	00	00	29	26	29	18					14.7
13	00	00	29	24	-	-					12.0
14	00	00	28	19	27	20					13.0
15	00	00	20	16	-	-					8.0
16	00	00	31	27	-	-					13.5
17	00	00	28	27	-	-					13.5
18	00	00	28	33	-	-					16.5
19	00	00	28	30	-	-					15.0
20	00	00	31	28	-	-					14.0
21	00	00	28	25	-	-					12.5
22	00	00	26	27	-	-					13.5
23				No observation due to rain							-
24	22	03	28	30	-	-					16.5
25				No observation due to rain							-
26	00	00	28	28	-	-					14.0
27	16	04	25	21	-	-					12 5
28	00	00	17	14	18	22					11.8
29				No observation due to rain							-
30	00	00	25	08	06	10					7.5
31				No observation due to rain							-
Average	-	00	-	24 1	-		-		-		

Upper Wind Speed (Velocity) in Knot and Digrection in Degree

Station . KORAT Time of Observation 0700, Aug. 1963

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir	Vel.	Dir.	Vel.	
1	00	00	29	10	31	06					5 3
2	00	00	27	10	01	04					4.7
3	00	00	23	10	14	14	10	07			7.8
4	00	00		Low clouds							0
5	00	00	29	17							8.5
6	00	00	30	25							12.5
7	00	00	29	28							14.0
8	24	06	28	38							22.0
9	00	00		Low clouds							0
10	23	03	28	30							16.5
11	00	00	31	28							14.0
12	26	02	32	17							9.5
13	00	00	28	10	13	03					4.3
14	00	00	20	24	11	04					10.3
15	00	00	30	19	03	04					7.7
16	23	03	31	16	33	06					8.3
17	22	02	29	19	17	06					7.3
18	00	00	27	13	-	-					6.5
19	00	00	20	10	21	01					6.3
20	00	00	26	06	-	-					3.0
21	00	00	31	08	12	13					8.3
22	00	00	31	11	36	04					5.0
23	00	00	20	03	25	07					5.3
24				No observation due to rain							-
25	00	00	26	22							11.0
26	26	02	30	14							8.0
27	27	03	34	18	34	05					8.7
28	27	06	-	-							6.0
29	00	00			Low clouds						0
30	00	00	35	02	05	05					2.3
31	00	00	26	11	25	08	08	10			7.3
Average	-	00	-	16.1	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, Sept. 1963

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	20	05	09	04	22	01			2.5
2	00	00	05	04	09	15					6 3
3	00	00	13	08	21	08	21	10			6 5
4	00	00	03	14	-	-					7.0
5	04	02			Low clouds						2.0
6	00	00	20	16							8.0
7	00	00	15	06							3.0
8	00	00			Low clouds						0
9	00	00	27	18							99.0
10	00	00									0
11	00	00	27	40							20.0
12	00	00	27	32							16.0
13	00	00	30	31							15.5
14	00	00	28	20	29	22					16.7
15	00	00	27	30	20	13					14.3
16	00	00	27	16	27	17					27.7
17	00	00	26	18	23	20	23	11			12.3
18	19	02	26	20	27	22					14.7
19	00	00	23	10	25	10					6.7
20	00	00	30	03	-	-					1.5
21	00	00	04	14	-	-					7.0
22	00	00	05	16	09	14					10.0
23	00	00	-	-	-	-					0
24	09	06	-	-	Low clouds						0
25	00	00	14	16							8.0
26					No observation due to fog						-
27	00	00	14	10							5.0
28	00	00	08	08							1.5
29					No observation due to no gass						-
30					No observation due to rain						-
31											
Ave-rage	-	00	-	15.5	-		-		-		

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Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, Oct 1963

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1					No observation due to no gas						-
2					No observation due to rain						-
3	00	00	15	17	12	36					17.7
4	07	02			Low clouds						2.0
5	00	00			Low clouds						0
6	00	00			Low clouds						0
7	00	00	20	08	-	-					4.0
8	00	00			Low clouds						0
9	00	00	06	09	-	-					4.5
10	00	00	08	08	09	18	08	27			8.7
11	00	00	12	09	-	-					4.5
12	00	00	11	14	08	19					15.0
13	00	00	06	14	07	26					13.3
14	00	00	06	16	09	12					9.3
15	00	00	07	11	05	10					7.0
16	00	00	09	09	-	-					4.5
17	00	00	10	06	-	-					3.0
18	00	00	09	26	10	25	10	06			14.3
19	03	02			Low clouds						2.0
20	04	06	07	13	-	-					9.5
21	02	03	06	18	05	10					10.3
22	00	00	08	19	-	-					9.5
23	00	00	05	19	07	13					10.7
24	00	00	11	10	23	10	29	08			7.0
25	06	01	10	16	24	08	20	01			6.5
26	00	00	14	07	-	-					3 5
27					No observation due to rain						-
28	00	00	17	05	Low clouds						2.5
29	00	00	-	-	Low clouds						0
30	02	03	-	-	Low clouds						1.5
31	36	01	05	08							4.5
Ave-rage	-	00	-	12.5	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, July 1964

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	26	03									1.5
2	28	10	28	17	29	13	31	09			12.3
3	00	00	26	29		Low clouds					14.5
4			25	32		Low clouds					16.0
5			22	12	24	17					14.5
6			22	09		Low clouds					4.5
7			21	04	28	04	30	05			4 3
8				No observation due to rain							
9			28	13	22						6 5
10			25	06	22	05	12	08			6 7
11			17	08	32	02	07	07			5.7
12				No observation due to rain							
13			26	15	-	-					7 5
14			26	14	24	11					12 5
15			26	17	-	-					8.5
16			27	13	25	13	15	06			10.7
17			24	13	27	07					10.0
18			26	17	18	14	12	13			14 7
19			29	11	-	-					5.5
20			24	10	07	07	06	14	07	12	10.8
21			23	07	02	13					10.0
22			21	26	-	-					13.0
23			16	14	19	19					16.5
24			12	07	09	12					9.5
25			06	09	04	08					8.5
26	00	00	07	04	09	11	13	08			5 8
27	00	00	25	05	18	14					6 3
28	00	00	24	05	Low clouds						2.5
29	00	00	24	12	20	08	11	09			7.3
30	00	00	26	22	21	06	09	14			10.5
31	00	00	25	20							10.0
Average	-	00.00	-	15.4	-	10 3	-	9.3	-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, August 1964

Date	Surface		2km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir	Vel.	Dir.	Vel.	Dir.	Vel.	Dir	Vel.	
1	00	00	26	25	33	08	07	13			11.5
2	24	02	30	15							8.5
3	22	02	27	33							17.5
4	23	03	-	-							3.0
5				No observation due to rain							-
6	28	04	32	14							9.0
7	-	-	-	-							-
8	24	02	33	08							5.0
9	24	02	29	22							12 0
10	20	02	27	43							22.5
11	23	02	25	13							7.5
12	00	00	29	17	27	14					10.3
13	00	00	27	10							5.0
14	00	00	26	16							8 0
15	00	00	27	22							11.0
16	00	00	27	29							14.5
17	27	06	30	20							13.0
18	00	00	30	17							8.5
19	00	00	28	22	08	18	02				8.0
20	26	04	30	24	26	14	03	04			11.5
21	00	00	34	21							10.5
22	25	04	27	16							10.0
23	24	02	28	24							13.0
24				No observation due to rain							-
25	24	04	29	21							12.5
26	00	00	19	02	20	09	10	15			6 5
27	28	02		low cloud							2.0
28	00	00	07	09							4 5
29	00	00	18	05	23	05					3.3
30	00	00	31	04	37	07	03	06			4.3
31	00	00									0
Average	-	2.0	-	18.5	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, September 1964

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	16	15	23	08					7.7
2	00	00	22	08	18	13	10	12			8.3
3	-	-	-	-	-	-	-				-
4	-	-	23	06	36	06	06	13			8 3
5	-	-	21	04	36	05	08	10			6 3
6	-	-	27	08	23	08					8.0
7	-	-	15	04	17	06	08	08			6 0
8	-	-	08	06	20	09					7.5
9	-	-	10	14	08	12					13.0
10	-	-	03	08	07	14					11 0
11	-	-	08	03	10	11	10	10			11.3
12	-	-	16	06	13	12					9.0
13	-	-	18	03							3 0
14	-	-			Low clouds						-
15					Low clouds						-
16	-	-	30	14	30	17					15 5
17	-	-	28	24	25	22					23 0
18	-	-	27	23	-	-					23.0
19	-	-	23	12	-	-					12.0
20	-	-	27	15	-	-					15.0
21	00	00	30	15	33	11					8 7
22	28	03	28	34	-	-					18.5
23				No observation due to Rain							-
24				No observation due to Rain							-
25	00	00		Low clouds							0
26	00	00	09	13	10	16	09	19			12.0
27				No observation due to Rain							-
28	30	10		Low clouds							10.0
29	35	02		Low clouds							2.0
30	00	00		Low clouds							0
31											
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, October 1964

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1				Low clouds						-	-
2	14	02	19	10							6 0
3	07	02		Low clouds							-
4				No observation due to Rain							-
5	00	00	02	07							3.5
6	00	00	02	04							2.0
7	00	00	36	14	09	08					7.3
8	00	00	30	13	01	17					10.0
9	09	04		Low clouds							-
10				No observation due to fog							-
11	00	00	13	07							3.5
12	00	00	02	02	06	02	12	11			3 5
13				No observation due to Rain							-
14	00	00	11	03							1.5
15	00	00	10	20							10.0
16	00	00		Low clouds							0
17				No observation due to fog							-
18	00	00	31	04							2.0
19	-	-	07	06	08	12	07	12			10.0
20	-	-	04	12	07	11	06	08			8 7
21	-	-	06	14	08	16	11	24			18.0
22	-	-	06	10	06	09	02	08			9.0
23	00	00	36	12	05	14	06	11			8.3
24				No observation due to Rain							-
25	00	00	08	12							6.0
26	-	-	11	14							14.0
27	00	00	05	15	09	17	18	10			10.5
28	00	00	07	17	08	18					11.7
29	36	02	06	16	09	26	06	14			14.5
30	00	00	-	-	05	17	11	20			12.3
31	03	04	-	-	-	-	-	-			4.0
Average	-		-		-		-		-		

Upper Wind Speed Wind (Velocity) in Knot and Direction in Defn

Station . KORAT Time of Observation 0700, July 1965

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir	Vel.	Dir.	Vel.	Dir	Vel.	Dir.	Vel.	
1	00	00	27	10							5.0
2	26	02	20	10							6.0
3	00	00	22	11	36	03	04	14			7.0
4	00	00	29	22	33	05	09	10			9.8
5	22	09	25	18	29	07	29	10			11.0
6	00	00	29	10	27	04	33	04			4.5
7	25	02	29	17	-	-					9.5
8	00	00	26	21	26	03	24	08			8.0
9	00	00	28	20	29	13	06	14			11.8
10	00	00	33	08	-	-					4.0
11	00	00	24	13	25	03	02	05			5.3
12	00	00	29	22		Low clouds					11.0
13				No observation due to rain							
14	31	03				Low clouds					1.5
15	25	05	30	20	31	06					10.3
16	25	03	28	14	27	10	20	13			10.0
17	00	00	22	05	14	10					5 0
18	00	00	12	08	14	10					6 0
19	00	00	15	03							1.5
20	00	00	23	06	13	03	04	06			3.8
21	25	03	29	16	33	04	32	09			8.0
22	00	00	33	10	30	04					4 7
23	00	00	22	09	21	08					10.0
24	24	04	28	29							16 5
25	24	02	29	34							18.0
26	20	03	27	31							17 0
27	21	02	27	33	27	21					15.3
28	00	00	30	28	35	08					12.0
29	00	00	30	20		Low clouds					10.0
30	00	00	30	18							9.0
31	00	00	28	21		Low clouds					10.5
Average	-	1	-	16.5	-	7.3	-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station . KORAT Time of Observation 0700, August 1965

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1				No ob servation due to rain							-
2	00	00	26	24	25	16					13.3
3	00	00	28	21							10.5
4	22	03	25	17							10.0
5	00	00	26	20	21	03					7.7
6	19	05	27	20	23	10					11.7
7	00	00	22	15							7.5
8	00	00	22	05	25	10					5.0
9	00	00	19	05	12	09	10	17			7.3
10	00	00	13	02	06	10	09	14			6.5
11	00	00	29	06	05	14	05	11			7.8
12	00	00	28	02	15	05	10	18			6.3
13	00	00	05	04	Low clouds						2.0
14	00	00			Low clouds						
15	00	00	13	03	12	12	09	08			5.8
16	00	00	18	06							3.0
17	00	00	11	03							1.5
18	00	00	35	03	05	15					6.0
19	27	02	24	11							6.5
20	00	00	17	13							6.5
21	13	02	22	11							6.5
22	00	00	24	12	16	06					6.0
23	00	00	31	04							2.0
24	00	00	10	04							2.0
25	00	00	01	05	11	09	09	16			7.5
26	00	00	19	02	09	08	06	16			6.5
27	00	00	03	06							3.0
28				No observation due to rain							-
29	00	00			Low clouds						-
30	00	00	23	25							12.5
31	00	00	27	23	19	03					8.7
Average	-	1	-	10	-	9	-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, Sept. 1965

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	32	09							4.5
2				No observation due to rain							-
3	00	00	24	20							10.0
4				No observation due to rain							-
5	22	02	27	21							11.5
6	00	00	28	18							9.0
7	10	00	26	08	22	08					5.3
8	00	00	26	06							3.0
9	27	04	32	13							8.5
10	00	00	26	20							10.0
11	00	00		Low clouds							0
12	00	00	26	12							6.0
13	00	00	28	08							4.0
14	30	02		Low clouds							2.0
15	06	02		Low clouds							2.0
16	00	00	06	09							4.5
17	00	00	06	16							8.0
18				No observation due to rain							-
19				Low clouds							-
20				No observation due to rain							-
21	00	00		Low clouds							0
22	00	00	14	05							2.5
23	00	00	22	05							2.5
24	00	00		Low clouds							0
25	00	00									0
26	00	00									0
27	00	00	17	10							5.0
28	00	00									0
29	00	00									0
30	00	00									0
31											
Average	-	00	-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station KORAT Time of Observation 0700, Oct 1965

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir	Vel.	
1	00	00		Low clouds							0
2	00	00	29	03							1.5
3				No observation due to rain							-
4	00	00	13	10	09	16					8.7
5	00	00		Low clouds							0
6	00	00	13	08	11	13					7.0
7	00	00	11	09							4.5
8	00	00	13	14							7.0
9	00	00	11	16							8.0
10	00	00	12	14							7.0
11	00	00		Low clouds							0
12	18	08		Low clouds							6 0
13	00	00	07	20							10.0
14	00	00	08	19							9.5
15	00	00		Low clouds							0
16	00	00	07	16							8.0
17	04	02	07	15							8 5
18	04	02	09	26							14.0
19	00	00	08	16							8.0
20	00	00	06	20	05	11					10 3
21	05	04	07	14							9.0
22	00	00	13	14	13	09					7.7
23	00	00	17	12							6.5
24	00	00	15	18		Low clouds					9.0
25	00	00	18	14							7 0
26	00	00	25	10		fog					5 0
27	00	00	17	10	15	04					4 7
28	00	00	25	08	21	10					6 0
29	00	00	09	02	28	25					9 0
30	00	00	09	11							5.5
31	00	00	11	16	17	09					8.3
Average	-	00	-	13.4	-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station KORAT Time of Observation 0700, July 1966.

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir	Vel.	Dir.	Vel	Dir.	Vel.	Dir.	Vel.	
1	00	00	27	22	27	08					10.0
2	00	00	25	21	23	11					10.7
3	20	02	27	21	23	16					13.0
4	00	00	26	21	-	-					10.5
5	00	00	24	21	19	22					14.3
6	00	00	22	18	16	10	10	14	09	22	12 8
7	00	00	21	06	10	11	07	24			10.3
8	00	00	08	12	12	14					8 7
9	00	00	16	15	16	19	14	16			12.5
10	00	00	10	13	18	10	08	13			9.0
11	00	00	26	08	14	02	11	08			4.5
12	00	00	32	11	33	06	02	09	09	20	9 2
13	00	00	30	10							5.0
14	00	00	25	12							6.0
15	00	00	27	16							8.0
16	00	00		Low clouds							0
17	00	00	28	07	Low clouds						3.5
18				No observation due to rain							-
19	00	00	17	04							2.0
20	00	00	30	06							3 0
21	00	00		Low clouds							-
22	00	00	27	15							7.5
23	25	15	30	24	29	14					7.7
24	00	00	30	14							7.0
25	24	05		Low clouds							5.0
26	24	04	26	27							15 5
27	28	08	28	37							22.5
28	20	04	28	34							10.0
29	00	00	30	34							17.0
30	00	00	29	34							17.0
31	00	00	35	22							11.0
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, August 1966.

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir	Vel	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	02	08	22	07	08	13			7.0
2	00	00	28	09							4.5
3	00	00	24	10							5.0
4	00	00	28	26							13.0
5	00	00	28	19							9.5
6	00	00	29	24							12.0
7	00	00	27	16							8.0
8	00	00	32	13							6.5
9	00	00	28	13	29	04	12	13			7.5
10	00	00	25	09							4.5
11	00	00	23	14							7.0
12	00	00	17	06							3.0
13	00	00	23	07	22	07					3.7
14	00	00	27	16							8.0
15	00	00	28	16	27	01	15	05			5.5
16	00	00	28	15							7.5
17	19	02	26	23	23	19					14.7
18	20	02	24	16							9.0
19	20	02	26	32							17.0
20	00	00	25	20	27	12					10.7
21	00	00	25	19	29	11	36	09			9.8
22	00	00	28	14							7.0
23	00	00	25	26							13.0
24	00	00	29	18	24	15					11.0
25	00	00	27	25	24	14					13.0
26	00	00	28	19	26	20					13.0
27				No observation due to rain							-
28	14	03		Low clouds							3.0
29	00	00	21	07	16	04					3.7
30	00	00	30	29							14.5
31	00	00	26	22							11.0
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, Sept. 1966

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	29	34							17.0
2	00	00	31	23							11.5
3	00	00		Low clouds							-
4	00	00	34	18	10	08	15	17			10.8
5	00	00	06	08	11	19	12				-
6	00	00	34	08							4.0
7	00	00	32	14							7.0
8	00	00	32	22	30	12					11.3
9				No observation due to rain							-
10	00	00	23	13							5.2
11	00	00	25	14	23	13	20	11			9.5
12	00	00	32	12							6 0
13	00	00	26	08							9.0
14	00	00	28	10							5 0
15				No observation due to rain							-
16	00	00	29	14							7.0
17	00	00		Low clouds							-
18	00	00		Low clouds							-
19	00	00		Low clouds							-
20	00	00	33	05							2.5
21	00	00	34	03							1.5
22	00	00	02	11	05	22					11.0
23	00	00	07	19	05	16					11.7
24	00	00	09	22							11.0
25	00	00	07	21	10	10	07	16			11.8
26	00	00	06	24	07	04	07	12			10.0
27	00	00	06	22	10	08					10.0
28	00	00	05	17							7.2
29	00	00	02	08	30	06					4.7
30	00	00	06	06							3.0
31											
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, October 1966

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	34	05							2.5
2	00	00	08	04	03	21					8.3
3	00	00	06	05	09	18					7.7
4	00	00	12	10	10	20					10.0
5	00	00	05	21							10.5
6	00	00	08	24							12.0
7				No observation due to rain							-
8	05	02		Low clouds							-
9	00	00		Low clouds							-
10	00	00		Low clouds							-
11	00	00		Low clouds							-
12	00	00	12	20							10.0
13	00	00	06	09							3.0
14	00	00	01	06	22	06	11	03			3.5
15	00	00	16	05	16	06					3 7
16	00	00	11	15	34	02					5.7
17	00	00	10	08	Low clouds						-
18	00	00	03	19							9.7
19	00	00	02	08	09	06	08	08			5 5
20	04	02	05	21	02	09					10.7
21	00	00		Low clouds							-
22	00	00	06	25							5 0
23	00	00	03	26							13.0
24	00	00		Low clouds							-
25				No observation due to rain							-
26	00	00		Low clouds							-
27	00	00	25	05	14	13					6 0
28	00	00	08	16							8.0
29	00	00	11	15							7.5
30	00	00	06	10	08	23					11.0
31	00	00	07	18	10	20					12.7
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, July 1967

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	28	09							4.5
2	00	00	22	13							6.5
3	00	00	21	06	20	20					13 0
4	00	00	23	08							4.0
5	00	00	28	15							7.5
6	00	00	27	22							11.0
7	00	00	30	19							9.5
8	00	00	30	15	30	07					11.0
9	00	00	27	10	11	04					7.0
10	00	00	26	13							6.5
11	00	00	27	18	24	09					13.5
12	00	00	27	13							6 5
13	00	00	26	17							8.5
14	21	02	26	20							11.0
15	00	00	25	13							6.5
16	00	00	16	10							5.0
17				No observation due to fog							-
18	00	00		Low clouds							-
19	00	00	03	07	08	07					4.7
20	00	00	32	04	12	09					4.3
21	00	00	07	02	19	08					3.3
22	00	00	22	09							4.5
23	00	00	26	18	22	07					8.3
24	00	00	27	23							11.5
25	22	02	27	34							18.0
26	20	03	25	28	Low clouds						15.5
27	20	01	27	28							14.5
28	24	02	31	22							12.0
29	00	00	31	17							8.5
30	00	00	01	03							1.5
31	00	00	-	-							0
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, August 1967

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00	28	20							10.0
2	27	02	30	23							12.5
3	24	04	30	19							11.5
4	25	03	27	29	28	09					13.3
5	21	02	27	25							13.5
6	23	02	28	29							15.5
7	23	03	27	27							15 0
8	00	00	31	18							9.0
9	00	00	35	13	Low clouds						6.5
10	00	00	31	04							2.0
11	00	00	26	06							3.0
12	23	03	26	16	24	09					9.3
13	21	04	27	31							17.5
14	24	01	29	20							10.5
15	00	00	30	10	26	10					6.7
16	24	03	26	26	25	15					14.7
17	20	02	26	26							14.0
18	00	00	28	29							14.5
19	25	02	31	13							7.5
20	00	00	32	09	30	02					3 7
21				No observation due to rain							-
22	23	03	27	21	26	12					12.0
23	00	00	28	19							9.5
24	25	02	31	20							11.0
25	00	00	35	11							5.5
26	00	00	05	06							3.0
27	00	00	22	14	25	09					7.7
28	00	00	26	20	24	10					10.0
29	23	24	27	23							23.5
30	00	00	30	17	Low clouds						11.0
31	27	05	27	22							13.5
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, Sept. 1967

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	24	02	29	17	29	08					9.0
2	00	00	29	26							13.0
3	00	00	31	15							7.5
4	27	02	32	19							10.5
5	00	00	31	04	05	06					3.3
6				No observation due to rain							-
7	00	00	29	15							7.5
8	00	00	26	13	20	11					8.0
9	00	00	28	15	21	07					7.3
10	00	00	29	14							7.0
11	00	00	25	09							4.5
12	00	00	28	10							5.0
13	00	00	28	20	24	08	09	08			9.0
14	00	00	28	17							8.5
15				No observation due to rain							-
16				"			"				-
17				"			"				-
18	00	00		Low clouds							0
19	00	00	30	03							1.5
20	00	00	23	10	25	09					6.3
21	00	00	27	21							10.5
22	21	02	26	24							13.0
23	00	00	27	09	26	14					11.5
24				No observation due to rain							-
25	00	00	28	12	Low clouds						6.0
26	00	00	24	18							9.0
27	00	00	26	13							6.5
28	00	00	25	09							4.5
29	00	00	28	10	26	07	01	16			8.3
30	00	00	33	17							8.5
31											
Average	-		-		-		-		-		

Upper Wind Speed (Velocity) in Knot and Direction in Degree

Station : KORAT Time of Observation 0700, October 1967

Date	Surface		2 km		5 km		8 km		12 km		Average of Velocity
	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	Dir.	Vel.	
1	00	00		Low clouds							0
2	00	00		Low clouds							0
3	00	00	07	22	10	20					14.0
4	04	04	09	17	Low clouds						10.5
5	08	04	08	16							10.0
6	07	04		Low clouds							4.0
7	00	00		Low clouds							0
8	00	00	07	09	11	05	06	13			6.3
9	00	00	01	12	03	17					3.7
10				No observation due to rain							-
11	00	00		Low clouds							0
12	00	00		Low clouds							0
13	00	00		Low clouds							0
14	00	00	06	15	08	16	11	20			12.8
15	00	00	05	12	Low clouds						6.0
16	00	00	08	14	11	16	11	08			9.5
17	00	00	06	18	06	06	33	06			7.5
18	04	03	04	10							6.3
19	00	00	05	28	34	15					14.3
20	00	00	07	17	17	03	03	10			7.5
21	00	00		Low clouds							0
22	00	00	30	04							2.0
23	00	00	33	05	25	05	01	06			4.0
24	00	00		Low clouds							0
25	00	00	03	05	04	12	08	17			8.5
26	00	00	07	25	29	23	07	27			18.8
27	00	00	08	24	12	17	11	31			18.0
28	00	00	03	14	Light fog						7.0
29	00	00	10	02	10	09					3.7
30	00	00	02	08	05	05	08	09			5.5
31	00	00	01	06	05	13	05	11			7.5
Average	-		-		-		-		-		

AD7-1 MONTHLY AVERAGE MAXIMUM TEMPERATURE OF PRACHINBURI

Unit : C°

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec	Average
1951	32.0	34.1	36.0	36.9	34.2	31.9	31 9	31.8	31.6	31.8	32.2	30.3	32.9
52	31.5	33.9	32.4	35.0	34.8	32.0	31.2	30.2	30.9	30.5	31 6	30.7	32.1
53	31.7	31.6	33.2	35.5	32.9	31.2	31.5	30.8	31.7	32.4	32.4	31.4	32.2
54	33.8	32.3	34.3	36 5	32.4	31.6	32.2	32.3	30.8	32.4	32.9	31.7	32 8
55	32.1	34 2	36.4	35.5	34.1	31.9	32.4	32.6	32.7	32.6	30.6	31.4	33.0
56	31.7	35 2	36.5	35.2	33.3	32.8	32.0	31.3	31.2	31.9	30.3	31.3	32.7
57	33.0	33.9	35.1	36.0	37.1	33.4	32.4	32.1	31.3	31.0	32.9	32.6	33.4
58	33.6	32.8	36 3	37.7	36.1	32.8	31.8	32.0	30.8	31.5	31.4	31.2	33.2
59	32.4	35.3	34.2	35.9	34 5	35 6	32.0	32.0	31.7	31.8	32.5	33.4	33 4
60	33.5	34.7	37.2	37.0	35.5	33.1	32.8	32.5	31.9	31 5	32.5	31.2	33.6
61	31.8	33.9	35 0	35 8	33.2	32.8	31.9	31.4	31.2	31.9	32.7	32.4	32.8
62	31.2	33.7	35 9	36.4	34.5	32.7	31.7	32.0	31.3	32.0	32.8	31.6	33 0
63	30.1	34.2	35 4	35.9	36.8	33.4	32.1	31.7	31.5	31.4	32 3	31.4	33.0
64	34.5	34.0	35.8	37 4	33.9	33.5	33.0	31.9	31.6	31.7	30.5	31.0	33.2
65	31.9	34.0	35.0	35.5	33.7	32.0	32.4	32.4	31.6	32 3	32.7	32.6	33.0
66	34.0	34 5	36 8	36.1	32.6	32.8	32.0	31.7	31.2	32.2	32 1	32.0	33.2
Average	32.4	33.9	35.3	36 1	34.4	32.7	32.1	31.8	31.4	31.8	32.0	31.6	33.0

AD7-2 MONTHLY AVERAGE MINIMUM TEMPERATURE OF PRACHINBURI

Unit : C°

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Average
1951	19.0	20.4	23.6	24 9	24.6	24.5	23.7	23.1	23.5	22 5	21.8	19.0	22.5
52	19 3	21.3	22.5	22.7	23.9	23.2	22.6	22.9	22.7	22.4	21.6	16 4	21.8
53	18.8	18.5	21.8	23.5	23.3	23.2	23.1	23.2	23.6	23.8	21.9	19 0	22.0
54	19.3	19 8	22.9	23.7	23.8	23.8	23 8	23.8	23.8	23.7	19.4	18.8	22.2
55	17.6	21.3	22.8	23.5	24.4	24 5	24 3	24.2	24.0	23.5	21.5	17.4	22.4
56	17.5	22.2	23.7	24.2	24.2	23.8	24.1	23.9	24.0	23.4	20.7	20.0	22.6
57	18.5	21.2	23.3	24.5	25.4	24.8	24.4	24.1	24.2	24.3	13.6	-	22.6
58	16.8	21.9	24.1	25 0	25.5	25 2	24 9	24.8	24.9	24.2	21.4	18.9	23.1
59	18.8	22.9	22.6	25.0	25 1	25.2	23.9	24.4	24.2	24.2	22.6	21 1	23.3
60	19.6	20.9	24.3	25 4	25.4	24.7	24.7	25.0	24.2	24.8	23.0	19.6	23 5
61	18.3	22.8	23.9	24.9	25.2	24.4	24.7	24.9	24.4	23.7	22.5	20.0	23.3
62	18.6	20.0	23.3	24.7	25 1	24.8	24.5	24.4	24.1	24 0	21.8	18.4	22.8
63	16.6	20.7	23.2	24 2	25.4	24.4	23.9	24.1	24.4	24.2	23.2	19.7	22 8
64	21.2	21.8	23.2	24.6	24.4	24.5	24.6	24.1	24.5	24.4	21.5	18.7	23 1
65	17.0	22.8	23.4	24.7	24.6	24.9	24.4	24 4	24.2	24.4	22.5	21.6	23.2
66	20.8	23.0	24.1	25.3	24.9	25.0	24 7	24.8	24.3	24.2	22.1	21.4	23.7
Average	18.6	21.3	23.3	24.4	24.7	24 4	24.1	24.1	24.1	23.9	21.4	19.3	22.8

AD7-3 MONTHLY AVERAGE MEAN TEMPERATURE OF PRACHINBURI

Unit : C°

	Jan.	Feb	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov	Dec.	Average
1951	27.0	28.6	30.4	31.0	29.3	28.0	27.7	28.0	27.7	27.6	28.0	25.8	28.3
52	26.9	28.5	27.7	29.1	28.9	27.6	27.3	26.8	27.2	26.8	27 9	25.5	27.5
53	27.2	26.8	28.4	29.4	27.4	26.9	27.2	26.8	27.2	27 8	27.6	27.2	27.5
54	28.3	27.6	29.1	29.8	27.6	27.2	27.8	28.3	27.6	28.5	27.3	26 4	28.0
55	26.1	28.8	30.4	30.0	29.5	28.3	28.9	28.7	28.2	28.3	26.4	25.8	28.3
56	25.9	29.5	30.8	29.4	29.0	29.1	28.3	28.1	28.0	28.0	26.1	26 1	28.2
57	27.3	28.5	29.9	30.6	31.6	29.2	28.6	28.5	27.8	27.8	28.2	27.6	28.8
58	28.2	28.2	31.3	31.9	31.3	29.2	28.4	28.6	28.0	28.2	27.4	26.4	28.9
59	27.1	29.9	29.2	31.1	29.9	30.8	28.1	28.5	28 4	28.4	28.5	28.6	29.0
60	28.0	29.3	31.4	32.1	30.2	29.4	29.2	28.9	28 5	28.5	28.4	26.7	29.2
61	26.5	29.2	30.0	31.1	29.2	29.0	28.4	28.4	28.3	28.4	28.5	27 6	28.7
62	26.1	28.1	30.6	31.0	29.9	29.1	28.5	28.6	28.1	28.8	28 4	26.3	28.6
63	24 8	28.8	30.2	30.9	31.6	29.5	28.6	28 5	28.4	28.1	28.4	26.9	28.7
64	29.2	29.2	30 9	31.5	29.5	29.6	29.2	28.3	28.1	28.5	26.7	26.3	28.9
65	26.4	29.1	30.0	30.7	29.1	28.6	28.9	28.8	28 3	28.7	28.5	28.4	28.8
66	29.0	29.7	31.6	31.2	28.9	29.7	28.9	28.6	28.4	28.7	28.2	27.8	29.2
Average	27.1	28.7	30.1	30.7	29.6	28 8	28.4	28.3	28.0	28.2	27.8	26.8	28.5

Table AD8-1 MONTHLY AND SEASONAL MEAN TEMPERATURE IN CENTIGRADE DEGREE

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year	NE Monsoon	1st Transition	SW Monsoon	2nd Transition	Period
Area 1																		
Chiangrai	19.5	21.6	24.5	27.3	27.9	27.5	26.9	26.7	26.7	25.3	23.1	20.0	24.8	21.1	26.6	27.0	25.3	1938-1965
Mae Hong-son	21.9	23.2	26.3	29.6	29.4	27.4	27.0	26.9	27.2	26.9	25.2	22.3	26.1	23.2	28.4	27.1	26.9	1943-1965
Chiangmai	21.1	23.1	26.0	28.6	28.7	27.9	27.4	27.0	26.9	26.2	24.5	21.8	25.8	22.6	27.8	27.3	26.2	1937-1965
Mae Sariang	22.1	23.5	26.7	29.8	29.6	27.5	26.9	26.8	27.4	27.3	25.9	23.0	26.4	23.6	28.7	27.2	27.3	1944-1965
Lampang	21.8	23.9	27.1	29.4	29.3	28.3	27.9	27.6	27.3	26.4	24.7	22.1	26.3	23.1	28.6	27.8	26.4	1944-1965
Nan	21.3	23.6	26.7	29.1	29.3	28.6	27.9	27.6	27.7	26.9	24.8	21.9	26.3	22.9	28.4	28.0	26.9	1947-1965
Phrae	21.8	24.3	27.3	29.9	29.4	28.0	27.6	27.4	27.2	26.8	24.9	22.2	26.4	23.3	28.9	27.6	26.8	1952-1965
Uttaradit	23.8	26.2	29.0	31.0	30.3	29.0	28.5	28.3	28.3	28.0	26.6	24.3	27.8	25.2	30.1	28.5	28.0	1940-1965
Tak	22.8	26.5	30.1	32.0	30.3	28.2	28.3	28.2	27.7	26.8	25.3	22.9	27.4	24.4	30.8	28.1	26.8	1954-1965
Phitsanulok	24.4	26.8	29.2	30.8	30.1	29.0	28.5	28.4	28.3	28.0	26.8	24.6	27.9	24.6	30.0	28.6	28.0	1937-1965
Mae Sot	22.9	25.1	28.1	29.9	29.0	27.1	26.3	26.2	27.0	27.1	25.7	23.0	26.5	24.2	29.0	26.7	27.1	1937-1965
Phetchabun	22.8	25.8	28.3	30.1	29.5	28.1	27.5	27.3	27.4	26.9	25.1	22.8	26.8	24.1	29.3	27.6	26.9	1950-1965
Bhumiphol Dam	23.0	26.0	29.0	31.5	30.0	28.5	28.0	27.9	27.2	26.7	25.9	23.9	27.3	24.7	30.2	27.9	26.7	1959-1965
Mean	22.2	24.6	27.6	29.9	29.4	28.1	27.6	27.4	27.4	26.9	25.3	22.7	26.6	23.6	28.4	27.6	26.9	
Area 2																		
Loei	20.2	23.5	26.4	28.6	28.4	27.9	27.5	27.2	26.7	25.7	23.7	21.1	25.6	22.1	27.8	27.3	25.7	1954-1965
Udon Thani	22.2	24.8	27.9	29.8	29.4	28.9	28.4	28.0	27.7	26.9	25.1	22.3	26.8	23.6	29.0	28.3	26.9	1937-1965
Nakhon Phanom	21.1	23.7	26.7	29.0	28.7	27.8	27.5	27.0	27.0	26.0	24.2	21.7	25.9	22.7	28.1	27.3	26.0	1953-1965
Sakon Nakhon	21.3	23.9	27.1	29.3	28.8	28.4	28.0	27.7	27.3	26.3	24.1	21.9	26.2	22.8	28.4	27.9	26.3	1947-1965
Mukdahan	21.2	24.3	27.5	29.5	29.2	28.3	28.0	27.7	27.3	26.3	24.3	21.9	26.3	22.9	28.7	27.8	26.3	1948-1965
Khon Kaen	22.8	25.6	28.6	30.1	29.6	28.9	28.3	28.1	27.6	26.6	25.0	22.9	27.0	24.1	29.4	28.2	26.6	1948-1965
Roi Et	23.2	25.6	28.5	29.9	29.5	28.9	28.3	28.1	27.7	26.6	25.1	23.0	27.0	24.2	29.3	28.3	26.6	1943-1965

