

資料編

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Full Name	Position of Title	Organization Name & Address
穂 崎 巧	特命全權大使 インド駐在	Plot No 4 & 5, 50-6, Chanakyapuri, New Delhi, Embassy of Jappn
宮 永 豊 司	一等書記官	— ditto —
平 井 徳 清	在インド J I C A 所 長	— ditto —
西 岡 京 治	コロンボ計画 農業専門家	国立ボンディ農園, Paro Dist.
津 川 友 明	国連ボランティア	Department of Industries and Mines, Royal Government of Bhutan, P. O. Box 141 Thimphu, Bhutan
渡 辺 良 典	Administrative Officer	在カルカッタ日本国総領事館 (Consulate-General of Japan, Calcutta)
SANGAY DORJI	1st Secretary	Royal Bhutanese Embassy
DAW PENJO	3rd Secretary	— ditto —
KINGA SINGYE	Attache	Economic Division, Ministry of Foreign Affairs
HARI, K. CHHEHI	Under Secretary	Foreign Ministry
DASHO LAM PENJOR	Deputy Minister	Planning Commission, Autonomous & Semi-autonomousbodies
UGYEN TSHEVING	Acting Director	Planning Commission, Autonomous & Semi-autonomousbodies.
DORJI NORBU	Assist Programme Officer	Planning Commission, Autonomous & Semi-autonomousbodies
SONAN TSHONG		Planning Commission, Autonomous & Semi-autonomousbodies
KUNLEY GYALTSHEN		Revenue Dept., Finance Ministry,
DASHO, C. DORJI	Secretary	Dept of Industries & Mines., Mnistry of Trade Industry & Power,
A. K. PRADKAN	Director	Department of Power, Ministry of Trade Industry & Power, Thimphu, Bhutan
JIGNE KARCHUNG	Engineering Officer	— ditto —

BHIM SUBBA	Superintending Engineer	Planning Division, Dept. of Power
SONAM TSHERING	Section Officer	Office of the Director, Dept. of Power,
O. B. CHETTRI	Section Officer	— ditto —
J. N. SHARMA	Section Officer	— ditto —
J. B. BASNET	Surveyor	— ditto —
SHERUB TENZIN	DASHO DZONGDA	Shemgang Dist.
TSEWANG NORBU	Block Head	Tshangkha, Tongsa Dist.
STHEL	Asst. Head	Tangsibi, Tongsa Dist.
PHUB DORJI	Block Head	Tongsa, Tongsa Dist.
KARHA WANGCHUK	Doctor	Tongsa Hospital, Tongsa Dist.
KOTA	Block Head	Tamjhing, Bumthang Dist. (Jagar)
TASHI DORJEE	Block Head	Ura, Bumthang Dist.
TASHI PHUNTSO	Head Master	Ura Primary School, Bumthang Dist.
FRITE MAURER	Master	Bumthang Dist. (Swiss Colony)
PEMA DORJE	Asst. Engineer	Tashigang Branch off., D.P., Tashigang Dist.
SANGAY WANGCHUK	Block Head	Yadi, Mongar Dist.
Mr. PHUB THINLBY	Section officer	Rukubji Branch off., D.P., Rukubji, Wangdiphodrang Dist.
Mr. THRINLAY DORJE	Block Head	Thrinalaygang, Punakha Dist.

調査団員構成

氏名	分担	所属
西村 哲 男	団長・総括	外務省経済協力局 無償資金協力課
大庭 宗 一	水力発電計画	農林水産省構造改善局 建設部水利課
横倉 順 治	計画, 監理	国際協力事業団無償資金計 画調査部基本設計調査第一課
佐藤 英 男	水力発電計画 兼, 水文解析	(株)E P D Cインターナショナル
木村 博 臣	発電土木	(株)E P D Cインターナショナル
一ノ瀬 五 男	電気・機械	(株)E P D Cインターナショナル

調査日程

日 順	月 日	曜 日	調 査 項 目		
1	4月7日	日	成田発		
2	8日	月	デリー着、日本大使館、JICA事務所及びブータン大使館表敬訪問インセプションレポートにより調査内容を説明。		
3	9日	火	デリー発 カルカッタ着		
4	10日	水	カルカッタ空港より離陸するもパロ空港周辺の天候不順のため一次バグドラ空港に待機したがカルカッタに引き返す。		
5	11日	木	カルカッタ発パロ経由ティンプ着、ブータン政府関係機関		
6	12日	金	Department of Power と最終現地調査行程の打合せ		
7	13日	土	資料収集(1/50,000)及び質問事項の打合せ		
8	14日	日	調査機材の準備及び現地調査の打合せ		
9	15日	月	ティンプ発 Rukubji Site踏査 Tongsa泊り。		
10	16日	火	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> A Group Tongsa Site 及びBumthang (No102) No103(Tamjhing) Site 踏査 Tongsa泊 </td> <td style="width: 50%; vertical-align: top;"> B Group No.5 Tangsibi Site 現地調査 Tongsa泊 </td> </tr> </table>	A Group Tongsa Site 及びBumthang (No102) No103(Tamjhing) Site 踏査 Tongsa泊	B Group No.5 Tangsibi Site 現地調査 Tongsa泊
A Group Tongsa Site 及びBumthang (No102) No103(Tamjhing) Site 踏査 Tongsa泊	B Group No.5 Tangsibi Site 現地調査 Tongsa泊				
11	17日	水	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> No.6 Bubja Site踏査 —Thimphu Thimphu泊 </td> <td style="width: 50%; vertical-align: top;"> No.102 Tongsa Site 現地 調査 Tongsa泊 </td> </tr> </table>	No.6 Bubja Site踏査 —Thimphu Thimphu泊	No.102 Tongsa Site 現地 調査 Tongsa泊
No.6 Bubja Site踏査 —Thimphu Thimphu泊	No.102 Tongsa Site 現地 調査 Tongsa泊				
12	18日	木	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> Department of Power と質問事項打合せ及びP.W.D 打合せ Thimphu泊 </td> <td style="width: 50%; vertical-align: top;"> No.103 Tamjhing Site 現地 調査 Bumthang泊 </td> </tr> </table>	Department of Power と質問事項打合せ及びP.W.D 打合せ Thimphu泊	No.103 Tamjhing Site 現地 調査 Bumthang泊
Department of Power と質問事項打合せ及びP.W.D 打合せ Thimphu泊	No.103 Tamjhing Site 現地 調査 Bumthang泊				

日 順	月 日	曜 日	調 査 項 目	
13	19日	金	Deputy Minister, Dasho Lam Penjor氏に表敬訪問 打合せ資料作成, chetta水 力 P.S取水口, 水路現地調 査 Thimphu泊	No.4 Ura Site 及びNo.103 Tamjhing Site 現地調査 Bumthang泊
14	20日	土	Chukha水力発電所建設現場 調査 大庭, 佐藤Phungcholing 泊 西村, 横倉 Thimphu泊	BumthangからMongarに移動 Mongar泊
15	21日	日	Phuntsholing資材置場及び 入国情况等調査 Thimphu泊	No.8 Yadi Site現地調査 Tashigang泊
16	22日	月	Department of Planning Commissionにてブータン政 府とMinutes of Discussion について協議, 午後佐藤, 団員現地調査出発 西村, 大庭, 横倉 3名 Thimphu泊 佐藤 Tongsa泊	No.8 Yadi Site現地調査 Mongar泊 MongarからBumthangに移動
17	23日	火	Signing of Minutes of Discussion No.6 Bubja Site現地調査 西村, 大庭, 横倉 3名 Thimphu泊 佐藤 Shemgang泊	Bumthang泊 BumthangからTongsaに移動
18	24日	水	西村団長, 大庭, 横倉3名 Paro発カルカッタ経由デリ ー着 No.104 Kekhar Site 踏査 佐藤 Shemgang泊	資料収集および整理 Tongsa泊

日 順	月 日	曜 日	調 査 項 目
19	25日	木	日本大使館およびJICA デリー事務所に調査概要説 明 No.104 Kekhar Site 現地調査 佐藤 Shemgang泊
20	26日	金	デリー発バンコック経由成 田着 TG915, KL863 西村団長, 大庭, 横倉 3名帰国 No.7 Surey Site 現地確認 佐藤Gaylegphug泊
21	27日	土	No.7 Surey Site 現地調査 Gaylegphug泊
22	28日	日	GaylegphugからTongsa移動 Tongsa泊
23	29日	月	TongsaからWangdiphodrang を経て Thimphu移動 Thimphu泊
24	30日	火	Department of Power より質問書回答入手, 質問事項に ついて検討
25	5月1日	水	Department of Power Mr. Suda他3名と質問事項及び現 地調査結果の概要について打合せ Thimphu泊
26	2日	木	資料収集及び帰国準備 Paro泊

日 順	月 日	曜 日	調 査 項 目
27	3 日	金	Paro発 (G, Q101) カルカッタ着 カルカッタ泊
28	4 日	土	カルカッタ発 (TG314) バンコック着 バンコック泊
29	5 日	日	バンコック発 (JL476) 成田着 帰 国

MINUTES OF DISCUSSIONS

ON

ESTABLISHMENT PROJECT FOR

MICRO HYDRO POWER FACILITIES

IN

THE KINGDOM OF BHUTAN

In response to the request made by the Government of the Kingdom of Bhutan for the Establishment Project for micro hydro power facilities in the Kingdom of Bhutan (hereinafter referred to as "the Project"), the Government of Japan has sent, through the Japan International Cooperation Agency (hereinafter referred to as "JICA") which is an official agency implementing the technical cooperation of the Government of Japan, the team headed by Mr. Tetsuo Nishimura, to conduct the survey for 29 days from April 7th to May 5th, 1985.

The team carried out a field survey, held a series of discussions and exchanged views with the authorities concerned of the Government of the Kingdom of Bhutan.

Both parties have agreed to recommend to

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: 2 :

their respective governments and the authorities concerned to examine the result of the survey attached herewith toward the realization of the Project.

23, April, 1985

Tetsuo Nishimura

TETSUO NISHIMURA
Head,
Japanese Survey
Team.

A.K. Pradhan

A.K. PRADHAN,
Director,
Department of Power,
Ministry of Trade,
Industries and Power,
Royal Government of
Bhutan : THIMPHU

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A T T A C H M E N T

- 1 : The objectives of the project is to establish micro hydro power facilities on the sites where the people around the area needs supply of electric power urgently for their living.
- 2 : First priority for the supply of power is put to public facilities such as schools, hospitals, communications, veterinary centres etc.
- 3 : The scale of the micro-hydro power facilities should be what can be maintained by the community and standardization should be considered as much as engineering view allows for easier maintenance, operation and spare parts supply.
- 4 : The Japanese Survey Team will convey the Government of Japan the desire of the Government of the Kingdom of Bhutan that the former takes necessary measures to cooperate in implementing the Project and bears the cost of the items requested by the latter shown in Annexure.I within the scope of Japanese economic co-operation programme in grant form.
- 5 : The Government of the Kingdom of Bhutan will take necessary measures listed in Annexure.II under the condition that the grant aid assistance by the Government of Japan is extended to the Project.

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- 6 : The Bhutanese team accepted that the present JICA Basic Design Team was fielded to study only 10 (Ten) sites originally proposed. However, they informed the team of the additional request for 140 (One hundred and forty) sites and requested them to convey this desire to their Government.
- 7 : Both parties confirmed that the Survey Team explained Japan's grant aid programme and the Bhutan side has understood it.

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ANNEXURE - I

1 : The following sites are requested by the Government of Bhutan to be established with micro-hydro facilities :-

In priority order -

- | | | | |
|-----|-----------------------------|---|----------------|
| 1) | Ura | : | Bumthang |
| 2) | Surey | : | Gaylegphug |
| 3) | Yadi | : | Mongar |
| 4) | Thimsung | : | Bumthang |
| 5) | Khekhar | : | Shemgang |
| 6) | Bubja | : | Tongsa |
| 7) | Rukubji | : | Wangdiphodrong |
| 8) | Tansibi | : | Tongsa |
| 9) | Nakhujung
(Thari Bacha) | : | Punakha |
| 10) | Tonsa | : | Tongsa |

2 : The following items are requested by the Government of the Kingdom of Bhutan as grant aid assistance.

- i) Micro hydro power equipment- ten sites
- ii) Civil works for as many sites as possible

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Equipment (in priority order)

- 1 : Turbine, Generator
- 2 : Penstock
- 3 : Pipes for water way, gates
- 4 : Step-up transformer, Transmission line,
Step-down transformer
- 5 : Distribution line to public facilities,
Illumination apparatus
inside the public facilities.
- 6 : Foundation for turbine and generator.

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ANNEXURE : II

Following arrangements are requested to be taken by the Government of Kingdom of Bhutan.

No	Items	To be covered by recipient Side.	To be covered by Grant Aid Side
1	To secure required land	0	
2	To construct access to the construction site for transportation of materials and equipment	0	
3	To construct the gate and fence in and around the site, if necessary	0	
4	To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the B/A i) Advising commission of A/P ii) Payment commission	0 0	
5	To ensure unloading and customs clearance air port of disembarkation in recipient country i) Marine (Air) transportation of the products from Japan to the recipient country ii) Tax exemption and custom clearance of the products at the port of disembarkation iii) Internal transportation from the port of disembarkation to the project site	0	(0) (0)
6	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into recipient country and stay therein for the performance of their work	0	
7	To maintain and use properly and effectively that the facilities constructed and equipment purchased under the grant	0	
8	To bear all the expenses other than those to be borne by the grant, necessary for construction of the facilities as well as for the transportation and the installation of the equipment.	0	

Received Data & Information except items filled in the Questionnaire

Ref. No	Title	Note
1.	General Information of Electric Power Supply in Bhutan	
(1)	Facts and Figures, Period ending March 1984	
(2)	Review of Power Development	
(3)	Power Map of Bhutan	
(4)	Schedule of Tariff	
(5)	Forecast of Power Requirement	
(6)	Daily Load Curve of Typical Day	
(7)	Monthly System Performance and Commercial Return for the System	
(8)	Monthly Performance of Hydel Power House	Hydel : Hydro Electric
(9)	Organization of Department of Power	
(10)	Number of Employees of Department of Power	
(11)	Design Criteria adopted for Existing Hydro Power Station.	
2.	Outline of Proposed Sites	
(1)	Meteorological Data of Adjacent Areas	
(2)	Pre-investigation of Proposed 10 Sites	
(3)	Average Occurance of Snow Fall, Rain Fall and Thunder Storms during the Months	
(4)	Micro Hydro Proposed Sites List, 65 in 140 sites	
(5)	Pre-investigation Result of each 10 Proposed sites	
3.	Reference Data for Basic Design	
(1)	Specifications 1984 (Published by P. W. D)	
(2)	Schedule of Rates for PHUNTSOLING, 1981	
(3)	Schedule of Rates for THIMPHU, 1984	Urban, Rural

(4)	Schedule of Rates for SAMDRUP JONKHAR, 1984	Urban, Rural
(5)	Schedule of Rates for SAMCHI, 1984	Urban, Rural
(6)	Schedule of Rates for SARBHANG, 1984	Rural
(7)	List of Names of P.W.D	
(8)	List of Construction Equipment owned by P.W.D	
(9)	List of Contractor/Firm for Civil Engineering and Transmission Lines	
4.	Reference Data for Implementation Plan	
(1)	Filled in the Questionnaire	
5.	Reference Data for Operation and Maintenance plan	
(1)	Filled in the Questionnaire	
6.	Reference Data for Evolution Project	
(1)	Filled in the Questionnaire	
7.	Socio-Economic Data of Information	
(1)	Structure of Government	
(2)	Statistical Hand Book of Bhutan	
8.	Other Required Data and Information	
(1)	Dzong District Boundary Map (on a scale of 1:250,000) in 1972	
(2)	Topographical Map (on a scale of 1:50,000)	Copy of 22 sheets
(3)	List of Indian Standard	
(4)	Tender Specification No DPT-2/84 for 66kV Transmission Lines issued by D.P.	
(5)	Tender Specification No DPT-3/84 for 66kV Transmission Lines issued by D.P.	
(6)	Mission Report for the Royal Government of Bhutan, Project BHU/81/019	
(7)	Maintenance Equipment Specification for Bhutan Project BHU/81/019	

(8) "BHUTAN, HIMALAYAN KINGDOM"

(9) Delhi Electric Supply Undertaking, Public Notice
News paper "Patriot, 9, April, 1985"

資料-6 ブータン国の一般事情

ブータン国の一般事情

1 地理および気候

「ブ」国はヒマヤラ地方に位置し、北部および北西部は中国（チベット）と国境を接し、南部および西部、東部はインドに接している。

国土面積は約46,500haで人口は約120万人である。そのうちの大多数は標高1,000m～3,000mの中間地帯に居住している。

気候については、高温多湿な亜熱帯気候の南部丘陵地帯から、根雪や氷河の寒冷気候の北部高山地帯にまたがっている。

一般的には、6月から9月迄は南西の季節風が吹き、地方によって異なるが、年間降雨量の約60～90%がこの間にもたらされるが、年間降雨量は500～2,000mmと地域による差が大きい。

気温については、南部では日間平均気温が冬の15℃から夏の31℃、中間地帯では例えばParo地域の冬5℃から夏25℃と年間を通じて温暖である。

しかし、標高4,000mを超える地域では、雨量は少なく、涼しい夏に比べ寒い冬が長い酷しい気候である。

2 歴史

「ブ」国は、古くからヒマラヤ山脈の中で鎖国的な国として存在していたが、1907年現王国の初代国王が即位してから、国家としての形態を整えてきた。それ以前の

「ブ」国の歴史はあまり明確ではない。16世紀頃には各溪谷間にペンロップと呼ばれる土侯が住んでおり、ゾンと呼ばれる城をかまえて統治していた。初代王国はトンサ地方のペンロップだったと云われており、この頃の「ブ」国は日本の戦国時代によく似ていたと云われている。

王国が樹立された3年後の1910年、「ブ」国はインドを支配していたイギリスの保護領となり、外交権をイギリスに委譲した。そのため当時「ブ」国は殆ど国際社会に登場しなかった。1947年インドがイギリスより独立したとき、イギリスがそれまで持っていた外交権をインドに引き渡した。

1949年8月にインドとの間で友好条約が調印され、インドとは今なお特殊な関係をもっており、特に外交関係についてはインド政府の助言に従うことになった。この結果「ブ」国は従来、インド以外の国とは個別的な外交関係をもたず、全てインドを通

じてその対外関係を処理してきた。1952年前国王ジグメ・ドルジ・ワンチュク (Wangchuk 王家3代目の国王) が即位して以来農奴の解放、議会の設置、教育の普及、僧院制度の改革等が遂行され、「ブ」国の近代化が始まった。その後地方豪族同士の争いにより1964年に国家主権論者ジグメ・ドルジ首相が暗殺され、11月の宮廷革命によりワンチュク国王が実権を掌握した。1972年同国王の死去に伴い、4代目国王にジグメ・シングェ・ワンチュク皇太子が即位し現在に至っている。

3 立法、行政、司法

「ブ」国は君主制だが、若い国王の下に民主化が進められている。

国会は一院制で、議員構成は100名の民間代表、40名の政府代表、10名の僧侶代表となっており、任期は3年である。

年2回の定例議会の他必要の都度招集される特別国会がある。

国会は法律の制定を行ない、重要案件について政府に勧告する。

国王および政府に対し、重要問題についての勧告や国会の定めた諸施策を監督する王室諮問協議会がある。

この協議会は国王指名と国会選出の8名で構成されている。

行政組織は、1968年に設置された閣僚委員会がある。

この委員会は各省大臣により構成され、近代化路線に従って国家政策を実施する責任を有している。

「ブ」国は18の地方に分かれ、各地方の長 (Dzongdag) は国务大臣および裁判所の地方長官に対しその地方の責任を有している。

村長は村民によって互選され村の統括の任にあたる。

現在の中央、地方の行政組織をFig. 1, 2に、電力局の組織をFig. 3に示す。

1968年「ブ」国の司法制度は立法、行政の各制度より独立し、現在国王を総裁とする控訴院、6人の判事によりなる高等裁判所、各地の治安裁判所がある。

Fig. 1 STRUCTURE OF GOVERNMENT

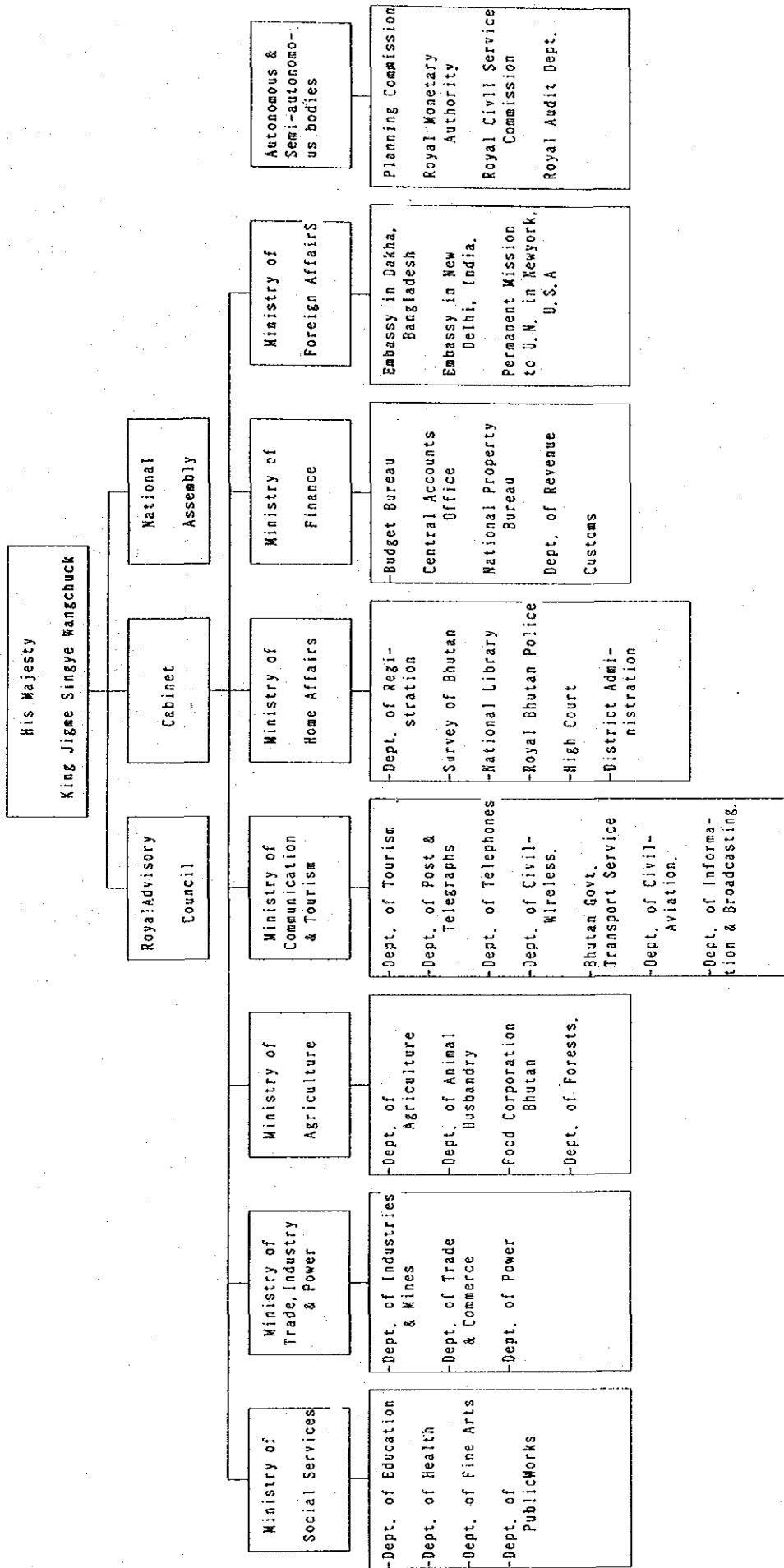


Fig. 2

ORGANIZATIONAL STRUCTURE OF A TYPICAL DISTRICT (DZONGKHAG)

