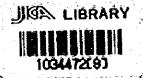
# SURVEY REPORT ON THE ENERGY SUPPLY-DEMAND DATA BANK SYSTEM IN THE REPUBLIC OF INDONESIA

MARCH 1981

JAPAN INTERNATIONAL COOPERATION AGENCY

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## SURVEY REPORT ON THE ENERGY SUPPLY-DEMAND DATA BANK SYSTEM IN THE REPUBLIC OF INDONESIA



**MARCH 1981** 

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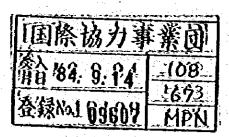
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#### PREFACE

In response to the request of the Government of the Republic of Indonesia, the Japanese Government decided to conduct a survey on the project to establish an Energy Supply-Demand Data Bank System in Indonesia and entrusted the survey to the Japan International Cooperation Agency (JICA). The JICA sent to Indonesia a survey team three times headed by Mr. Takao Tomitate from September 18, 1980 to March 1, 1981.

The team exchanged views with the officials concerned of the Government of Indonesia in conducting the survey. After the team returned to Japan, further studies were made and the present report has been prepared.

I hope that this report will serve for the development of the Project and contribute to the promotion of friendly relations between our two countries.

I wish to express my deep appreciation to the officials concerned of the Government of the Republic of Indonesia for their close cooperation extended to the team.

March, 1981

Keisuke Arita

Krienke

President

Japan International Cooperation Agency

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# SUMMARY OF TECHNICAL COOPERATION

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#### 1. Outline of Technical Cooperation

The commencement of technical cooperation concerning the establishment of the energy supply-demand data bank in the Republic of Indonesia dates back to May 1977. A request for the said technical cooperation was submitted to the Japanese government by Mr. Piet Haryono, the President Director of the Indonesian State Oil and Gas Mining Enterprise (PERTAMINA).

The contents of the cooperation were confirmed between the Republic of Indonesia and Japan after submission of the request. However, there were various unclear points in connection with the Indonesian attitude and preparedness to receive the Japanese, as well as the scope of collection and filing of various data. Thus, the Japanese government dispatched a preliminary survey team to Indonesia from February 28 to March 12, 1978 in order to carry out investigations on technical cooperation concerning the project.

After their return to Japan, the team prepared the "Peasibility Study Report for Technical Cooperation on the Energy Data Bank System of the Republic of Indonesia." Meanwhile, the Indonesian side included the project in the List of Requests for Foreign Assistance (IGGI LIST) of the BAPPENAS, and at the same time submitted a formal request calling for technical cooperation to the Japanese government through the Technical Coordination Committee in the President's Office.

Upon receiving the formal request from the Indonesian government, the Japanese government examined the results obtained from the preliminary survey and studied the request. As a result, in late August 1978, the Japan International Cooperation Agency (JICA) requested that the Institute of Energy Economics in Japan conduct formal investigations on the area of cooperation concerning the establishment of the energy supply-demand data bank. The Institute of Energy Economics performed its field survey from October 15 to November 13.

The objective of the field survey was to determine actual conditions in Indonesia regarding the fields which required Japanese cooperation in establishing the data bank. Thus, it was aimed at obtaining information which would help the Japanese side decide on the forms of cooperation which could be offered to the Indonesian side.

Consequently, the team was to study the situation in Indonesia by conducting the survey primarily on the following items.

- 1) Data related to petroleum and gas
- 2) Energy supply-demand forecast, and balance table
- 3) Utilization of computers at oil refineries
- 4) Overall computer utilization system

(2)
5) Data on energy sources other than petroleum and gas, such as electric power, coal,

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After these five survey items had been further broken down into 33 sub-items, the survey was undertaken. The results from the extensive survey, lasting three weeks, were presented in its "Survey Report on the Energy Supply-Demand Data Bank System in the Republic of Indonesia." The basic conditions for the establishment of the Energy Supply-Demand Data Bank (EDB) system as delineated in the report may be summarized as follows.

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- (1) The EDB system shall fall under the control of the MIGAS of the Indonesian Ministry of Mines and Energy, and be utilized by MIGAS and PERTAMINA with the consent of the said Ministry and the Japanese government. The data to be processed at present shall be mainly related to oil and gas, and electronic computers and software at PERTAMINA shall also be employed.
- (2) The results of the field survey show that MIGAS and PERTAMINA have sufficient data related to petroleum and gas, and in addition, the hardware, software, manpower, etc. to formulate a project to establish and EDB system and to execute it.
- (3) Important factors in establishing the EDB system include: the type of system to be considered, established, maintained, and operated; and ideas and preparations for future improvement.

According to this basic concept, the types of technical cooperation had been classified into two steps: step 1 which was aimed at establishing a comparatively simple EDB system, and step 2, a more complicated large-scale EDB system. It was noted that technical cooperation should be restricted to step 1 for the present time.

A simple EDB system designed at the first step has the following basic functions: 1) preparation of a basic energy statistical table; 2) preparation of an energy balance table and 3) midium- and long-term energy supply-demand forecast.

Based on the basic policy described in the survey report, the Japanese government decided to offer and execute technical cooperation required for the establishment of an EDB system in Indonesia in fiscal year 1979, and entrusted the Institute of Energy Economics to undertake the actual activities.

The items for cooperation in 1979 are as described in the following section 3. These comprised of the establishment of energy data bases, formulation of the energy balance table, and development of a medium- and long-term energy supply-demand forecast model. For this purpose, JICA dispatched a team of experts three times and one professional to Indonesia, who stayed in the country for 8 months to render technical assistances. On the other hand, Indonesia, too, dispatched a total of twenty personnel including the four, whose expenses were shouldered by JICA, to Japan for training. As the result of such cooperative works based upon the mutual understanding of the two countries, the objectives as planned were achieved.

(3)

It is, however, pointed that the Indonesian members were not able to fully assimilate some of the works involved due to the training period being a little short. In the light of the situation, both government agreed to further conduct the technical cooperation in 1980.

In the technical cooperation of 1980, the follow-up was made on the data bank established in the previous year and the application system of it as well as the setting-up of the energy balance table and a sub-data bank for preparation of an energy balance table and a supply-demand forecast model. The function of the established sub-data bank is to intensify the micro-data obtained from enterprises into the macro-data of the national level. Thus, the establishment of this sub-data bank makes it possible to store the macro-statistics.

Through these 3-year surveys and technical cooperative works, the alignment of energy-related data in Indonesia will be further enhanced to a large degree. It can be said in this context that the cooperation for the energy supply-demand data bank system in Indonesia has completed its first stage. This report, therefore, is considered as the summary of achievements over the three-year period.

#### 2. Field Study (1978)

2-1 Objective and Items of Field Study

#### 2-1-1 Objective of Field Study

As stated in the preceding section, the field study with respect to this project was carried out in 1978, the summary of which is herein given.

The Field study was conducted in order to clearly ascertain the situation prevailing in Indonesia in respect of the items for cooperation listed below and required for establishing Energy Supply-Demand Data Bank, i.e. to collect information through the field study on which to base our judgement for determining the best manner in which Japan may extend its cooperation in regard to the various items for cooperation.

Discussion items listed below have been sorted out based on the detailed discussions exchanged between Japan and Indonesia during the preliminary investigations by the Japanese government conducted from February 28 to March 12, 1978.

Items for Cooperation in the Project for Indonesian Energy Supply-Demand Data Bank System.

- (1) Design for Establishing Energy Supply-Demand Data Bank
- a: Survey of Existing Energy Related Statistics in Indonesia

The most fundamental problem in establishing an energy supply-demand data bank in Indonesia is in what scope the energy related data may be utilized. To learn this point,

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systems for data collection, actual accumulation and classification on the following statistics will be studied, the problems pointed out and guidance given: (I) supply-demand statistics broken down by energy resources such as oil, coal, natural gas, electric power, etc.; (ii) supply-demand statistics broken down by sectors such as industry, agriculture, forestry and fishery, transportation, energy, household sector, etc.; (iii) import-export statistics broken down by energy resources; (iv) price statistics broken down by energy resources.

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#### b: Design for Computerization of Energy Statistics

In order to systematically collect, store, retrieve and utilize the considerable amount of energy supply-demand statistics, it naturally requires computer utilization. Possible technical assistance will be given for (1) method of data input (including preparation of input format), (2) programming for storage and retrieval of data, (3) preparation of output format for computer processing of data.

c: Preparation of Comprehensive Energy Statistics Table (Energy Balance Table) and
Design for Computerization

In order to systematically prepare energy supply-demand plan, it is necessary to have energy statistic balance table summarized by and broken down by the energy resources and the supply-demand sectors. Accordingly, the transfer of know-how and technical guidance will be given for (1) designing optimum energy balance table for Indonesia, (2) statistical method of transfer from primary energy to secondary energy, (3) entery calory conversion, (4) statistical method of handling and correcting inventory, etc.

- (2) Design for Establishing Energy Demand Porecasting Method
- a: Survey and evaluation of existing demand forecasting method in Indonesia

  Evaluation of existing demand forecast model techniques, review of various parameters used, analysis of input data precision, suitableness of forecast model and forecast object, and suitable guidance will be carried out.
- b: Introduction and evaluation of major forecast techniques used in Japan and other countries of the world

Advantages and problems of forecast techniques used in major countries are pointed out as the examples of applications are introduced.

c: Review and design for demand forecast suited for Indonesia

In preparing the energy plan in Indonesia in the light of the above points a and b, the forecast method considered the most suitable will be reviewed and the guidance will be given for preparing forecast model.

d: Scope of Porecast Model

The demand forecast will be made in respect of (1) energy resources and of (2) sectors.

The seasibility in respect of (3) regional forecast will also be studied.

e: Review of Possibilities of Energy Conversion -

One of the most critical points to be reviewed in the Energy Plan in Indonesia is to determine what energy resource is to be put to what kind of uses. Energy Balance Table will be utilized and the possibility of using some types of models (optimal conversion, allocation model) will be considered, and if they are found feasible, they will be put to practice.

(3) Survey of Specific Consumption for Energy in the Industrial Sector

In relation to the energy demand forecast mentioned in the above item (2), the importance for further detailing the forecast in the industrial sector is expected to increase, and the fundamental data in this sector is urgently needed. In particular, the methodology and the manners of operation for more precise forecast based on data collection in the medium and small scale industry sector will be reviewed.

For this purpose, the method for preparing specific consumption in Japan will be introduced, and the method of conducting the survey on the actual situation (the survey table format, optimum number of samples, selecting the survey objects, survey period, etc.) which is suitable for Indonesia will be reviewed and guidance will be given.

- (4) Cooperation Concerning Systematization of Resinery Related Data and Application of the Data to Optimal Operation Model for Resineries
- a: Survey and Evaluation of Existing Models in Indonesia

Among the refinery models, there are (1) macroscopic model for conforming the oil supplydemand of the whole nation and (2) optimal operation model at a refinery or an oil company.

These models will be introduced and the analysis by these models will be taught.

- b: Review of Optimal Refinery Operation Model Suitable for Indonesia
- (1) National Refinery Network Model

The nation is divided into 8 demand regions, and the optimal operation of refineries will be sought assuming optimal transportation system between the regions.

(2) Individual Refinery Model

Mainly to correspond to short term supply-demand variations, the operation plans for individual refineries will be prepared.

(3) Overall Model for National Refineries

Preparation of production plan on national basis, allotment and adjustment of production plans, based on each refinery will be reviewed.

(6)

#### 2-1-2 Items for Survey that the role from the west to be seen in the reading of the seen and the

Based on the items for cooperation as above outlined, the items for on the spot survey were selected as shown in Table 2-1.

However, these items for survey were rearranged in order to facilitate efficient survey when it was actually conducted.

- (1) Survey concerning data related to oil and gas.
- (2) Survey concerning demand forecast and energy balance table.
- (3) Survey concerning computer utilization in refineries,
- (4) Overall survey concerning computer utilization system.
- (5) Survey concerning data related to electric power and coal, other than oil and gas.

Accordingly, the items (1) to (5) are distributed to sub-items (1) - (33) in Table 2-1.

#### 2-2 Composition and Responsibilities of Survey Team

The team comprised of nine experts in energy economics, demand forecast, oil refinery process, computer technology, system design and system analysis and one officer in charge of the present project from JICA.

The survey was conducted for the period of three weeks, various sections of the survey lasting respectively for 1 week, 10 days, 2 weeks and 3 weeks. Table 2-2 lists the members of the team and the subjects for which they were responsible.