Ubon Ratchathani	23.8	26.1	28.5	29.8	29.2	28.4	27.9	27.8	27.3	26.6	25.3	23.7	27.0	24.7	29.2	27.9	26.6	1943-1965
Surin	23.5	26.2	28.7	29.8	29.3	28.6	28.2	27.9	27.5	26.7	25.0	23.3	27.1	24.5	29.3	28.1	26.7	1948-1965
Nakhon Ratchasima	23.5	26.6	28.9	29.9	29.2	28.6	28.2	28.0	27.4	26.6	25.0	23.0	27.1	24.5	29.3	28.1	26.6	1937-1965
Sap Muang	20.7	24.0	26.2	27.5	27.6	27.2	26.6	26.4	25.8	24.8	22.5	20.7	25.0	22.0	27.1	26.5	24.8	1956-1965
Chaiya-phum	23.1	25.8	28.3	29.9	29.6	28.4	27.6	27.5	27.0	26.6	25.3	23.4	26.9	24.4	29.3	27.6	26.6	1956-1965
Mean	22.2	25.0	27.8	29.4	29.0	28.4	27.9	27.6	27.2	26.3	24.6	22.4	26.5	23.5	28.7	27.8	26.3	
Area 3																		
Nakhon Sawan	24.9	27.7	30.3	31.4	30.5	29.6	29.0	28.7	28.3	27.9	26.6	24.5	28.3	25.9	30.7	28.9	27.9	1939-1965
Lopburi	25.9	28.4	30.1	30.7	29.9	28.9	28.3	28.1	27.8	27.4	26.4	25.3	28.1	26.5	30.2	28.3	27.4	1943-1965
Suphanburi	25.1	27.6	29.7	31.3	30.4	29.5	28.9	28.6	28.1	27.6	26.3	24.7	28.2	25.9	30.5	28.8	27.6	1952-1964
Prachinburi	25.5	27.6	29.2	30.2	29.6	28.6	28.1	28.0	27.8	27.9	27.0	25.4	27.9	26.4	29.7	28.1	27.9	1952-1965
Kancha-naburi	24.6	27.5	29.9	31.2	30.2	28.9	28.4	28.3	28.0	27.1	25.8	24.1	27.8	25.5	30.4	28.4	27.1	1949-1965
Don Muang	26.0	27.6	29.2	30.2	29.8	29.2	28.8	28.7	28.2	28.2	27.4	25.8	28.3	26.7	29.7	28.7	28.2	1937-1965
Bangkhen	25.8	27.5	28.9	29.9	29.6	29.0	28.7	28.5	28.1	27.8	26.9	25.5	28.0	26.4	29.5	28.6	27.8	1943-1965
Bangkok	26.0	27.8	29.2	30.1	29.7	28.9	28.5	28.4°	28.0	27.7	27.0°	25.7	28.1	26.6	29.7	28.5	27.7	1937-1965
Arayap-rathet	24.9	27.8	29.5	30.0	29.5	28.5	27.9	27.9	27.7	27.4	26.2	24.5	27.7	25.9	29.7	28.0	27.4	1938-1965
Mean	25.4	27.7	29.6	30.6	29.9	29.0	28.5	28.5	28.0	27.7	26.6	25.1	28.1	26.2	30.0	28.5	27.7	
Area 4																		
Chonburi	25.7	27.3	28.7	29.5	29.2	29.0	28.4	28.2	27.8	27.4	26.5	25.6	27.8	26.7	29.1	28.4	27.4	1945-1965
Sattahib	28.0	29.3	30.2	30.7	29.9	29.7	29.3	29.2	28.7	28.1	27.6	27.2	29.0	28.0	30.3	29.2	28.1	1938-1965
Chantaburi	25.8	27.1	27.9	28.4	28.3	27.7	27.4	27.3	27.1	27.3	26.6	25.5	27.2	26.3	28.2	27.4	27.3	1938-1965
Khlong Yai Pom	25.8	26.7	27.6	28.0	28.1	27.2	26.9	26.7	26.5	26.8	26.6	26.1	26.9	26.3	27.9	26.8	26.8	1952-1965
Prachuma-chomklao	24.7	26.9	28.3	29.6	29.2	28.5	28.1	27.9	27.4	27.1	26.4	25.1	27.4	25.8	29.0	28.0	27.1	1956-1965
Koh Sichang	26.2	27.7	28.8	30.3	29.6	29.5	28.8	28.7	28.0	27.3	27.2	26.5	28.2	26.9	29.6	28.8	27.3	1958-1965
Mean	26.0	27.5	28.6	29.4	29.1	28.6	28.2	28.0	27.6	27.3	26.8	26.0	27.8	26.7	29.0	28.1	27.3	

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year	NE Monsoon	1st Transition	SW Monsoon	2nd Transition	Period
Area 5																		
Hua Hin	25.0	26.4	27.7	28.7	28.9	28.9	28.4	28.4	27.9	27.1	26.4	25.3	27.4	25.8	28.4	28.4	27.1	1940-1965
Prachuab Kirikhan	24.5	26.0	27.3	28.8	28.9	28.4	28.0	27.9	27.9	26.9	26.1	24.9	27.1	25.4	28.3	28.1	26.9	1940-1965
Chumphon	24.9	26.1	27.1	28.4	28.2	27.6	27.3	27.2	27.2	26.8	25.9	24.8	26.8	25.4	27.9	27.3	26.8	1940-1965
Ban Don	25.7	26.7	27.9	28.8	28.7	28.1	27.8	27.8	27.5	27.1	26.3	25.6	27.3	26.1	28.5	27.8	27.1	1937-1965
Nakhon Si Tham-marat	26.0	26.5	27.4	28.2	28.5	28.4	28.0	27.9	27.7	27.1	26.3	25.7	27.3	26.1	28.0	28.0	27.1	1943-1965
Songkhla	26.9	27.3	27.8	28.5	28.9	28.6	28.4	28.3	28.1	27.5	26.8	26.5	27.8	26.9	28.4	28.4	27.5	1937-1965
Narathiwat	25.9	26.3	26.9	27.7	28.0	27.6	27.3	27.2	27.2	26.7	26.1	25.8	26.9	26.0	27.5	27.3	26.7	1943-1965
Mean	25.6	26.5	27.4	28.4	28.6	28.2	27.9	27.8	27.6	27.0	26.3	25.5	27.2	26.0	28.1	27.9	27.0	
Area 6																		
Ranong	25.7	26.8	27.7	28.4	27.5	26.6	26.5	26.3	26.0	26.2	25.9	25.4	26.6	26.0	27.9	26.4	26.2	1943-1965
Phukot	27.3	28.0	28.5	28.6	28.0	27.8	27.5	27.5	27.1	27.0	27.1	27.1	27.6	27.4	28.4	27.5	27.0	1938-1965
Phukot Air Port	26.4	27.1	27.9	28.3	27.8	27.7	27.4	27.3	26.9	26.7	26.6	26.4	27.2	26.6	28.0	27.3	26.7	1952-1965
Trang	26.8	27.8	28.7	29.0	28.2	27.5	27.2	27.2	27.0	27.0	26.7	26.5	27.5	27.0	28.6	27.2	27.0	1948-1965
Mean	26.6	27.4	28.2	28.6	27.9	27.4	27.2	27.1	26.8	26.7	26.6	26.4	27.2	26.8	28.2	27.1	26.7	

NOTE:

NE Monsoon = November - February
1st Transition = March - May
SW Monsoon = June - September
2nd Transition = October

Table AD8-2 MONTHLY AND SEASONAL MEAN MAXIMUM TEMPERATURE IN DEGREE CENTIGRADE

Station	Jan.	Feb.	Mar.	Apr.	May	Ju.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year	NE Monsoon	1st Transition	SW Monsoon	2nd Transition	Period
Area 1																		
Changrai	27.6	30.8	33.6	35.1	33.8	32.0	31.0	30.6	31.1	30.3	29.0	26.9	31.0	28.6	34.2	31.2	30.3	1938-1965
Mae Hong-son	29.8	32.5	35.9	37.2	34.9	31.2	30.5	30.5	31.2	31.9	31.3	29.4	32.2	30.8	36.0	30.9	31.9	1943-1965
Chiangmai	29.2	32.1	35.0	36.0	34.3	32.3	31.4	30.8	30.9	30.8	30.1	28.6	31.8	30.0	35.1	31.4	30.8	1937-1965
Mae Sariang	30.8	33.4	36.4	37.6	34.9	31.3	30.6	30.4	31.5	32.4	32.1	30.4	32.7	31.7	36.3	31.0	32.4	1944-1965
Lampang	30.2	32.8	35.8	36.5	34.8	32.9	32.2	31.8	31.5	31.1	30.9	29.5	32.5	30.9	35.7	32.1	31.1	1944-1965
Nan	29.8	32.6	35.5	36.6	35.0	33.1	32.0	31.6	32.0	32.0	31.0	29.3	32.5	30.7	35.7	32.2	32.0	1947-1965
Phrae	30.6	33.1	35.7	37.3	35.2	32.7	31.9	31.6	31.5	31.6	31.2	29.9	32.7	31.2	36.1	31.9	31.6	1952-1965
Uttaradit	32.7	35.1	37.8	38.5	36.1	33.5	32.9	32.5	33.0	33.3	33.1	32.0	34.2	33.2	37.5	33.0	33.3	1940-1965
Tak	31.3	34.6	37.2	38.3°	35.0	32.4	32.1	32.1	31.6	31.1	30.9	30.3	33.1	31.8	36.8	32.1	31.1	1954-1965
Phitsanulok	31.5	33.7	35.9	37.0	35.4	33.4	32.7	32.4	32.2	32.4	32.0	30.9	33.3	32.0	36.1	32.7	32.4	1937-1965
Maesot	31.4	33.7	36.1	37.0	34.3	30.7	29.5	29.3	30.8	31.9	31.7	30.5	32.2	31.8	35.8	30.1	31.9	1937-1965
Phetchabun	32.0	34.0	36.1	37.4	35.2	32.8	31.9	31.3	31.5	32.0	31.9	30.9	33.1	32.2	36.2	31.9	32.0	1950-1965
Bhumiphol Dam	30.0	33.3	36.5	38.2	34.9	32.4	31.8	31.9	30.8	30.8	30.7	29.6	32.6	30.9	36.5	31.7	30.8	1959-1965
Mean	30.5	33.2	36.0	37.1	34.9	32.4	31.6	31.3	31.5	31.7	31.2	29.9	32.6	31.2	36.0	31.7	31.7	
Area 2																		
Loei	29.4	32.0	34.6	36.0	34.1	32.6	32.1	31.5	31.0	30.7	30.1	29.0	31.9	30.1	34.9	31.8	30.7	1954-1965
Udon Thani	30.6	32.6	35.4	36.3	34.6	33.2	32.6	32.0	31.5	31.8	31.2	29.8	32.6	31.1	35.4	32.3	31.8	1937-1965
Naknon Phanom	28.4	30.2	32.9	34.6	33.3	31.4	31.1	30.8	30.7	31.0	30.3	28.7	31.1	29.4	33.6	31.0	31.0	1953-1965
Sakon Na-Khon	29.4	31.4	33.9	35.7	33.8	32.5	32.0	31.5	31.2	31.2	30.5	29.3	31.9	30.2	34.5	31.8	31.2	1947-1965
Mukdahan	29.2	31.7	34.5	35.6	34.2	32.5	32.0	31.6	31.2	31.1	30.1	29.0	31.9	30.0	34.8	31.8	31.1	1948-1965
Khon Kaen	30.5	32.8	35.5	36.5	34.8	33.2	32.6	32.1	31.5	31.4	30.9	30.0	32.7	31.1	35.6	32.4	31.4	1948-1965
Roi Et	30.3	32.3	34.9	35.6	34.2	32.9	32.3	31.8	31.2	31.0	30.8	29.1	32.2	30.6	34.9	32.1	31.0	1943-1965

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year	NE Monsoon	1st Transition	SW Monsoon	2nd Transition	Period
Ubon Ratchathani	31.0	33.2	35.4	35.8	34.1	32.5	31.9	31.5	31.0	31.1	30.6	29.8	32.3	31.2	35.1	31.7	31.1	1843-1965
Surin	31.1	33.5	35.6	36.2	34.7	33.5	32.8	32.5	31.8	31.0	30.5	30.1	32.8	31.3	35.5	32.7	31.0	1948-1965
Nakhon Ratchasima	31.6	34.1	36.1	36.4	34.7	33.6	33.1	32.9	32.0	31.2	30.8	30.1	33.1	33.7	35.7	32.9	31.2	1937-1965
Sap Muang	29.3	31.8	33.6	34.3	33.4	32.0	31.2	30.4	29.8	29.1	28.0	27.6	30.9	29.2	33.8	30.9	29.1	1956-1965
Chaiya-phum	30.0	32.2	34.8	35.8	34.7	32.8	31.7	31.4	30.5	30.4	30.1	29.6	32.0	30.5	35.1	31.6	30.4	1956-1965
Mean	30.1	32.2	34.8	35.8	34.2	32.7	32.1	31.7	31.1	30.9	30.3	29.3	32.1	30.5	34.9	31.9	30.9	
Area 3																		
Nakhon Sawan	32.4	34.7	36.6	37.7	36.0	34.4	33.6	33.3	32.5	32.1	31.8	31.1	33.9	32.5	36.8	33.5	32.1	1939-1965
Lopburi	32.9	34.8	36.4	36.7	35.1	33.4	32.7	32.3	31.6	31.5	31.5	31.5	33 4	32.7	36.1	32.5	31.5	1943-1965
Suphanburi	31.8	34.2	36.4	37.7	35.7	34.3	33.4	32.8	31.8	31.3	30.5	30.3	33.4	31.7	36.6	33.1	31.3	1952-1965
Prachin-buri	32.3	33.8	35.2	36.1	34.5	32.8	32.1	31.9	31.4	31.8	32.0	31.7	33.0	32.5	35.3	32.1	31.8	1952-1965
Khanchana-buri	32.3	34.8	36.6	37.8	35.5	33.4	32.9	32.6	32.3	31.3	30.9	30.8	33.4	32.2	36.6	32.8	31.3	1949-1965
Don Muang	32.3	33.5	34.9	35.5	34.6	33.3	32.7	32.5	31.9	31.5	30.9	30.8	32.9	31.9	35.0	32.6	31.5	1937-1965
Bangkhen	32.2	33.4	34.6	35.4	34.5	33.3	32.8	32.5	31.9	31.3	30.9	30.9	32.8	31.9	34.8	32.6	31.3	1943-1965
Bangkok	32.0	33.0	34.2	34.8	34.2	33.0	32.4	32.2	31.8	31.3	31.0	30.9	32.6	31.7	34.4	32.4	31.3	1937-1965
Aranya-prathet	32.4	34.6	35.9	36.1	34.5	32.8	32.1	32.0	31.7	31.7	31.3	31.0	33.0	32.3	35.5	32.2	31.7	1938-1965
Mean	32.3	34.1	35.6	36.4	35.0	33.4	32.7	32.5	31.9	31.5	31.2	31.0	33.1	32.2	35.7	32.6	31.5	

Area 4																		
Chonburı	31.2	32.1	33.1	33.7	33.1	32.4	31.8	31.6	31.1	31.0	31.0	30.9	31.9	31.3	33.3	31.7	31.0	1945-1965
Sattahıb	33.7	34.2	34.5	34.6	33.6	33.0	32.4	32.8	32.4	32.2	32.4	32.8	33.2	33.3	34.2	32.7	32.2	1938-1965
Chantaburı	32.4	33.0	33.4	33.7	32.6	31.1	30.8	30.6	30.6	31.6	31.5	31.2	31.9	32.0	33.2	30.8	31.6	1938-1965
Khlong Yai	31.4	31.5	32.0	32.8	32.1	30.6	30.4	29.8	29.9	30.9	31.4	31.5	31.2	31.5	32.3	30.3	30.9	1952-1965
Pom Prachunia-chomkıao	30.1	30.9	31.7	32.8	32.6	31.7	31.4	31.5	31.0	30.7	30.2	30.1	31.2	30.3	32.4	31.4	30.9	1956-1965
Koh Sichang	29.8	30.9	31.8	33.3	32.3	32.0	31.3	31.2	30.6	29.9	30.0	29.9	31.1	30.2	32.5	31.3	29.9	1958-1965
Mean	31.4	32.1	32.8	33.5	32.7	31.8	31.4	31.3	30.9	31.1	31.1	31.1	31.8	31.4	33.0	31.4	31.1	
Area 5																		
Hua Hin	29.4	30.6	32.0	32.9	32.9	33.0	32.3	32.3	31.8	30.6	29.9	29.1	31.4	29.8	32.6	32.4	30.6	1940-1965
Prachuab Kırikhan	30.4	31.6	32.7	33.8	33.7	32.6	32.2	32.0	32.1	30.9	30.1	29.7	31.8	30.5	33.4	32.2	30.9	1940-1965
Chumphon	29.9	31.1	32.4	33.5	32.9	31.6	31.2	31.0	30.9	30.5	29.8	29.2	31.2	30.0	32.9	31.2	30.5	1940-1965
Ban Don	30.9	33.0	34.6	35.0	33.8	32.8	32.4	32.5	32.2	31.4	30.1	29.7	32.4	30.9	34.5	32.5	31.4	1937-1965
Nakhon Si Thamma-rat	29.9	31.1	32.4	33.4	33.4	33.3	33.1	32.9	32.7	31.3	29.9	29.2	31.9	30.0	33.1	33.0	31.3	1943-1965
Songkhla	29.7	30.4	31.5	32.7	33.1	33.0	32.9	32.8	32.4	31.3	29.9	29.3	31.6	29.8	32.4	32.8	31.3	1937-1965
Narathıwat	29.6	30.4	31.4	32.4	32.4	32.1	31.8	31.7	31.7	30.6	29.5	29.0	31.1	29.6	32.1	31.8	30.6	1943-1965
Mean	30.0	31.2	32.4	33.4	33.2	32.6	32.3	32.2	32.0	30.9	29.9	29.3	31.6	30.1	33.0	32.3	30.9	
Area 6																		
Ranong	31.0	32.8	33.6	33.6	31.5	30.0	29.9	29.6	29.3	30.0	30.1	30.1	31.0	31.0	32.9	29.7	30.0	1943-1965
Phukot	31.3	32.3	32.9	32.6	31.5	31.0	30.8	30.6	30.2	30.3	30.4	30.6	31.2	31.2	32.3	30.7	30.3	1938-1965
Phukot Aır Port	31.3	32.4	33.0	32.8	31.3	30.7	30.4	30.2	29.8	30.0	30.4	30.8	31.1	31.2	32.4	30.3	30.0	1952-1965
Trang	32.3	34.0	35.4	34.9	32.7	31.7	31.3	31.2	30.9	31.0	30.8	31.0	32.3	32.0	34.3	31.3	31.0	
Mean	31.5	32.9	33.7	33.5	31.8	30.9	30.6	30.4	30.1	30.3	30.4	30.6	31.4	31.4	33.0	30.5	30.3	

NOTE : -

NE Monsoon	=	November	- February
1st Transition	=	March	- May
SW Monsoon	=	June	- Spetember
2nd Transition	=	October	

Table AD8-3 MONTHLY AND SEASONAL MEAN MINIMUM TEMPERATURE IN DEGREE CENTIGRADE

Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year	NE Monsoon	1st Transition	SW Monsoon	2nd Transition	Period
Area 1																		
Chiangrai	11.3	12.4	15.2	19.4	22.0	23.0	22.9	22.7	22.3	20.3	17.2	13.1	18.5	13.5	18.9	22.7	20.3	1938-1965
Mae Hongson	13.9	14.0	16.8	22.1	24.1	23.7	23.4	23.3	23.1	22.1	19.3	15.4	20.1	15.7	21.0	23.4	22.1	1943-1965
Chiangmai	13.3	14.0	16.9	21.1	23.2	23.5	23.3	23.2	22.9	21.5	18.9	14.9	19.7	15.3	20.4	23.2	21.5	1937-1965
Mae Sariang	13.3	13.3	17.1	22.2	24.2	23.7	23.3	23.2	23.3	22.3	19.7	15.7	20.1	15.5	21.2	23.4	22.3	1944-1965
Lampang	13.3	14.8	18.4	22.2	23.7	23.8	23.6	23.5	23.1	21.6	18.6	14.8	20.1	15.4	21.4	23.5	21.6	1944-1965
Nan	12.8	14.7	17.9	21.6	23.6	24.1	23.7	23.6	23.4	21.9	18.7	14.5	20.0	15.2	21.0	23.7	21.9	1947-1965
Phrae	13.0	15.4	18.9	22.5	23.6	23.3	23.2	23.1	23.0	21.7	18.7	14.4	20.1	15.4	21.7	23.2	21.7	1953-1965
Uttaradit	150.0	17.3	20.2	23.5	24.6	24.4	24.1	24.0	23.9	22.6	20.1	16.5	21.4	17.2	22.8	24.1	22.6	1940-1965
Tak	14.2	18.4	23.0	25.6	25.3	24.7	24.5	24.4	23.8	22.4	19.7	15.6	21.8	17.0	24.6	24.4	22.4	1954-1965
Phitsanulok	17.1	19.8	22.5	24.5	24.9	24.6	24.4	24.4	24.5	23.8	21.6	18.2	22.5	19.2	24.0	24.5	23.8	1937-1965
Mae Sot	14.3	16.2	19.3	22.8	24.0	23.7	23.1	23.1	23.2	22.3	19.6	15.6	20.6	16.4	22.0	23.3	22.3	1937-1965
Phetchabun	13.9	17.6	20.5	22.8	23.7	23.5	23.1	23.2	23.2	21.8	18.5	14.7	20.5	16.2	22.3	23.3	21.8	1950-1965
Bhumiphol Dam	16.1	18.7	21.5	24.7	25.0	24.4	24.1	24.0	23.5	22.6	21.0	18.1	22.0	18.5	23.7	24.0	22.6	1959-1965
Mean	14.0	15.9	19.1	22.7	24.0	23.9	23.6	23.5	23.3	22.1	19.4	15.5	20.6	16.2	21.9	23.6	22.1	
Area 2																		
Loei	11.4	14.9	18.1	21.1	22.8	23.3	23.0	22.9	22.6	20.7	17.3	13.4	19.3	14.3	20.7	23.0	20.7	1954-1965
Udon Thani	13.9	17.1	20.5	23.1	24.1	24.5	24.1	24.0	23.8	21.9	19.0	14.9	20.9	16.2	22.6	24.1	21.9	1937-1965
Nakon Phanom	13.9	17.2	20.7	23.3	24.1	24.1	23.9	23.7	23.3	21.1	18.2	14.6	20.7	16.0	22.7	23.8	21.1	1953-1965
Sakon Nakhon	13.0	16.6	20.4	23.1	23.8	24.1	23.9	23.9	23.4	21.2	17.6	14.3	20.4	15.4	22.4	23.8	21.2	1947-1965
Mukdahan	13.7	17.1	20.5	23.5	24.2	24.2	23.9	20.8	23.4	21.3	18.3	14.9	20.5	16.0	22.7	23.1	21.3	1948-1965
Khon Kaen	15 0	18.5	21.7	24.0	24.5	24.6	24.0	24.0	23.7	22.3	19.2	15.8	21.4	17.1	23.4	24.1	22.3	1948-1965
Roi Et	16.2	18.9	22.2	24.3	24.8	24.8	24.4	24.4	24.1	22.3	16.4	16.3	21.6	17.0	23.8	24.4	22.3	1943-1965
Ubon Katchathani	16.6	18.8	21.7	23.8	24.3	24.3	23.9	23.9	23.7	22.3	20.2	17.4	21.7	18.3	23.3	24.0	22.3	1943-1965
Surin	15.9	18.9	21.8	23.6	23.8	23.7	23.3	23.3	23.1	22.3	19.7	16.6	21.3	17.8	23.1	23.4	22.3	1948-1965

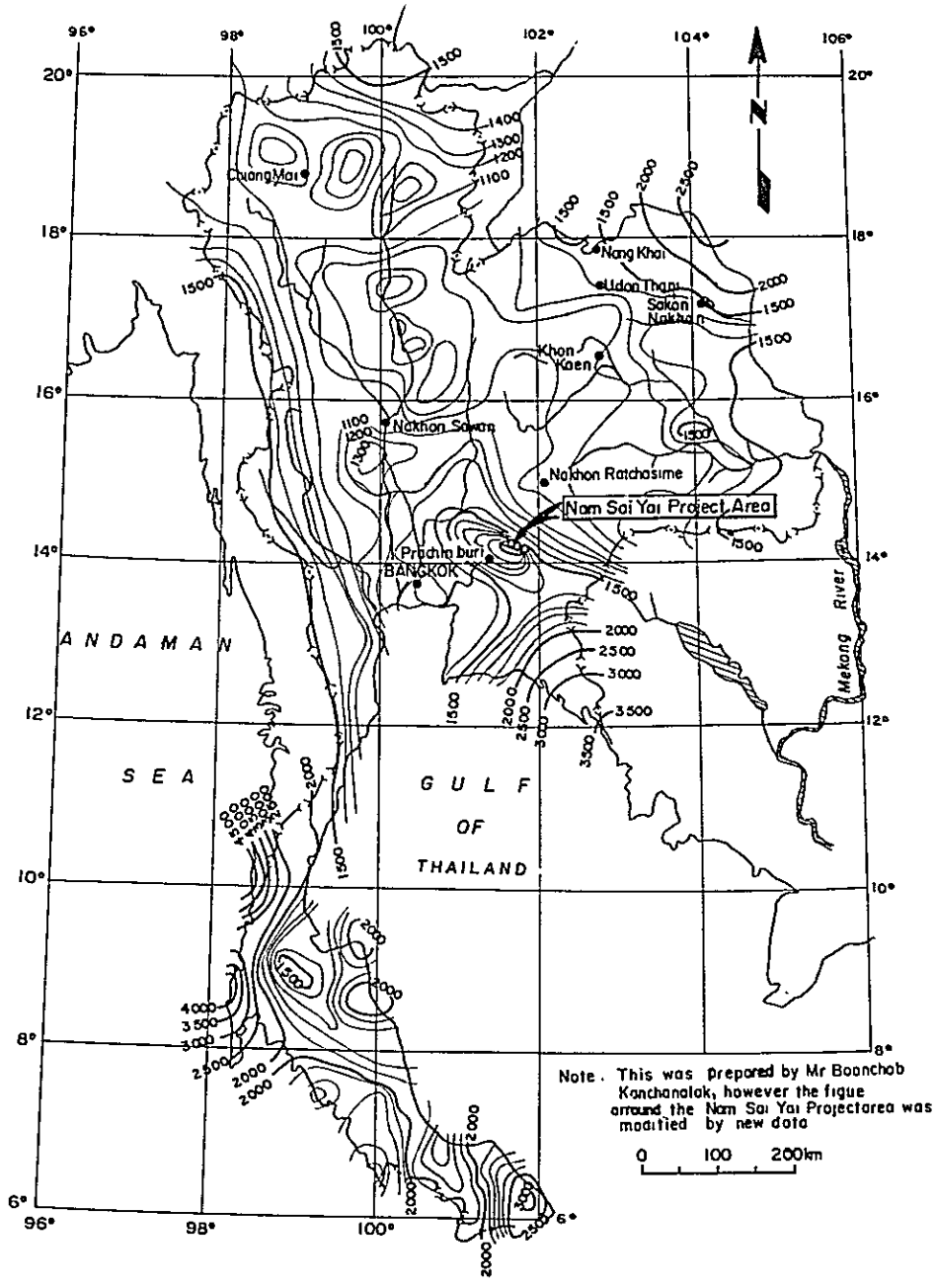
Station	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year	NE Monsoon	1st Transition	SW Monsoon	2nd Transition	Period
Area 5																		
Hua Hin	20.5	22.1	23.4	24.5	24.9	24.8	24.5	24.4	24.0	23.5	22.7	21.2	23.4	21.6	24.3	24.4	23.5	1940-1965
Prachuab Kirikhan	18.8	20.5	21.9	23.5	24.2	24.2	23.9	23.9	23.6	22.8	22.0	20.2	22.5	20.4	23.2	23.9	22.8	1940-1965
Chumphon	19.9	21.0	21.8	23.1	23.6	23.6	23.3	23.5	23.4	23.1	22.1	20.4	22.4	20.9	22.8	23.5	23.1	1940-1965
Ban Don	20.5	20.3	21.1	22.6	23.4	23.3	23.2	23.0	22.9	22.7	22.4	21.4	22.2	21.2	22.4	23.1	22.7	1937-1965
Nakhon Si Thammarat	22.0	21.8	22.1	22.8	23.7	23.4	22.9	22.8	22.8	22.8	22.6	22.3	22.7	22.2	22.9	23.0	22.8	1943-1965
Songkhla	24.0	24.1	24.1	24.4	24.6	24.2	23.9	23.9	23.8	23.8	23.8	23.9	24.0	24.0	24.4	24.0	23.8	1937-1965
Narathiwat	22.2	22.3	22.5	23.1	23.5	23.1	22.8	22.8	22.8	22.8	22.7	22.5	22.8	22.4	23.0	22.9	22.8	1943-1965
Mean	21.1	21.7	22.4	23.4	24.0	23.8	23.5	23.5	23.3	23.1	22.6	21.7	22.9	21.8	23.3	23.5	23.1	
Area 6																		
Ranong	20.4	20.7	21.9	23.1	23.4	23.6	23.1	23.0	22.8	22.4	21.7	21.0	22.3	21.0	22.8	23.1	22.4	1943-1965
Phukot	23.4	23.7	24.1	24.5	24.6	24.5	24.5	24.4	24.0	23.8	23.8	23.6	24.1	23.6	24.4	24.3	23.8	1938-1965
Phukot Air Port	21.5	21.9	22.8	23.8	24.3	24.7	24.4	24.4	23.9	23.4	22.7	22.2	23.3	22.1	23.6	24.4	23.4	1952-1965
Trang	21.3	21.5	22.1	23.1	23.7	23.4	23.1	23.2	23.1	23.0	22.6	21.9	22.7	21.8	23.0	23.2	23.0	1948-1965
Mean	21.7	22.0	22.7	23.6	24.0	24.1	23.7	23.8	23.5	23.2	22.7	22.2	23.1	22.1	23.5	23.8	23.2	

NOTE: -

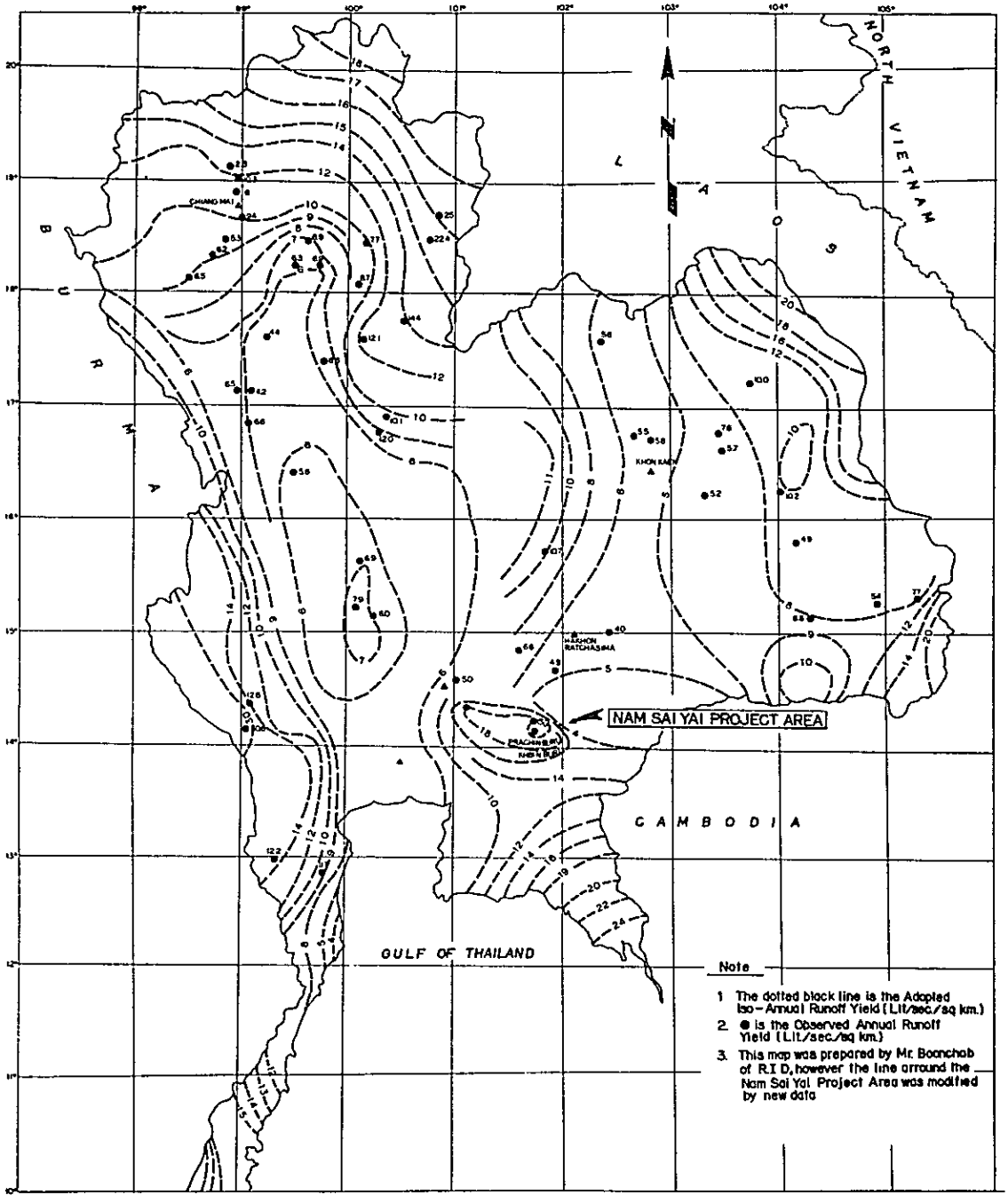
NE. Monsoon = November - February
1st Transition = March - May
SW. Monsoon = June - September
2nd Transition = October

Nakhon Ratchasima	15.4	19.1	21.6	23.2	23.8	23.7	23.3	23.2	23.0	22.0	19.4	16.0	21.1	17.5	22.9	23.3	22.0	1937-1965
Sap Muang	12.2	16.2	18.7	20.6	21.9	22.3	22.1	22.4	21.9	20.4	17.0	13.8	19.1	14.8	20.4	22.2	20.4	1956-1965
Chaiya-phum	16.2	19.3	21.9	24.0	24.4	24.0	23.6	23.6	23.4	22.8	20.4	17.2	21.7	18.3	23.4	23.7	22.8	1956-1965
Mean	14.5	17.7	20.8	23.1	23.9	24.0	23.6	23.3	23.3	21.7	18.6	15.4	20.8	16.6	22.6	23.6	21.7	
Area 3																		
Nakhon Sawan	17.4	21.0	23.6	25.1	25.0	24.7	24.3	24.1	24.2	23.8	21.4	18.0	22.7	19.5	24.6	24.3	23.8	1939-1965
Lopburi	18.8	22.1	23.9	24.8	24.7	24.3	24.0	24.0	24.0	23.6	21.3	19.0	22.9	20.3	24.5	24.1	23.6	1943-1965
Suphanburi	18.3	20.9	23.0	24.9	25.0	24.7	24.4	24.5	24.4	24.3	22.2	19.1	23.0	20.1	24.3	24.5	24.3	1952-1965
Prachinburi	18.6	21.3	23.2	24.3	24.7	24.4	24.1	24.2	24.1	23.9	21.8	19.1	22.8	20.2	24.1	24.2	23.9	1952-1965
Kanchana-buri	16.8	20.2	22.8	24.6	24.9	24.5	24.0	23.9	23.6	22.9	20.7	17.5	22.2	18.8	24.1	24.0	22.9	1949-1965
Don Muang	19.6	21.8	23.5	24.8	25.0	25.1	24.8	24.9	24.8	24.9	23.9	20.9	23.7	21.6	24.4	24.9	24.9	1937-1965
Bangkhen	19.3	21.6	23.2	24.5	24.7	24.8	24.5	24.6	24.4	24.3	23.0	20.0	23.2	21.0	24.1	24.6	24.3	1943-1965
Bangkok	20.1	22.6	24.3	25.3	25.1	24.9	24.5	24.5	24.2	24.1	22.9	20.5	23.6	21.5	24.9	24.5	24.1	1937-1965
Aranyap-rathet	17.5	21.1	23.0	24.0	24.4	24.2	23.7	23.8	23.7	23.1	21.0	18.1	22.3	19.4	23.8	23.9	23.1	1938-1965
Mean	18.5	21.4	23.4	24.7	24.8	24.6	24.3	24.3	24.2	23.9	21.9	19.1	22.9	20.3	24.3	24.3	23.9	
Area 4																		
Chonburi	20.0	22.4	24.2	25.3	25.4	25.6	25.1	24.9	24.5	23.7	22.1	20.2	23.6	21.2	25.0	25.0	23.7	1945-1965
Sattahib	22.3	24.6	25.8	26.6	26.3	26.4	25.8	25.6	25.1	23.9	22.8	21.6	24.7	22.8	26.2	25.7	23.9	1938-1965
Chantaburi	19.3	21.1	22.4	23.4	24.0	24.3	24.0	24.0	23.6	23.0	21.6	19.8	22.5	20.5	23.3	24.0	23.0	1938-1965
Khlong Yai	20.2	21.9	23.2	23.9	24.0	23.7	23.5	23.6	23.2	22.8	21.8	20.7	22.7	21.2	23.7	23.5	22.8	1952-1965
Pom Prachun-lachomklao	19.3	23.0	25.0	26.3	25.8	25.2	24.8	24.2	23.8	23.6	22.5	20.2	23.6	21.3	25.7	24.5	23.6	1956-1965
Koh Sichang	22.5	24.4	25.8	27.2	26.8	27.0	26.3	26.1	25.3	24.7	24.4	23.0	25.3	23.6	26.6	26.2	24.7	1958-1965
Mean	20.6	22.9	24.4	25.5	25.4	25.4	24.9	24.7	24.3	23.6	22.5	20.9	23.8	21.7	25.1	24.8	23.6	

AD- 9 ISOHYETAL MAP OF MEAN ANNUAL RAINFALL
((1906 – 1960))



AD-10 MAP OF SPECIFIC RUN-OFF IN VARIOUS REGIONS OF THAILAND



APPENDIX B

GEOLOGY

CONTENTS

TABLE LIST

FIGURE LIST

B.1 GEOLOGY OF MAIN DAM SITE

TOPOGRAPHY

The width of the river at the dam site is approximately 50 m with the mountainsides on both banks being extremely gently sloped as shown in Fig. B-1. There are flat areas at the middle portions of the slopes on both banks. Also, on both upstream and downstream sides of the dam axis, there are small, shallow gullies with part of the dam axis crossing these gullies. Flow of water can be seen in these gullies only during times of rainfall and it is thought erosive forces are not strong.

