

**Chapter 6.**

**PROGRAM SPECIFICATION**



## Chapter 6 Program Specification

As described in "The Report of Conceptual System Design", it was concluded that the Petroleum Exploration and Production Data Bank System be designed and managed on the basis of the following matters.

- Utilization of IMS for data base processing
- Data processing by the batch system
- Utilization of diskettes for input data
- Utilization of COBOL language for programming

In accordance with the aforementioned matters, the detailed system design for the following processing was performed based on the results of the output reporting methods described in Chapter 4 and the data bases described in Chapter 5.

- Updating and maintaining master files
- Inputting the data into the data bases
- Outputting the output reports from the data bases

In this chapter, the results of the detailed system design related to the abovementioned processing are described together with the input data format in APPENDIX V, the program specifications in APPENDIXES VI, VII and VIII and the instruction on input data processing in APPENDIX IX.

In the followings, Processing for Master File is described in Section 1, Data Base Input Processing in Section 2 and Data Base Output Processing in Section 3.

## 6-1 Processing for Master File

As described in 5-3, the following four master files were designed independently of the data bases in the Petroleum Exploration and Production Data Bank System.

- Field master
- Well master
- Zone master
- Company master

The detailed system design for the process flow, processing of updating programs and processing of output programs for the master list were performed on the above-mentioned four master files.

Eight (8) programs, which are four (4) updating programs for master files and four (4) output programs for the master list, were designed in detail and named according to the naming convention in Chapter 3 as follows.

### - Program for Updating Processing

	<u>Program Name</u>
Field master	EPB59000
Well master	EPB59005
Zone master	EPB59010
Company master	EPB59015

- Program for Output Processing of Master List

	<u>Program Name</u>
Field master	EPB59100
Well master	EPB59105
Zone master	EPB59110
Company master	EPB59115

Reference is made to APPENDIX VI on the program specification of master file processing. In this APPENDIX, here are described, in detail, function, input data, reference data, output data, check of input data, editing of the data in the master record, output sequence, condition of changing page and supplementary explanation for output item.

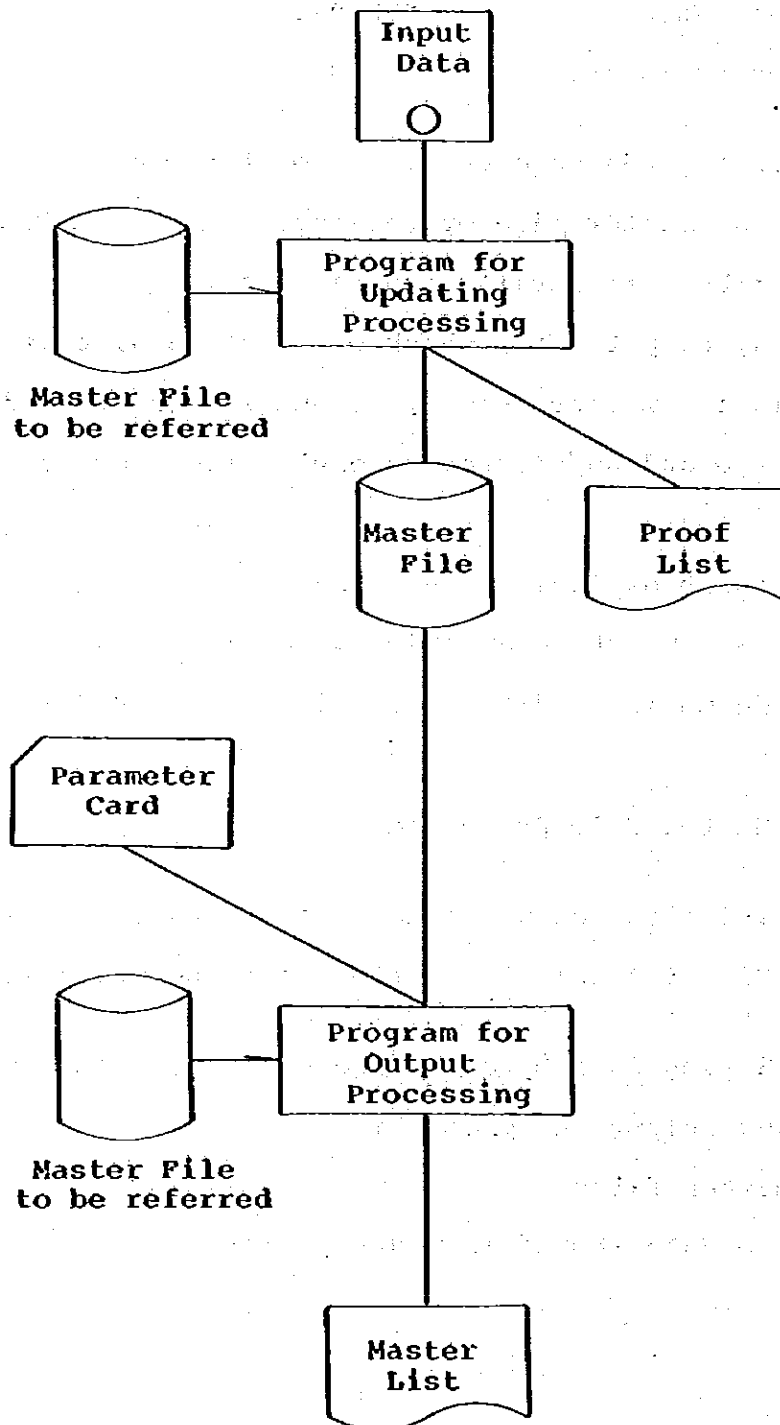
In the course of design, input data processing of master files was investigated and the results were shown, as "Instruction on input data processing", in APPENDIX IX.

(1) Flow of Master File Processing

The process flow for updating data of master files are described in Fig. 6-1 related to the following processings.

- Check updating data by collating with pertinent master files, and output the proof list
- Update master files
- Output the data stored in master files

**Fig. 6-1 Flow of Master File Processing**



(2) Program for Updating Processing of Master File

In this paragraph, a description is made on the format of input data, input data check, output processing of proof list and updating processing related to master file updating processing.

Reference is made to APPENDIXES IV, V, VI and IX.

1) Format of input data

Format of input data for master files was designed in the manner so as to enable to update any data with data item in master files and the format was shown in APPENDIX V.

The following is a schematic diagram for the formats.

#1 (1)	#2	#3	Updating data	#4 X(4)
-----------	----	----	---------------	------------

( ) shows number of characters.

#1 ; Indication of updating ----- I : Insertion  
(Update-id) R : Replacement  
D : Deletion

#2 ; Transaction code

Transaction data for input processing to master files are classified into nine groups which have their transaction code as follows.

	Transaction code
Transaction data for filed	EMF1
Transaction data for facilities field	EMF2
Transaction data for well	BMW1

Transaction data for reservoir unit	EMZ1
Transaction data for layer	EMZ2
Transaction data for contractor	EMC1
Transaction data for operator	EMC2
Transaction data for company	EMC3
Transaction data for manufacturer	EMC4

#3 : Key item for updating ----- Refer to (KEY-1), (KEY-2), etc. in APPENDIX V.

#4 ; Batch No. ----- Indication for a batch of data

## 2) Input data check

There are indispensable input data check, code check, numeric check, logic check and master file collation check. Followings are explanation of checking procedure.

### a. Indispensable input data check

- In updating processing of data insertion, it is indispensable to prepare the following data by master files. In case of lack of any above data, an error mark, as described later in 6-1-(2)-3), would be output.



### Input data

Field master	Indication of updating, transaction code, key item for updating and Area code
Well master	Indication of updating, transaction code, key item for updating, String code, Province code, Completion status, Well status and Kind of completed zone
Zone master	Indication of updating, transaction code, key item for updating, kind of reservoir and Development status
Company master	Indication of updating, transaction code and key item for updating

- In updating processing of data replacement, it is necessary to prepare the data to be replaced together with the data for "Update-id", transaction code and key item for updating as shown in 6-1-(2)-1). The deletion of data as mentioned below can be performed by inputting the mark "\*" in all the columns for pertinent data. In case of lack of any data for "Update-id", transaction code and key item for updating, an error mark, as described later in 6-1-(2)-3), would be output.
- In updating processing of data deletion, the data for "Update-id", transaction code and key item for updating is input. In case of lack of any data for "Update-id", transaction code and key item for updating, an error mark, as described later in 6-1-(2)-3), would be output.

b. Code check

An error mark, as described later in 6-1-(2)-3), would be output in case of input of the code which is not defined in APPENDIX IV.

c. Numeric check

An error mark, as described later in 6-1-(2)-3), would be output in case that data other than numeric data is input incorrectly for numeric data.

d. Logic check

If there is a logic contradiction among data, an error message would be output as described later in 6-1-(2)-3).

It is the example case that, while "Pumping" of "Current status" is assigned, "Ordinary string" of "String specification" is incorrectly assigned at the same time.

	<u>String specification</u>	<u>Current status</u>
1	Ordinary string	(01 - 09 Flowing)
2	Rod pump	01 Natural flowing
3	Submergible pump	02 Pumping
4	Gas lift	03 Gas lifting
5	Dump flood water injection	04 Injecting
6	Powered water injection	
7	Gas injection	

e. Master file collation check

- In updating processing of data insertion, an error message as described later in 6-1-(2)-3), would be output in case that the data of key items of the insertion is already stored in pertinent master file.

- In updating processing for data replacement and deletion, it is indispensable that there exists pertinent data having the same data for key items in pertinent master file.

If it does not exist, an error message, as described later in 6-1-(2)-3), would be output.

- There is a regulation, as described in APPENDIX IX, in connection with the priority order for input data to master files.

If the regulation is broken, an error message, as described later in 6-1-(2)-3), would be output.

3) Output processing of proof list

The layout of the proof list for output of an error mark and an error message, of which are described into 6-1-(2)-3) is shown in page 94. Followings are output processes of the proof list.

- As for indispensable data item check in 2)-a, code check in 2)-b and numeric check in 2)-c, the item name of error data would be output together with "\*\*\* ..." under the data.



- As for master file collation check in 2)-d and logic check in 2)-e, following error messages would be output by kinds of errors.

<u>Error condition</u>	<u>Error message</u>
- There is logic contradictions among data.	LOGICAL RELATION MISSING
- As for updating processing of data insertion, the data of key items of the insertion is already stored in pertinent master file.	ALREADY IN MASTER FILE
- In updating processing for data replacement or deletion, it is indispensable that there exists pertinent data having the same data for key items in pertinent master file.	NOT FOUND IN MASTER FILE
- If the regulation in APPENDIX IX is broken.	ERROR AGAINST REGULATION

#### 4) Updating processing

Followings are updating processing for the data passing through the checks as described in 6-1-(2)-2).

The updating processing is performed in accordance with "Update-id" described in 6-1-(2)-1).

- Data insertion : Input data is inserted in the master file
- Data replacement : Data stored in the master file is replaced by new input data. In case that data of "\*\*\* ..." is input, the data is replaced by space data.
- Data deletion : Data stored in the master file is deleted.

The date of updating processing is stored in the master file by using the execution date of the computer system when the aforementioned updating is performed.

**(3) Program for Output Processing of Master List**

The data stored in Field master, Well master, Zone master or Company master would be output into the master list through the card in shown the following format.

Program name (8)	Key item for data retrieve	Blank
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( ) shows number of characters.

The followings are noted for the above layout of the parameter card.

**- Program name**

EPB59100 (for Field master)  
EPB59105 (for Well master)  
EPB59110 (for Zone master)  
EPB59115 (for Company master)

**- Key item for data retrieve**

The format of the key item for data retrieve for each master file is shown in APPENDIX VI. The followings are functions of the key item for data retrieve.

- As for Field master (EPB59100), "Flag of field or facilities field" is selected as the key item for data retrieve. The data related to "Field" in case of assignment of "Field" and the data related to "Facilities field" in case of assignment of "Facilities field" is output respectively according to the layout in APPENDIX VI.
  
- As for Well master (EPB59105), "Field code" is selected as the key item for data retrieve. The data related to assigned fields is output according to the layout in APPENDIX VI.
  
- As for Zone master (EPB59110), "Flag of reservoir or layer" and "Field code" and "Flag of reservoir or layer" are assigned at the same time. When the data related to "Reservoir or Layer" in the assigned field would be output according to the layout in APPENDIX VI.
  
- As for Company master (EPB59115), "Kind of company" is selected as the key item for data retrieve. The data related to "Contractor", "Operator", "Company" or "Manufacturer" is output in accordance with the assignment of them.

## 6-2 Data Base Input Processing

The detailed design of data base input processing was made taking into consideration the avoidance of error data for input, efficiency of input data processing and easy preparation of input data.

As for programs for data base input processing, a total of twenty-three (23) programs was designed, of which twenty-one (21) programs are for updating processing of data base described in 5-1 and two auxiliary programs for assisting input data preparation for the following processings.

- Input data processing for workover well
- Input data processing for yearly production and injection by reservoir units.

This is calculation processing for yearly production and injection by reservoir units which is moved from the data base "Production and injection" to the data base "Reserves data" in order to calculate "Remaining reserves".

The above twenty-three (23) programs were named and listed as follows in accordance with the naming convention is Chapter 3.



1) Program for Updating Processing

	<u>Program name</u>
1. "Contract Area" data base	EPB50000
2. "Geological Survey" data base	EPB50010
3. "Geological Analysis" data base	EPB50020
4. "Resource Prospect" data base	EPB50030
5. "Geological Map and Figure" data base	EPB50040
6. "Geological Report" data base	EPB50050
7. "Geophysical Survey" data base	EPB51000
8. "Geophysical Map" data base	EPB51010
9. "Geophysical Seismic Section" data base	EPB51020
10. "Geophysical Report" data base	EPB51030
11. "Well Data" data base	EPB52000
12. "Petrophysical and PVT Analysis Data" data base	EPB53000
13. "Production and Injection" data base	EPB54000
14. "Oil Consumption" data base	EPB54010
15. "Gas Consumption" data base	EPB54020
16. "Reserves Data" data base	EPB55000
17. "Well Test and Stimulation" data base	EPB56000
18. "Field Laboratory Fluid Analysis" data base	EPB56010
19. "Station" data base	EPB57000
20. "Equipment" data base	EPB57010
21. "Pipeline" data base	EPB58000
 - Auxiliary Program	
1. Copy of well data	EPB52050
2. Calculation of yearly production and injection by reservoir units	EPB55050

Reference is made to APPENDIX VII on the program specification of data base input processing. In this APPENDIX, here are described in detail, function, input data, reference data, output data, check of input data and editing of the data in the master record.

In the course of design, input data processing of data bases was investigated and the results were shown, as "Instruction on input data processing", in APPENDIX IX.

**(1) Flow of Data Base Input Processing**

The process flow for updating data of data bases are described in Fig. 6-2 related to the following processings.

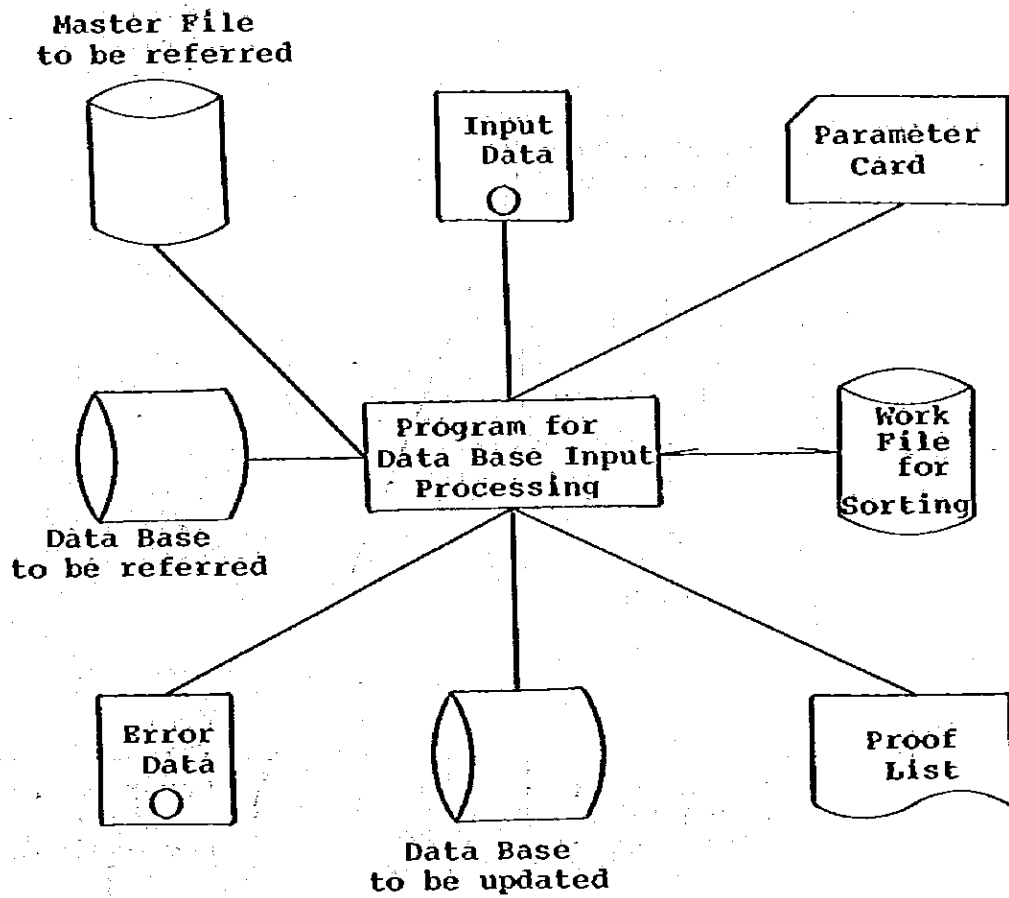
- Check updating data by collating with pertinent master files and data bases, and output the proof list and error data.
  
