

An aerial photograph of an offshore oil and gas platform in the middle of the ocean. The platform is a complex of steel structures, including a large central processing unit and several smaller modules. A red crane is visible on the left side. The water is a deep blue, and the sky is a lighter blue. The text is overlaid on the image.

Metadata System Development on Natural Gas Resources in Indonesia

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Content

(focused on the upstream activities)

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- f) Data Flow and Access
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3. Recommendations

1. Background of Oil & Gas Activity in Indonesia

1.a) Petroleum Legislations

- The 1945 Constitution of Indonesian Republic (UUD'45). Article 33
- Law No. 22/2001 On Oil And Gas
 - Oil and Gas Business divided into the upstream and downstream activities
 - PERTAMINA be changed to be as state owned company only
- Law No. 30 / 2007 on Energy
- Gov. Regulation (PP) No.35/2004 On Oil and Gas Upstream Activity
 - Ministry of EMR offer/tender oil and gas working area to business entity
 - Contractor might stored and utilize the data that obtained from their general survey
 - All data that obtained from PSC's activities are belonging to the state
- PP No.36/2004 On Oil and Gas Downstream Activity
- PP No.42/2002 On Executive Agency for Upstream Oil and Gas Activity
 - BPMIGAS decided as Regulator body for oil and gas upstream activity
 - BPMIGAS gives approval of PSC's work plan and budget /financial expenditure
- PP No.67/2002 On Executive Agency for Downstream Oil and Gas Activity
- Presidential Decree No. 5 / 2006, on the National Energy Policy

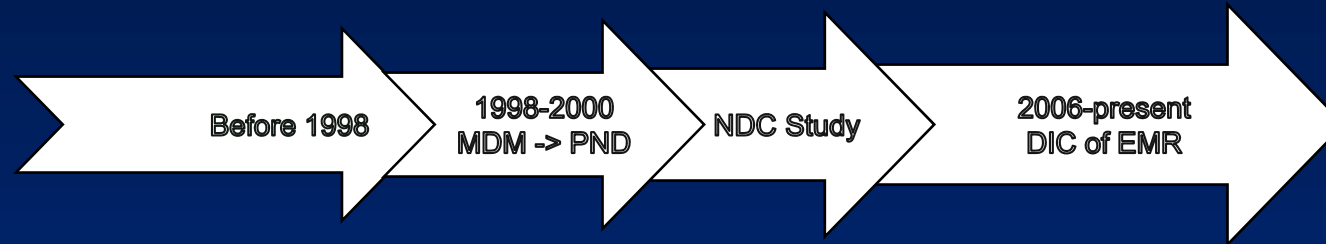
Note: Hierarchy of Indonesia Regulation

UUD =>Law(UU) => Gov. Reg.(PP) =>Presidential Decree (Keppres) =>Ministry Reg. (Permen)

1.b) Data Management Policy and Strategy

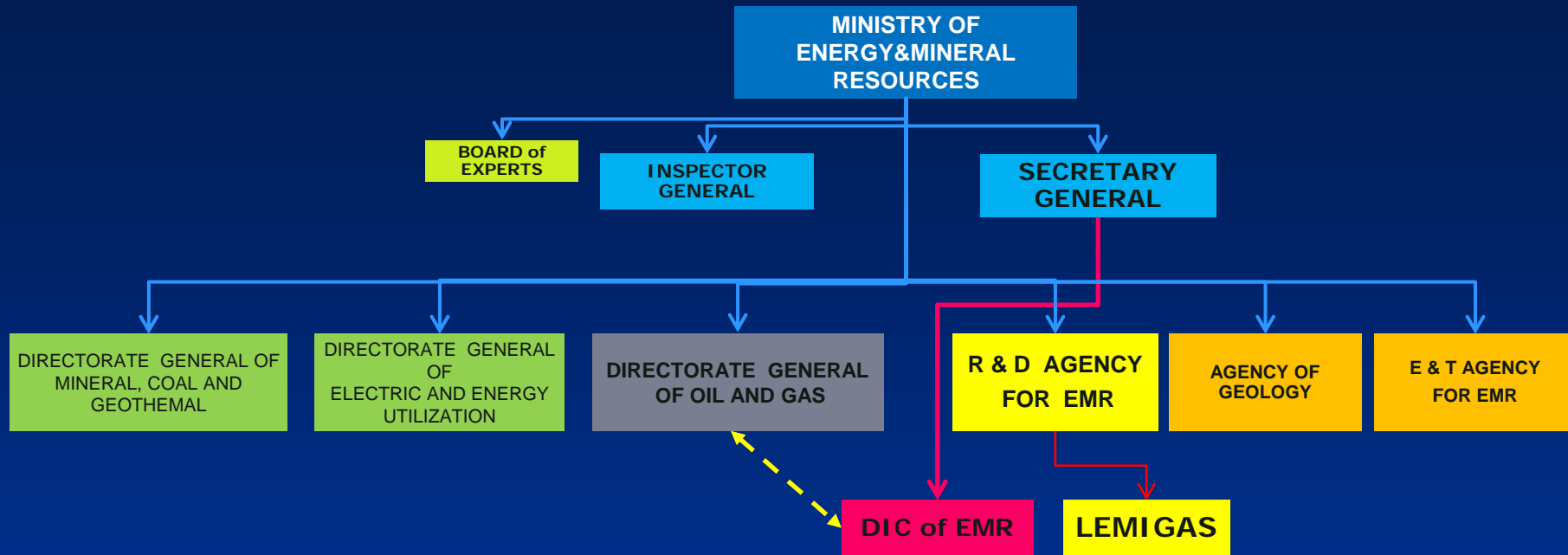
- The Regulation of Minister of EMR No.27/2006, on Data Management and Utilization of Data Generated from Oil and Gas General Survey, Exploration and Exploitation Activities.
 - All E&P oil and gas data type are belonging of Government.
 - To use the data has to obtain approval from Director General of Oil and Gas.
 - All E&P oil and gas data must be submitted to Data & Information Center EMR
 - Contractors/Companies have a limited authorization of data utilization as long as its operation period within its contract area.