Outward from the abutment on the left bank approximately 600 m away, there is a saddle running roughly east-west and the spillway will be provided taking advantage of this saddle. The main stream flows east while just barely meandering.

Approximately 350 m downstream of the dam axis, in the vicinity of the NEA Camp, there is a waterfall approximately 20 m high. Sandstone is exposed at this waterfall while for approximately 1 km downstream, numerous large boulders of sandstone can be seen in the river bed. However, not a small amount of these boulders were originated at the mountainsides on both banks and the retreat of the waterfall is not thought to be very rapid.

GEOLOGY

Geological survey was performed by core borings besides reconnaissance. Also pressurized permeability tests of bed rock were carried out utilizing bore holes. Core borings numbered 17 holes totalling 422.12 m. The results are given in Table B-1.

ROCK SPECIES AND SURFACE DEPOSITS

The rock consists of sandstone, siltstone and alternations of the two which belong to the Korat Formation. The thicknesses of strata and rock qualities are shown in Table B-1.

Deposits are scarce in the river bed section and sandstone layers of II-Zone are exposed in various places. Both banks are covered with surface deposits and there are no outcrops.

There are potholes of from several centimeters to greater than one meter in size in the bed rock of the river bed portion.

STRATIFICATION AND GEOLOGICAL STRUCTURE

The ground strata are roughly layered in orderly manner as shown in Table B-2 and at

times thin layers of clayey material and narrow fractured layers are found along strata planes. The ground strata show extremely gentle undulating folds and so there are local variations in strike and dip although the dip is generally at not more than 10°towards the upstream side.

Although there seem to be no large-scale faults, it appears joints are developed with strike close to north-south and dip which is vertical. These joints exist at intervals of several tens of centimeters to more than a meter and it is presumed the cracks at the mountainside are open. The distribution of the various layers may be seen in Fig. B-2.

WEATHERING

Compared with siltstone, sandstone has higher resistance to weathering action. However, numerous potholes are seen in the river bed section with some weathering at the surface portion, the rock at a depth of about 2 m having been discolored from the original gray to yellow while absorption has been increased. The sandstone at the mountainsides as shown in the log of Core Boring DH-3 has been weathered to a depth of approximately 5 m from the surface of the bed rock and phenomena indicate weakening of cementation.

Siltstone is susceptible to weathering and about 5 m from the surface of the bed rock has become weakened. Also, there is siltstone which is air-slaking found in a thickness of more than 10 m at a great depth at Core Borings DH-1 and DH-2 on the right bank, the layer appearing to be gently sloped into the mountain.

Wherever joints and cracks are opened, weathering has progressed along the joints even if the surface of the bed rock is sound and the siltstone layer underneath has been weakened horizontally in places. This phenomenon when seen from the downstream side of the waterfall approximately 350 m below the dam axis shows a weak stratum sandwiched between sandstone from which infiltration water springs out.

PERMEABILITY OF BED ROCK

Permeability tests under pressure were performed utilizing bore holes. In consideration of design high water level, the water pressure was varied between approximately 2 kg/sq.cm and 7 kg/sq.cm according to the location of the hole and the depth of the cross section tested, starting with low pressures and increasing to high pressures, the permeability being measured at various pressure levels. The measurement figures converted into coefficients of permeability and expressed graphically are shown in Fig. B-3.

According to this figure and test results, it appears the characteristics of the bed rock at the dam site are as ginve below.

(1) Most of the bed rock shows greater permeability with increasing depth.

(2) Radical increase in permeability is not seen even when pressure is increased.

(3) In general, the permeability of holes at higher elevation is great.

(4) Bed rock with extreme permeability is not seen.

(5) In general, rock at depths of more than 10 m are impermeable, but the bed rock at intermediate to high elevations on the right bank show little difference in permeability from the rock at surface portions.

FOUNDATIONS OF STRUCTURES

Based on topography and geological conditions of the dam site, a fill-type dam is recommended. This is because the topography is such that the crest length of the dam is exceedingly long in relation to the dam height, and as there is a saddle on the left bank, the spillway will be provided here. Also, from the standpoint of geology, if it were to be a concrete dam, the quantity of excavation would be increased because of the rock quality while there is little prospect of availability of concrete aggregates sufficient for the dam near the dam site.

When considering a fill-type dam, the outlook for rock materials is not very good either so that it will be desirable to make only the center portion rock-fill while the low, long portions on both sides, the dike portions, should be earth dams. In this case, the rock-fill portion would have sound sandstone spread out from the river bed as a foundation while the earth-fill portion would generally be on siltstone.

Although the rock-fill dam will have sandstone as a foundation, the potholes in the river bed and open joints and cracks in the mountainsides will require excavation, removal and treatment while weak strata below formed by weathering from these portions will require adequate treatment.

The earth dam sections will have siltstone as their foundations. Since the siltstone has poor resistance to weathering, the surface portions have been severely weathered to a considerable depth, the rock having been altered to clay and become loose. This portion would cause lowering of bearing strength and water loss due to permeation of reservoir water so that following excavation and removal the bed rock to serve as foundation should be adequately treated in accordance with the quality of the rock. Also, there is some siltstone with air-slaking properties. This air-slaking siltstone is at part of the right bank and considerations should be given to shutting off from air by shotcreting or other methods immediately upon excavation.

The arrangement and depths of grout holes are determined upon study of permeability

test results, but there will probably be a necessity to carry out supplemental grouting depending on rock quality.

The foundation of the spillway is mainly sandstone which is weathered and generally soft and weak and considerations should be given to prevention of scouring at chute sections.

B-2 POWERHOUSES AND WATERWAYS

The geology of the powerhouses and waterways in the two alternative schemes (Line A and Line B) is composed of the Korat Series of the Mesozoic Era which consists mainly of alternations of sandstone, siltstone and shale. There are at times interbeds of conglomeratic portions in the alternations. The strata are generally layered horizontally and there are no large-scale faults in the vicinities of the waterway routes. The surface portions of bedrock are widely and fairly deeply weathered and have been discolored from the original blue-gray or dark gray to yellow or brown. The weathered sandstone at the surface shows cracks with openings of several centimeters to 30 cm at intervals of several tens of centimeters to several meters developed in a criss-cross manner. These cracks are fairly deep and some go in as much as several meters. Siltstone and shale have poor resistivity against weathering with portions at the surface generally soft. There are even some layers at greater depths which have been subjected to weathering. There also are some siltstones and shales which show air-slaking phenomena.

Although there are no igneous rock, veinlets of calcite can be seen along joints of the rocks.

Thin topsoil consisting mainly of silty fine-grained sand covers the abovementioned bed rock.

No marked springing of water has been recongized in the vicinities of tunnel routes.

B-3 GEOLOGY OF A LINE WATERWAY

TOPOGRAPHY

The A Line Waterway (approximately EL 560 m) is from the No.2 Reservoir passing under a peak of EL 645 m and along a ridge with an elevation of approximately 590 m to the surge tank. The gradient of the slope from the surge tank to the No.2 Power Station is approximately 1/10.

The water discharged from the No.2 Power Station will be stopped by the No.3 Dam and conducted to the No.3 Power Station. The regulating pond formed by this No.3 Dam being located at a tableland (approximately EL 500 m) of a gently undulating topography will be a

broad lake more than 1 km wide.

The headrace (approximately EL 497 m) passes from the intake of the No.3 Power Station located at the southern end of this regulating pond under a peak of approximately EL 540 m and again reaches a surge tank on the slope facing the Nam Sai Yai. The slope of the penstock from this surge tank to the No.3 Power Station is at a gradient of approximately 1/3.5.

GEOLOGY

The core borings made for geological survey of A Line numbered 18 holes, totalling a length of 348.04 m and is indicated in Table B-4 with locations and logs shown in Fig. B-4.

(1) No.2 Power Station

(1) - 1 Headrace Tunnel

The intake is covered with fairly thick overburden of 7.6 m, the basal rock being siltstone having numerous cracks locally to be weak in places but which is generally massive and sound. The tunnel portion consists of alternations of fine-grained and sound gray sandstone, reddish brown or grayish green siltstone and massive and sound gray sandstone and of sound reddish brown or gray siltstone. Although cracks are developed in places to comprise weak portions, the geology is generally good.

(1) - 2 Surge Tank and Penstock

The overburden at the surge tank location is exceedingly thick being 14.37 m according to borings. The bed rock is good consisting of massive, medium-grained sound sandstone. The topsoil of the slope of the penstock is also fairly thick being from 5 to 6 m. The bed rock is siltstone with an interbed of sandstone and is medium-grained to fine-grained and gray in color.

(1) - 3 Powerhouse

According to borings, the overburden is 1.82 m thick underneath which there is a strata of sandstone boulders for approximately 4 m. This is thought to be probably a sand and gravel layer of an old river bed. This layer should become exposed at the face of the slope when the powerhouse foundation is excavated and attention must be paid to stabilization of the overburden and the sand and gravel layer. The bed rock is siltstone. According to borings, there were considerable portions of this siltstone from which cores could not be taken. The reasons for it being impossible to gather cores should be studied and the stability of the powerhouse foundation ascertained.

(2) No.3 Power Station

(2) - 1 Headrace Tunnel

The intake is covered with fairly thick overburden of approximately 5.4 m and the bed rock is siltstone which is in generally good condition although there are fine cracks in places. The tunnel portion has fine cracks also, but is chiefly sound and massive siltstone although there may be sandstone in parts.

(2) - 2 Surge Tank

The surge tank site is yellowish brown to gray fine-grained sandstone under overburden of approximately 4 m and the geology is of generally good condition. The penstock is covered with thick topsoil at higher and intermediate elevations with the depth at thick portions at the higher elevations being approximately 7 m and at the intermediate elevations approximately 9 m. The basal rock consists mainly of alternations of reddish brown to gray, massive, sound sandstone and dark gray massive siltstone, but at intermediate elevations there is yellowish brown to reddish brown, massive and sound siltstone, and although there are fine cracks in places, the rock is generally in good condition. The powerhouse location is covered with topsoil and sand and gravel of approximately 5 m thickness while the bed rock is comprised of fine-grained, massive and sound, gray sandstone. Since both penstock and powerhouse are covered with thick overburden, adequate caution must be given to stabilization of slope surfaces after excavation.

(3) No.3 Dam

The right bank is covered with thick topsoil reaching a depth of approximately 9 m, while the bed rock from a depth of 10 m is sound siltstone in good condition. The overburden is approximately 3 m at the river bed portion while deeper than this is sound sandstone with gray, fine-grained quartz grains. The topsoil of the left bank is approximately 4 m thick with the bed rock being the same sandstone as at the river bed portion, but according to borings there is a portion which is extremely weathered and soft for approximately 1.2 m at a depth of around 7 to 8 m.

B-4 GEOLOGY OF B LINE WATERWAY

TOPOGRAPHY

The B-Line Waterway takes a route which crosses mountainous land with flat peaks of elevations of 460 m to 600 m from the No.2 Reservoir to No.3 Power Station which faces on the Nam Sai Noi. The average gradient of the slops along the waterway route is smaller than 1/40.

The surface of this table land is dissected with shallow valleys in which there is no water-flow in the dry season. Along the Nam Sai Yai and the Nam Sai Noi, there is continuous flow of water throughout the year so that an evergreen appearance is presented with thick growth of large trees, but the vegetation changes to thick bushes at the surface of the tableland.

The waterway route as indicated in Fig. B-5 shows the headrace tunnel (approximately EL 565 m) from the No.2 Reservoir (high water level, EL 591 m) to the No.2 Power Station passes the underground of a tableland with peaks at around EL 600 m with the thickness of bedrocks being generally constant except for the portal sections of the tunnel. In contrast, the headrace tunnel (approximately EL 440 m) from the No.3 Regulating Pond (high water level, EL 495 m) to the No.3 Power Station passes under a ridge with undulations between 520 m and 455 m.

The penstock of No.2 Power Station (length, 900 m) has a flat section approximately 400 m long in the middle with the two end sections being provided on slopes with average gradients of 1/10 joining the tableland of elevation of approximately 600 m and the flat valley which will become the No.3 Regulating Pond. On the other hand, the penstock of No.3 Power Station (length, 900 m) is on a slope which drops directly from an elevation of approximately 560 m to the Nam Sai Noi (approximately EL 195 m at river bed) at an average gradient of approximately 1/3.

The No.2 Power Station will be provided at a gently sloped valley along the No.3 Regulating Pond approximately 500 m northeast of the dam of this pond. The slope behind the power station is not steep. The No.3 Power Station faces the main stream of the Nam Sai Noi. At the back is a relatively steep slope with several steps of cliffs formed of exposed bed rock. This slope is at present in a stable state.

The No.3 Regulating Pond is situated roughly at the center of the tableland area and will be formed in a valley which separates the higher tableland (approximately EL 600 m) and the lower tableland (about EL 500 m). The width of this valley is large with the river gradients of both main stream and tributaries in the reservoir area being exceedingly gentle. The dam is scheduled to be located where two tributaries join the main stream and where the width of the valley is slightly narrowed. The dam will be a rock-fill dam with a crest length of approximately 400 m and a height of approximately 15 m. Both banks at the dam site are gently sloped.

GEOLOGY

The geological investigations carried out for this Project consist of general reconnaissance of the route and core borings comprised of 22 holes totalling 415.13 m in length. The locations of core borings and geological stratifications are shown in Fig. B-6.

(1) No.2 Power Station

(1) - 1 Headrace Tunnel

The tunnel route is composed of siltstone and sandstone and alternations of these rocks with siltstone being distinctly predominent. The rock is usually fresh with sandstone being massive and sound, but the siltstone is susceptible to efflorescence and seen in the core of Boring BB from 32.6 m to 40.0 m (bottom of hole), is broken into small rock fragments of less than 1-cm size. Therefore, in construction of the tunnel,it will be necessary to line sections of rock prone to efflorenscene promptly after excavation. Also, as the siltstone and shale strata have portions in which fractured zones, slickensides or joints are concentrated although they are of small scale, it is considered supports will be necessary over a considerable length.

(1) - 2 Surge Tank and Penstock

The thickness of the surface deposit at the surge tank site is especially great being as much as 8.20 m. The bed rock underneath is softened by weathering down to a depth of about 20 m and there are spots where siltstone and shale have become clay. The bed rock deeper than 20 m is composed of laminated siltstone, but it is generally fresh and core recovery is 100%. It is thought to have sufficient bearing strength as a foundation for the surge tank.

According to Core Boring DD, the topsoil of the penstock site is extremely thin being about 40 cm with sandstone underneath. This sandstone appears to be in the form of boulders and below this sandstone there are strata of sandstone and siltstone which are exceedingly weathered down to a depth of 4.4 m. The weathering degree is lessened with increased depth, but fresh bed rock cannot be recognized until a depth of 8 m is reached. To provide pedestal for the penstock, it will be necessary to excavate rock which has turned to clay such as exists down to 4.4 m.

(1) - 3 Powerhouse

The topsoil at the powerhouse site is generally thin being approximately 2 m according to Core Boring EE. Sandstone predominates with weathering not reaching too deeply, fresh rock being found from a depth of 3.7 m. The sandstone is interbedded with thin layers of siltstone and at places shows a coarse-grained rock facies, but mostly it is fine-grained, massive, and sound rock. Therefore, it is thought the powerhouse can be provided on a stable foundation.

(2) No.3 Regulating Pond and Intake

According to Core Borings U, V and W along the dam axis, the overburden at the abutments on both banks is thick reaching a depth of 5 to 6 m, but at the river bed portion the overburden is thin with bed rock being reached at a depth of about 1 m.

The bed rock at the left bank abutment is sandstone at the top and siltstone at the bottom with weathering found to a depth of approximately 10 m from the surface, most of the rock having become clay. The bed rock deeper than 10 m is generally fresh, but according to Core Boring W, a section for approximately 1 m from a depth of 13.30 m is occupied by siltstone showing efflorescence tendencies.

The river bed portion is chiefly composed of siltstone. This siltstone is interbeded with sandstone layers of about 1-m width and in portions presents a sandy facies. Weathering does not extend deeply, but according to Core Boring V, there is an efflorescence siltstone layer of about 1 m from a depth of approximately 1.2 m.

The right bank abutment bed rock is fine-grained sandstone, and similarly to the left bank, weathering has occurred to a considerable depth, but deeper than 8.65 m from the surface, the rock is fresh.

As a result of these core borings, it is thought there will be no obstacles to construction of the dam if greatly weathered rock is excavated and removed and the bed rock is improved by grouting.

(3) No.3 Power Station

(3) - 1 Headrace Tunnel

The topsoil at the intake site is approximately 4 m thick with the rock below being mainly sandstone. This sandstone is extremely fine-grained and there are places in which alternations with siltstone are seen. Weathering has taken place to a depth of approximately 10 m from the ground surface. Fresh sandstone presents a light gray to gray hue and is massive and sound. In Core Boring I, there is an interbed of efflorescence siltstone at a depth of 19.40 m – 20.0 m and slickensides at 17.90 m and 21.15 m, but bed rock deeper than the weathered strata is fresh and sound.

According to results of core borings made a intervals of 200 m to 500 m along the center line of the headrace tunnel, the topsoil is generally thin being between 1 m and 5 m and from about 10 m from the ground surface the bed rock is fresh. However, with the exception of Core Boring O, siltstone predominates as bed rock. The siltstone is interbedded with soft rock and efflorescence rock strata at places and since resistivity to weathering is poor in comparison to sandstone, the route of the headrace tunnel has been selected at a depth below the bottoms of the core borings.

(3) - 2 Surge Tand Penstock and Powerhouse

The penstock will be provided on a slope of approximately 20 and its length will be 900 m. There are steep cliffs several meters in hight at places along this mountain slope. According to Core Boring R (depth, 14 m) provided at midheight of the slope, below

topsoil of approximately 2.30 m is weathered bed rock to the bottom of the hole with core recovery being extremely poor. Therefore, thorough consideration should be given to topography and geology in selection of locations for pedestal of the penstock.

The topsoil at the powerhouse site is extremely thin, but according to Core Boring T, there is a thick talus deposit. The bed rock underneath the talus deposit is siltstone with weathered layers and efflorescence layers. Also, it appears that the bed rock comprising the mountainside behind the powerhouse is severely weathered. Therefore, in design of the powerhouse, adequate consideration must be given to excavation and stabilization of the slope behind the powerhouse as well as the foundation.

TABLE B-1 Result of core boring on main damsite

Hole name	Location	Elevation of top of hole(m)	L*1	Length of hole (m)	Thickness of overburden(m)	Remarks
1		585.5		20.00	4.71	
2	Right bank	583.5		20.00	6.50	
3				30.00	7.10	
4		560		30.00		
5	River bed	560		30.00		Dam
6		560		29.70		
7		557.15		30.00	6.50	
8		559.87	90°	30.00	4.50	
9		592.62		20.00	7.00	
10		615		35.00	5.40	
11		615		35.00	5.15	
12		576.62		20.00	7.85	
13		569.71		30.00	7.10	
	Right bank					
S-2				10.60	5.60	
S-3				14.82	4.73	Spillway
S-4		604.0		9.36	4.00	
S-5		605		8.14	3.00	
S-6		596.0		9.50	4.00	
S-7		593		10.00	4.00	
Q-1				30.00	3.60	Quarry
Q-2				31.20	3.50	

* L indicates angle of hole

TABLE B-2 Result of core boring on B line waterway

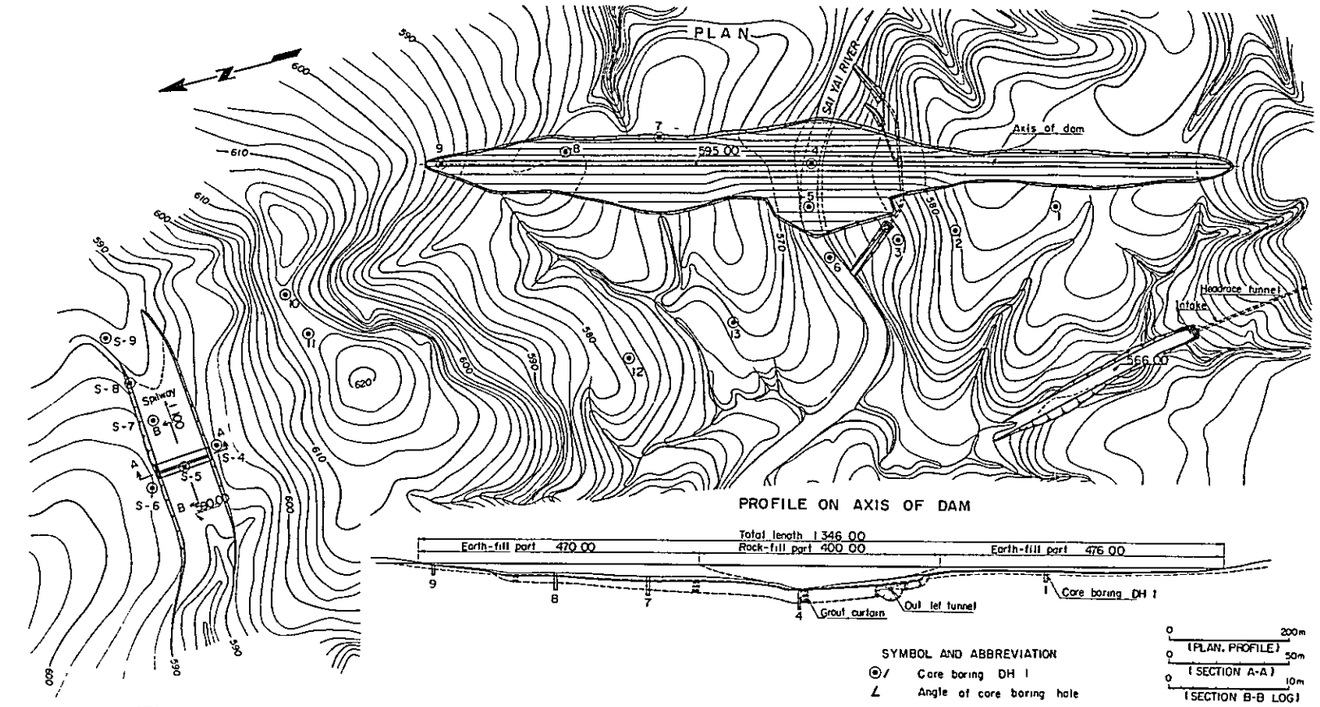
Hole name	Location	Elevation of top of hole (m)	L*1	Length of hole (m)	Thickness of overburden (m)	Remarks
AA	Headrace tunnel			30.20		
BB				40.00		No. 2 PS*2
CC	Surge tank		90°	30.10		
DD	Penstock			15.40		
EE	Power station			15.20		
E				13.90		
F	Former plan		90°	20.55		Out of
G				10.60		present
H				15.60		line
I	Intake			29.35		
J	Headrace tunnel			30.68		
K				15.45		
L				15.40		
M			90°	16.00		No. 3 PS
N				15.63		
O				15.40		
P	Surge tank			11.35		
R	Penstock			14.00		
T	Power station			14.84		
U				15.38		
V	No. 3 Pondage		90°	14.80		Dam axis
W				15.30		

* 1 L indicates angle of hole

* 2 PS indicates power station

Result of core boring on B line waterway

Hole name	Location	Length of hole (m)	Thickness of overburden (m)	Division
A	Intake	20.0	6.5	
B	Headrace tunnel	40.0	7.0	
C	"	30.55	4.73	
D	"	30.0	6.0	No. 2
E	"	40.0	8.0	Power station
F	Surge tank	15.21	14.37	
G	Penstock	11.0	5.65	
H	Power station	15.0	5.7	
J	Intake	18.66	5.42	
K_1	Headrace tunnel	15.22	7.22	
K_2	Surge tank	8.15	4.05	No. 3
L	Penstock	13.0	7.0	Power station
M	"	15.35	3.85	
N	"	15.2	9.13	
O	Power station	15.0	5.07	
P	No. 3 Dam	15.38	8.9	
Q	"	15.0	3.0	Dam axis
R	"	15.32	4.12	
Total		348.04		



HOLE 1 (∠ = ⊥)

▼ 585.5
Casing
Casing drill
Decomposed SANDSTONE,
520-545 White clay
545-1160 Mainly SILTSTONE, with thin beds of SANDSTONE
545-620 Some what clayey
620-1160 Moderately fresh but somewhat soft
1160-2000 Mainly SANDSTONE, moderately fresh, fine grained, greenish grey
Core broken into pieces or grains due to air-slaking
1700-1860 Interbedded with few amount of chocolate colored SILTSTONE

HOLE 2 (∠ = ⊥)

▼ 583.5
Casing drill
55-188 SILTSTONE, grey to green, generally soft
Core broken into pieces or grains due to air slaking
650-80 Clayey bearing SANDSTONE fragments in part
188-200 SANDSTONE, medium grained, fresh

HOLE S-2 (∠ = ⊥)

0-56 Top soil
56-106 SANDSTONE, light brown to brown due to weathering, fine grained soft
Core broken in stiks
Bedding spaced 15 to 20cm apart
82 and 95 Joints dip 80°

HOLE S-3 (∠ = ⊥)

0-473 Top soil
473-49 SANDSTONE fragments, weathered
49-63 No core
63-74 SANDSTONE, reddish, weathered Bedding spaced 3 to 15cm apart
74-103 SANDSTONE, light brown due to weathering, soft
80 CLAYSTONE veneer, 10cm wide
103-1265 SANDSTONE, grey, fine grained, well cemented, fresh
Bedding spaced 5 to 20 cm apart
1265-1482 SANDSTONE, Color is reddish due to weathering in upper portion and varies to grey in lower fine grained, well cemented in general
140 Joint dips 80°
142-146 No core

HOLE S-4 (∠ = ⊥)

▼ 604.0
0-40 Top soil
40-88 SANDSTONE, light brown, fine grained, well cemented, generally fresh
40-655 pebbly
88-91 CLAYSTONE
91-936 No core

HOLE S-5 (∠ = ⊥)

▼ 605
0-30 Top soil
30-814 SANDSTONE, interbedded with CLAYSTONE veneers, light brown due to weathering, well cemented
Bedding spaced 5 to 10cm apart
70-72 No core

HOLE S-6 (∠ = ⊥)

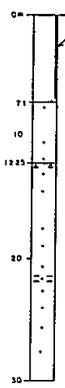
▼ 596.0
0-40 Top soil
40-90 SANDSTONE
40-60 reddish due to weathering, fine grained, soft
Core in sticks
60-75 grey, well cemented,
72-75 pebbly
75-83 interbedded thin beds of CLAYSTONE, reddish to brown due to weathering, soft
83-90 No core
90-95 purple, fine grained, well cemented, having CLAYSTONE on the top portion

HOLE S-7 (∠ = ⊥)

▼ 593
0-40 Top soil
40-45 SANDSTONE, weathered, loose
45-55 No core
55-100 SANDSTONE
55-87 reddish to light brown, weathered, intercalated clay veneer 20 cm wide on the bottom
87-91 No core
91-100 SANDSTONE, light brown, fine grained, well cemented

FIG. B-1
NAM SAI YAI No.2 AND No.3 POWER STATION,
LOCATION AND LOGS OF CORE BORING
IN No.2 DAMSITE AND VICINITY (1-2)

HOLE 3



▼ 569.5

Casing

7.1-30.0 SANDSTONE

7.1-12.25 very fine grained, somewhat unwell cemented, Staind joints are spacing, 20 to 70 cm, average 40cm

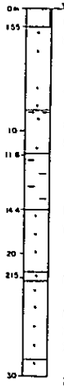
12.25 Crushed zone, 5 cm thick, horizontal

12.25-25.0 medium grained generally well cemented, pale grey, coaly lamina in part

21.55 dark grey SILTSTONE, 20 cm thick

21.90 SILTSTONE, clayey, friable, 40 cm thick

HOLE 4



▼ 560

Casing drill

1.55-11.80 SANDSTONE, medium grained, well cemented

1.55-1.90 Yellow, due to weathering

4.78-4.83 No core, due to closely jointed

8.36-8.69 SILTSTONE, dark grey

8.80 and 9.10 Coaly material

11.8-14.4 SILTSTONE, moderately fresh, dark grey Bedding dips at 45°

14.2-14.3 Hardly crushed, 10cm thick

11.4-30.0 SANDSTONE, medium grained, with thin beds of SILTSTONE in part, fresh

15.2-15.3 sheeted horizontal SILTSTONE, clayey

17.7 Crushed clayey band, 8cm thick

20.3 Clayey seam, 1cm thick

20.3-23.7 Bearing SILTSTONE patches or thin beds in part

21.5-22.3 Friable

28.6-28.7 Broken cone

HOLE 5

▼ 560

2.0-14.4 SANDSTONE, medium grained, massive, with thin beds of SILTSTONE in part

8.3-8.4 SILTSTONE, sheeted and friable, broken into horizontal

9.4-10.0 Coarse grained

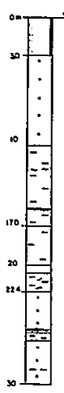
14.2-14.4 SILTSTONE

14.4-19.6 SILTSTONE, moderately sound Core cut into piece to sub-sticks

19.3-19.6 Cracked with clayey materials in some

19.6-30.1 SANDSTONE, interbedded with SILTSTONE SANDSTONE, fresh and sound SILTSTONE, somewhat weathered Core cut into pieces to fragments

HOLE 6



▼ 560

Casing drill

3.0-10.4 SANDSTONE, medium grained, fresh, well cemented, compact

8.65 SHALE, 1cm thick

9.52 and 9.55 Coaly film

10.4-20.2 SILTSTONE

10.4-17.0 Fresh and firm

12.15 Joint with clay film

12.9-14.1 Core cut in 5 to 10cm, due to jointing

15.8 clay, 5cm thick

17.0-20.2 Core cut in 15 to 25cm

18.05-18.15 No core.

18.15, clay, 7cm thick

20.05-20.95 No core

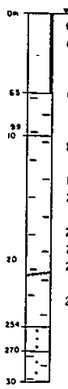
20.95-22.4 CLAYSTONE hardly jointed, clayey

22.4-30.0 Mainly SANDSTONE, with thin beds of SILTSTONE well cemented, compact

24.35 clay, 15 cm thick

28.63 SILTSTONE, jointed

HOLE 7



▼ 577.15

Casing drill

6.5-25.4 SILTSTONE, bearing fine grained SANDSTONE in some parts

6.5-9.9 Core recovery is very poor Some SILTSTON is broken or cracked due to air-slaking

19.6 joint with clay film, dips at 60°.

19.8 Horizontal joint, with clay film

20.4 Minor fault, 2 to 3cm thick, dips at 80°.

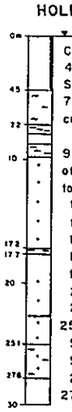
20.9, Clay film dips at 30°.

25.1-25.4 Sleep angled gouge

24.5-27.5 SANDSTONE, fine grained, compact

27.5-30.0 Interbedded SILTSTONE with SANDSTONE, moderately fresh

HOLE 8



▼ 579.87

Casing drill

4.5-7.2 Clay with SANDSTONE fragments

7.2-9.9 SILTSTONE, completely decomposed

8.03-8.66 No core

9.9-25.05 SANDSTONE, moderately fresh, most of core broken in sabsticks to pieces

10.1-10.2 Hardly jointed

15.9-16.1 No core

16.5-16.6 No core

17.2-17.7 CLAYSTONE

17.8-17.9 No core

20.0-25.7 Compact

22.3 Clay, 1 cm thick

25.1-27.83 Interbedded SHALE and SANDSTONE Some SHALE is sheeted

27.4 Clay 1 cm thick

27.83-30.0 Uninspected.

HOLE 9

▼ 592.62

Casing drill

7.0-12.1 Mainly SILTSTONE, developing horizontal cracks. 8.0-8.5 & 11.0-11.5 Clayey, due to decomposition

12.1-20.0 SANDSTONE, fresh, moderately sound to sound, 12.1-16.6 Mainly fine grained

16.6-17.8 Medium grained

17.8-19.0 Coarse grained

19.0-20.0 Medium grained

HOLE 10

▼ 615

0-5.4 Top soil

5.4-7.55 SCLAYSTONE dark grey, fresh, Core in sticks

7.55-8.5 Almost no core

8.5-10.0 SANDSTONE, light grey fine to medium grained soft, with clayey thin bed at the top Core in sticks.

10.0-10.25 No core

10.25-12.4 SANDSTONE, brown to light yellow, medium grained, soft

10.9 Joint dips 80°

12.4-12.9 Clay, 50cm thick

12.9-24.3 CLAYSTONE, greenish to dark grey, fresh Core in sticks

24.3-30.6 SANDSTONE, brown, fine grained, compact, interbedded with thin beds of CLAYSTONE.

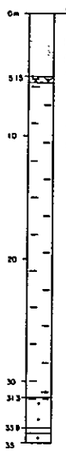
24.5 Joint dips 90°

30.0 Joint dips 80°

30.6-35.0 SANDSTONE, grey, fine to medium grained, compact, interbedded with CLAYSTONE veneers 5 to 10cm apart

32.5 Crack

HOLE 11



▼ 615

0-5.15 Top soil

5.15-5.6 CLAYSTONE, pink due to weathering

5.6-31.3 SILTSTONE, green to dark grey, fresh Core in sticks

10.1 Joint dips 60°

31.3-35.0 Mainly SANDSTONE, light brown, fine grained, compact, fresh, occuring SILTSTONE thin bed at the top Core in sticks

32.0 Joint dips 45°

33.0 Joint dips 60°

33.8-34.2 No core

HOLE 12

▼ 576.62

Casing drill

7.85-17.36 SILTSTONE generally fresh, compact.