- Update data bases

**(2) Program for Updating Processing of Data Base**

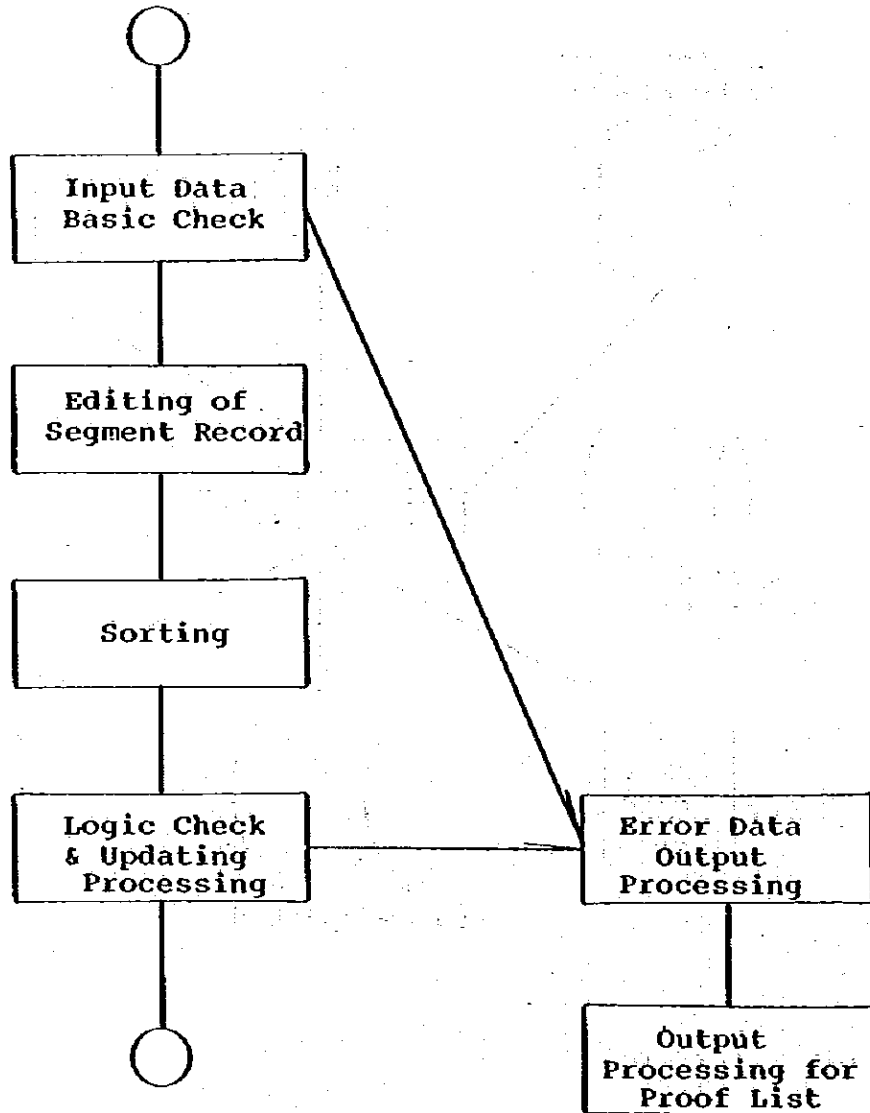
In this paragraph, a description is made on format of input data, input data basic check, editing of segment record, sorting, logic check, error data output processing on diskettes, output processing of proof list and updating processing related to data bases updating processing as shown in Fig. 6-3.

Reference is made to APPENDIXES IV, V, VII and IX.

**Fig. 6-2 Flow of Data Base Input Processing**



**Fig. 6-3 Procedure of Data Base Updating Processing**



1) Format of input data

Format of input data for data base was designed in the manner so as to enable to update any data with data item in a segment of data bases and the format was shown in APPENDIX V. The following is a schematic diagram for the format.

#1 (1)	#2 (2)	#3	Updating data	#4 X(4)
-----------	-----------	----	---------------	------------

( ) shows number of character.

#1 ; Indication of updating --- I : Insertion  
(Update-id)

R : Replacement

D : Deletion

#2 ; Transaction code ----- First five letters in  
Segment name

ex. PAA01  
PEA02

#3 ; Key item for updating --- Refer to [Key-1], [Key-2]  
or [Key-3] in APPENDIX V.

#4 ; Batch No. ----- Indication for a batch  
of data

Note ; As for updating processing of data deletion,  
the length of one record for input data in  
128 bytes which is equal to one record length  
of diskette.

As for EPB54000, EPB54010, EPB54020 and EPB55000,  
the following parameter card in addition to the input data  
must be prepared in accordance with their purposes which  
is described in APPENDIX VII.

Program name (9)	Year and month (4)	Blank
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( ) shows number of character.

## 2) Input data basic check

Input data basic check is consisted of indispensable data item check, code check, numeric check, limit check, and master file collation check, which is described in the following.

### a. Indispensable data item check

As for updating processing of data insertion, reference is made to "INTRODUCTORY REMARKS" of APPENDIX VII. Data items are listed in "Check of input data" in APPENDIX VII. Among them, update-id, transaction code and data item which are defined as key items in APPENDIX V, are indispensable for input data preparation in case of insertion of data. If these are failed to input, input data for segment can not be inserted in data base and an error mark, as described later in 6-2-(2)-7), would be output. If input data other than the said data are failed to input, only warning messages, as described later in 6-2-(2)-7), would be output but data of segment can be inserted in data base.

- In updating processing of data replacement, it is necessary to prepared the data to be replaced together with the data for "Update-id", "Transaction code" and key item for updating as shown in 6-2-(2)-1).

The deletion of data as mentioned below can be performed by input of the mark "\*" in all the column for pertinent data.

In case of lack of any data for "Update-id", "Transaction code" and key item for updating, an error mark, as described later in 6-2-(2)-7), would be output.

- In updating processing of data deletion, the data for "Update-id", "Transaction code" and key item for updating is input.

In case of lack of any data for "Update-id", "Transaction code" and key item for updating, an error mark, as described later in 6-2-(2)-7), would be output.

b. Code check

An error mark, as described later 6-2-(2)-7), would be output in case of input of the code which is not defined in APPENDIX IV.

c. Numeric check

An error mark, as described later in 6-2-(2)-7), would be output in case that data other than numeric data is input incorrectly for numeric data.

d. Limit check

As described in the following example, an error mark, as described later in 6-2-(2)-7), would be output in case of the input data which is out of limit.

- Date                     $01 \leq \text{Day} \leq 31$                     51  
                               $01 \leq \text{Month} \leq 12$                     15
- Interval                From  $a_1$  to  $a_2$                      $a_1 > a_2$
- Local  
   Coordinate             $b_1 \leq \text{Longitude} \leq b_2$   
                               $c_1 \leq \text{Latitude} \leq c_2$

e. Master file collation check

In updating processing of the data to be stored in a master file such as Field master and Well master, it is indispensable that these data be stored in pertinent master file before updating processing is performed. If these are not stored yet, an error mark described later in 6-2-(2)-7) would be output.

3) Editing of segment record

Editing of segment record is performed for the data which has passed the input data basic check in 6-2-(2)-2). Reference is made to "Editing of the Data" in each program specification of APPENDIX VII on the detail of editing processing.

Followings are the editing processing which is considered important in processing and its example of those.

a. Format conversion of data to the format on data base

- Convert a input data format to the internal code format and store the data with this converted format in data base. The example case is referred to "Geological survey code" of APPENDIX IV.



b. Movement of the data from master file to data base

The data is not prepared as a direct input data, but moved from master file through pertinent code. For example, the input data for "Province code" and "Area code" are not prepared directly in input data processing, but these moved from Field master through "Field code" which is prepared for input data.

c. Rearrangement of data in the segment record

For example, the data for ten (10) segment occurrences is input in one input data format in accordance with the instruction of occurrence of [Key-2] as in the case of "Well reference" of "Geological map and figure". These must be split into ten (10) segment occurrences on the data base.

4) Sorting

For the purpose of sorting data, [Key-1], "Transaction code" and "Update-id" were selected as first key, second key and third key respectively.

5) Logic check

The sorted data are checked through the logic check and the data base collation check in the following.

a. Logic check

An error message described in 6-2-(2)-7) would be output in the example case that the data for "Gas lift" assigned by following "String specification" of the segment "Completion string" in the data base is going to be updated by the data for "Rod pump".

String specification

1. Ordinary string
2. Rod pump
3. Submergible pump
4. Gas lift
5. Dump flood water injection
6. Powered water injection
7. Gas injection

b. Data base collation check

- In updating processing of data insertion an error message as described later in 6-2-(2)-7) would be output in case that the data of key items of the insertion is already stored in pertinent data base.
- In updating processing for data replacement and deletion, it is indispensable that there exists pertinent data having the same data for key items in pertinent data base. If it does not exist, an error message, as described later in 6-2-(2)-7), would be output.
- As for updating processing of the data of the segment at second level and third level, the existance of their parent segment is indispensable in updating processing. If it is not found, an error message, as described later in 6-2-(2)-7), would be output.
- There is a regulation as described in APPENDIX IX in connection with the priority order for input data to

data bases. If the regulation is broken, an error message, as described later in 6-2-(2)-7), would be output.

6) Error data output processing on diskettes

The error data of input data basic check in 6-2-(2)-2) and logic check in 6-2-(2)-5) would be output in the input format in 6-2-(2)-1) on diskettes.

7) Output processing of proof list

The layout of the proof list for output of an error mark warning message and an error message, of which are described into 6-2-(2)-2) and 5) is shown in page 110. Followings are output processes of the proof list.

- As input data basic check in 6-2-(2)-2), the item name of error data would be output together with "\*\*\*\*..." under the data.
- As for a warning message as stated in 2)-a, related data item which are not input would be output together with "XX...." under the position in diskette to be input.
- As for logic check in 6-2-(2)-5), following error messages should be output by kinds of error.

<u>Error condition</u>	<u>Error message</u>
- There is logic contradictions among data	LOGICAL RELATION MISSING
- As for updating processing of data insertion, the data of key items of the insertion is already stored in pertinent data base.	ALREADY IN DATA BASE



- In updating processing for data replacement or deletion, it is indispensable that there exists pertinent data having the same data for key items in pertinent data base NOT FOUND IN DATA BASE
- The parent segment does not found in pertinent data base PARENT NOT FOUND
- If the regulation in APPENDIX IX is broken ERROR AGAINST REGULATION

### 8) Updating processing

Followings are updating processing for the data passing through the checks as described in 6-2-(2)-2) and 5).

The updating processing is performed in accordance with "Update-id" described in 6-2-(2)-1).

- Data insertion: Input data is inserted in the segment.
- Data replacement: Data stored in the segment is replaced by new input data. In case that data of "\*\*\*..." is input, the data is replaced by space data.
- Data deletion: Data stored in the segment is deleted.

### (3) Auxiliary Program for Processing of "Copy of well data"

The Auxiliary Program for Processing of "Copy of well data" was designed for the purpose of an efficiency and an easiness of the input processing of workover data to data base.

Here is described the parameter card, in 6-2-(3)-1), to be used for the execution of the program "EPB52050" processing

of data copy and replacement in 2), and output of proof list in 3) in the following.

1) Parameter card

The parameter card with the following format is used for the execution of the program "EPB52050".

Program name  (8)	Well code (10 each of the maximum number)  (7)*10	Blank  (2)
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( ) shows number of character. (

Note:

- Program name; EPB52050
- Well code; The maximum ten (10) well codes can be assigned in copy and replacement processing of workover data to data base.

2) Processing of data copy and replacement

As for the well assigned by the parameter card described in 6-2-(3)-1), the following processing is performed related to data copy and replacement. Reference is made to the program specification of APPENDIX VII.

- Copy the data, which is not updated by workover operation, from the well data with the previous status to the workover well data on data base.

- Copy the data for "workover number" and "completion status" from the segment "Well" to the segment "Workover history".
- Replace current workover No. of the segment "Well" of "Original Well" by new workover number.

### 3) Output processing of proof list

The results of the processing of data copy and replacement would be output in accordance with the layout of the proof list of the program "EPB52050" in APPENDIX VII.

### (4) Auxiliary Program for Processing of "Calculation of yearly production and injection by reservoir units"

The auxiliary program for processing of "Calculation of yearly production and injection by reservoir units" was designed for the purpose of an easiness of the input processing of yearly production and injection data to the data base "Reserves data".

Here is described the parameter card to be used for the execution of the program "EPB55050", in 6-2-(4)-1), processing of data calculation and movement in 2) and output of proof list in 3) in the following.

#### 1) Parameter card

The parameter card with the following format is used for the execution of the program "EPB55050".

Program name (8)	Year (2)	Blank (70)
---------------------	-------------	---------------

Note: - Program name; EPB55050

- Year; Last two figures of the Christian Era is used for the year during which yearly production and injection is calculated by reservoir units.

## 2) Processing of data calculation and movement

As for the production and injection during the year assigned by the parameter card described in 6-2-(3)-1), the following processing is performed related to data calculation and movement.

Reference is made to the program specification of APPENDIX VII.

- Multiply production and injection of each reservoir unit with their respective share factor.
- Sum up the above calculated productions and injection by the following statistical units.
  - by kind of recovery method
  - by kind of completed zone
  - by reservoir unit
- Move the above calculated data to the data base "Reserves Data".

## 3) Output processing of proof list

The results of the processing of data calculation and



movement would be output in accordance with the layout of the proof list of the program "EPB55050" in APPENDIX VII.

**(5) Recovery Processing of Data Base**

As for recovery processing of the data base prepared through data base input processing described in 6-2-(1), (2), (3) and (4), the system was designed in the manner that the following data base recovery utility can be applied to the recovery processing of data base.

- 1) Data Base Image Copy Utility for creation of image copies of data bases.
- 2) Data Base Change Accumulation Utility for accumulation of data base changes from log tapes since the last complete image copy.
- 3) Data Base Recovery Utility for restoration of the data base, using a prior data base image copy and the accumulated changes from log tapes.
- 4) Data Base Backout Utility for removal of changes made to data bases by a specific application program.

The above recovery processing of data base will be established in the course of programming, debugging and testing to be performed as the next phase of the project.

### 6-3 Data Base Output Processing

The detailed design of data base output processing was made taking into consideration the efficiency of output processing for the output report of three hundred and thirty (330) output reporting methods described in Chapter 4.

As for programs for data base output processing, a total of one hundred and fifty-six (156) programs was designed, of which twenty-two (22) programs are for the basic output reporting method and one hundred and thirty-four (134) programs for the combined output reporting method, as follows.

#### 1) Basic output reporting method

One program was designed for each basic reporting method at the first level, which is described in Chapter 4. As the results, twenty-two (22) programs were designed for twenty-two (22) basic output method, of which all situate at the 1st level of a hierarchical structure.

#### 2) Combined output reporting method

Generally one program was designed for each combined reporting method in Chapter 4.

However one program was designed for a group of combined output reporting methods as for Production Data Information group, Reserves Data Information group and Production Operation Information group, which are grouped avoiding repetition because of their resemblance among each other. As the results, one hundred and thirty-four (134) programs were designed for combined output reporting methods.

The above one hundred and fifty-six (156) programs were named and listed as shown in Table 6-1 of page 126 in accordance with the naming convention in Chapter 3.

Reference is made to APPENDIX VIII on the program specification of data base output processing and APPENDIX I on the layout of output reporting method. In this APPENDIX, here are described in detail, output reporting method, assignment parameter, segment name, master file name, output sequence, condition of changing page and supplementary explanation for output item.

#### (1) Flow of Data Base Output Processing

The process flow for output of data from data bases are described in Fig. 6-4 relating to the following processing.

- Check assignment parameters assigned in parameter cards by collating with pertinent master files, retrieve the data from data bases according to assignment parameters and output pertinent output report.
- Output the check list of assignment parameters.
- Output the cover list of output report.

#### (2) Program for Output Processing of Data Base

In this paragraph, a description is made on check of assignment parameters, preparation of table for data retrieval, output processing of check list of assignment parameters, output processing of cover list for output report and output processing of output reports as shown in Fig. 6-5.

**Fig. 6-4 Flow of Data Base Output Processing**

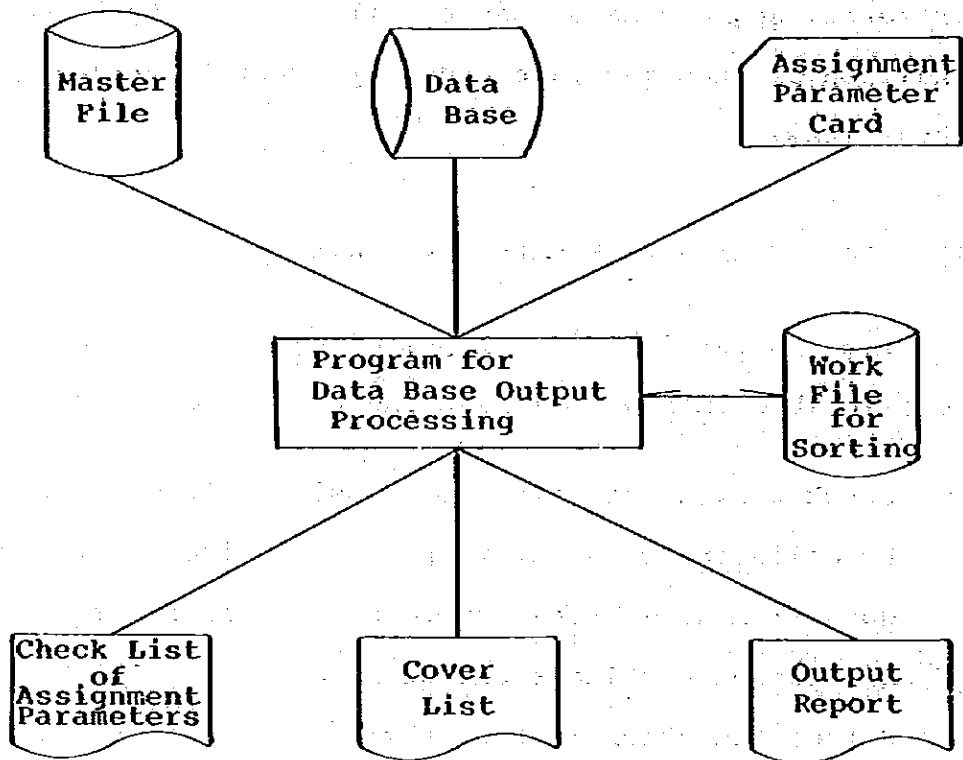
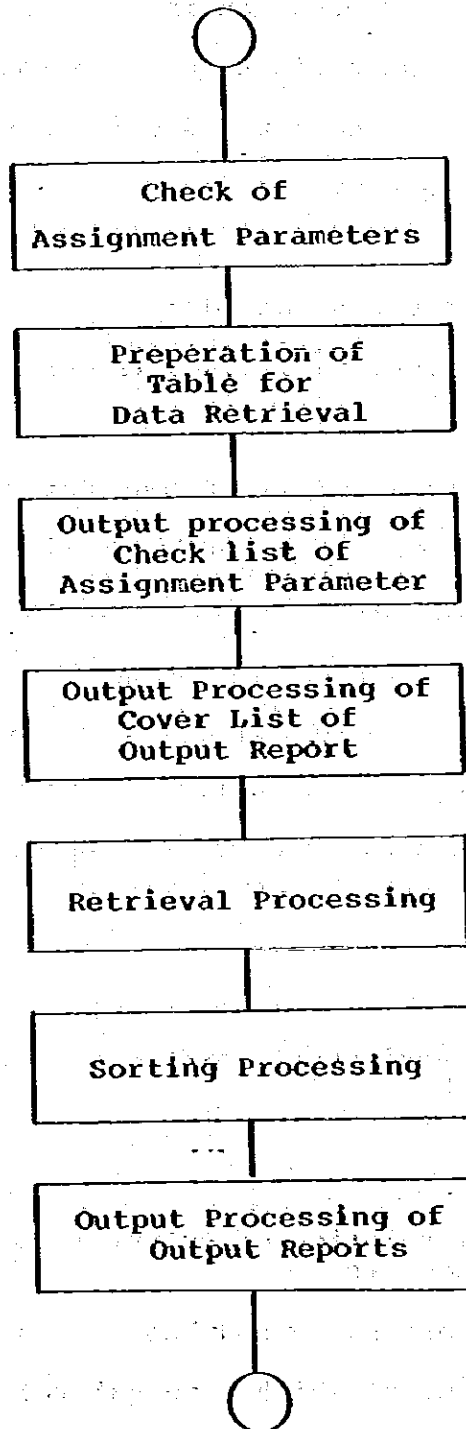


Fig. 6-5 Procedure of Data Base Output Processing



Reference is made to Chapter 4 on output reporting method, together with APPENDIXES I, II, III and IV.