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gligge kill a tota gažina dibero koliki da koli elegensa i nejiž nam koliki, kiliž nam govenije kila je koliki Imovilim na ma tota stolata naminišta a nejim nema komena i kiližina, negata oda izvili i kili i kili, kiliži

वांक प्रोतिक विकास के किल्किन किल्किन कर अनुवार कर की अपने किल्किन कर है। इस प्रोतिक किल्किन किलिक किलिकिन कर अनुवार कर की अपने किल्किन कर है।

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Table 2-1 Survey Items for Indonesian Energy Supply-Demand Data Bank

MANAGEMENT TO THE PROPERTY AS	-	Contents of survey	fsurvey
cooperation	Kind	Itom surveyed	Remarks
1-12 Survey of existing	(demand)	1: Actual statistics of energy demand broken down-by primary energy resources	oil, coal, natural gas, hydroclectric power, and other non-commercial energy
energy in Indonesia		2. Actual statistics of demand broken down by	mining, agriculture, forestry and fishery,
			manufacturing, transportation, energy, household
		3. Actual statistics broken down by regions	administrative regions, or economic regions of Indonesia, demand broken down by primary
			energy resources, and by sectors
		4: Actual statistics broken down by oil products, and by sectors	gasoline, kerosene, diesel oil, heavy fuel, and other products industry, household transportation, conversion sectors
	. :	5: Actual statistics of power demand broken down by sectors	industry, transportation, household, energy sectors
	(Arddne)	6: Actual statistics of supply in Indonesia broken down by primary energy resources	oil, coal, natural gas, hydroelectine power, others
		7. Actual statistics of supply in Indonesia broken down by region	including those broken down by regions
		8: Actual statistics of domestic supply of electric power	including those broken down by regions
		9: Actual statistics of domestic supply broken down by oil products	including those broken down by regions
	(production)	10: Actual statistics of domestic production broken down by primary energy resources	including those broken down by regions

	(import & export)	ដូ ដូ	Actual statistics of domestic production broken down by oil products Actual statistics of import and export broken down by primary energy resources	including those broken down by regions broken down by countries of origin and by importing countries
·		13:	Accused statistics of import and export broken down by oil products	
	(prices)	<del></del>	Wholesale and retail prices broken down by primary energy resources	excepting hydroelectric power
,	3 3	15:	Wholesale and retail prices broken down by oil products	
		16:	16. Rate of electricity	charge system classified by the types of clients
		17:	Ž 7	FOB (export) C&F (import)
<del> </del>		÷:	Import and export prices broken down by oil products	
1-2: Design for com- putenzation of energy	(collection)	ğ 8	Methodology for collecting energy, statistics Methodology for storing energy statistics	structure and system for collection filing system
<del></del>	(retrieval)	21:	Remieval and use of energy statistics	method of retrieval, use system
1.3: Preparation of	oppe)	22:	Scope and format of Energy, Balance Table	optimum format of balance table
comprehensive energy statistics table of wenter	(data process- ing)	ឌ	Data processing accompanying energy	how to treat energy loss ratio, calory, inventory, correction
(Energy-Balance-Table) and-design for its	And the second of the second o	24 1042	The second of th	
computerization (72. Energy supply-	(forecast	24.	Evaluation of existing forecast models in	structure of models, parameters, input data, results
demand forecast technique	model		STATE OF THE STATE	

「一般の大きないという」とはなりのである。 というのできない こうちゅうしゅ こうちゅうしゅ おいましゅう

and the second that the second of the second	The state of the s		Contents of survey	£'survoy
cooperation	Xind		Itom surveyed	Remarks
The second secon	(economic plan)	25:	Enorgy supply-demand forecast and economic plan.	GNP/IIP/energy consumption, economic development, plan, energy consumption broken down by
	(computer)	26:	26: Utilization of computers	sectors, etc. types of hardwares, capacity, kinds of software, etc.
	(mampowar)	27:	Level of programmers	numbers and capacity
7 3 1	(present arruncion)	88	Survey on actual situation of energy, consumption in big scale manufacturing industry.	conduct of actual field survey concerning energy demand control
industrial sectors are considered and a sectors of the constant of the constan		29:	Survey, on actual situation of energy consumption in medium & small scale manufacturing industry	
		Š	Data collection system from end use	mechanism for data collection
rvey on existing	(model)	31:	Evaluation of existing model in respect of content, utilization method and result	survey on both sides of input and output
	(xeffmory)	ä	Survey of refinery related data broken downby, such as capacities, utilities, manpower, cost, production pattern, etc. in existing refinences	
	(prosent status)	33	On-the-spot survey of refinances	

Table 2-2 Composition of Survey Team, Responsibilities, and schedule

1. Takao Temitato   Esangy economia: Supervision   10/15   10/15   10/15     2. Kanichi Maraii   Supply-demand fore sequence   22, 23, 24, 25   10/15   10/12     3. Yoshio Xana   Supply-demand fore   22, 23, 24, 6, 7   10/15   10/12     4. Euc Takai   Oul entire   1, 1, 2, 3, 4, 6, 7   10/15   10/15     5. Snochi Sicial   Syrtem standyris   Oul entire   22, 23, 28, 29, 30   10/15   10/15     5. Snochi Sicial   Syrtem standyris   Oul entire   22, 23, 28, 29, 30   10/15   10/15     5. Snochi Sicial   Syrtem standyris   Oul entire   22, 23, 28, 29, 30   10/15     6. Morocata   Economic devider   Oul gas stands from   22, 23, 28, 29, 30   10/15     7. Teen   met Lineage   Supply-demand   12, 13, 14, 15, 17,   10/15   10/17     8. Funio Anakan   Electricity supply   Electricity Coal   12, 13, 14, 15, 17,   10/15   10/12     9. Koichi Onda   Syrtem design and   Computer   26, 27, 31   10, 12, 16     9. Koichi Onda   Syrtem design and   Computer   26, 27, 31   10/15   10/12     10. Industria	Namo	Specialist in	Responsibilities	Items of Survey responsible numbers	Survey Schodulo 10/15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-11/1-2-3-4
Supply-demand         Supply-demand force         22, 23, 24, 25, 7         10/15         10/22           Snathchal analysis         Oil, gas statistics         11, 2, 3, 4, 5, 7         10/15         10/15           System-bankysts         Oil softning         31, 32, 33, 26, 27         7         10/15           Oil softning         31, 32, 33, 28, 27         10/15         10/15           System stalysis         Oil softning         32, 33, 28, 29         10/15           Oil softning         32, 33, 28, 29, 30         10/15         10/15           System stalysis         Oil softning         32, 33, 28, 29, 30         10/15           All supply-demand         Oil, gas statistics         12, 13, 14, 15, 17, 10/15         10/15           Bactistity supply         Supply-demand core         12, 23, 5, 6, 8         10/17         10/22           Electricity supply         Bactistics         26, 27, 31         10/15         10/22           System design and         Computer         26, 27, 31         10/15         10/22	1: Takno Tomitate Hond	Enorgy economics: Systom analysis	:		11/4
Exercity connomics         Oil, gas stadiction         1, 2, 3, 4, 6, 7, 7         10/15         10/25           System shalfyits         Oil refining.         31, 32, 33, 26, 27         10/15         10/15           demand, System conjuder         Oil refining.         32, 33, 28, 29, 30         10/15         10/25           System shalfyits         Oil refining.         32, 33, 28, 29, 30         10/15         10/22           System shalfyits         Oil refining.         32, 33, 14, 15, 17, 10/15         10/15         10/22           System shalfyits         Oil, gas statistica.         12, 13, 14, 15, 17, 10/15         10/17         10/27           Supply-demand.         Out, gas statistica.         19, 20, 21, 23, 26, 8, 10/17         10/17         10/27           Supply-demand.         Computer         26, 27, 31         10/12         10/22           System design and.         Computer         26, 27, 31         10/15         10/22           System design and.         Computer         26, 27, 31         10/15         10/23	2: Xenichi Matsul	Supply-demand forecast, Statistical analysis	9.	22, 23, 24, 25	
Oil supply & conjuter         Oil setting         31, 32, 33, 26, 27         10/15         10/25           domand, System         Computer         32, 33, 28, 29, 30         10/15         10/25           System snalysis         Oil gas statistics         12, 13, 14, 15, 17, 10/15         10/15         10/22           Economic develop         Oil gas statistics         25         13, 14, 15, 17, 10/15         10/15           Data bank, Energy         Supply-demand fore         19, 20, 21, 23         10/17         10/27           System design and computer         Computer         26, 27, 31         10, 12, 16         10, 12, 16           System design and analytis         Computer         26, 27, 31         10/15         10/22	3. Yoshio.Hara Socretary	Energy economic System analysis	ž.	1, 2, 3, 4, 6, 7, 9, 10, 11, 13, 18	1 .
System snalysis         Oil refining         32, 33, 28, 29, 30         10/15           Coll supply-domand         industrial statistics         12, 13, 14, 15, 17         10/15           Economic develop- ment, Energy         Oil, gas statistics         12, 13, 14, 15, 17         10/15           Supply-domand force supply-domand         19, 20, 21, 23         10/17         10/27           Supply-domand force supply-domand         10, 12, 16, 8         10/17         10/22           System design and analytis         Computor         26, 27, 31         10/15         10/22	4: Elizo Takai	Oil supply & demand, System design, Data bank	Oll refining. Computer		
Economic develop-         Oll, gas statistics         12, 13, 14, 15, 17, 10/15         10/15           Supply-domand         Supply-domand force         12, 20, 21, 23         10/17         10/27           Ramply-domand         cast, Balance Table         1, 2, 3, 5, 6, 8, 10, 12, 16         10/12         10/22           System design and         Computer         26, 27, 31         10/15         10/22	5: Shoketal Salead		Oil redining industrial startstion	05.62.82.55.20	10/15
Date bank, Energy supply-demand force  Reply-demand forceast forceast forceast  Electricity, rupply Ratistics  System design and Computer  Computer  26, 27, 31  10/15  10/22  10/22  10/22  10/22	6: Motorada Xudawa	Economic develop- ment, Energy Supply-demand	】 (6) (5) (1)	12,13,14,15,17, 25	9 20-15 <b>20/20</b> 10 10 10 10 10 10 10 10 10 10 10 10 10
Electricity supply Electricity, Coal 1, 2, 3, 5, 6, 8, 10,12, 16  Syntem design and Computer 26, 27,31  analysis 10/12  10/22  10/22	7: Toru Nichicucaumi	Data bank, Energy supply-femand forecast	Supply-domand fore- cart, Balance Table	· 19, 20, 21, 23	
System design and Computer 26, 27, 31 analysis analysis 10/22 10/22 10/25	8: Fumio Arakawa	Electricity supply	Electricity, Coal statistics	1, 2, 3, 5, 6, 8, 10, 12, 16	10/22
A CONTRACTOR OF THE CONTRACTOR	9: Koichi Orada	deaps and	Computer	26.27.31	
	10: Isso Asst (JICA)				and the second of the second o

Note: Number for items of survey responsible by respective members indicate those in Table 3.1.

2-3 Schedule and Objects of Survey

On the spot survey was conducted for the total of 3 weeks, and the period was roughly classified into three. The first week was devoted to the general conference attended by the counterpart in Indonesia comprising of 9 members from MIGAS (including staff at LEMIGAS Oil & Gas Institute) and Pertamina. The general conference discussed primarily the concept of energy supply-demand data bank. That is, what scope of data should be fed to the data bank and what types of application system may be prepared by utilizing the data field in the bank. It was agreed on one hand to give priority to the processing of oil and gas supply-demand data for input, and on the other hand, it was determined to study the details and the scope of data presently available of other energy such as electricity and coal than oil and gas and the industrial statistics. The reason for conducting the survey on the other energy sources than oil and gas has to do with the establishing of data utilization system. It is considered that the utilization of fundamental data other than that of oil is indispensable in a case, for example, of oil products demand forecast which is most fundamental for the application system of the data bank and which has a high priority for Indonesia.

The second point discussed was the concrete method of survey. As discussed above, the survey team was divided into small groups of two or more experts, each group reviewing from time to time the items of survey. The third point discussed was selection of objects of survey other than MIGAS and Pertamina. The discussion concluded that necessary studies could be conducted by PLN for supply-demand of electricity, Coal Corporation (Batu Bara) for coal supply-demand, and the Investment Control Agency of Ministry of Industry and the Central Bureau of Statistics for general industrial statistics.