1.c) History of Petroleum database management

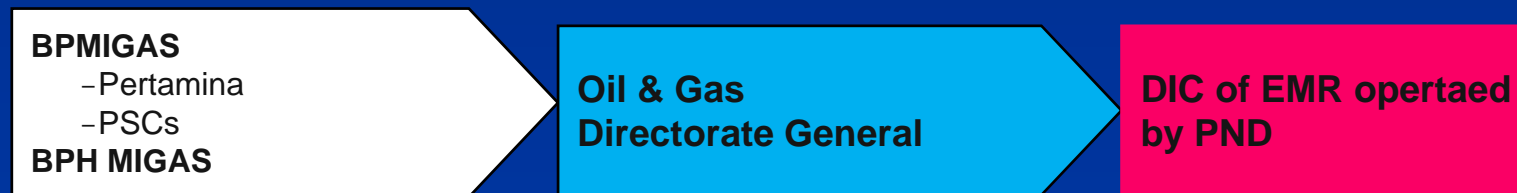


- Before 1998 year, PERTAMINA -as state company and government representative-arranged and managed all data E&P oil and gas. Its stored in Pertamina and PSC's data warehouse. The national standard of data structure is not decided.
- End of nineties century – beginning of 2000 year, Directorate General of Oil and Gas issued the metadata standard structure of "Oil and Gas Data Management (MDM)"and referred to PetroBank data management system, held by Patra Nusa Data (PND), company which supported by Oil and Gas Directorate General and ELNUSA.
- Beginning period of Law No.22/2001 validated, compiling of all natural resources database was proposed as National Data Center (NDC).
- At present time, all of energy and mineral resources data are managed under Data & Information Center of EMR. (Pusdatin ESDM)

1.d) Organization



Oil and Gas metadata submission flow



1.e) Operator

- ◆ The Center for Data and Information on Energy and Mineral Resources (Pusdatin) plays a strategic role in managing the National Data Center which handles all data related to the energy and mineral resources sector, both classified and unclassified data.
- ◆ Pusdatin have cooperated with PT Patra Nusa Data in managing oil and gas data. This is expected to further improved in the forthcoming future with the management of other energy and mineral resource sector data. Data from active working areas categorized as classified data.

PATRA NUSA DATA

PREFACE

PT. Patra Nusa Data as a member of PT. Elnusa was established in November 4th 1997, under the authority of Migas Data Management, Directorate General of Oil and Gas.

PT. Patra Nusa Data has done many efforts to manage and rejuvenate the national exploration data asset in Indonesia and it has been a part of PUSDATIN

VISION :

A reliable partner in petroleum EP information



MISSION :

- To benefit petroleum EP data users through an integrated Data Management system that cover data storage, cataloguing, value adding, and promotion.
- To empower national resources in national petroleum data management.