1) Assignment card

There are a header card, an independent assignment card and the end card as the cards to be used for the execution of programs. APPENDIX II shows the detail of the way of handling and the layout of the above cards.

2) Check of assignment parameters

Check of assignment parameters is consisted of sequence check of assignment parameters, check of mutual relation of output reporting method and assignment parameters, code check, numeric check, check of upper and lower limits, and master file collation check, which is described in the following.

a. Sequence check of assignment parameters

If the following input order of assignment cards is broken, an error message, as described later in 6-3-(2)-4), would be output.

- 1) Header card
- 2) Independent assignment card
- 3) End card

b. Check of mutual relation of output reporting method and assignment parameters

Each output reporting method has an indispensable assignment parameters, of which a mutual relation is described in APPENDIX II.

If the mutual relation is broken in input processing, an error message, as described later in 6-3-(2)-4), would be output.

c. Code check

An error mark, as described later 6-3-(2)-4), would be output in case of assignment of the code which is not defined in APPENDIX IV.

d. Numeric check

An error mark, as described later in 6-3-(2)-4), would be output in case that data other than numeric data is assigned incorrectly for numeric data.

e. Check of upper and lower limits

In the following data for the assignment of interval, Data-I stands for a lower limit and Data-II stands for an upper limit. If  $\text{Data-I} > \text{Data-II}$ , and error mark, as described later in 6-3-(2)-4), would be output.

From Data-I to Data-II

f. Master file collation check

In assignment of the data to be stored in a master file such as Field master and Well master, it is indispensable to these data be stored in pertinent master file before output processing is performed. If these are not stored yet, an error mark, as described later in 6-3-(2)-4), would be output.

### 3) Preparation of table for data retrieval

As for preparation of table for data retrieval, a special attention should be paid to 6 ~ 11 of "Introductory Remarks" of APPENDIX II.

### 4) Output processing of check list of assignment parameter

The layout of the proof list for output of an error mark and an error message, of which are described into 6-3-(2)-2), is shown in page 123. Followings are output processes of the proof list.

- As for code check in 2)-c, numeric check in 2)-d, check of upper and lower limits in 2)-e and master file collation check in 2)-f, the item name of error data would be output together with "\*\*\*..." under the data.
- As for sequence check of assignment parameters in 2)-a and check of mutual relation of output reporting method and assignment parameters in 2)-b, following error messages would be output by kinds of errors.

<u>Error condition</u>	<u>Error message</u>
- The input order of assignment card is not correct.	INVALID ORDER
- Output reporting method is assigned incorrectly.	INVALID METHOD
- Indispensable assignment parameters are not input.	PARAMETER EXPECTED
- Improper assignment parameters are input.	UNAVAILABLE PARAMETER ASSIGNED
- There is logic contradictions among assignment parameters.	ERROR ON LOGICAL RELATION





5) Output processing of cover list of output report

In the page 37-42 of Chapter 4 is shown an example of cover list of output reporting method.

On the cover list, the followings are output, as shown in the example.

- The name and abbreviation of the output reporting method assigned by a header card
- "PERTAMINA UNIT EP-II"
- Assignment parameters assigned by a header card and independent assignment parameter cards\*
- The definition of "FISCAL YEAR", in case of using a fiscal year instead of calendar year, as described in 5 of "INTRODUCTORY REMARKS" of APPENDIX I.
- The full description for, such as, "\*1", "\*2" instead of headword described in 6 of "INTRODUCTORY REMARKS" of APPENDIX I.
- The definition of "HIGH EPRESSION GAS", "MEDIUM PRESSION GAS" and "LOW PRESSION GAS" described in 7 of "INTRODUCTORY REMARKS" of APPENDIX I.
- Date, month and year when the execution is carried out.

\* Note: Assignment parameters fixed in APPENDIX II for each output reporting method would be orderly output on the cover list in accordance with the format described in Table 6-2.

6) Output processing of output reports

In output processing of output reports, data is retrieved in accordance with the table of data retrieval in 6-3-(2)-3)

from data base described in 5-1 and APPENDIX III, edited and output in accordance with the layout of output reporting method in APPENDIX I.

Reference is made to APPENDIX VIII on a detail of data retrieval, editing and output processing.

Table 6-1    List of Output Program

<u>Abbreviation</u>	<u>Common Name</u>	<u>Program Name</u>	
(A - Geological Data and Contract Area Information)			
1)	A0-1, A0-11, A0-12	Contract area information	EPB50100
2)	A0-2	Geological survey report information	EPB50110
3)	A0-3	Geological analysis activity report information	EPB50120
4)	A0-4	Prospect information	EPB50130
5)	A0-5	Map and figure information	EPB50140
6)	A0-6	Report information	EPB50150
7)	A1	List of contract area	EPB50200
8)	A2	List of relinquished area	EPB50205
9)	A3	Geological survey list completed by year	EPB50210
10)	A4	Geological analysis activities list completed by year	EPB50215
11)	A5	Exploration activities summary completed by year	EPB50220
12)	A6	List of map and figure	EPB50225
13)	A7	List of report	EPB50230
14)	A8	Main lithological information summary by well	EPB50235
15)	A9	Lithological core description summary	EPB50240
16)	A10	Lithological side wall core description summary	EPB50245
17)	A11	Hydrocarbons indication summary	EPB50250
18)	A12	Correlation of formation tops	EPB50255

	<u>Abbreviation</u>	<u>Common Name</u>	<u>Program Name</u>
19)	A13	Estimated hydrocarbons in place and recoverable hydrocarbon resources	EPB50260
20)	A14	Estimated hydrocarbons in place by formation	EPB50265
21)	A15	Estimated hydrocarbons in place for prospect by type of trap	EPB50270

## (B - Geophysical Data Information)

1)	B0-1, B0-11 ~ B0-15	Seismic survey information	EPB51100
2)	B0-2, B0-21 ~ B0-24	Magnetics survey information	EPB51110
3)	B0-3, B0-31 B0-34	Gravity survey information	EPB51120
4)	B0-4	Well velocity survey information	EPB51130
5)	B0-5	Special study information	EPB51140
6)	B1	Geophysical survey list by year	EPB51200
7)	B2	Geophysical survey list by area	EPB51205
8)	B3	Summary of geophysical data processing	EPB51210
9)	B4	Summary of geophysical interpretation and special study	EPB51215
10)	B5	List of geophysical report by field or prospect name	EPB51220
11)	B6	List of geophysical map by field or prospect name	EPB51225
12)	B7	List of magnetic tape for geophysical survey	EPB51230
13)	B8	Summary of geophysical survey unit cost	EPB51235
14)	B9	Survey method for seismic survey	EPB51240

	<u>Abbreviation</u>	<u>Common Name</u>	<u>Program Name</u>
15)	B10	Total length for geophysical field operation	EPB51245
16)	B11	Total fuel for geophysical survey	EPB51250
17)	B12	Total explosive for seismic survey	EPB51255
18)	B13	Total geophysical survey cost by area	EPB51260
19)	B14	Total geophysical survey cost by year	EPB51265
20)	B15	List of geophysical report by survey	EPB51270
21)	B16	List of geophysical map by survey	EPB51275
22)	B17	List of seismic section by field or prospect	EPB51280

## (C - Well Data Information)

1)	C0-1, C0-11 ~ C0-16	Well data information	EPB52100
2)	C1	Well summary	EPB52200
3)	C2	Well list	EPB52205
4)	C3	Well completion summary	EPB52210
5)	C4	Completion record diagram	EPB52215
6)	C5	Drilling activity summary	EPB52220
7)	C6	Workover activity summary	EPB52225
8)	C7	Contractor	EPB52230
9)	C8	Hole and casing	EPB52235
10)	C9	Completion string specification	EPB52240
11)	C10	Rod pump summary	EPB52245
12)	C11	Submargible pump summary	EPB52250
13)	C12	Gas lift summary	EPB52255

	<u>Abbreviation</u>	<u>Common Name</u>	<u>Program Name</u>
14)	C13	Well head assembly summary	EPB52260
15)	C14	Bit record summary	EPB52265
16)	C15	Mud record summary	EPB52270
17)	C16	Primary cementing summary	EPB52275
18)	C17	Mud off test record summary	EPB52280
19)	C18	Downhole trouble summary	EPB52285
20)	C19	Abandonment record summary	EPB52290
21)	C20	Correlation of layer tops	EPB52295
22)	C21	Well log information summary	EPB52300
23)	C22	Mud log information summary	EPB52305
24)	C23	Coring information summary	EPB52310
25)	C24	Side wall sample information summary	EPB52315
26)	C25	Cutting sample information summary	EPB52320
27)	C26	Drill stem test information summary	EPB52325
28)	C27	Wireline formation test information summary	EPB52330
29)	C28	Yearly historical drilling statistics by field	EPB52335
30)	C29	Yearly historical drilling statistics by area	EPB52345
31)	C30	Well cost summary	EPB52345
32)	C31	Time analysis summary	EPB52350
33)	C32	Mud consumption summary	EPB52355
34)	C33	Cement consumption summary	EPB52360

<u>Abbreviation</u>	<u>Common Name</u>	<u>Program Name</u>
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## (D - Petrophysical and PVT Analysis Data Information)

1)	D0-1	Core and PVT analysis information	EPB53100
2)	D1	List of analysis report	EPB53200
3)	D2	Core analysis record	EPB53205
4)	D3	PVT analysis record	EPB53210

## (E - Production Information)

1)	E0-1	Production information	EPB54100
2)	E0-2	Injection information	EPB54110
3)	E1~E8	Monthly oil & total condensate and total gas production	EPB54200
4)	E9~E12	Monthly oil, gas cap condensate and non associated condensate production	EPB54205
5)	E13~E18	Monthly high pressure gas, medium pressure gas and low pressure gas production	EPB54210
6)	E19~E22	Monthly solution gas, gas cap gas and non associated gas production	EPB54215
7)	E23~E29	Historical monthly oil & total condensate and total gas production	EPB54220
8)	E30~E35	Historical monthly oil, gas cap condensate and non associated condensate production	EPB54225
9)	E36~E42	Historical monthly high pressure gas, medium pressure gas and low pressure gas production	EPB54230
10)	E43~E48	Historical monthly solution gas, gas cap gas and non associated gas production	EPB54235



	<u>Abbreviation</u>	<u>Common Name</u>	<u>Program Name</u>
11)	E49~E55	Historical yearly oil & total condensate and total gas production	EPB54240
12)	E56~E61	Historical yearly oil, gas cap condensate and non associated condensate production	EPB54245
13)	E62~E68	Historical yearly high pressure gas, medium pressure gas and low pressure gas production	EPB54250
14)	E69~E74	Historical yearly solution gas, gas cap gas and non associated gas production	EPB54255
15)	E101 ~ E112	Monthly injection	EPB54300
16)	E113 ~ E124	Historical monthly injection	EPB54310
17)	E125 ~ E136	Historical yearly injection	EPB54320
18)	E201, E202	Monthly gas consumption	EPB54400
19)	E203 ~ E205	Summary of monthly gas consumption	EPB54405
20)	E206 ~ E208	Historical monthly gas consumption	EPB54410
21)	E209 ~ E211	Summary of historical monthly gas consumption	EPB54415
22)	E212 ~ E214	Summary of historical monthly own use gas consumption	EPB54420
23)	E215 ~ E217	Summary of historical monthly process gas consumption	EPB54425
24)	E218 ~ E220	Historical yearly gas consumption	EPB54430
25)	E221 ~ E223	Summary of historical yearly gas consumption	EPB54435
26)	E224 ~ E226	Summary of historical yearly own use gas consumption	EPB54440

	<u>Abbreviation</u>	<u>Common Name</u>	<u>Program Name</u>
27)	E227 ~ E229	Summary of historical yearly process gas consumption	EPB54445
28)	E230	Monthly oil consumption by area	EPB54450
29)	E231, E232	Historical monthly oil consumption	EPB54455
30)	E233, E234	Historical yearly oil consumption	EPB54460
31)	E301, E302	Well status report for all wells	EPB54500
32)	E303, E304	Well status report for producer	EPB54505
33)	E305, E306	Well status report for injector	EPB54510
34)	E307, E308	Well status report for shut-in well	EPB54515
35)	E309, E310	Well status report for waiting well	EPB54520
36)	E311	Well status of reservoir unit	EPB54525
37)	E312, E313	Well status information	EPB54530

## (F - Reserves Data Information)

1)	F0-1	Reserves information	EPB55100
2)	F0-2	Reservoir parameter information	EPB55110
3)	F1~F4	Remaining reserves	EPB55200
4)	F5~F8	Initial hydrocarbon in place and recoverable hydrocarbon	EPB55210
5)	F9~F14	Historical remaining reserves summary	EPB55220
6)	F15	Reservoir parameter for oil zone	EPB55230
7)	F16	Reservoir parameter for gas cap zone and gas reservoir	EPB55240

<u>Abbreviation</u>	<u>Common Name</u>	<u>Program Name</u>
(G - Production Operation Date Information)		
1) G0-1, G0-11 ~ G0-15	Well test and stimulation information	EPB56100
2) G0-2, G0-21 ~ G0-24	Field laboratory fluid analysis information	EPB56110
3) G1	Production test result	EPB56200
4) G2	Injection test result	EPB56205
5) G3	Bottomhole pressure survey record diagram	EPB56210
6) G4	Current bottomhole pressure survey record	EPB56215
7) G5	Current buildup and falloff pressure survey result	EPB56220
8) G6	List of production log survey	EPB56225
9) G7	Stimulation job activity record	EPB56230
10) G8, G9	Field laboratory fluid analysis data summary	EPB56235
11) G10, G11	Field laboratory gas analysis data summary	EPB56240
12) G12, G13	Field laboratory water analysis data summary	EPB56245

## (H - Production Facilities Data Information)

1) H0-1, H0-11, H0-12	Station information	EPB57100
2) H0-2, H0-11, H0-12	Equipment information	EPB57110
3) H1	Summary of station	EPB57200

<u>Abbreviation</u>	<u>Common Name</u>	<u>Program Name</u>
4) H2	Station cost data by kind of station	EPB57205
5) H3	Station cost data by fiscal year	EPB57210
6) H4	Summary of equipment	EPB57215
7) H5	Equipment cost data by kind of equipment	EPB57220
8) H6	Equipment data by manufacturer	EPB57225
9) H7	Equipment cost data by fiscal year	EPB57230
10) H8	Summary of station modification	EPB57235
11) H9	Summary of equipment maintenance	EPB57240
12) H10	Equipment maintenance cost data by fiscal year	EPB57245
13) H11	System's equipment data	EPB57250

## (I - Pipeline Information)

1) I0-1, I0-11, I0-12	Pipeline information	EPB58100
2) I1	Summary of pipeline	EPB58200
3) I2	Pipeline cost data by kind of linepipe	EPB58205
4) I3	Pipeline cost data by fiscal year	EPB58210
5) I4	Summary of pipeline maintenance	EPB58215
6) I5	Pipeline maintenance cost data by fiscal year	EPB58220

Table 6-2 Format of Assignment parameter for cover list  
of Output Report method

(1/4)

Formats of "Row" and "Column"  
are referred to note 1:

ASSIGNMENT PARAMETER NAME	CODE or NAME	ARRANGEMENT	REMARKS
(COMMON)			
Province code	Name	Row	
Area code	Name	Row	
Field office code	Name	Row	
Field code	Name	Row	
Well code	Name	Column	
Station code	Name	Column	
Formation code	Name	Row	
Layer code	Name		See note 2
Reservoir unit code	Code		See note 3
Type of reservoir content	Name	Row	
Completion status	Name	Row	
Objective of well	Name	Row	
PERTAMINA or contractor	Name		
Kind of geophysical survey	Name	Row	
Kind of station	Name	Row	
Period			See note 6
Date			
(A-GEOLOGICAL DATA AND CONTRACT AREA INFORMATION)			
Kind of contract	Name	Row	
Contract code	Code	Column	
Contractor code	Name	Row	
Operator code	Name	Row	
Kind of geological survey	Name	Row	
Kind of geological analysis	Name	Row	
Geological survey code	Name	Column	
Point coordinate			See note 4
Scale			See note 5

ASSIGNMENT PARAMETER NAME	CODE or NAME	ARRANGEMENT	REMARKS
Sorting pattern	Name		
Type of trap	Name	Row	
Kind of map	Name	Row	
Kind of report	Name	Row	
Map code	Code	Column	
Report code	Code	Column	
( B-GEOPHYSICAL DATA INFORMATION )			
Method of survey	Name	Row	
Geophysical survey code	Code	Column	
Company code	Name	Row	
Kind of geophysical survey and study	Name	Row	
Kind of map	Name	Row	
Kind of report	Name	Row	
Horizon code	Name	Row	
Scale			
( C-WELL DATA INFORMATION )			
Objective of workover	Name	Row	
Workover number	Name	Row	
String specification	Name	Row	
Type of subsurface pump	Name	Row	
Macaroni pipe	Name	Row	
Bit size			
Kind of trouble	Name	Row	
Kind of log	Name	Row	
( D-PETROPHYSICAL AND PVT ANALYSIS DATA INFORMATION )			
Kind of petrophysical and PVT analysis	Name	Row	

ASSIGNMENT PARAMETER NAME	CODE or NAME	ARRANGEMENT	REMARKS
Kind of analysis performed	Name	Row	
Petrophysical and PVT analysis code	Code	Column	
( E-PRODUCTION INFORMATION )			
String system code	Name	Row	
Kind of completed zone	Name	Row	
Well status	Code	Column	
Kind of pressure for gas	Name	Row	
Water cut			See note 6
Gas-oil ratio			See note 6
History of recompletion	Name	Row	
Kind of injection fluid	Name	Row	
( F-RESERVES DATA INFORMATION )			
Development status of reservoir unit	Name	Row	
Kind of reserves	Name	Row	
Kind of recovery method	Name	Row	
Abandoned condition for gas cap zone and gas reservoir	Name	Row	
( G-PRODUCTION OPERATION DATA INFORMATION )			
Workover number	Name	Row	
Kind or type of well test and stimulation	Name	Row	
Well test and stimulation code	Code	Column	
Well or station	Name	Row	
Field laboratory fluid analysis code	Code	Column	

ASSIGNMENT PARAMETER NAME	CODE or NAME	ARRANGEMENT	REMARKS
<b>( H-PRODUCTION FACILITIES DATA INFORMATION )</b>			
Result of inspection	Name	Row	
"Written off" or "Not" for equipment	Name	Row	
Kind of equipment	Name	Row	
Main specification			See note 6
Equipment code	Code	Column	
Manufacturer code	Name	Row	
<b>( I-PIPELINE INFORMATION )</b>			
Kind of linepipe	Name	Row	
Nominal size			See note 6
Result of inspection	Name	Row	
"Written off" or "Not" for pipeline	Name	Row	
Pipeline code	Code	Column	



Note 1

- Row:

Province code

PROVINCE: JAMBI  
S.SUMATRA  
RIAU  
W.JAVA

- Column:

Well code

WELL NAME: LBA-M001, LBA-M002, LBA-M003,  
LBA-M004, LBA-M005, LBB-M001

Note 2

LAYER NAME: [ #1 ] - [ #2 ], [ #2 ], [ #2 ]

#1 Abbreviation of field name  
#2 Layer name

Note 3

RESERVOIR UNIT CODE: [ #1 ] - [ #2 ], [ #2 ], [ #2 ]

#1 Abbreviation of field name  
#2 Reservoir unit code

Note 4

POINT COORDINATE

LATITUDE: +999.99.99 [S] or [N]  
LONGITUDE: 999.99.99 [E]

Note 5

SCALE: 1:99,999

Note 6

[ #1 ] : [ #2 ] - [ #3 ]

#1 Assignment parameter name  
#2 From  
#3 To



**Chapter 7.**

**A PLAN FOR COMPUTER APPLICATION AND INTRODUCTION  
TO PERTAMINA UNIT EP-II  
COMPUTER SYSTEM**



## Chapter 7 A Plan for Computer Application and Introduction to PERTAMINA Unit II Computer System

For the purpose of the establishment of the Petroleum Exploration and Production Data Bank System, the computer application and the introduction of the designed system to PERTAMINA Unit II computer system, and the establishment and the management of the data base will have to be performed successively after the detailed system design.