The surveys other than by Pertamina and MIGAS were conducted attended by the members of counterpart team comprising of MIGAS nad Pertamina for facilitating joint understanding of the investigation. The second week of the survey, or the second stage of the survey was conducted by discussing details the individual items by the five small groups and the corresponding groups on the counterpart. At the same time, at the break of surveys, the general conference was held in which the results of the individual surveys conducted by the groups were published, the groups mutually confirmed the facts. In the third week of the survey, or the third stage, the memorandum conclusively prepared by the survey team was studied and the details of the survey confirmed at the general conference.

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Table 2-3 On-the-spot Survey Record (1)

Date :	Participants :	Discussions with	Discussions on
Oct. 16 (Mon)	Tomitate, Takai Kikkawa, Matsui, Hara, Sakai, Asai	Japanésé émbassy JICA office	Briefing on survey objects, Discussion of objects, content of survey
17 (Tue)		Mr. Wijarso (Director-General, MIGAS) Overall conference with Indonesian counterpart (Mr. R. Robot, Mr. Rohali Sani, Mr. Widartomo, Mr. Nyoman Sudibia, Mr. Djoko Widagdo, Mrs. Endang Lestari, Mr. Sumardi, Mrs. Soeparti)	Content of data bank, Content of survey items, Investigation of schedule
18 (Wed)	Tomitate, Takai Kikkawa, Matsui, Hara, Sakai, Asai	Overall conference with Indonesian counterpart (attended by the same members as previous day)	Discussion continued, Five discussion groups formed
19 (Thu)	Group 1, Tomitate Kikawa, Hara	Mr. Rohali Sani, Mrs. Soeparti and others	Data related to oil and gas
eron to set Esperante	Group 2, Matsul, Nishizutsumi	Mr. Hendro, Mrs. Endang Lestari	Demand forecast, Balance table
	Group 3& 5 Takai, Sakai	Mr. Robot, Mr. Nyoman, Mr. Sumardi, Mr. Maman, Mr. Djoko, Mr. Pramono	all activities the special section of the section o
20 (Fri)	All the members  Group 2, Matsui, Nishizutsumi	All the members of Indonesian counterpart Mr. Nyoman, Mr. Hendro Mrs. Endang	General meeting, Schedule for the 2nd week and after. Visits to other governmental offices, Supply forecasting
21 (Sat)	Group 2, Matsui, Sakai	Mrs. Rohali Sani, Mr. Widartomo, Mr. Razif Razak, Mr. Umar Said	Demand forecast techniques, Method of Balance Table preparation
23 (Mon)	Group 1 & 2, Tomitate, Hara Nishizutsumi, Arakawa	Mr. Rohali Sani, Mrs. Soeparti, Mr. Razif Razak, Mr. Chaligir Djufri	Kinds of oil, gas data: scope, method of data collection
	Group 3 & 5, Takai, Osada, Sakai	Mr. Robot, Mr. Erwin, Mr. Djoko, Mr. Sumardi	Computer system, Utilization of computer in oil relining

Date	Participants	Discussions with	Discussions on
24 (Tue)	Groups 1 & 2, Tomitate, Hara, Arakawa, Nishizutsumi	(Industrial Ministry) Mr. Anwar Nawawi (MIGAS) Mr. Razif Razak	Discussion at Industrial Ministry (Agency of investment Control) on collection of industrial statistics and data types
and the contract of the contra	Groups 3 & 5 Takai, Osada, Sakai	Mr. Singgih Darsono, Mr. Soegihardi, Mr. Djoko, Mr. Sumardi, Mr. Agung Witono	Oil refinery model, etc.
	Group 4, Tomitate, Arakawa, Hara	(PLN: Electric Power Corporation) Mr. Margono, Mr. Sihonbing, (MIGAS) Mrs. Soeparti, Mr. Djoko	Visit to PLN, Hearing on the content of data on electric power
<u> </u>	All the members	Japanése embassy	Explanation of E.D.B. system
25 (Wed)	Groups 1 & 2 Hara, Arakawa, Nishizutsumi Group 3 & 5, Sakai	Mr. Rohali Sani, Mrs. Soeparti, Mr. Razif Razak Sumardi	MIGAS, Plan for eatablishing Data Base, Hearing Computer
26 (Thu)	Hara, Nishizutsumi Arakawa, Osada, Sakai	All the members of Indonesian counterparts	Agreements on various points at intermediate time during the survey
	Group 3, Sakai, Osada, Hara	Mr. Tanudjaja	Distribution data for oil products
27 (Fri)	Group 3, 5, Sakai	Mr. Nyoman	Computer
	Group 2, Hara,	Mr. Budi Sudarsono (MIGAS) Mr. Hendro, Mr. Razak also attended	Energy Balance Table
28 (Sat)	Group 4, Tomitate Osada, Sakai	(Ministry of Industry) Mr. Anwar Nawawi Mr. Razak (MIGAS also attended)	Industrial statistics, Data collection system, computer utilization plan
	Group 4, Arakawa,	(PLN) Mr. Margono, Mr. Sihonbing, Mr. Djoko (Pertamina) Mrs. Soeparti (MIGAS)	Statistics related to electric power

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Date	Participants	Discussions with	Discussions on
30 (Món)	Group 4, Tomitate Hara, Arakawa, Sakai	(P.N. Batu Bara) Mr. Adnan Kusama, Mr. Djoko (Pertamina), Mrs. Soeparti (MIGAS), Mr. Pramono	Coal statistics
	Group 4, Tomitate, Arakawa Groups 1 & 3, Hara Sakai	(Central Bureau of Statistics) Mr. Sugito, Mr. Supranto Mr. Sujana D.A.	Input-output Table, Genefal statistics Product sales statistics, Sales forecast
31 (Tue)	Tomitaté, Hara, Arakawa, Sakai	Mr. Samaun Samadikun (Director General of Energy)	Concept of E.D.B. and explanation of Japanese cooperation
	Group 4, Arakawa, Hara	(PLN) Mr. Margono, Mr. Siponbing, (Pertamina & MIGAS) Mr. Djoko, Mrs. Soeparti	Electric power related data
Nov. 1 (Wed)	Tomitate, Hara Arakawa, Sakai	Mr. Trisulo	Explanation on B.D.B. system Briefing on the content of survey
Nov. 2	Tomitate, Hara, Arakawa, Sakai	Counterpart: Mr. Robot, Mr. Nyoman, Mrs. Soeparti, Mr. Pramono, Mr. Sumardi	Final conference, adjustment made on the outline of survey results
ិ សូមគេចិ ពេលពិសាធាតិ	Tomitate, Hara, Arakawa, Sakai	(Japanese embassy) Mr. Kanda, Mr. Ohmura, secretary	Report on the findings of surrey
	Dispression in the second seco	(JICA office) Mr. Miyamoto, president, Mr. Shinoura	tyk enyk atro- traktor
*. *.	egyetî ê 🙀 ji e sa 📑 ji Girê	Mr. Wijarso, Mr. Warga Dalem, Mr. Robot, Mr. Qojum	
	Description of the second of t	The State of the s	erineige gester († 1902) 1900 - Paris Santa

#### 3. Technical Cooperation Implemented in the 1st Year (1979)

#### 3-1 Objective and Items of Cooperation

Actual cooperative works rendered to Indonesia for the establishment of the EDB system was put into effect from the end of July 1979. The objective was to assist in the establishment of an EDB system which had been necessary for the repletion of an Energy Supply and Demand Scheme, a part of the 4th 5-Year Economic Development Plan (REPERITA IV, FT 1984–1989) set forth by the Indonesian government. Therefore, the scope of the work related to the EDB System Project was agreed upon between the two countries prior to execution of the cooperation. In the resulting Scope of Work, the objective of cooperation is stated as follows:

"The objective of the project is to enforce Japanese technical cooperation, through her experience and expertise, for the establishment of the data bank for supply and demand of energy, and its utilization system which would enable the formulation of appropriate plans on the supply and demand of energy."

After the results of the field survey of the previous year was studied and necessary adjustment of opinions made, concrete items which required cooperation were narrowed to three:

- 1) Establishment of an energy data base;
- 2) Preparation of energy balance tables; and
- 3) Development of a medium- and long-term energy supply-demand forecast model.

#### 3-2 Content of Items which were Effected

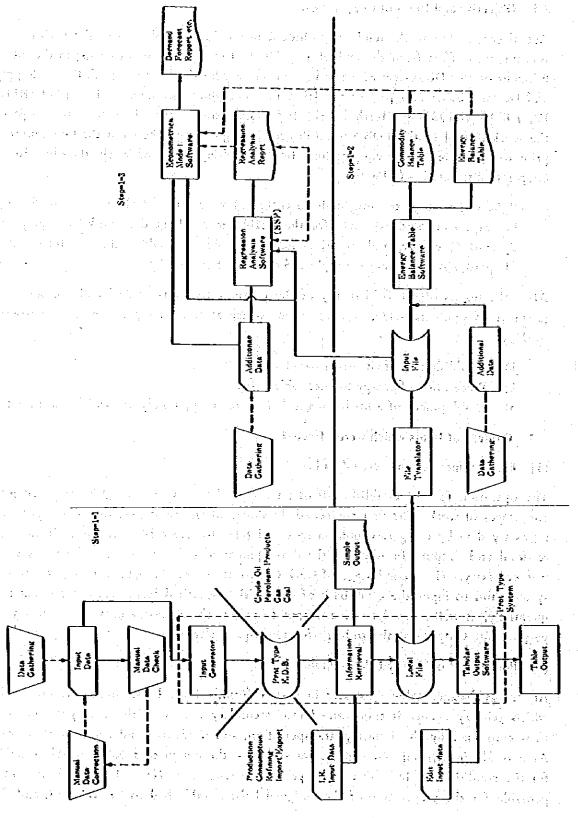
#### (1) Establishment of an energy data base

The operation for the establishment of an energy data base was roughly separated into two stages of work. The first comprised the design of an overall system which inputs the necessary data by categories under a specified form to create files, perform information retrieval and output. In addition, the development of software required for the system was necessary. The second stage of work was to determine the data to be input into the system, and to input the great bulk of data with a specified form into the computersequentially, as well as to determine output forms for the necessary data on a monthly or yearly basis. Output was also to be performed sequentially.

#### (2) Preparation of energy balance tables

An energy balance table illustrates in matrix form, using calorific units, the process in which primary energy is transformed into secondary energy in the energy sector, and then consumed by the industry, transportation, and residential and commercial sectors. As a result, in carrying out cooperative activities, the design of a balance table suitable for the conditions in Indonesia was a primary requirement. Next, data which are indispensable for the preparation of the designed balance table had to be collected; and the

Fig. 3-1 Content and Mutual Relationship of the Cooperative Operation and Division of Labor



(17)

construction of an equation system for energy balances necessary for the compilation of the designed balance table was required. Finally, software capable of preparing the balance tables by inputing actual data into the equation system had to be developed. As a result, the energy balance tables for Indonesia covering the years from 1969 to 1978 were compiled in this manner.

#### (3) Development of a medium- and long-term energy supply-demand forecast model

Since medium- and long-term, here, refers to a period of five to ten years, process of the works will be: first, to design medium- and long-term forecast model; second, and most important, to collect time-series macroeconomic data from the past decade, and collect data related to energy which would not be input to the data bank — indispensable elements for establishing the structural equations of the forecast model, and in deciding the values of exogenous variables; and third, to develop the medium- and long-term model and associated software. With regard to the cooperative operation in this fiscal year, various restrictions were imposed on the development of the model, primarily due to the lack of necessary time-series data. However, sufficient forecast results up to 1990 could be obtained.

The cooperative items were effected in accordance with the above described contents and procedures in Indonesia and Japan respectively, taking the form of a cooperative operation.

Figure 3-1 illustrates the content and mutual relationship of the cooperative operation and division of labor.

#### 3-3 Composition of Members Involved in the Cooperative Operation

#### (1) Composition of the JICA Expert Team

The JICA Expert Team consists of nine members including energy economists, system engineers, and system analysts. A total of eleven members participated in the field survey taken three times. These experts plus one additional took part in the cooperative operation in Japan with the Indonesian members.

#### (2) Composition of Indonesian Counterpart

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In undertaking the project, the Indonesian side formed a team consisting of experts in the related fields at MIGAS, LEMIGAS, and PERTAMINA in order to participate in the cooperative operation. The number of members in the team reached nearly 30, while the number of members who were dispatched to Japan as trainees exceeded 20, 4 of whom were received by the JICA.