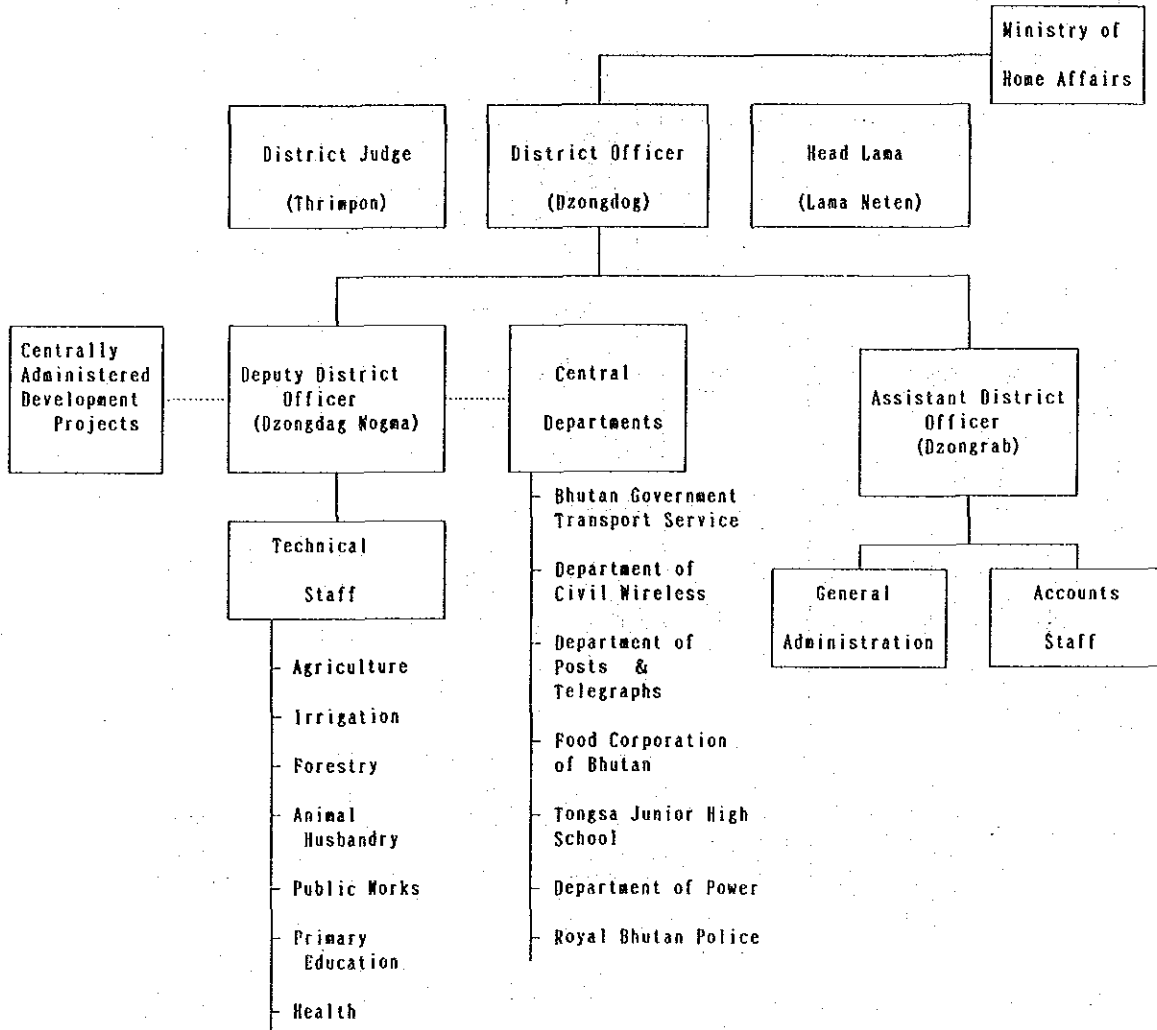
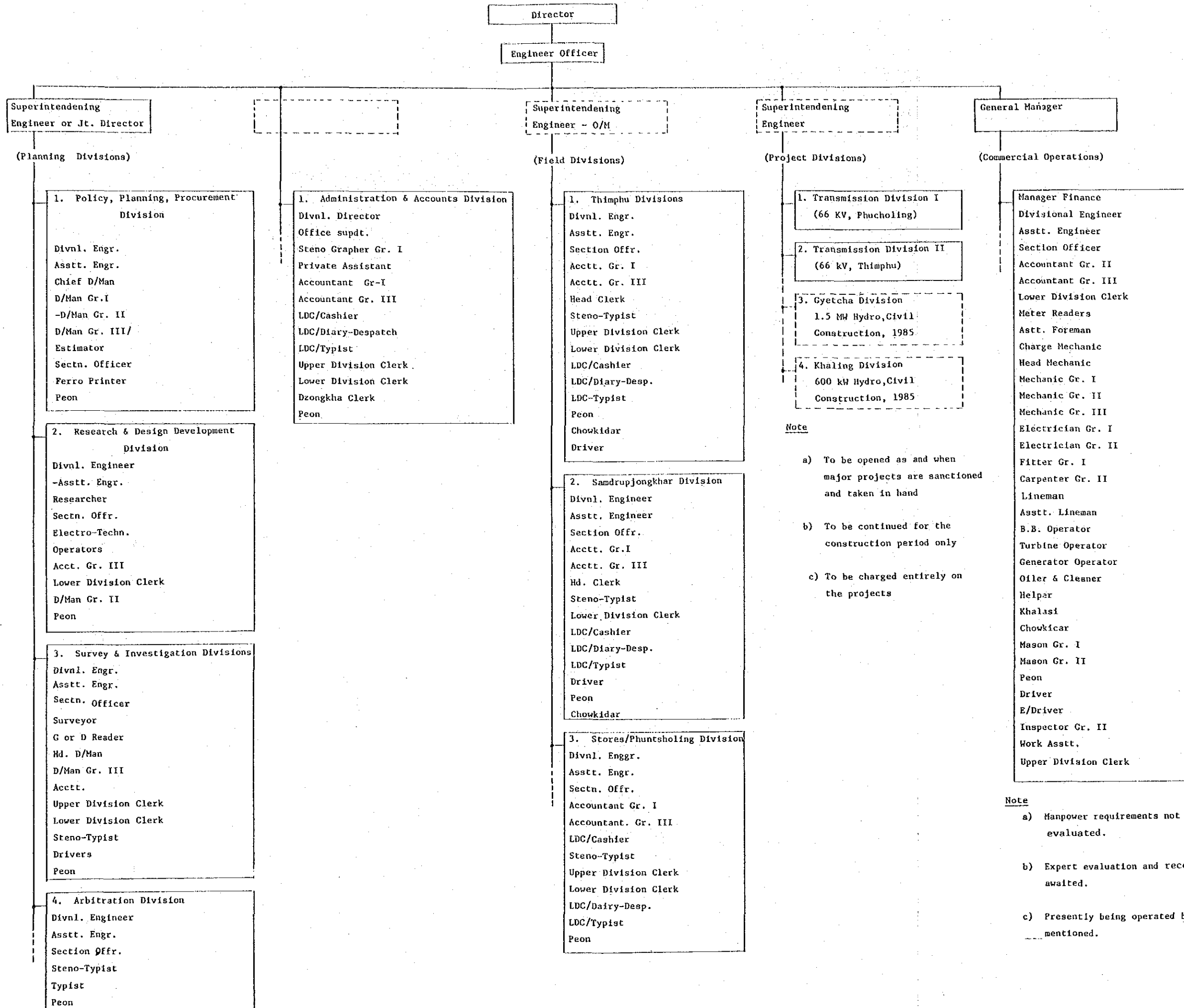


Fig. 3 ORGANIZATION OF THE DEPARTMENT OF POWER



4 経 済

主要産業は人口の約90%が就業する農林畜産業であり、国内総生産の63%を占めている。(Table 1参照)

食用穀類は「ブ」国国内の需要を賄うには不足しており、不足分はインドより輸入している。主要農産物であるメーズは主に「ブ」国東部で生産され、農作物総生産高の約1/2を占め、また稲作は「ブ」国西部の主要作物で農作物総生産高の1/3を占めている。またその他の穀物は比較的高地で栽培されている。その他重要な農作物としては、トウガラシ、豆類、ジャガイモ等である。近年は南部および西部で、リンゴ、オレンジ、カルダモム等が換金作物として栽培されるようになった。

この他の1次産業としては、林業が挙げられる。高地部では、エゾ松、トド松、西洋モミジ等が繁茂し、中央部ではカシの木、低地部ではサラソウ樹が茂っている。

「ブ」国の国土の2/3以上が森林によって覆われており、1980~1981年の国内総生産の約16%が林業によって占められている。又、工業製品の約半分が木材資源によって作られており「ブ」国経済にとって重要な役割を果たしている。また森林資源の保護、再植林等についても近代的方法が採用されつつある。民間の関連事業では、製材業、マッチの芯、鉛筆材料、茶箱等の製造工場がある。公共部門では商業用合板の製作が「ブ」国政府の手により運営されている。

工業の、国内総生産に占める比率は6%程度で非常に低い。

「ブ」国で比較的大工場としてあげられるのは、インドの無償資金で建設されたセメント工場、蒸溜酒製造所、果実加工工場等である。

現在、セメントは国内消費だけでは余剰がありインド等へ輸出されている。

Table 1 Gross Domestic Product (at Market Prices) , 1980/81

Sector	Nu million	Percentage (%)
Agriculture and Related Sectors	645.2	63.2
Agriculture	409.4	40.1
Animal Husbandry	76.5	7.5
Forestry	159.3	15.6
Industry	63.5	6.3
Manufacturing and Processing	33.3	3.3
Mining	8.6	0.8
Power	2.7	0.3
Construction	18.9	1.9
Services	311.8	30.5
Transportation and Communications	33.4	3.3
Tourism	11.0	1.1
Financial Institutions	15.4	1.5
Trade	28.6	2.8
Social Services	34.8	3.4
Public Administration	06.6	10.4
Rental and Other Services	82.0	8.0
Total GDP	1,020.5	100.0

Source : ASIAN DEVELOPMENT BANK
RESTRICTED REPORT No. BHU —EC. 1

鉱物資源については、近年インドの地質調査所の援助で開発可能な資源について調査研究が行われ、白雲石、石灰石、石膏、大理石、鉛、亜鉛、銅等の存在が確認された。このうち白雲石、石灰石等の採鉱が具体的に行われている。これらは政府の手によって経営されている。

観光は外貨獲得の有力な源であり、1980年には 1,406人の観光客が 129万ドル相当

の外貨をもたらした。また1983年からは、外国人の「ブ」国国内登山を許可するようになり外国人用ホテルが5ヶ所 200ベッドあり、かなり観光客の増加が期待できるが今後の飛躍的な観光産業の発展を図るためには、交通手段の改善を検討する必要がある。

エネルギー開発については、国内の需要を充足するために中小規模及び地域的なマイクロ水力で賄うよう計画しているが、PhuntsholingとThimphu の中間地点で、マオン川にインドの援助により最大出力336MW のChukha水力発電所を建設中である。これの完成により電力の対インド輸出を行なうことができ、更に「ブ」国西部地区への電力供給が可能となるため、国内産業の振興への推進力となるものと期待されている。

「ブ」国の主要かつ最大の貿易相手国はインドである。然し最近の貿易収支を見ると、対インド貿易は若干減少傾向を示しており、西ドイツ、日本等が増加傾向にある。

日本の対「ブ」国貿易は主に自動車、電気製品等の輸出であり年々増加傾向を示している。

日本の対「ブ」国貿易収支
(単位千Nu)

年	輸出額	輸入額	収 支
1981	3,293	85	3,208
1982	10,991	—	10,991
1983	18,284	309	17,975

資料-7 各地点の需要想定結果

Table 4.2-4 Demand Forecast of Typical Village at Rukubji Site (No. 3)

No.	Consumer	Kind of Load (Power Facilitie)	Unit Capacity (W,VA)	No. of Unit	Installed Capacity (W,VA)
1	Power House	Lamp	60	2	120
2	(Village Office)	Lamp	60	10	600
		Public Address System	100	1	100
3	(Dispensary)	Lamp	60	5	300
		Room Heater	5,000	2	10,000
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
4	(Vet. Dispensary)	Lamp	60	5	300
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
5	(Junior High School)	Lamp	60	35	2,100
		Fluorescent Lamp	40	40	1,600
		Public Address System	100	1	100
		Video Disk & Television	140	1	140
6	(Food Corporation of Bhutan)	Lamp	60	5	300
7	(Branch Post Office)	Lamp	60	5	300
8	Street Lighting	Lamp	60	5	300
9	Private House				
(1)	Including Neighboring Villages	Lamp	60	65x5	19,500
		Radio	10	65	650
(2)	Excluding Neighboring Villages	Lamp	60	45x5	13,500
		Radio	10	45	450
10	Rice Milling Plant	Motor	3,700	1	3,700
11	(Wireless Station)	Lamp	60	5	300
		Power Source Equipment	1,000	1	1,000

12	Total			
(1)	Excluding Private House	Lamp		4,620
		Fluorescent Lamp		1,680
		Heater		17,200
		Power		1,740
		Total		25,240
(2)	Including Private House	Lamp		18,120
		Fluorescent Lamp		1,680
		Heater		17,200
		Power		5,890
		Total		42,890
(3)	Including Private House of other Villages	Lamp		24,120
		Fluorescent Lamp		1,680
		Heater		17,200
		Power		6,090
		Total		49,090

Calculation of Maximum Demand Forecast

Case 1 Excluding Private House

$$P \geq \left(\frac{4,620}{1.0} + \frac{1,680}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{17,200}{1.0 \times 1.0} + \frac{1,740}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 3,080 + 14,939 = 18,019 \text{ (VA)}$$

Then, Required Power Plant Out Put is as follow:,

$$P_p = P \times K = 18.0 \times 1.2 = 22 \text{ (kVA)}$$

Where, K is Transmission & Distribution Loss Factor

Case 2 Including Private House

$$P \geq \left(\frac{18,120}{1.0} + \frac{1,680}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{17,200}{1.0 \times 1.0} + \frac{5,890}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 9,268 + 19,802 = 29,070 \text{ (VA)}$$

$$P_p = P \times K = 29.1 \times 1.2 = 35 \text{ (kVA)}$$

Case 3 Including Private House of Other Villages

$$P > \left(\frac{24,120}{1.0} + \frac{1,680}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{17,200}{1.0 \times 1.0} + \frac{6,090}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 12,018 + 20,037 = 32,055 \text{ (VA)}$$

$$P_p = P \times K = 32.1 \times 1.2 = 39 \text{ (kVA)}$$

Table 4.2-4 Demand Forecast of Typical Village at Tangsibi Site (No. 5)

No.	Consumer	Kind of Load (Power Facilite)	Unit Capacity (W,VA)	No. of Unit	Installed Capacity (W,VA)
1	Power House	Lamp	60	2	120
2	Village Office with Hall	Lamp	60	10	600
		Public Address System	100	1	100
3	(Sub-dispensary)	Lamp	60	5	300
		Room Heater	5,000	2	10,000
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
4	(Vet. Dispensary)	Lamp	60	5	300
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
5	(Primary School)	Lamp	60	35	2,100
		Fluorescent Lamp	40	40	1,600
		Public Address System	100	1	100
6	(Agriculture Office)	Lamp	60	5	300
7	(Branch Post Office)	Lamp	60	5	300
8	Street Lighting	Lamp	60	5	300
9	Private House				
(1)	Including Neighboring Villages	Lamp	60	131x5	39,300
		Radio	10	131	1,310
(2)	Excluding Neighboring Villages	Lamp	60	71x5	21,300
		Radio	10	71	700
10	Rice Milling Plant	Motor	3,700	1	3,700
11	Sawmill	Motor	5,500	1	5,500

12	Total				
(1)	Excluding Private House	Lamp			4,320
		Fluorescent Lamp			1,680
		Heater			17,200
		Power			600
		Total			23,800
(2)	Including Private House	Lamp			25,620
		Fluorescent Lamp			1,680
		Heater			17,200
		Power			10,500
		Total			55,000
(3)	Including Private House of other Villages	Lamp			43,620
		Fluorescent Lamp			1,680
		Heater			17,200
		Power			11,110
		Total			73,610

Calculation of Maximum Demand Forecast

Case 1 Excluding Private House

$$P \geq \left(\frac{4,320}{1.0} + \frac{1,680}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{17,200}{1.0 \times 1.0} + \frac{600}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 2,943 + 13,603 = 16,546 \text{ (VA)}$$

Then, Required Power Plant Out Put is as follow:

$$P_p = P \times K = 16.5 \times 1.2 = 20 \text{ (kVA)}$$

Where, K is Transmission & Distribution Loss Factor

Case 2 Including Private House

$$P \geq \left(\frac{25,620}{1.0} + \frac{1,680}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{17,200}{1.0 \times 1.0} + \frac{10,500}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 12,705 + 25,205 = 37,910 \text{ (VA)}$$

$$P_p = P \times K = 37.9 \times 1.2 = 46 \text{ (kVA)}$$

Case 3 Including Private House of Other Villages

$$P \geq \left(\frac{43,620}{1.0} + \frac{1,680}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{17,200}{1.0 \times 1.0} + \frac{11,110}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 20,955 + 25,920 = 46,875 \text{ (VA)}$$

$$P_p = P \times K = 46.9 \times 1.2 = 56 \text{ (kVA)}$$

Table 4.2-4 Demand Forecast of Typical Village at Bubja Site (No. 6)

No.	Consumer	Kind of Load (Power Facilitie)	Unit Capacity (W,VA)	No. of Unit	Installed Capacity (W,VA)
1	Power House	Lamp	60	2	120
2	(Village Office with Hall)	Lamp	60	10	600
		Public Address System	100	1	100
3	Basic Health Unit	Lamp	60	5	300
		Room Heater	5,000	1	5,000
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
4	Vet. Dispensary	Lamp	60	5	300
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
5	Primary School	Lamp	60	35	2,100
		Fluorescent Lamp	40	40	1,600
		Public Address System	100	1	100
6	Agriculture Center	Lamp	60	5	300
7	(Branch Post Office)	Lamp	60	5	300
8	Street Lighting	Lamp	60	5	300
9	Private House	Lamp	60	48x5	14,400
		Radio	10	48	480
10	(Rice Milling Plant)	Motor	3,700	1	3,700
11	Telephone Exchange	Lamp	60	5	300
		Power Source Equipment	1,000	1	1,000
12	(Sawmill)	Motor	5,500	1	5,500

13	Total				
(1)	Excluding Private House	Lamp			4,620
		Fluorescent Lamp			1,680
		Heater			12,200
		Power			1,600
		Total			20,100
(2)	Including Private House	Lamp			19,020
		Fluorescent Lamp			1,680
		Heater			12,200
		Power			11,280
		Total			44,180
(3)	Including Private House of other Villages	Lamp	-	-	-
		Fluorescent Lamp	-	-	-
		Heater	-	-	-
		Power	-	-	-
		Total	-	-	-

Calculation of Maximum Demand Forecast

Case 1 Excluding Private House

$$P \geq \left(\frac{4,620}{1.0} + \frac{1,680}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{12,200}{1.0 \times 1.0} + \frac{1,600}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 3,080 + 11,025 = 14,105 \text{ (VA)}$$

Then, Required Power Plant Out Put is as follow:

$$P_p = P \times K = 14.1 \times 1.2 = 17 \text{ (kVA)}$$

Where, K is Transmission & Distribution Loss Factor

Case 2 Including Private House

$$P \geq \left(\frac{19,020}{1.0} + \frac{1,680}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{12,200}{1.0 \times 1.0} + \frac{11,280}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 9,680 + 22,369 = 32,049 \text{ (VA)}$$

$$P_p = P \times K = 32.0 \times 1.2 = 38 \text{ (kVA)}$$

Table 4.2-4 Demand Forecast of Typical Village at Surey Site (No. 7)