In this chapter, a plan for the implementation of the computer application and the introduction of the system is proposed, which has been made on the basis of the program specification described in Chapter 6.

Firstly an estimation was made on the number of the line statements of programs to be coded, secondly an analysis was made on the job to be performed, thirdly an estimation was made on the manpower by the kinds of job to be required and finally planning was made for the implementation of the computer application and the introduction of the system.

Taking Indonesian requirements into consideration, here were designed three hundred and thirty (330) output reporting methods, which are considered rather complicated to handle.

A number of the required line statements for programs was estimated 379,500 in 7-(1) mainly on the basis of the above three hundred and thirty (330) output reporting methods.

However, it is predicted that, more or less, seventy (70) percent of the above three hundred and thirty (330) will be properly made use of taking accounts of an availability of field data and an efficiency of the management of the system.

In this chapter, the manpower to be required was estimated in 7-(3) on the basis of the seventy (70) percent of 379,500 line statements.

It is recommended that the Indonesian counterpart put the priority order for each output reporting methods mentioned above and select the output reporting methods which will be essential. Since the layout of the output reporting method is detailed in the form of the actual computer output as described in APPENDIX I, Indonesian side will be able to make the proper selection by which the best system will be established.

#### (1) Estimation of Line Statement Number of Programs

The program specification is described in APPENDIX VI for master file processing, in APPENDIX VII for data base input processing and in APPENDIX VIII for data base output processing respectively.

On the basis of the above program specification, an estimation is made 379,500, as follows, for the number of line statements for data base input and output processing and master file processing.

1) Data base input and output processing

	<u>Input processing</u>	<u>Output processing</u>	<u>Total</u>
A-Geological Data and Contract Area Informa- tion	13,400	12,000	25,400
B-Geophysical Data Information	23,900	29,000	52,900
C-Well Data Information	56,300	29,000	85,300
D-Petrophysical and PVT Analysis Data Informa- tion	2,000	2,000	4,000
E-Production Data Information	9,800	71,000	80,800
F-Reserves Data Information	13,600	41,000	54,600
G-Production Operation Data Information	17,100	15,600	32,100
H-Production Facilities Data Information	17,300	15,000	32,300
I-Pipeline Data Information	4,100	4,000	8,100
<b>Subtotal</b>	<b>157,500</b>	<b>218,000</b>	<b>375,500</b>

2) Master file processing

Field master, Well master Zone master and Company master	2,000	2,000	4,000
<b>Grand total</b>	<b>159,500</b>	<b>220,000</b>	<b>379,500</b>

## **(2) Job for Computer Application and Introduction**

As for the computer application and introduction of the system to the computer system, the job was analyzed and itemized as follows.

### **I. Programming**

- 1) Preparation for programming**
- 2) Coding**
- 3) Preparation of test data**
- 4) Program test**
- 5) Drafting input data sheet**

### **II. Introduction of the system**

### **III. Preparation of manual**

As for items mentioned above, a description is made on the detail as follows.

### **I. Programming**

In preparation for programming, an analysis is made in detail on the programs and the way of coding program is established.

For the purpose of promoting an efficiency, the following jobs will be firstly carried out.

- Standardization of coding**
- Preparation of common program modules**
- Preparation of model programs**



At the same time, an adaptability of the system to IMS will be investigated through the programs which will be prepared specially for the test.

The number of line statements of programs will be estimated then the order of coding will be determined, and finally the implementation schedule of coding will be established, so that programmer's share of the work will be efficiently allocated. The coding will be carried out in accordance with the above schedule in the following order.

- Preparation of copy library
- Division of a program into subprogram, if necessary
- Preparation of programs
- desk debugging
- compilation

The compiled programs will be tested and stored in magnetic tapes in an almost completed form.

For this purpose, firstly Job Control Language will be prepared, test data prepared and then test runs carried out.

On the basis of the results of the above test runs and requirements of the Indonesian counterpart, data sheet for input data will be drafted, which will be finalized taking field conditions into consideration after the introduction of the system to PERTAMINA Unit II computer system.

## II. Introduction of the system

Programs prepared, tested and stored in magnetic tapes in Tokyo, will be transported to PERTAMINA Unit-II computer systems.

For the purpose of the introducing the system to PERTAMINA Unit-II computer system, the followings will be carried out with the assistance of the Indonesian counterpart.

- Introduction of programs
- Creation of data base
- Preparation of Job Control Language
- Comprehensive test and demonstration
- Establishment of input-output procedure

## III. Preparation of manual

On the basis of the results of the introduction described in (2)-II, the following manual will be prepared finally.

- System manual
- Program manual
- Run book
- Instruction manual for input-output procedure

### (3) Manpower to be required

The manpower to be required for the implementation of the job described in 7-(2) is estimated in a man-month unit, as

follows, on the basis of  $379,500 \times 0.7 = 265,650$  line statements.

#### I. Programming

##### 1) Preparation for programming

- Senior engineer	10
- Engineer	5

##### 2) Coding, preparation of test data and program test

- Senior engineer	36
- Engineer	215

##### 3) Drafting input data sheet

- Senior engineer	3
- Engineer	5

---

(Total)	274
---------	-----

#### II. Introduction to the system

- Senior engineer	20
-------------------	----

#### III. Preparation of manual

- Senior engineer	7
- Engineer	5

---

(Total)	12
---------	----

Grand Total	306
-------------	-----

As for preparation of programs in I, an approximate machine time of 30 hours for central processing unit and 138 hours for channel unit of IBM 370-168 will be required for

debugging and test runs.

As for introduction to PERTAMINA Unit-II computer system, it is imperative for introducer to be able to use the computer under a favorable condition.

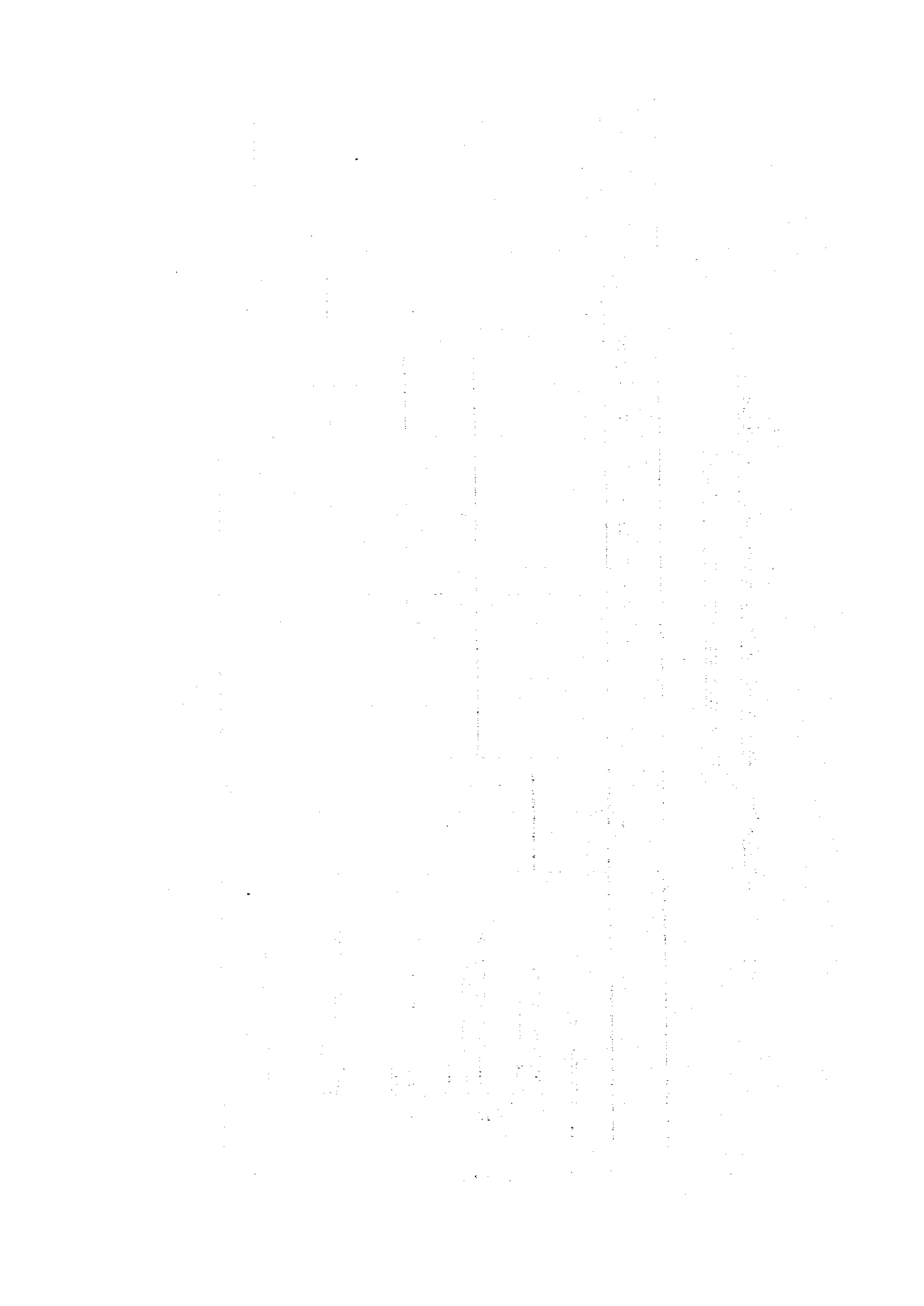
#### (4) A Time Schedule of Implementation

In Table 7-1 are shown a time schedule of the implementation of the computer application and the introduction of the system to PERTAMINA Unit-II computer system.

Since this is one proposal on the basis of the manpower estimated in 7-(3), there should be alternatives adjusting number of programmers to be involved at the same time.

Table 7-1 Work Schedule for Programming, Introduction of the System and Preparation of Manual

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	(month)	
I. Programming																																
(1) Preparation for Programming																																
(2) Coding, preparation of test data and program test																																
(3) Drafting input data sheet																																
II. Introduction of the system																																
III. Preparation of manual																																



REFERENCE I

SCOPE OF WORK FOR THE TECHNICAL COOPERATION OF  
THE PETROLEUM EXPLORATION AND PRODUCTION DATA  
BANK SYSTEM DEVELOPMENT PROJECT (CTA-71)

AND

MINUTES OF MEETING ON THE TECHNICAL COOPERATION  
FOR THE DETAILED DESIGN OF THE PETROLEUM  
EXPLORATION AND PRODUCTION DATA BANK SYSTEM  
DEVELOPMENT PROJECT IN THE REPUBLIC OF INDONESIA





1. SCOPE OF WORK FOR THE TECHNICAL COOPERATION OF THE  
PETROLEUM EXPLORATION AND PRODUCTION DATA BANK SYSTEM  
DEVELOPMENT PROJECT (CTA-71)

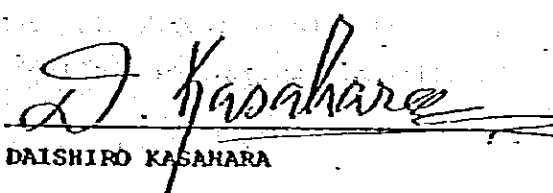


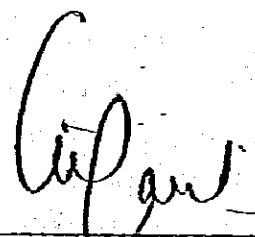
SCOPE OF WORK FOR  
THE TECHNICAL COOPERATION OF THE  
PETROLEUM EXPLORATION AND PRODUCTION DATA  
BANK SYSTEM DEVELOPMENT PROJECT (CTA-71)

AGREED BETWEEN  
THE DEPARTMENT OF MINES AND ENERGY  
OF THE REPUBLIC OF INDONESIA

A N D

THE JAPANESE MISSION FOR THE PETROLEUM EXPLORATION  
AND PRODUCTION DATA BANK DEVELOPMENT PROJECT IN  
THE REPUBLIC OF INDONESIA  
SEPTEMBER 30, 1980

  
DAISHIRO KASAHARA

  
Ir. WIJARSO

B/H

Leader of the Petroleum  
Exploration and Production  
Data Bank System Development  
Project Team, Japan International  
Cooperation Agency (JICA)

Director General of Oil and Gas  
Department of Mines and Energy,  
Republic of Indonesia

On this, "JICA" refers to the Japan International Cooperation Agency and "Indonesian Side" refers to the Department of Mines and Energy of the Republic of Indonesia.

#### 1. Reference

Reference is made to the following reports, which are the outcome of the technical cooperation having been performed since 1978 by JICA.

- (1) Survey Report on the Petroleum and Production Data Bank System Development Project in the Republic of Indonesia, August, 1979 (hereinafter called "Report A").
- (2) Report of Conceptual System Design on the Petroleum Exploration and Production Data Bank System Development Project in the Republic of Indonesia, August, 1980 (hereinafter called "Report B").

#### 2. Objective

The objective is to conduct the technical cooperation described in 3, in establishing the Petroleum Exploration and Production Data Bank System in the Republic of Indonesia.

#### 3. Scope and Program of the Technical Cooperation

- (1) The cooperation will be performed during the period from October 1, 1980 to the end of September, 1981, but the cooperation performed during the period from April 1 to September 30, 1981 can only be done subject to the official approval of the 1981's budget to be settled.
- (2) Scope of the technical cooperation during the period as described in 3-(1) will be limited to the extent of the detail design of the system which has been conceived in Report B and, as described in Report A, consist of :

- a. Preparation of a draft report of detail system design
- b. Presentation of the draft report to the Indonesian side
- c. Preparation of a final report of detail system design

As for "a. Preparation of a draft report of detail system design", a detail work procedure is itemized, together with a brief description of the work, in Exhibit 1.

- (3) Time schedule for the performance of the said technical cooperation is shown in Table 1.

#### 4. Collaboration of JICA

- (1) JICA will perform the work within the scope described in 3-(2) according to the schedule described in 3-(3) at his control.
- (2) For the performance of the work of 3-(2)-b, JICA will send five experts to the Republic of Indonesia for about one month from the beginning of May, 1981.
- (3) JICA will submit to Indonesian Side the following reports :
  - a. Thirty (30) copies of draft text of report and ten (10) copies of draft appendix to the report of detail system design at the time of arrival of JICA mission described in 4-(2) in the Republic of Indonesia.
  - b. Thirty (30) copies of text of a final report and ten (10) copies of appendix to the report of detail system design within two months after the completion of presentation in 3-(2)-b.
- (4) JICA will receive participants as counterpart during the performance of the work within the scope of work described in 3-(2) of total thirteen (13) man-months in accordance with schedule described in Table 2 in order to transfer technical know-how to Indonesian Side related to the project concerned.

- (5) As for 13 man-months of participations described in 4-(4), JICA will provide the necessary living expenses for 3 man-months and international air flight fares for two complete tickets of Indonesia - Japan in accordance with JICA's rules and regulations.

5. Collaboration of Indonesian Side

- (1) Indonesian Side will nominate a counterpart group and a project coordinator who is in charge of the execution of the Indonesian Side's collaboration described hereunder.
- (2) Indonesian Side can dispatch Indonesian experts as counterpart during the performance of the work within the scope of work described in 3-(2) of thirteen (13) man-months to Japan under Indonesia's expenses except the case described in 4-(5) to get technology transfer in accordance with participation program described in Table 2.
- (3) Indonesian Side will collaborate with JICA mission for presentation of the draft report described in 3-(2)-b in their stay in the Republic of Indonesia :
- a. Assisting the JICA mission to obtain necessary formalities, if required.
  - b. Arranging the exemption for the members of JICA mission from import and export duties imposed on the member's personal effects.
  - c. Providing the JICA mission a suitable office and supporting facilities in locations of their stay.
  - d. Providing the JICA mission the available documents, data and information related to the project.
  - e. Providing the JICA mission a suitable local transportation to enable them to perform their work efficiently.