Table 3-1 Members of the JICA Expert Team

Name	Distribution of Work
Takao Tomitate	Coordinator of the first of the
Hitoshi Shozawa	Energy balance table
Kenichi Matsui	Energy supply-demand forecast model
Yoshio Hara	Assistant coordinator, energy statistics
Yoshiki Ogawa	Energy balance table, software for the balance table
Akio Sonobe	Data base, field coordinator
Koichi Osada	Software for the data bank
Shoji Yoshikoshi	Software for the data bank, software for the forecast model
Selsuó Taxemoto	A JICA Propagation for a state of the second contract of the second
Toru Nishizutsumi	apir je bija in jenerija kreansji ja politik ja in jiro
(Domestic operation)	Energy supply-demand forecast model

Table 3-2 Members of the Indonesian Counterpart

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Name	Buzeau	Distribution of Work
A. Qoyum	MIGAS	Coordinator
R. S. Robot	PERTAMINA	Assistant Coordinator
Erwin Kasim	•	Designing of the data bank
Maman Widjaja	"	Software for data bank
Agung Witono	•	Software for data bank
Djoko Widagdo	<b>4.</b> ************************************	Programming
Santoso Koerdi		Programming
Paido H.	•	Programming
Anton H.		Programming
Sumardi C. D.	arting of the state of the stat	Programming
Pramono		Supply-demand forecast model
Tanujaya	"	Supply-demand forecast model
Rohali Sani	MIGAS	Energy balance table
Mrs. Soeparti Soediro	"	Energy balance table
Mulyanto	**	Supply-demand forecast model
Widartomo	a field # days on Ellipse.	Supply-demand forecast model
Razif Razak	人名西 <b>州</b> 海野港市,有省第	Energy balance table
C. Djufri	and the following	Energy balance table
Mrs. Ratna	A SOUTH AND	Supply-demand forecast model
Hendro Prawoto	LIMIGAS	Energy balance table
Mrs. Endang Lestari	**	Energy balance table
Bunyani	PERTAMINA	Software for the data bank

#### 3-4 Operational Schedule and its Content

# (1) Operational schedule and its content in Indonesia

The Japanese expert team was dispatched to Indonesia three times, and one professional was stationed in Indonesia throughout the operation of the project.

The first expert team was dispatched from July 28 to September 8, 1979. Immediately after determining the scope of the project for this fiscal year, they moved onto the execution of the operation. The first cooperative works included: 1) deciding on the types of data to be input, and the input form; 2) deciding on the forms of data output which could be obtained as statistical tables, and formulating a rough outline of the form; 3) determining the number of raws and columns in the balance tables, and confirming the availability of data; and 4) establishing software for data input into the data bank, etc.

The second team was sent on December 4 and stayed in Indonesia until December 30, 1979. Their work included: 1) preparation of software related to the energy blance table; and 2) installation of software for data retrieval and output.

The third team was dispatched from March 5 to March 11, 1980, taking over the half-completed operation. During their short stay, the work covered; 1) clarification of the problems which had arisen during the course of the cooperative operation up to that stage; and 2) discussions on the direction which the expansion of the data bank should be led in the future, and methods of cooperation required for the expansion.

#### (2) Operational schedule in Japan and its content

The first domestic operation was undertaken from September 17 to November 20, 1979, succeeding the work carried out by the first dispatched team. The operation took the form of a joint operation between the Japanese and Indonesian members. The number of countermembers who had visited Japan during this period totalled 14, including 2 trainees received by the JICA.

The work of the first domestic operation consisted of: 1) construction of the equation system for energy balances; 2) input of actual data and experimental compilation of the 1978 balance table; and 3) preparation of software for data retrieval from the data bank and data output.

The major objective of the second domestic operation, undertaken from December 13, 1979 to Pebruary 17, 1980, was to develop a medium- and long-term energy supply-demand forecast model. As a result, the first half of the operational period was concentrated on the conceptual design of the forecast model. Based on the conceptual design, equation of the model and exogenous variables were set up. In the latter half, real data were input to obtain results, and software required for the operation of the model was also developed.

#### (20)

In order to determine the real situation of energy supply and demand in the Japanese major industries, four field trips were made during the course of the first and second domestic operations.

Table 3-3 Field Trips to Major Domestic Industries

起来:"快乐,一个大家的人的心理是一样的

	Date	Name of Factory
First trip	Oct. 4-5, 1979	Kashima Plant of Mitsubishi Petrochemical Co., Ltd. Kashima Oil Refinery Kashima Ironworks of Sumitomo Metal Industries, Ltd.
Second trip	Oct. 18-19, 1979	Hamaoka nuclear power plant of Chubu Electric Power Co. Ltd. Toyota factory of Toyota Motor Co., Ltd.
Third trip	Nov. 7, 1979	Isogo steam power plant of Electric Power Development Co. (Coal) Minami-Yokohama steam power plant of Tokyo Electric Power Co., Inc. (LNG) Negishi factory of Tokyo Gas Co., Ltd.
Fourth trip	Feb. 4, 1980	Nagoya Ironworks of Nippon Steel Corporation  LNG receiving station of Chubu Electric Power Co., Ltd.

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WORK SCHEDULE BY ITEMS AND ASSIGNED PERSONS

WORK ITEM	NAME	JO.	AUG	SEP.	ocr.	NOV.	DBC	JAN	FEB.	MAR
COORDINATER	Takao TOMITATE	(28)	(01)					Access to	- (s) - (s)	(ø) — (ø)
DESIGN OF ENERGY BALANCE TABLE	HITOMA SHOZAWA Yondo HARA	(28)	(a,7)	) 250 Vic. (	train demandation of	<b>(*)</b>	(en) —			
ESTABLISHMENT OF EQUATIONS AND SOFTWARES FOR E.B.T.	Yoshiki OGAWA			A THINK - Market - STATE -	in the second se	<b>(+)</b>	the second second second	(00)		t between the state of the stat
ESTABLISHMENT OF SOFTWARES, FOR, E.D.B. AND, ENERGY, SUPPLY-DEMAND FORECAST (*)	Shoji YOSHIKOSHI Koleti OSADA	(28)		( <b>%</b> ) <del>-</del>		<b>(\$)</b>	38	0	<b>©</b>	Ê
ENERGY DATA BASE	AXIO SONOBE	(23)								(22)
ESTABLISHMENT OF ENERGY FORECAST MODEL	Konicht MAISUI (Toru NISHIZUTSUMI)	- :				: :		- 1	(9)	<b>3</b> 1
COORDINATER	Qoyum R. S. Robot			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(9)	T 1				
ESTABLISHMENT OF ENERGY BALANCE TABLE (DESIGN, EQUATIONS, AND SOFTWARES)	Soopard Soediro Shonio Rohali Sani Razif Razuk C. Djutri Endang Lostati		(12) (12) (14) (14)		(01)	\$\frac{0}{0}\$	88	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		2.00

WORK ITEM	NAME	rot	AUG.	SEP	Scr.	NON	DEC.	JAN.	PEB.	MAR.
development of e.d.b. System and softwares	Erwin Kasum Maman Widjaja Agung Witono Sumardi C.D. Santoso Paido		-3-3-3-	(11) (11) (11)		(8) <del>1</del>				
	Anton Bunyani			8-7	(10) +					
ESTABLISHMENT OF ENERGY SUPPLY- DEMAND FORECAST MODEL	Mulyanto				(28)	T	(25) ⊢−	÷	(3)+(17)	
ESTABLISHMENT OF SOFTWARE FOR ENERGY SUPPLY-DEMAND.	Pramono						- → (SC)	- ê		
ESTABLISHMENT OF SOFTWARES FOR E.D.B. AND FORECAST MODEL.	*Djoko Widagdo						133)			

Note: Work in JAKARTA

----- Work in TOKYO

( ) Date
( ) Expert for the domestic work

Trainees accepted by JICA

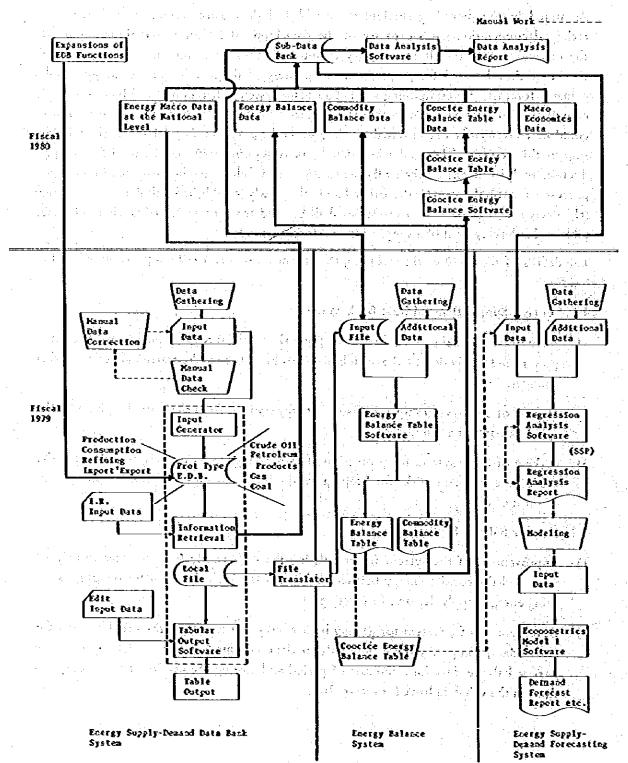
#### 4. Technical Cooperation Implemented in the 2nd Year (1980)

As stated in the preceding section, the established data bank system through the 1979 technical cooperation has a capacity of the data input of 200,000. But these are mostly the original micro-data. It is necessary to intensify these data into the macro-data each time that they be used for preparation of an energy balance table or an energy supply-demand forecast. By establishing a sub-data bank system wherein a monthly and a yearly compilation of data re made so that such compiled data for both micro- and macro-bases could be conveniently drawn out depending upon the purpose. Pig. 4-1 shows the relationship in this respect. The established data bank system in 1979 shall be used for the production analysis of oils by their oil-classifications and fields and the analysis of conversion process of natural gas. On the other hand, the newly established sub-data bank system (the energy data bank on a macro-scale) shall be used for preparation of an energy balance table and a development of a supply-demand forecast model.

The details of the 1980 works including the follow-up of the 1979 cooperation are as follows:

- 4-1 Energy Supply-Demand Data Bank System
- 1) Accumulation of the energy data excepting those of oil & gas, namely, coal & electric power, and correction of the system so as to be able to make statistical table of other energies.
- 2) Making of a sub-system for processing data for transfer from the main data bank to the sub-data bank of a macro-data.
- 3) Making of a sub-system for protection of data from destruction as well as the effective use of the magnetic disks for keeping data, since the main data bank handles a large amount of data.
- 4-2 Energy Balance System
- 1) Improvement of the system for calculating the commodity balance table in original units and the concise energy balance table manually made last year for the purpose of using energy supply-demand forecasting.
- 2) Development of a system for getting basic energy statistics from the sub-data bank for macro-data, computing the energy balance data, commodity balance data and concise energy balance data for a number of period and storing the results of such computations in the sub-data bank for macro-data.