No.	Consumer	Kind of Load (Power Facillite)	Unit Capacity (W,VA)	No. of Unit	Installed Capacity (W,VA)
1	Power House	Lamp	60	2	120
2	(Village Office with Hall)	Lamp	60	10	600
		Public Address System	100	1	100
3	Dispensary	Lamp	60	5	300
		Room Heater	5,000	1	5,000
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
4	Vet. Dispensary	Lamp	60	5	300
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
5	Primary School	Lamp	60	35	2,100
		Fluorescent Lamp	40	40	1,600
		Public Address System	100	1	100
6	(Agriculture Extention Office)	Lamp	60	5	300
7	Branch Post Office	Lamp	60	5	300
8	Street Lighting	Lamp	60	5	300
9	Private House	Lamp	60	240x5	72,000
		Radio	10	240	2,400
10	(Rice Milling Plant)	Motor	3,700	1	3,700
11	(Sawmill)	Motor	5,500	1	5,500

12	Total				
(1)	Excluding Private House	Lamp			4,320
		Fluorescent Lamp			1,680
		Heater			12,200
		Power			600
		Total			18,800
(2)	Including Private House	Lamp			76,320
		Fluorescent Lamp			1,680
		Heater			12,200
		Power			12,200
		Total			102,400
(3)	Including Private House of other Villages	Lamp	-	-	-
		Fluorescent Lamp	-	-	-
		Heater	-	-	-
		Power	-	-	-
		Total	-	-	-

Calculation of Maximum Demand Forecast

Case 1 Excluding Private House

$$P \geq \left(\frac{4,320}{1.0} + \frac{1,680}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{12,200}{1.0 \times 1.0} + \frac{600}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 2,943 + 9,853 = 12,796 \text{ (VA)}$$

Then, Required Power Plant Out Put is as follow:

$$P_p = P \times K = 12.8 \times 1.2 = 15 \text{ (kVA)}$$

Where, K is Transmission & Distribution Loss Factor

Case 2 Including Private House

$$P \geq \left(\frac{76,320}{1.0} + \frac{1,680}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{12,200}{1.0 \times 1.0} + \frac{12,200}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 35,943 + 23,447 = 59,390 \text{ (VA)}$$

$$P_p = P \times K = 59.4 \times 1.2 = 71 \text{ (kVA)}$$

Table 4.2-4 Demand Forecast of Typical Village at Yadi Site (No. 8)

No.	Consumer	Kind of Load (Power Facilitite)	Unit Capacity (W,VA)	No. of Unit	Installed Capacity (W,VA)
1	Power House	Lamp	60	2	120
2	Village Office (1985 -)	Lamp	60	5	300
		Public Address System	100	1	100
3	Dispensary	Lamp	60	5	300
		Room Heater	5,000	2	10,000
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
4	Vet. Hospital	Lamp	60	9	540
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
5	Primary School	Lamp	60	70	4,200
		Fluorescent Lamp	40	80	3,200
		Public Address System	100	1	100
6	Food Corporation of Bhutan (1985 -)	Lamp	60	5	300
7	Branch Post Office	Lamp	60	3	180
8	Street Lighting	Lamp	60	5	300
9	Private House				
(1)	Including Neighboring Villages	Lamp	60	115x5	34,500
		Radio	10	115	1,150
(2)	Excluding Neighboring Villages	Lamp	60	540x5	162,000
		Radio	10	540	5,400
10	Rice Milling Plant	Motor	3,700	1 (3)	3,700 (11,100)
11	Wireless Station (1985 -)	Lamp	60	5	300
		Power Source Equipment	1,000	1	1,000
12	Sawmill	Motor	5,500	0 (1)	0 (5,500)

13	Total				
(1)	Excluding Private House	Lamp			6,540
		Fluorescent Lamp			3,280
		Heater			17,200
		Power			1,600
		Total			28,620
(2)	Including Private House	Lamp			41,040
		Fluorescent Lamp			3,280
		Heater			17,200
		Power			6,450
		Total			67,970
(3)	Including Private House of other Villages	Lamp	-	-	168,540
		Fluorescent Lamp	-	-	3,280
		Heater	-	-	17,200
		Power	-	-	23,600
		Total	-	-	212,620

Calculation of Maximum Demand Forecast

Case 1 Excluding Private House

$$P \geq \left(\frac{6,540}{1.0} + \frac{3,280}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{17,200}{1.0 \times 1.0} + \frac{1,600}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 4,877 + 14,775 = 19,652 \text{ (VA)}$$

Then, Required Power Plant Out Put is as follow:

$$P_p = P \times K = 19.7 \times 1.2 = 24 \text{ (kVA)}$$

Where, K is Transmission & Distribution Loss Factor

Case 2 Including Private House

$$P > \left(\frac{41,040}{1.0} + \frac{3,280}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{17,200}{1.0 \times 1.0} + \frac{6,450}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 20,689 + 20,459 = 41,148 \text{ (VA)}$$

$$P_p = P \times K = 41.1 \times 1.2 = 49 \text{ (kVA)}$$

Case 3 Including Private House of Other Villages

$$P > \left(\frac{168,540}{1.0} + \frac{3,280}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{17,200}{1.0 \times 1.0} + \frac{23,600}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 79,127 + 40,556 = 119,683 \text{ (VA)}$$

$$P_p = P \times K = 120.0 \times 1.2 = 144 \text{ (kVA)}$$

Table 4.2-4 Demand Forecast of Typical Village at Punakha Site (No. 101)

No.	Consumer	Kind of Load (Power Facillite)	Unit Capacity (W,VA)	No. of Unit	Installed Capacity (W,VA)
1	Power House	Lamp	60	2	120
2	Village Office with Hall	Lamp Public Address System	60 100	10 1	600 100
3	Dispensary	Fluorescent Lamp Room Heater Water Heater Refrigerator Germicidal Lamp	40 5,000 3,600 200 20	22 2 1 1 2	880 10,000 3,600 200 40
4	Vet. Dispensary	Lamp Water Heater Refrigerator Germicidal Lamp	60 3,600 200 20	9 1 1 2	540 3,600 200 40
5	Primary School	Lamp Fluorescent Lamp Public Address System	60 40 100	35 40 1	2,100 1,600 100
6	Food Corporation of Bhutan	Lamp	60	5	300
7	Agriculture Office	Lamp	60	5	300
8	Branch Post Office	Lamp	60	5	300
9	Street Lighting	Lamp	60	5	300
10	Private House				
(1)	Including Neighboring Villages	Lamp Radio	60 10	32x5 32	9,600 320
(2)	Excluding Neighboring Villages	Lamp Radio	60 10	54x5 54	16,200 540
11	Rice Milling Plant	Motor	3,700	4	14,800

12	Total				
(1)	Excluding Private House	Lamp			4,560
		Fluorescent Lamp			2,560
		Heater			17,200
		Power			600
		Total			24,920
(2)	Including Private House	Lamp			14,160
		Fluorescent Lamp			2,560
		Heater			17,200
		Power			15,720
		Total			49,640
(3)	Including Private House of other Villages	Lamp	-	-	20,760
		Fluorescent Lamp	-	-	2,560
		Heater	-	-	17,200
		Power	-	-	15,940
		Total	-	-	56,460

Calculation of Maximum Demand Forecast

Case 1 Excluding Private House

$$\begin{aligned}
 P &> \left(\frac{4,560}{1.0} + \frac{2,560}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{17,200}{1.0 \times 1.0} + \frac{600}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1} \\
 &= 3,557 + 13,603 = 17,160 \text{ (VA)}
 \end{aligned}$$

Then, Required Power Plant Out Put is as follow:

$$P_p = P \times K = 17.2 \times 1.2 = 21 \text{ (kVA)}$$

Where, K is Transmission & Distribution Loss Factor

Case 2 Including Private House

$$\begin{aligned}
 P &> \left(\frac{14,160}{1.0} + \frac{2,560}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{17,200}{1.0 \times 1.0} + \frac{15,720}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1} \\
 &= 7,957 + 31,322 = 39,279 \text{ (VA)}
 \end{aligned}$$

$$P_p = P \times K = 39.3 \times 1.2 = 47 \text{ (kVA)}$$

Case 3 Including Private House of Other Villages

$$P \geq \left(\frac{20,760}{1.0} + \frac{2,560}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{17,200}{1.0 \times 1.0} + \frac{15,940}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$
$$= 10,982 + 31,580 = 42,562 \text{ (VA)}$$

$$P_p = P \times K = 42.6 \times 1.2 = 51 \text{ (kVA)}$$

Table 4.2-4 Demand Forecast of Typical Village at Tongsa Site (No. 102)

No.	Consumer	Kind of Load (Power Facilitie)	Unit Capacity (W,VA)	No. of Unit	Installed Capacity (W,VA)
1	Power House	Lamp	60	2	120
2	Village Office (in Zong)	Lamp	60	20	1,200
		Public Address System	100	1	100
		Fluorescent Lamp	40	30	1,200
3	Hospital	Lamp	60	30	1,800
		Fluorescent Lamp	40	60	2,400
		Room Heater	5,000	4	20,000
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
		Vacuum Pump	750	1	750
		X-ray	20,000	1	20,000
4	Vet. Hospital	Lamp	60	30	1,800
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
5	Junior High School	Lamp	60	292	17,520
		Fluorescent Lamp	40	124	4,960
		Public Address System	100	1	100
		Video Disk & Television	140	1	140
6	Food Corporation of Bhutan (Agriculture Dept.)	Lamp	60	5	300
7	Bank of Bhutam, Branch Office	Lamp	60	5	300
8	Post Office	Lamp	60	5	300
9	Street Lighting	Lamp	60	10	600
10	Private House	Lamp	60	100x5	30,000
		Radio	10	100	1,000
11	Rice Milling Plant	Motor	3,700	1	3,700
12	Sawmill	Motor	5,500	1	5,500

13	Telephone Exchange Station	Lamp	60	5	300
		Power Source Equipment	1,000	1	1,000
14	Food Corporation of Bhutan (Agriculture Dept.)	Lamp	60	5	300
15	Wireless Station	Lamp	60	5	300
		Power Supply Equipment	1,000	1	1,000
16	Public Work Office Dept. Office	Lamp	60	8	480
17	Tourist Logde	Lamp	60	38	2,280
		Fluorescent Lamp	40	30	1,200
18	Forest Office	Lamp	60	22	1,320
19	Department of Power Branch Office	Lamp	60	19	1,140
20	Total				
(1)	Excluding Private House	Lamp			30,060
		Fluorescent Lamp			9,840
		Heater			27,200
		Power			23,490
		Total			90,590
(2)	Including Private House	Lamp			60,060
		Fluorescent Lamp			9,840
		Heater			27,200
		Power			33,690
		Total			130,790

Calculation of Maximum Demand Forecast

Case 1 Excluding Private House

$$P \geq \left(\frac{30,060}{1.0} + \frac{9,840}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{27,200}{1.0 \times 1.0} + \frac{23,490}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 19,415 + 47,927 = 67,342 \text{ (VA)}$$

Then, Required Power Plant Out Put is as follow:

$$P_p = P \times K = 67.3 \times 1.2 = 81 \text{ (kVA)}$$

Where, K is Transmission & Distribution Loss Factor

Case 2 Including Private House

$$P \geq \left(\frac{60,060}{1.0} + \frac{9,840}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{27,200}{1.0 \times 1.0} + \frac{33,690}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$
$$= 33,165 + 59,880 = 93,045 \text{ (VA)}$$

$$P_p = P \times K = 93.0 \times 1.2 = 112 \text{ (kVA)}$$

Table 4.2-4 Demand Forecast of Typical Village at Tamjhing Site (No. 103)

No.	Consumer	Kind of Load (Power Facilitie)	Unit Capacity (W,VA)	No. of Unit	Installed Capacity (W,VA)
1	Power House	Lamp	60	2	120
2	(Village Office with Hall)	Lamp	60	10	600
		Public Address System	100	1	100
3	(Dispensary)	Lamp	60	5	300
		Room Heater	5,000	1	5,000
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
4	(Vet. Dispensary)	Lamp	60	5	300
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
5	(Primary School)	Lamp	60	35	2,100
		Fluorescent Lamp	22	40	880
		Public Address System	100	1	100
6	(Agriculture Section Office)	Lamp	60	5	300
7	(Branch Post Office)	Lamp	60	5	300
8	Street Lighting	Lamp	60	5	300
9	Private House				
(1)	Including Neighboring Villages	Lamp	60	35x5	10,500
		Radio	10	35	350
(2)	Excluding Neighboring Villages	Lamp	60	70x5	21,000
		Radio	10	70	700
10	(Sawmill)	Motor	5,500	1	5,500

II	Total				
(1)	Excluding Private House	Lamp			4,320
		Fluorescent Lamp			960
		Heater			12,200
		Power			600
		Total			18,080
(2)	Including Private House	Lamp			14,820
		Fluorescent Lamp			960
		Heater			12,200
		Power			6,450
		Total			34,430
(3)	Including Private House of other Villages	Lamp			25,320
		Fluorescent Lamp			960
		Heater			12,200
		Power			6,800
		Total			45,280

Calculation of Maximum Demand Forecast

Case 1 Excluding Private House

$$P \geq \left(\frac{4,320}{1.0} + \frac{960}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{12,200}{1.0 \times 1.0} + \frac{600}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 2,530 + 9,853 = 12,383 \text{ (VA)}$$

Then, Required Power Plant Out Put is as follow:

$$P_p = P \times K = 12.4 \times 1.2 = 15 \text{ (kVA)}$$

Where, K is Transmission & Distribution Loss Factor

Case 2 Including Private House

$$P \geq \left(\frac{14,820}{1.0} + \frac{960}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{12,200}{1.0 \times 1.0} + \frac{6,450}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 7,343 + 16,709 = 24,052 \text{ (VA)}$$

$$P_p = P \times K = 24.1 \times 1.2 = 29 \text{ (kVA)}$$

Case 3 Including Private House of Other Villages

$$P > \left(\frac{25,320}{1.0} + \frac{960}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{12,200}{1.0 \times 1.0} + \frac{6,800}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 12,155 + 17,119 = 29,274 \text{ (VA)}$$

$$P_p = P \times K = 29.3 \times 1.2 = 35 \text{ (kVA)}$$

Table 4.2-4 Demand Forecast of Typical Village at Kekhar Site (No. 104)

No.	Consumer	Kind of Load (Power Facilitie)	Unit Capacity (W,VA)	No. of Unit	Installed Capacity (W,VA)
1	Power House	Lamp	60	2	120
2	(Village Office with Hall)	Lamp	60	10	600
		Public Address System	100	1	100
3	(Dispensary)	Lamp	60	5	300
		Room Heater	5,000	1	5,000
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
4	(Vet. Dispensary)	Lamp	60	5	300
		Water Heater	3,600	1	3,600
		Refrigerator	200	1	200
		Germicidal Lamp	20	2	40
5	(Primary School)	Lamp	60	35	2,100
		Fluorescent Lamp	40	40	1,600
		Public Address System	100	1	100
6	(Agriculture Sub Center)	Lamp	60	5	300
7	(Branch Post Office)	Lamp	60	5	300
8	Street Lighting	Lamp	60	5	300
9	Private House	Lamp	60	27x5	8,100
		Radio	10	27	270
10	(Rice Milling Plant)	Motor	3,700	1	3,700
11	(Sawmill)	Motor	5,500	1	5,500

12	Total			
(1)	Excluding Private House	Lamp		4,320
		Fluorescent Lamp		1,680
		Heater		12,200
		Power		600
		Total		18,800
(2)	Including Private House	Lamp		12,420
		Fluorescent Lamp		1,680
		Heater		12,200
		Power		10,070
		Total		36,370

Calculation of Maximum Demand Forecast

Case 1 Excluding Private House

$$P \geq \left(\frac{4,320}{1.0} + \frac{1,680}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{12,200}{1.0 \times 1.0} + \frac{600}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 2,943 + 9,853 = 12,796 \text{ (VA)}$$

Then, Required Power Plant Out Put is as follow:

$$P_p = P \times K = 12.8 \times 1.2 = 15 \text{ (kVA)}$$

Where, K is Transmission & Distribution Loss Factor

Case 2 Including Private House

$$P \geq \left(\frac{12,420}{1.0} + \frac{1,680}{0.8} \right) \times 0.5 \times \frac{1.1}{1.2} + \left(\frac{12,200}{1.0 \times 1.0} + \frac{10,070}{0.8 \times 0.8} \right) \times 0.75 \times \frac{1.1}{1.1}$$

$$= 6,655 + 20,951 = 27,606 \text{ (VA)}$$

$$P_p = P \times K = 27.6 \times 1.2 = 33 \text{ (kVA)}$$

資料-8 流量資料

DAY	4	5	6	7	8	9	10	11	12	1	2	3
1	42.710	62.760	87.710	***	174.800	135.630	55.880	89.090	35.020	35.630	25.650	28.950
2	38.600	46.830	89.000	***	115.230	136.450	75.480	78.960	35.820	35.630	25.550	28.960
3	50.500	41.670	82.720	***	160.180	159.560	77.520	104.660	35.190	34.750	32.570	29.910
4	26.660	40.750	88.450	***	110.810	124.570	78.130	61.560	32.430	36.350	25.570	26.300
5	24.350	40.850	92.220	***	128.430	113.520	84.630	61.460	31.780	35.430	25.550	26.130
6	34.350	42.530	94.460	***	128.430	180.500	89.230	47.620	30.490	33.710	30.090	28.700
7	36.040	54.070	110.230	***	128.430	175.650	81.010	54.690	34.900	33.710	33.810	28.780
8	32.260	54.070	85.710	***	111.020	145.650	77.320	40.760	36.770	32.480	30.990	29.190
9	34.230	54.070	107.660	***	109.370	144.560	77.640	45.070	32.240	34.040	30.670	29.040
10	33.450	54.070	109.320	***	152.460	134.890	87.340	47.690	31.300	34.500	25.550	26.631
11	29.460	54.070	135.320	***	132.150	152.240	114.380	37.260	33.180	35.560	25.370	29.300
12	34.460	54.070	120.110	***	159.000	122.430	88.970	37.470	31.230	34.400	32.550	29.190
13	34.760	54.070	96.220	***	116.590	135.450	92.240	40.500	31.010	33.550	31.700	31.220
14	33.810	54.070	91.580	***	172.620	183.470	111.430	40.220	31.960	34.770	31.700	39.220
15	26.560	54.070	90.210	***	98.340	177.680	74.380	38.020	36.770	32.050	31.050	39.350
16	35.910	54.070	97.350	***	112.120	148.530	92.640	39.920	31.850	32.050	30.780	28.980
17	42.930	54.070	97.350	***	130.910	209.660	85.070	38.370	25.130	32.570	33.180	34.040
18	45.760	70.950	105.070	***	143.800	158.540	104.600	38.920	30.820	30.640	35.390	30.400
19	47.680	73.150	164.450	***	128.410	170.570	91.600	38.170	30.730	32.300	30.060	39.000
20	48.360	75.680	90.570	***	119.870	144.280	89.080	35.840	31.270	31.400	30.700	34.090
21	44.540	07.240	77.890	***	115.660	153.780	75.660	38.180	30.550	31.410	28.790	31.280
22	45.850	60.580	96.950	***	115.660	122.900	105.740	36.460	28.280	30.500	25.370	31.220
23	45.770	93.110	91.960	***	115.660	158.130	85.740	36.510	31.540	33.850	26.230	28.590
24	43.150	88.340	100.340	***	146.810	156.150	78.360	32.670	27.730	38.880	25.280	29.830
25	46.650	87.710	145.720	***	147.590	103.570	62.090	37.490	27.530	30.450	28.620	25.550
26	46.550	73.580	109.120	***	158.000	123.500	62.510	36.510	27.530	30.240	27.610	26.700
27	46.360	77.860	148.010	***	157.060	137.150	61.300	40.580	27.490	30.240	25.220	36.560
28	48.380	97.710	***	***	116.000	118.710	51.200	38.430	28.490	30.950	26.880	31.220
29	44.410	117.740	***	***	145.650	76.240	50.880	36.410	25.470	34.000	31.570	33.570
30	55.170	80.050	***	***	175.220	111.620	95.200	32.970	29.950	30.300	34.360	34.360
31	85.950	85.950	122.220	122.220	175.220	175.220	95.200	32.970	29.950	30.200	25.280	25.650
TOTAL	1120.230	1206.710	***	***	14245.440	14355.780	7633.810	1386.440	963.700	1028.540	842.060	571.101
AVERAGE	41.010	66.723	***	***	136.950	146.655	84.962	46.215	31.087	33.175	30.075	31.326
MAXIMUM	55.170	112.740	164.450	195.740	152.040	209.860	114.380	104.660	36.770	38.880	35.390	39.900
MINIMUM	29.460	40.750	***	***	98.340	76.240	51.200	32.970	25.130	30.200	25.280	25.650

MAY-NIGHT DATE < 840917 > 205.640
 35-NIGHT DATE < 840829 > 145.650
 65-NIGHT DATE < 841030 > 56.200
 185-NIGHT DATE < 840506 > 42.530
 275-NIGHT DATE < 841210 > 31.300
 355-NIGHT DATE < 840708 > ***
 MIN-NIGHT DATE < 840716 > ***
 *ITEM (P)

 A N N U A L

 T C T A L A V E R A G E M A X I M U M M I N I M U M

 ***** 205.650 *****

NO	4	5	6	7	8	9	10	11	12	1	2	3
1	74.660	112.740	178.240									
2	40.700	110.590	126.960	256.300								
3	40.350	97.230	117.480	216.780								
4	37.880	85.150	137.070	176.510								
5	35.820	77.210	141.550	392.570								
6	67.330	73.090	163.040	314.780								
7	41.260	137.660	116.570	176.610								
8	41.260	84.660	139.820	188.160								
9	42.140	76.700	125.120	165.370								
10	35.210	74.240	115.920	155.790								
11	35.210	70.160	115.830	119.190								
12	44.360	68.320	136.520	132.040								
13	37.330	77.480	106.000	126.250								
14	42.390	68.320	93.860	126.251								
15	41.420	70.670	103.360	259.680								
16	41.560	82.520	162.510	139.680								
17	44.160	70.480	116.560	188.920								
18	41.370	120.860	158.930	189.920								
19	50.660	105.490	127.280	174.400								
20	41.260	103.130	163.450	170.720								
21	40.120	103.870	157.220	181.300								
22	35.040	119.870	201.050	200.660								
23	52.870	111.610	174.400	166.830								
24	35.920	111.610	179.160	189.070								
25	35.830	85.000	193.410									
26	30.160	83.920	195.800									
27	57.820	83.520	195.800									
28	41.660	100.710	189.390									
29	82.910	101.390	145.330									
30	52.120	56.230	233.100									
31		56.230										
TOTAL			12815.400	14427.770								
AVERAGE			30.810	147.520								
MAXIMUM	57.120	137.690	233.100	392.570								
MINIMUM		56.230	53.560									
MAX-NICHI DATE < 830705 >			392.570									
35-NICHI DATE < 930629 >			145.720									
SS-NICHI DATE < 920516 >			74.240									
155-NICHI DATE < 931230 >			34.100									
275-NICHI DATE < 921016 >												
355-NICHI DATE < 940320 >												
MIN-NICHI DATE < 940331 >												