DF

Table-2

PARTICIPATION PROGRAM FOR TECHNICAL COOPERATION

1980		1981			TOTAL MAN MONTHS	
Oct.	Nov.	Dec.	Jan.	Feb.		Mar.
3 1/2 (4) Expert		1 (1) Expert				4 m.m.
	1 (1) DBA	1 (1) DBA				2 m.m.
						2 m.m.
						2 m.m.
						2 m.m.
						1 m.m.
Ex 3 1/2 (4)						13 m.m.

Preparation of Draft Report

- (1) Design of system function
  - a) design of output format
  - b) design of data check list
  - c) design of input data layout
  - d) design of instruction parameter card
  - e) design of input/output and data base processing
- (2) Design of data base and files
  - a) design of data base structure
  - b) description of data
  - c) preparation of master/table file specification
  - d) design of back-up recovery and restart procedure
- (3) Preparation of program specification
  - a) preparation of program list
  - b) determination of function and constituent of program
  - c) description of processing in program
  - d) description of table and file
  - e) description of input/output
  - f) instruction for coding rule
- (4) Planning of debugging and test run

3.5.5



Exhibit - 1

The work for Preparation of a Draft Report of Detail System Design

A detail work procedure for detail system design is itemized as follows.

1. Design of system function
  - (1) Design of output format
  - (2) Design of data check list
  - (3) Design of input data layout
  - (4) Design of instruction parameter card
  - (5) Design of input/output and data base processing
  
2. Design of data and file
  - (1) Design of data base structure
  - (2) Description of data
  - (3) Preparation of master/table file specification
  - (4) Design of back-up recovery and restart procedure
  
3. Preparation of program specification
  - (1) Preparation of program list
  - (2) Determination of function and constituent of program
  - (3) Description of processing in program
  - (4) Description of table and file
  - (5) Description of input/output
  - (6) Instruction for coding rule
  
4. Planning of debugging and test run

As regards output report of which kind is already determined in conceptual system design, their format will be designed in detail in the actual printed-out form and also their processing method will be determined in this step. The input layout will be designed for the input data item to be stored in the data base of the Data Bank System. At the same time, the data check method will be designed and the data entry system preventing an error data from storing will be established.

D.H.

B.S.S.

Data structure of the data base and master/table file will be designed for the purpose of making it efficient to store the input data into storage device and to retrieve these data from the data base and files. As a result, the program specification report for making the programs to be equipment for the Data Bank System will be prepared, and the report should include a planning of debugging and test method of programs.

The results of detail system designing work will be summarized in a draft report of detail system design.

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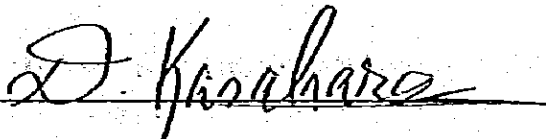
D.H.

2. MINUTES OF MEETING ON THE TECHNICAL COOPERATION FOR THE  
DETAIL DESIGN OF THE PETROLEUM EXPLORATION AND PRODUCTION  
DATA BANK SYSTEM DEVELOPMENT PROJECT IN THE REPUBLIC OF  
INDONESIA



MINUTES OF MEETING  
ON  
THE TECHNICAL COOPERATION FOR THE DETAIL DESIGN OF THE  
PETROLEUM EXPLORATION AND PRODUCTION DATA BANK  
SYSTEM DEVELOPMENT PROJECT  
IN  
THE REPUBLIC OF INDONESIA

SEPTEMBER 30, 1980



DAISHIRO KASAHARA

Team Leader of the Japanese  
Mission for the Petroleum Expl.  
and Prod. Data Bank System  
Development Project, Japan  
International Cooperation Agency



B.S. SITOEMORANG

Coordinator  
The Indonesian Counterpart  
for the Petroleum Expl.  
and Production Data Bank  
System Development Project,  
Department of Mines and Energy

MINUTES OF MEETING

**Subject** : The technical cooperation of the Petroleum Exploration and Production Data Bank System Development Project.

**Date on** : September 26 and 29, 1980.

**Place in** : Pertamina Head Office  
Jl. Merdeka Timur 1A, Jakarta - Indonesia.

**Attendants** : As in appendix-1.

The meeting has been opened by Mr. B.S. Sitoemorang the project coordinator of the Indonesian side and attended by Mr. Daishiro Kasahara the Team Leader of the Project as well as by Mr. Isao Asai both of the JICA mission.

The objective of the meeting is to discuss and finalize the scope of work for technical cooperation of the detail design of the Petroleum Exploration and Production Data Bank System Development Project in the Republic of Indonesia.

After discussing both parties have agreed "the scope of work for the technical cooperation of the detail design of the Petroleum Exploration and Production Data Bank System Development Project". During the course of discussion followings have been noted,

1. JICA mission recommends that Indonesian engineer, geologist/geophysicist and computer specialist who have participated in the conceptual system design will also participate in the detail design work.
2. The Indonesian counterpart team should prepare coding system before the completion of the detail system design and will consult with their Japanese counterparts about its development.
3. Indonesian counterparts are recommended to bring examples of data to be used during their participation period.

*D.H.*

*B.S.S.*

4. Data Base Naming Convention Proposed by Indonesian counterparts will be discussed in Tokyo on the flexibility in case of Data Base Development and a future modification.
5. Indonesian Side will inform JICA/JOE of his schedule at each participation in advance one week before.
6. The performance of the work for the detail design of the Data Bank System Development Project which will be at the control of JICA should be done in accordance with the plans formulated for achieving its objectives.

---

*D.H.*

*B.S.S -*

ATTENDANT LIST IN INDONESIA

## 1. INDONESIA SIDE :

B.S. Sitoemorang	EP - Pertamina	Coordinator
Erwin Kasim	BPD - Pertamina	
Sudjana D.A.	BPD - Pertamina	
Soepraptono	EP - Migas	
Lili Harballi	BPD - Pertamina	
Agung Witono	BPD - Pertamina	
Sumantri	RES/ENG - Pertamina	
Djumero	RES/ENG - Pertamina	
Zainal Achmad	Exploration - UEP II Pertamina	
Rohali Sani	Migas	

## 2. JAPAN SIDE :

Daishiro Kasahara	JICA	Team Leader
Isao Asai	JICA	



**REFERENCE II**

**INDONESIAN PARTICIPANTS' ACTIVITY REPORT**



Tokyo, Nov. 18, 1980

To Mr. B.S. Sitoemorang

The Petroleum Exploration and Production  
Data Bank System Development Project  
PERTAMINA Team Leader..

Re; Memorandum No.1 on the Indonesian  
Participants' Activity in the  
Detailed Design Work for the  
Petroleum Exploration and Produc-  
tion Data Bank System Development  
Project.

Dear Mr. B.S. Sitoemorang

Following is the memorandum No.1 on the Indonesian Participants' Activity during the period between Oct. 21 and Nov. 18, 1980 in the detailed design work for the Petroleum Exploration and Production Data Bank System Development Project. This memorandum consists of Participants' Activity Record, Work Progress and Record of Discussion.

1. Participants' Activity Record

The plenary meetings between participants and JOE were held 1 time during the period. The résumé of the said meetings was summarized in Table-1. Also reference is made to Table-2 on the respective participants' activity record.

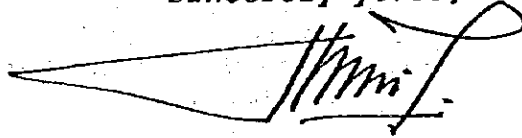
2. Work Progress

The work progress as to the detailed design work for the subject was reported by JOE as in Table-3.

**3. Record of Discussion**

Record of discussion conducting by subteam during the participation Period is presented to herewith as Attachment I.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'Suwito Rudyatmoko', written over a horizontal line. The signature is stylized and cursive.

**Suwito Rudyatmoko**

- cc: - R. S. Robot  
Head of Data Processing Bureau
- B. Malana  
Ka. Din. Prod. Migas Dit. EP
- G. A. S. Najoran  
Ka. Din. Eks. Migas Dit. EP
- A. K. Soejoso  
PUEP II

Table-1

The résumé of the plenary meeting

Meeting dated on October 21, 1980

Place ; JOE conference room

Attendants ;

(Indonesian side)

Messrs. B.S. Sitoemorang	Team Leader
Suwito Rudyatmoko	Production Engineer
Djumero Saindrodjojo	Reservoir Engineer
Madjid Rachman	Production Engineer
Zanial Ahmad	Geologist
Agung Witono	Data Base Administrator

(JOE side)

Messrs. D. Kasahara	Team Leader
E. Ezoe	Mechanical Engineer
H. Takizawa	Geologist
H. Kusano	Drilling Engineer
A. Shibuya	Geophysicist
H. Isono	System Analyst
T. Ichinokawa	System Analyst
S. Tai	System Analyst
K. Kobayashi	System Analyst

Main Agenda;

- Introduction of Attendants
- Discussion on Participation Schedule

Table-2 Participants' Activity Record

<u>Name</u>	<u>Working Period</u>	<u>Main Work Performed</u>	<u>Remarks</u>
A.M. RACHMAN (Production Eng.)	Oct. 21, 1980	- Courtesy call to Mr. D. Kasahara and staffs of JOE	Arriving in Tokyo on Oct. 21, 1980
	Oct. 22 - 31, 1980	- Discussion on participation schedule	Leaving Tokyo on Nov. 3, 1980
		- Checking the output format for Production Facilities and Pipeline Data Information	
		- Settlement of output format, selection and correction of wordings and units for Production Facilities and Pipeline Data Information	
		- Proposal of identification code of Countries' name for equipments supplier for Field Facilities and Pipeline	
	Oct. 23, 1980	- Courtesy call to Pertamina Representative in Tokyo	
Zanial Achmad (Geologist)	Oct. 21, 1980	- Arriving in Tokyo	Arriving in Tokyo on Oct. 21, 1980
	Oct. 23, 1980	- Courtesy call to Pertamina Representative	Leaving Tokyo on Nov. 19, 1980
	Oct. 21 - 24, 1980	- Discussion on Working Schedule	
		- Study on the coding system and output format designed by JOE	
	Nov. 27 - 31, 1980	- Discussion and correction of output data for Geological and Confract area information.	

Remarks

Main Work Performed

Working Period

Name

<u>Name</u>	<u>Working Period</u>	<u>Main Work Performed</u>	<u>Remarks</u>
Suwito Rudyatmoko (Production Engineer)	Oct. 24 - Nov. 14	<ul style="list-style-type: none"><li>- Review the output format</li><li>- Discussed with the counterpart if there is any modification or alteration of the format, wording or any other matters.</li><li>- Prepared, discussed and established new format after modification and/or alteration.</li><li>- Discussed and established the Coding method and abbreviation of the output data.</li></ul>	
	Nov. 17 - 18, 1980	<ul style="list-style-type: none"><li>- Reporting</li><li>- Courtesy call to Pertamina Representative.</li></ul>	
Sumantri (Reservoir Engineer)		<ul style="list-style-type: none"><li>- Joined Pertamina Team two days in a week, assisting Suwito and Djumero.</li></ul>	
Djumero Saindrodjojo (Reservoir Engineer)	Oct. 21, 1980	<ul style="list-style-type: none"><li>- Arriving in Tokyo</li></ul>	Arriving in Tokyo on Oct. 21, 1980
	Oct. 21, 1980	<ul style="list-style-type: none"><li>- Discussion on working schedule</li></ul>	
	Oct. 23, 1980	<ul style="list-style-type: none"><li>- Courtesy call to Pertamina Representative in Tokyo.</li></ul>	Leaving Tokyo on Nov. 19, 1980
	Oct. 21, 1980 - Nov. 18, 1980	<ul style="list-style-type: none"><li>- Discussion and correction of Output Format for D, E and F files.</li><li>- Discussion Source document of D, E, F files.</li></ul>	

<u>Name</u>	<u>Working Period</u>	<u>Main Work Performed</u>	<u>Remarks</u>
		<ul style="list-style-type: none"> <li>- Special discussion for D file with Mr. D. Kasahara.</li> <li>- Discussion data input for E file of M.R.P.W., P.D.R., B.S. program at Pdaju.</li> <li>- Discussion for well master and Zone master of master file.</li> <li>- Courtesy call to Pertamina Representative.</li> <li>- Leaving for Jakarta.</li> </ul>	
	Nov. 17, 1980		
	Nov. 19, 1980		
Agung Witono (Data Base Administrator)	Oct. 21, 1980	- Courtesy call to Mr. D. Kasahara and staffs of JOB.	Arriving in Tokyo on Oct. 21, 1980
	Oct. 22, 1980	- Study of data base structure.	Leaving Tokyo on Nov. 19, 1980
	Oct. 23, 1980	- Discussion with Mr. Isono, Mr. Tai & Mr. Ichinokawa about: <ul style="list-style-type: none"> <li>. Data base structure.</li> <li>. Scope of work DBA on detailed design.</li> <li>. Working schedule.</li> </ul>	
	Oct. 24 - Nov. 7, 1980	- Courtesy call to Pertamina Representative.	
	Nov. 14, 1980	- Study detailed data base structure & application by preparing UCC-10 transaction.	
	Nov. 17, 1980	- Discussion with Mr. Isono, Mr. Tai & Mr. Kobayashi about data base specification.	
	Nov. 17, 1980	- Pertamina Representative.	



Table - 3

Work Progress of Detailed Design Work for Petroleum  
Exploration and Production Data Bank System of  
PERTAMINA UNIT EP-II

<u>Item Performed</u>	<u>Performance of Progress</u>
1. Design of system function	
(1) Design of output format .....	80%
(2) Design of data check list .....	30%
(3) Design of input data layout .....	20%
(4) Design of instruction parameter card .....	30%
(5) Design of input/output and data base processing .....	30%
2. Design of data and file	
(1) Design of data base structure .....	80%
(2) Description of data .....	70%
(3) Preparation of master/table file specification .....	80%
(4) Design of back-up recovery and restart procedure .....	30%
3. Preparation of program specification	
(1) Preparation of program list .....	20%
(2) Determination of function and constituent of Program .....	20%
(3) Description of processing in program .....	20%
(4) Description of table and file .....	50%
(5) Description of input/output .....	30%
(6) Instruction for coding rule .....	-
4. Planning of debugging and test run .....	-

**Attachment I**

**Record of Discussion Conducted by Subteam**  
**During the Participation Period**

Sub-team I

A-Geological Data and Contract Area Information and  
B-Geophysical Data Information Groups

Coding System

1. COMMON

(1) Province Code

- Addition of West Java Province (coded as 7) and West Kalimantan (coded as 8) to the proposed six provinces coding classification.

(2) Area Code

- Alteration of "Musi District" to "Musi Klingi"
- "Area names" are corrected as follows

code	area name	abbreviation
01	Kompleks Palembang Selatan	KPS
02	Kompleks Palembang Tengah	KPT
03	Musi Klingi	MSK
04	Jambi	JBI

(3) Prospect/Field Code

- Explanation of present prospect list and coding system will be given after discussion of field code grouped in F-Information group by PERTAMINA.

(4) Formation Code

- Correction of name and abbreviation of "Muara" (coded as 02) to "Muara Enim" and abbreviated as MEF.

(5) Map Code

- Length of reference code no. corrected to 7 digits.
- List of reference no. will be decided by PERTAMINA.

(6) Report Code

- Length of reference code no. corrected to 7 digits.
- List of report reference no. will be completed by PERTAMINA.

(7) Flag Code of PERTAMINA or Foreign contractor

- Correction of wording of "foreign contractor" to "contractor".

2. A-GEOLOGICAL DATA AND CONTRACT AREA INFORMATION GROUP

(1) Kind of Contract

- Classification code of kind of contract was completed.

(2) Contract Code

- List of contract since 1967 and coding system was completed.

(3) Contractor Code

- Length of contractor code is decided as 3 digits.
- List of contractor since 1967 and coding system was decided by PERTAMINA.

(4) Operator Code

- This coding system is newly added to the A-Information Group.
- Length of operator code is decided as 3 digits.
- List of operator since 1967 and coding system was established by PERTAMINA.

(5) Kind of Geological Survey

- Classification code of "kind of geological survey" was established.

(6) Geological Survey Code

- Sequence no. for "geological survey code" is decided as 3 digits.
- PERTAMINA will prepare the sequence no. considering to the actual usage.

(7) Type of Map, Figure and Report

- This classification code is re-classified as follows

code	
1	Surveyed area map
2	Main map prepared by survey
3	Other map prepared by survey
4	Main figure prepared by survey
5	Other figure prepared by survey
6	Survey report

(8) Kind of geological analysis

- Three abbreviation names are changed as follows.

code	analysis name	old abbrev.		new abbrev.
31	carbonate rock analysis	CBR	to	CBA
32	clastic rock analysis	CLR	to	CRA
33	other lithological analysis	OLT	to	OLA

(9) Geological Analysis Code

- Length of sequence number is decided as 3 digits.
- Sequence number will be decided after finishing the inventories of actual data in PERTAMINA UFP-II.

(10) Sample source for Analysis

- Item name of "sample source for analysis" is corrected to "analysis subject".

(11) Kind of sample

- Classification code of "kind of sample" is completed according to the manner of the proposal.

(12) Type of Trap

- This coding system is completed according the manner of the proposal.

(13) Type of Figure and Report

- This coding system is completed according to the manner of proposal

(14) Kind of Analysis Performed

- Correction of wording "shaving analysis" to "sieving analysis".

(15) Kind of Map and Figure

- Addition of "Areal photographic map" (coded as 17) to "General map classification".
- Introduced "Biostratigraphic cross-section" (coded as 53) and altered the code no. 53 for "other cross-section" to code no. 54.
- Correction of item name "chart" to chart/column (coded as 60)
- Correction of item name ; " Geological correlation chart" to " Stratigraphic column/well section" (coded as 61).

(16) Kind of Report

- "General report" added to kind of report classification and coded as 19.

## Output Reporting Method

### 1. A- GEOLOGICAL DATA AND CONTRACT AREA INFORMATION GROUP

#### (1) A0-1, A0-11, A0-12

- Correction of wording
  - "Right holder's area" to "Contract area"
  - "Ratio of area size" to "Ratio to original size"
- "Point name" is newly selected as output item taking account of the actual numbering system of PERTAMINA UEP-II.
- Reference list between point name and point number should be established by PERTAMINA.
- "Operator name"-added as assignment parameter and output item.
- Addition "drawing no. as output item

#### (2) A0-2

- Correction of data properties of exchange rate to 9(4)v(2)
- Addition of "drawing no." as output item after "Identification no." in the list of main map , figure and report.
- "Horizontal scale" should be placed in first priority before "vertical scale" in this output method.

#### (3) A0-3

- Correction of wording
  - "Sample source" to "subject of analysis"
  - "Unit cost" to "total cost"
- "Horizontal scale" should be placed in first priority before "vertical scale".

#### (4) A0-4

- Correction of wording
  - Hydrocarbons PI should be divided into "GIP" and "OIP"
- Net pay thickness should be sub-divided as "oil net pay" and "gas net pay".
- Corrections of data length are as followings.