15.1-17.36 Somewhat clayey Core is broken with light blow of hammer

17.25-17.36 weathered, jointed, soft

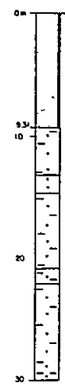
17.36-20.0 SANDSTONE, medium grained, sound

18.55-19.0 Coarse grained

19.0-19.2 SILTSTONE, weathered

19.2 Clayey and jointed in steep angle, 5cm thick

HOLE 13



▼ 569.71

Casing drill

9.31-30.0, SANDSTONE with thin lamina of SILTSTONE

9.3-9.7 Weathered

10.1 SILTST 1cm thick

11.6-11.8 SILTST weathered

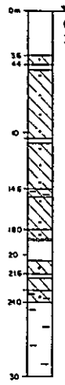
11.75 clayey, 5cm thick

13.2-14.6 SANDST medium grained, well cemented

20.9-22.1 SANDST coarse grained, with coaly lamina spaced 15 to 20 cm

29.32, dark grey SILTST 10 cm thick

HOLE Q-1 (∠ = ⊥)



▼

0-3.6 Top soil,

3.6-24.0 SANDSTONE

3.6-7.7 light brown, soft Upper and lower portions are weathered about 50cm in sphere

4.4-4.9 No core

7.7-10.4 light grey, fine grained rather soft

10.4-10.9 No core

10.9-18.0 light brown, rather soft, Core in sticks

14.6 CLAYSTONE, 70cm wide

16.7-17.1 No core

18.0-24.0 light grey, somewhat weathered, soft

18.9 Clay

18.9-20.5 No core

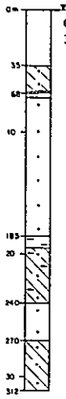
21.6-22.0 No core

23.0-24.0 interbedded weathered CLAYSTONE

23.5-23.6 No core

24.0-30.0 CLAYSTONE, dark grey fresh

HOLE Q-2 (∠ = ⊥)



▼

0-3.5 Top soil

3.5-31.2 Mostly SANDSTONE

3.5-5.0 yellow to brown, medium grained, weathered

5.0-6.8 light grey to yellowish brown, medium grained, occuring clay on the bottom

6.8-7.2 No core

7.2-18.5 light grey, medium grained, fresh Core in sticks

18.5-19.5 SILTSTONE band

19.5-24.0 interbedded SILTSTONE thin bands, light grey, well cemented

24.0-27.0 medium grained, fresh,

27.0-31.32 light grey, weathered

SYMBOL

∠ Angle of cove boring hole

⊥ Vertical

HOLE Q-1 and Q-2 are boring in quarry site

FIG. B-2

NAM SAI YAI No.2 AND No.3 POWER STATION, LOCATION AND LOGS OF CORE BORING IN No.2 DAMSITE AND VICINITY (2-2)

HOLE A

0-65 Top soil
65-76 SANDSTONE fragment
76-175 SILTSTONE, gray, massive, developed fine cracks and broken in pieces in some parts
101 Crushed clay seam 02cm wide, dip 30°.
109 Joints with slickenside dip 30°-35°
131 Zone of closed joints 35cm wide, joint space 2-4cm, dip 45°-80°, irregular with some calcite coating
141 Joints with slickenside dip 30°-35°
148 " " " 35°
153 " " " 35°
147 Many small fragments of carbonaceous matter 10cm wide
175-185 SILTSTONE developed fine cracks and broken in pieces of 05-1cm in size
181 Joint with slickenside dip 20°-35°
199 " " " 30°-35°
76-200 Core in pieces of 10-20cm long

HOLE B

0-70 Top soil
70-94 SILTSTONE, reddish brown, fine grained, massive
Broken in pieces when dry
Grading to SANDSTONE
94-170 SILTSTONE interbeded with SANDSTONE
SILTSTONE, grading to very fine SANDSTONE
Broken in pieces when dry
170-400 SILTSTONE interbeded with very fine grained SANDSTONE
170-190 Reddish brown, fine grained, massive
184-190 Core broken in pieces
190-247 Greyish, fine-grained, massive
Core broken in pieces 1-5cm.
247-270 Grey, some micaceous
266-270 Broken in small pieces
270-400 Greyish, fine-grained, massive
340 Broken in small pieces
380-383 Broken in small pieces

HOLE C

0-473 Top soil
473-74 SANDSTONE, reddish brown, massive
66 Joints dip 75°-80°, irregular, close
74-120 SANDSTONE; grey, fine grained, micaceous, massive, very hard, some parts show slip cleavage of silty layers
78 Joints dip 85°-90°, irregular, rough surface, no coating
120-280 SANDSTONE interbedded with SILTSTONE beds
SILTSTONE, reddish brown with greyish green in some parts, massive
132 Joints with slickenside dip 40°-50°
120-154 Core of 15 to 25cm long
166-199 Core of 4 to 9 cm long
199-230 Core of 6 to 20 cm long
230-280 Core of 20 to 30cm long
SANDSTONE, grey, massive, very hard
263 Joints dip 70°, rough surface, close
280-3055 SILTSTONE, reddish brown and grey, massive, hard
Core mostly in 20cm long
280 Joints dip 40°-75°, smooth close

HOLE E

0-80 Top soil
80-102 SANDSTONE interbeded with SILTSTONE
Light grey, medium grained, massive
102-110 SILTSTONE, light grey or reddish brown, fine grained, very soft
110-286 SILTSTONE interbeded with SANDSTONE
110-132 Reddish brown, fine-grained, very soft, grading to grey SANDSTONE
132-180 Reddish brown, fine-grained, massive, broken in pieces when dry
180-200 Mostly grey, some reddish brown, fine-grained, massive
Horizontal broken in pieces when dry
200-290 Grey or light green, fine-grained, massive
286-307 Light grey SANDSTONE, fine-grained, massive
307-400 SILTSTONE interbeded with SANDSTONE
Grey, fine-grained, massive

HOLE D

0-60 Top soil
60-78 SANDSTONE, yellowish brown, fine-grained, strongly weathered to sandy clay
Core of 10 to 25cm long
78-130 SANDSTONE; grey, massive, hard, interbeded with silty clay and SILTSTONE.
82 Partly shear-crushed zone 10 cm
130-140 Core of 10 to 15cm long
No joint
140-162 Core of 60 to 70cm long
162-210 SANDSTONE, reddish brown, massive, developed numerous fine cracks
Core of 5 to 15cm long
170 Crushed clay seam, 02cm associated with zone of close spaced joint 20cm wide
210-300 SANDSTONE, grey, fine-grained massive, hard.
Core of 30 to 50 cm long
273 Joints dip 80°-85°, irregular

HOLE F

0-1437 Top soil.
1437-1521 SANDSTONE, grey, medium grained, massive

HOLE G

0-565 Top soil
565-110 SILTSTONE interbeded with SANDSTONE
Grey, medium to fine-grained, massive
716-76 Core loss
90 Core broken

HOLE H

0-182 Top soil
182-57 SANDSTONE boulder
255-298 Core loss
368-570 Core loss
57-150 SILTSTONE.
57-70 Decomposed
70-80 Core loss
80-968 Grey, fine-grained, massive, some micaceous
968-1149 Core loss
1149-150 Grey, fine-grained, massive

HOLE J

0-542 Top soil
542-675 SILTSTONE; reddish brown, LIMONITE stained at all cracks
Core of 5cm long
675-708 Core loss
708-130 SILTSTONE, grey, massive, partly developed fine cracks and broken in pieces
73 Crushed zone 5cm wide, contained clay and crushed rock pieces.
80-86 Joints dip 65-70°, Spacing, 10-12cm
114 Crushed seam 05cm
130-1866 SILTSTONE
Core of 15 to 30cm long
157 Joints dip 60-65° irregular, close, clean

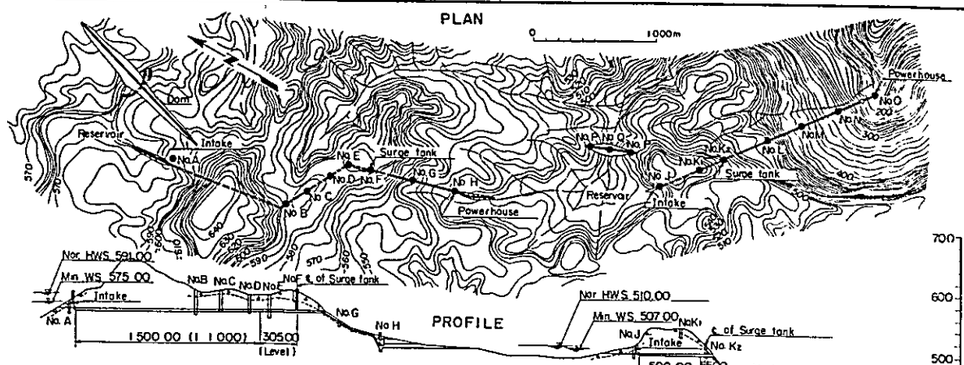
HOLE Kı

0-722 Top soil
722-80 SILTSTONE, reddish brown
80-87 Core loss
87-115 SILTSTONE developed fine cracks, grey, massive
Core of 5 to 15 cm long
115-121 Core loss
121-1522 SILTSTONE, hard
125 Joint dip 50°, smooth, close, clean

HOLE Kz

0-405 Top soil
405-47 SANDSTONE; yellowish brown, fine grained, massive
47-485 Core loss
485-60 Core mostly in 20cm long
60-655 Core loss
655-689 SANDSTONE; fine grained, grey
67 Stickenside dip 30°
689-725 Core loss
725-815 SANDSTONE interbeded with medium grained SANDSTONE, porous

PLAN



HOLE L

0-672 Top soil
672-70 Boulder (SANDSTONE)
70-848 SANDSTONE, grey, fine grained, massive, hard
Core of 15 to 20 cm long
742 Joint dip 80°-85°, opened 01cm smooth
848-920 Core loss
920-130 SILTSTONE interbedded with SANDSTONE
SILTSTONE, dark grey massive, developed fine cracks
101 Joint dip 75°, smooth surface, close, clean
120 Crushed clay seam 01cm
Core of 10 to 20cm long

HOLE M

0-385 Top soil
385-820 Mostly SANDSTONE
SANDSTONE, reddish brown, fine to medium grained
SILTSTONE, greyish green, massive, clayey rich in parts
Core of 8 to 20 cm long
82-966 Core loss
966-986 SILTSTONE, reddish brown
986-1075 Core loss
1075-130 SILTSTONE; reddish brown massive, developed numerous fine cracks
1305-1535 SILTSTONE, yellowish brown, very fine grained, massive, hard
Core of 12 to 18 cm long

HOLE N

0-78 Top soil
78-913 Core loss
913-152 SANDSTONE interbedded with SILTSTONE
SILTSTONE, grey, massive
105-109 strongly weathered SILTSTONE
SANDSTONE, reddish brown, fine to medium grained, massive, hard
913-109 Core mostly in 15cm long
109-136 Core mostly more than 50 cm long
136-152 Core of 10 to 20cm long

HOLE O

0-37 Top soil
37-414 SANDSTONE boulder
414-478 Core loss
478-507 SANDSTONE boulder
507-150 SANDSTONE, grey, fine to medium grained, massive, hard
507-110 Core of 25 to 30cm long
805 Joint dip 70° opened 01cm rough surface
110-150 Core mostly more than 50cm long.

HOLE P

0-622 Top soil
622-89 Core loss
89-101 SILTSTONE, reddish brown or grey, massive, broken partly in pieces
Core broken in small fragments, averages 1 or 2cm
101-1538 SILTSTONE, greyish green, massive, hard
Core mostly in 30cm long
119 Joints dip 80°-85°, irregular, open 01cm
153 Joint dip 85°, smooth, clay veneer

HOLE Q

0-30 Top soil
30-150 SANDSTONE, light grey, fine-grained, with clear quartz grains, massive, very hard
Core mainly more than 50cm long
36 Joints dip 40°, opened 01cm, clayey
547 Joint dip 40°, close, clean
81 Crushed clay seam 02 cm
90 Joint dip 40°, smooth, clean
110 Clay seam 01cm
120 Joint dip 40°, smooth, clean

HOLE R

0-412 Top soil
412-68 SANDSTONE, reddish brown to yellowish brown, with clear quartz grain, massive
Core mostly in 40cm long
68-722 SANDSTONE strongly weathered to soft clay
722-799 Core loss
799-1532 SANDSTONE, light grey, with irregular lamina of SILTSTONE
84 Joint dip 55°, rough surface
89 Joint dip 30°, rough surface
125 Joint dip 80°-85°, irregular opened 02cm

LEGEND

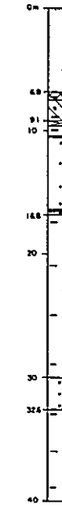
- Top soil
- (Section) (Boring) logs
- SILTSTONE
- Boulder or gravel
- SANDSTONE interbeded with SILTSTONE
- Core loss
- Fractured part
- SANDSTONE
- Boring (plan)

FIG. B-3
NAM SAI YAI No.2 AND No.3 POWER STATION, LOCATION AND LOGS OF CORE BORING ON WATERWAY

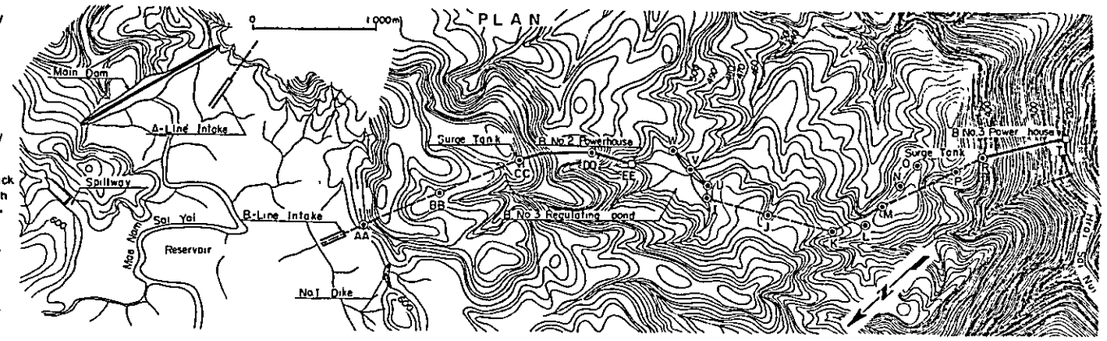
HOLE AA (∠ = ⊥)

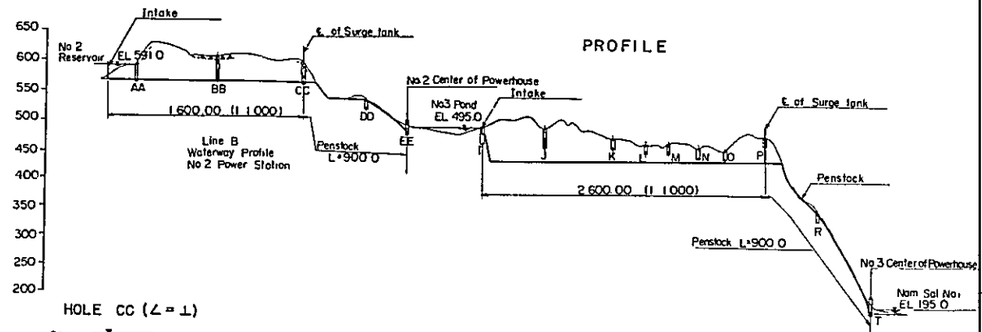
0-6.2 Top soil
6.2-10.0 SILTSTONE, reddish brown, fresh, massive
Developing hair cracks due to dry (air-slaking)
Core is horizontally parted along lamina in pieces 5 to 10cm long
9.0 Joint dips 85° to 90°, close, clean
10.0-12.5 SILTSTONE, grey, less calcareous
10.2 Joint dips 70° to 80°, close, smooth, clean
11.1 Joint dips 70°, close, clean
12.5-18.0 SANDSTONE, with SILTSTONE thin layers, fresh to somewhat weathered massive to poorly bedded
Core cut in 5 to 15cm long
Joints spaced 1 to 16 m apart and dip 80° to 90° Some joints have CALCITE, LIMONITE or MANGANESE veneer up to 0.2cm wide
13.7 Crushed clay veneer 0.2cm thick, parallel to bedding
18.0-20.8 SANDSTONE, grey, fng., fresh to somewhat weathered massive
Core cut in pieces 5 to 10cm long.
20.8-22.2 SILTSTONE, reddish brown, developing numerous hair cracks
Core broken in small fragments, averages 1cm
21.2 Slickenside
22.2-25.2 SANDSTONE interbedded with SILTSTONE beds, fresh to somewhat weathered Core cut in pieces 3 to 10cm long
25.2-28.5 SILTSTONE, decreasing strength by dry
Core broken in to small pieces 3 to 10cm long, due to cracking
26.0-26.5 Core broken in chips 0.5 to 1cm
27.0 Crushed clay, 0.2cm wide
27.4 Slickenside dips 45°
28.5-30.2 SANDSTONE grey, fng., massive to poorly bedded, very sound core is broken along thin silty and carbonitized layers

HOLE BB (∠ = ⊥)

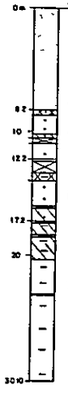


0-6.8 Top soil
6.8-9.1 SILTSTONE, reddish brorrn, pebbly
Pebbles are QUARTZ, cemented with clayey silt and calcareous materials
core in pieces 3 to 6cm long
6.8-7.5 highly wth
7.5-9.1 moderately weathered
9.1-9.6 No core
9.6-10.3 SILTSTONE, pebbly, grading into very fng SANDSTONE, sound, generally fresh Core averages 25cm long
10.3 Crushed seam is consisted of clayey silt 1cm and clay 0.1cm thick
10.3-16.8 SANDSTONE, grey, very fng., with thin reddish brown silty layers, fresh, massive, sound
core cut in 10 to 25cm long
11.8 Irregular crack dips 85° to 90°
14.4 Slickenside dips 25°
16.5 Joint dips 85° is opened up to 0.2cm wide, coated with clay
16.8-30.0 SILTSTONE, reddish brown but partly varied into grey, massive, Core broken into small pieces or grains, less than 1cm in size, due to air-slaking
30.0-32.6 SANDSTONE, grey, fng, massive to poorly bedded, fresh, sound
31.6 with small PYRITE spots
Core cut in 10 to 20 cm long
32.6-40.0 SILTSTONE, fresh to somewhat wth Core broken in pieces and grains, up to 1cm in size
31.1 Joint dips 85° to 90°, irregular
34.0 Slickenside dips 40° to 45°
35.0 Sheared band dips 30°, 8cm wide, joints spaced 1 to 2cm apart, with clayey crushed rocks.
34.0-38.8 Slickensides occur in 5 to 20cm apart



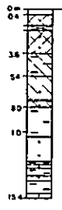


HOLE CC (∠ = ⊥)



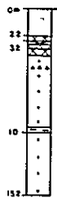
0-8.2 Top soil
8.2-10.5 SANDSTONE, weathered
8.2-8.6 Decomposed, clayey
9.55-10.2 Core in substick to pieces, 30 to 7cm long
10.5-11.0 No core
11.0-12.2 SANDSTONE, core in pieces, 5 to 15cm long Joints are stained
12.2-14.0 SILTSTONE
12.2-14.0 Sheared and weathered Core in fragments to chips
12.45-13.35 No core
14.0-17.2 SANDSTONE, fine grained moderately weathered
14.0-16.0 Core in pieces 5 to 20cm long, averages 10cm.
16.0-16.2 No core.
16.2-17.2 Core in pieces to chips
17.2-17.4 No core
17.4-30.1 SILTSTONE
17.4-20.4 weathered Core in pieces to fragments.
18.35-18.65 No core
20.4-30.1 Fresh Core parts in sticks to pieces along lamination, 5 to 50cm long, averages 20cm
23.05, Air-slaking band, 15cm wide
23.25 Sheared zone, 2cm wide

HOLE DD (∠ = ⊥)



0-0.4 Top soil
0.4-1.3 SANDSTONE, boulder
1.3-1.7 Core loss
1.7-4.4 Fragments of SANDSTONE and SILTSTONE in silty clay, with plant roots
4.4-5.4 SILTSTONE, reddish brown, somewhat weathered
4.4-5.4 Joint dip 80° to 90°, opened up to 0.5cm wide, filled with silty clay and roots
5.4-8.0 SANDSTONE, light yellow to brown, somewhat weathered, poorly bedded
6.6-7.1 Joint dips 80°, opened to 0.1cm wide, filled with clay and LIMONITE coating
7.5 silty clay, 5cm thick
8.0-10.4 SILTSTONE, greenish grey, fresh, massive
10.4-15.4 mainly SANDSTONE with SILTSTONE layers.
SANDSTONE, grey, massive sound core in 10 to 30cm long
11.0-11.5, 12.0-12.4, 13.2-13.6
13.9-14.3 and 12.9-13.5
Joints dip 80° to 90°, smooth or irregular, opened up to 0.2cm, LIMONITE coarting or stained
12.4-12.6, 13.0-13.6 and 14.0-15.0 SILTSTONE layer.

HOLE EE (∠ = ⊥)



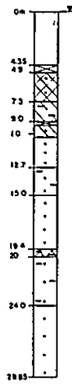
0-2.2 Top soil
2.2-3.2 SANDSTONE, boulder and clay
2.6-2.9 No core
3.2-15.2 SANDSTONE, fine to very fine grained, grey to dark grey, massive, interbedded with dark grey SILTSTONE bands and brecciated SANDSTONE
3.2-3.7 highly to moderately weathered
3.7-15.2 Fresh Core in sticks 20 to 50cm long
3.4-3.6 Joints dip 85° coated with LIMONITE
4.8 Sheared zone, 10cm wide, sheeting spaced 1 to 2cm apart
6.0-7.2 Joint dips 85° to 90°, opened to 0.1cm wide, irregular plane with LIMONITE veneer
9.6-10.0 SILTSTONE band
9.6 Joint dips 45° to 50°, close and clean
10.0-10.2 Core broken into grain 0.5 to 1cm
10.0 Joint dips 70°, clean
10.8 Joint dips 65°, clean, with crushed seam 0.2cm wide
11.8 Joint dips 80°, close, clean
12.5 Joint dips 85° opened to 0.1cm, coated with clay, many slickenside
13.6-14.2 coarse grained,
14.3 Joint dips 45°, fresh

SYMBOL AND ABBREVIATION

AA ◉ Core boring and its name
∠ Angle of core boring hole
⊥ Vertical

FIG. B-4
NAM SAI YAI No.2 AND No.3 POWER STATION, LOCATION AND LOGS OF CORE BORING ON ALTERNATIVE WATERWAY (1-3)

HOLE I (∠ = ⊥)



0 - 4.35 Top soil
4.35 - 4.9 Almost no core
4.9 - 7.3 SILTSTONE, yellow to brown, soft due to highly to completely weathering, very weak in dry strength
6.67 - 9.0 SILTSTONE, grey, finely cracked after dry, somewhat to moderately weathered Core broken in 1 to 3cm chips
9.0 - 9.3 No core
9.3 - 12.7 SANDSTONE, light grey, fine grained with some small patches of SILTSTONE, massive, fresh, sound
- 9.3 Joint dips 85° to 90°, with clayey veneer 0.1 to 0.5 cm thick
- 10.0 Crushed seam, 5cm wide, parallel to bedding, dips 0 - 10°
- 9.3 - 10.15 Core broken in pieces up to 5cm long.
- 10.15 - 12.7 Core broken in sticks to sticksticks to 60cm long

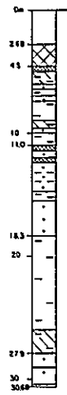
12.7 - 15.0 Mainly SANDSTONE interbeded with thin beds of SILTSTONE, fresh SANDSTONE, grey very fine grained SILTSTONE, grey
Core parts along silty beds in 20 to 30cm long
- 13.5 Joint dips 85° closed, with no coating
- 14.0 Fracture dips 85° to 90°, with no coating

15.0 - 19.4 SANDSTONE fresh
Core broken in sticksticks 10 to 50cm, averages 25cm long
- 15.1 Joint dips 85° to 90°, with no coating
- 16.6 Fracture dips 85°, with no coating
- 17.9 Slickenside dips 30°, with clay veneer

19.4 - 20.0 SILTSTONE, grey, air slacked
20.0 - 24.0 Mainly SANDSTONE, interbedded with SILTSTONE, fresh
Core broken in sticks 10 to 30cm long, except 21.0 to 21.2 in chips and slices
- 20.1 Joint dips 45° to 50°, with clay veneer
- 21.15 Slickenside
- 21.2 and 21.6 Joint dips 80° to 90° LIMONITE stained
- 23.6 Joint dips 85° to 90°, LIMONITE and clay veneer coated

24.0 - 29.35 SANDSTONE, light grey, fine grained, massive, fresh, sound, with limy seams in parts
Core broken in 10 to 100cm, averages 50cm long

HOLE J (∠ = ⊥)



0 - 2.68 Top soil
2.68 - 4.5 Boulders and fragments in silty clay with roots
4.5 - 5.0 No core
5.0 - 11.0 Mainly SILTSTONE interbedded with SANDSTONE
SILTSTONE is grey to greyish green, containing carbonaceous spots, massive, and fresh
- 5.0 - 6.0 Core is broken in pieces along bedding which dips 0° to 10°
- 7.0 Crack dips 85° to 90°, irregular, close, clean
- 9.0 - 9.6 Core broken in pieces
- 9.8 Crack dips 85° to 90°, irregular, close
- 10.6 Slickenside dips 30°

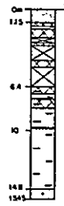
11.0 - 11.4 and 12.0 - 12.4 No core
11.4 - 12.0 SANDSTONE
- 11.5 Joint dips 80° to 85° opened to 0.1 cm, smooth, filled with clay

12.4 - 18.3 Mainly SANDSTONE interbedded with SILTSTONE
SANDSTONE is grey, fine grained, massive to poorly bedded with carbonaceous matter layers, fresh and sound
- 12.4 - 15.6 Core in pieces 2 to 10cm long.
- 15.6 - 18.3 Core in sticks 25 to 60cm long
- 14.5 Joints dip 40° and 45° in erossing, irregular, close, clean

18.3 - 27.9 SILTSTONE,
- 18.3 - 26.0 Core is broken in pieces 5 to 20cm long along lamina dipped 0 to 10°
- 20.0 Irregular and closed crack dips 50° to 55°
- 25.0 Slickenside dips 40° to 45°
- 25.3 Clay veneer.
- 25.6 Joint dips 40° to 45°, closed and clean.
- 26.0 - 27.9 Core is broken in pieces 1 to 10cm long
- 26.1 Slickenside dip 45° to 50°.

27.9 - 30.68 SANDSTONE, light grey fine grained with layers of SILTSTONE and carbonaceous matter in part, fresh, very sound Core is broken in sticks 25 to 40cm long
- 29.0 Carbonaceous matter 0.2cm thick
- 29.7 Joint dips 85°, opened 0.1cm no coating
- 30.3 Carbonaceous matter 1cm thick.
- 30.5 Carbonaceous matter 0.1cm thick

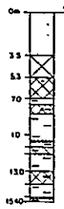
HOLE K (∠ = ⊥)



0 - 1.15 Top soil
1.15 - 6.4 SANDSTONE, highly weathered, Clayey in part, almost no core
6.4 - 14.8 SILTSTONE, brown to grey, massive
- 6.4 - 7.0 Weathered Core broken in peaces 2 to 10cm long.
- 7.0 - 8.4 Generally fresh Core broken in peaces 10 to 20cm, long
- 8.4 - 9.3 Core broken into grains due to air slacking
- 9.3 - 14.8 Core broken in peaces 4 to 10cm long
- 9.8 Crushed zone, 10cm thick, with fragments and silty clay
- 13.0 Joint dips 85°, closed, clean

14.8 - 15.45 SANDSTONE, light grey, fine grained, massive to poorly laminated
Core broken in 15 to 25cm long

HOLE L (∠ = ⊥)



0 - 3.5 Top soil
3.5 - 4.2 SANDSTONE, highly weathered
4.2 - 5.35 No core
5.35 - 7.0 SANDSTONE, fine to medium grained, weathered, decomposed in part Core broken up to 10 cm long
7.0 - 7.4 SANDSTONE, weathered Core broken in pieces 4 to 15 cm long
- 7.4 Joint dips 80° to 85°, LIMONITE stained

7.4 - 15.4 SILTSTONE, generally fresh.
- 7.4 - 8.2 Core broken in fragments to grains due to air - slaking
- 8.2 - 11.0 Massive, Core broken in substick to pieces, 10 to 40cm long
- 9.2 Two joint dip 70°, smooth, clean.
- 10.6 Crushed zone with clay and breccia, 10cm wide

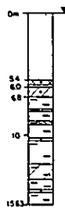
11.0 - 11.5 Jointed. Core broken in fragments
11.5 - 12.8 Somewhat jointed Core broken in substick to pieces, 40 to 10cm long
12.8 - 15.4 Jointed in most part Core broken in peces to fragments, up to 10cm long
- 13.0 - 14.0 Sheared zone, 100cm wide Joints spaced 0.5 to 1cm apart, dipped 80°, smooth and clean
- 14.85 - 15.3 Core broken in pieces 10 to 15cm long
- 15.2 Sheard zone, 16cm wide

HOLE M (∠ = ⊥)

0 - 3.27 Top soil
3.27 - 3.75 SANDSTONE, highly weathered, rock fragments in clay
3.75 - 4.65 no core
4.6 - 6.75 SILTSTONE, yellow to brown
- 4.6 - 5.15 Jointed Core broken in fragments and pieces
- 5.15 - 6.45 Core broken in pieces 10 to 20cm long, except 6.0 - 6.15 in fragments and 6.45 - 6.75 im chips
- 5.2 Joint dips 50°, with LIMONITE veneer 0.1cm wide
- 6.0 Joint dip 65°, with LIMONITE veneer 0.1cm wide

6.75 - 8.0 No core
8.0 - 16.0 SILTSTONE, light grey, massive to poorly bedded, fresh, sound
- 8.0 - 8.4 Jointed Core broken in chips to fragments
- 8.2 - 10.5 Joints spaced 80cm apart, with LIMONITE veneer or coating
- 8.4 - 16.0 Core broken in substicks to pieces, 40cm to 5cm, averages 20cm long
- 9.2 - 9.45 hardly jointed Core in chips
- 11.5 - 11.25 hardly jointed
- 15.4 Sheared zone, 5cm wide

HOLE N (∠ = ⊥)



0 - 5.4 Top soil
5.4 - 6.0 SANDSTONE, boulder in silty clay due to complete weathering, with roots
- 5.8 - 6.0 No core

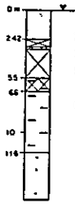
6.0 - 6.8 SANDSTONE, grey, fine grained Core broken in peces to fragments up to 10 cm long
6.8 - 15.63 SILTSTONE, grey to green, massive fresh Core broken in pieces 10 to 15cm long in most part
- 7.8 - 8.0 Core in chips due to jointing
- 8.3 Hardly jointed zone, 5cm wide
- 8.7 - 9.4 Hardly jointed Core in chips
- 9.65 Joint dips 45° close, no coating
- 10.6 Joint dips 80° close, no coating
- 11.4 Joint dips 80° with clay veneer 0.1 cm wide
- 12.2 Joint dips 80° close no coating
- 12.3 - 13.6 Jointed, Core in pieces to 5cm long
- 15.0 Joint dips 45° to 50°, close

SYMBOL

∠ Angle of core boring hole
⊥ Vertical

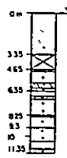
FIG B-5
NAM SAI YAI No 2 AND No.3 POWER STATION, LOCATION AND LOGS OF CORE BORING ON ALTERNATIVE WATERWAY (2-3)

HOLE O (∠ = ⊥)



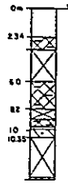
0-2.42 Top soil
2.42 - 5.5 Almost no core
3.0 - 3.2 Rock chips
5.5 - 6.6 SILTSTONE. fragments in silty clay, completely weathered
6.6 - 11.6 SILTSTONE, brownish grey, massive, generally fresh
Core broken in pieces 5 to 20 cm long
8.6 Joint dips 65°, close no coating
9.8 Joint dips 80° to 85°, LIMONITE coated in part
10.4 Joint dips 80°, LIMONITE stained
11.4 Joints dip 80° on 85° spacing 10 to 30 cm apart, with clayey LIMONITE veneer 0.1 cm wide
11.6 - 15.4 SANDSTONE, light grey, very fine grained, massive to poorly bedded, sound.
Core broken in substick to pieces 4.0 to 15 cm long, but parted in slices in some part
12.0 - 12.2 Pebbly, calcareous, with thin carbon lamina

HOLE P (∠ = ⊥)



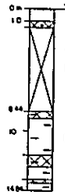
0 - 3.35 Top soil
3.35 - 4.65 No core
4.65 - 6.35 SANDSTONE, yellow to brown, fine grained, massive, with silty clayey beds weathered
Core broken in pieces 10 to 20 cm interbeded with silty clayey beds
4.65 Rock fragments in silty clay, 15 cm thick
5.7 - 6.1 Rock fragments and pieces in silty clay.
6.35 - 6.65 No core
6.65 - 11.35 SANDSTONE, moderately weathered
6.65 - 7.0 Core broken in fragments due to jointing and weathering
7.0 - 10.35 Core broken pieces 5 to 15 cm, averages 10 cm long
7.8 - 9.4 Joints spaced 30 to 50 cm apart, with veneer of LIMONITE or clay, dipped 50° to 80°
8.25 - 8.35, 9.3 - 9.35 and 10.35 - 11.0 No core
11.0 - 11.35 Core broken into chips and grains

HOLE R (∠ = ⊥)



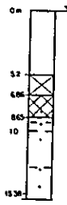
0-2.34 Top soil
2.34 - 3.36 SANDSTONE fragments decomposed SILTSTONE with roots, highly weathered
3.36 - 6.0 No core
6.0 - 9.6 SILTSTONE, reddish brown Core broken in chips and grains, 0.5 to 2 cm long
7.9 Crushed seam, 10 cm wide clayey
8.2 - 9.0 No core
9.6 - 9.75 No core
9.75 - 14.0 SANDSTONE reddish brown, fine grained
Core broken in pieces 5 to 10 cm long, along joints
Joint dip 70° to 65°, coated with LIMONITE
10.55 - 13.8 No core

HOLE T (∠ = ⊥)



0-1.0 Top soil
1.0 - 1.5 SANDSTONE, fine grained, yellow to brown, highly weathered
1.5 - 8.44 Almost no core
2.65 - 3.75, 4.0 - 4.17 and 7.0 - 7.17 weathered SANDSTONE boulders and silty clay
8.44 - 9.0 SILTSTONE, grey, massive, highly weathered
core broken into chips and grains due to wething
9.0 - 14.84 SILTSTONE, reddish brown with irregular shaped grey or green patches, massive
Core broken in pieces 5 to 20 cm long due to drying
12.0 - 13.0 and 14.0 - 14.3 Core broken in chips and grains due to air-staking

HOLE U (∠ = ⊥)

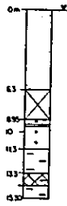


0-5.2 Top soil
5.2 - 6.86 No core
6.86 - 15.38 mainly SANDSTONE
6.86 - 8.65 SANDSTONE and SILTSTONE, boulders and fragments in clayey silt matrix, highly to completely weathered
8.65 - 15.38 SANDSTONE, fine to very fine grained, massive to poorly bedded, intercalated thin beds of CLAYSTONE and pebbly foles in some places, fresh, sound
Core broken in substicks to pieces, 10 to 50 cm, averages 30 cm long
9.1 CLAYSTONE, 0.1 cm wide
9.8 Coaly matter, 1.5 cm wide
12.8 CLAYSTONE, 0.1 cm wide

HOLE V (∠ = ⊥)

0-1.05 Top soil
1.05 SANDSTONE, yellow to brown, fine grained, moderately weathered Boulders ?
Core broken in pieces 5 to 25 cm long, but 2.4 - 2.5 in fragments
2.0 CLAYSTONE, 5 cm wide, with SANDSTONE pebbles and coaly matters
2.3 Jount dips 80° to 85°, LIMONITE stained
2.6 - 14.8 Mainly SILTSTONE, grey massive, sound
2.6 - 7.6 Core broken in pieces 10 to 15 cm long Joints are spaced 20 to 60 cm apart varying 50° to 90° in dip, and some are stained by LIMONITE
7.6 - 8.9 SANDSTONE, light grey, fine grained, massive, containing small pieces of LIGNITE Core broken in 10 to 35 cm long
8.9 - 14.8 SILTSTONE, fresh Core broken in 10 to 60 cm long in most portion
11.9 - 13.1 Core in pieces to chips.
12.6 Joint dips 45°, with veneer of clay and LIMONITE, up to 0.2 cm wide
14.6 Slickenside dips 45°

HOLE W (∠ = ⊥)



0-6.3 Top soil
6.3 - 8.95 No core
8.95 - 9.3 SANDSTONE fragments
9.3 - 9.45 No core
9.45 - 11.3 SANDSTONE, grey to yellow, medium grained, massive, fresh
Core broken in pieces to stick 10 to 70 cm long
9.5 Joint dips 85° to 90° with clayey LIMONITE coating, to 0.2 cm wide
11.3 - 16.3 SILTSTONE, grey, massive to faint bedding, fresh
Core broken in pieces to slices, 2 to 20 cm long, along horizontal layering.
13.3 - 14.3 Core broken in chips due to air-sticking

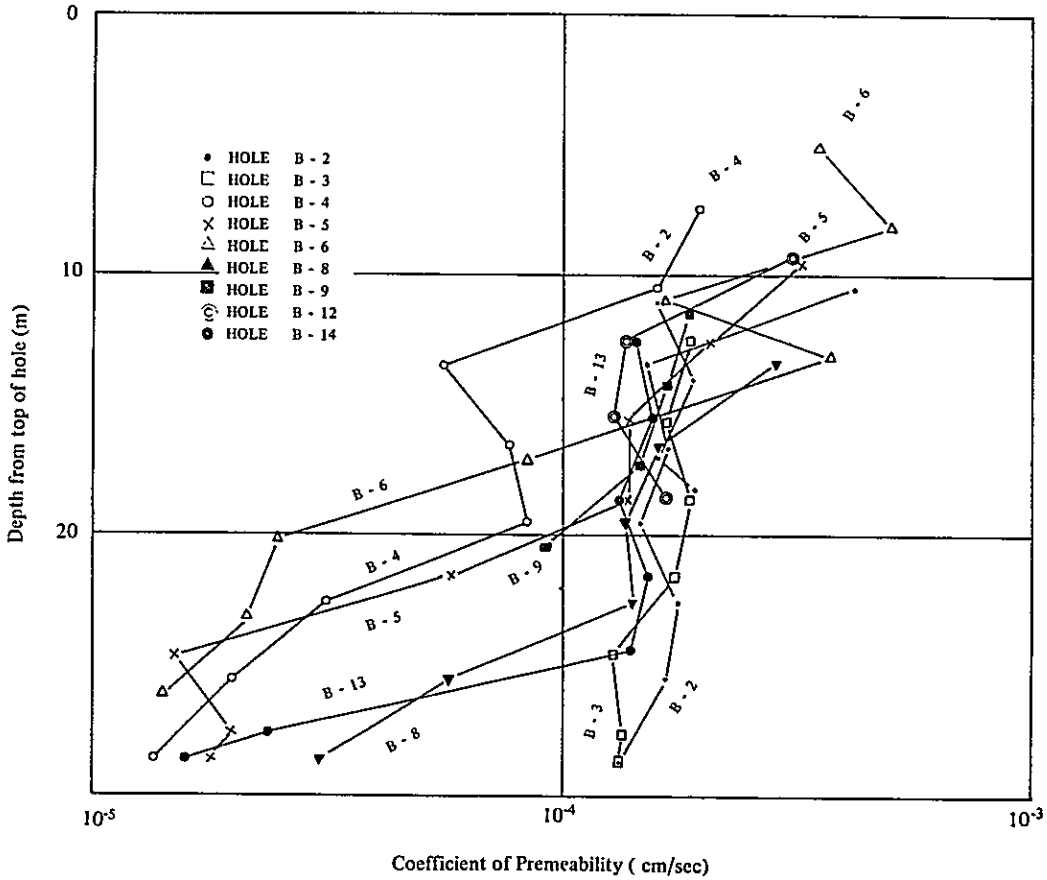
SYMBOL

∠ Angle of core boring hole
⊥ Vertical

FIG B-6

NAM SAI YAI No.2 AND No 3 POWER STATION, LOCATION AND LOGS OF CORE BORING ON ALTERNATIVE WATERWAY (3-3)

FIG. B-7 SAI YAI NO.2 DAM SITE WATER PRESSURE TEST ON FOUNDATION



APPENDIX C

CONSTRUCTION MATERIALS

CONTENTS

TABLE LIST

FIGURE LIST

CONSTRUCTION MATERIALS

C.1 OUTLINE

The materials described herein are mainly the impervious materials (soil materials impervious core) for the No.2 and No.3 dams, but semi-pervious materials (filter), rock-fill materials and concrete aggregate necessary for construction of the spillway, waterways and powerhouses will also be briefly described. The materials investigations for the present study were chiefly for the purpose of reconnaissance and confirmation of the areas proposed in the preceding reconnaissance study. For soil materials, 13 test pits, each about 2 m deep, were excavated in were excavated in the 4 areas, A,B,C and D indicated in Fig. C-1. One sample was taken from each test pit to obtain a total of 13 samples. Soil tests were conducted by consignment to Chulalongkorn University in Bangkok. Of the 13 samples, 7 representative ones were selected and some amount of supplementary tests were performed at the Civil Engineering Laboratories of the Electric Power Development Co.