Fig. 4-1 Concept of the Final Data Bank System



-y t = 7 ·

Table 4-1 Members of the JICA Expert Team

	Name	Distribution of Work	e de la companya de l
	Takao Tomitate	Coodinator	* e ·
	Hitoshi Shozawa Akio Sonobe	Energy Balance Table Sub-Data Bank, Energy Balance Table	(
	Yoshio Hara	Energy Supply-Demand Forecast	
	Shoji Yoshikoshi	Operating System	
	Yoshiki Ogawa	Sub-Data Bank, Energy Balance Table	
	Naoki Tani	Data Analysis	
and the second	Isao Asai	JICA, Coordinator	
	(Domestic Operation)		1.12
	Kazuya Fujime	Supply-Demand Forecast System	2 2
	Koichi Osada	Data Bank System	

Table 4-2 Numbers of the Indonesian Counterpart

	Name	Bureau	Distribution of Work	
	Rohali Sani	MIGAS	Coordinator	İ
	Erwin Kasim	PERTAMINA	Deputy Coordinator	1. 1.1
	Mrs. Soeparti Soediro	MIGAS.	Energy Balance Table	
	Widartomo Mulyanto	MIGAS MIGAS	Supply-Demand Forecast Model	
	Pramono	PERTAMINA	alika esteki ol <b>u</b> likoa kolonia eta	. 1
4.375	Kurtubi	MIGAS	•	
14	Sauman Sri Basuki Hendro Prawoto	MIGAS LEMIGAS		
	Sumirdi C.D.	PERTAMINA	Energy Data	
	C. Djulri	MIGAS	an mate <b>in</b> mate Mate And Andrew	
	Razil Razak Rival Hamzah	MIGAS	e that soff are a second and	PT (\$
	Winaryanto	MIGAS		- i-
	Joras P.	MIGAS	<i>,</i> ,	
	Amril K.	MIGAS	"	
· .	Ikunten G.	MIGAS	• .	1
	Maman Widaja	PERTAMINA	Software	
	Santoso Koerdi	PERTAMINA	"	i
	Paido H.	PERTAMINA	• •	
	Anton H.	PERTAMINA	••	1
	Djoko Widagdo	PERTAMINA	••	
	Mrs. Ratna	MIGAS	a	

(26)

- 3) Development of a system for getting energy balance data, commodity balance data, & concise energy balance data from the sub-data bank for macro-data and printing out the energy balance table, commodity balance table and concise energy balance table of an arbitrary period and in a desired number.
- 4-3 Energy Supply-Demand Porecast System
- 1) Since the supply-demand forecast model system developed in 1979 is incapable of coping with the change of models, a simulator shall be developed for application of models constructed by the general econometric method.
- 2) Connection of the simulator and the sub-data bank for drawing from such energy data bank the data necessary for the model application.
- 3) Improvement and test-simulation of the equation system of the energy supply-demand forecast model including the 1979 data.
- 4) Expansion of reporting functions for obtaining the result of energy supply-demand forecasts in an output form of a concise energy balance table.
- 4.4 Sub-Data Bank System for Macro-Data
- 1) Development of a system capable of accumulating the macroeconomic and macroenergy data by applying the concept of the energy supply-demand data bank and of maintaining such data bank simultaneously.
- 2) Since it seems likely that a great deal of time is still necessary to be able to transfer basic energy statistics from the energy supply-demand bank to the sub-data bank for macro-data, manual inputs shall be made of basic energy statistics on annual basis into the data bank for obtaining the energy balance table and supply-demand forecast.
- 3) Manual input of macroeconomic data into the data bank for obtaining the energy supply-demand forecast.

Table 4-3 Contents of Technical Cooperation

	Project	Work Item
:	Establishment of Sub-Data Bank for macro energy data at the national level	Design of input output format     Softwares     Data Analyzing Functions     Data Storing
II.	Connection of Sub-Data Bank to Energy Balance System	<ul> <li>(3) Expansion of Softwares</li> <li>(6) Making of Energy Balance Table and Storing to Sub- Data Bank</li> </ul>
111.	Connection of Sub-Data bank to Energy Supply-Demand Forecasting System	Expansion of Softwares     Improvements of Energy Supply-Demand Forecasting     Model
IV.	Connection between Energy Balance and Energy Supply- Demand Porecasting Systems	<ul> <li>Expansion of softwares to make Concise Energy Balance Tables</li> <li>Making of Concise Energy Balance Tables and Storing to Sub-Data Bank</li> </ul>
<b>v.</b>	Improvement and expansion of Energy Supply-Demand Data Bank System	🚯 same as Project Item
VI.	Operation	3 same as Project Item
VII.	Final Manual	() same as Project Item

			EDULE AND	WORK SCHEDULE AND ASSIGNED PERSONS & ITEMS	ERSONS & I	TEMS		
NAME	ITEMS	æ.	ocr	NON	DEC	JAN	FEB	MAR
T, Tomitate	Coordinate	(12)					(16) (15)	A
H. Shozawa	ගමගමග					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(22)(31)	
A. Sonobe	0000	(SE)	(8)					¥
Y. Hara	Coordinate					(5)(1)		
S. Yoshikoshi	0000000	(30)	(8)		7	(5)	90	(3)
Y. Ogawa	<b>0000000000000000000000000000000000000</b>	(SE)	(%)		7	<b>(2)</b>	(8) (8)	, b.u
N. Tani	ගයකය		*			(5)	(CD)	
K. Fujime	0			- 1				T
K. Osada.	8				· · ·	V.		<b>.</b>
I. Asai	Coordinate (JICA)	83	(VO)					-
Rohali Sani	Coordinate			(82)	(9)			
Erwin Kasim	Coordinate			(6)				
Mrs. Soeparti	0000000		CD-	(2)				
Widartomo	080			<b>83</b>	620			
& Mulyanto	<u>ක්කතනමඟ</u> භ			(D)	(2)			
Pramono	⊗			60	(8)(2)			
* Kurubi	<b>89</b>		-		(10 ····································	CA)		

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NAME	ITEMS	AES.	OCT.	NOV	DEC	JAN	FEB	MAK
⇔ Sauman S.B.	<b>8</b>				(CO)(CD)	027		
Hendro P.	0000				(10)			
Sumardi C.D.	ଡ			(6)(6)				
C. Djufn	8							
* Rezdf Rezak	@ &				(82)(91)	92		
Rival Hamzah	8		-(23)	(6)(2)				
Winaryanto	8			**************************************	(8)(8)			
Torax P.	⊖							
Amril X.	❸						ŕ	
Ikunten G.	8							
Maman W.	8		-(22)	27*****(2)				
Santoso K.	0000		(C)	(2)			-	
Paido K.	ආකරකක	·		(25)-	(53)			
Anton H.	<b>00000</b>		æ)	(52)				
Djoko W.	ගගග			<del>.</del> (52)	(52)(52)			
Mrs. Ratna	කකක		·	6Z	(52)······(52)			
	Note:	Note: Work in JAKAKTA Work in TOKYO	( ) Date & Trainse	( ) Date & Truinees accepted by JICA	Numbers for items indicate those in Table 4-3.	ndicate those in Tab	\$5.4.50	

# USER'S MANUAL OF ENERGY SUPPLY-DEMAND DATA BANK I

PREPARATION AND IMPLEMENTATION OF INPUT DATA

# 

# USER'S MANUAL OF ENERGY SUPPLY-DEMAND DATA BANK I -- PREPARATION AND IMPLEMENTATION OF INPUT DATA --

### 1. Coding of Data

- 1-1 General Notice on Coding
  - (1) Data is important and required to be exact, because these data will make the basis of Energy Data base, Energy Balance Table and Energy Supply Demand Forecasting of the Republic of Indonesia.

    Input data sheets should be filled as carefully as possible.
  - (2) While coding, latest Table Data\*, coding format\*, coding example\* and comments\* on each kind of energy sources should be referred.
  - (3) Especially errors caused by mis-transformation from the real name to code no. are difficult to be found hereafter, so should be very careful to get code no..
  - (4) In case of the sub-total is not given in the raw documents, calculate and get the value to code in input data sheets.
  - (5) Make sure that a group of data is consisted of three kinds of card, that is to say:

a Header card stack of Data cards a End card

- (6) Be careful not so as to make the additional line excessing 27 lines in a input data sheet, even if it's a END card.

  In many cases, it would be skip-punched.
- (7) After having code once re-check by sight, especially if data is filled in the correct columns respectively.

  This will be done easily with the Column Field Plate.
- (8) Characters of alphabetic and digit should be coded in print hand so as to be easily recognized by punchers, especially for following characters: I,1;O,0;M,H;W,N;P,D;.

  Be deeply impressed that punching is done by punchers not by coders, and unrecognizable characters will surely come to many errors.
- (9) Data for different month and different kind of resources should not be given in the same input data sheet.
- (10) When it happens to have some points that you can not understand or new items to be discussed, don't hesitate to contact with the person of Computer Sub-Dit..

(2) Fig. 1 Procedures in Date Coding and Checking raw materials coding information by section for update coding sheets check-1 MIGAS arrange Computér Sub Dit. for update exchange memo updation punch . Table Data run and get IDCL, IDL input input data data list checking list

-34-

#### 1-2 Table Data

(1) The kinds of Table Data are as follows:

A.	crude sield	* :i	:	(300)#	1	. 13 -
	crude type to an account of the		1.			100
C.	refinery and was filled !!	tive -	ž -	(100)	i ba	14
Ď.	marketing region in the last	क इंदि	t <sub>2</sub>	( 20)	1 1 1	$AH_{-}(\sigma)_{\alpha\beta} \circ c$
B.	seafed depot			(200)		.ppgffredel
F.	upcountry depot			(100)	A Company	សសស្រាល់ ប៉ុន្តែ។ បាក់ចាំងនៅ ទី ទេ
G.	distribution station					5 11 4 4 4 5 5
H.	discharging	ideas (* la				- odistim
J.	foreign country			(50)		er st. E.
J.	category			( 50)	in Philip Beka≹a	
K.	commodity			(100) <sub>15</sub>		
	sort			(100)		arita b
M.	gas field Company	en de la companya de La companya de la co	1981	(300)	ar ar vile	្ ១៩៦ខេត្តខណ្ឌ
N.	company	,	•	(100)		and the state of t
О.	system			( 10)		
P.	loading port			<b>(100)</b>	- :	
Q.	unit			( 20)	*max	. size

- (2) These Table Data should be carefully referred, while transforming the real name to code no. or symbol.
- (3) If the code no. or symbol is not found a necessary to be added to Table Data, it should be informed to Computer Sub-Dit, to be registered newly.
- (4) In Table Data, specific values or other information regarding to each item are given in addition to correspondence of the real name and code no. or symbol.

  So, while registered newly, these additional information should be submitted to Computer Sub-Dit. at the same time.

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- 1-3 Input Data Format
- (1) Same format could be commonly used for Crude Oil, Gas, Coal and so forth.
- (2) The column field for three kinds of card are as follows:
  - A. Header card that the share

	ន នៅតំបូរ៉ាំកំពុតប្រការប្រទ		ு இது ஆர்க்கிக்கு இன்றையுக்கும். இது ஆர்க்கிக்கு இன்றையுக்கும்.
name	position in	column	contents
a) frequenc	ycol. 1	1,	kinds of frequency*1
b) year	y col. 1 Fine 1 Surnitating col. 2 ~ 5 Fine 1 Suritation	4	
c) quarter	col. 6 col. 7 ~ 8	1	figure of the quarter*
a) monta	cos, 7 ~ 8	. 4	figure of the month

name	position	no. of column	contents
e) scale	col. 9 ~ 10	2	multiplier to the amount
f) unit	col. 11 ~ 13	3	kinds of unit *4
g) sub-total	col. 14 ~ 28	15	sum of the amount in data cards
h) sheet ID	col. 70 ~ 76	7	sheet identification no. *5
i) section ID	col. 77 ~ 80	6	section identification symbol <sup>46</sup>

### \*1 Y (year), Q (quarter), M (month)

if Y is given, col. 2 ~ 5 must be given if Q is given, col. 2 ~ 6 must be given if M is given, col. 2 ~ 5 & col. 7 ~ 8 must be given

\*2 1 : January to March

2 : April to June

3 : July to September

4 : October to December

- \*3 given in the figure of power of  $10^{\rm n}$  ( $-9 \le {\rm n} \le 9$ ) and multiplied by the amount to get the real amount
- \*4 BBL : barrel

MT : metric ton KL : kilo litter

MCF : cubic feet (103)

.M3 : cubic meter

KWH: kilo watt per hour

US\$ : U.S. dollar

MCM: cubic meter (103)

- \*5 given hereafter by Computer Sub-Dit.
- \*6 indicates the section responsible for preparation of the data

EPIP : Seksi Penambangan

EPKM: Seksi Pemasaran

PERT: Research and Development, Pertamina

#### B. Data card

name	position	no, of column	contents	reference
a) category	col. 1 ~ 2	2	refer to Table Data	2, (1)-J
b) commodity	col. 3 ~ 5	3	refer to Table Data	2. (1)-K
c) sort – 1	col. 7 ~ 9	3**	refer to Table Data	2. (1)-L
d) sort – 2	col. 11 ~ 13	3		1
e) amount	col. 15 ~ 26	12	given in right-shift*2	
f) field	col. 28 ~ 30	3	refer to Table Data	2. (1)-A, M
g) type	col. 31 ~ 32	2	refer to Table Data	2. (1)-B+3

name	position	no. of column	contents	reference
h) refinery	col. 35 ~ 36	2	refer to Table Data	2. (1)-C <sup>+3</sup>
i) marketing	col. 39 ~ 40	2	refer to Table Data	2. (1)-D+3
j) discharging	$col. 43 \sim 45$	3	refer to Table Data	2. (1)-H <sup>+4</sup>
k) foreign country	col. 48 ~ 49	2	refer to Table Data	2. (1)—l
l) domestic transporta- tion	col. 52 ~ 59	8	refer to Table Data	2. (1)-C,B, F,G*5
m) comments	col. 62 ~ 66	, 5	comments	
n) sheet ID	cól. 70 ~ 76	7	same as	2. (2)-A-i)
o) section ID	col. 77 ~ 80	6	same as	2. (2)-A-j}

- \*1 '&' should be filled in col. 6 or col. 6 and col. 10 if sort 1 or sort 1 and sort 2 is used respectively.
- \*2 should be given in right-shift, without point (.)