A N N U A L
 T C Y A L A V E R A G E M A X I M U M M I N I M U M
 392.570

DAY	4	5	6	7	8	9	10	11	12	1	2	3
1	3.885	4.501	*****	20.594	26.544	6.195	*****	1.902	0.972	3.731	3.740	3.740
2	4.067	3.885	*****	24.514	25.763	8.804	3.594	1.850	0.930	3.899	3.720	3.740
3	4.326	3.565	*****	24.451	15.733	7.693	2.862	1.410	0.930	3.899	3.740	3.740
4	5.801	3.773	*****	22.687	17.702	5.387	3.180	1.326	0.888	3.899	3.700	3.633
5	3.626	3.787	*****	17.990	16.534	7.504	2.874	1.710	0.888	3.731	3.780	3.680
6	4.130	3.599	*****	58.542	16.408	16.527	2.708	1.320	0.888	3.899	3.160	3.680
7	3.563	3.773	*****	60.690	14.531	42.420	2.534	1.260	0.954	3.899	3.760	3.663
8	3.402	3.787	*****	46.526	12.131	20.231	2.928	1.260	0.954	3.899	3.570	3.660
9	3.563	3.787	*****	43.962	12.712	16.464	2.676	1.236	1.080	3.899	3.570	3.660
10	3.563	3.626	*****	33.985	5.059	15.438	2.130	1.236	1.092	3.731	3.700	3.650
11	3.402	3.787	*****	35.203	7.812	11.424	2.070	1.236	1.110	3.899	3.430	3.650
12	3.563	3.885	*****	42.572	7.749	11.473	2.214	1.266	1.440	4.067	3.700	3.750
13	3.563	4.046	*****	36.967	7.301	*****	2.100	1.212	1.788	3.897	3.720	3.690
14	3.563	3.541	*****	32.221	6.544	*****	2.226	1.170	1.602	3.899	3.680	3.750
15	3.563	3.741	*****	28.735	6.554	*****	1.592	1.170	1.398	3.899	3.710	3.750
16	3.598	4.212	*****	27.454	4.235	*****	1.812	1.170	1.074	4.123	3.870	3.790
17	2.562	5.243	*****	28.764	3.619	*****	2.214	1.314	1.050	3.820	3.710	3.730
18	5.250	120.122	*****	24.470	3.610	*****	5.400	1.320	1.032	4.151	3.710	3.730
19	4.774	42.782	*****	14.238	4.704	*****	4.530	1.170	1.032	4.123	3.740	3.660
20	4.886	55.320	*****	24.342	3.558	*****	2.540	1.170	1.032	3.899	3.710	3.780
21	4.893	38.878	*****	32.345	4.623	*****	3.492	1.080	0.996	4.061	3.710	3.650
22	4.576	60.739	*****	50.484	3.610	*****	7.534	1.080	0.996	4.061	3.710	3.750
23	3.558	106.857	*****	54.152	4.893	*****	2.886	1.044	0.996	4.061	3.710	3.780
24	3.755	45.847	*****	46.791	4.315	*****	2.556	1.110	0.996	3.899	3.710	3.800
25	3.757	55.881	*****	35.042	4.319	*****	2.556	1.110	0.996	3.899	3.710	3.800
26	3.558	42.140	*****	35.668	5.535	*****	2.940	0.994	0.936	3.899	3.710	3.620
27	3.558	35.564	*****	64.645	5.061	*****	2.070	1.110	0.936	4.067	3.710	3.760
28	4.242	24.274	*****	64.645	4.788	*****	1.508	1.068	0.936	3.899	3.850	3.700
29	3.855	25.319	*****	40.215	4.788	*****	7.016	1.026	0.936	4.067	3.800	3.800
30	3.430	23.653	*****	32.812	4.542	*****	2.064	1.021	0.954	3.899	3.760	3.760
31		23.653	*****	32.812	4.542	*****	2.064	1.021	0.954	3.899	3.760	3.760
TOTAL	117.051	826.820	*****	1183.078	276.694	*****	*****	37.141	30.766	121.974	103.280	115.296
AVERAGE	3.932	26.665	*****	38.164	5.022	*****	*****	1.238	1.057	3.935	2.680	3.719
MAXIMUM	5.801	120.122	*****	56.654	26.544	42.420	5.400	1.902	1.788	4.151	2.890	3.800
MINIMUM	3.402	3.598	*****	14.238	3.558	*****	*****	0.984	0.888	3.731	3.160	3.620

MAX-NICHI DATE < 840518 > 129.122
 35-NICHI DATE < 840801 > 26.544
 65-NICHI DATE < 840816 > 4.235
 185-NICHI DATE < 850204 > 3.700
 275-NICHI DATE < 841114 > 1.170
 365-NICHI DATE < 840021 > *****
 MIN-NICHI DATE < 841001 > *****
 *ITPM 7)

***** A N I N U A L *****
 ***** AVERAGE *****
 ***** MAXIMUM *****
 ***** MINIMUM *****
 ***** 129.122 *****

DAY	4	5	6	7	8	9	10	11	12	1	2	3
1	2.450	2.540	4.732	15.096	15.932	22.792	5.900	6.360	4.560	3.745	3.318	1.750
2	2.786	2.730	4.732	17.045	13.524	16.576	5.317	6.146	4.711	3.450	3.024	1.673
3	2.464	4.613	4.732	15.085	16.435	15.855	7.932	8.113	4.186	2.295	2.526	1.583
4	2.744	3.752	4.305	18.756	5.630	15.855	6.594	5.357	4.186	2.793	3.055	1.589
5	2.877	3.157	11.361	33.044	5.772	12.482	6.140	5.357	4.186	3.171	3.109	1.673
6	2.254	4.340	8.652	26.530	12.905	12.838	6.237	6.116	4.151	3.171	3.059	1.589
7	2.464	71.188	26.850	16.680	15.615	16.899	6.237	5.575	4.151	3.311	2.958	1.589
8	2.254	10.143	12.537	10.300	11.830	24.248	6.118	5.357	3.976	3.458	3.055	1.673
9	2.344	10.143	17.444	10.300	16.765	6.758	5.719	5.357	3.976	3.171	2.955	1.673
10	2.017	5.057	13.048	15.757	7.812	44.303	6.216	5.320	3.976	3.171	2.926	1.750
11	2.943	4.478	12.255	11.333	9.310	48.734	6.706	5.145	3.976	3.458	2.900	1.589
12	2.505	3.031	11.669	15.722	9.310	79.926	6.167	4.970	3.808	2.779	1.666	1.589
13	2.744	4.473	9.828	21.412	9.387	40.166	6.027	5.145	3.976	3.171	1.666	3.059
14	2.744	4.326	10.648	21.799	11.229	31.250	5.596	4.970	3.976	3.605	1.666	1.918
15	2.786	5.376	14.555	30.585	12.782	24.892	5.530	5.145	3.808	3.171	1.750	1.918
16	2.786	4.326	7.355	13.034	8.974	22.708	5.230	5.955	4.123	3.059	1.666	1.918
17	2.744	5.376	9.758	23.611	7.545	18.739	8.337	5.103	4.123	3.059	1.666	1.918
18	2.744	7.133	9.005	18.772	7.945	16.656	8.337	5.103	3.948	2.926	1.666	1.918
19	2.254	10.136	21.007	15.344	10.465	20.587	7.413	5.285	3.948	3.755	1.666	3.059
20	1.764	5.366	21.007	12.054	7.672	18.507	70.028	5.103	3.948	3.129	1.750	3.059
21	2.422	10.962	21.007	11.641	23.852	17.103	6.475	5.068	3.948	2.926	1.666	2.884
22	3.555	6.999	71.007	21.264	29.820	16.891	7.210	5.068	4.123	3.059	1.666	2.884
23	2.422	7.210	18.662	10.950	18.732	13.440	6.104	5.068	3.948	3.059	1.666	3.024
24	2.878	7.056	24.626	19.076	28.826	17.815	6.059	5.593	3.948	3.159	1.666	1.918
25	2.878	6.419	15.176	11.830	23.408	18.166	5.890	5.068	3.899	3.059	1.666	1.918
26	2.878	6.202	17.595	27.367	22.792	17.717	5.999	5.593	3.899	3.059	1.666	1.918
27	3.045	4.592	17.324	42.161	20.177	18.046	6.195	5.410	4.123	2.926	1.666	1.918
28	3.080	4.645	10.900	14.615	21.224	13.615	6.166	4.580	3.750	3.059	2.026	1.827
29	2.940	4.760	28.457	23.007	21.378	11.431	6.166	4.711	3.899	3.059	2.026	1.827
30	2.940	4.445	16.582	17.378	18.438	11.153	6.166	4.711	3.710	3.171	1.827	1.827
31	4.445	4.445	17.978	17.978	18.478	18.478	6.166	3.710	3.710	3.171	1.827	1.827
TOTAL	75.856	250.644	422.548	585.645	501.723	724.578	268.097	162.222	126.650	98.603	66.195	62.265
AVERAGE	2.462	8.085	14.085	18.892	16.185	24.153	8.648	5.407	4.021	3.191	2.297	2.009
MAXIMUM	3.080	71.188	28.457	42.161	38.920	79.526	70.028	8.112	4.711	3.759	3.318	3.059
MINIMUM	1.764	2.640	4.305	10.300	7.672	10.899	5.530	4.711	3.710	2.779	1.597	1.589
MAX-NIGHT DATE < 930517 >			70.556									
75-NIGHT DATE < 930720 >			21.007									
85-NIGHT DATE < 930929 >			11.431									
195-NIGHT DATE < 931120 >			5.103									
275-NIGHT DATE < 940207 >			3.059									
355-NIGHT DATE < 940722 >			1.666									
MIN-NIGHT DATE < 940225 >			1.587									
MIN-NIGHT DATE < ? >												

 ***** A N N U A L *****

 ***** T O T A L ***** A V E R A G E ***** M A X I M U M ***** M I N I M U M *****

 ***** 3347-C16 ***** S.145 ***** 75-826 *****

DAY	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	7.140	6.537	12.033	7.238	5.068	7.238	5.068	7.238	5.068	7.238	5.068	7.238	5.068	7.238	5.068
2	11.528	7.156	7.162	7.126	4.298	7.126	4.298	7.126	4.298	7.126	4.298	7.126	4.298	7.126	4.298
3	11.704	5.964	7.812	6.363	4.725	6.363	4.725	6.363	4.725	6.363	4.725	6.363	4.725	6.363	4.725
4	17.270	6.973	7.973	6.973	5.873	6.973	5.873	6.973	5.873	6.973	5.873	6.973	5.873	6.973	5.873
5	9.389	7.217	15.932	5.705	6.713	5.705	6.713	5.705	6.713	5.705	6.713	5.705	6.713	5.705	6.713
6	6.930	7.642	8.715	7.679	5.586	7.679	5.586	7.679	5.586	7.679	5.586	7.679	5.586	7.679	5.586
7	7.581	7.280	11.665	9.666	6.188	9.666	6.188	9.666	6.188	9.666	6.188	9.666	6.188	9.666	6.188
8	5.316	5.078	7.679	7.679	5.418	7.679	5.418	7.679	5.418	7.679	5.418	7.679	5.418	7.679	5.418
9	5.808	5.322	11.665	5.705	5.313	5.705	5.313	5.705	5.313	5.705	5.313	5.705	5.313	5.705	5.313
10	8.645	11.767	14.700	8.672	3.930	8.672	3.930	8.672	3.930	8.672	3.930	8.672	3.930	8.672	3.930
11	7.566	10.752	10.710	8.232	3.542	8.232	3.542	8.232	3.542	8.232	3.542	8.232	3.542	8.232	3.542
12	5.175	5.750	10.570	8.225	3.829	8.225	3.829	8.225	3.829	8.225	3.829	8.225	3.829	8.225	3.829
13	10.122	14.728	5.975	8.225	3.969	8.225	3.969	8.225	3.969	8.225	3.969	8.225	3.969	8.225	3.969
14	5.140	10.622	5.327	5.252	2.310	5.252	2.310	5.252	2.310	5.252	2.310	5.252	2.310	5.252	2.310
15	6.678	17.052	6.469	7.238	2.163	7.238	2.163	7.238	2.163	7.238	2.163	7.238	2.163	7.238	2.163
16	10.287	14.500	4.630	7.910	2.985	7.910	2.985	7.910	2.985	7.910	2.985	7.910	2.985	7.910	2.985
17	8.022	13.855	7.280	7.653	3.090	7.653	3.090	7.653	3.090	7.653	3.090	7.653	3.090	7.653	3.090
18	13.202	14.301	7.392	7.510	3.882	7.510	3.882	7.510	3.882	7.510	3.882	7.510	3.882	7.510	3.882
19	8.714	13.552	7.687	6.825	3.423	6.825	3.423	6.825	3.423	6.825	3.423	6.825	3.423	6.825	3.423
20	5.614	14.462	7.427	5.908	3.682	5.908	3.682	5.908	3.682	5.908	3.682	5.908	3.682	5.908	3.682
21	7.325	16.116	6.853	6.853	3.545	6.853	3.545	6.853	3.545	6.853	3.545	6.853	3.545	6.853	3.545
22	11.256	12.891	6.211	6.275	3.171	6.275	3.171	6.275	3.171	6.275	3.171	6.275	3.171	6.275	3.171
23	5.614	12.250	6.078	5.628	3.950	5.628	3.950	5.628	3.950	5.628	3.950	5.628	3.950	5.628	3.950
24	6.405	11.536	6.421	6.135	3.171	6.135	3.171	6.135	3.171	6.135	3.171	6.135	3.171	6.135	3.171
25	7.805	10.614	6.428	5.685	3.171	5.685	3.171	5.685	3.171	5.685	3.171	5.685	3.171	5.685	3.171
26	11.270	9.660	7.427	6.845	3.297	6.845	3.297	6.845	3.297	6.845	3.297	6.845	3.297	6.845	3.297
27	8.022	11.445	6.323	6.202	3.297	6.202	3.297	6.202	3.297	6.202	3.297	6.202	3.297	6.202	3.297
28	10.843	13.605	7.503	4.704	3.773	4.704	3.773	4.704	3.773	4.704	3.773	4.704	3.773	4.704	3.773
29	10.545	12.131	6.232	6.546	3.458	6.546	3.458	6.546	3.458	6.546	3.458	6.546	3.458	6.546	3.458
30	12.557	10.787	9.337	3.470	3.458	3.470	3.458	3.470	3.458	3.470	3.458	3.470	3.458	3.470	3.458
31	12.557	8.337	8.337	3.470	3.458	3.470	3.458	3.470	3.458	3.470	3.458	3.470	3.458	3.470	3.458
TOTAL	252.467	328.485	274.509	203.607	174.644	203.607	174.644	203.607	174.644	203.607	174.644	203.607	174.644	203.607	174.644
AVERAGE	9.434	10.590	8.855	6.797	4.021	6.797	4.021	6.797	4.021	6.797	4.021	6.797	4.021	6.797	4.021
MAXIMUM	17.270	17.052	15.932	9.666	6.713	9.666	6.713	9.666	6.713	9.666	6.713	9.666	6.713	9.666	6.713
MINIMUM	5.140	5.250	4.630	3.470	2.163	3.470	2.163	3.470	2.163	3.470	2.163	3.470	2.163	3.470	2.163

MAX-NIGHT DATE < 820312 > 20.652
 35-NIGHT DATE < 820300 > 10.787
 65-NIGHT DATE < 820307 > 7.200
 195-NIGHT DATE < 820320 > *****
 275-NIGHT DATE < 820321 > *****
 395-NIGHT DATE < 820321 > *****
 MIN-NIGHT DATE < 820321 > *****
 ITEM 7

***** ANNUAL *****
 TOTAL AVERAGE MAXIMUM

 ***** 20.652 *****

DAY	4	5	6	7	8	9	10	11	12	1	7	3
1	0.434	0.945	0.546	0.525	0.903	0.740	0.427	0.294	0.483	0.463	0.463	0.463
2	0.470	1.057	0.537	0.585	0.885	0.642	0.427	0.294	0.476	0.476	0.476	0.476
3	0.406	0.966	0.560	0.497	0.847	0.672	0.420	0.294	0.483	0.483	0.483	0.483
4	0.420	0.840	0.503	0.511	0.875	0.728	0.413	0.266	0.469	0.469	0.469	0.469
5	0.752	0.658	0.557	0.519	0.815	0.700	0.406	0.266	0.469	0.469	0.469	0.469
6	0.406	0.768	0.560	0.627	0.701	0.686	0.406	0.266	0.476	0.476	0.476	0.476
7	0.483	0.763	0.735	0.586	0.882	0.686	0.371	0.252	0.483	0.483	0.483	0.483
8	0.357	0.854	0.662	0.535	0.840	0.651	0.311	0.266	0.483	0.483	0.483	0.483
9	0.945	0.777	0.762	0.511	0.553	0.651	0.752	0.266	0.497	0.497	0.497	0.497
10	0.430	0.763	0.546	0.665	0.777	0.686	0.392	0.266	0.565	0.565	0.565	0.565
11	0.700	0.651	0.519	0.616	1.057	0.700	0.378	0.266	0.476	0.476	0.476	0.476
12	0.457	0.672	0.457	0.406	0.888	0.728	0.378	0.266	0.450	0.450	0.450	0.450
13	0.413	1.036	0.477	0.420	0.721	0.651	0.371	0.252	0.450	0.450	0.450	0.450
14	0.406	0.926	0.483	0.554	0.677	0.567	0.371	0.252	0.406	0.406	0.406	0.406
15	0.403	0.700	0.465	1.306	0.580	0.679	0.322	0.252	0.448	0.448	0.448	0.448
16	0.364	0.651	0.476	0.532	0.819	0.679	0.343	0.252	0.490	0.490	0.490	0.490
17	0.302	0.644	0.559	0.448	0.693	0.644	0.376	0.252	0.467	0.467	0.467	0.467
18	0.336	0.651	0.535	0.370	0.784	0.595	0.336	0.252	0.441	0.441	0.441	0.441
19	0.371	0.651	0.518	0.364	0.728	0.581	0.329	0.252	0.427	0.427	0.427	0.427
20	0.434	1.302	0.457	0.497	1.032	0.567	0.329	0.250	0.441	0.441	0.441	0.441
21	0.406	0.763	0.457	0.455	0.531	0.532	0.308	0.270	0.413	0.413	0.413	0.413
22	0.474	1.470	0.560	1.120	1.027	0.566	0.308	0.294	0.357	0.357	0.357	0.357
23	0.700	0.928	0.557	0.658	0.997	1.085	0.301	0.287	0.441	0.441	0.441	0.441
24	0.444	0.910	0.457	0.476	1.155	0.518	0.308	0.287	0.427	0.427	0.427	0.427
25	0.457	0.763	0.483	0.868	0.587	0.511	0.308	0.250	0.441	0.441	0.441	0.441
26	0.525	0.651	0.573	0.546	0.885	0.511	0.315	0.320	0.427	0.427	0.427	0.427
27	0.457	0.679	0.644	0.555	0.847	0.537	0.308	0.322	0.441	0.441	0.441	0.441
28	0.812	0.663	0.623	0.572	0.596	0.480	0.308	0.294	0.357	0.357	0.357	0.357
29	0.577	0.672	0.644	0.623	1.022	0.462	0.300	0.294	0.413	0.413	0.413	0.413
30	0.540	0.672	0.763	1.077	0.502	0.462	0.254	0.287	0.441	0.441	0.441	0.441
31	0.672	0.672	1.037	1.037	0.303	0.462	0.287	0.287	0.441	0.441	0.441	0.441

TOTAL	15.541	25.086	16.824	16.824	24.299	28.160	18.760	10.576	8.463	14.005	14.005	14.005
AVERAGE	0.516	0.809	0.541	0.541	0.787	0.935	0.605	0.353	0.273	0.452	0.452	0.452
MAXIMUM	0.577	1.470	0.763	1.006	1.155	1.630	0.740	0.427	0.322	0.569	0.463	0.519
MINIMUM	0.236	0.644	0.465	0.465	0.457	0.701	0.462	0.294	0.250	0.357	0.357	0.357
MAX-NICHI DATE < 870715 >	1.806											
35-NICHI DATE < 830821 >	0.931											
65-NICHI DATE < 870312 >	0.672											
105-NICHI DATE < 840101 >	0.483											
275-NICHI DATE < 830318 >	0.370											
365-NICHI DATE < 840224 >	0.806											
MIN-NICHI DATE < 840306 >	0.806											
SYSTEM	4											