-Areal closure	99,999	X1000	AC
-Reservoir rock volume	9,999.999	X1000	ACFT
-GIP	9,999.9		MCF/ACFT
-OIP	9,999.9		BBL/ACFT

- Hydrocarbon in place (oil&gas) 999,999.99
- HC in place (Risk reduced) 999,999.99
- HC in place (Recoverable) 999,999.99

- Addition of "drawing number" to the table of map reference

(5) A0-5

- Addition of items is as follows
  - Map and Figure code are added as assignment parameter

(6) A0-6

- Addition of "Drawing no. to map and figure information
- Correction of data properties are as follows.
  - "Identification" ..... x(11)
  - "Drawing no." ..... x(7)

(7) A-1

- "Operator name" should be added as assignment parameter and also output item in this method.
- Contractor name is placed just after contract code.

(8) A-2

- Correction of wording of "ratio" to "ratio to original area"
- Addition of "operator name" to this method
- Contractor name should be followed just after contract code.

(9) A-3 & A-4

- Correction of wording, "foreign contractor" to "contractor"
- Correction of data properties, "exchange rate" .... to 9(7)

(10) A-5

- Correction of wording
  - Name of organization to "company name"
- Correction of output item
  - Kind of geological survey to "locality name"



- Alteration
  - Full company name to abbreviated company name
- Addition of items
  - Area name, field/prospect name and well name to geophysical survey summary list
  - Area name and field/prospect name to geophysical data processing summary list
- Addition of "exchange rate" to cost item

(11) A-6

- Vertical scale and horizontal scale should be identified as V and H.
- Addition of out put items
  - "Identification number"
  - "Drawing number"

(12) A-7

- Addition of assignment parameter
  - Prospect/field name

(13) A-8

- Title of "Lithological formation information summary" should be corrected to "Lithological information summary"
- Addition of items
  - Layer name(abbreviation)
  - Top of layer(DF & SS)
  - Main lithology of each layer

(14) A-9

- Correction of wording
  - "Lithology" to "main lithology"
- Correction of data properties
  - "Hardness".....x(7)

(15) A-10

- Addition of item
  - Recovery (%) should be placed between the items of "sample no."and "sampling depth".
- Correction of wording
  - "Lithology" to "main lithology"
- Correction of data properties
  - "Hardness"..... x(7)

(16) A-11

- Formation name should be abbreviated.
- "Solvent" should be placed between "fluorescence" and "gas chromatogram component".

(17) A-12

- Correction of wording
  - MUF to MEF

(18) A-13

- Data properties should be followed A0-4 output format

### 3. B-GEOPHYSICAL DATA INFORMATION

#### (1) Kind of Geophysical Survey

- Correction of wording "Kind of Geophysical Survey" to "Kind of Geophysical Survey and Study"

#### (2) Geophysical Survey Code

- Pertamina will prepare the reference number for geophysical survey code to complete the coding system

#### (3) Method of Survey

Completed

#### (4) Recording System

Completed

#### (5) Shooting Pattern

- Correction of wording "Shooting Pattern" to "Spread Pattern"
- Alteration of the proposed coding system and established the sequence as follows.

1. Split spread
2. End-off spread
3. Double split spread
4. Double end-off spread
5. Slalom line spread
6. T spread
7. L spread
8. Offset spread
9. Other spread

#### (6) Airborne or Land

- Correction of wording "Airborne or Land" to "Land, Ship or Air".
- Addition of "Ship" to classification item of "Land, Ship or Air".

(7) Kind of Section

Completed

(8) Application of Deconvolution

Completed

(9) Migrated or unmigrated

Completed

(10) Kind of Map

- Pertamina requested to establish new classification of "Kind of Map" as follows,

10. Seismic map
11. Shot point map
12. Time contour map
13. Interval time contour map
14. Depth contour map
15. Isopach map
16. Other map
20. Magnetic map
21. Location map
22. Residual field intensity map
23. Interpretation map
24. Other map
30. Gravity map
31. Location map
32. Bouger anomaly map
33. Residual gravity map
34. Other map
40. Special study map

(11) Kind of report

- Pertamina requested to establish new classification of "Kind of Report" as follows,

10. Seismic survey
11. Seismic field operation report
12. Seismic data processing report
13. Seismic interpretation report
20. Magnetic survey
21. Magnetic field operation report
22. Magnetic data processing report
23. Magnetic interpretation report
30. Gravity survey

31. Gravity field operation report
32. Gravity data processing report
33. Gravity interpretation report
40. Well velocity survey report
50. Special study report

**(12) Horizon Name**

- Alteration of coding classification as follows,

- 01 H-1, Orange to Brown
- 03 H-3, Yellow to Orange
- 06 H-6, Brown to Yellow
- 07 H-7, Violet to L. Brown
- 08 H-8, Red to Violet/Red

**(13) Horizon Name (Based on the standard formation name)**

- Correction of wording "Horizon Name" to "Geological Identification Marker".

**(14) Synthetic Seismogram**

Completed

Others

- "Company Code" should be prepared by Pertamina according to the proposed format.

## 2. B-Geophysical Data Information

### (1) B0-1, B0-2, B0-3, B0-4 and B0-5

#### 1. Correction of Data Properties as follows,

- Survey name	x(100)
- Objective	x(200)
- Company name	9(2)
- Total length recorded	9(7)v9(3)
- Total stations recorded	9(8)
- Total line cutting	9(7)v9(3)
- Total land survey	9(7)v9(3)
- Total depth drilled	9(9)
- Sampling rate of B110. 16-4	9(2)
- Geophone interval	9(3)
- Hole's separation	9(2)
- Average charge depth	9(2)
- Spread pattern	9(2)
- Distance between stations of B110. 16-18	9(3)
- Description	x(150)
- No. of stations per year of B113. 3	9(7)
- Date of B113. 1 and B123. 1	x(4)
- Exchange rate	9(4)v9(2)
- Identification for map	x(11)
- Drawing number	x(7)
- Storage number for map	x(10)
- Identification number for report	x(20)
- Sampling rate for processing	9(2)
- Total length interpreted	9(7)v9(3)

- Total stations interpreted 9(8)
- Total interpretation cost US\$ 9(6)v9(2)
- Total interpretation cost Rp 9(9)v9(2)
- Scale 9(7)
- Total shot 9(3)
- Horizon name 9(2)\*2

## 2. Addition of Data Item

- "Exchange Rate" to every cost information
- "Period for Field Operation" to B0-12, B0-22 and B0-32
- "Period for Field Operation" and "Period for Data Processing" to B0-13, B0-14, B0-23, B0-24, B0-33 and B0-34
- "Land, Ship or Air" to B0-11 and B0-31
- "Identification", "Drawing Number" and "Storage Number" to every map information in the output reporting method
- "Identification Number" to every report information in the output reporting method
- "Geological Identification Maker" in B0-14

## 3. Correction of Wording

- "Name of Organization" to "Company Name" in all output reporting methods
- "Contract" to "Order Document" in B0-13, B0-23 and B0-33
- "Location" to "Well Location" in B0-4
- "Identification of Map" to "Map Name" in all output reporting methods
- "Identification of Report" to "Report Name" in all output reporting methods

**(2) B5 List of Geophysical Report by Field or Prospect Name**

**1. Correction of wording**

- "List of Report" to "List of Geophysical Report by Field or Prospect Name",

**2. Addition of Data Item**

- Identification number
- Storage number

**3. Addition of Assignment Parameter**

- Kind of report
- Survey code

**(3) B6 List of Geophysical Map by Field or Prospect Name**

**1. Correction of Wording**

- "List of Map" to "List of Geophysical Map by Field or Prospect Name"

**2. Addition of Data Item**

- Identification
- Drawing number

**3. Addition of Assignment Parameter**

- Scale
- Survey code

**(4) B7 List of Magnetic Tape for Geophysical Survey**

**1. Addition of Assignment Parameter**

- Survey code



**(5) B9 Survey Method for Seismic Survey**

**1. Addition of Data Item**

- Distance between Stations

**(6) Addition of Output Reporting Method**

**1. List of Geophysical Report by Kind of Report**

- Report code
- Identification number
- Survey code
- Date
- Storage number
- Title
- Author
- Company name
- Area name

**\* Assignment parameter**

- Kind of survey and study
- Method of survey
- Kind of report
- Period

**2. List of Geophysical Map by Kind of Map**

- Map code
- Survey code
- Identification
- Drawing number
- Date
- Scale

- Horizon name
- Title
- Author
- Company name
- Area name
- \* Assignment parameter
  - Kind of survey and study
  - Method of survey
  - Kind of report
  - Period

## Subteam II

### C - Well Data Information

#### 1. Addition of Data Item

- 1) "String depth" with 9999.9 after "Comp. String" at column heading in C3.

#### 2. Alteration of Data Item

- 1) "Footage Drilled" to "Meter Drilled" at column heading in C0-13.
- 2) "Cement Bulk Vol." to "Cement Bulk Amount" in C0-13.
- 3) "Drilling Depth [M]" to "Depth [MBDF]" and "SS Depth [M]" to "Depth [MSS]" in C0-14.
- 4) "Access-Marine" to "Access Water" in C0-16.
- 5) "BRT" to "BDF" in C20.
- 6) "Total Footage" to "Total Meter Drilled" and "Footage Drilled" to "Meter Drilled" in C28.

#### 3. Alternation of Data Length

- 1) Two decimal for Derrick Floor Elevation and Derrick Floor Height from Bottom Flange.

#### 4. Deletion of Assignment Parameter

- 1) Workover Number from C3
- 2) Formation Name and Layer Name from C10, C11, and C12

5. Confirmation are made on following items

- 1) The all output format "date" and "period" should be written in Indonesia style as follows: DD/MM/YY or DD/MM/YYYY.
- 2) In case of Mercator Coordinate [N], [S]; [E] or [W], you should be used indicating the latitude and longitude.
- 3) Mechanical status - mainly inform the date of tubing, gas lift valves, (s) and other down hole equipment - which changes due to well pulling job as acidizing, gas lift redesign, etc., will be input as new data in data base. Consequently the old data from latest workover will be deleted and replaced by those new one. The old data of preceding workover are still in data base as long as there is no new data from well pulling job.
- 4) Information data of other artificial lift method, such as Hydraulic pump, is possible to be added at "Completion String" Segment in the future.
- 5) Well status code proposed by JOE seem to be more complete and can be accepted.
- 6) The input format lay out are still prepared by JOE. Discussion of this matter will be held when JOE team visit Indonesia in the next trip.

## Subteam III

### E-Production Data Information

#### (1) Addition of data item

- 1) "String code" to E3, E6, E7, E8, E15, E16, E26, E37, E46, E49, E50, E52, E55, E56, E59, E64 and E85
- 2) "Monthly production for Unit EP-II by area" to E1, E9, E13, E19, E45, E51 and E67
- 3) "Well status information for Unit EP-II by area" to E75, E77, E79, E81 and E83

#### (2) Alteration of data item

- 1) "Workover number" to "Recompletion sequence notation" in E3, E6, E7, E8, E15, E16, E26, E37, E46, E49, E50, E52, E55, E56, E59, E64 and E85.  
Recompletion sequence notation is used to indicate that a well is already recompleted to other zone or layer.  
This notation is used to distinguish recompletion from the other workover job.

#### (3) Addition of coding

##### 1) "String code"

In case of dual or multiple completions well, to distinguish each completion, string code combine with the string name (L, M, S, A) will be used. Each completion should be treated as a different well which will also be indicated in recompletion sequence notation. Thus the string name does not indicate the completed reservoir.

#### (4) Addition of output reporting method

- 1) "Historical monthly oil & total condensate and total gas production for Unit EP-II"

as for this methods, following items are included:

- Year, month
- Average daily production
  - Oil & total condensate
  - Total gas

- Gas oil ratio
- Water cut
- Average daily injection gas by gas lift
- Monthly production
  - Oil & total condensate
  - Total gas
  - Water
- Cumulative production
  - Oil & total condensate
  - Total gas
  - Water
- Number of producers

Assignment parameters to be applied to this method are to follows:

- Period
  - String name
  - Kind of completed zone
  - Well status
  - Range of water cut
  - Range of gas-oil ratio
  - Kind of reservoir
- 2) "Historical monthly oil gas cap condensate and nonassociated condensate production for Unit EP-II" as for this method, following items are included:
- Year, month
  - Average daily production
    - Oil
    - Gas cap condensate
    - Nonassociated condensate

- Monthly production
  - Oil
  - Gas cap condensate
  - Nonassociated condensate
- Cumulative production
  - Oil
  - Gas cap condensate
  - Nonassociated condensate

Assignment parameters to be applied to this method are as follows:

- Period
  - String name
  - Well status
  - Range of water cut
  - Range of gas-oil ratio
  - Kind of reservoir
- 3) "Historical monthly high pressure gas, medium pressure gas and low pressure gas production for Unit EP-II"
- as for this method following items are included:
- Year, month
  - Average daily production
    - High pressure gas
    - Medium pressure gas
    - Low pressure gas
  - Monthly production
    - High pressure gas
    - Medium pressure gas
    - Low pressure gas

- Cumulative production
  - High pressure gas
  - Medium pressure gas
  - Low pressure gas
- Definition of high, medium and low pressure gas

Assignment parameters to be applied to this method are as follows:

- Period
- String name
- Kind of completed zone
- Well status
- Range of water cut
- Range of gas oil ratio
- Kind of reservoir

4) "Historical monthly solution gas, gas cap gas and nonassociated gas production for Unit EP-II"

as this method, following items are included:

- Year, month
- Average daily production
  - Solution gas
  - Gas cap gas
  - Nonassociated gas
- Monthly production
  - Solution gas
  - Gas cap gas
  - Nonassociated gas
- Cumulative production
  - Solution gas



- Gas cap gas
- Nonassociated gas

Assignment parameters to be applied to this method are as follows:

- Period
- String name
- Well status
- Range of water cut
- Range of gas-oil ratio
- Kind of pressure for gas
- Kind of reservoir

5) "Historical monthly water injection for Unit EP-II"

6) "Historical monthly gas injection for Unit EP-II"

as these methods, following items are included:

- Year, month
- Kind of injection fluid
- Average daily injection
- Monthly injection
- Cumulative injection
- Number of injectors

Assignment parameters to be applied to these methods, are as follows:

- Period
- String name
- Kind of completed zone
- Well status
- Kind of injection fluid
- Kind of reservoir

- 7) "Summary of monthly gas production and consumption by area"
- 8) "Summary of monthly gas production and consumption by field"
- 9) "Summary of historical monthly gas production and consumption for Unit EP-II"
- 10) "Summary of historical monthly gas production and consumption for area"
- 11) "Summary of historical monthly gas production and consumption for field"

as these methods, following items are included:

- Gas production
- Gas consumption
  - Own use
  - Process
  - Sales
    - City gas
    - Public utility
- Flare and losses gas
  - Flare gas
  - Losses

Assignment parameters to be applied to these methods as follows:

- Area name (for 7), 8), 10))
- Field name (for 8), 11))
- Kind of pressure for gas (for 7), 8), 9), 10), 11))
- Kind of reserves (for 7), 8), 9), 10), 11))
- Period (for 7), 8), 9), 10), 11))
- 12) "Summary of monthly own use gas by area"
- 13) "Summary of monthly own use gas by field"
- 14) "Summary of historical monthly own use gas for Unit EP-II"

- 15) "Summary of historical monthly own use gas for area"  
16) "Summary of historical monthly own use gas for field"

as these methods, following items are included

- Fuel
- Injection gas
- Gas lift gas
- Compressor
- Utilities
- Total

Assignment parameters to be applied to these methods are as follows:

- Area name (for 12), 13), 15))
  - Field name (for 13), 16))
  - Kind of pressure for gas (for 12), 13), 14), 15), 16))
  - Kind of reserves (for 12), 13), 14), 15), 16))
  - Period (for 12), 13), 14), 15), 16))
- 17) "Summary of monthly process gas by area"  
18) "Summary of monthly process gas by field"  
19) "Summary of historical monthly process gas for Unit BP-II"  
20) "Summary of historical monthly process gas for area"  
21) "Summary of historical monthly process gas for field"

as these methods, following items are included:

- LPG plant
- LNG plant
- Fertilizer-plant
- Pusri II
- Pusri III
- Pusri IV

- Refinery (Plaju & Sungai Gerong)
- Polypropylen
- Aromatic
- Total

Assignment parameters to be applied to these methods are as follows;

- Area name (for 17), 18), 20))
  - Field name (for 18), 21))
  - Kind of pressure for gas (for 17), 18), 19), 20), 21))
  - Kind of reserves (for 17), 18), 19), 20), 21))
  - Period (for 17), 18), 19), 20), 21))
- 22) "Shut-in wells information by wells"
- 23) "Waiting wells information by wells"

As these methods, following items are included:

- Year, month
- Area name
- Field name
- Well name
- String code
- Recompletion sequence notation
- String name
- Block station name
- Kind of completed zone
- Well status (well status code and it's explanation)
- Layer name
- Tubing shut-in pressure
- Casing shut-in pressure

- Cumulative production

- Oil (condensate)

- Gas

- Water

- Producing months

Assignment parameters to be applied to these methods are as follows:

- Area name

- Field name

- String name

- Kind of completed zone

24) "Abandoned wells information by wells"

25) "Suspended wells information by wells"

as these methods, following items are included:

- Area name

- Field name

- Well name

- String name

- Recompletion sequence notation

- Cumulative production

- Oil (condensate)

- Gas

- Water

- Abandoned date (Suspended date)

Assignment parameter to be applied to these methods are as follows:

- Area name

- Field name

(5) Addition of assignment parameter

- 1) "History of well" to E3, E6, E7, E8, E15, E16, E26, E37, E46, E49, E50, E52, E55, E56, E59, E64, and E85

(6) Data source

It is fully understood that the recent B file input will use the existing MRPW or PDR. Those data source actually are the output of a computerized process which used in Unit EP-II. Pertamina participants proposed not to use those data and recommended to use directly the raw data (individual well test data) which are the data source of MRPW and PDR.

This matter suppose can be done by combining the existing program into the data bank system.

JOE side agree to study the possibility of such combination. An information of program flow chart and input format which is now used in Unit EP-II will be a great help for that study.

**F-Reserves Information**

**(1) Addition of assignment parameters**

1) "Formation name" to F3

**(2) Correction of wording**

1) "Proved" to Proven"

Subteam IV

H - Production Facilities Data Information

I - Pipeline Data Information

After checking and discussion with our counterpart about Diagram Index of Output Reporting Method, conceptual specification of Output Reporting Method, Output Data Format and Segment Diagram Index of Data Structure of The Data Bank System, some conclusions can be made as:

1. Data Items

Data items for steam turbine is added as follows to "Data Items in Segment H200 (Root Segment of Facilities Information) in page AII-203.