PATRA NUSA DATA

PURPOSE :

- To preserve national asset
- To provide a fast and easy access to high quality data
- To attract more investors in oil and gas sector through an 'open file' system

PND ACTIVITY :

- To gather, to store, to re-master & to process (value adding), to maintain National EP data using international & industry standards in formats media and warehouse.
- To establish Indonesia petroleum EP Metadata base.
- To provide data review & access to data services
- To prepare and provide data packages for new Working Area offering
- To produce Indonesia Petroleum Working Area Map
- To help the industry in establishing integrated Petroleum EP Data Management and GIS based software applications

STEP

GETTING THE DATA AVAILABILITY INFORMATION

- ◆ Visit DAVAL (Data Availability Online) which covers GIS View of Exploration Data Information (Seismic, Well, Geo-Report/Map) and is accessible online through www.patranusa.com
- ◆ Arrange Data Corner at our sites which are available to adequate the needs to review data quality for your Selected Data
- ◆ Arrange Review Room which has been provided for having more private and convenience time and place to review data quality
- ◆ Directly contact Business Center Unit for further assistance



DATA REVIEW FACILITIES

- ◆ Review Room
 - Review Room for any requested data will be available at Data Room Site I & II every working day at 08.30 am until 4:00 pm and to ensure an uninterrupted schedule, representatives are required to propose the schedule tentatively not later than 5(five) working days
 - For the session, an Existing Available Data Volume (Seismic, Well & Geo-Report/Map) covers a maximum of 4,000 sq-km area is prepared for One Day Review Room and no data can be taken out or reproduced in any form

- ◆ Data Corner
 - Data Corner is arranged to support Indonesia Oil & Gas Open Acreages Bid Round for having Data Quality Review of Data Packages

2. Standard and metadata structure Oil & Gas in Upstream Activities

2.a) Metadata design and structure

➤ Refer to Regulation of MEMR no.27/2006, classified data

Base on type	Base on status
General Data	Restricted (Closed) data
Basic/Raw Data	Open data
Processed Data	Active data
Interpretation Data	

Exploration and Exploitation data submission

1. Well Data
2. Seismic Data
3. Geological & Geophysical Data
4. Production
5. Reservoir
6. Study

2.b) International standard used

- GIS base technology
- Seismic data : SEG Y, SEGB and SEGD format in Cartridge
- The number of character are adopted from POSC Epicenter
- Images use JPG or TIFF format
- Reporting in PDF file

2.c) Metadata elements used

Seismic Display Metadata

Attribute	Description	Data type
CONTRACTOR	Contractor who own the license	Varchar2(80)
WORKING AREA	Area where the survey is conducted	Varchar2(80)
FIELD_AREA	Part of working area	Varchar2(80)
COUNTRY	Country where it is conducted	Varchar2(40)
SURVEY_NAME	The name of survey	Varchar2(40)
SURVEY_DATE	The starting date of the survey	Date
PROCESSING-CONTRACTOR	Contractor who process the data	Varchar2(40)
PROCESSING-DATE	The starting date of the processing	Date
LINE NAME	The name of the line in the survey	Varchar2(40)
FIRST-SHOTPOINT	First shotpoint of line seismic	Number(5)
LAST-SHOTPOINT	Last shotpoint of line seismic	Number(5)
FIRST-CDP	First CDP of line seismic	Number(5)
LAST-CDP	Last CDP of line seismic	Number(5)

TYPE OF EXPLORATION AND EXPLOITATION DATA

No	Activities	General data	Basic data	Processed data	Interpretation data
1	Cartography Geography	<ul style="list-style-type: none"> - General information - Production Facilities Maps - Oil and Gas Field Location Maps - Well Location Maps - Oil and Gas Working Area Maps - etc 			
2	Seismic	<ul style="list-style-type: none"> - General information - Basemaps - Datum Reference Geodetic information 	<ul style="list-style-type: none"> - Seismic Field Data - Weathering Zone Data - Field Quality - Control Plot - instrument Test 	<ul style="list-style-type: none"> - Brute Stack - Pre Stack - Pre-Stack Migration (if exists) - Stack - Post Stack 	<ul style="list-style-type: none"> - Earth Modelling - Geophysical Cross Section - Seismic Interpretive Data - Subsurface Structural Maps (Time-Depth Contour Maps)
3	Production	<ul style="list-style-type: none"> - General information - Production Facilities : <ul style="list-style-type: none"> - Pipeline - Separator - Compressor - Accumulation Tank - Lifting Terminal - Well Status - Pertamina/ Contractor Production 	<ul style="list-style-type: none"> - Production Data: <ul style="list-style-type: none"> - Qo, Qg, Qw -GOR - BS & W - Ps, Pwf, Pwh - EOR Data - Production Test Data - Temperature Gradient - Pressure Gradient 		
4	Reservoir	<ul style="list-style-type: none"> - General information - Reservoir Formation - Hydrocarbon Result 	<ul style="list-style-type: none"> - Workover Performance - PVT Reservoir - Reservoir properties(SW,Vshale,etc) - Reservoir Mineralogy 	<ul style="list-style-type: none"> - Rock Qualification, Source Rock, - Hydrocarbon Type - Reservoir Characteristic Analysis - Acreage Calculation - Seismic 4 D Data Analysis (related to reservoir condition) 	<ul style="list-style-type: none"> - Reservoir Simulation - Reserve Estimation - Production Estimation