NO	4	F	6	7	A	9	10	11	12	1	2	3
1	0.270	0.250	0.210	1.230	0.850	0.770	0.817	0.817	0.817	0.817	0.817	0.817
2	0.300	0.740	1.210	1.230	0.830	0.730	0.889	0.889	0.889	0.889	0.889	0.889
3	0.310	1.010	1.650	1.180	0.860	0.700	0.833	0.833	0.833	0.833	0.833	0.833
4	0.310	1.020	1.340	1.260	0.850	0.760	0.812	0.812	0.812	0.812	0.812	0.812
5	0.330	0.920	1.100	1.150	0.870	0.780	0.749	0.749	0.749	0.749	0.749	0.749
6	0.250	1.120	1.160	1.350	0.890	0.770	0.791	0.791	0.791	0.791	0.791	0.791
7	0.320	0.920	1.190	1.400	0.920	0.770	0.560	0.560	0.560	0.560	0.560	0.560
8	0.540	0.920	1.290	1.320	0.800	0.740	0.553	0.553	0.553	0.553	0.553	0.553
9	0.620	1.250	1.270	1.250	0.850	0.730	0.553	0.553	0.553	0.553	0.553	0.553
10	0.720	0.940	1.160	1.180	0.820	0.820	0.560	0.560	0.560	0.560	0.560	0.560
11	1.020	0.900	1.210	1.380	0.940	0.720	0.546	0.546	0.546	0.546	0.546	0.546
12	0.740	0.930	1.590	1.300	0.830	0.760	0.616	0.616	0.616	0.616	0.616	0.616
13	0.560	1.060	1.170	1.180	0.820	0.750	0.560	0.560	0.560	0.560	0.560	0.560
14	0.550	0.920	1.310	1.340	0.790	0.670	0.574	0.574	0.574	0.574	0.574	0.574
15	0.560	0.940	1.620	1.180	0.760	0.700	0.560	0.560	0.560	0.560	0.560	0.560
16	0.400	0.870	1.720	1.340	0.780	0.670	0.540	0.540	0.540	0.540	0.540	0.540
17	0.540	0.980	1.420	1.220	0.720	0.640	0.553	0.553	0.553	0.553	0.553	0.553
18	0.300	0.940	1.200	1.170	0.770	0.670	0.560	0.560	0.560	0.560	0.560	0.560
19	0.380	0.830	1.410	1.150	0.770	0.670	0.497	0.497	0.497	0.497	0.497	0.497
20	0.340	0.970	1.530	1.240	0.750	0.670	0.518	0.518	0.518	0.518	0.518	0.518
21	0.770	0.850	1.470	1.140	0.820	0.640	0.546	0.546	0.546	0.546	0.546	0.546
22	0.410	0.830	1.250	1.160	0.820	0.620	0.553	0.553	0.553	0.553	0.553	0.553
23	0.310	0.700	1.280	1.000	1.360	0.610	0.546	0.546	0.546	0.546	0.546	0.546
24	0.310	0.990	1.570	1.140	0.990	0.600	0.560	0.560	0.560	0.560	0.560	0.560
25	0.300	0.870	1.260	1.100	0.800	0.520	0.570	0.570	0.570	0.570	0.570	0.570
26	0.290	1.010	1.280	0.580	0.890	0.600	0.560	0.560	0.560	0.560	0.560	0.560
27	0.200	0.770	1.400	1.000	0.770	0.600	0.560	0.560	0.560	0.560	0.560	0.560
28	0.300	0.850	1.340	0.500	0.760	0.590	0.497	0.497	0.497	0.497	0.497	0.497
29	0.270	1.050	1.180	0.940	0.760	0.600	0.497	0.497	0.497	0.497	0.497	0.497
30	0.320	1.250	1.850	0.590	0.750	0.580	0.476	0.476	0.476	0.476	0.476	0.476
31	0.320	1.250	1.850	0.750	0.750	0.476	0.476	0.476	0.476	0.476	0.476	0.476
TOTAL	21.450	31.240	47.230	35.520	25.660	20.550	18.477	18.477	18.477	18.477	18.477	18.477
AVERAGE	0.715	1.008	1.362	1.184	0.828	0.685	0.596	0.596	0.596	0.596	0.596	0.596
MAXIMUM	0.560	1.400	1.850	1.400	1.360	0.820	0.889	0.889	0.889	0.889	0.889	0.889
MINIMUM	0.250	0.740	0.930	0.500	0.720	0.580	0.476	0.476	0.476	0.476	0.476	0.476
MAX-NICHI DATE < BCCLE >	1.520											
15-NICHI DATE < PCCP75 >	1.520											
55-NICHI DATE < S31202 >	0.850											
105-NICHI DATE < P31207 >	0.560											
175-NICHI DATE < S0512 >												
245-NICHI DATE < P3071 >												
MIN-NICHI DATE < P3071 >												

ANNUAL
 TOTAL AVERAGE MAXIMUM MINIMUM
 1.520
 0.850
 0.560
 1.520

STAY#	4	5	6	7	8	9	10	11	12	1	2	3
1	13.510	27.630	128.570	27.650	18.130	18.130	18.130	18.130	18.130	18.130	18.130	18.130
2	21.280	63.760	172.520	26.520	18.050	18.050	18.050	18.050	18.050	18.050	18.050	18.050
3	14.240	27.630	117.880	26.630	17.900	17.900	17.900	17.900	17.900	17.900	17.900	17.900
4	17.120	45.500	106.890	26.490	17.900	17.900	17.900	17.900	17.900	17.900	17.900	17.900
5	11.160	45.170	103.380	26.370	17.900	17.900	17.900	17.900	17.900	17.900	17.900	17.900
6	10.650	51.280	94.760	25.260	15.090	15.090	15.090	15.090	15.090	15.090	15.090	15.090
7	11.160	123.060	57.750	25.870	17.780	17.780	17.780	17.780	17.780	17.780	17.780	17.780
8	15.130	98.650	54.850	25.730	15.090	15.090	15.090	15.090	15.090	15.090	15.090	15.090
9	15.920	84.990	50.340	22.670	15.090	15.090	15.090	15.090	15.090	15.090	15.090	15.090
10	17.920	97.030	76.860	22.670	15.090	15.090	15.090	15.090	15.090	15.090	15.090	15.090
11	20.010	81.760	77.710	25.680	15.020	15.020	15.020	15.020	15.020	15.020	15.020	15.020
12	20.680	105.580	64.740	27.350	14.880	14.880	14.880	14.880	14.880	14.880	14.880	14.880
13	21.820	119.570	67.100	22.280	14.860	14.860	14.860	14.860	14.860	14.860	14.860	14.860
14	25.690	88.220	67.100	22.090	18.360	18.360	18.360	18.360	18.360	18.360	18.360	18.360
15	21.070	85.910	92.070	22.090	17.930	17.930	17.930	17.930	17.930	17.930	17.930	17.930
16	24.790	80.280	72.760	22.020	14.760	14.760	14.760	14.760	14.760	14.760	14.760	14.760
17	16.680	87.110	72.460	21.820	14.650	14.650	14.650	14.650	14.650	14.650	14.650	14.650
18	45.260	54.370	77.330	21.650	14.580	14.580	14.580	14.580	14.580	14.580	14.580	14.580
19	54.370	54.370	71.460	21.650	14.480	14.480	14.480	14.480	14.480	14.480	14.480	14.480
20	35.060	35.060	69.600	21.520	14.380	14.380	14.380	14.380	14.380	14.380	14.380	14.380
21	25.500	25.500	77.330	21.530	14.380	14.380	14.380	14.380	14.380	14.380	14.380	14.380
22	42.540	42.540	74.740	21.440	14.380	14.380	14.380	14.380	14.380	14.380	14.380	14.380
23	100.310	100.310	71.060	18.640	14.220	14.220	14.220	14.220	14.220	14.220	14.220	14.220
24	61.030	61.030	68.740	18.530	14.220	14.220	14.220	14.220	14.220	14.220	14.220	14.220
25	56.550	56.550	68.740	18.500	14.220	14.220	14.220	14.220	14.220	14.220	14.220	14.220
26	55.880	55.880	72.050	18.360	14.220	14.220	14.220	14.220	14.220	14.220	14.220	14.220
27	44.220	44.220	72.050	18.360	14.020	14.020	14.020	14.020	14.020	14.020	14.020	14.020
28	45.560	45.560	71.520	18.270	14.020	14.020	14.020	14.020	14.020	14.020	14.020	14.020
29	37.320	37.320	66.530	18.130	13.900	13.900	13.900	13.900	13.900	13.900	13.900	13.900
30	27.650	27.650	67.100	18.130	13.900	13.900	13.900	13.900	13.900	13.900	13.900	13.900
31	27.650	27.650	67.100	18.130	13.900	13.900	13.900	13.900	13.900	13.900	13.900	13.900
TOTAL	966.430	966.430	12550.000	670.330	477.290	477.290	477.290	477.290	477.290	477.290	477.290	477.290
AVERAGE	31.175	31.175	82.261	22.344	15.396	15.396	15.396	15.396	15.396	15.396	15.396	15.396
MAXIMUM	100.310	100.310	128.570	27.650	18.360	18.360	18.360	18.360	18.360	18.360	18.360	18.360
MINIMUM	10.650	10.650	66.530	18.130	13.900	13.900	13.900	13.900	13.900	13.900	13.900	13.900
MAX-NICHI DATE < R4101 >	128.570	128.570										
MIN-NICHI DATE < R41020 >	69.600	69.600										
MAX-NICHI DATE < R41125 >	19.500	19.500										
MIN-NICHI DATE < R40615 >												
MAX-NICHI DATE < R40930 >												
MIN-NICHI DATE < R50321 >												
MAX-NICHI DATE < R50331 >	128.570	128.570										
*ITPM(5)												

ANNUAL

TOTAL AVERAGE MAXIMUM MINIMUM

DATA	4	5	6	7	8	9	10	11	12	1	2	3
1	15. FC4	20.860	14.740	37.710	25.710	18.090	16.990					
2	20. C0F	20.860	14.170	36.650	25.100	24.150	17.850					
3	15. FC4	27.200	14.570	21.130	22.516	24.160	18.850					
4	7. 574	25.070	15.130	27.110	24.310	23.370	16.030					
5	16. 727	40.260	15.630	27.110	24.740	22.080	27.270					
6	15. 185	35.130	14.230	27.110	21.690	22.080	14.830					
7	21. 385	20.930	15.670	23.630	21.650	20.470	14.980					
8	15. 185	21.280	28.140	25.650	21.530	20.470	14.700					
9	15. 185	32.270	37.070	23.810	21.960	22.140	14.700					
10	15. 185	32.220	37.020	25.650	25.300	22.140	14.700					
11	15. 460	32.220	37.020	25.270	22.200	20.810	14.980					
12	17. 707	37.250	37.020	32.650	21.280	20.810	14.700					
13	15. 477	35.580	39.420	27.110	21.470	16.180	14.990					
14	19. 456	27.420	39.420	45.470	21.470	15.180	14.590					
15	17. 185	37.250	39.420	93.430	20.770	18.140	17.690					
16	17. 185	27.620	42.980	45.590	20.770	18.720	17.960					
17	25. 693	23.250	47.500	55.030	20.770	17.640	14.450					
18	25. 693	21.750	42.500	48.040	20.770	18.250	14.870					
19	21. 650	21.150	42.500	40.550	27.060	19.250	17.520					
20	21. 650	21.150	42.500	37.460	21.060	17.400	16.060					
21	17. 389	22.200	34.360	37.480	28.700	17.400	16.060					
22	17. 185	17.450	34.360	34.750	28.700	17.590	14.890					
23	17. 185	15.640	38.800	38.590	28.700	20.420	16.060					
24	16. 878	14.130	38.800	38.590	57.730	18.050	16.060					
25	16. 878	14.130	38.800	38.590	41.730	18.050	14.890					
26	23. 000	20.010	38.800	27.110	25.900	17.380	14.420					
27	25. 305	15.110	38.800	27.110	25.900	17.380	14.420					
28	17. 461	17.580	38.800	25.630	21.830	23.380	15.290					
29	27. 786	17.960	38.800	26.480	24.080	15.070	15.000					
30	23. 786	14.420	39.030	23.650	25.270	15.970	14.040					
31		14.420		26.370	25.270		14.040					
TOTAL	53.451	755.480	992.050	11052.220	804.026	588.220	493.380					
AVERAGE	15.782	24.459	33.068	35.074	25.636	15.607	15.915					
MAXIMUM	27.50F	40.260	42.980	93.430	57.730	24.160	27.270					
MINIMUM	7.574	14.130	14.170	21.130	20.770	15.070	14.040					
MAY-NIGHT DATE < P20015 >												
35-NIGHT DATE < P20010 >												
55-NIGHT DATE < P21025 >												
195-NIGHT DATE < P20607 >												
275-NIGHT DATE < P20825 >												
355-NIGHT DATE < P20221 >												
MIN-NIGHT DATE < P20331 >												
ATTEN(5)												
ANNUAL												
TOTAL AVERAGE MAXIMUM MINIMUM												
***** 82.430 *****												

DAYA	4	5	6	7	8	9	10	11	12	1	2	3
1	0.956	0.866	0.817	1.926	3.776	1.951	2.951	1.446	1.058	*****	*****	*****
2	0.816	0.866	1.025	2.027	3.776	1.856	2.627	1.404	1.010	*****	*****	*****
3	0.856	1.180	0.956	2.115	4.736	1.743	2.495	1.446	1.005	*****	*****	*****
4	0.880	1.245	1.003	2.217	4.451	1.641	2.291	1.475	1.111	*****	*****	*****
5	0.836	1.354	0.856	2.438	4.491	1.717	2.107	1.350	1.056	*****	*****	*****
6	0.836	0.887	0.915	3.632	4.736	1.955	2.103	1.350	1.005	*****	*****	*****
7	0.816	1.245	1.219	3.633	5.305	1.836	1.929	1.350	1.082	*****	*****	*****
8	1.068	1.054	1.710	11.022	5.505	1.955	1.929	1.298	0.968	*****	*****	*****
9	1.145	0.566	7.352	15.875	4.050	1.776	1.502	1.298	0.925	*****	*****	*****
10	1.078	1.151	1.913	15.975	4.050	1.827	1.302	1.258	0.992	*****	*****	*****
11	1.078	0.987	1.389	12.212	3.821	1.591	1.283	1.258	0.960	*****	*****	*****
12	1.202	1.064	1.366	11.305	3.285	1.647	1.392	1.258	0.861	*****	*****	*****
13	0.944	1.215	1.315	11.522	3.286	1.715	1.669	1.258	0.925	*****	*****	*****
14	1.066	1.064	1.310	11.922	2.888	1.928	1.759	1.298	0.925	*****	*****	*****
15	1.122	1.064	1.372	9.623	3.576	2.203	1.420	1.201	0.878	*****	*****	*****
16	0.566	1.040	1.246	7.228	2.576	3.220	1.652	1.218	0.941	*****	*****	*****
17	1.102	0.931	1.316	5.571	2.713	4.175	1.585	1.265	0.941	*****	*****	*****
18	0.614	0.396	1.155	4.232	2.910	3.521	1.595	1.096	0.912	*****	*****	*****
19	0.614	0.796	1.780	3.786	1.677	4.145	1.537	1.171	0.912	*****	*****	*****
20	0.616	0.796	1.913	3.786	2.228	3.521	1.491	1.236	0.838	*****	*****	*****
21	1.014	0.638	5.124	4.050	1.522	3.525	1.517	1.125	0.874	*****	*****	*****
22	0.617	0.588	3.578	3.686	1.663	3.524	1.517	1.157	0.874	*****	*****	*****
23	0.617	0.804	2.752	3.127	1.906	3.675	1.631	1.204	0.837	*****	*****	*****
24	0.554	0.804	2.145	4.142	2.113	3.357	1.631	1.114	0.861	*****	*****	*****
25	1.041	0.788	2.262	5.505	2.177	2.698	1.608	1.142	0.926	*****	*****	*****
26	1.135	0.866	2.283	7.361	2.057	3.270	1.608	1.100	0.844	*****	*****	*****
27	0.623	0.866	2.168	7.571	2.057	3.084	1.526	1.100	0.844	*****	*****	*****
28	0.524	1.011	2.086	5.505	2.137	2.551	1.438	1.047	0.837	*****	*****	*****
29	0.556	0.866	2.783	4.736	2.137	3.379	1.397	1.100	0.837	*****	*****	*****
30	0.506	0.866	1.556	4.491	2.113	3.379	1.463	1.100	0.837	*****	*****	*****
31		0.866		4.491	2.113		1.463			*****	*****	*****
TOTAL	25.285	25.888	50.452	218.882	58.431	70.804	55.118	37.295		*****	*****	*****
AVERAGE	0.816	0.866	1.025	7.061	3.175	2.660	1.778	1.242		*****	*****	*****
MAXIMUM	1.202	1.354	7.352	19.212	5.505	4.175	2.951	1.475	1.111	*****	*****	*****
MINIMUM	0.816	0.866	0.817	1.926	1.522	1.501	1.392	1.047		*****	*****	*****
MAX-NICHI DATE < F2031 >												
15-NICHI DATE < F2022 >												
05-NICHI DATE < P21007 >												
10-NICHI DATE < P21127 >												
275-NICHI DATE < P21231 >												
355-NICHI DATE < P30321 >												
MIN-NICHI DATE < P30331 >												
SYSTEM												

ANNUAL

TOTAL AVERAGE MAXIMUM MINIMUM

DAY#	4	5	6	7	8	9	10	11	12	1	2	3
1	141.340	101.750	348.750	917.850	1111.100	832.900	404.010	242.340	155.280	122.340	80.720	52.870
2	54.440	111.710	341.510	755.850	1237.630	54.100	473.880	248.260	148.640	126.930	75.880	54.440
3	59.330	116.310	281.510	705.860	974.030	858.690	496.440	239.230	144.390	114.410	80.450	55.960
4	55.650	116.310	282.670	815.150	751.590	832.230	413.700	233.230	141.680	115.050	82.130	60.530
5	51.470	128.260	300.750	766.370	629.470	502.570	395.910	222.880	131.940	105.900	73.310	54.310
6	56.540	125.150	420.040	954.100	620.110	1089.250	282.060	219.940	137.010	116.050	60.330	57.190
7	56.540	131.460	436.440	1004.340	54.107	1038.420	343.060	224.610	149.130	101.640	60.120	48.320
8	55.440	132.680	487.300	1170.140	505.510	880.740	352.400	217.000	150.080	116.050	61.810	55.300
9	54.660	137.370	432.040	954.100	627.370	781.460	336.050	152.650	150.080	575.805	54.710	58.420
10	56.530	141.330	517.810	846.950	568.680	732.350	325.290	178.390	147.260	52.830	52.950	58.420
11	54.550	163.420	602.410	766.370	554.880	741.200	263.090	185.780	149.130	82.960	57.160	61.190
12	52.750	154.780	556.660	1164.540	541.650	720.320	255.080	185.780	144.920	91.690	62.210	60.970
13	51.760	176.770	522.900	1011.340	578.850	753.780	413.700	175.910	141.680	89.640	64.660	52.140
14	51.760	172.420	528.150	832.230	540.420	756.390	355.640	183.190	144.920	88.220	73.870	58.030
15	55.570	197.330	583.270	1070.920	529.110	561.450	427.490	173.420	144.920	96.860	73.140	57.820
16	55.240	372.800	789.280	954.100	553.100	838.840	395.750	170.340	141.680	55.180	63.890	54.670
17	53.550	353.010	80.523	1076.920	574.860	1071.670	413.700	173.530	136.580	106.200	64.460	53.800
18	55.560	396.060	454.300	954.100	558.500	1065.880	320.800	173.350	133.870	102.660	57.610	52.560
19	55.700	397.060	382.850	766.370	612.850	838.840	330.050	167.900	132.590	94.020	57.610	51.110
20	60.300	371.990	442.650	73.962	638.400	751.520	339.290	167.900	127.200	91.690	62.840	54.670
21	53.490	327.100	660.200	916.480	518.150	853.040	343.090	157.670	125.380	89.950	53.630	53.830
22	58.440	317.480	528.190	1101.120	518.150	656.270	348.530	170.400	122.360	94.670	55.050	52.990
23	55.510	435.620	507.640	1155.020	522.870	753.780	380.760	160.580	119.660	91.380	54.140	52.600
24	71.580	306.620	602.410	1055.300	506.400	713.780	272.700	162.440	118.380	89.080	52.430	40.120
25	73.330	315.110	923.650	966.800	547.370	605.320	310.080	158.140	118.880	89.950	42.270	44.750
26	80.000	297.730	739.620	1645.880	834.430	539.160	253.500	152.430	117.710	88.200	50.550	52.600
27	53.630	277.640	605.320	1341.120	972.570	521.550	230.120	167.670	113.280	90.790	45.750	50.760
28	102.080	372.800	570.520	2044.380	75.840	522.770	230.750	163.290	114.290	89.060	51.590	49.930
29	83.190	456.840	555.540	1784.050	1101.340	441.530	283.360	153.840	110.770	75.810	50.170	50.170
30	100.640	396.060	538.160	1171.540	1156.790	445.730	266.850	141.190	117.530	77.230	55.090	55.090
31	156.060	156.060	1171.540	1156.790	1156.790	266.850	266.850	112.530	112.530	77.230	55.090	55.090
TOTAL	12159.120	17903.270	*****	*****	*****	*****	*****	5563.460	14138.750	13886.675	1690.230	1680.980
AVPAGE	73.204	254.944	502.211	1026.167	667.632	758.099	353.871	165.445	139.508	125.377	60.365	54.225
MAXIMUM	141.340	456.840	923.650	12044.380	11227.630	11099.250	456.440	249.260	155.280	975.805	82.130	54.440
MINIMUM	51.760	101.750	80.523	73.962	54.107	54.100	266.850	141.180	110.770	75.810	5.710	40.120
MAX-NIGHT DATE < 840728 >	2044.760											
MIN-NIGHT DATE < 840721 >	516.460											
MAX-NIGHT DATE < 840627 >	528.190											
MIN-NIGHT DATE < 840514 >	172.440											
MAX-NIGHT DATE < 850128 >	80.060											
MIN-NIGHT DATE < 850119 >	51.110											
MAX-NIGHT DATE < 850205 >	9.710											
MIN-NIGHT DATE < 850205 >	9.710											
*ITEM#												