17- Specification in case of steam turbine

1	Type of steam turbine	X(1)	To be coded as in Appendix II (Page AIII-79)
2	Model name	X(20)	
3	Objective of service	X(30)	
4	Power	9(6)	(kw)
5	Speed	9(5)	(rpm)
6	Steam pressure	X(30)	
7	Dimension (width x length x height)	X(40)	

2. Assignment Parameters

- none



3. Correction of Wordings

- 1) Note 1 Function and Capacity of Station in page AII-189 is corrected from oil to liquid as follows.

Function		Capacity (Design)		
Code	Name	(1)	(2)	(3)
02	Storage	<u>Liquid</u> m <sup>3</sup>		
		9 (6)		
03	Pumping	<u>Liquid</u> Production m <sup>3</sup> /d		
		9 (5)		

4. Output Reporting Method

- none

5. Item for Coding and Coding System

- 1) The followings is added to Table 3-1 "Specification Items For Assignment" in page 169.

Kind of Equipment		Main Specification (Design)		
Code	Name	(1)	(2)	(3)
55	Steam Turbine	Power	Speed	
		kw	rpm	
		9 (6)	9 (5)	

- 2) Coding system for station code in page 199 and AIII-16 is altered as follows.

**f1** - **f2** - **f3**

(2)      (2)      (2)

( ) shows number of characters

**f1**; Facilities field code

**f2**; Code of "kind of station"

**f3**; Sequence number

- 3) Coding system for pipeline code in page 208 and AIII-80 is altered as follows.

**f1** - **f2** - **f3** - **f4**

(2)      (2)      (2)      (2)

station code

( ) shows number of characters

**f1**; Facilities field code

**f2**; Code of "kind of station"

**f3**; Sequence number of station

**f4**; Sequence number of pipeline

} Station code  
at the end of  
pipeline

## 6. Coding Classification

- 1) Facilities field code and abbreviation is proposed as on Table 1 in next page.

Table - 1  
FACILITIES FIELD CODE

Code	Name	ABB.	Code	Name	ABB.
01	PRABUMULIH PUSAT	PPP	50	BAJUBANG	B
02	PRABUMULIH BARAT	PB	51	TEMPINO	T
03	LEMBAK	LBK	52	KENALI ASAM	KA
04	PAYA KABUNG	PK	53	SUNGAI GELAM	SG
05	TALANG JIMAR	TJ	54	SUNGAI LILIN	SL
06	TANJUNG TIGA BARAT	TTB	55	SETITI	ST
07	TANJUNG TIGA TIMUR	TTT	56	SANGETI	SNT
08	TANJUNG MIRING BARAT	TMB			
09	TANJUNG MIRING TIMUR	TMT			
10	GUNUNG KEMALA	GK			
11	BENUANG	BN			
12	BENAKAT TIMUR	EB			
13	LIMAU TIMUR	LT			
14	LIMAU BARAT	LB			
15	BELIMBING	BL			
16	TANJUNG LONTAR	TL			
17	SUBAN JERIGI	SJ			
18	BATU KERAS	BK			
19	SUNGAI TAHAM	ST			
20	KUANG	KG			
21	TASIM KUANG	TKG			
22	PAGAR DEWA	PD			
23	PRABUMENANG	PM			
24	MERAKSA	MR			
25	KIKIM	KK			
26	OGAN	OG			
27	RUKAM	LB			
28	KARANGAN	KR			
29	SIGOYANG	SIG			
30	BETUNG	BT			
31	SIMPANG	SPG			
32	MUSI	MS			

2) Code for manufacturer's country is proposed as follows.

Code	Countries Name
01	Australia
02	Austria
07	Canada
14	E. Germany
16	France
22	Holland
25	Italy
28	Japan
55	Spain
56	Sweden
61	U. S. A.
62	U. Kingdom
67	W. Germany

7. Others

Units in output data format are altered as follows.

KL/D	to	M3/D
CU.M/D	to	M3/D
KG/SQ.CM.G	to	KG/CM2G
1000 RP	to	RP1000
YYYY.MM.DD	to	DD.MM.YYYY

## Subteam V

### Data Base Administrator's Record

#### I. Scope of Work for Data Base Administration

1. As a result of discussion the scope of work for Data Base Administration during Detailed Designing Plan includes a final information about:

- Physical Data Base Structure
- Physical Data Base Definition for;
  - . Segments, and
  - . Field elements only.
  - . Data Dictionary Source (non UCC-1Ø transaction format which is required for UCC-1Ø transaction preparation).

Note: Detailed coding and generations for

- DBD (pointers, access method)
- PSB
- SSA
- I/O area
- etc. will be done in the beginning of the next phase (programming phase).

## II. Design and Naming Convention:

1. Data base hierarchical structure figure used for E/P data base will be made in the format as used in Pertamina.
2. Naming conventions for all data bases and all segments already established as a result of a discussion between DBA and JOE system analyst.

## III. Job Performed

1. Restructure all data bases using IMS/VS standard hierarchical structure.
2. Establishment of naming for all data bases.
3. Establishment of naming for all segments.
4. Coding and preparation of "Data base data" UCC-1Ø transaction.
5. Coding and preparation of "Data set/segment connection" UCC-1Ø transaction.
6. Coding all "Data base text" UCC-1Ø transactions.
7. Coding all "Segment text" UCC-1Ø transactions.

**Note:** The completed job above is around 5% from the total job must be performed by DBA from Pertamina which will be includes:

- Preparation of "Field text UCC-10" transaction images (+2000 transaction).
- Preparation of "Segment/Field connection" UCC-10 transaction images (+2000 transaction).
- Establishment Field short names.



Tokyo, Dec. 18, 1980

To Mr. B. S. Sitoemorang

The Petroleum Exploration and Production  
Data Bank System Development Project  
PERTAMINA Team Leader.

Re; Memorandum No. 2 on the Indonesian  
Participants' Activity in the  
Detailed Design Work for the  
Petroleum Exploration and Production  
Data Bank System Development  
Project.

Dear Mr. B. S. Sitoemorang

Following is the memorandum No. 2 on the Indonesian Participants' Activity during the period between Nov. 17 and Dec. 17, 1980 in the detailed design work for the Petroleum Exploration and Production Data Bank System Development Project. This memorandum consists of Participants' Schedule, Participant's Activity-Record, Work Progress and Record of Discussion.

1. Participant's Schedule.

The schedule was made for two kind of activity:

- 1) System Analyst Schedule
- 2) Data Base Administrator Schedule

Both of them is shown in Table-1.

2. Participant's Activity Records.

The activity record by Participant divide into two activity (System Analyst Activity, and D/B Administrator Activity) as in Table-2.

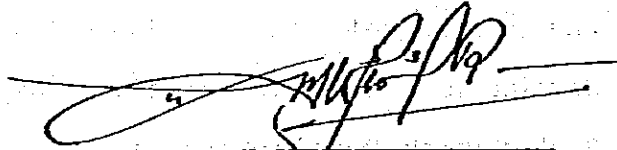
**3. Work Progress**

The work progress as to the detailed design work for the subject was reported by JOE as in Table-3.

**4. Record of Discussion**

Record of discussion conducting by group during the participation period is presented herewith as Attachment I.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'M. Nur Ruslan', is written over a horizontal line. The signature is stylized and somewhat cursive.

(M. Nur Ruslan)

cc: - R. S. Robot  
Head of Data Processing Bureau

- A. Karim Hasim  
Head of Data Processing Dept. Area II

Table-1

Participation Work

A. System Analyst Group

1. Naming Convention related Application Program
2. Reading the Report of Conceptual Design
3. Study of
  - 1) Output Reporting Method
  - 2) Output Format
  - 3) Code System
  - 4) Master File
  - 5) Input/Output Process
4. Preparation of Program Specification
  - 1) Settlement of Program Specification Format
  - 2) Preparation of Program Specification

B. Data Base Administrator Group

1. Reading the Report of Conceptual Design
2. Reading the document prepared by Mr. Witono
3. Learning the field element by
  - 1) Preparation of field text from
    - the Report
    - data base structure
    - system analysts

2) Preparation of "Segment/field connection" UCC-10 transaction from

- the Document
- data base structure
- output format
- field name
- COBOL name

Remarks

Main Work Performed

Working Period

Group/Name

- Dec. 3 - Dec. 17
- Establishing Field Short Name for every field in A, B and H Information Groups
  - Coding all 'Field Text' UCC-10 transactions for A, B and H Information Groups
  - Cross checking between all fields in A and B Information Groups, and the Corresponding output reporting methods, in order to examine the usefulness of each field.
  - Some additions of the segment name to the existing D/B structures:
    - a. Monthly Consumption Segment, namely PECO2MCO, in Gas Consumption D/B of 'E' Information Group
    - b. Station Reference Segment and Well Reference Segment, namely PHA04REF and PHA05WEL, respectively, in station D/B of 'H' Information Group
  - Finalization of the existing Data Base Names and Segment Names

Emil Silvan and  
A. Albani

A. Albani leaving Tokyo  
on Dec. 20, 1980

Table-2 Participants' Activity Record

<u>Group/Name</u>	<u>Working Period</u>	<u>Main Work Performed</u>	<u>Remarks</u>
System Analyst Group (Nur Ruslan and Lili Hambali)	November 17	- Courtesy call to Mr. D. Kasahara and JOE Staff	Arriving in Tokyo on Nov. 16, 1980
	November 18 - 21	- Discussion on participation schedule  - Study of Naming Convention  - Study on the Report of Conceptual design	
	November 25 - December 5	- Study on: Output reporting method Input/Output format Code System Master File Input-output Process	
	December 8 - December 17	- Study on: Preparation of Program Spec. Settlement of Program Spec.	Nur Ruslan Leaving Tokyo on Dec. 19, 1980
	Nov. 18 Nov. 19 - Dec. 2	- Discussion on participation schedule  - Learning the overall system concepts from the report of Conceptual design  - Learning the D/B Design from D/B Structure document	Emil Silvan Arriving in Tokyo on Nov. 16, 1980  A. Albani Arriving in Tokyo on Nov. 25, 1980

Table - 3

Work Progress of Detailed Design Work for Petroleum  
Exploration and Production Data Bank System of  
PERTAMINA UNIT EP-II

<u>Item Performed</u>	<u>Performance of Progress</u>
1. Design of system function	
(1) Design of output format .....	80%
(2) Design of data check list .....	80%
(3) Design of input data layout .....	50%
(4) Design of instruction parameter card .....	80%
(5) Design of input/output and data base processing .....	80%
2. Design of data and file	
(1) Design of data base structure .....	80%
(2) Description of data .....	70%
(3) Preparation of master/table file specification .....	80%
(4) Design of back-up recovery and restart procedure .....	50%
3. Preparation of program specification	
(1) Preparation of program list .....	20%
(2) Determination of function and constituent of Program .....	20%
(3) Description of processing in program .....	20%
(4) Description of table and file .....	50%
(5) Description of input/output .....	30%
(6) Instruction for coding rule .....	-
4. Planning of debugging and test run .....	-

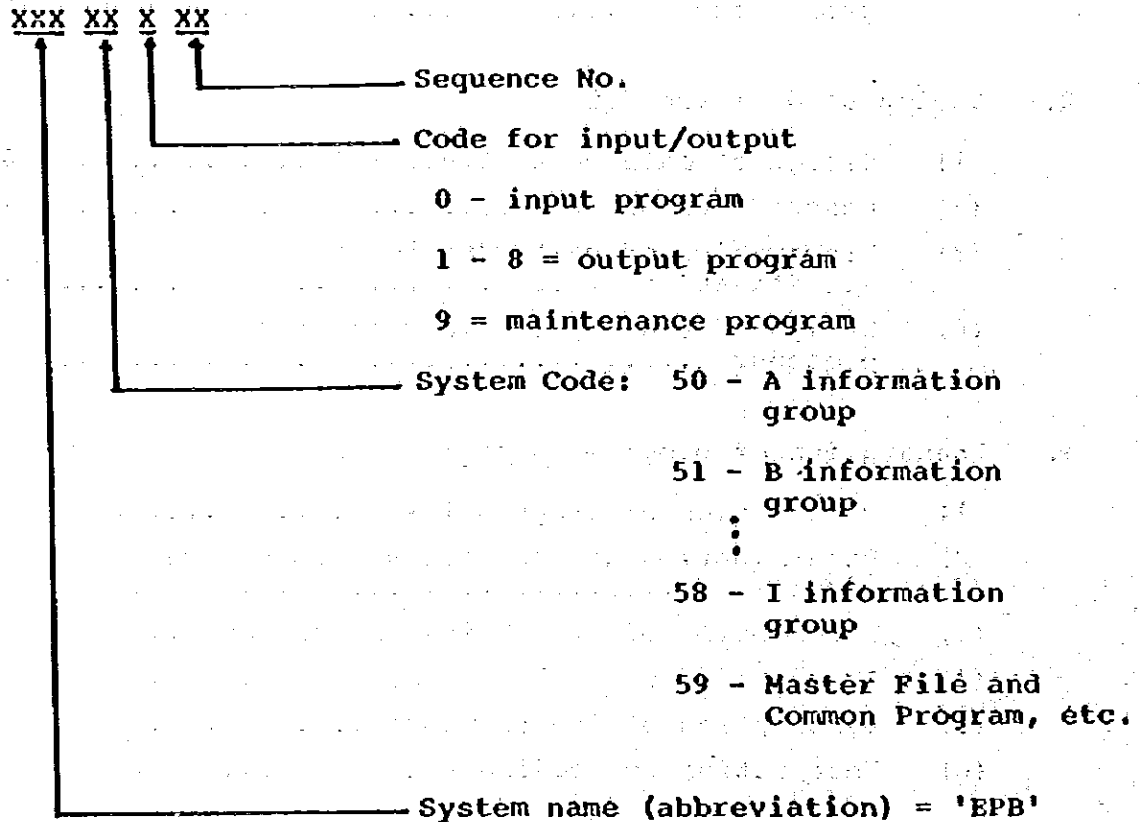
ATTACHMENT I

Record of Discussion Conducting by Group  
During the Participation Period

A. System Analyst Group

1. Program Name Convention

According to Standard programming already established in Pertamina, program name described as follows:



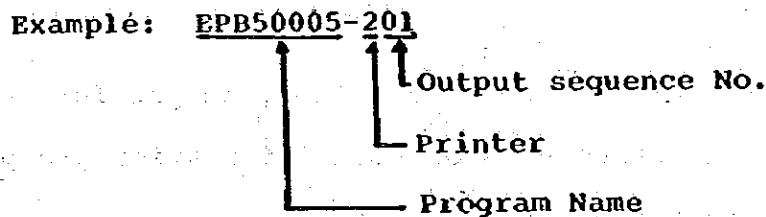
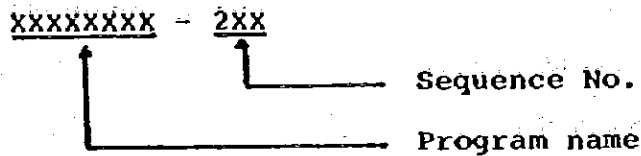


2. Program name is also used in COBOL program as Program-ID, module name and SOURCE Library name.

3. Output Format

Addition of report No. at each report correspond with program name itself and printed out on the top of the page at the left of header.

This report No. was described as follows:



4. Master file

- Correction of Item name in all master file  
'Replace Date' to 'updating date'
- Correction of position in well master  
layer code: position 504 to position 485  
updating date: position 573 to position 493

5. Input Processing

- It is not necessary to use utility sort (external sort).  
We can use the facility of COBOL-sort (internal sort).
- In this case we can simplified the input flow/processing  
with detete/cancel one program step (external sort).

6. Updating-ID

Only three kinds of updating ID are allowed

These are: I for Insert  
D for Delete  
R for Replace

7. Program Spec.

Still studying output reporting method, output format and  
referring to data structures of each information group,  
to make preparation of program spec.

B. Data Base Administrator Group

1. 'Corrections for Segment Key-fields:

a. Each segment type can have only one key-field.

As a result, the following segment types must be corrected in order to have just one key-field:

- |            |            |
|------------|------------|
| - PAB02MAP | - PBA03LOC |
| - PAC04FIG | - PBA07REP |
| - PAD03MAP | - PBA11IMR |
| - PAE03FOL | - PBA14REP |

b. Date, when defined as a key-field, must be in the format of YYYYMMDD.

Correction should be made against the following segment:

- PAA02HIS

JOE System Analysts will make corrections for these key-fields.

2. Transaction Layout for Input Processing has not come to the conclusion yet, because the usage of some fields (i.e. sequence number fields), has not clearly understood by Indonesian counter part.

Further discussion to this matter should be conducted.



Tokyo, January 19, 1981

To Mr. B. S. Sitoemorang

The Petroleum Exploration and Production  
Data Bank System Development Project  
Pertamina Team Leader.

Re; Memorandum No. 3 on the Indonesian  
Participants' Activity in the  
Detailed Design Work for the  
Petroleum Exploration and Production  
Data Bank System Development  
Project.

Dear Mr. B. S. Sitoemorang

Following is the memorandum No. 3 on the Indonesian Participants' Activity during the period between Dec. 18, 1980 and Jan. 18, 1981 in the detailed design work for the Petroleum Exploration and Production Data Bank System Development Project. This memorandum consists of Participants' Activity Record, Work Progress and Record of Discussion.

1. Participants' Activity Record

The meeting between participants and JOE side were held one time during the period. The resume of said meetings was summarized in Table - 1. Also reference is made to Table - 2 on the respective participants' Activity Record.

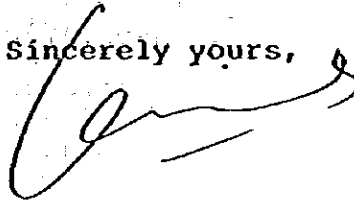
2. Work Progress

The work progress as to detailed design work for the subject was reported by JOE as in Table - 3.

3. Record of Discussion

Record of discussion conducted by participant during the participation period is presented herewith as Attachment I.

Sincerely yours,



(Emil Silvan)

- cc: - R. S. Robot  
Head of Data Processing Bureau
- A. Karim Hasim  
Head of Data Processing Dept. Area II

Table - 1

The resume of the meeting

Meeting dated on Dec. 18, 1980

Place: JOE

Attendants:

(Indonesia Side)

Messrs. Emil Silvan	(Data Base Administrator)
A. Albani	(Data Base Administrator)
M. Nur Ruslan	(System Analyst)
Lili Hambali	(System Analyst)

(JOE Side)

Messrs. Mr. H. Isono	(System Analyst)
Mr. S. Tai	(System Analyst)
Mr. K. Kobayashi	(System Analyst)

Main Agenda:

- . Discussion on format of transaction layout for input processing.
- . Data base back-up and recovery/restart procedure.