	4. 建制造性原料	kinds o	f data	f data		
field name	Oil	Gas	Coal	others		
field	Table Data-A (001 ~ 270)	Table Data-M (001 ~ 272)	Table Data-A (271 ~ 272)	l e e		
type	B (01 ~ 30)	B (51 ~ 55)				
refinery	C (01 ~ 30)	C		:		
market	D (01 ~ 08)					

Transformation table of the real name — code no. In Table Data A and M is just the same, but additional information are different.

Refer to 3 in detail.

\*4 'discharging' means 'discharging port of import goods' in case of Oil and Gas data, but 'loading port for export' in case of Coal data.

kinds of origin and destination are as follows:

R: refinery

M: market region

F : seafed depot

U: upcountry depot
D: distribution station

Refer to 3 in detail.

(6)

C. End card

			n	o. of	
	name	position	co	lumn	contents
a)	end		3		
<b>b</b> )	sheet ID	col. 70 ~ 76	7	same as	A-h)
c)	section ID	col. 77 ~ 80	4	same as	A-i)

- 1-4 Comments on Each Kind of Energy Resources
- (1) Oil
  - A. To manage the Intermediate Products such as
    - o Middle Distillates
    - o Feed Stock
    - O Asphalt Base
    - o Lubricant Base,

We set the commodity names MID, FDS, ABS and LBS respectively. These are only used in Transformation (Category T) and excluded from the Energy Balance Table.

B. The same product happens to be input and output in refinery. To distinguish the commodity is used as input or product, category T and P is used.

category T - in case of 'input' category P - in case of 'product'

C. There are three types of 'stock' as follows.

WRF - at the refinery yard especially for materials before transformation

REF - at the refinery yard for products

CRF - at the crude oil field

D. There are two types of 'Loss' as follows.

REF - at the refinery yard

CRF - at the crude oil field

Be sure that the amount of "Own Use" at the refinery yard should not be counted in that of 'Loss'.

- B. The code no. of foreign country should be given for the data BV, IV. The value of BV, IV is desiatably given in integer.
- F. Make sure some alternations in definition of data are correctly done.

1) T 
$$\left\{ \begin{array}{c} ADO \\ IDO \\ HFO \end{array} \right\}$$
 & AUT  $\longrightarrow$  A  $\left\{ \begin{array}{c} ADO \\ IDO \\ HFO \end{array} \right\}$  & RAO

A: Category of 'Auto Generation'

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# (2) Gas

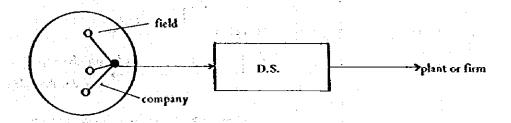
A. There are three types of 'Own Use' as follows.

GIN - for gas injection

GSL - for gas lift

FUL - for fuel

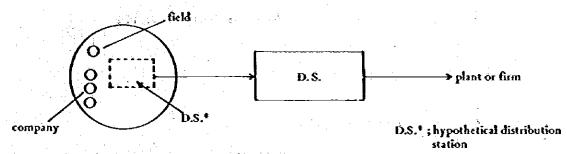
B. General supply flow of Gas is as follows.



Distribution station is actually pumping station.

To utilize or apply Domestic Transportation' column field system to Gas supply flow, 'Hypothetical' distribution station is set as following figure.

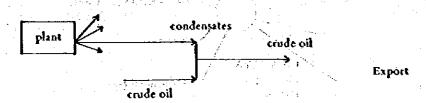
This station is named same as company (refer to 3-2-14)



C. All cases of distribution of Gas are as follows.

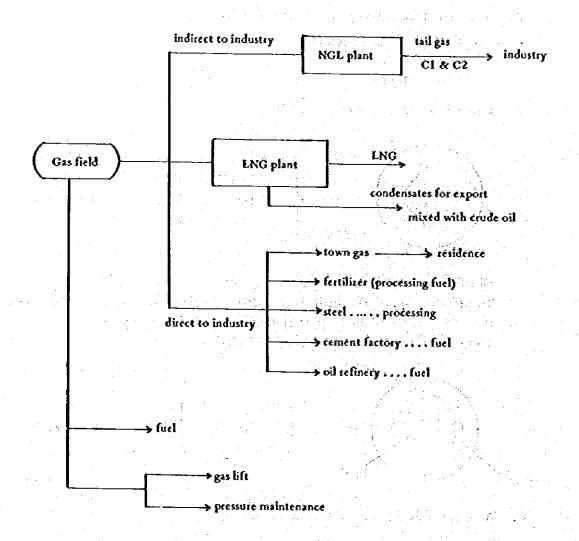
from to
: D.S.\* (D) → LNG plant (R)
• D.S.\* (D) → D.S. (D)
• D.S.\* (D) → industry (R)
• D.S. (D) → industry (R)
• LPG plant (R) → D.S. (D)

D. Condensates from LNG plant is mixed with some crude oil to make another crude oil for export.

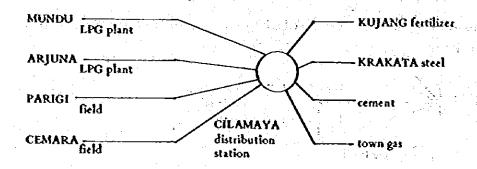


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# B. Flow of natural Gas in Indonesia is as follows.



# F. An example of distribution station is as follows.



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(12)

## (3) Coal

#### A. Field name

The 'Crude Oil Field' column field (col. 28 ~ 30) should be used to indicate the coal field.

ex. 271 Bukit Asam 272 Ombilin

#### B. Stock data

There are two kinds of 'stock'.

- a) stock at coal field
- b) stock at seafed depot (ex. Kertapati)

# C. Supply data

At this moment, Supply and Consumption data is just the same. Firms of related industries should be registered in Refinery Table.

ex. 86 UPTB BANGKA

87 PELTIM MUNTOK

91 POMALA

Nickel mining

# D. Loss data

There are two types of 'loss'.

TRP - transportation

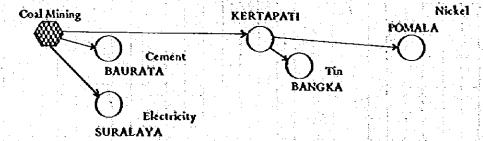
PLS - plant site

These TRP, PLS symbols are used in Sort - 1 column field.

#### E. Others

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a) Distribution of the coal in R.I. is as follows:



b) At this moment, only data from Bukit Asam, Ombilin field are considered.

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# 1-5 Estimation of Data Volume in E.D.B. System

Data volume as a whole should roughly be estimated to use for the design of E.D.B. system.

# A. Conditions in estimation

- 1) The period covered is from Jan. 1978 to Dec. 1979.
- 2) Actual data of Jan. 1979 is used as basis data. For coal, data of Dec. 1978 is used.
- 3) Actual data volume mentioned above 2) is the figure for the time being, so the final figure could be increased.

# B. Actual data volume in detail by kinds of data

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cageto	ory		V	olume				%	*
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<b>H</b> .1	(own use)		1.	23	ž .			1	
L.	(loss)			43			n in in <del>e</del> Kalendar	2	1
W	(stock)			175				10	
E	(expòrt)			88		11.5		5	
I	(import)		V.	36				2	
T	(transportation)	Territoria. Territoria		49			• •	3	
S				450	-			23	-
M	(marketing)			143				8	
C	(consumption)			593				32	
total		-	<del></del>	042	***	<del></del>		1000	

 total			1,843		100%
 	1.4	2.4	age of the second		100%

#### 2) Gas

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#### 3) Coal

category		vol	ume	<b>%</b>
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W			1	5

	<u>.</u>	(15)
category	volume	पूर्वका संस्था <b>र्क</b> । है है
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E	10 04 14 16 <b>2</b> 10 14 14 14 14 14 14 14 14 14 14 14 14 14	oviento in sulli 🥱 🖟
total	22	100%
Data volume in the aggregate		
1) monthly data volume by	kinds of energy resource	PS
ំកំនុងរាជាមួយ ដែ	You have a suit	· ·
120	volume (item)	
o oil	2,000*	
o gas	300*	en de la companya de la companya de la companya de la companya de la companya de la companya de la companya de La companya de la companya de la companya de la companya de la companya de la companya de la companya de la co
o coal	30*	
o others		ughly rounded figure a little
total	2,500 bi	gger than counted in B
2) data volume as a whole	च के <b>वेदर्</b> ष	A constant
6 (year) x 12 (month) x	2,500 (items/month) = 180,000 (items)	1 m ff() (計) とが軽
stranger (vi s.) de la cuerca. king of data and avig un de la completa a to	of the Market Section	विकास के किया है है जिस्से के किया है। सम्बद्धां के क्षेत्र के किया है किया है किया है कि किया है कि किया है कि किया है कि किया है कि किया है किया ह
ck-1 (for coded sheets before	punching) was a second of	A THE DAY OF MEDICAL CONTRACTOR
sure the following items on co		ा असीक्षेत्रस <b>ा</b> रही

'a group of data be consisted of three kinds of card in following order:

- directa Header card a to a material of to thing of the fee direct and received a stack of Data cards
- a Endicard estig and early grown Skipick of bodes dug gebloogig de autremedat (to

all of the column fields necessary for each kind of data definition be filled

data be filled in exact column fields

It would easily be done with Column Field Plate.

'sub-total' column field be filled

End' card be not given in the line excessing 27th printed line and account to the In that case, it is desirable to prepare an additional sheet for it.

Category, Commodity and Sort be correctly coded referring to '14 Comments on each kind of energy resources?

Captiful and Line 14 and a section of the

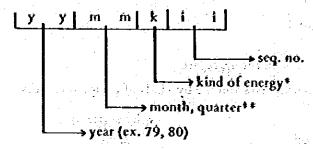
เรื่องที่ สุด ค. ว.รู้ อาการให้ เครื่อง สาการแกะ

#### 2-2 Numbering

The unique number is assigned to each coded sheet so as to be identified easily hereafter.

This number is punched in col. 70 ~ 76 of Header card, Data card and End card.

A. Rule of numbering is as follows.



B. After having numbered the I.D. no. as mentioned above by numbering machine at the upper part in the right-hand side of each coded sheet, give the number at col. 70 ~ 76 of each sheet so as to be easily punched by punchers.

#### 2-3 Punching

Having been checked, the coded sheets can be submitted to BPD of PERTAMINA with 'Memo on Data Punching', and be punched in diskette. Comments on data punching job are as follows.

- (1) Information of punching job asked by MIGAS Computer Sub-Dit. (abbreviates M, afterwards) should be transmitted to PERTAMINA, BPD (abbreviates P, afterwards) with 'Memo on Data Punching'.
- (2) Persons of P, M must make sure the data sheets (coding sheets or input data list) and contents of the Memo be matched.
- (3) The person of P or M should sign when he exchanges the Memo, sheets or output list each other.
- (4) A. The person of M must give the additional information to the Memo as follows:
  - a) Note '0 = zero, Ø=O' on the first page of sheets in every group of coding sheets or input data list (in case of both Job 1 and Job 2).

- b) Give the 'diskette No.' on the first page of every group of input data list in which the data concerned punched (in case of Job 2).
- B. The person of P must send back No. of the diskette in which the data punched. This information should be given in 'Memo' (in case of Job 1).

(81) MEMO ON DATA PUNCHING date received : 1 1 1 1 sign : BPD of PERTAMINA date submitted: \_\_\_\_\_\_, 1980 sign : Computer, Sub Dit. MIGAS Job O (Job 1) punch to diskette revise data in diskette (Job 2) list input data ☐ list input data checking by program I Data  $\mathbf{o}$ number of sheets diskette no. data I.D. data I.D. Total Date sinished :\_ sign: BPD PERTAMINA Date received:

sign : Computer, Sub Dit. MIGAS

### 2-4 Check-2 (after punching))

Finishing punched and having Input Data checking Program run, following materials will be submitted from BPD of PERTAMINA.

- o input data list (IDL)
- o input data checking (IDCL)

In IDCL, error messages would be given.