 A N N U A L

 ... T O T A L ... A V E R A G E | M A X I M U M | M I N I M U M

 129351.657 | 251.648 | 2044.380

 9.710

CPYNO

DAY*	4	5	6	7	8	9	10	11	12	1	2	3
1	142.640	102.100							180.710			
2	146.502	174.696							92.790			
3	119.572	152.658							112.330			
4	184.606	145.537							100.670			
5	151.036	142.572							113.300			
6	155.335	157.116							28.250			
7	152.661	150.271							103.190			
8	57.890	150.900							97.090			
9		233.144							131.570			
10		177.714							127.220			
11		132.736							106.740			
12		146.080							54.010			
13		151.816							100.470			
14		157.245							106.740			
15		232.644							101.730			
16		180.159							87.060			
17		167.874							58.970			
18		221.512						102.158	90.900			
19		221.684						102.158	117.760			
20								115.640	101.570			
21		284.713						101.560	58.670			
22		385.740						111.260	102.500			
23		188.866						58.510	58.980			
24		182.964						122.750	117.050			
25		160.866						123.530	98.670			
26		140.401						146.520	107.380			
27		175.062						165.480	104.790			
28		164.017						102.820	100.240			
29		246.304						56.740	100.240			
30		171.114						108.030	105.130			
31		171.114							105.130			
TOTAL		1572.641							3307.850			
AVFVAGF		106.440							106.705			
MAXIMUM		385.740							180.710			
MINIMUM		102.100							87.060			

MAX-NICHI DATE < 820522 > 385.740
 35-NICHI DATE < 820401 > 142.640
 55-NICHI DATE < 820420 > *****
 195-NICHI DATE < 820619 > *****
 275-NICHI DATE < 821117 > *****
 355-NICHI DATE < 830231 > *****
 MIN-NICHI DATE < 830231 > *****
 *JTRM(3)

A N N U A L

T C T A L | A V E R A G E | M A X I M U M | M I N I M U M

| 3307.850 | 106.705 | 180.710 | 87.060

NO	4	5	6	7	8	9	10	11	12	1	2	3
1	C.539	1.717	2.152	2.842	8.335	1.677	1.134	0.889	0.500	*****	0.410	
2	C.540	1.533	1.953	2.658	4.704	1.393	1.134	0.950	0.480	*****	0.430	
3	C.574	1.522	2.002	2.682	4.704	1.750	1.071	0.889	0.520	*****	0.450	
4	C.511	1.652	2.502	2.667	4.046	1.750	1.071	0.889	0.520	*****	0.430	
5	C.532	1.652	2.254	2.115	4.970	1.400	1.071	0.989	0.520	*****	0.430	
6	C.538	3.225	2.254	2.506	5.047	1.400	1.071	0.777	0.480	*****	0.430	
7	C.602	2.520	3.335	2.506	4.214	1.172	1.071	0.777	0.480	*****	0.430	
8	C.406	2.158	2.142	2.282	4.074	1.330	1.071	0.854	0.480	*****	0.430	
9	C.406	2.158	2.576	2.016	3.493	1.330	1.071	0.777	0.560	*****	0.410	
10	C.563	1.652	4.721	2.016	3.430	1.330	1.071	0.777	0.520	*****	0.430	
11	C.406	1.727	3.338	2.212	3.430	1.330	1.071	0.854	0.560	*****	0.430	
12	C.371	1.484	3.335	1.960	3.332	1.316	1.071	0.854	0.520	*****	0.410	
13	C.477	1.484	3.335	1.960	3.003	1.716	1.071	0.777	0.570	*****	0.460	
14	C.518	3.143	2.075	1.960	3.003	1.330	1.071	0.854	0.520	*****	0.460	
15	C.352	3.963	2.782	2.254	3.003	1.491	1.071	0.854	0.460	*****	0.460	
16	C.371	3.143	2.075	1.960	3.003	1.330	1.043	0.777	0.520	*****	0.441	
17	C.455	2.475	2.212	1.960	3.003	1.330	1.043	0.777	0.520	*****	0.430	
18	C.352	3.003	1.694	1.960	3.003	1.295	1.043	0.724	0.480	*****	0.390	
19	C.455	2.475	1.645	2.158	3.003	1.316	0.966	0.742	0.590	*****	0.410	
20	C.352	3.143	1.645	2.212	3.003	1.716	1.043	0.742	0.570	*****	0.410	
21	C.500	3.003	2.016	2.158	3.003	1.246	1.015	0.742	0.490	*****	0.410	
22	C.550	2.457	4.032	1.960	3.003	1.246	1.047	0.742	0.450	*****	0.380	
23	C.550	2.254	5.460	1.960	3.003	1.246	1.047	0.742	0.450	*****	0.390	
24	C.550	2.158	3.528	2.254	3.003	1.246	0.931	0.742	0.480	*****	0.410	
25	C.550	2.158	4.368	2.158	3.003	1.204	0.931	0.742	0.420	*****	0.300	
26	C.540	2.142	2.842	2.158	1.890	1.204	1.001	0.742	0.450	*****	0.410	
27	C.500	2.142	3.538	3.222	1.799	1.162	0.931	0.638	0.490	*****	0.410	
28	C.580	2.142	4.368	3.222	1.440	1.162	0.931	0.637	0.440	*****	0.410	
29	C.670	3.003	3.731	3.255	1.393	1.162	0.931	0.607	0.440	*****	0.300	
30	C.550	2.003	3.003	3.255	1.344	1.127	0.885	0.607	0.430	*****	0.410	
31	C.526	3.003	3.003	3.255	1.127	1.127	0.607	0.607	*****	*****	0.410	
TOTAL	15.166	23.789	50.922	16.135	100.688	41.034	20.958	23.990	*****	*****	13.001	
AVERAGE	C.506	C.754	2.732	2.456	3.356	1.324	1.030	0.774	*****	*****	0.419	
MAXIMUM	C.550	C.566	5.460	3.822	6.239	1.750	1.134	0.959	0.590	*****	0.460	
MINIMUM	C.371	C.511	1.445	1.960	1.344	1.127	0.885	0.607	*****	*****	0.380	

MAX-NICHI DATE < P40501 > 0.225
 35-NICHI DATE < P40708 > 1.143
 55-NICHI DATE < P40810 > 2.016
 105-NICHI DATE < P41129 > 0.021
 175-NICHI DATE < P50101 > 0.500
 255-NICHI DATE < P50218 > *****
 MIN-NICHI DATE < P50228 > *****
 4 ITEMS

A N N U A L
 T C T A L A V F R A G F M A X I M U M M I N I M U M
 ***** S.339 *****

#LAY#	4	5	6	7	8	9	10	11	12	1	7	3
1	3.920	7.798	5.285	10.641	10.405	10.990	6.257	5.676	3.180	2.807	2.420	2.129
2	3.770	5.108	5.069	8.708	11.053	10.562	6.306	4.138	2.910	2.611	2.268	2.268
3	3.667	4.914	4.184	12.117	11.725	12.855	5.279	5.172	2.252	2.906	2.212	1.991
4	3.764	4.298	3.624	8.477	8.631	13.293	7.021	5.442	2.950	2.674	2.118	1.960
5	3.663	4.196	4.186	8.687	8.631	11.725	6.167	5.123	2.484	2.484	2.040	2.765
6	3.541	4.210	5.068	8.255	5.709	14.455	6.167	5.357	2.517	2.611	2.250	2.548
7	3.870	5.257	11.165	8.295	8.652	10.409	7.312	3.520	2.873	2.772	2.750	2.604
8	3.070	5.159	9.705	9.177	7.903	5.767	5.405	5.625	2.484	2.772	2.250	2.443
9	2.920	5.068	8.561	8.413	9.303	10.647	6.357	5.540	2.169	2.702	2.640	2.660
10	2.940	6.002	8.512	8.918	7.574	10.962	5.310	3.910	2.439	3.157	2.560	2.299
11	3.580	7.224	5.008	11.402	7.477	10.562	5.004	4.778	2.169	2.793	2.660	2.443
12	3.460	6.335	5.564	14.511	7.255	9.987	5.527	4.857	2.873	2.730	2.540	2.653
13	3.840	6.706	6.244	10.405	7.812	12.450	5.261	3.800	2.517	2.570	2.630	2.617
14	3.960	5.145	6.244	15.750	7.518	*****	8.676	4.991	2.950	2.583	2.510	3.518
15	3.220	7.128	13.447	9.667	7.036	*****	10.213	3.313	2.460	2.562	2.660	2.996
16	3.350	8.393	14.067	15.956	5.499	*****	9.135	4.822	2.517	3.060	2.510	2.750
17	4.771	7.084	12.425	8.211	5.647	*****	9.103	4.125	2.517	3.234	2.380	2.100
18	5.170	5.955	9.923	14.871	8.981	*****	7.287	3.633	2.467	2.709	2.440	2.833
19	4.150	6.485	8.652	11.725	10.724	*****	8.141	3.091	2.950	2.968	2.360	2.633
20	3.260	5.824	7.347	8.456	10.675	*****	5.247	3.857	2.517	3.101	2.100	2.919
21	4.770	5.033	9.968	11.508	10.235	*****	12.021	3.631	2.460	2.709	2.250	2.839
22	4.140	10.280	10.405	11.053	8.881	*****	11.417	3.483	2.873	2.870	2.350	2.665
23	4.000	6.881	10.405	10.717	11.452	*****	8.903	3.482	1.856	2.870	2.250	2.618
24	3.224	5.761	7.418	10.472	11.430	*****	5.675	3.657	2.073	2.821	2.340	2.604
25	3.270	5.931	10.871	11.725	11.430	*****	7.267	3.827	2.426	2.022	2.300	2.492
26	3.971	5.656	15.750	11.170	11.430	*****	7.300	3.985	2.621	2.213	2.500	2.604
27	3.650	5.474	10.472	10.405	13.174	*****	6.864	3.167	2.877	2.142	2.500	3.157
28	3.730	5.809	12.062	9.667	13.415	*****	7.612	3.267	2.685	3.352	2.200	2.905
29	10.050	6.531	10.802	10.541	13.415	*****	5.605	3.003	2.621	2.653	2.870	2.870
30	7.550	5.831	12.173	11.032	13.415	*****	6.794	*****	2.037	2.807	2.793	2.793
31	5.031	5.031	11.032	11.032	13.415	*****	6.784	*****	2.037	2.807	2.793	2.793
TOTAL	122.827	187.955	257.259	331.452	311.596	*****	244.237	*****	78.761	85.073	64.521	91.475
AVERAGE	4.001	6.063	8.577	10.652	10.061	*****	7.879	*****	2.541	2.744	2.304	2.628
MAXIMUM	10.050	10.280	15.750	15.956	13.415	16.455	12.021	5.676	3.180	3.352	2.660	3.519
MINIMUM	2.920	4.106	2.941	8.211	7.036	*****	5.270	*****	1.856	2.022	2.200	1.960
MAX-NICHI DATE < P40716 >												
75-NICHI DATE < P40722 >												
65-NICHI DATE < P40704 >												
185-NICHI DATE < P41117 >												
275-NICHI DATE < P50205 >												
355-NICHI DATE < P40921 >												
MIN-NICHI DATE < P41130 >												
STEP(1)												

***** A N N U A L *****

***** I T O T A L *****

***** E V E R A G E *****

***** M A X I M U M *****

***** 15.056 *****

CLAY#	4	5	6	7	8	9	10	11	12	1	2	3
1	1.855	0.915	0.825	1.372	1.273	0.504	0.932	0.932	0.703	1.226	1.375	0.653
2	1.615	0.827	0.855	1.372	1.273	0.800	0.832	0.832	0.703	1.165	1.360	0.653
3	1.664	0.915	0.855	1.372	1.273	0.800	0.932	0.832	0.868	1.163	1.417	0.852
4	1.366	1.159	1.055	1.408	1.552	0.868	0.767	0.757	0.868	1.131	1.473	0.852
5	1.143	1.159	1.066	1.365	1.273	0.733	0.546	0.868	0.868	1.176	1.423	0.852
6	1.136	1.159	1.155	1.666	1.480	0.834	0.734	0.868	0.868	1.168	0.719	0.652
7	1.128	1.159	2.021	1.371	1.675	0.504	0.796	0.868	0.868	1.238	0.733	0.852
8	0.883	1.159	2.021	1.371	1.273	0.867	0.795	0.868	0.868	1.238	0.733	0.852
9	0.827	1.159	1.359	1.371	1.624	0.904	0.734	0.800	0.800	1.196	0.619	0.852
10	0.770	1.159	1.732	1.371	1.341	0.834	0.734	0.868	0.800	1.217	0.669	0.930
11	0.647	1.159	1.656	1.371	1.341	0.834	0.760	0.868	0.800	1.151	0.325	0.786
12	0.882	1.066	1.444	1.371	1.341	0.865	0.760	0.800	0.800	1.408	0.768	0.786
13	0.855	0.976	1.269	1.589	1.341	0.865	0.701	0.868	0.800	1.387	0.686	0.852
14	0.795	0.976	1.300	1.531	0.772	1.000	0.701	0.868	0.868	1.260	0.655	0.793
15	0.677	1.033	1.326	1.589	0.712	1.033	0.760	0.733	0.868	1.306	0.655	0.793
16	0.885	1.033	1.300	1.311	0.610	1.120	0.760	0.733	0.868	1.332	0.655	0.793
17	1.120	1.000	1.155	1.273	0.690	0.885	0.701	0.733	0.868	1.340	0.655	0.793
18	1.033	1.000	1.326	1.552	0.673	0.867	0.701	0.733	0.868	1.488	0.744	0.793
19	0.855	1.000	1.280	1.552	0.757	0.867	0.832	0.868	0.800	1.459	0.659	0.793
20	0.855	0.885	1.525	1.552	0.757	0.868	0.832	0.868	0.733	1.455	0.744	0.639
21	0.855	0.827	2.011	1.552	0.610	0.834	0.832	0.868	0.800	1.423	0.744	0.639
22	0.655	0.827	1.936	1.711	0.670	0.834	0.832	0.832	0.800	1.412	0.744	0.639
23	0.855	0.927	1.552	1.552	0.642	0.867	1.192	0.832	0.800	1.374	0.744	0.347
24	0.855	0.827	1.358	1.552	0.642	0.867	1.192	0.832	0.800	1.374	0.655	0.347
25	0.855	0.827	1.564	1.311	0.673	0.800	0.832	0.832	0.733	1.374	0.744	0.821
26	1.128	0.855	1.371	1.630	0.504	0.868	0.832	0.832	0.733	1.366	0.744	0.857
27	1.215	0.798	1.589	1.359	0.610	0.868	0.832	0.767	0.733	1.321	0.655	0.821
28	1.128	0.855	1.431	1.359	0.504	0.767	0.832	0.767	0.800	1.321	0.744	0.751
29	1.075	0.966	1.444	1.624	0.504	0.832	0.767	0.767	0.800	1.397	0.857	0.857
30	0.565	0.855	1.258	1.589	0.610	0.767	0.767	0.767	0.733	1.375	0.857	0.857
31	0.855	0.855	1.589	1.589	0.610	0.767	0.767	0.767	0.733	1.375	0.857	0.857
TOTAL	30.767	30.643	42.851	45.276	31.010	25.568	25.123	24.507	24.817	40.734	22.827	24.014
AVERAGE	1.026	0.992	1.428	1.455	1.001	0.866	0.810	0.817	0.801	1.314	0.815	0.775
MAXIMUM	1.855	1.159	2.021	1.666	1.635	1.120	1.192	0.868	0.868	1.499	1.473	0.930
MINIMUM	0.647	0.798	0.655	1.273	0.610	0.733	0.701	0.703	0.703	1.131	0.325	0.347

MAX-NICHI DATE < 820607 > 2.021
 35-NICHI DATE < 820806 > 1.450
 55-NICHI DATE < 820809 > 1.272
 185-NICHI DATE < 821214 > 0.868
 275-NICHI DATE < 820318 > 0.763
 355-NICHI DATE < 820321 > 0.609
 MIN-NICHI DATE < 820311 > 0.325
 *ITPM(2)

***** A N N U A L *****
 ***** T F T A L *****
 ***** A V F R A C F *****
 ***** M A X I M U M *****
 ***** 769.307 *****
 ***** 1.600 *****
 ***** 2.021 *****
 ***** 0.325 *****