The test results are shown in Table C-1 and Table C-2. The particle size distribution curves are given in Fig. C-2 and compaction and permeability curves in Fig. C-3.

C.2 IMPERVIOUS MATERIALS

The soil available at the project site and its vicinity is residual soil with sandstone mainly as mother rock. The soil obtained in the present study can be broadly classified into the 4 types indicated in Fig. C-2 of these. Type 2 shows a particle-size distribution favorable for impervious core material and it will be desirable to embank this at or near optimum water content. It was confirmed that this Type 2 soil existed in Area A and Area C. The vicinities of these areas are relatively flat terrain with gentle undulations and this type soil is distributed here in depths of up to 2 m or more. Therefore, it is estimated that the amounts of soil required for both the No.2 and No.3 dams can be gathered areas within 2 or 3 km of the center of the dams. However, for each dam, it will be desirable for the soil to be gathered from one location as near as possible to the dam. Consequently, in final selection of borrow areas, it would be desirable to conduct further surveys to assertain whether better materials exist and if so the extent of distribution and to carry out tests required for design and work control.

C.3 OTHER MATERIALS

Pervious materials will be collected at the downstream left bank side in the case of the No.2 dam, and in vicinity of the dam in the case of the No.3 dam. It will be possible to apply almost all of the excavation muck from the various structures for use as this type of material. However, it will be necessary for further investigations to be made to discover material of good quality, confirm the quantity and as a result of the further detail data will be obtained, the dam can be reexamined in the most economic one.

Regarding concrete aggregates, the sand deposited by the Huai Yang River which joins the Sai Yai River approximately 5 km downstream of its confluence with the Sai Noi River will be used as fine aggregate. As for coarse aggregate, this will be purchased from crushing plants scattered throughout the district around Kabin Buri. Further investigations are necessary concerning quality, grading and available quantities of these concrete aggregates.

TABLE C-1 Summary of Compaction and Permeabiuty Test Results (1/2)

Area	Sample		Soil Classification		Water Content (%)	Specific Gravity	Atterberg's Limit			Gradation (%)		
	No.	Depth(m)	Unified	Revised PR.			LL	PL	PI	-4.8mm	-0.4mm	-0.075mm
A	1	0.5-1.5	SC(CL)	A-4(2)	10.45	2.73	26.94	19.47	7.47	72.5	69.0	45.0
	2	1.8	CL	A-4(8)	15.85	2.63	30.60	20.91	9.69	100.0	99.5	75.0
	3	0.4-1.0	CL	A-7-6(6)	11.31	2.71	42.55	26.49	16.06	76.0	53.0	51.0
	4	1.0-1.8	CL	A-7-6(13)	18.55	2.63	45.74	26.00	19.74	100.0	94.5	82.5
	7	0.4-2.0	MH	A-7-5(13)	17.05	2.77	50.78	33.19	17.59	93.0	82.5	80.0
B	11	0.4-1.7	CL	A-4(8)	18.45	2.63	29.39	20.14	9.25	100.0	99.0	92.0
	12	0.6-1.6	-	-	7.39	2.67	25.08	-	-	90.0	86.5	77.5
	13	0.5-1.9	CL	A-6(9)	17.18	2.71	35.39	22.44	13.15	99.2	87.0	81.0
C	21	0.5-1.8	-	-	11.07	2.62	-	-	Non-Plastic	90.0	90.0	53.5
	22	0.5-1.8	ML	A-7-6(6)	14.05	2.78	42.67	27.68	14.99	93.0	67.0	55.0
	23	0.4-2.0	ML	A-6(9)	13.32	2.83	39.47	26.11	13.36	98.0	81.5	72.0
D	31	0.4-1.7	CL	A-6(9)	11.11	2.72	34.21	22.07	12.14	97.5	86.0	83.6
	32	0.4-1.8	GM(ML)	A-6(4)	11.09	2.74	39.93	27.19	12.74	61.0	56.5	48.5

TABLE C-1 Summary of Compaction and Permeability Test Results (2/2)

Area	Compaction Test		Permeability Test			
	Optimum Water Content (%)	Maximum Dry Density (ton/m^3)	Optimum Water Content (%)	Coefficient of Permeability at opt. (cm/sec)	Water Content(%)	Minimum Value of Permeability Coef. (cm/sec)
A	15.10	1.778	15.10	4.5×10^{-6}	17.80	9.7×10^{-7}
	15.50	1.760	15.50	2.3×10^{-6}	17.80	1.03×10^{-6}
	17.70	1.786	17.70	1.0×10^{-7}	20.70	2.1×10^{-7}
	21.40	1.640	21.40	9.0×10^{-7}	24.20	1.5×10^{-7}
	22.70	1.680	22.70	5.5×10^{-7}	24.80	1.9×10^{-7}
B	18.20	1.673	18.20	1.1×10^{-5}	21.50	3.5×10^{-7}
	13.00	1.852	13.00	5.2×10^{-6}	14.80	1.4×10^{-6}
	20.60	1.668	20.60	1.0×10^{-6}	22.50	4.5×10^{-7}
C	13.00	1.779	13.00	1.2×10^{-4}	16.00	4.5×10^{-6}
	20.20	1.668	20.20	-	-	-
	21.60	1.650	21.60	1.1×10^{-6}	24.00	2.0×10^{-7}
D	16.80	1.770	16.80	1.0×10^{-6}	18.70	6.5×10^{-7}
	15.10	1.863	15.10	4.0×10^{-7}	16.80	1.8×10^{-7}

TABLE C-2 Summary of Particle Size Distribution Test Results

Sample No.	Sample Depth(m)	Soil Color	Soil Classification		Water Content (%)	Specific Gravity	Atterberg's Limit			Max. Grain Size (mm)	Gradation				Remarks
			Unified	Revised P.R			LL	PL	PI		-4.8mm (%)	-0.4mm (%)	-7.5 (%)	-5 (%)	
21	0.5-1.8	reddish yellow	SC-SM (LL-ML)	A-4(1)	9.1	2.670	23.8	17.2	6.6	40	77.0	76.4	41.9	13.0	Sandy Silt
12	0.6-1.6	yellowish red	CL	A-6(7)	7.3	2.716	32.0	19.6	12.4	20	75.3	70.7	63.5	17.0	Silt with Rock Fragment
11	0.4-1.7	dark brown	CL	A-7-6(14)	18.2	2.678	47.9	26.2	21.7	10	99.5	98.8	92.0	35.5	Silt
23	0.4-2.0	reddish yellow	CH	A-7-5(16)	13.9	2.813	60.1	30.4	29.7	20	87.3	70.8	65.8	33.0	Silty Clay
32	0.4-1.8	reddish brown	GC(CH)	A-2-7(3)	12.1	2.916	53.8	28.6	25.2	40	48.7	43.9	34.1	14.5	Laterite
22	0.5-1.8	reddish brown	CH	A-7-6(15)	14.5	2.876	60.0	29.9	30.1	40	73.3	61.7	57.0	27.0	Clay with Rock Fragment
7	0.4-2.0	reddish brown	CH	A-7-5(20)	18.0	-	75.3	34.6	40.7	20	85.2	75.6	72.8	33.5	

FIG. C-1 SOIL MATERIALS EXCAVATED AREA

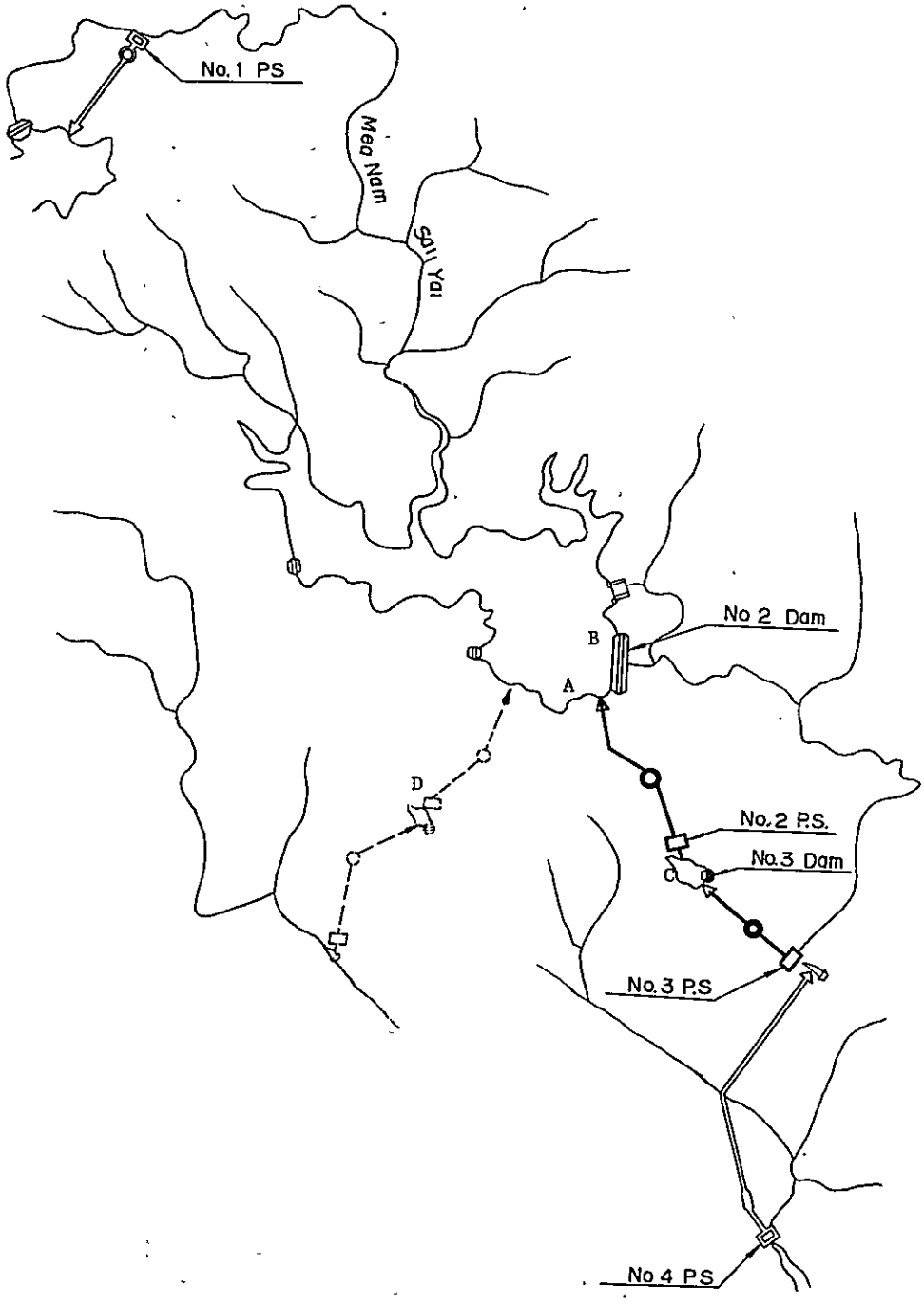
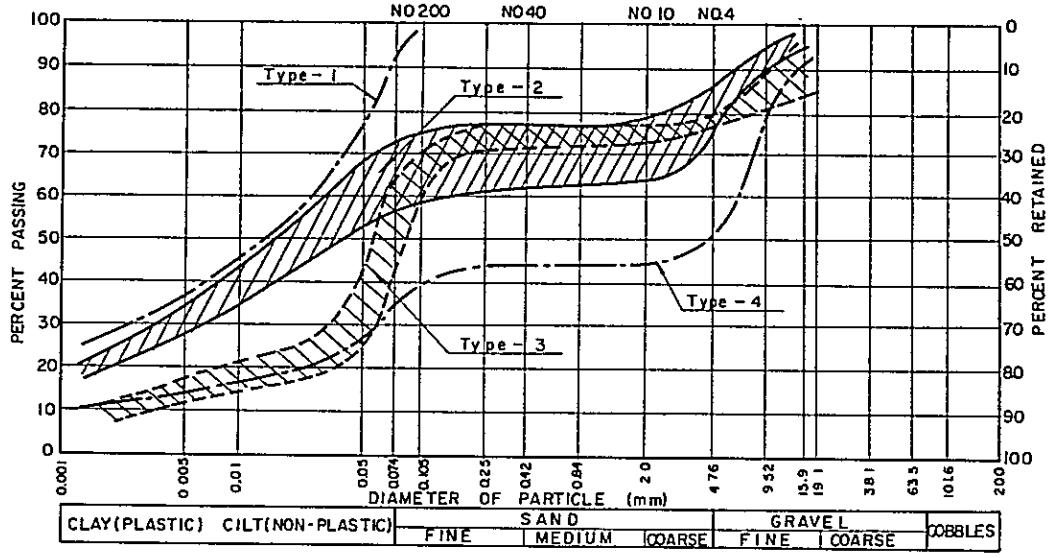