Table-2 Participants' Activity Record

<u>Name</u>	<u>Working Period</u>	<u>Main Work Performed</u>	<u>Remarks</u>
Lili Kambali	November 17	- Courtesy call to Mr. D. Kasahara and JOE Staff	Arriving in Tokyo on Nov. 16, 1980
	November 18 - 21	- Discussion on participation schedule	Leaving Tokyo on Jan. 10, 1981
		- Settlement the naming convention related application program	
		- Study on the report of conceptual design	
	November 25 - December 5	- Study on <ul style="list-style-type: none"> <li>. Output reporting method</li> <li>. Input/output format</li> <li>. Code system</li> <li>. Master file</li> <li>. Input and output process</li> </ul>	
	December 18, 1980	- Discussion of the transaction layout for input processing.	
	December 8, 1980 - January 8, 1981	- Preparation of program specification <ul style="list-style-type: none"> <li>. Settlement of program specification format</li> <li>. Preparation of program specification</li> </ul>	
	Nov. 18	- Discussion on participation schedule	Arriving in Tokyo on Nov. 16, 1980
	Nov. 19 - Dec. 2	- Learning the overall system concepts from the report of conceptual design	Leaving Tokyo on Jan. 20, 1980
		- Learning the D/B Design from D/B structure document	
Emil Silvan			



Remarks

Main Work Performed

Working Period

Name

Emil Silvan	Dec. 3 - Dec. 17	<ul style="list-style-type: none"><li>- Establishing field short names for field elements in A and H information groups</li><li>- Coding 'Field Text' UCC-10 Transactions for A and H information groups</li><li>- Cross checking between field elements in A information group and the corresponding output reporting methods, in order to examine the usefulness of each field</li><li>- Some additions of the segment name to the existing D/B structures:<ul style="list-style-type: none"><li>a. Monthly consumption segment, namely PECØ2MCO, in gas consumption D/B of 'E' information group.</li><li>b. Station reference segment and well reference segment, namely PHAØ4REF and PHAØSWEL, respectively, in station D/B of 'H' information group</li></ul></li><li>- Finalization of the existing data base names and segment names.</li></ul>
	Dec. 18, 1980	<ul style="list-style-type: none"><li>- Discussion on Data Base Backup &amp; recovery/restart procedures and transaction layout for input processing</li></ul>
	Dec. 19, 1980 - Jan. 16, 1981	<ul style="list-style-type: none"><li>- Establishing field short names for field elements in C, H and I information groups</li><li>- Coding 'Field Text' UCC-10 transactions for C, H and I information groups</li></ul>

<u>Name</u>	<u>Working Period</u>	<u>Main Work Performed</u>	<u>Remarks</u>
Emil Silvan	Jan. 9, 1981	<ul style="list-style-type: none"> <li>- Cross checking between field elements in C, H and I information groups and the corresponding output reporting methods</li> <li>- Courtesy call to Pertamina Representatives.</li> </ul>	.

Table - 3

Work Progress of Detailed Design Work for Petroleum  
Exploration and Production Data Bank System of  
PERTAMINA UNIT EP-II

<u>Item Performed</u>	<u>Performance of Progress</u>
1. Design of system function	
(1) Design of output format .....	90%
(2) Design of data check list .....	90%
(3) Design of input data layout .....	80%
(4) Design of instruction parameter card .....	90%
(5) Design of input/output and data base processing .....	85%
2. Design of data and file	
(1) Design of data base structure .....	90%
(2) Description of data .....	90%
(3) Preparation of master/table file specification .....	90%
(4) Design of back-up recovery and restart procedure .....	50%
3. Preparation of program specification	
(1) Preparation of program list .....	50%
(2) Determination of function and constituent of Program .....	50%
(3) Description of processing in program .....	50%
(4) Description of table and file .....	50%
(5) Description of input/output .....	50%
(6) Instruction for coding rule .....	-
4. Planning of debugging and test run .....	-

ATTACHMENT I

Record of Discussion Conducting by Participants  
During the Participation Period

I. System Analyst

1. Coding System

- a. Code using in the system was classified into two kinds, one is class-A (for master file, etc.) and the other is class-B (for copy library).

Master file . Field master  
. Well master  
. Zone master  
. Company master

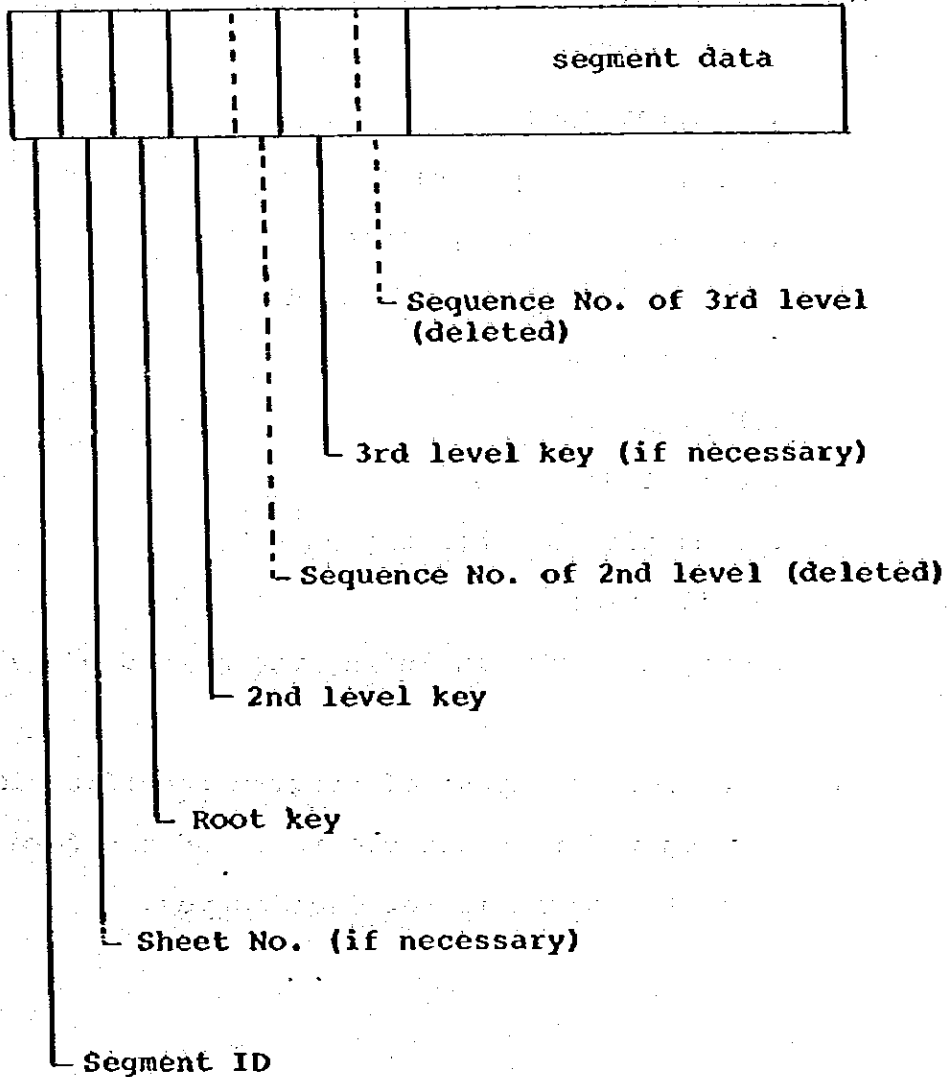
Copy Library . The name of copy library is not decided yet.

- b. Code for copy library, used in application programs was classified into two groups, one is the assignment code for common use of more than two data information groups, and other is the assignment code used only for a specific data information group.

2. Format of Transaction Layout for Input Processing

Pertamina and JOE side both agree to delete sequence number fields from proposed transaction format.

The transaction layout for input processing has described as follows.



### 3. Settlement of Program Specification Format

In this stage, only make preparation for general program specification, and program will be made at programming stage by using HIPO Chart model.

Items of program specification are included in the following format layout.

- . Program name
- . (Purpose of program)
- . Output reporting method
- . Assignment parameter card
- . Segment name
- . Master file
- . Output Sequence
- . Condition of changing page
- . (File name)
- . Output items (including the method of calculations)

Note: The format layout of program specification above, is only for output program, and the format for input program is not decided yet.

#### 4. Preparation of Program Specification

According to the format layout of program specification as stated above, Pertamina system analyst (Lili Hambali) has tried to prepare some output program specifications, related to A information group as follows.

- . Basic output report for contract area
- . Basic output report for geological survey
- . Basic output report for geological analysis
- . Basic output report for prospect information
- . Basic output report for map and figure information
- . Basic output report for report information
- . List of concession area
- . List of relinquished area
- . Geological survey list by year
- . Geological analysis list by year
- . Exploration activities summary by year
- . List of map and figure
- . List of report
- . Lithological formation information summary by well
- . Lithological core description summary
- . Lithological side wall core description summary
- . Hydrocarbons indication summary
- . Correlation of formation tops
- . Estimated hydrocarbons in place and recoverable reserves
- . Estimated hydrocarbons in place by formation
- . Estimated hydrocarbons in place for prospect by type of trap

## II. Data Base Administrator

1. Data Base Backup and Recovery/Restart procedure will be carried out by using IMS Utilities. Operation method of this procedure will be established in further stage.
2. For Geological Data and Contract Area Information Group, there are many kinds of geological survey reports and geological analysis reports. The main report code is recorded in the root segment and the rest report codes are inserted as dependent segments.
3. Data dictionary for this Data Bank System has been completed approximately by 25%, which include:
  - Coding all 'Data Base Text' UCC-10 transactions
  - Coding all 'Segment Text' UCC-10 transactions
  - Coding all 'Data Set/Segment Connection' UCC-10 transactions
  - Coding +1000 'Field Text' UCC-10 transactions and establishing field short names from the existing +2000 fields.



Tokyo, Feb. 24, 1981

To Mr. B. S. Sitoemorang

The Petroleum Exploration and Production  
Data Bank System Development Project  
PERTAMINA Team Leader.

Re; Memorandum No. 4 on the Indonesian  
Participants' Activity in the  
Detailed Design Work for the  
Petroleum Exploration and Production  
Data Bank System Development  
Project.

Dear Mr. B. S. Sitoemorang

Following is the memorandum No. 4 on the Indonesian Participants' Activity during the period between Jan. 26 and Feb. 24, 1981 in the detailed design work for the Petroleum Exploration and Production Data Bank System Development Project. This memorandum consists of Participants' Schedule, Participant's Activity-Record, Work Progress and Record of Discussion.

1. Participant's Schedule.

The schedule was made as shown in Table-1.

2. Participant's Activity Records.

The activity record by Participant as shown in Table-2.

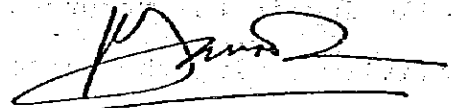
3. Work Progress

The work progress as to the detail designing work for the subject was reported by JOE as in Table-3.

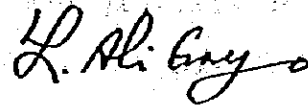
4. Record of Discussion

Record of discussion conducted during the participation period is presented herewith as Attachment I.

Sincerely yours,



(Sudjana D.A.)



(S. Ali Gayo)

cc: - R. S. Robot  
Head of Data Processing Bureau

Table-1

Participation Work (Jan. 26 - Feb. 25, 1981)

1. Discussion of Naming Convention and Coding Rule, etc.
2. Review the Report of Conceptual Design
3. General explanation of Detailed System Designing Work
4. Review of results of Detailed System Designing Work;
  - (1) Output Reporting Method
    - 1) Output Report Layout
    - 2) Assignment Parameter
  - (2) Data Base Structure
  - (3) Code System
  - (4) Master File
  - (5) Input/Output Processing
5. Preparation of program Specification
  - (1) Settlement of Program Specification Format
  - (2) Preparation of program Specification
6. Discussion of the next phase work

Table-2 Participant's Activity Record

<u>Group/Name</u>	<u>Working Period</u>	<u>Main Work Performed</u>	<u>Remarks</u>
Sudjana D.A./ S. Ali Gayo	Jan. 26 Jan. 27-Feb. 24	<ul style="list-style-type: none"> <li>- Courtesy Call to mr. D.Kasahara and JOE staff</li> <li>- Discussion on Participation schedule</li> <li>- Discussion of Naming Convention and Coding Rule                             <ul style="list-style-type: none"> <li>. Data Base Naming Convention</li> <li>. System Application Naming Convention</li> <li>. Application Coding Rule</li> </ul> </li> <li>- General explanation of Detail System Designing Work by JOE Team                             <ul style="list-style-type: none"> <li>. Table of content of Detail System Designing Report</li> <li>. Work Program of Detail Design Work</li> <li>. Time Schedule</li> <li>. bottle neck</li> </ul> </li> <li>- Review of result of Detail System Designing Work Discuss and Request for Correction                             <ul style="list-style-type: none"> <li>. Output Reporting Method                                     <ul style="list-style-type: none"> <li>Report Layout, Assignment parameter (Ref. Attachment-I)</li> </ul> </li> <li>. Output Report Layout</li> <li>. Input Data format</li> <li>. Data Base Structure</li> <li>. Master file</li> <li>. Input processing</li> <li>. Output processing</li> </ul> </li> <li>- Settlement of Program Specification Format                             <ul style="list-style-type: none"> <li>. Output processing method</li> <li>. Data input processing method</li> </ul> </li> </ul>	<p>Arriving in Tokyo on Jan. 24, 1981</p> <p>Leaving Tokyo on Feb. 25, 1981</p>

Table - 3

Work Progress of Detailed Design Work for Petroleum  
Exploration and Production Data Bank System of  
PERTAMINA UNIT EP-II

<u>Item Performed</u>	<u>Performance of Progress</u>
1. Design of System function	
(1) Design of output format .....	100%
(2) Design of data check list .....	90%
(3) Design of input data layout .....	100%
(4) Design of instruction parameter card .....	90%
(5) Design of input/output and data base processing .....	90%
2. Design of data and file	
(1) Design of data base structure .....	100%
(2) Description of data .....	100%
(3) Preparation of master/table file specification .....	90%
(4) Design of back-up recovery and restart procedure .....	100%
3. Preparation of program specification	
(1) Preparation of program list .....	90%
(2) Determination of function and constituent of Program .....	90%
(3) Description of processing in program .....	90%
(4) Description of table and file .....	90%
(5) Description of input/output .....	100%
(6) Instruction for coding rule .....	90%
4. Planning of debugging and test run .....	90%

ATTACHMENT - I

RECORD OF DISCUSSION CONDUCTED BY PARTICIPANTS  
DURING THE PARTICIPATION PERIOD

1. OUTPUT REPORT LAYOUT:

- a. To be consistent with other Computer Output Reports produced by Pertamina Data Processing Bureau, it is requested to print-out on every page one additional header line to the Report title formatted as follow:

Filler : x(3)  
Report-Name : 'EPBxxxxxx2xx'  
Filler : x(46)  
Organization : 'PERTAMINA UNIT EP II'  
Filler : x(44)  
Processing Date : DD-MM-YY  
Filler : x(2)  
Filler : 'Page :'  
Page-Sequence-No : 9999

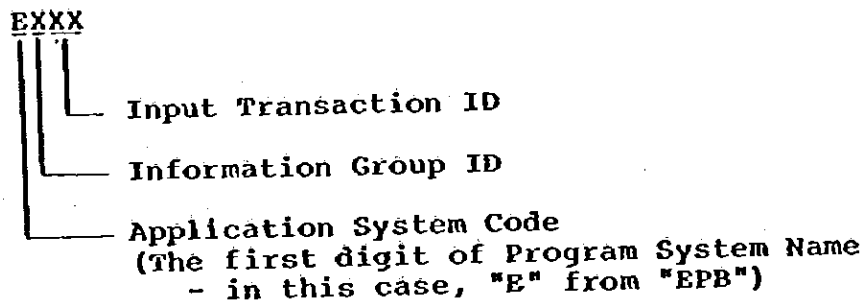
- b. To avoid confusion for the users due to its complexity of the E & P Data Bank System's Information, it is recommended to print-out additional line on every end of Report such statement as follow:

"THIS IS END OF REPORT NAME XXXXXXXX-XXX."

As the result of detailed system design, they will be explained in the introductory remarks of APPENDIX-I of the draft report of detailed system design, but they will be not written on each of report layout until the execution of the next phase.

2. NAMING CONVENTION:

- a. It is requested by Pertamina side that the input Data Transaction Name follow the following input Transaction Naming Convention;





Input Transaction Code

EAXX	Input processing method for Contract Area			
EABX	"	"	"	" Geological Survey
EACX	"	"	"	" Geological Analysis
EADX	"	"	"	" Resource Prospect
EAEX	"	"	"	" Geological Map & Figure
EAFX	"	"	"	" Geological Report
EBXX	"	"	"	" Geophysical Survey
(01~05) EB2X	"	"	"	" Geophysical Map
EB3X	"	"	"	" Geophysical Report
ECXX	"	"	"	" Well Data
EDAX	"	"	"	" Petrophysical & PVT Analysis Data
EEAX	"	"	"	" Production & Injection
EEBX	"	"	"	" Oil Consumption
EECX	"	"	"	" Gas Consumption
EFAX	"	"	"	" Reservoir Data
EGAX	"	"	"	" Well test in Stimulation
EHAX	"	"	"	" Field Laboratory Fluid Analysis
ENAX	"	"	"	" Station
EHBX	"	"	"	" Equipment
EIAX	"	"	"	" Pipeline

3. SETTLEMENT OF PROGRAM SPECIFICATION FORMAT:

As it has already mention in memorandum No. 3 by previous participant that the program specification in this stage only broad program specification not in detail, but it is recommended by Pertamina participant to include estimated line statement for each program in order to get closer estimate by information groups. Rough estimate by JOE that to carry out program coding to satisfied latest users requirement will require 350 to 400 man-months.

- a - Program specification for output reporting method remain the same as it is mentioned in memorandum No.3.
- b - Program specification for input data processing will include the following format layout:

- Program name
- Program function
- Input data involve
- Data base/files involve
- Output data base involve
- Processing involve

This program specification is settled by Pertamina side and JOE side as standard program specification format layout throughout the Petroleum E & P Data Bank System.

4. DISCUSSION OF THE NEXT PHASE WORK:

There are some pending items to be settled before the execution of next phase (phase-II) included following items:

- 1 - Settlement of field name convention of Data Base Structure
- 2 - Input Data procedure
- 3 - Due to the heavy work of next phase, it is recommended to put priority on the information groups in the E & P Data Bank System.

Planning of the next phase work will be described in the draft report of detailed system design.



JICA