資料- 9 流況曲線

Fig. 4.3-2-(1) Discharge Duration Curve

NO.1
GYETSA YEAR DURATION ZU
 $\frac{m^3/sec-day}{100 Km^2}$

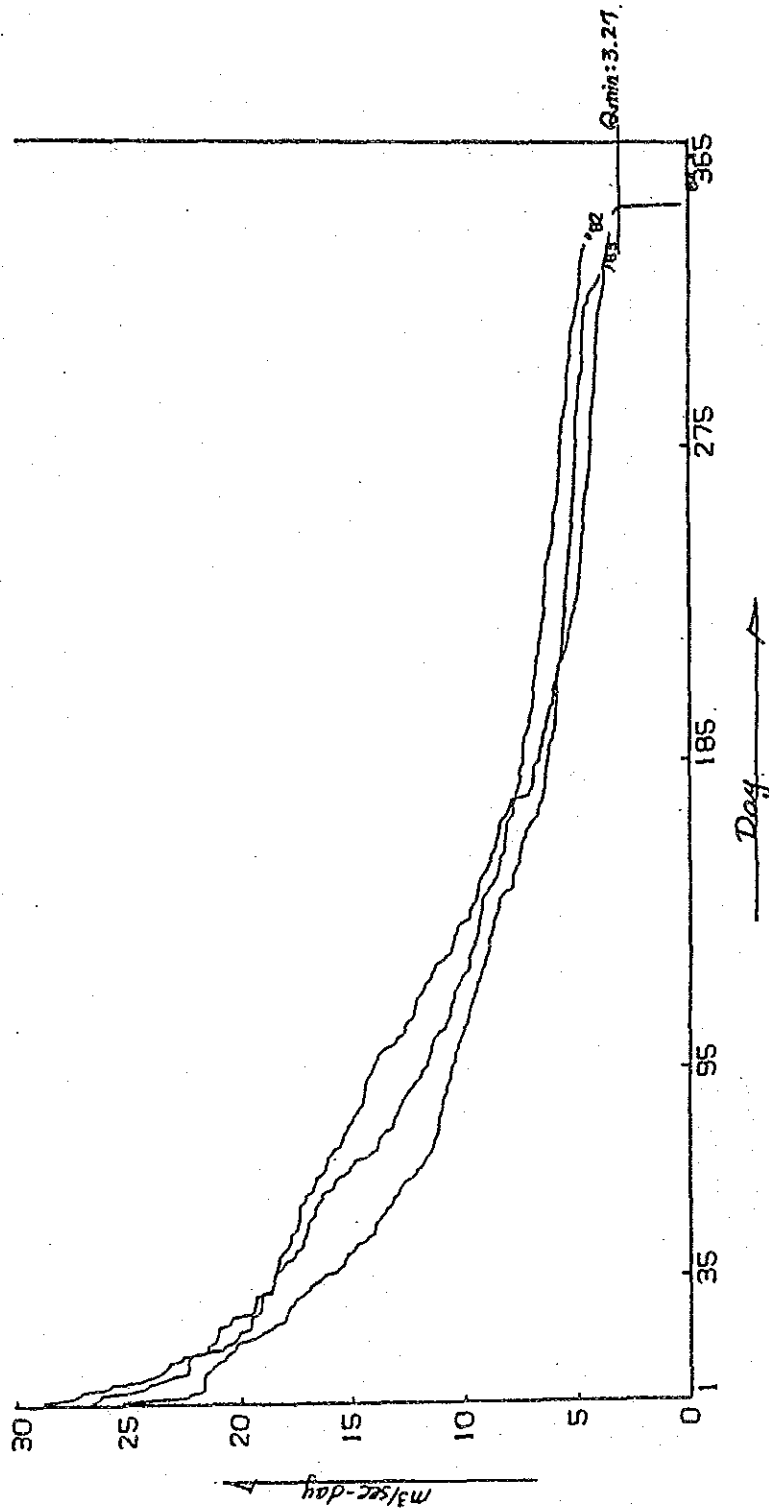


Fig. 4.3-2-(2) Discharge Duration Curve

NO.2
 KHALIG YEAR DURATION ZU
 $\frac{m^3 \text{ sec-day}}{100 \text{ km}^2}$

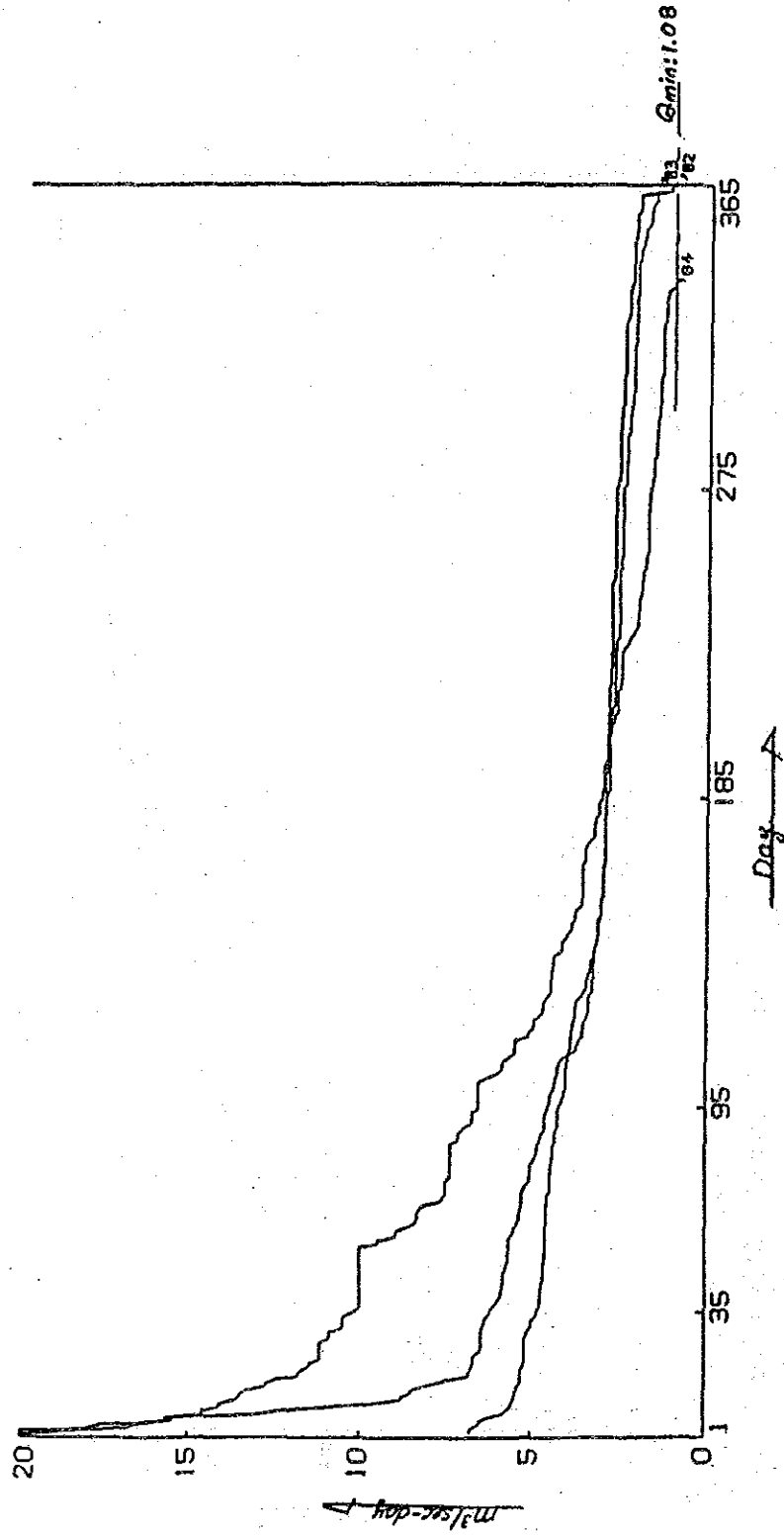


Fig 4.3-2- (3) Discharge Duration Curve

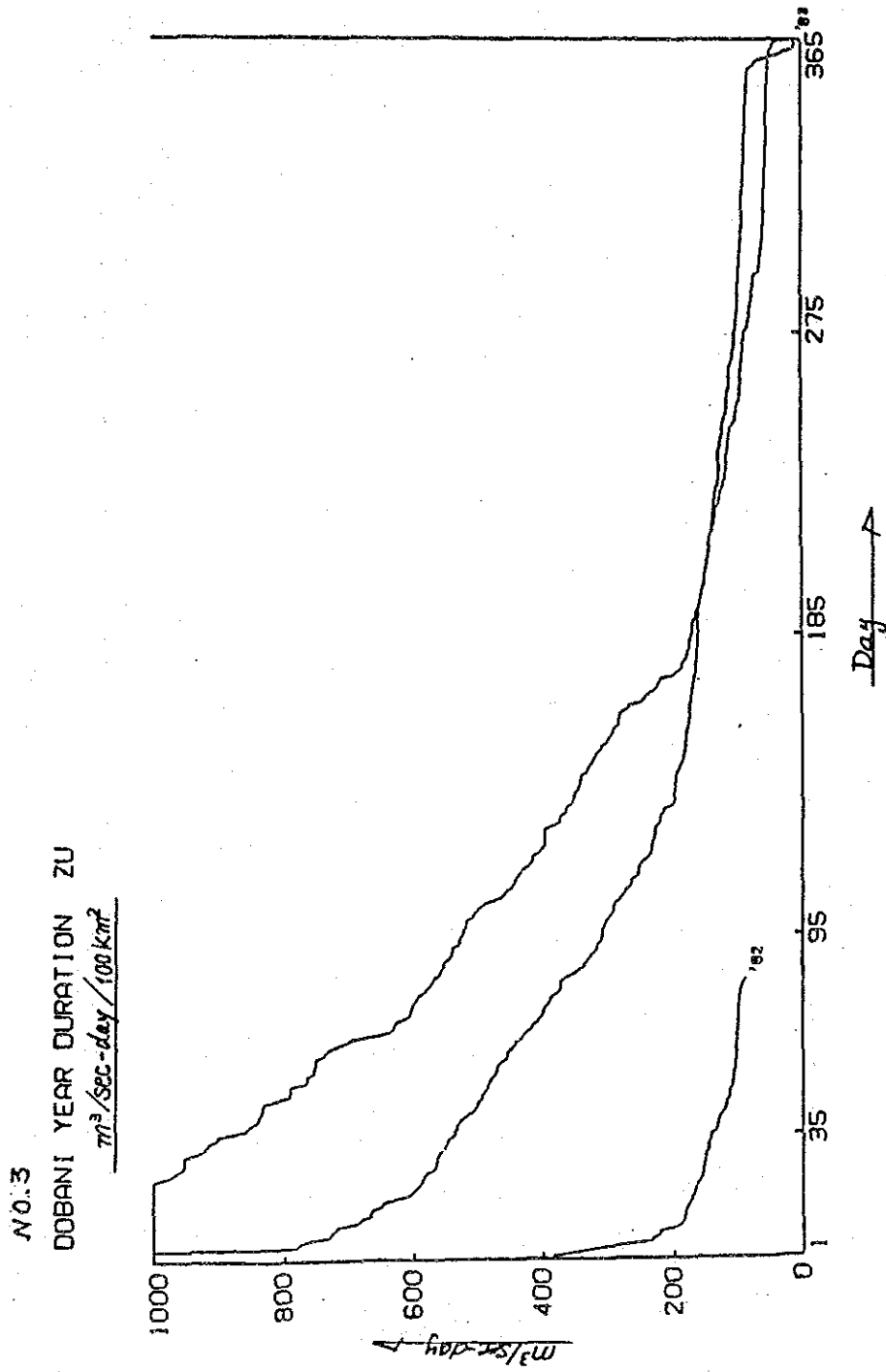


Fig. 4.3-2-(4) Discharge Duration Curve

NO. 4

PEMAGYAT YEAR DURATION ZU

$\frac{m^3/sec-day}{100 km^2}$

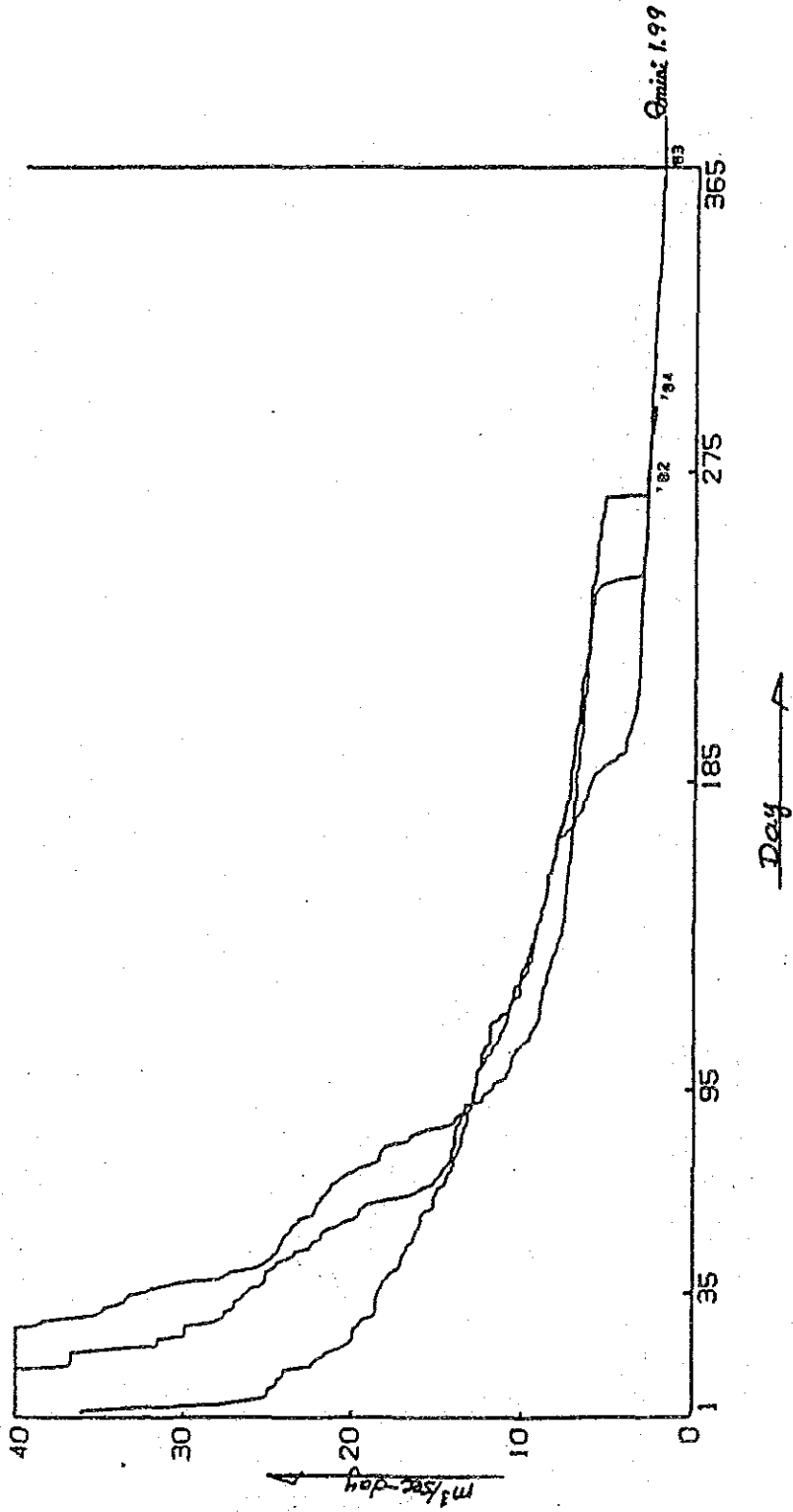


Fig. 4.3-2-(5) Discharge Duration Curve

NO.5

MUNSHIAR YEAR DURATION ZU

$\frac{m^3}{sec-day/100 km^2}$

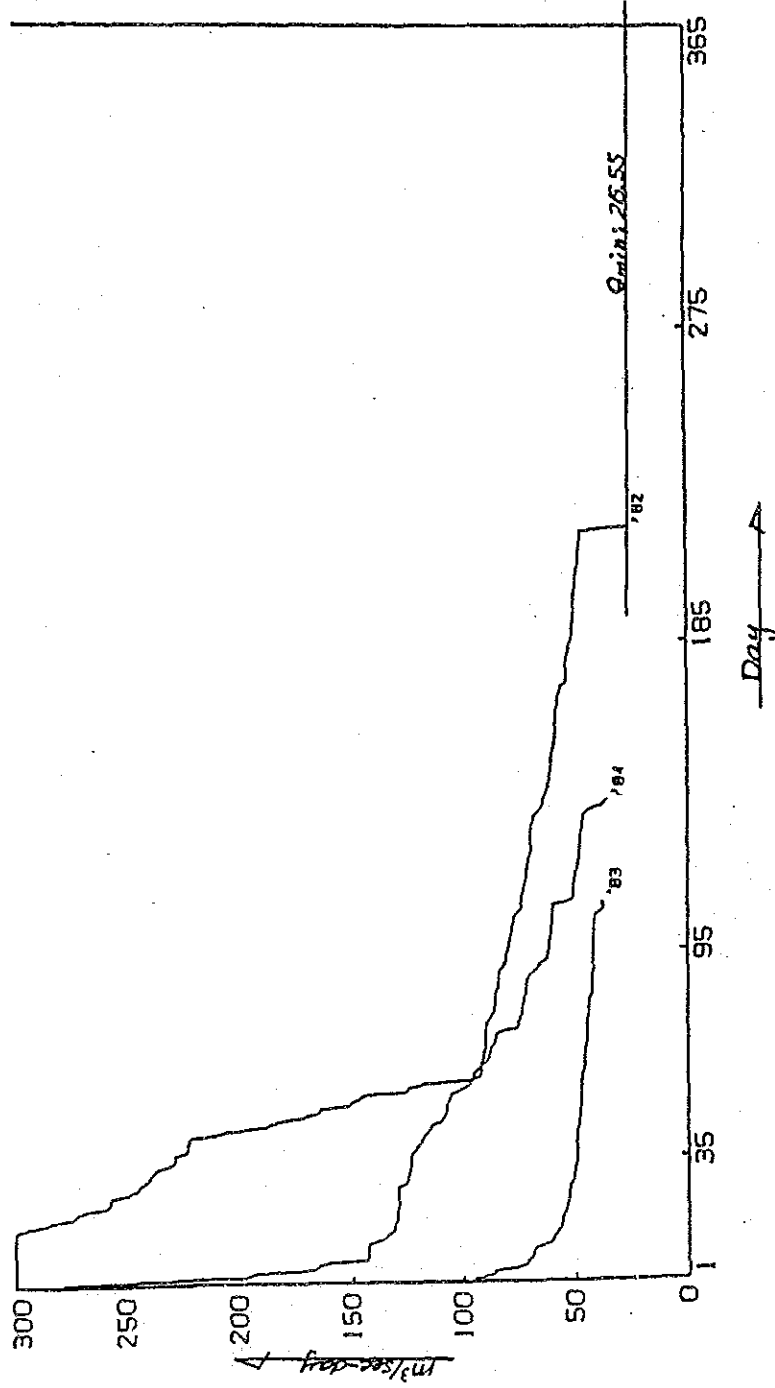


Fig. 4.3-2-(6) Discharge Duration Curve

NO. 6
TASHIYANGTISI YEAR DURATION ZU
 $\frac{m^3}{\text{sec-day}}/100 \text{ km}^2$

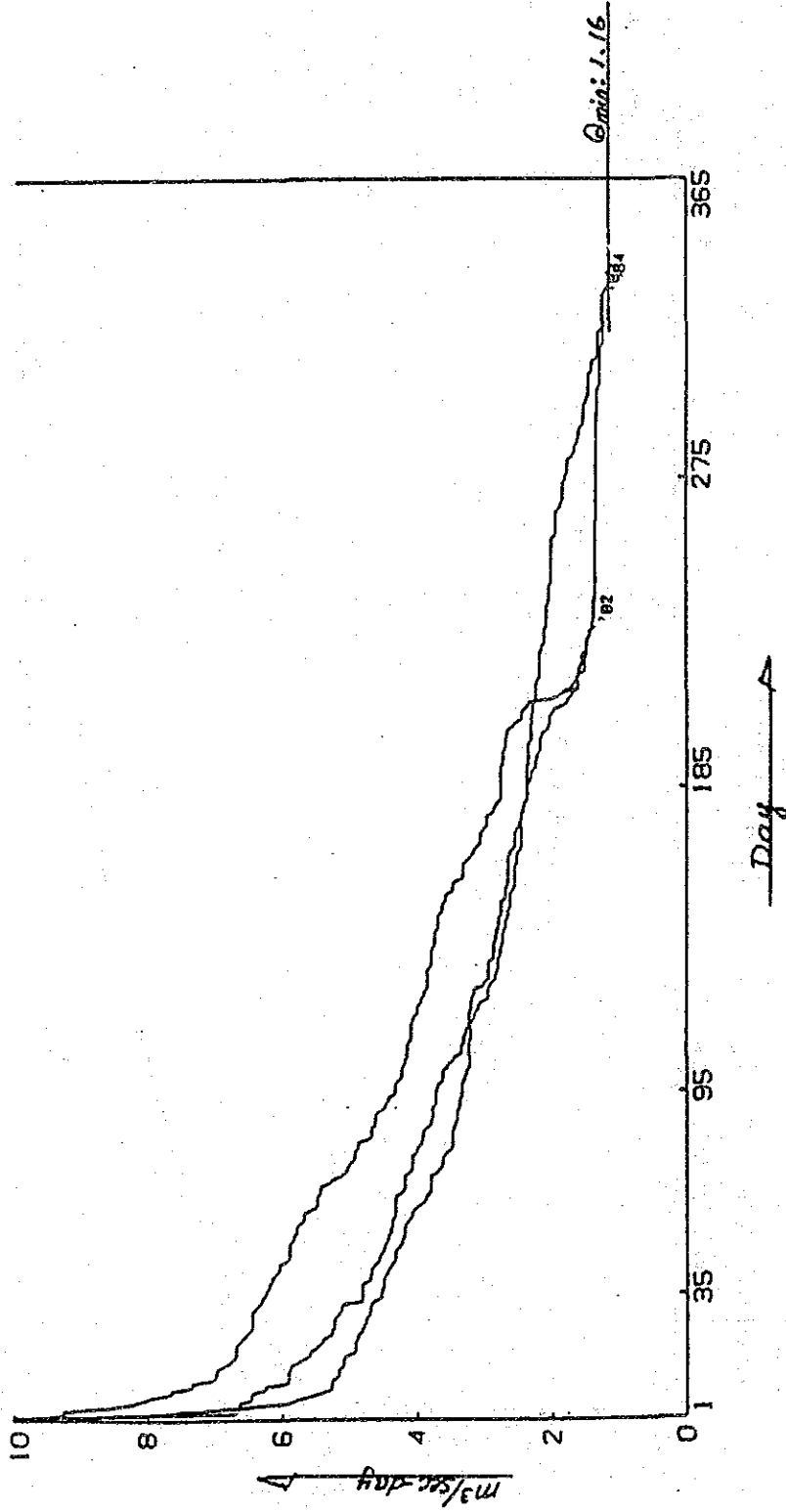


Fig. 4.3-2-(7) Discharge Duration Curve

NO.7

NANGLAM YEAR DURATION ZU
 $\frac{m^3/sec \cdot day}{100 km^2}$

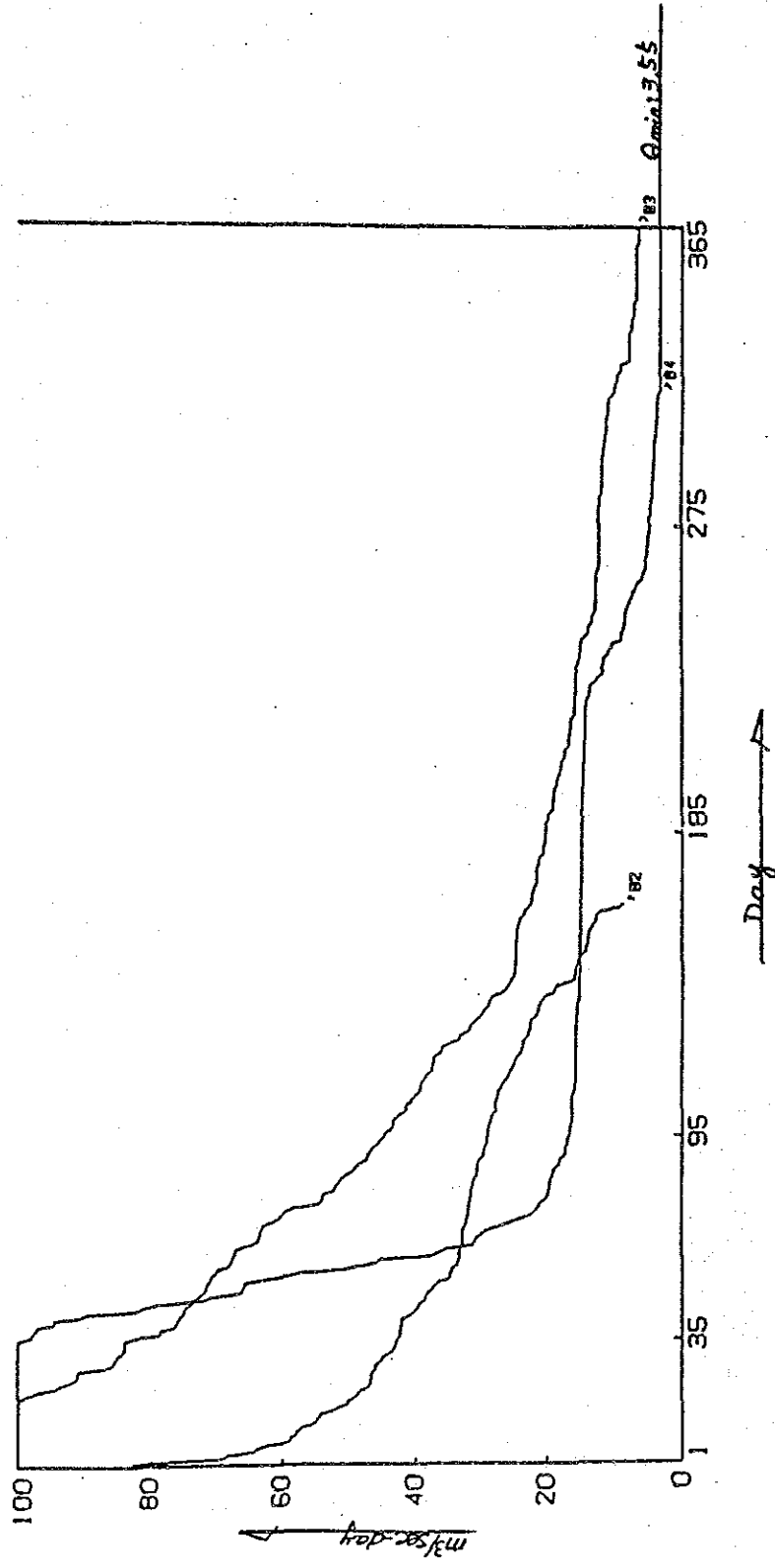
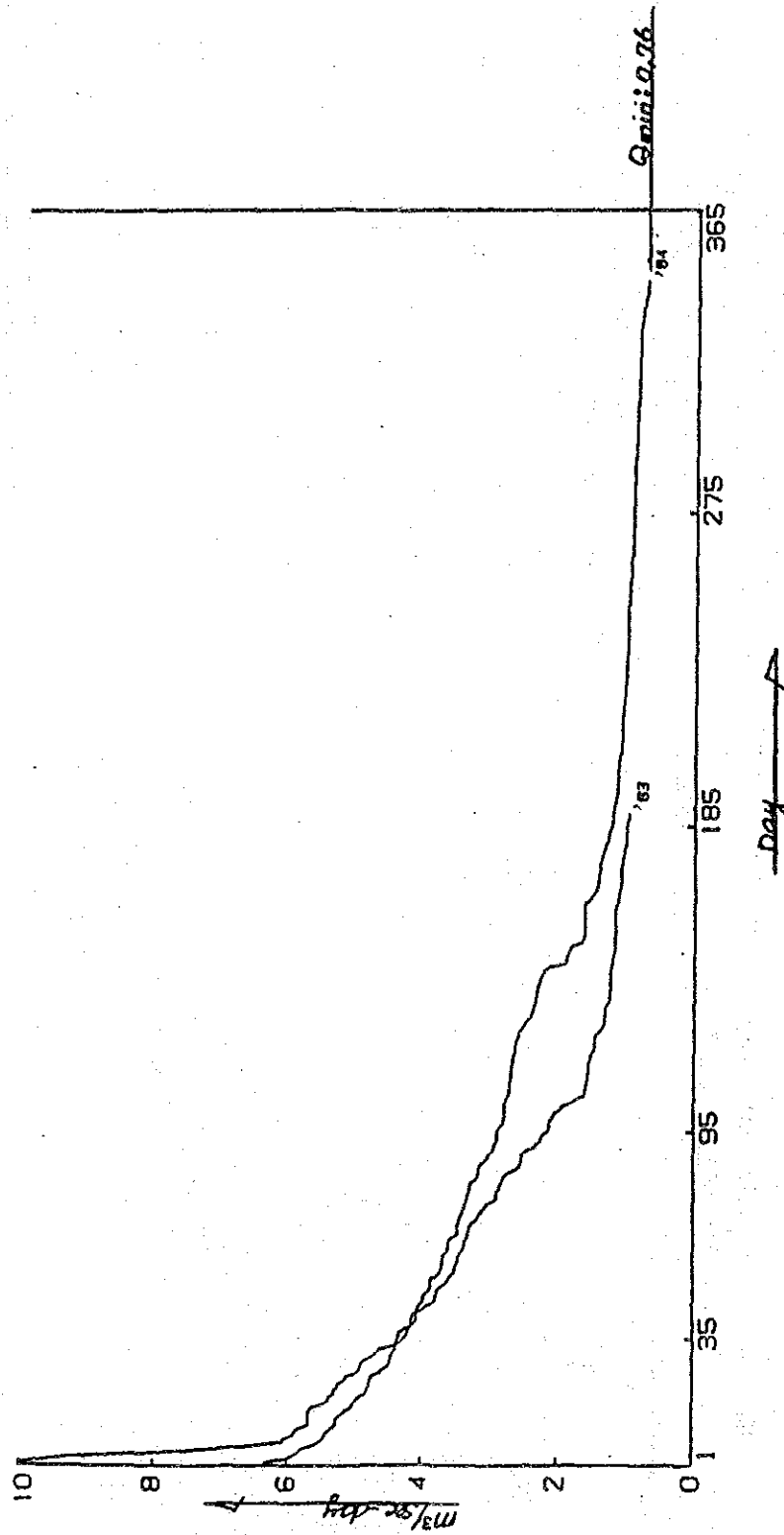