FIG. C-2 PARTICLE SIZE DISTRIBUTION CURVES



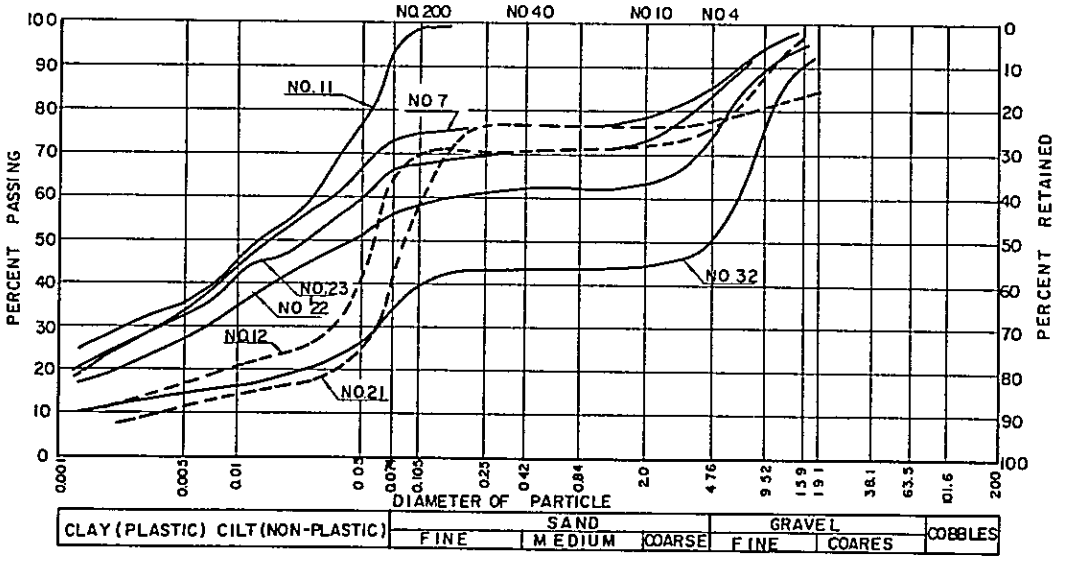


FIG. C-3 (1) COMPACTION AND PERMEABILITY CURVES

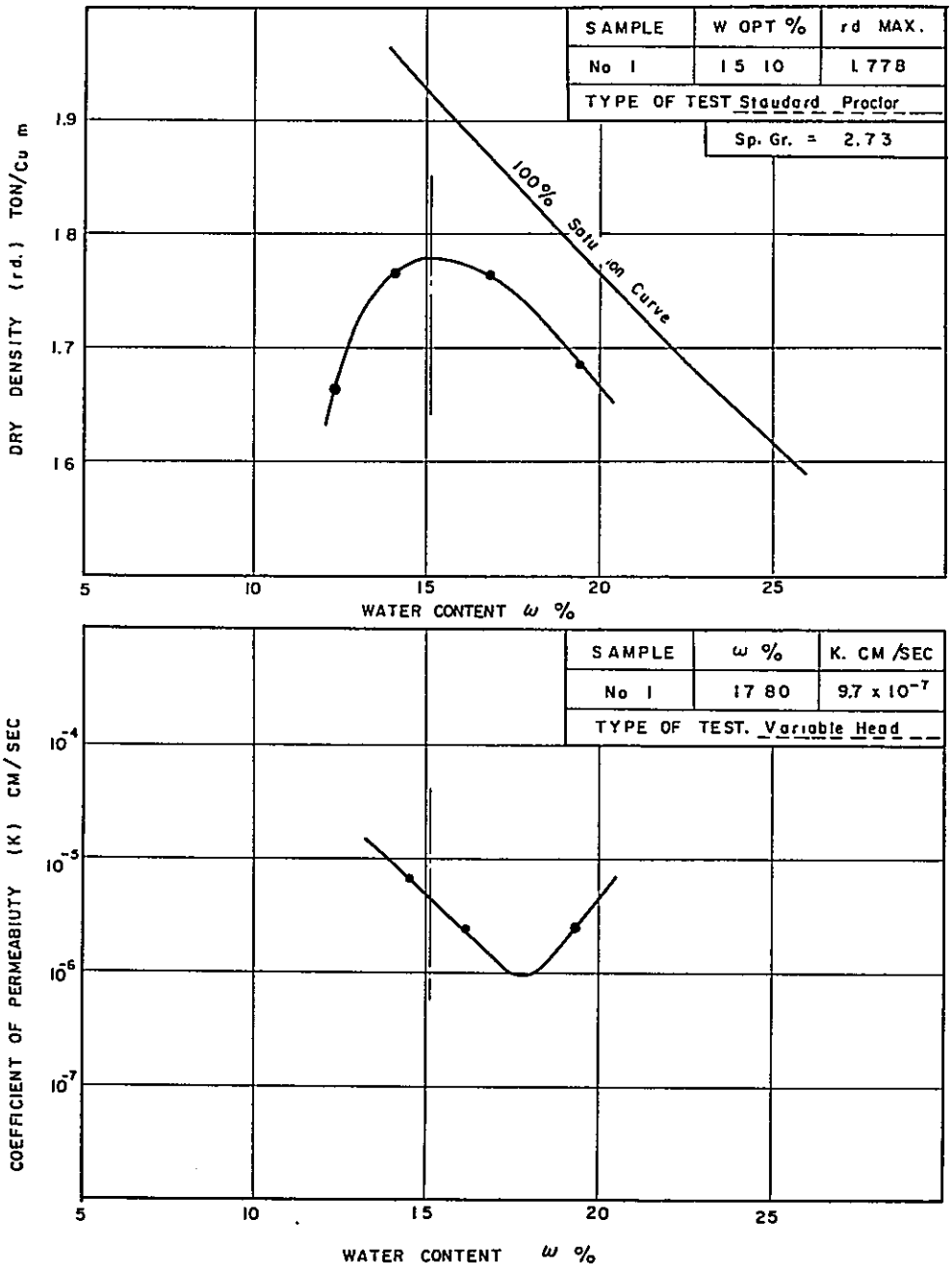


FIG. C-3 (2) COMPACTION AND PERMEABILITY CURVES

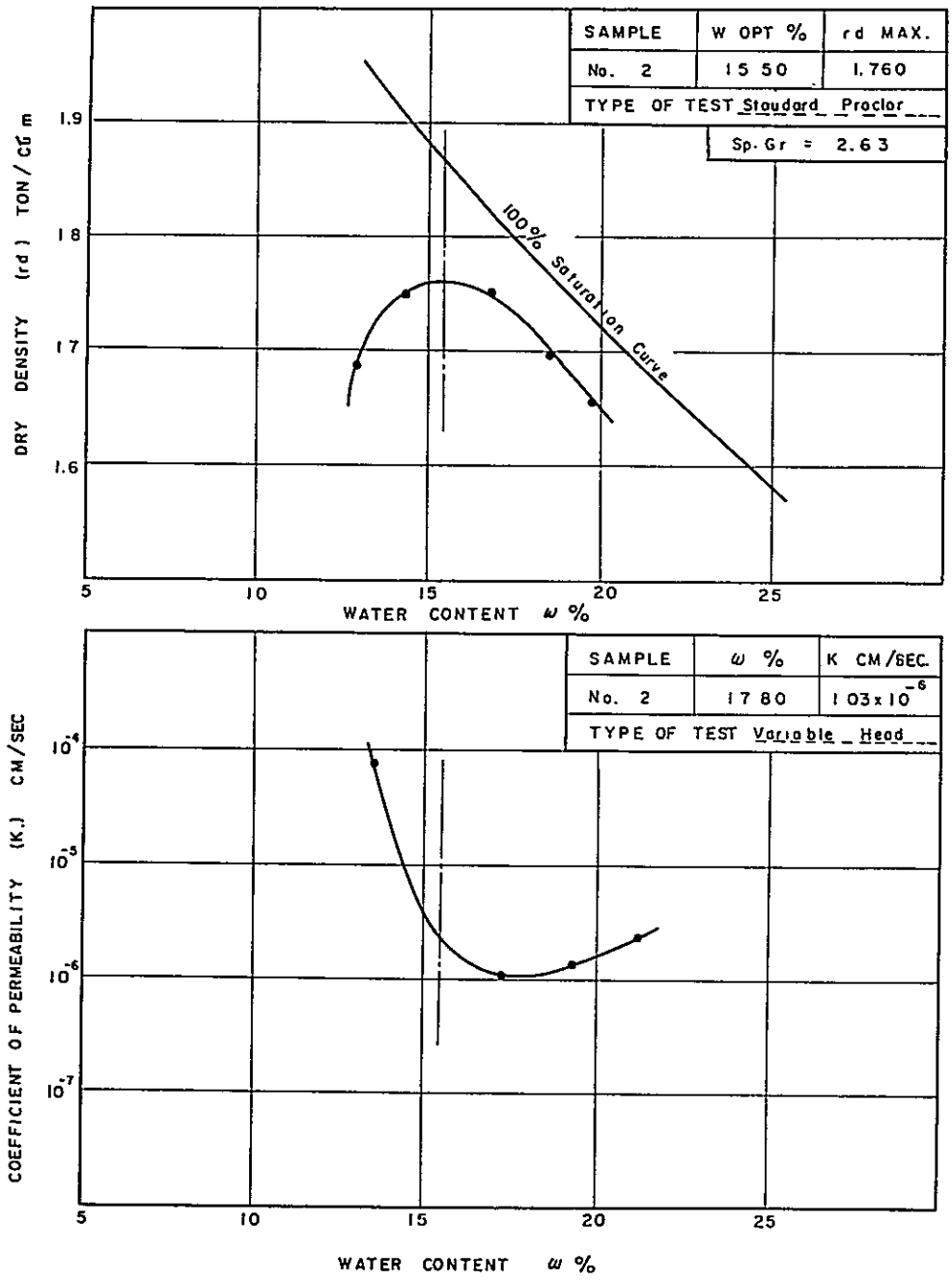


FIG. C-3 (3) COMPACTION AND PERMEABILITY CURVES

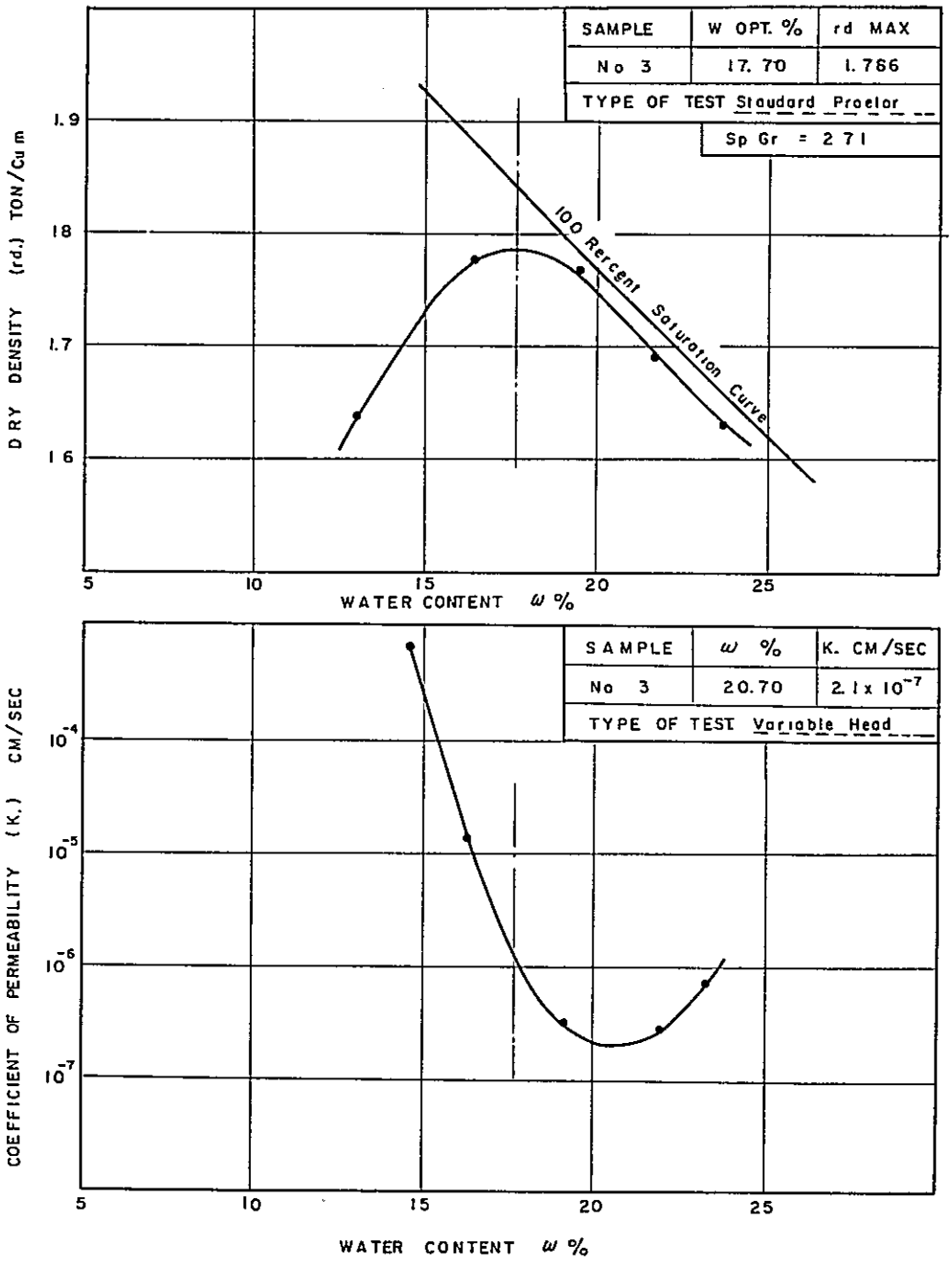


FIG. C-3 (4) COMPACTION AND PERMEABILITY CURVES

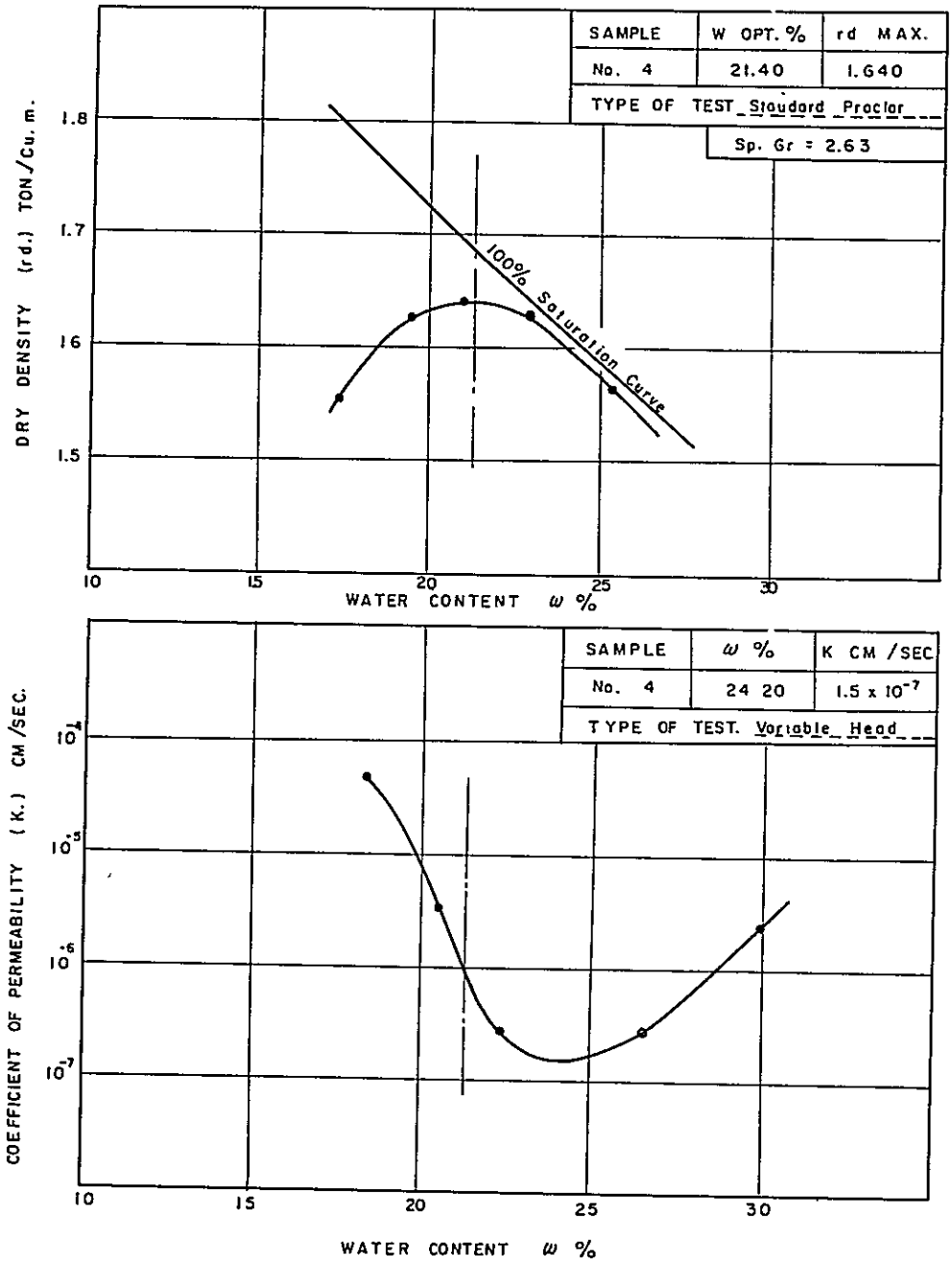


FIG. C-3 (5) COMPACTION AND PERMEABILITY CURVES

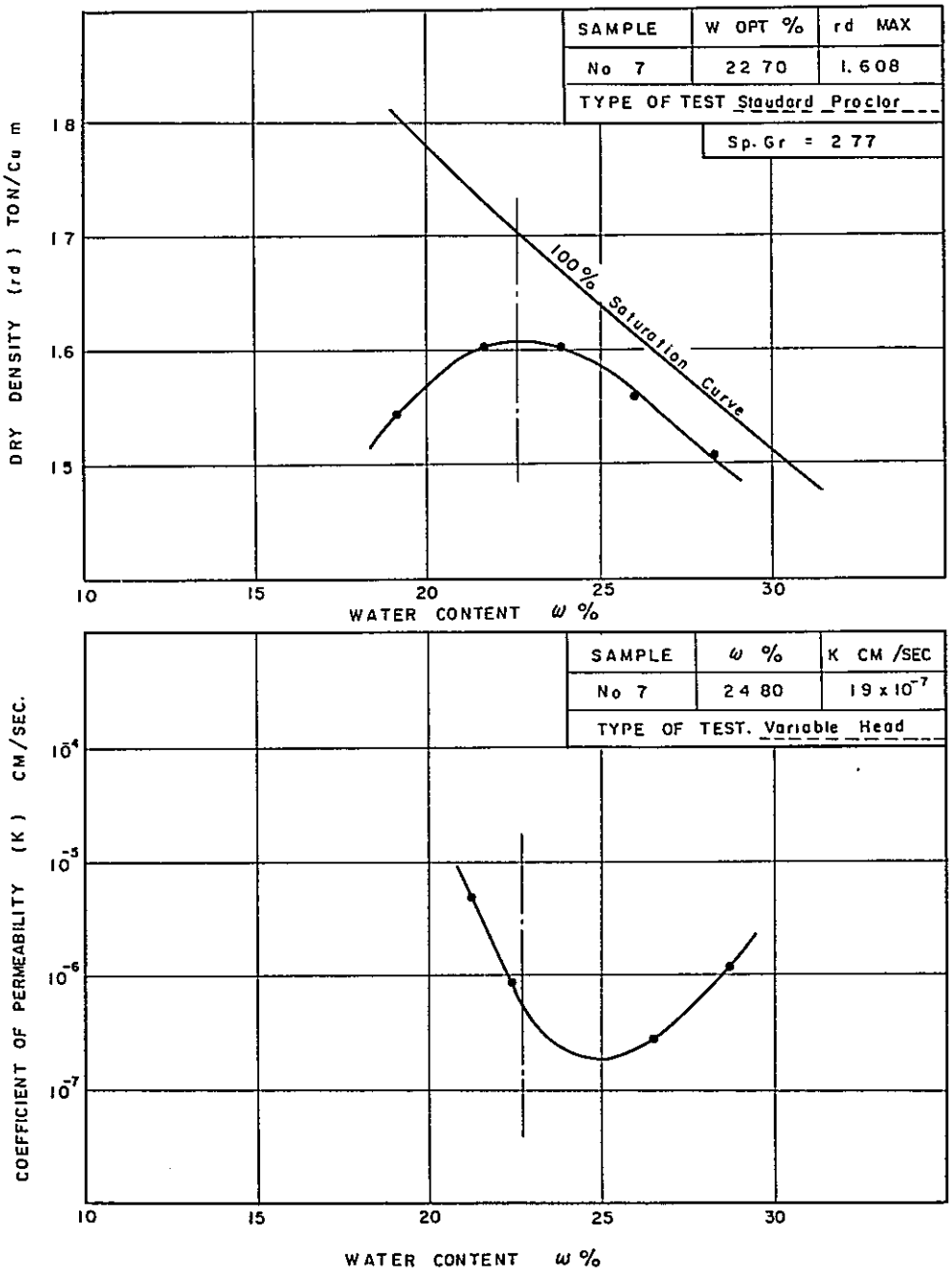


FIG. C-3 (6) COMPACTION AND PERMEABILITY CURVES

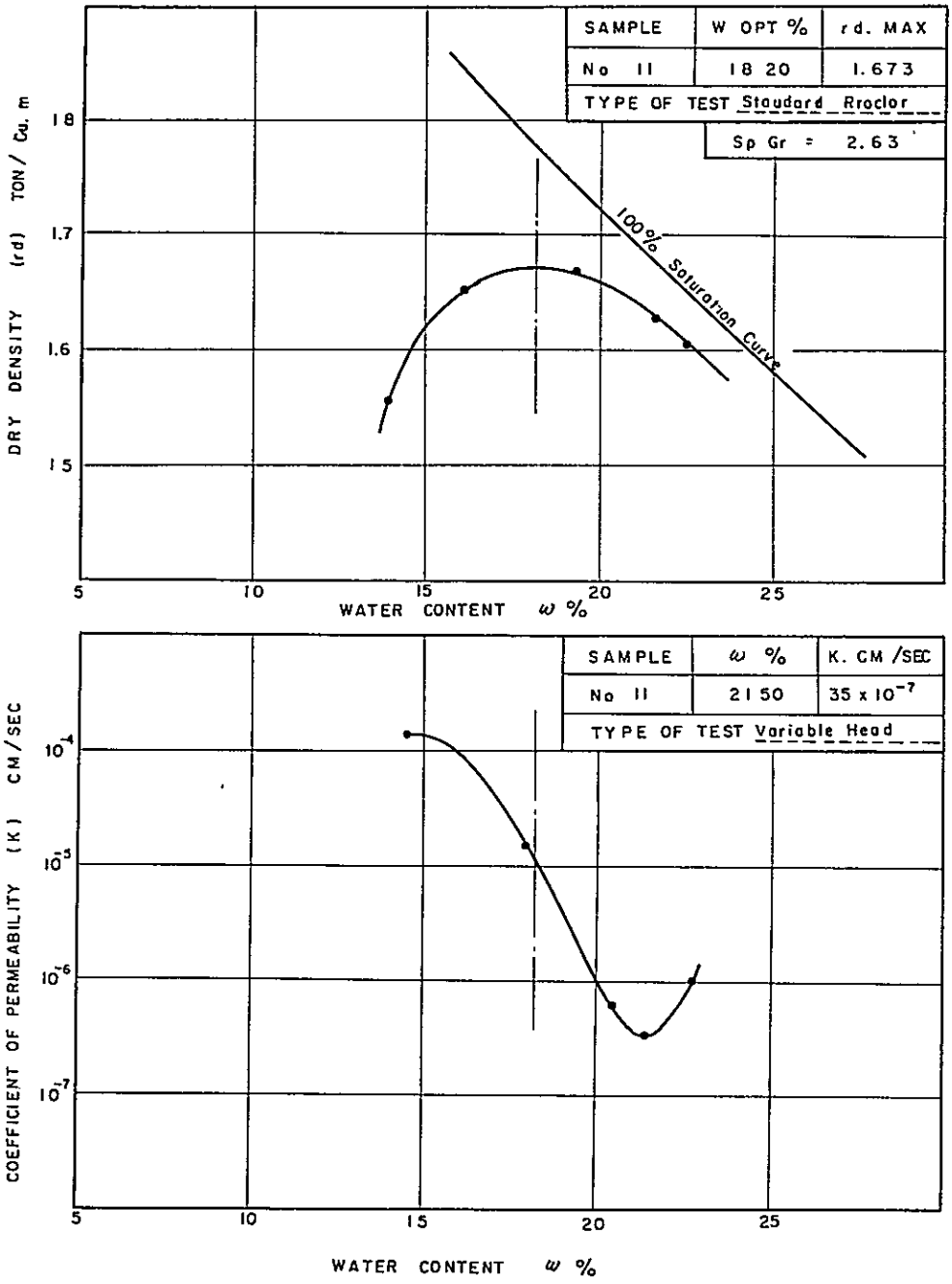
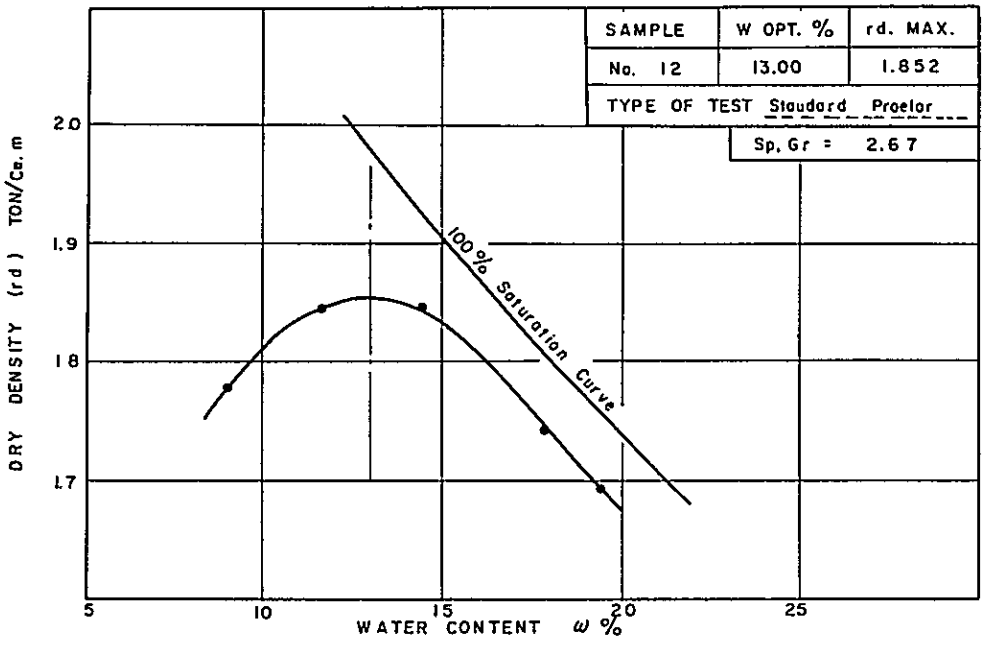


FIG. C-3 (7) COMPACTION AND PERMEABILITY CURVES



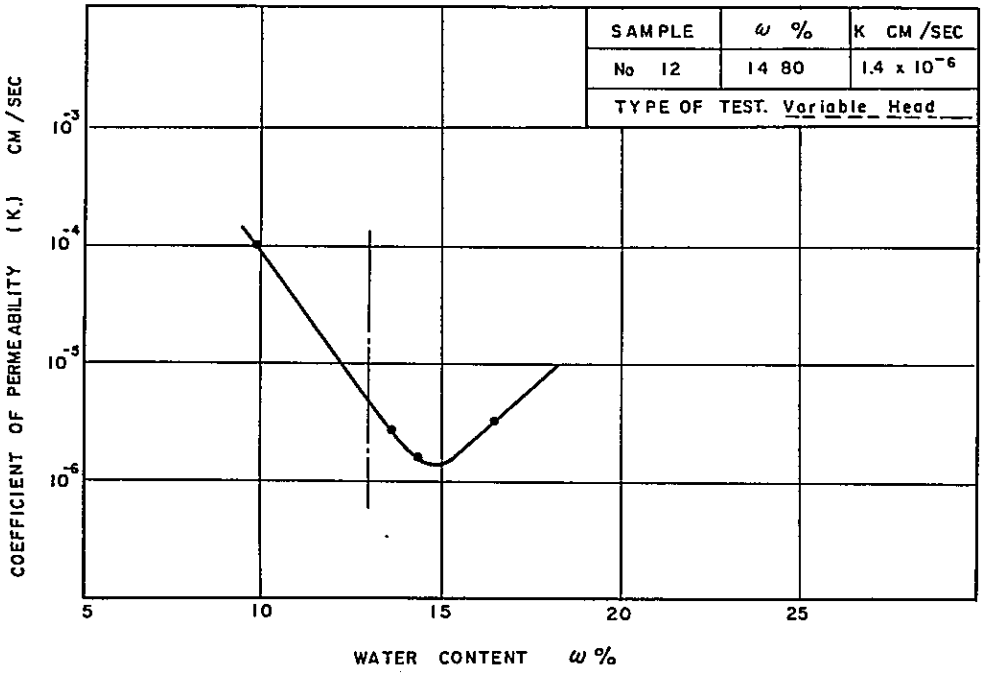


FIG. C-3 (8) COMPACTION AND PERMEABILITY CURVES

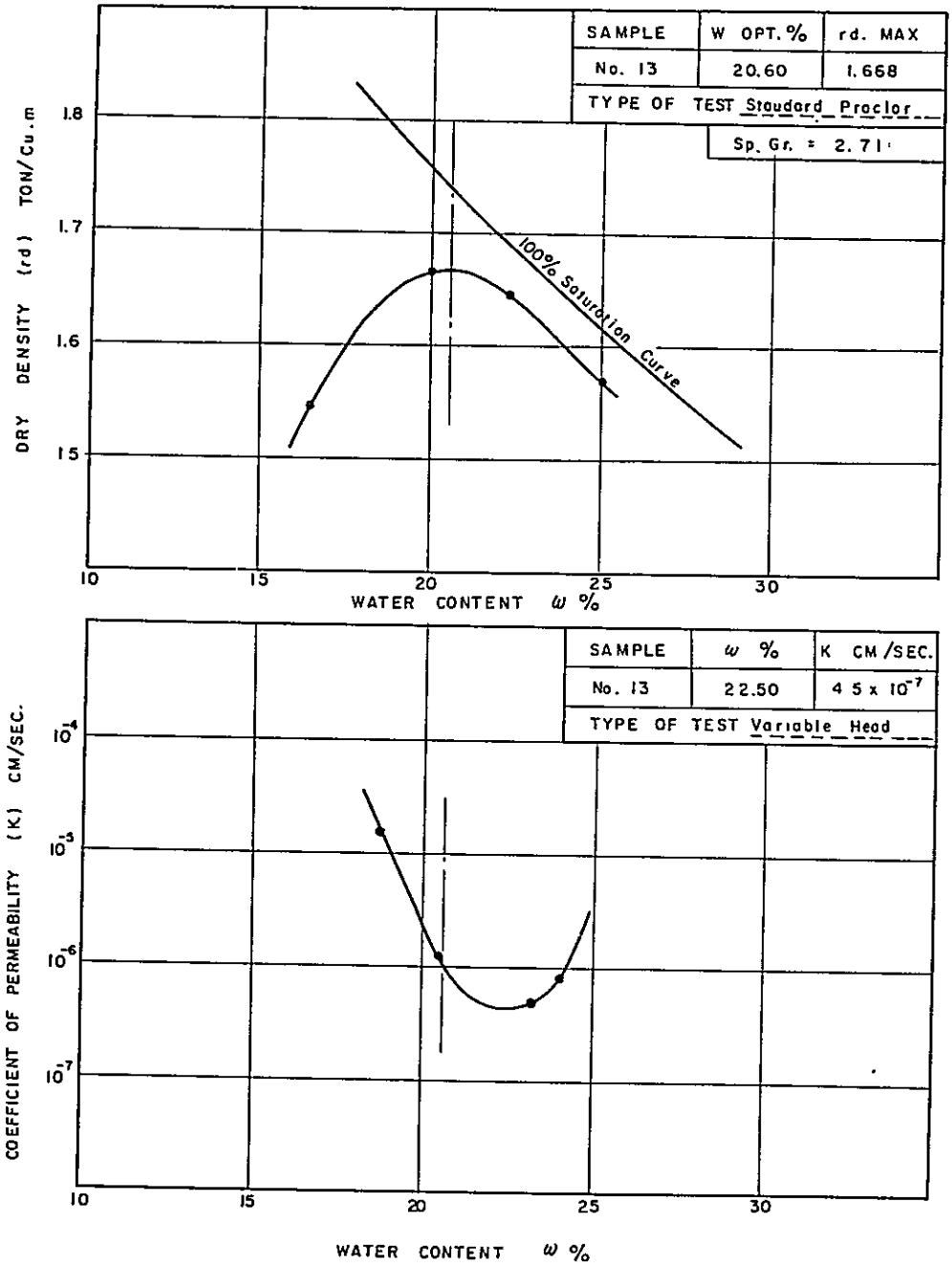


FIG. C-3 (9) COMPACTION AND PERMEABILITY CURVES

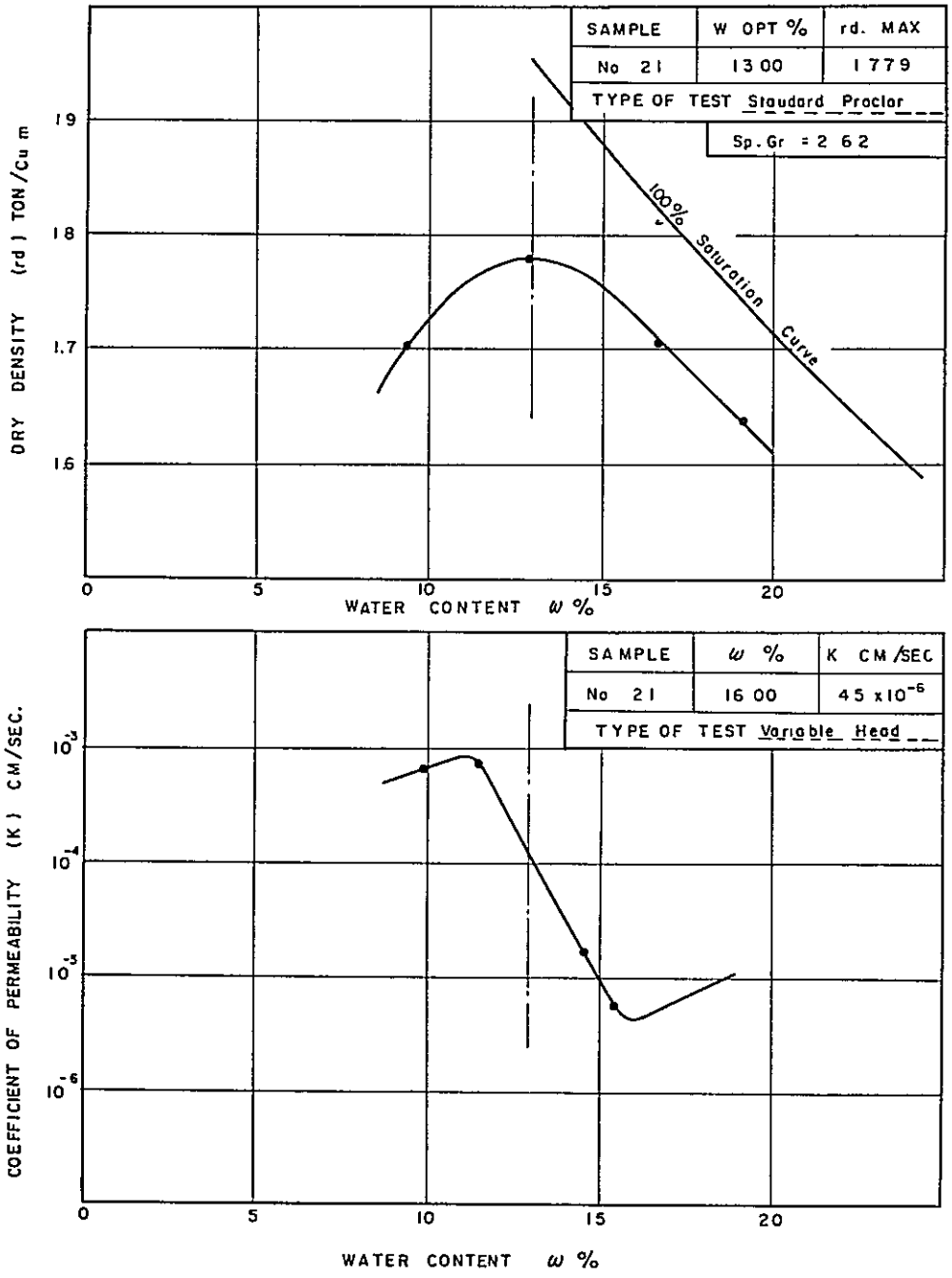


FIG. C-3 (10) COMPACTION AND PERMEABILITY CURVES

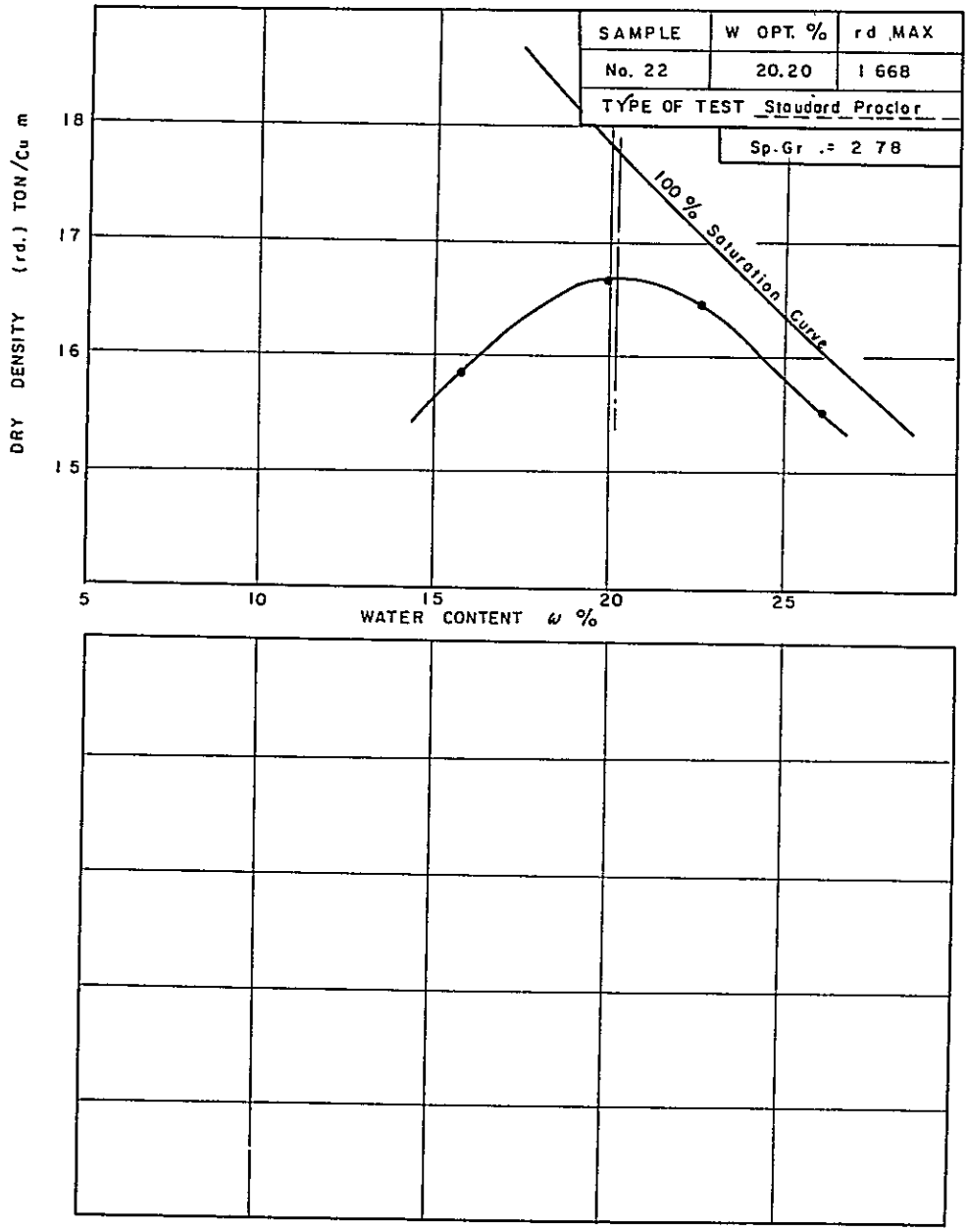


FIG. C-3 (11) COMPACTION AND PERMEABILITY CURVES

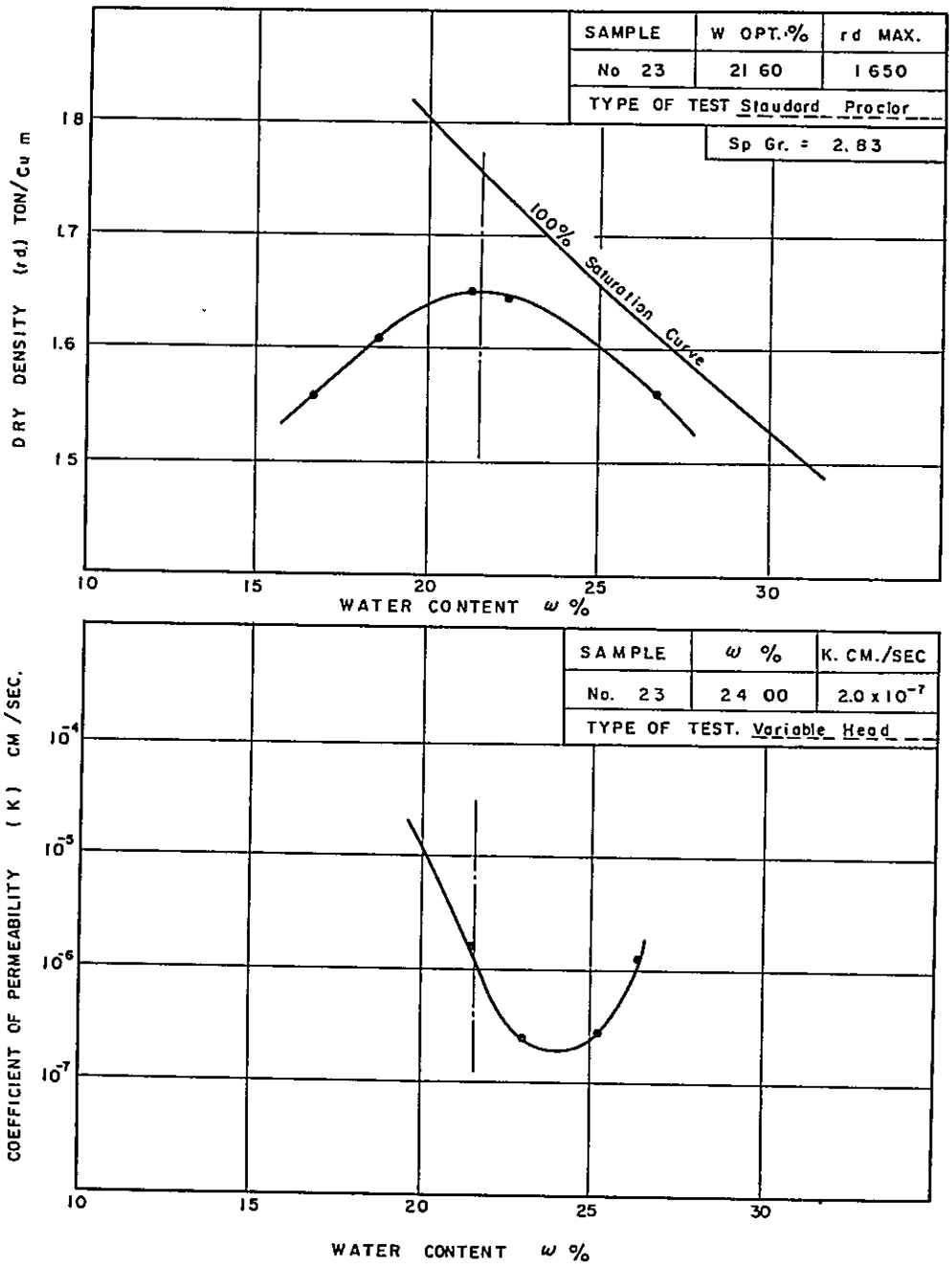


FIG. C-3 (12) COMPACTION AND PERMEABILITY CURVES

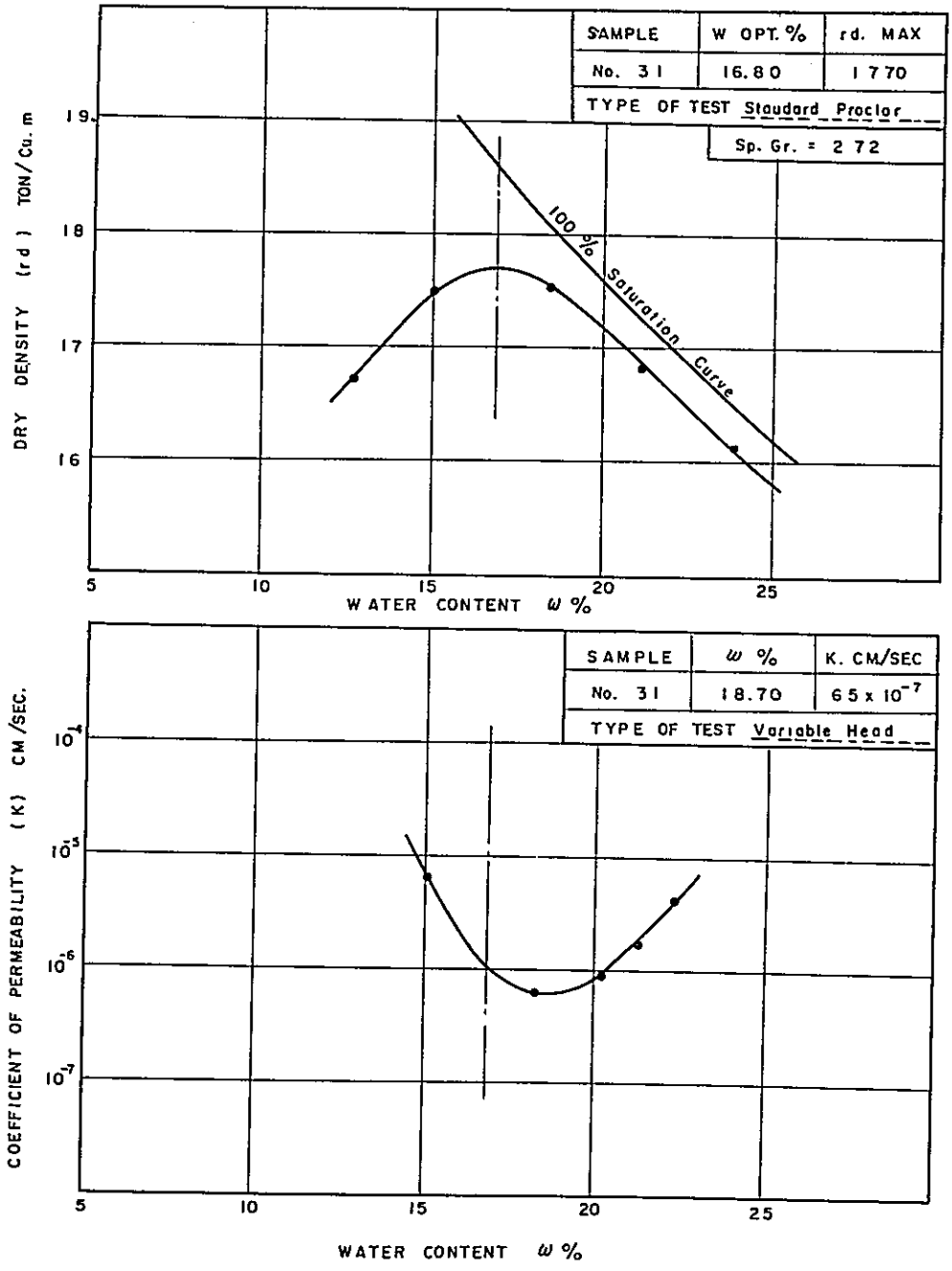
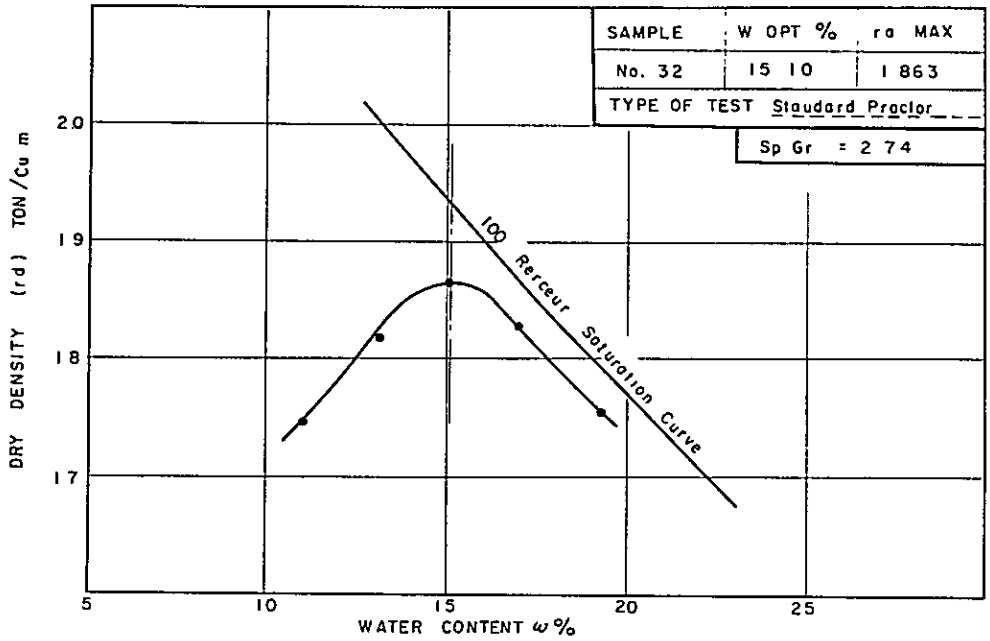
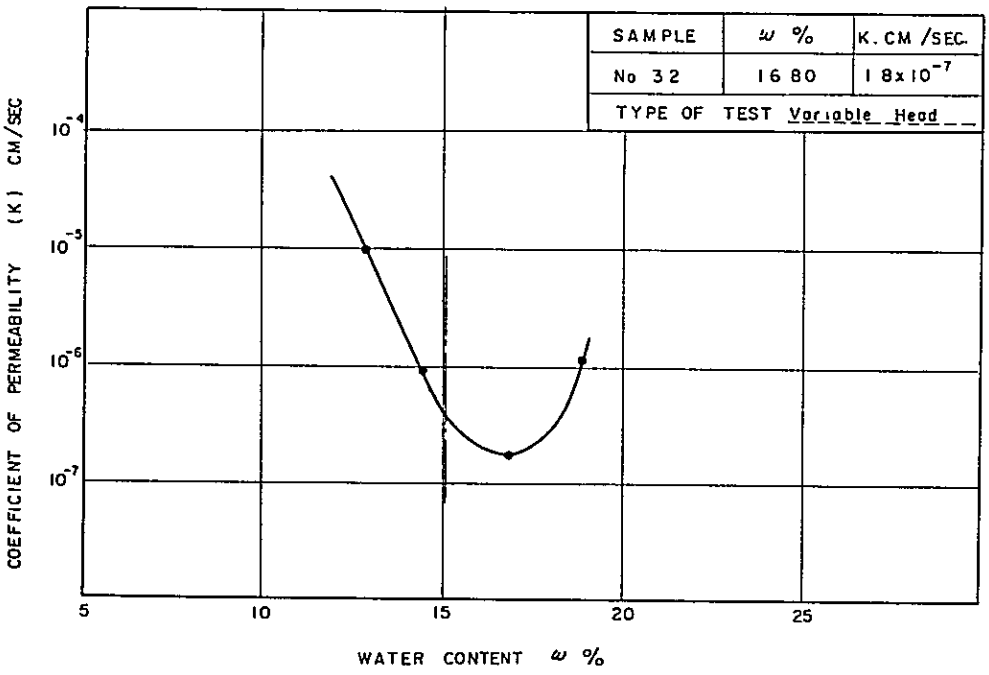


FIG. C-3 (13) COMPACTION AND PERMEABILITY CURVES





APPENDIX D

MARKET SURVEY AND LOAD FORECAST

TABLE LIST

FIGURE LIST

TABLE D-1 Power Demand in Northeast Region (1961 – 1966)

Year	1961	1962	1963	1964	1965	1966	Average 5 years
Energy Demand at Customer (kWh) (Sales Energy)	11,735	15,256	18,591	24,130	31,957	44,167	
Increasing Rate (%)	-	30	22	30	32.5	38	30.3
Loss Factor * (%)	65.8	66.6	67.6	71.3	73.3	71.5	69.5
Energy Demand at Power Plant	17,834	22,893	27,513	33,858	43,630	61,939	
Increasing Rate	-	28.3	20.2	23.1	28.9	42.0	28.2
Load Factor (%)	24	26	28	28	30	33	
Peak Demand (kW)	8,190	10,000	11,214	13,500	16,427	21,120	
Increasing Rate (%)	-	22	12	20.5	21.8	28.3	21.0
Population	8,879,600	9,136,700	9,378,600	9,815,100	10,122,200	10,425,800	
Energy Consumption per Capita (kWh)	1.3	1.7	2.0	2.5	3.2	4.2	
Energy Generation per Capita (kWh)	2.0	2.5	2.9	3.4	4.3	5.9	

Note : * Loss Factor = $\frac{\text{Sales Energy}}{\text{Gross Generation}}$ x 100 (%)

TABLE D-2 Demand Components of NEEA System (1965)

	Energy Generation (kWh)	Station Service (kWh)	Energy Sold for Residence & Commercial (kWh)	Energy Sold for Industry (kWh)	Free Service (kWh)	Public Lighting (kWh)	Energy Load Total (kWh)	Number of Customers Residence & Commercial	Industries
Burirum	1,280,903	28,636	677,270	46,792	12,616	46,794	783,472	2,968	19
Chaiyaphum	1,083,445	10,414	742,177	65,879	9,071	72,571	889,698	3,013	31
Kalasin	543,828	10,183	391,431	10,444	6,301	50,674	458,850	1,718	8
Khonkaen	5,538,012	54,331	3,674,960	102,197	15,389	376,918	4,169.464	6,553	36
Mahasarakam	730,773	10,151	459,943	49,448	9,616	60,875	579,882	2,467	20
Nakornphanom	1,188,959	27,426	938,337	84,308	8,997	150,715	1,182,357	5,218	52
Nakornratsima	12,341,751	104,783	7,471,328	2,763,159	42,805	221,838	10,499,130	12,082	65
Nongkai	1,971,549	17,606	1,218,213	125,479	13,717	97,606	1,455,015	5,187	53
Roi-ed	1,068,600	14,362	675,040	70,704	9,348	97,976	853,068	3,259	19
Srisaket	1,060,664	13,143	648,439	111,306	10,320	50,493	820,558	2,971	23
Sakal Nakom	809	18,495	678,675	71,961	9,375	57,976	817,987	3,031	27
Surin	1,854,248	11,215	1,130,015	193,529	11,210	123,111	1,457,865	3,497	21
Udonthani	6,413,314	57,754	3,966,041	231,559	18,124	660,282	4,876,006	6,446	60
Ubolracthani	6,508,362	107,067	4,505,875	430,141	36,855	393,505	5,366,376	10,391	193
Total			27,177,744	4,356,906	213,744	2,461,334	34,209,728		
(%)			(79.5)	(12.7)	(0.6)	(7.2)	(100%)		

Note : Loey has been excluded.