Procedures of checking would be as follows (refer to Fig. 2).

### (1) Identification of errors

Referring to IDCL, the list of error messages and explanation (refer to page 53), and Table Data, errors will be identified as caused by one of there items mentioned below.

- A. punch miss

  This can be found by comparing the coded sheet and IDL.
- B. coding miss
- C. corresponding data not given in Table Data

# (2) Getting the correct data

- A. in case of punch miss

  The correct data can be got easily from the coded sheet.
- B. In case of coding miss

  The correct data should be got through being checked by the person of each section in charge of in MIGAS.
- C. In case of corresponding data not given in Table Data

  The correct data should be given by the person of each section in charge of MIGAS.

#### (3) Informing the correct data

- A. in case of punch miss and coding miss

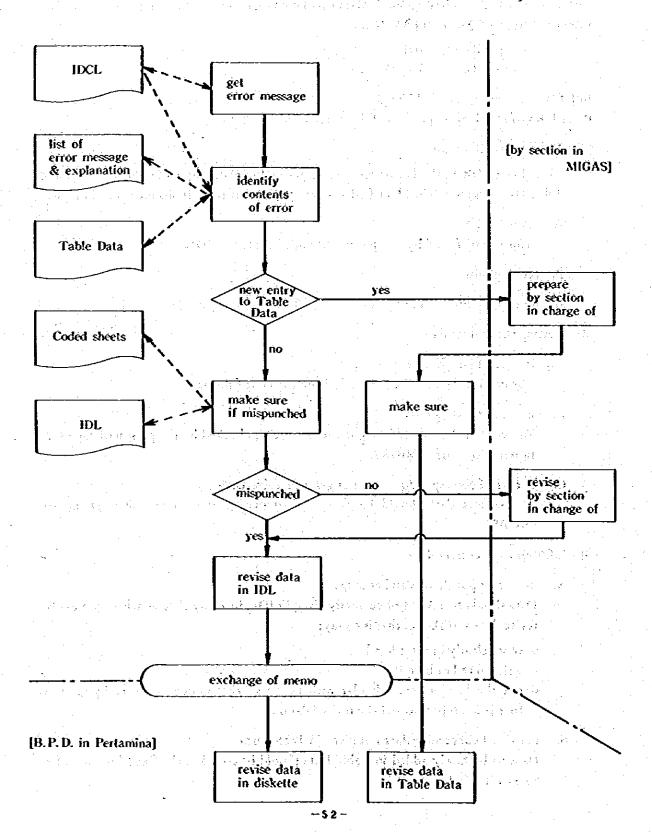
  Data should be revised or correctly given in IDL, in a way that punchers can easily revise data in diskette, that is to say;
  - o write clearly in print hand
  - o write in red or blue
  - o put the line in perpendicular with pencil so that punchers can easily get the first column position of the revised data.
- B. in case of concerning data not given in Table Data

  Data to be newly added in Table Data should be coded in the fixed format (refer
  to 3-2 Tables).

Fig. 2 General Flow of Data Error Check

[Computer Sub-Dit. in MIGAS]

CHURCHARDER STORES SHOWN



(4) Delivering the information

The information about revision of the data should be submitted to BPD of PERTAMINA with 'Memo or Data Punching' mentioned at '2-3. Punching'

19、2000年1月2日 2日报总约31日,新型1000 1000年1月1日

This procedure mentioned above would be repeated if necessary.

# list of error message & explanation

#### Header card

- 1) WRONG FREQUENCY' symbol other than Y, Q, M found in col. 1
- 2) WRONG YEAR' figure other than 1970 ~ 2100 found in col. 2 ~ 5
- 3) WRONG QUARTER' figure other than 1 ~ 4 found in col. 6
- 4) WRONG MONTH'

  Ggure other than 1 ~ 12 found in col. 7 ~ 8
- 5) WRONG SCALE' figure more than 9 found in col. 9 ~ 10
- 6) 'WRONG UNIT' symbol other than registered in Table Data found in col.  $11 \sim 13$

#### Data card

1) WRONG CODE OR SYMBOL

CATEGORY
COMMODITY
SORT
CRUDE FIELD

symbol other than registered in Table Data found in

col. 1 ~ 2 col. 3 ~ 5 col. 7 ~ 9 or 11 ~ 13 col. 28 ~ 30

respectively

2) WRONG FACILITY CODE FOR DOMESTIC TRANSP.

figure other than registered in Table Data found in col. 53 ~ 55 (FROM) or col. 57 ~ 59 (TO) respectively

3) WRONG CODE OF DOMESTIC TRANSP. FROM

TO

symbol other than R, U, F, D found in col. 52 (FROM) or col. 56 (TO) respectively

4) 'SUB-TOTAL NOT BALANCE SELSIN \_\_\_\_\_\_\_\_,

sub-total given in col. 14 ~ 28 of Header card and the sum of amount given in col. 15 ~ 26 of all Data card not balanced difference figure given as -----

# 3. Table Data

### 3-1 General Description

There are 17 kinds of table.

These Table Data being used for giving the name to be printed in output lists and giving information for mutual relation of data and the specific values, maintenance should carefully be done.

3-2 Table

(1) crude field

< 300 >+

max, size

- o items concerned
  - code no.
  - · name of crude oil field
  - code no. of company concerned
  - · code no. for 'on shore' or 'off shore'
  - · code no. for type of crude oil
  - · specific value

API sulfer contents pour point viscosity

÷′54 −

### o format

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- o comment
  - a) Code no. 271 and 272 are used for Coal data.
  - b) Code no. for 'on shore' or 'off shore' are as follows.

01 : on shore 02 : off shore

(2) crude type

ho.

- o items conceined

concerned code no.

name for type of crude oil

code no. of loading port concerned specific value

API sulfer contents pour point viscosity:

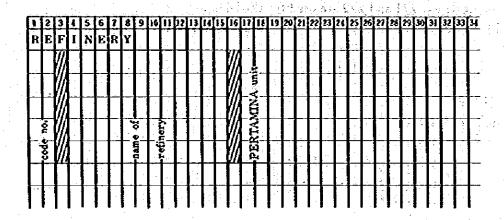
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#### o comment

- a) Relation table between type of crude oil and loading port is used to output tabulation of B.D.B. by loading port, not giving raw data directly by loading port.
- b) Code no. 51 and 52 is used for Gas data.
- (3) refinery

< 100 >

- o items concerned
  - · code no.
  - · name of refinery
  - · code no. showing PERTAMINA production unit
- o format



#### o comment

a) This table contains other plants or firms than refineries as follows.

code no. 01 ~ 14; refinery

15 ~ 20 ; floating storage

21 ~ 30 ; Singapore refinery plant

31 ~ 40 ; LNG, LPG plant

41 ~ 60; town gas plant

61 - 70 ; fertilizer plant

71 ~ 80 ; cement plant

81 2 85 ; steel and fron firm

 $86 \sim 90$ ; tin mining firm

91 ~ 95; nickel mining firm

(4) marketing region

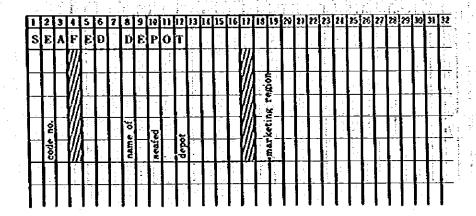
< 20 >

- o items concerned
  - · code no.
  - · no. of marketing region
- o format

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(5) seafed depot < 200 >

- o items concerned
  - · code no
  - · name of seafed depot
  - · code no. of marketing region
- o format



(26)

(6) up country depot

< 100 >

- o items concerned
  - code no.
  - · name of up country depot
  - · code no. of marketing region
- o format

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(7) distribution

< 100 >

- o items concerned
  - · code no.
  - · name of distribution station
- o format

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- o comment
  - a) This table mainly concerns with distribution of Gas, and consists of several gas

(27)

distribution stations (code no. 01  $\sim$  03) and hypothetical station (actually company names as same as Table (14). Refer to 3.4 in detail.

(8) discharging

< 50 >

- o items concerned
  - · code no.
  - · name of discharging port
- o format

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- o comment
  - a) This table concerns with the discharging port of import goods for Oil and Gas data and the loading port for export in case of Coal data.
- (9) foreign country

< 50 >

- o items concerned
  - · code no.
  - · name of foreign country
- o format

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(28)

- o comment
  - a) Singapore refinery plants are treated as foreign countries (code no. 20 ~ 23).
- (10) category
  - o items concerned <50>

- symbol indicating category
- · name of category
- o format

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(11) commodity < 100>

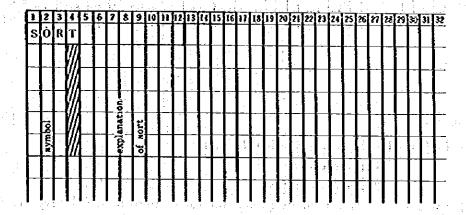
- o items concerned
  - · symbol
  - explanation of commodity
- o format

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- o comment
  - a) This table prepares the column name for E.B.T..
- (12) sort

< 100 >

- o items concerned
  - symbol
  - · explanation of sort
- o format



#### o comment

- a) These data are used at column field 'sort-1' (col.  $7 \sim 9$ ) and 'sort-2' (col. 11  $\sim 13$ ) in Data card.
- b) All of these data registered will not necessarily appear as row names in E.B.T..
  Because some of them are used only on the step of E.D.B. system.
- (13) gas field

< 300 > ±

- o items concerned
  - · code no.
  - · name of natural gas field
  - code no. for 'on shore' or 'oll shore'
  - code no. for type of natural gas
  - specific value
    - C1 contents C2 contents C3 contents
    - C4 contents
    - C5+ contents
    - sulfer contents

### o format

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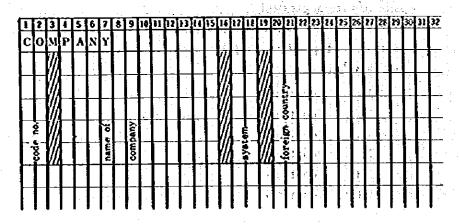
- a) Code no. for the type of Gas is as follows:
  - 51; associated
  - 52; non-associated
- b) Same data as crude field are given in the Table. All of these fields registered are not necessarily actual gas fields.
- c) Code no. for 'on shore' or 'off shore' is just the same as that of crude field (Table (1)).

# (14) company

- o items concerned

  - code no.name of company
  - code no. for the type of system
  - code no. of foreign country to which the company belongs

## o format



(31)

(15) system

< 10 >

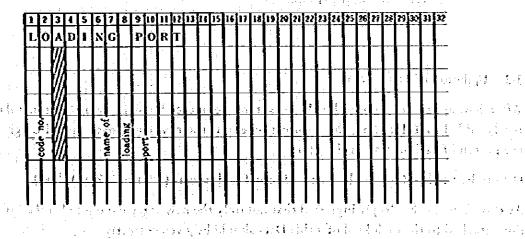
- o items concerned
  - code no.
  - · type of system
- o format

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(16) loading port

< 100 >

- o items concerned
  - · code no.
  - name of loading port
- o format



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(17) unit

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- items concerned
   unit symbol
- o format

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### comment

a) The type of unit prepared is as follows.

BBL; barrel

∟MT; metric ton

LKL; kilo litter

MCF; cubic feet

uM3; cubic meter

KWH; kilo watt per hour

US\$; U.S. dollars

## 3-3 Updation of Table Data

After having been recognized by the person of Computer Sub-Dit. data that some data be newly added in Table Data, the information about the new entry data should be given by the person of each section in charge of.

Data to be newly added can be written in the fixed format (refer to 3-2 in Tables).

At this moment, be deeply inpressed that not only the new entry data but also the information attached to the each kind of Table Data should be given correctly.

The coded information should be submitted to BPD of PERTAMINA.