Fig. 4.3-2-(8) Discharge Duration Curve

NO.8

REFEE YEAR DURATION ZU

$\frac{m^3/sec \cdot day}{100 \cdot km^2}$



資料-10 地点別計画図

Fig. 4.3-3-(1) General Layout

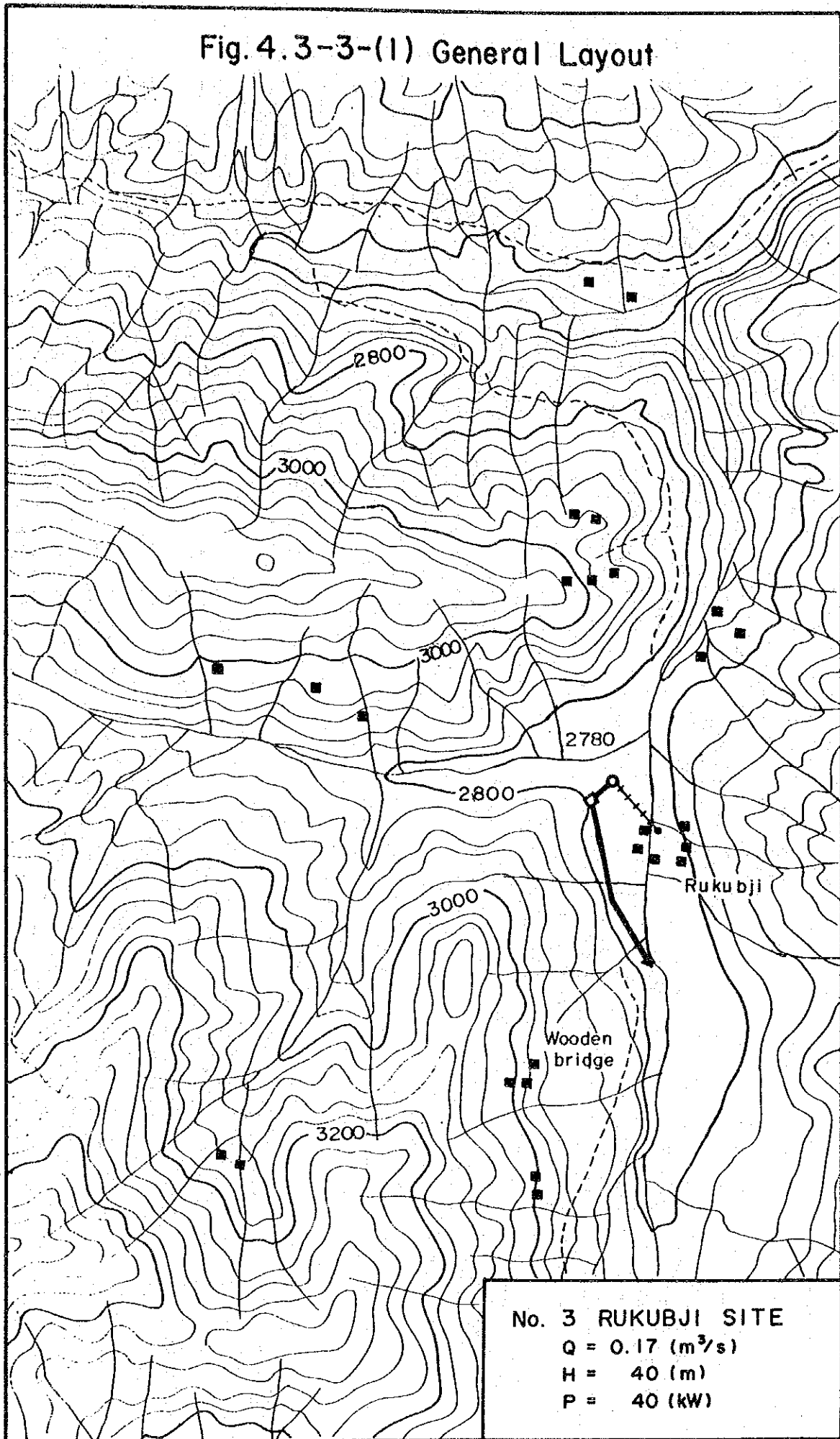


Fig.4.3-3-(2) General Layout

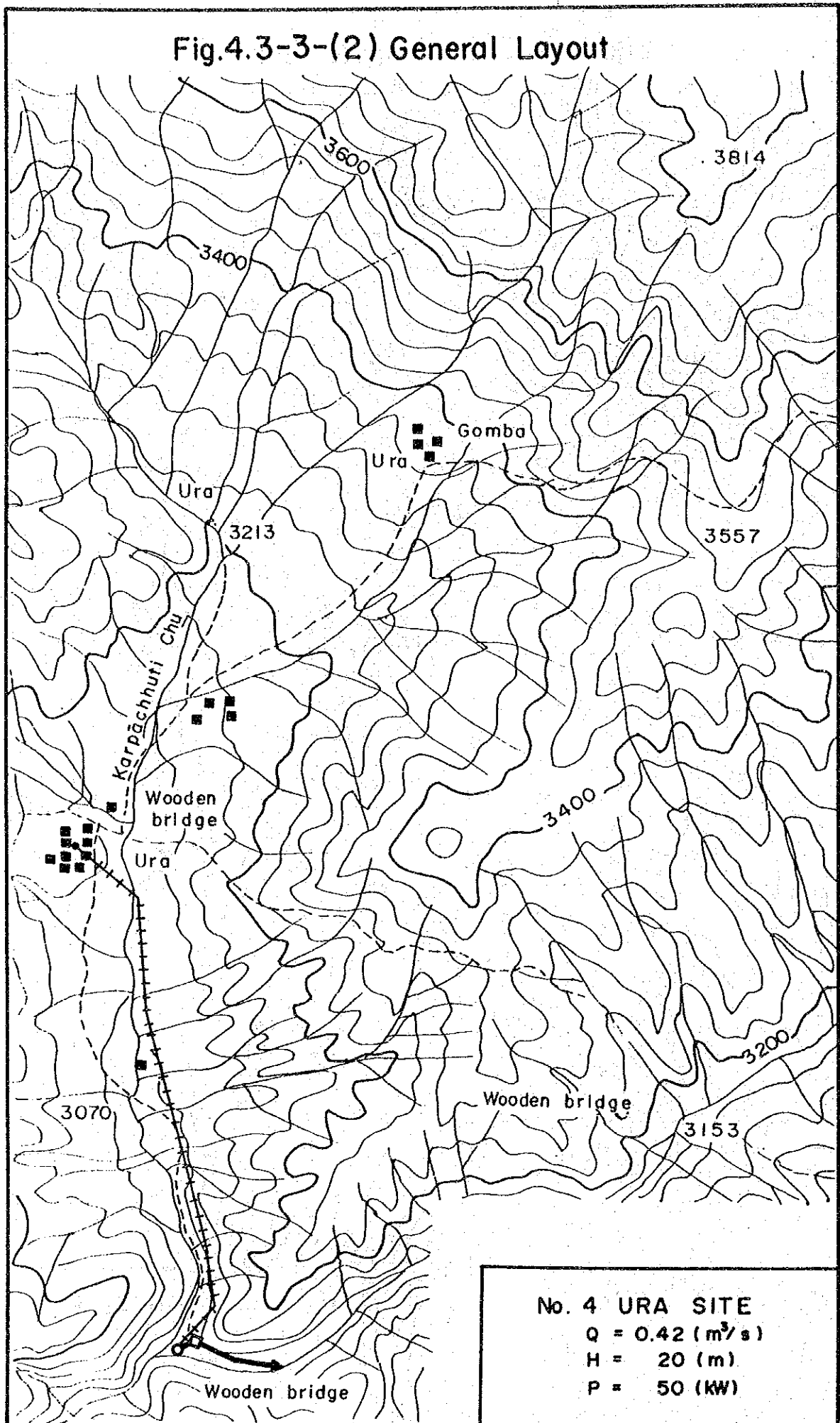


Fig.4.3-3-(3) General Layout

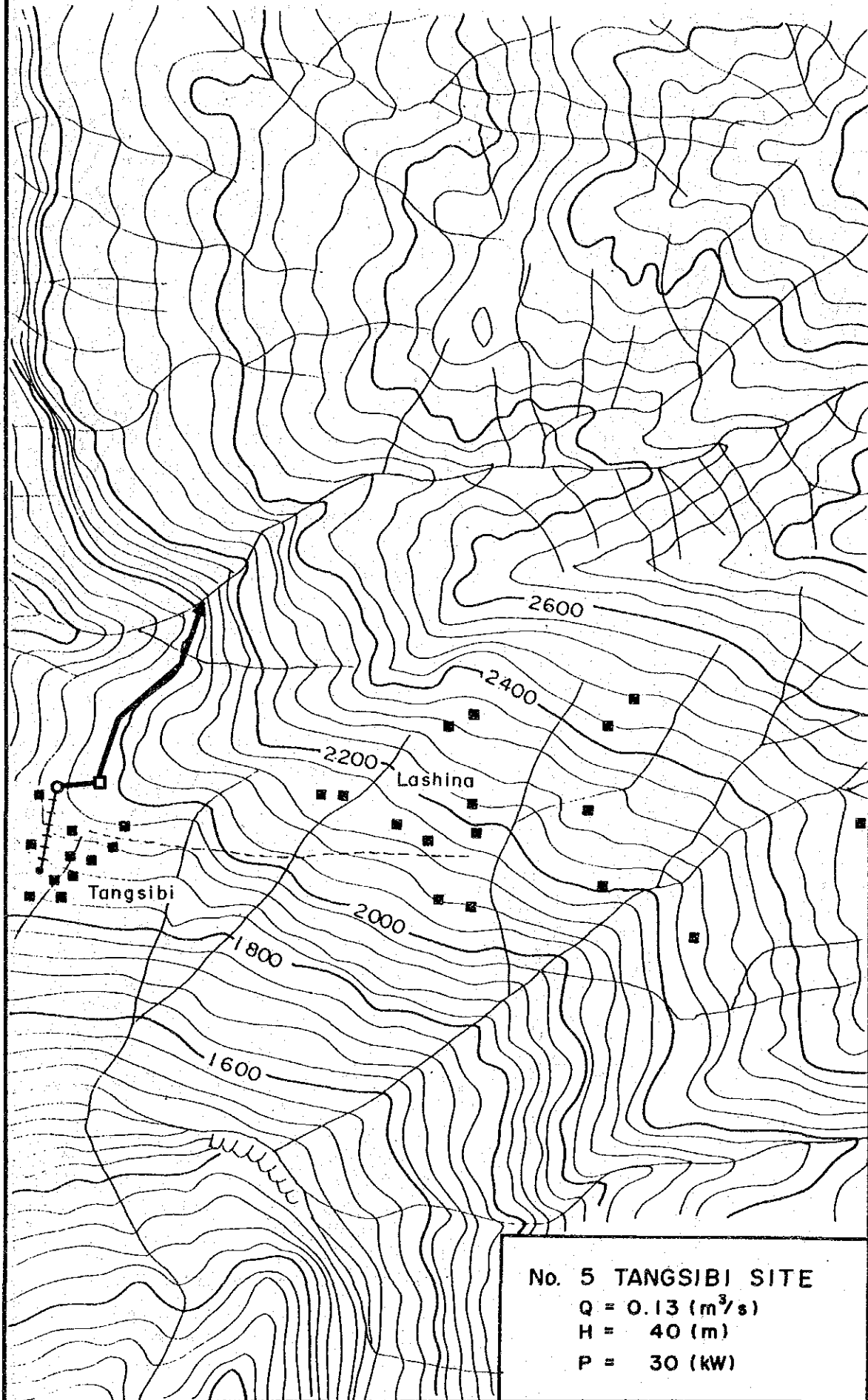


Fig.4.3-3-(4) General Layout

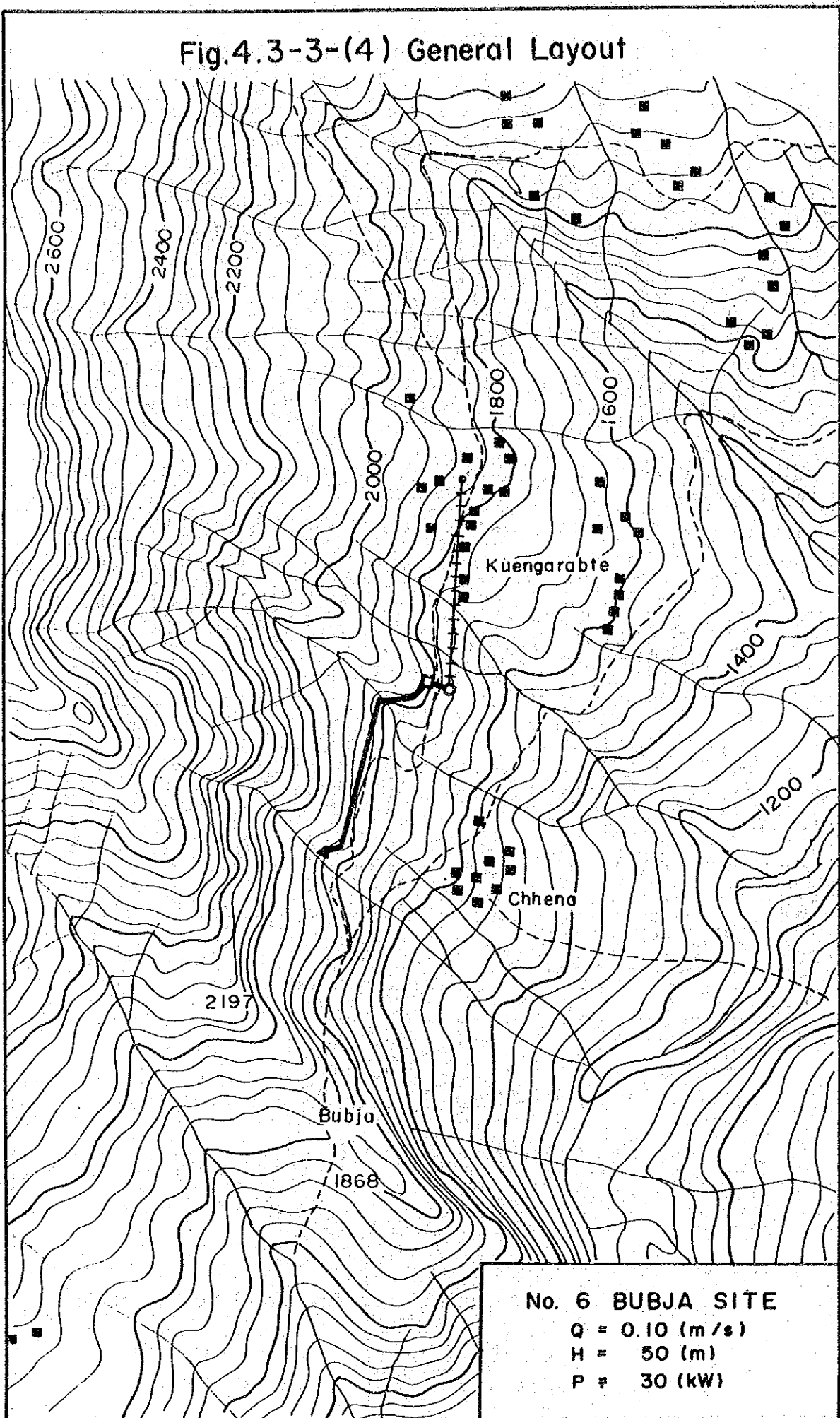


Fig. 4.3-3-(5) General Layout

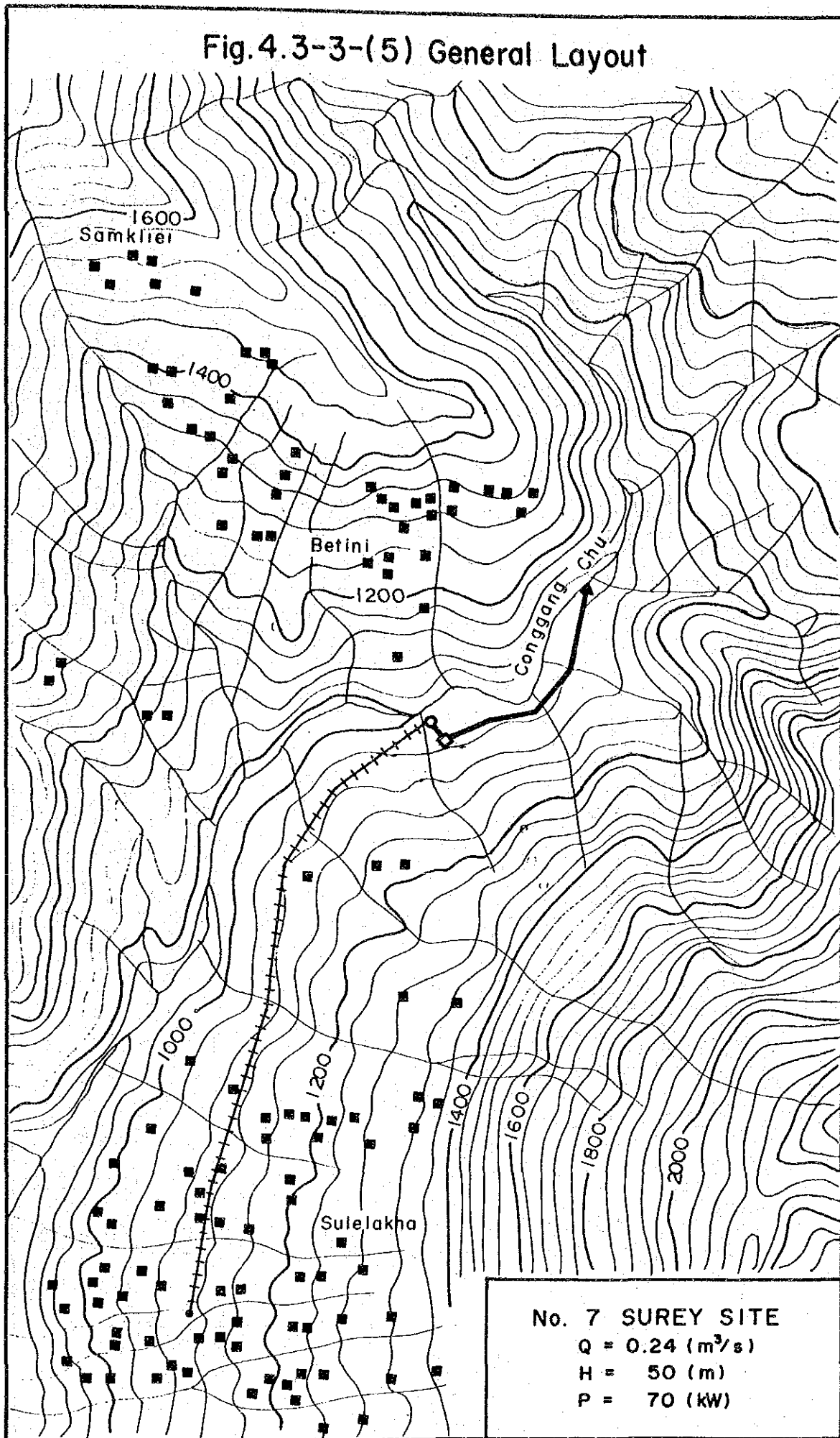


Fig.4.3-3-(6) General Layout