TABLE D-3 Annual Mean Rate of Load Growth in kWh (1960-1966)

(Unit : %)

Year	1960	1961	1962	1963	1964	1965	1966
Nam Pong Service Area							
Nakornratsima	14.0	14.0	17.0	28.0	24.0	49.0	38.0
Phol	12.0	23.0	16.0	18.0	21.0	7.0	19.0
Banphai	22.0	65.0	31.0	0.5	23.0	47.0	12.0
Khonkaen	17.0	21.0	44.0	24.0	38.0	51.0	56.0
Udonthani	20.0	76.0	29.0	32.0	21.0	44.0	41.0
Nongkai	4.0	38.0	0.6	45.0	2.5	8.0	43.0
Mahasarakam	63.0	17.0	22.0	18.0	31.0	29.0	75.0
Kalasin	31.0	47.0	43.0	18.0	16.0	47.0	61.0
Roi-et	19.0	13.0	58.0	14.0	12.0	15.0	44.0
Nam Pung Service Area							
Sakolnakorn	12.0	51.0	28.0	23.0	47.0	48.0	39.0
Nakornphanom	39.0	21.0	27.0	10.0	16.0	31.0	12.0
Mukudaharn	22.0	47.0	23.0	3.0	7.0	37.0	40.0
Nakae	-	-	-	67.0	23.0	87.0	61.0
Thatphanom	22.0	47.0	23.0	3.0	7.0	37.0	40.0
Lam Dom Noi Service Area							
Ubolratthani	20.0	76.0	29.0	32.0	21.0	20.0	20.0
Surin	38.0	0.7	37.0	17.0	22.0	26.0	18.0
Srisaket	27.0	33.0	31.0	14.0	14.0	24.0	13.5
Burirum	5.0	92.0	16.0	11.0	7.0	-	-

TABLE D-4 Estimated Annual Mean Rate of Load Growth in kWh

(Unit : %)

Year	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Nam Pong Service Area															
Nakornratsima	30	26	23	20	15	13	11	11	11	10	10	10	9	9	9
Phol	20	18	16	12	10	9	9	9	8	8	8	7	7	7	7
Banphai	20	18	16	12	10	9	9	9	8	8	8	7	7	7	7
Khonkaen	30	26	23	20	15	13	11	11	11	10	10	10	9	9	9
Udonthani	30	26	23	20	15	13	11	11	11	10	10	10	9	9	9
Nongkai	25	23	21	15	11	10	9	9	9	8	8	8	7	7	7
Mahasarakam	25	23	21	15	11	10	9	9	9	8	8	8	7	7	7
Kalasin	25	23	21	15	11	10	9	9	9	8	8	8	7	7	7
Roi-et	20	18	16	12	10	9	9	9	8	8	8	7	7	7	7
Nam Pung Service Area															
Sakolnakorn	25	23	21	15	11	10	9	9	9	8	8	8	7	7	7
Nakornphanom	15	13	11	10	9	9	9	8	8	8	8	7	7	7	7
Mukdaharn	25	23	21	15	11	10	9	9	9	8	8	8	7	7	7
Nakae	25	23	21	15	11	10	9	9	9	8	8	8	7	7	7
Thatphanom	20	18	16	12	10	9	9	9	8	8	8	7	7	7	7
Lam Dom Noi Service Area															
Ubolratthani	(15)	(15)	(15)	20	18	16	12	10	9	9	9	8	8	8	7
Surin	(15)	(11)	(10)	20	18	16	12	10	9	9	9	8	8	8	7
Srisaket	(15)	(11)	(10)	20	18	16	12	10	9	9	9	8	8	8	7
Burirum	(15)	(11)	(10)	20	18	16	12	10	9	9	9	8	8	8	7

TABLE D-5 Load Forecast of Northeast Region

Year / Service Area	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Nam Pong														
Demand (MWh)	95,561	119,329	147,240	167,194	211,872	224,798	238,768	254,768	270,317	287,908	306,262	324,709	344,764	361,648
Peak Load (MW)	27.4	33.6	39.3	43.0	54.8	58.0	60.7	64.2	68.2	71.2	75.8	79.9	83.4	88.7
Nam Pung														
Demand (MWh)	5,845	6,979	7,975	8,691	9,525	10,174	10,970	11,812	12,661	13,570	14,577	15,483	16,462	17,501
Peak Load (MW)	2.7	3.0	3.2	3.4	3.6	3.7	3.9	4.1	4.3	4.5	4.7	4.9	5.2	5.4
Lam Dom Noi														
Demand (MWh)	-	-	28,408	32,850	37,315	40,938	44,364	47,764	51,018	54,522	57,917	61,668	65,639	69,393
Peak Load (MW)	-	-	8.7	9.6	10.6	11.5	12.2	12.9	13.3	14.0	14.9	15.4	16.5	17.3
Nam Ngum														
Demand (MWh)	15,300	22,500	22,500	28,000	-	-	-	-	-	-	-	-	-	-
Peak Load (MW)	4.5	6.6	7.6	8.0	-	-	-	-	-	-	-	-	-	-
Total Load at Substation														
(MWh)	116,706	148,808	206,123	236,735	258,712	275,910	294,102	314,102	333,996	356,000	378,756	401,860	426,865	448,542
(MW)	34.6	43.2	58.8	64.0	69.0	73.3	76.8	81.2	85.8	89.7	95.4	100.2	105.1	111.4
Losses in the System														
for (MWh) (%)	5.0	5.6	6.3	6.9	7.5	8.1	8.7	9.3	9.9	9.9	9.9	9.9	9.9	9.9
for (MW) (%)	7.6	8.3	9.3	10.0	10.8	11.5	12.2	13.0	13.8	13.8	13.8	13.8	13.8	13.8
Total Load at Sending End														
Demand (MWh)	122,800	157,200	219,900	254,300	279,700	300,200	322,100	347,800	370,600	395,100	420,000	446,000	473,700	497,500
Peak Load (MW)	37.4	47.2	65.0	71.0	77.5	82.7	87.5	93.2	99.5	104.0	111.0	116.0	122.0	129.0

TABLE D-6 Power Demand of MEA System

	Year	1962	1963	1964	1965	1966
Residential	kWh	141,307,902	126,860,340	149,708,411	176,051,341	222,259,101
	Number of Customers	163,049	129,139	143,264	157,768	176,714
	Unit Consumption	867	981	1,045	1,119	1,259
Small Residential	kWh	-	7,185,864	9,601,935	9,912,399	10,771,392
	Number of Customers	-	37,007	32,063	28,544	26,501
	Unit Consumption	-	194	300	348	406
Small Business & Industry	kWh	178,324,594	179,917,819	190,977,481	212,529,248	262,220,817
	Number of Customers	51,520	59,390	59,159	60,936	65,004
	Unit Consumption	3,460	3,030	3,220	3,495	4,040
Large Business & Industry	kWh	53,963,418	155,308,398	257,387,836	374,787,695	569,852,853
	Number of Customers	1,420	661	854	923	1,212
	Unit Consumption	38,000	235,000	301,500	406,000	470,000
Tramway	kWh	3,906,180	3,499,512	1,520,349	399,687	409,536
	Number of Customers	3	3	3	1	1
	Unit Consumption	1,302,060	1,166,504	506,783	399,687	409,536
Total	kWh	384,281,583	479,303,138	616,076,366	785,732,692	1,073,404,454
	Number of Customers	216,561	226,819	236,068	248,868	269,588
	Unit Consumption	1,775	2,110	2,610	3,160	3,980

TABLE D-7 GDP and Electric Generation in Thailand

Year	1961	1962	1963	1964	1965	1966
GDP (million Baht)	59,969	65,307	68,961	74,351	81,221	92,120
GDP Growth Rate (%)		8.9	5.6	7.8	9.2	13.4
Gross Generation (million kWh)	612	709	804	1,028	1,339	1,740
kWh Growth Rate (%)		15.9	13.4	27.8	30.2	29.9

TABLE D-8 GDP for the Second National Economic and Social Development Plan

(1966 - 1971 by NEDB at 1965 Prices)

(Unit : Million Baht)

Industrial Origin	1960		1966 *		Average Annual Growth Rate 1961-1966	1971		Average Annual Growth Rate 1967 - 1971
	GDP	Percentage Distribution	GDP	Percentage Distribution		GDP	Percentage Distribution	
Agriculture	20,988.3	36.7	27,540.6	31.6	4.6	34,031.7	26.0	4.3
Mining and Quarrying	1,039.3	1.8	1,927.4	2.2	10.9	2,659.6	2.0	6.6
Manufacturing	5,948.8	10.4	10,583.5	12.2	10.2	17,799.8	13.6	10.9
Construction	2,220.7	3.9	4,415.0	5.1	12.3	7,577.7	5.8	11.4
Electricity & Water Supply	259.4	0.5	697.5	0.8	18.2	1,595.6	1.2	18.0
Transportation & Communication	3,997.0	7.0	6,666.0	7.7	9.0	11,217.4	8.6	11.0
Wholesale & Retail Trade	10,193.4	17.8	16,167.8	18.6	8.0	24,154.8	18.6	8.4
Banking, Insurance & Estate	1,372.1	2.4	3,433.5	3.9	16.6	7,527.7	5.7	17.0
Ownership of Dwellings	2,872.2	5.0	3,563.7	4.1	3.7	4,548.3	3.5	5.0
Public Administration & Defence	2,911.5	5.1	4,392.6	5.1	7.2	7,741.2	5.9	12.0
Services	5,361.0	9.4	7,597.6	8.7	6.0	11,969.4	9.1	9.5
Gross Domestic Product	57,163.7	100.0	86,985.2	100.0	7.3	130,814.2	100.0	8.5

Note: * 1966 estimates are based on incomplete (seven-month) data.

TABLE D-9 Load Forecast of YEA System Based on GDP Growth

Year	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Population in Central plain and the North (thousands)	17,715	18,307	18,918	19,551	20,204	20,880	21,578	22,299	23,045	23,816	24,613	25,500	26,300	27,200	28,100	29,100
GDP Growth Rate in Central Plain and the North		11.6	10.1	10.1	9.5	9.3	8.9	8.5	8.5	8.5	8.5	7.5	7.5	7.5	7.5	7.5
GDP in Central Plain and the North (million Baht)	65,998	73,638	81,039	89,219	97,698	106,822	115,901	125,754	136,443	148,040	160,624	137,000	186,000	200,000	214,000	231,000
GDP/Capita	3,725	4,022	4,287	4,563	4,835	5,116	5,371	5,639	5,921	6,216	6,526	6,780	7,072	7,350	7,620	7,940
Power Consumption (million kWh)	1,390	1,791	2,197	2,660	3,158	3,711	4,266	4,879	5,558	6,308	7,128	7,915	8,744	9,671	10,666	11,764
kWh/Capita	78.46	97.83	116.14	136.03	156.30	177.73	197.68	218.79	241.17	264.88	289.60	310.41	332.47	355.56	379.56	404.27
GDP Growth/Capita		7.97	6.59	6.44	5.96	5.81	4.98	4.98	5.00	4.98	4.99	3.97	3.97	3.97	3.97	3.97
Elasticity Ratio	3.1	2.84	2.66	2.50	2.36	2.25	2.14	2.05	1.97	1.87	1.81	1.79	1.75	1.70	1.64	1.62
kWh Growth/Capita		24.70	18.71	17.13	14.90	13.71	11.22	10.68	10.23	9.83	9.33	7.19	7.11	6.94	6.75	6.51
kWh Growth/Rate		28.86	22.67	21.06	18.72	17.51	14.95	14.36	13.91	13.50	13.00	11.05	10.47	10.60	10.29	10.30

TABLE D-10 kWh Balance (Based on AID Load Forecast)

(Unit : Million kWh)

Year		1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Annual Energy Demand												
YEA		4,441	5,275	6,150	7,047	7,947	8,897	9,898	10,929	11,996	13,154	14,400
NEEA		254	280	300	322	348	371	395	420	446	474	496
Subtotal	A	4,695	5,555	6,450	7,369	8,295	9,268	10,293	11,349	12,442	13,628	14,896
Hydro (Bhumibol)		1,512	1,512	1,512	1,512	1,512	1,512	1,512	1,512	1,512	1,512	1,512
Hydro (Phasom)			982	982	982	982	982	982	982	982	982	982
Hydro (Nam Pung, Pong, Dom Noi)		145	145	145	145	145	145	145	145	145	145	145
Hydro (Nam Phrom)			34	137	137	137	137	137	137	137	137	137
Subtotal	B	1,657	2,673	2,776	2,776	2,776	2,776	2,776	2,776	2,776	2,776	2,776
Thermal YEA (P.F=70%)		3,980	3,980	3,980	3,980	5,691	7,972	7,972	9,682	9,682	11,393	13,104
NEEA		0	0	0	0	0	0	0	0	0	0	0
Subtotal	C	3,980	3,980	3,980	3,980	5,691	7,972	7,972	9,682	9,682	11,393	13,104
Total	D=B+C	5,637	6,653	6,756	6,756	8,467	10,748	10,748	12,458	12,458	14,169	15,880
Margin 1	E=D-A	942	1,098	306	-613	174	1,480	455	1,109	-16	541	984
Sai Yai No.2	F				39	39	39	39	39	39	39	39
Margin 2	G=E+F				-574	213	1,519	494	1,148	55	580	1,023
Sai Yai No.3	H				46	185	185	185	185	185	185	185
Margin 3	I=G+H				-528	398	1,704	679	1,333	240	765	1,208
Quae Yai No.1	J				160	983	1,143	1,143	1,143	1,143	1,143	1,143
Margin 4	K=I+J				- 368	1,381	2,847	1,822	2,476	1,383	1,898	2,351
Quae Yai No.2	L							737	737	737	737	737
Margin 5	M=K+L							2,559	3,213	2,120	2,635	3,088
Quar Yai No.3	N											370
Margin 6	O=M+N											3,458

TABLE D-11 kWh Balance (Based on EPDC forecast)

(Unit : Million kWh)

Year		1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Annual Energy Demand												
YEA		3,933	4,582	5,242	5,970	6,776	7,657	8,561	9,468	10,453	11,530	12,602
NEEA		254	280	300	322	348	371	395	420	446	474	496
Subtotal	A	4,187	4,862	5,542	6,302	7,124	8,024	8,956	9,888	10,899	12,004	13,098
Hydro (Bhumibol)		1,512	1,512	1,512	1,512	1,512	1,512	1,512	1,512	1,512	1,512	1,512
Hydro (Phasom)			982	982	982	982	982	982	982	982	982	982
Hydro (Nam Pung, Pong, Dom Noi)		145	145	145	145	145	145	145	145	145	145	145
Hydro (Nam Phrom)			34	137	137	137	137	137	137	137	137	137
Subtotal	B	1,657	2,673	2,776	2,776	2,776	2,776	2,766	2,776	2,776	2,776	2,776
Thermal YEA (Plant Factor 70%)		3,980	3,980	3,980	3,980	5,691	5,691	7,401	7,401	9,112	9,112	10,823
Thermal NEEA (Stand by only)		0	0	0	0	0	0	0	0	0	0	0
Subtotal	C	3,980	3,980	3,980	3,980	5,691	5,691	7,401	7,401	9,112	9,112	10,823
Total	D=B+C	5,637	6,653	6,756	6,756	8,467	8,467	10,177	10,177	11,888	11,888	13,599
Margin 1	E=D-A	1,450	1,791	1,214	454	1,343	443	1,221	289	989	-116	501
Sai Yai No.2	F				39	39	39	39	39	39	39	39
Margin 2	G=E+F				493	1,382	482	1,260	328	1,026	-77	540
Sai Yai No.3	H				46	185	185	185	185	185	185	185
Margin 3	I=G+H				539	1,567	667	1,445	513	1,211	108	725
Quae Yai No.1	J				160	983	1,143	1,143	1,143	1,143	1,143	1,143
Margin 4	K=I+J				699	2,550	1,810	2,588	1,656	2,354	1,251	1,868
Quae Yai No.2	L							737	737	737	737	737
Margin 5	M=K+L							3,325	2,393	3,091	1,988	2,605
Quae Yai No.3	N											370
Margin 6	O=M+N											2,975

TABLE D-12 kW Balance in December (Based on AID LOAD FORECAST)

(Unit : MW)

		1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Pack Load Demand YEA		885	1,037	1,196	1,355	1,508	1,682	1,859	2,046	2,243	2,436	2,665
NEEA		71	78	83	88	93	100	104	111	116	122	129
Subtotal	A	956	1,115	1,279	1,443	1,601	1,782	1,963	2,157	2,359	2,558	2,794
Hydro (Bhumibal)		243	262	269	275	283	287	295	304	305	308	311
Hydro (Phasom)			62	79	102	123	130	143	143	145	151	158
Hydro (Nam Pung Nam Pong, Dam Noi)		45	45	45	45	45	45	45	45	45	45	45
Hydro (Nam Phrom)			38	38	38	38	38	38	38	38	38	38
Hydro Subtotal	B	288	407	431	460	489	500	521	530	533	542	552
Thermal YEA		649	649	649	649	928	1,300	1,300	1,579	1,579	1,858	2,137
NEEA		30	30	30	30	30	30	30	30	30	30	30
Thermal Subtotal	C	679	679	679	679	958	1,330	1,330	1,609	1,609	1,888	2,167
Total of Supply Capacity	D=B+C	967	1,086	1,110	1,139	1,447	1,830	1,851	2,139	2,142	2,430	2,728
Margin 1	E+D-A	+11	-29	-169	-304	-154	48	-112	-18	-217	-128	-66
Sai Yai No.2	F			7.3	7.3	7.3	9.2	9.2	9.2	9.2	9.2	9.2
Margin 2	G=E+F			-162	-297	-147	57	-103	-9	-208	-119	-57
Sai Yai No.3	H				37.9	39	46.3	56.4	56.4	56.4	56.4	56.4
Margin 3	I=H+G				-259	-108	103	-47	47	-152	-63	-1
Quae Yai No.1	J				169	171	188	198	229	252	284	103
Margin 4	K=I+J				-90	63	290	151	267	100	221	102
Quae Yai No.2	L							81	89	93	93	103
Margin 5	M=K+L							232	364	193	313	205

NOTE: In order to plan an assured and reliable supply of power and energy to cope with the demand, it is necessary to have in the system, generating capacity exceeding the maximum demand as reserve or margin.
It appears advisable to have a reserve capacity equivalent to about 10% of the maximum demand for time being.

TABLE D-13 kW Balance in December (BASED ON EPDC LOAD FORECAST)

(Unit : MW)

		1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Peak Demand YEA		773	891	1,016	1,154	1,294	1,453	1,611	1,779	2,004	2,132	2,321
NEEA		71	78	83	88	93	100	104	111	116	122	129
Subtotal	A	844	919	1,099	1,242	1,387	1,553	1,715	1,890	2,120	2,254	2,450
Hydro (Bhumibal)		222	244	256	264	272	280	283	292	296	302	306
Hydro (Phasom)		-	48	58	76	94	110	133	138	143	143	148
Hydro (Nam Pung, Nam Pong, Dom Noi)		45	45	45	45	45	45	45	45	45	45	45
Hydro (Nam Phrom)		-	26	285	30.8	33.6	36.8	37.4	37.4	37.4	37.4	37.4
Hydro Subtotal	B	267	363	387.5	415.8	444.6	471.8	498.4	512.4	521.4	527.4	536.4
Thermal (YEA)		649	649	649	649	928	928	1,207	1,207	1,486	1,486	1,765
Thermal (NEEA)		30	30	30	30	30	30	30	30	30	30	30
Thermal Subtotal	C	679	679	679	679	958	958	1,237	1,237	1,516	1,516	1,795
Total of Supply Capacity	D=B+C	946	1,042	1,066.5	1,094.8	1,402.6	1,429.8	1,735.4	1,749.4	2,037.4	2,043.4	2,311.4
Margin 1	E=D-A	102	123	-32	-147	16	-123	20	-141	-83	-211	-119
Sai Yai No.2	F			5.3	7.3	7.3	7.3	8.6	9.2	9.2	9.2	9.2
Margin 2	G=E+F			-27	-140	23	-116	29	-132	-74	-202	-110
Sai Yai No.3	H				31.6	35.8	39.1	39.1	53.3	56.4	56.4	56.4
Margin 3	I=H+G				-108	59	-77	68	-79	-18	-46	-54
Quae Yai No.1	J				162	164	171	184	192	214	238	267
Margin 4	K=I+J				54	223	94	252	113	196	92	213
Quae Yai No.2	L							73	78	85	89	103
Margin 5	M=K+L							325	191	281	182	316

FIG. D-1 DAILY LOAD CURVE OF NEEA SYSTEM

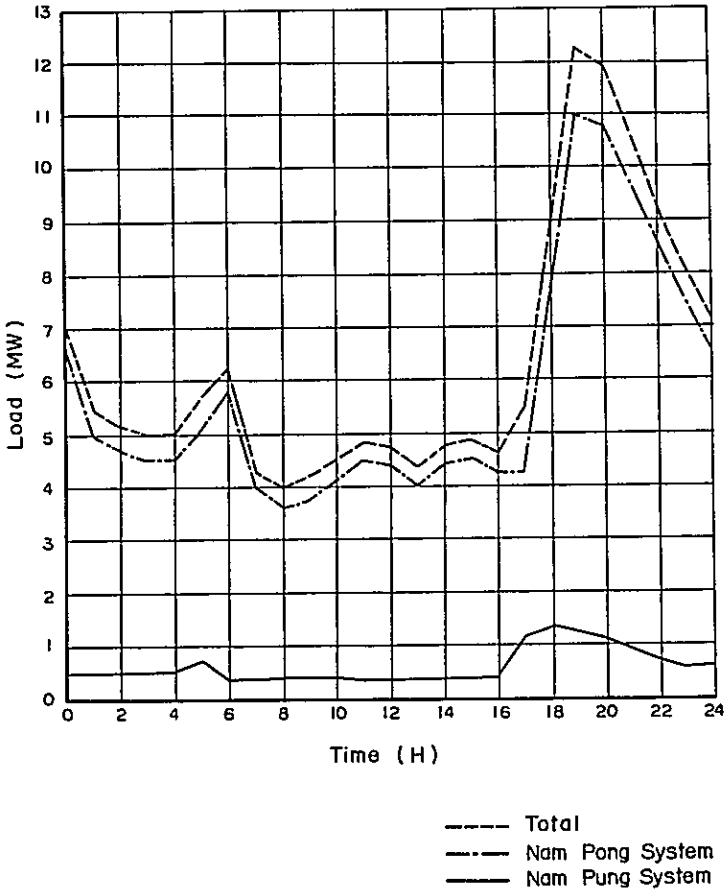


FIG. D-2 RELATION BETWEEN PER CAPITA ENERGY CONSUMPTION AND PER CAPITA INCOME

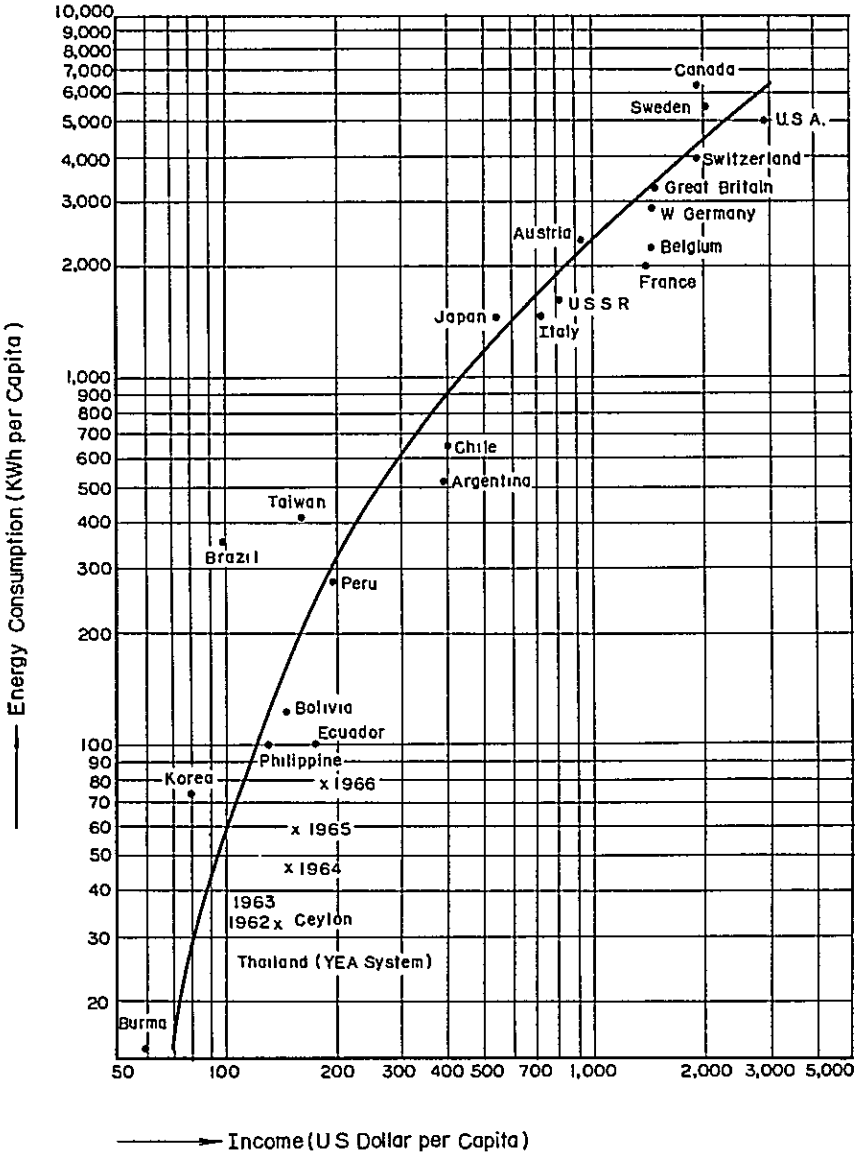


FIG. D-3 RELATION BETWEEN ELASTICITY OF INCREASE OF PER CAPITA ENERGY CONSUMPTION AND PER CAPITA GDP AND ENERGY CONSUMPTION

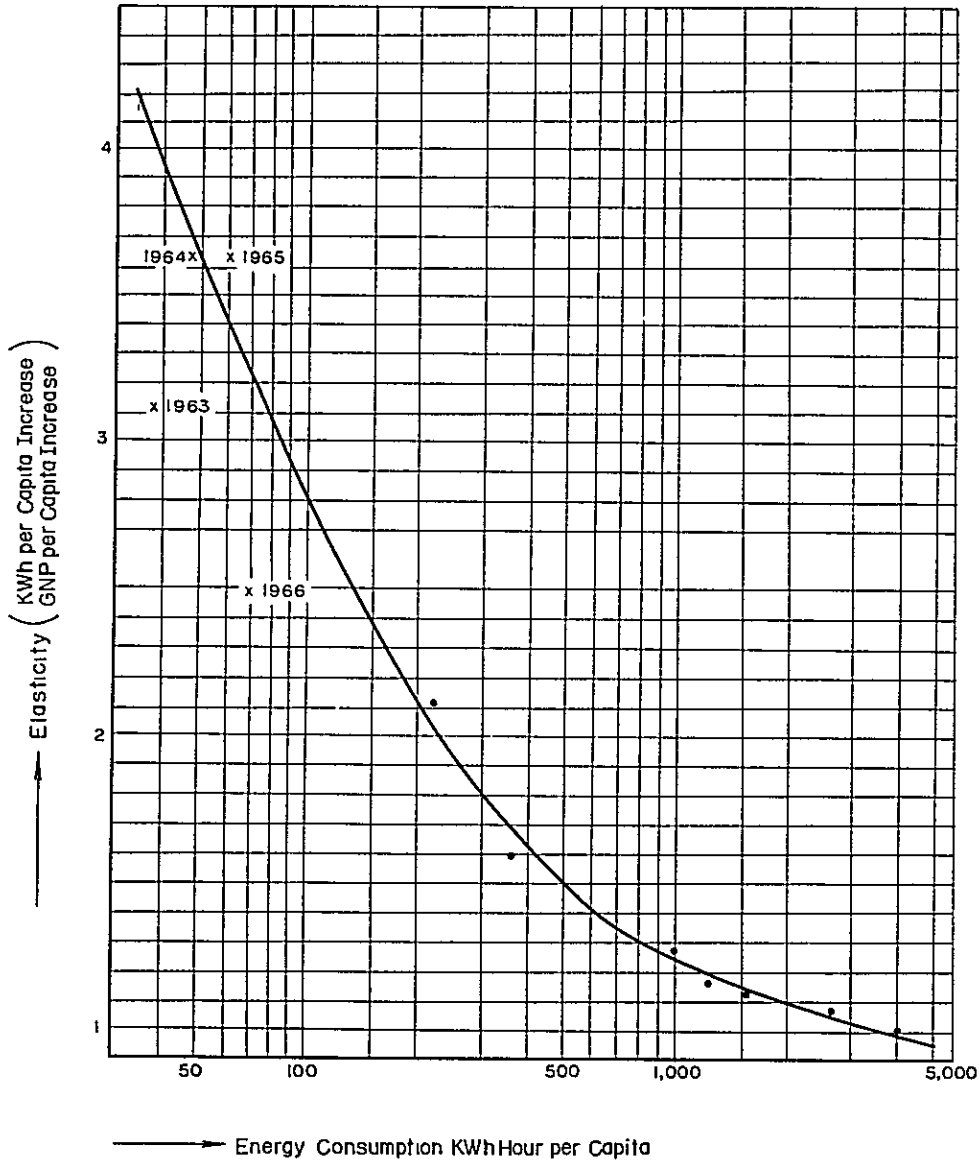
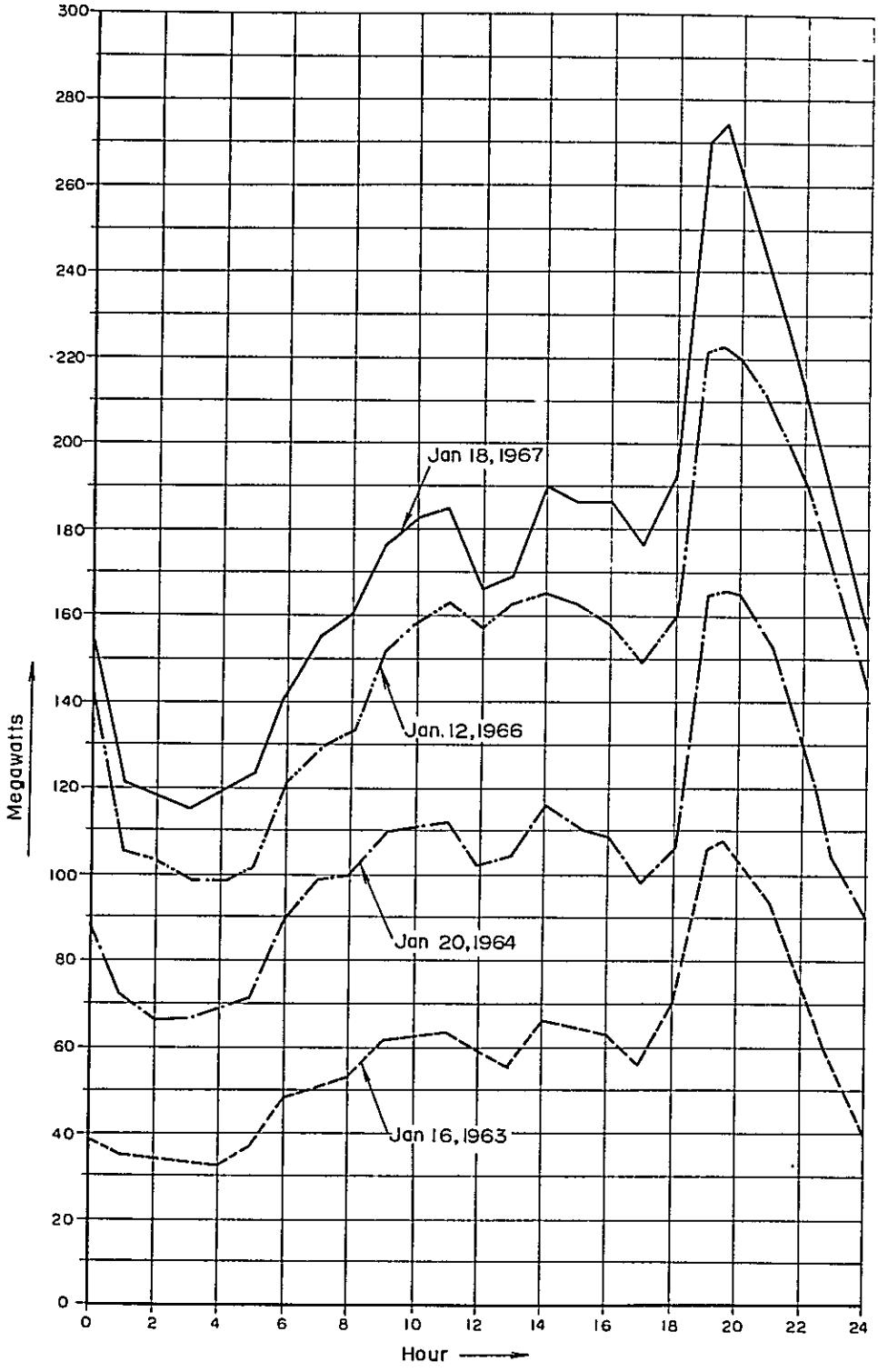


FIG. D-4 DAILY LOAD CURVE OF YEA SYSTEM



APPENDIX E

RESERVOIR

TABLE LIST

FIGURE LIST

TABLE E-1 General Feauture of Alternate Schemes with several Nor. H.W.S. of Nam Sai Yai No.1 and No.2 Reservoirs

No.2 Res. Nor. H.W.S. (Eff. Storage)	No.1 Reservoir Nor. H.W.S.(Eff. Storage) Power Station of Nam Sai Yai		Case A Without No.1 Reservoir			Case B (Combined with No.1 Reservoir) Case B-1 (730 m : 120 x 10^6 m^3)				Case B-2 (727.5 m : 90 x 10^6 m^3)				Case B-3 (722.5 m : 50 x 10^6 m^3)			
			No.2	No.3	No.4	No.1	No.2	No.3	No.4	No.1	No.2	No.3	No.4	No.1	No.2	No.3	No.4
595 m ($162x10^6m^3$)	Catchment Area: Each	sq.km	295	3	56	124	171	3	56	124	171	3	56	124	171	3	56
	Catchment Area: Total	sq.km	295	298	354	124	295	298	354	124	295	298	354	124	295	298	354
	Reservoir : Nor.H.W.S	m	591	510	170	730	591	510	170	727.5	591	510	170	722.5	591	510	170
	Reservoir : Nor M.W.S	m	575	507	-	712	575	507	-	712	575	507	-	712	575	507	-
	Tail Water Level	m	510	170	40	630	510	170	40	630	510	170	40	630	510	170	40
	Rated Head	m	73.2	333.8	119.8	88.4	73.6	334.2	120	86.7	73.6	334.2	120	83.4	73.6	334.2	120
	Available Discharge : Maximum	c.m.s.	22	22	23	10	23.0	23.0	24	10	23	23	24	8	23	23	24
	Available Discharge : Firm	c.m.s.	7.0	7.0	7.1	3.2	7.6	7.6	7.7	3.1	7.5	7.5	7.6	2.6	7.4	7.4	7.5
	Available Discharge : Annual Average	c.m.s.	7.6	7.7	9.0	3.2	7.7	7.8	9.1	3.2	7.6	7.7	9.0	3.1	7.5	7.6	8.9
	Installed Capacity	MW	14	63	23	8	15	66	24	8	15	66	24	6	15	66	24
	Dependable Capacity	MW	10.0	61.3	21.5	6.0	10.6	64.3	22.5	6.0	10.6	64.3	22.5	4.7	10.6	64.3	22.5
	Annual Energy Production	MWh.	40,900	188,000	79,400	20,800	41,700	191,000	80,400	20,500	41,200	189,000	79,500	19,000	40,600	187,000	78,500
	Construction Cost	10^6 ฿	297.1	198.4	179.0	145.9	301.9	204.5	188.0	138.7	301.9	204.5	188.0	129.4	301.9	204.5	188.0
591 m ($110x10^6m^3$)	Catchment Area : Each	sq.km.	295	3	56	124	171	3	56	124	171	3	56	124	171	3	56
	Catchment Area : Total	sq.km	295	298	354	124	295	298	354	124	295	298	354	124	295	298	354
	Reservoir : Nor. H.W.S.	m	591	510	170	730	591	510	170	727.5	591	510	170	722.5	591	510	170
	Reservoir : Nor M.W.S.	m	575	507	-	712	575	507	-	712	575	507	-	712	575	507	-
	Tail Water Level	m	510	170	40	630	510	170	40	630	510	170	40	630	510	170	40
	Rated Head.	m	70.0	333.3	119.4	88.4	71.0	334.2	120	86.7	70.7	333.8	119.8	83.4	70.1	333.7	119.4
	Available Discharge : Maximum	c.m.s.	20	20	21	10	23	23	24	10	22	22	23	8	20	20	21
	Available Discharge . Firm	c.m.s.	6.4	6.4	6.5	3.2	7.4	7.4	7.5	3.1	7.3	7.3	7.4	2.6	6.3	6.8	6.9
	Available Discharge : Annual Average	c.m.s.	7.5	7.6	8.9	3.2	7.6	7.7	9.0	3.2	7.6	7.7	9.0	3.1	7.5	7.6	8.9
	Installed Capacity	MW	12	58	21	8	14	66	24	8	14	62	23	6	12	58	21
	Dependable Capacity	MW	9.2	56.0	19.5	6.0	10.6	61.2	22.5	6.0	10.3	61.5	21.5	4.7	9.3	56.4	19.5
	Annual Energy Production	MWh	38,700	187,000	78,000	20,800	39,800	189,000	79,500	20,500	39,400	189,000	79,500	19,000	38,800	187,000	78,500
	Construction Cost	10^6 ฿	236.4	186.6	171.5	145.9	243.7	201.5	183.5	138.7	241.3	198.1	179.0	129.4	238.9	192.6	174.5