	046 NILLA 07 01 01
3-4 List of Table Data	047 **** 047 *** 07 01 01
TAN OF IBOIC DOTA	048 SO HENGGALA 09 01 OL
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	051 U. TANJUNG 09 01 01 052 **** 052 *** 09 01 01
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07 01 01	054 *** 054 *** 09 01 01
07 01 01	055 (UK) 07 01 02
03 PENATANG 07 01 01	056 KULIN 07 01 02
194 BEKASAP 07 01 01	057 **** 057 *** 07 01 02
07 01 01	058 **** 058 *** 07 01 02
06 N. HENGGALA 07 DI 01	059 *** 059 *** 07 01 02
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99 PERATANG BOW 07 01 01	051 TERANTAM 09 01 03 062 PEDADA 09 01 03
10 KOTABATAK 07 01 01	063 DAHAR 09 01 03
07 01 01 01	054 SARAK 09 01 03
012 MINOAL 07.01.01	065 LANGGAK 09 01 03
013 PUDU 07 01 01	066 **** 066 *** 09 01 03
01 4 BANGKO 07 01 01	057 **** 067 *** 09 01 03
015 SO BALAM 07 01 01	068 ** ** 063 *** 09 01 03
016 PETAPAHAN 07 01 01 017 SURAH 07 01 CI	069 **** 069 *** 09 01 03
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DO SO HENGGALA OT OL OL	073 5510 10 01 04
021 SQ.PINGG13 07 01 01	074 JIRAK 10 01 04
07 01 01	075 RAJA 10 01 04
07 01 C1	076 85 TUN 10 01,04
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025 SIKLADI   07 01 01 026 SE, SINTONS   07 01 01	078 0=RAS 10 01 04 079 A3 A8 10 01 04
027 SERUNI 07 01 01	079 A3 A8 10, 01, 04 080 9JLU 10 01 C4
028 CERAKAN 07 01 01	081 BAUNG 10 01 04
029 55 1130 07 01 01	082 LOYAX 10 01 04
029 55 LIBO 07 01 01 030 PAGER 07 01 01	083 \$5.1801 10.01.04
031 PINANG 07 01 01	084 DEHA 10 01 04
032, (180 07 01, 61	085 19UL 10 01 C4
033 PUTIARA 07 01 01 034 SINGA 07 01 01	086 (EPATI 10 01 04
034: SINGA 07 01:01 035: PATANG 07 01:01	087 PAKBUTAN 10 01 04 088 55 KAYA 10 01 04
036 KOPAR 07 01 01	088 SERAYA 10 01 04 089 TERAS 10 01 04
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039 PELITA 07 01 CI	092 **** 002 *** 10 01 04
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042 INTAN 07 01 01	095 LISIK 10 01 65
043 AYTARA 07 01 01 044 ARAR 07 01 01	096 (KU) 10 01 05
045 0303	097, A154H 10, 01, 05 098, A17, PULAI 10, 01, 05
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102 RELINBING . 10 01 05	155 CENDRAHASIH. 16 01 15
103 PEKAN 10 01 05	156 KASIM TENGAH 16 01 15
	157 KOI 16 OI 15
104 KERBAU 10 01 05	
105 CINTA 11 02 06	158 **** 158 *** 16 01 15
106 KITTY 11 02 06	159 ** ** 159 *** 16 01 15
107 NORA 11 02 06	160 RANTAU 01 01 16
108 ZELDA 11 02.06	161, E. TABUHAN 01 01 16
109 SAHA 11 02 06	162 W. TABUHAN 01 01 16
110 SELATAN 'A' - 11 02 C6	163 P. PANJANG 01 01 16
111 GITA 11 02 06	
112 *** 112 *** 11 02 66	165 PERLAY 01 01 16
113 ** ** 113 *** 11 02 06	166 SIMPANG 01 01 16
114 *** 114 *** 11 02 06	167 64 TUHANDI 01 01 16
115 **** 115 *** 11 02 06	158 GEBANG 01 01 16
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122 **** 122 *** 11 02 06	178 PEUREULA 17 01 35
123 **** 123 *** 11 02.06	176 TUALANG 17 01 35
124 **** 124 *** 11 02 66	177 6460 17 01 35
125 AP JUVA 12 02 07	178 PEUDAHA 17 01 35
126 ** ** 126 *** 12 02 07	179 EURANTI 17 01 35
127 AR INBI 12 02 08	180 **** 180 *** 17 01 35
128 **** 128 *** 12 02 08	181 ** ** 181 *** 17 01 35
129 SEKBAKUNG 12 02 09	182 PANGUNJAYA 34 01 17
130 **** 130 *** 12 02 69	193 XLUANG 34,01,17
131 ** * 131 *** 12 02 09	184 TEHPINO 34 01 17
132 ATTAKA 13 02 10	185 **** 165 *** 34 01.17
122 161 111111 12 62 16	156 TARAKAN 18 01 18
130 n.c. 10 12 10	
133 ASLAHIN 13 02 10 134 KERTHOTHGAN 13 02 10	157 SANGA SANGA 18 01 18
135 JAKIN 13 02 10	198 SANDOJA 18 01 18
136 ### 136 ### 13 02 10	199 BONGKARAN 18 01 )8
137 SEPINGGAN 13 02 11	190 ** ** 190 *** 18 01 18
138 \$2\$ 138 \$2\$ 13 02 11	191 **** 191 *** 18 01 18
139 **** 139 *** 13 (2 )1	192 SULA 19 01 19
140 PADAY 14 01 12	193 **** 193 *** 19 01 19
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142 SENSERAH 14 C1 12	105, SALAWATI 20 01, 20
143 NILAM 14, 01, 12	156.3334 196 474 20 01 20
143 NILAN 14 (1, 12 144 #### 144 ### 14 (1, 12	196 **** 196 *** 20 01 20 197 **** 197 *** 20 01 20
145 HANDIL 15 02 13	198, WANG 21 02 21
146 ++++ 146 *** 15,02.13	199 ** ** 199 *** 21 02 21
147, BEKAPAT 15.02 14	200, ** ** 200 *** 21 02 21
148 *** 148 *** 15,02 14	221, 141, 22, 01, 22
149, ** * 149 ** 15, 02, 14	202 ** ** 202 ** 22 01 22
	202 3777 602 777 66 01 62
150 JAYA 16 01 15	203, ** ** 203 *** 22 01 22
151 KASIH 16 01 15	204 TANJUNG TIGA 02 01 23

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205 TALANG JIMAR 02 CT 23	258 43-33 258 333 05 01 30
206 T. JIHAR THG. 02 C1 23	259 **** 259 ***
207 T. JIMAR TIN. 02 01 23	250 CTR PURAL 10 01 05
208 PRABUMULTH B.02 01 23	261 **** 261 ***
209 TG. HIRING R. 02 01 23	262 **** 262 ***
210 10 112 110 0 10 02 01 23	263 **** 263 ***
210 TG. HIR ING T. 02 01 23	264 *** 264 ***
211 LIHAU 02 01 23	
212 KARANGAN 02 01 23	265 **** 265 ***
213 CN. KEMALA 02 01 23	266 *** 266 ***
214 95LIH9 ING 02 01 23	267 **** 267 ***
215 KUANG 02 01 23	268 *** 268 ***
216 BENAKAT TIM. 02 01 23	269 **** 269 ***
217 CGAN 02 01 23	270 **** 270 ***
and the second of the second o	271 BUXIT ASAH
	272 OIBILIN
219 BETUNG 02 01 23	
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221 ** ** 221 *** 02 01 23	CRUDE TYPE
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224 ** * 224 ** 02 01 23	03 PEDADA 03
225 BAJUBANG 03 01 24	04' S .SUMATRA 04
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229 S.LILIN 03 01 24	OB ARIHBI 06
230 \$51111 03 01 24	OP SEHBAYUNG 14
231 SSNGETT 03 01 24	LO ATTAKA 10
232 *** 232 *** 03 01 24	11 SEPINGGAN 15
· 233 ### 233 ### 03 01 24	12" BADAK 26
234 RANDEGAN 03 01 25	13 HANDIL 09
235 JATIBARANG 03 01 25	14 BEKAPAT 09
236 CEMERA . 03 01 25	15 HAL 10 17
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238 TUGU BARAT 03 01 25	18 TARAKAY 12
239 CEMARA BRT 03 01 25	그 그 그 그들은 그는 그는 그는 그는 그를 가는 그를 가는 것이 되었다.
240 KANDANG H.T 03 01 25	19 BULA 23
241 59970 04 01 26	2) SALAHATI 16
242 **** 242 *** 04 01 26	21 UPANG 20
243 SANGATTA 04 01 27	22 ARUN 22
244 ** ** 244 *** 04 01 27	23 S. PALEHRANS 64
245 TANJUUS 04 01 28	24 JA181 04
246 HARUKIN SEL. 04 01 28	25 JATIBARANG 06
247 TAPIAN TIMUR 04 01 28	26 BUIYU 13
248 *** 248 *** 04 01 28	27 SAVGATTA 25
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249 KLA40V0 05 01 29	도요: 생년에 내가 되었다.
250 LINDA 05 01 15	
251 ** ** 251 ** 4 05 01 15	30 CEOU
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253 LEOOK 05 01 30	32 ARASIAN L.C.
254 NGLC30 06 01 36	33 ASPHALT SASE 22
255 SEMANGGI 06:01 30	34' LIBE BASE 22
256 KAWENSAN 06 01 30	35 KATAPA/NSC-A 02
257 ** ** 257 ** 06 01 30	36 KRUKA

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37 CONDENSATE	33 ARJUNA
38 *** 38 ***	34 HUNDU
39 *** 39 ***	35 SANTAN
	36 BOYTANG
40: MIXED	37 *** 37 ***
41 * * * 41 * * *	
421 **** 42 ***	38 *** 38 ***
43 * * * * 43 * * *	39 *** 39 ***
44 *** 44 ***	40 *** 40 ***
45 **** 45 ***	41 TGO . HEDAY
46 *** 46 ***	42 TO PADANG
47/**** 47 ***	43 TG . PALERBANG
48 **** 48 ***	44 TCP.JAKARTA
49**** 49 ***	45' TGO . 80'S OR
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50 * ** 5 0 * *	47 TGP.CIREBOY
51 ASSOCIATED	49 TG SEHARANG
52: NOI-ASSCIATO	49 TGP. SURABAYA
53 MIXED-GAS	
54 *** 54 ***	50' TGP .U.PANDANG
55 * *** 55 ***	51 *** 51 ***
END	52 * * * 52 * * *
REFINERY	53 *** 53 ***
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05 PLAJU 03	59 *** 59 ***
06' BALTKPAPAN 05	
OT CILACAP 04	
08 YOVOKROHO 04	61 PUSRI
09-CEPU 09	62 KWANG
10 PKL SUSU 01	63 ASSAN
11 TG.UBAY	64 KALTIH
12 P. SAMBU	65 GRESIK
13 **** 13 ***	65 *** 66 ***
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30 * ** 30 **	83 **** 83 ***
31' ARUN	84 *** 84 ***
32 RAYTAU	85 **** 85 ***

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87/ PITIM HUYTOK	037 **** 037 *** 04
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89 + +++ 89 +++	039 **** 039 9** 04
90 *** 90 ***	040 SURABAYA 05
91 PCKALA	041 BENDA 05
END	042 AMPENAN OS
MARK . REGION	043 TARAKAN 05
01.H'S' I	044 KUPANS 05
02 M.R. 11	045 MENENG 05
03 M.R. III	046 BANJARHASIN 05
04 M.4. IV	047 SAMARINDA 05
05' M.R. V	048 BALIKPAPAN 05
06 M.Q. VI	049 SUHBANA BSR 05
O7 MARA VII	050 BIHA 05
09 M.R. VIII	051 NAUMERE 05
END	052 EVDE 05
SEAFED DEPOT	053 ATAPUPU 05
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007 THOM SUMAWE 01 008 ULE-ULE 01	051 DILLY 05
	062 HJARA PADAK 05
009 TS48ALAI 01 010 PANJANG 02	053 SANGA-SANGA 05
<del></del>	064 TJ. SANTAN 05
011 JAM91 02	045 SEL, LONBOK 05
012 PC-BALAII 02	- 056 KOTA BARU 05
013 KERTAPATI 02	057 BATU LICIN 05
014 BOOM BAQU OZ	068 SOTEK 05
015 HANGGAR 02	059 LONGIKIS 05
016 TUNGKAL 02	070 WUNSPANDANG 06
017 6ELINYU 02	071 AYBON
OI & LIRIK O2	O72 PARE-PARE 06
019 KENTOK 02	073 KENDARI 06
OZO TJG.PRIOK O3	O74 PALU
021 PALONGAN 03	075 TOUASA
022 CIREBON 03	076 SALAYAR 06
023 NERAK 03	077 PONALA 06
024 PANTIANAK 03	- 077 PAREK 00 078 PANTUNG 06
025 KOTA BERAU 03	
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23 PERTIFPILL	13 TANJUNG USAN
24 PERT EP. IV	14 F.S.JAKARTA
25 PERTISPIN	15 BANJARMASIN
26 LEYIGAS	16 PAUJANG
27 PT, CP1	17 C18 E80H
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