No.2 Res. Nor. H.W.S. (Eff. Storage)	No.1 Reservoir Nor. H.W.S. (Eff. Storage) Power Station of Nam Sai Yai		Case A (Without No.1 Reservoir)			Case B (Combined with No.1 Reservoir)											
						Case B-1 (730m : 120 x 10^6m^3)				Case B-2 (727.5m : 90 x 10^6m^3)				Case B-3 (722.5m : 50 x 10^6m^3)			
			No.2	No.3	No.4	No.1	No.2	No.3	No.4	No.1	No.2	No.3	No.4	No.1	No.2	No.3	No.4
	Catchment Area : Each	sq.km.	295	3	56	124	171	3	56	124	171	3	56	124	171	3	56
	Catchment Area : Total	sq.km	295	298	354	124	295	298	354	124	295	298	354	124	295	298	354
	Reservoir : Nor.H.W.S.	m	587	510	170	730	587	510	170	727.5	587	510	170	722.5	587	510	170
	Reservoir : Nor M.W.S	m	575	507	-	712	575	507	-	712	575	507	-	712	575	507	-
587 m	Tail Water Level	m	510	170	40	630	510	170	40	630	510	170	40	630	510	170	40
($70 \times 10^6m^3$)	Rated Head	m	66.7	332.5	118.4	88.4	67.7	333.7	119.6	86.7	67.2	333.2	119.4	83.4	67.2	333.7	119.4
	Available Discharge : Maximum	c.m.s.	16	16	17	10	21	21	22	10	20	20	21	8	20	20	21
	Available Discharge : Firm	c.m.s.	5.2	5.2	5.3	3.2	6.9	6.9	7.0	3.1	6.7	6.7	6.8	2.6	6.3	6.3	6.4
	Available Discharge : Annual Average	c.m.s.	6.9	7.0	8.3	3.2	7.6	7.7	9.0	3.2	7.6	7.7	9.0	3.1	7.5	7.6	8.9
	Installed Capacity	MW	9	45	17	8	12	60	22	8	12	56	21	6	12	56	21
	Dependable Capacity	MW	7.1	43.4	15.5	6.0	9.9	58.5	20.5	6.0		55.8	19.5	4.7	9.2	55.8	19.5
	Annual Energy Production	MWh	33,800	171,000	72,200	20,800	37,800	189,000	79,100	20,500	37,500	188,000	79,000	19,000	37,000	186,000	78,300
	Construction Cost	10^6 ฿	183.2	168.0	155.3	145.9	199.6	192.1	174.5	138.7	196.3	186.6	170.0	129.4	196.3	186.6	170.0
	Catchment Area : Each	sq.km.	295	3	56	124	171	3	56	124	171	3	56	124	171	3	56
	: Total	sq.km	295	298	354	124	295	298	354	124	295	298	354	124	295	298	354
	Reservoir : Nor. H.W.S.	m	583	510	170	730	583	510	170	727.5	583	510	170	722.5	583	510	170
	Reservoir : Nor M.W.S	m	575	507	-	712	575	507	-	712	575	507	0	712	575	507	-
583 m	Tail Water Level	m	510	170	40	630	510	170	40	630	510	170	40	630	510	170	40
($38 \times 10^6m^3$)	Rated Head	m	62.2	330.9	117.5	88.4	64.1	332.8	119.4	86.7	64.0	332.8	119.2	83.4	64.0	332.7	119.0
	Available Discharge : Maximum	c.m.s.	10	10	11	10	19	19	20	10	18	18	19	88	17.0	17	18
	Available Discharge : Firm	c.m.s.	4.6	3.2	3.3	3.2	6.0	6.1	6.2	3.1	5.8	5.8	5.9	2.6	5.5	5.5	5.6
	Available Discharge : Annual Average	c.m.s.	6.0	5.3	6.6	3.2	7.4	7.5	8.8	3.2	7.4	7.5	8.8	3.1	7.0	7.1	8.4
	Installed Capacity	MW	6	29	11	8	11	54	20	8	10	51	19	6	10	48	18
	Depemdable Capacity	MW	4.6	27.7	9.6	6.0	8.8	53	18.5	6.0	8.3	50.0	17.5	4.7	7.5	47.3	16.5
	Annual Energy Production	MWh	23,800	129,000	57,100	20,800	34,800	183,000	77,500	20,500	34,800	184,000	77,400	19,000	33,000	173,500	73,500
	Construction Cost	10^6 ฿	137.8	134.1	120.8	145.9	163.4	177.9	165.5	138.7	160.6	173.1	161.0	129.4	157.7	168.2	155.3

TABLE E-2 Benefit (B) and annual cost (C) of alternative schemes (Isolated development: No.2and No.3 P.S.)

R2 \ R1	R1	Case A	Case B 730 m H.W.S. ($120x10^6$ m^3)	Case B 727.5 m H.W.S. ($90x10^6 m^3$)	Case B 722.5 m H.W.S. ($50x10^6$ m^3)
	B	47.0	48.6	48.3	47.5
595m H.W.S.	C	36.4	43.7	43.1	42.3
($162x10^6$ m^3)	B-C	10.6	4.9	5.2	5.2
	B/C	1.2	1.11	1.12	1.12
	B	44.9	48.0	47.1	45.0
591m H.W.S.	C	31.1	38.7	38.2	37.0
($110x10^6$ m^3)	B-C	13.8	9.3	8.9	8.0
	B/C	1.44	1.24	1.23	1.22
	B	38.1	45.9	44.9	44.5
587m H.W.S.	C	25.8	35.3	34.0	33.4
($70x10^6 m^3$)	B-C	12.3	10.6	10.9	11.1
	B/C	1.48	1.30	1.32	1.33
	B	26.8	42.9	42.0	39.5
583m H.W.S.	C	20.0	31.6	30.4	29.3
($50x10^6 m^3$)	B-C	6.8	11.3	11.6	10.2
	B/C	1.34	1.36	1.38	1.35

Note: R1 = Nam Sai Yai No.1 Reservoir
R2 = Nam Sai Yai No.2 Reservoir
H.W.S. = Normal High Water Surface Level
Figures in parenthesis = Effective Storage Capacity
Case A = Without R1
Case B = Combined with No.1 Reservoir

TABLE E-3 Benefit (B) and Annual Cost (C) of Alternative Schemes (With up and down stream development)

(Unit : Million Baht)

No.2 Reservoir (Eff. storage) \ P.S.		Case A			Case B-1				Case B-2				Case B-3			
		No.2 & No.3	No.4	No.2 ~No.4	No.1	No.2 & No.3	No.4	No.1 ~No.4	No.1	No.2 & No.3	No.4	No. 1 ~No.4	No.1	No.2 & No.3	No.4	No.1 ~No.4
595m ($162\times10^6m^3$)	B	47.0	12.1	59.1	2.7	48.0	12.5	63.2	2.7	47.8	12.4	62.9	2.3	47.3	12.4	62.0
	C	36.4	10.4	46.8	2.7 *4.1	37.2	10.9	54.9	2.7 *3.7	37.2	10.9	54.5	2.7 *3.3	37.2	10.9	54.1
	B-C	10.6	1.7	12.3	0	10.8	1.6	8.3	0	10.6	1.5	8.4	-0.4	10.1	1.5	7.9
	B/C	1.29	1.16	1.26	1.00	1.29	1.15	1.15	1.00	1.29	1.14	1.15	0.85	1.27	1.14	1.15
591m ($110\times10^6m^3$)	B	44.9	11.5	56.4	2.7	46.8	12.4	61.9	2.7	46.6	12.2	61.5	2.3	45.0	11.6	58.9
	C	31.1	10.2	41.3	2.7 *4.1	32.2	10.7	49.7	2.7 *3.7	32.3	10.4	49.1	2.7 *3.3	31.7	10.2	47.9
	B-C	13.8	1.3	15.1	0	14.6	1.7	12.2	0	14.3	1.8	12.4	-0.4	13.3	1.4	11.0
	B/C	1.44	1.13	1.37	1.00	1.45	1.16	1.25	1.00	1.44	1.17	1.25	0.85	1.42	1.14	1.23
587m ($70\times10^6m^3$)	B	38.1	10.1	48.2	2.7	43.0	12.0	57.7	2.7	42.4	11.6	56.7	2.3	42.1	11.6	56.0
	C	25.8	9.0	34.8	2.7 *4.1	28.8	10.2	45.8	2.7 3.7	28.1	9.9	44.4	2.7 *3.3	28.1	9.9	44.0
	B-C	12.3	1.1	13.4	0	14.2	1.8	11.9	0	14.3	1.7	12.3	-0.4	14.0	1.7	12.0
	B/C	1.48	1.12	1.39	1.00	1.49	1.18	1.26	1.00	1.51	1.17	1.28	0.85	1.50	1.17	1.27
583m ($38\times10^6m^3$)	B	26.8	7.4	34.2	2.7	36.9	11.3	50.9	2.7	36.3	11.1	50.1	2.3	34.8	10.5	47.6
	C	20.0	7.0	27.0	2.7 *4.1	25.1	9.6	41.5	2.7 *3.7	24.5	9.4	40.3	2.7 *3.3	24.0	9.0	39.0
	B-C	6.8	0.4	7.2	0	11.8	1.7	9.4	0	11.8	1.7	9.8	-0.4	10.8	1.5	8.6
	B/C	1.34	1.06	1.27	1.00	1.47	1.18	1.23	1.00	1.48	1.18	1.24	0.85	1.45	1.17	1.22

Note: (1) Case A = Without No.1 Reservoir
(2) Case B-1 = Combined with No.1 Reservoir and 730m H.W.S. ($120 \times 10^6m^3$)
(3) Case B-2 = Combined with No.1 Reservoir and 727.5m H.W.S. ($90 \times 10^6m^3$)
(4) Case B-3 = Combined with No.1 Reservoir and 722.5m H.W.S. ($50 \times 10^6m^3$)
(5) H.W.S. = Normal High Water Surface Level
(6) Figures in Parenthesis = Effective Storage Capacity
(7) P.S. = Power Station of Nam Sai Yai
(8) * = Cost of No.1 Dam Only
(9) In this calculation, No.1 and No.4 power stations including dam will be completed four years and eight years later.

TABLE E-4 Benefit (B) and Annual Cost (C) of Alternative Schemes
(Simultaneous Development)

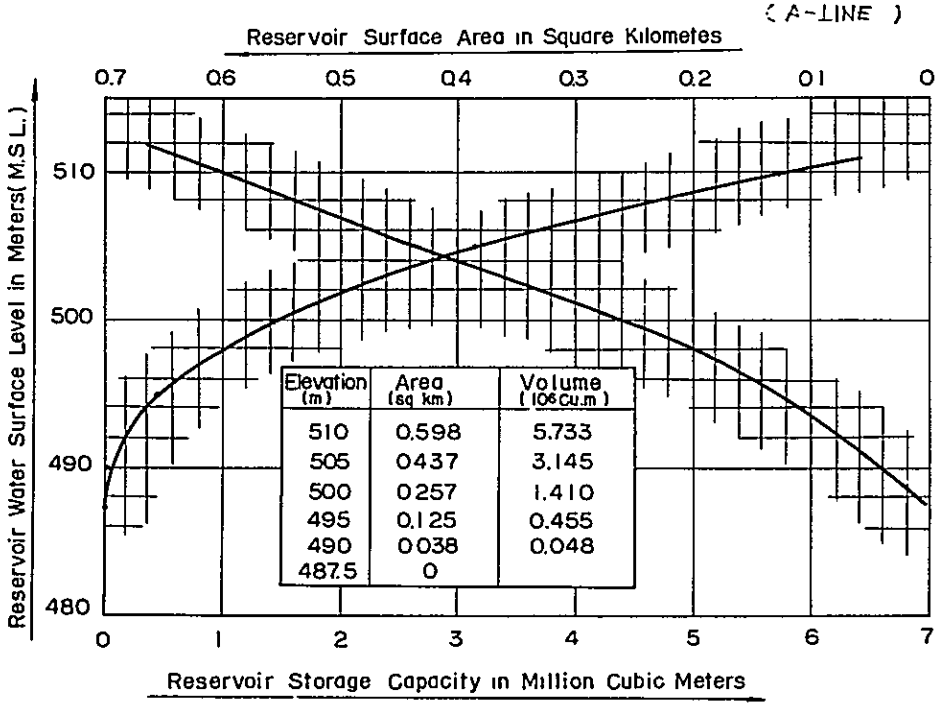
(Unit : Million Baht)

No.2 Reservoir (Eff. storage)	P.S.	Case A			Case B-1				Case B-2				Case B-3			
		No.2 & No.3	No.4	No.2 ~No.4	No.1	No.2 & No.3	No.4	No.1 ~No.4	No.1	No.2 & No.3	No.4	No.1 ~No.4	No.1	No.2 & No.3	No.4	No.1 ~No.4
595m ($162\times10^6m^3$)	B	47.0	15.4	62.4	4.3	48.6	15.8	68.7	4.3	48.3	15.7	68.3	3.7	47.5	15.6	66.8
	C	36.4	13.2	49.6	4.3 *6.5	37.2	13.8	61.8	4.3 *5.9	37.2	13.8	61.2	4.3 *5.3	37.2	13.8	60.6
	B-C	10.6	2.2	12.8	0	11.4	2.0	6.9	0	11.1	1.9	7.1	-0.6	10.3	1.8	6.2
	B/C	1.29	1.17	1.26	1.00	1.31	1.14	1.11	1.00	1.30	1.14	1.12	0.86	1.28	1.14	1.10
591m ($110\times10^6m^3$)	B	44.9	16.6	61.5	4.3	48.0	15.7	68.0	4.3	47.1	15.4	66.8	3.7	45.0	14.7	63.4
	C	31.1	12.8	43.9	4.3 *6.5	32.2	13.5	56.5	4.3 *5.9	32.3	13.2	55.7	4.3 *5.3	31.7	12.8	54.1
	B-C	13.8	3.8	17.7	0	15.8	2.2	11.5	0	14.8	2.2	11.1	-0.6	13.3	1.9	9.3
	B/C	1.44	1.30	1.40	1.00	1.49	1.16	1.20	1.00	1.46	1.17	1.20	0.86	1.42	1.15	1.17
587m ($70\times10^6m^3$)	B	38.1	12.8	50.9	4.3	45.9	15.1	65.3	4.3	44.9	14.7	63.9	3.7	44.5	14.7	62.9
	C	25.8	11.4	37.2	4.3 *6.5	28.8	12.8	52.4	4.3 *5.9	28.1	12.5	50.8	4.3 *5.3	28.1	12.5	50.2
	B-C	12.3	1.4	13.7	0	17.1	2.3	12.9	0	16.8	2.2	13.1	-0.6	16.4	2.2	12.7
	B/C	1.48	1.12	1.37	1.00	1.59	1.18	1.25	1.00	1.60	1.18	1.26	0.86	1.58	1.18	1.25
583m ($38\times10^6m^3$)	B	26.8	9.3	36.1	4.3	42.9	14.3	61.5	4.3	42.0	14.0	60.3	3.7	39.5	13.2	56.4
	C	20.0	8.9	28.9	4.3 *6.5	25.1	12.2	48.1	4.3 *5.9	24.5	11.8	46.5	4.3 *5.3	24.0	11.4	45.0
	B-C	6.8	0.4	7.2	0	17.8	2.1	13.4	0	17.5	2.2	13.8	-0.6	15.5	1.8	11.4
	B/C	1.34	1.04	1.25	1.00	1.71	1.17	1.28	1.00	1.71	1.19	1.30	0.86	1.65	1.16	1.25

Note: (1) Case A = Without No.1 Reservoir
(2) Case B-1 = Combined with No.1 Reservoir and 730m H.W.S. ($120 \times 10^6m^3$)
(3) Case B-2 = Combined with No.1 Reservoir and 725.5m H.W.S. ($90 \times 10^6m^3$)
(4) Case B-3 = Combined with No.1 Reservoir and 722.5m H.W.S. ($50 \times 10^6m^3$)
(5) H.W.S. = Normal High Water Surface Level
(6) Figures in Parenthesis = Effective Storage Capacity
(7) P.S. = Power Station of Nam Sai Yai
(8) * = Cost of No.1 Dam only

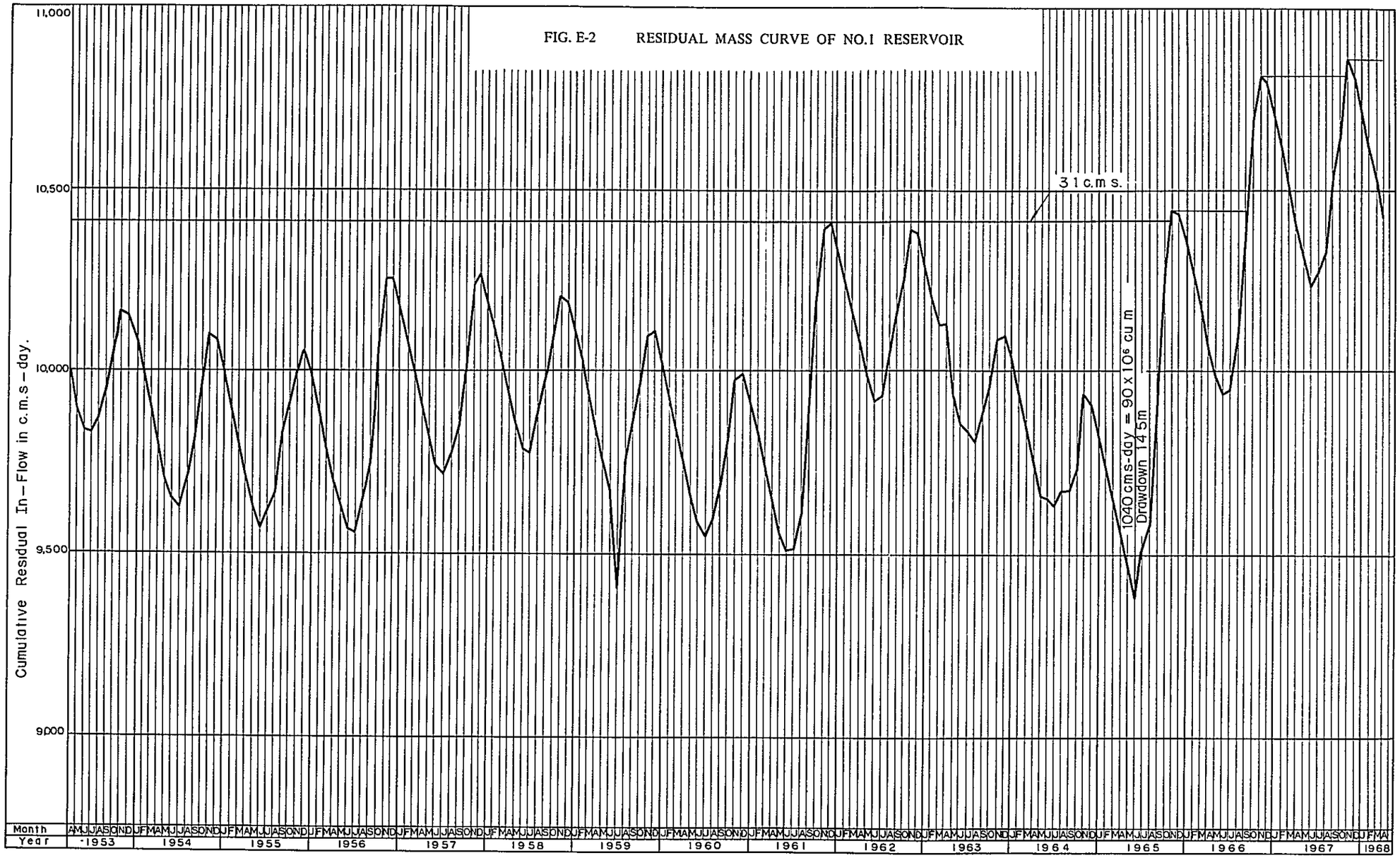
FIG. E-1 AREA CAPACITY CURVES FOR A-NO.3 REGULATING POND

(A-LINE)



Elevation (m)	Area (sq km)	Volume (10^6 cu.m)
510	0.598	5.733
505	0437	3.145
500	0257	1.410
495	0.125	0.455
490	0038	0.048
487.5	0	

FIG. E-2 RESIDUAL MASS CURVE OF NO.1 RESERVOIR



APPENDIX F

TABLE LIST

TABLE F-1 AVAILABLE ENERGY OF NAM SAI YAI NO.2 POWER STATION

YEAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	ANNUAL
53-54	2551.0	2568.0	2497.0	2652.0	2776.0	2799.0	2988.0	2895.0	2956.0	2896.0	2547.0	2728.0	32853.0
54-55	2539.0	2560.0	2473.0	2684.0	2836.0	2876.0	9224.0	2853.0	2896.0	2823.0	2468.0	2628.0	38860.0
55-56	2423.0	2428.0	2470.0	3216.0	2840.0	2822.0	2992.0	2911.0	2988.0	2936.0	2597.0	2800.0	33423.0
56-57	2621.0	2640.0	2562.0	3244.0	2887.0	9072.0	9400.0	2911.0	2980.0	2924.0	2583.0	2772.0	46596.0
57-58	2590.0	2592.0	2504.0	2660.0	2788.0	2825.0	9349.0	2911.0	2983.0	2936.0	2597.0	2800.0	39535.0
58-59	2621.0	2636.0	2559.0	3234.0	2876.0	2884.0	9237.0	2864.0	2916.0	2848.0	2496.0	2664.0	39835.0
59-60	2466.0	2460.0	2334.0	2656.0	2776.0	2818.0	3008.0	2911.0	2980.0	2928.0	2583.0	2780.0	32700.0
60-61	2597.0	2600.0	2478.0	2636.0	2768.0	2802.0	3008.0	2911.0	2980.0	2928.0	2583.0	2780.0	33071.0
61-62	2597.0	2644.0	2586.0	3262.0	9150.0	9096.0	9400.0	2911.0	2980.0	2928.0	2583.0	2780.0	52917.0
62-63	2601.0	2624.0	2578.0	3286.0	8587.0	2776.0	2992.0	2892.0	2948.0	2887.0	2539.0	2716.0	39426.0
63-64	2528.0	2512.0	2411.0	2476.0	2608.0	2644.0	2880.0	2818.0	2872.0	2796.0	2446.0	2600.0	31591.0
64-65	2396.0	2488.0	2396.0	2568.0	2592.0	2605.0	2916.0	2818.0	2855.0	2776.0	2424.0	2576.0	31410.0
65-66	2369.0	2412.0	2562.0	2748.0	9187.0	9096.0	9400.0	2911.0	2976.0	2919.0	2572.0	2759.0	51911.0
66-67	2570.0	2628.0	2570.0	3309.0	9200.0	9096.0	9337.0	2884.0	2932.0	2864.0	2515.0	2680.0	52585.0
67-68	2489.0	2468.0	2462.0	2668.0	2892.0	2911.0	9400.0	2892.0	2940.0	2876.0	2521.0	2692.0	39211.0
	2530.5	2550.7	2496.1	2886.6	4450.9	4474.8	6368.7	2886.2	2945.5	2884.3	2536.9	2717.0	39728.3

TABLE F-2 AVAILABLE ENERGY OF NAM SAI YAI NO.3 POWER STATION

YEAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	ANNUAL
53-54	12911.0	13391.0	13049.0	13550.0	13631.0	13210.0	13677.0	13049.0	13375.0	13346.0	12052.0	13339.0	158580.0
54-55	12911.0	13396.0	13032.0	13614.0	13677.0	13292.0	42035.0	13020.0	13369.0	13344.0	12050.0	13338.0	187078.0
55-56	12907.0	13393.0	13153.0	16012.0	13610.0	13163.0	13646.0	13137.0	13400.0	13354.0	12058.0	13346.0	161179.0
56-57	12915.0	13385.0	13042.0	15939.0	13654.0	40971.0	42127.0	13067.0	13381.0	13348.0	12054.0	13339.0	217222.0
57-58	12911.0	13370.0	13028.0	13554.0	13633.0	13248.0	42247.0	13119.0	13398.0	13354.0	12060.0	13346.0	187268.0
58-59	12915.0	13381.0	13044.0	15927.0	13652.0	13236.0	42031.0	13042.0	13373.0	13346.0	12052.0	13339.0	189338.0
59-60	12911.0	13377.0	12982.0	13725.0	13625.0	13252.0	13706.0	13077.0	13383.0	13350.0	12054.0	13344.0	158786.0
60-61	12913.0	13369.0	12994.0	13552.0	13633.0	13236.0	13806.0	13080.0	13383.0	13350.0	12054.0	13344.0	158714.0
61-62	12913.0	13419.0	13067.0	15933.0	42324.0	40941.0	42114.0	13082.0	13385.0	13350.0	12054.0	13344.0	245926.0
62-63	12913.0	13396.0	13077.0	15968.0	42003.0	13210.0	13725.0	13032.0	13370.0	13346.0	12052.0	13335.0	189431.0
63-64	12911.0	13360.0	13014.0	13454.0	13606.0	13183.0	13690.0	13095.0	13390.0	13350.0	12056.0	13344.0	158453.0
64-65	12905.0	13484.0	13020.0	13565.0	13494.0	13151.0	13806.0	13030.0	13369.0	13348.0	12052.0	13344.0	158568.0
65-66	12907.0	13370.0	13274.0	13596.0	42397.0	41005.0	42091.0	13044.0	13377.0	13344.0	12048.0	13335.0	243788.0
66-67	12907.0	13435.0	13067.0	16008.0	42295.0	40963.0	42012.0	13018.0	13360.0	13344.0	12048.0	13335.0	245792.0
67-68	12911.0	13360.0	13110.0	13609.0	13796.0	13294.0	42101.0	12972.0	13354.0	13344.0	12048.0	13335.0	187234.0
	12910.7	13392.4	13063.5	14533.7	21268.7	20623.7	28854.3	13057.6	13377.8	13347.9	12052.8	13340.7	189823.8

QN

TABLE F-3 POWER DISCHARGE FOR NO.2 POWER STATION

YEAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	ANNUAL
53-54	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
54-55	6.4	6.4	6.4	6.4	6.4	6.4	20.0	6.4	6.4	6.4	6.4	6.4	7.5
55-56	6.4	6.4	6.4	7.5	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.5
56-57	6.4	6.4	6.4	7.5	6.4	20.0	20.0	6.4	6.4	6.4	6.4	6.4	8.8
57-58	6.4	6.4	6.4	6.4	6.4	6.4	20.0	6.4	6.4	6.4	6.4	6.4	7.5
58-59	6.4	6.4	6.4	7.5	6.4	6.4	20.0	6.4	6.4	6.4	6.4	6.4	7.6
59-60	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
60-61	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
61-62	6.4	6.4	6.4	7.5	20.0	20.0	20.0	6.4	6.4	6.4	6.4	6.4	9.9
62-63	6.4	6.4	6.4	7.5	20.0	6.4	6.4	6.4	6.4	6.4	6.4	6.4	7.6
63-64	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
64-65	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4
65-66	6.4	6.4	6.4	6.4	20.0	20.0	20.0	6.4	6.4	6.4	6.4	6.4	9.8
66-67	6.4	6.4	6.4	7.5	20.0	20.0	20.0	6.4	6.4	6.4	6.4	6.4	9.9
67-68	6.4	6.4	6.4	6.4	6.4	6.4	20.0	6.4	6.4	6.4	6.4	6.4	7.5
	6.4	6.4	6.4	6.8	10.0	10.0	13.7	6.4	6.4	6.4	6.4	6.4	7.6

FN

TABLE F-4 SPILLED WATER OF NO. 2 RESERVOIR

YEAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	ANNUAL
53-54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54-55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55-56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.2
56-57	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.6	0.0	0.0	0.0	0.0	0.2
57-58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.1
58-59	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59-60	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.1	0.0	0.0	0.0	0.0	0.2
60-61	0.0	0.0	0.0	0.0	0.0	0.0	3.6	2.3	0.0	0.0	0.0	0.0	0.5
61-62	0.0	0.0	0.0	0.0	0.0	1.2	1.6	2.4	0.0	0.0	0.0	0.0	0.4
62-63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63-64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64-65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65-66	0.0	0.0	0.0	0.0	0.0	5.5	0.5	0.5	0.0	0.0	0.0	0.0	0.5
66-67	0.0	0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.3
67-68	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.1
	0.0	0.0	0.0	0.0	0.0	0.7	0.5	0.9	0.0	0.0	0.0	0.0	0.2

HN

TABLE F-5 WATER SURFACE OF NO.2 RESERVOIR

YEAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	ANNUAL
53-54	581.6	579.9	580.2	582.0	585.1	588.0	590.4	590.5	589.6	588.1	586.2	583.9	585.5
54-55	581.3	579.7	579.6	582.8	586.6	590.0	589.5	589.4	588.1	586.3	584.0	581.4	584.9
55-56	578.3	576.4	579.5	584.3	586.7	588.6	590.5	590.9	590.4	589.1	587.6	585.7	585.7
56-57	583.4	581.7	581.9	584.9	587.9	590.7	590.9	590.9	590.2	588.8	587.2	585.0	587.0
57-58	582.6	580.5	580.4	582.2	585.4	588.7	590.5	590.9	590.3	589.1	587.6	585.7	586.2
58-59	583.4	581.6	581.8	584.7	587.6	590.2	589.6	589.7	588.6	586.9	584.8	582.3	585.9
59-60	579.4	577.2	576.0	582.1	585.1	588.5	590.9	590.9	590.2	588.9	587.2	585.2	585.1
60-61	582.8	580.7	579.7	581.6	584.9	588.1	590.9	590.9	590.2	588.9	587.2	585.2	585.9
61-62	582.8	581.8	582.5	585.3	588.9	590.9	590.9	590.9	590.2	588.9	587.2	585.2	587.1
62-63	582.9	581.3	582.3	585.8	584.4	587.4	590.5	590.4	589.4	587.9	586.0	583.6	586.0
63-64	581.0	578.5	578.0	577.6	580.9	584.0	587.7	588.5	587.5	585.6	583.4	580.7	582.8
64-65	577.6	577.9	577.6	579.9	580.5	583.0	588.6	588.5	587.1	585.1	582.8	580.1	582.4
65-66	576.9	576.0	581.9	584.4	589.2	590.9	590.9	590.9	590.1	588.7	586.9	584.7	586.0
66-67	582.1	581.4	582.1	586.3	589.3	590.9	590.4	590.2	589.0	587.3	585.3	582.7	586.4
67-68	580.0	577.4	579.3	582.4	588.0	590.9	590.9	590.4	589.2	587.6	585.5	583.0	585.4
	581.1	579.5	580.2	583.1	586.0	588.7	590.2	590.3	589.3	587.8	585.9	583.6	585.5

TABLE D-1 ANNUAL BENEFIT OF NAM SAI YAI NO.2 AND NO.3 POWER STATION WITH INTEREST RATE OF 7%

(Unit : 1,000 Baht)

Fiscal Year	No.2 Power Station Annual Benefit	No.2 Power Station Present Worth in 1974	No.3 Power Station Annual Benefit	No.3 Power Station Present Worth in 1975	Total of Annual Benefit
1974	6,070	6,070	-	-	6,070
1975	6,670	6,230	30,760	30,760	37,430
1976	6,670	6,120	32,020	29,900	38,690
1977	6,670	5,450	33,010	18,800	38,680
1978	7,060	5,380	33,010	27,000	40,070
1979	7,240	(45 yrs.) 7,240 x 13.605 x 0.713 = 70,300	37,270	28,400 (45 yrs.) 38,200 x 13.605 x 0.713 = 370,000	44,510
1980	⋮	⋮	38,200	⋮	45,440
⋮	⋮	⋮	⋮	⋮	⋮
2023	7,240		⋮	⋮	45,440
2024	-		38,200		38,200
	Present Worth in 1974	99,550	Present Worth in 1975	514,860	-
Annual Benefit for 50 yrs. (Capital recovery factor for 50 yrs = 7.25%)		7,220	-	37,300	(B)= 44,520

Investment Cost of No.2 P. S. = 231,700,000 ฿

Investment Cost of No.3 P. S. = 188,900,000 ฿

Transmission, Telecommunication and Substation = 69,200,000 ฿

Annual Cost Factor Generating Plant = 8.25% (+1%)

Annual Cost Factor for Transmission Telcommunication and Substation =10.25% (+3%)

Annual Cost for Generating Plant = 19,100 + 15,600 = 34,700 ฿

Annual Cost for Transmission Telcommunication and Substation = 7,100 ฿

Total Annual Cost (C) = 41,800 ฿

Benefit Cost Ratio (B/C) = 1.07

TABLE D-2 ANNUAL BENEFIT OF NAM SAI YAI NO.2 AND NO. 3 POWER STATION WITH INTEREST RATE OF 8%

(Unit : 1,000 Bat

Fiscal Year	No. 2 Power Station Annual Benefit	No. 2 Power Station Present Worth in 1974	No.3 Power Station Annual Benefit	No.3 Power Station Present Worth in 1975	Total of Annual Benefit
1974	6,070	6,070	-	-	6,070
1975	6,670	6,170	30,760	30,760	37,430
1976	6,670	5,720	32,020	29,600	38,690
1977	6,670	5,300	33,010	28,300	38,680
1978	7,060	5,200	33,010	26,200	40,070
1979	7,240	(45 yrs.) 7,240x12.234 x0.681 = 60,400	37,270	27,400	44,510
1980	⋮		38,200	(45 yrs) 38,200x12.234 x0.681 = 318,000	45,440
2023	7,240		⋮	⋮	45,440
2024	-		38,200		38,200
	Present Worth in 1974	88,860	Present Worth in 1975	460,260	-
Annual Benefit for 50 yrs. (Capital recovery factor for 50 yrs. = 8.17%)		7,260	-	37,600	(B)= 44,860

Investment Cost of No.2 P. S. = 231,700,000 ฿

Investment Cost of No.3 P. S. = 188,900,000 ฿

Transmission, Telecommunication and Substation = 69,200,000 ฿

Annual Cost Factor for Generating = 9.17%

Annual Cost Factor for Transmission, Telecommunication and Substation = 11.17%

Annual Cost for Generating plant = 21,300 + 17,300 = 38,600 ฿

Annual Cost for Transmission and Telecommunication and Substation = 7,800 ฿

Total Annual Cost (C) = 46,400 ฿

Benefit Cost Ratio (B/C) = 0.97

APPENDIX G

TABLE LIST

FIGURE LIST

FIG. G-1 RELATION BETWEEN BENEFIT COST RATIO AND INTEREST OF NAM SAI YAI NO.2 AND NO.3 PROJECTS