2.d) Quality Control

➤ MIGAS DIRECTORATE and DIC of EMR

2.e) System and technologies used

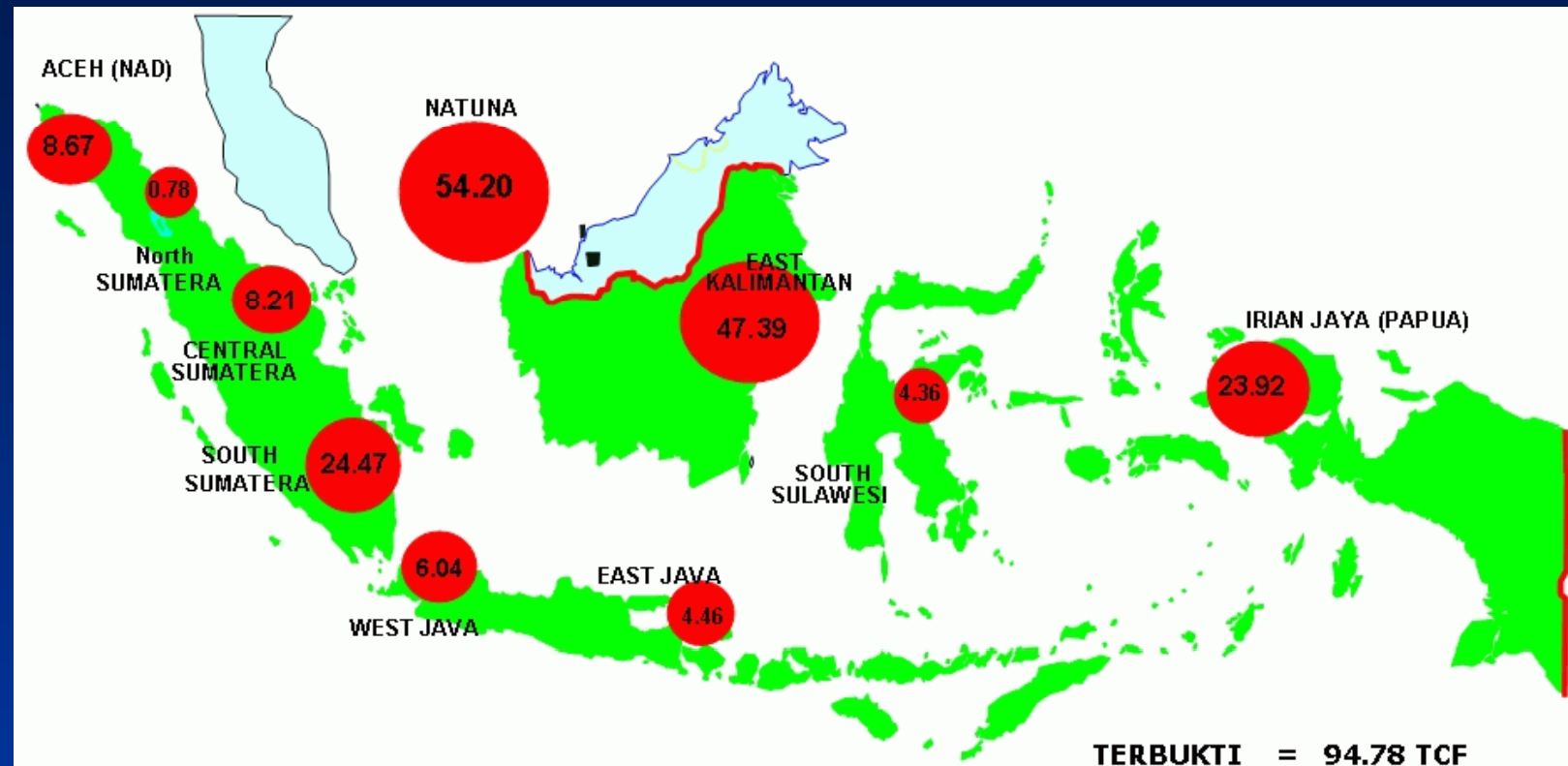
- Present technology, ex. POSC Epicenter (Petrotechnical Open Software Corporation), Inameta

2.f) Data flow and access

- Submission/request : Business Entity => Migas Directorate => DIC of EMR
- For the Active Data: BPMIGAS ⇔ Internal Policy of Pertamina/PSCs
- Public domain: see DIC of EMR web (operated by PND)

Examples: access data from web site DIC of EMR

INDONESIAN GAS RESERVES



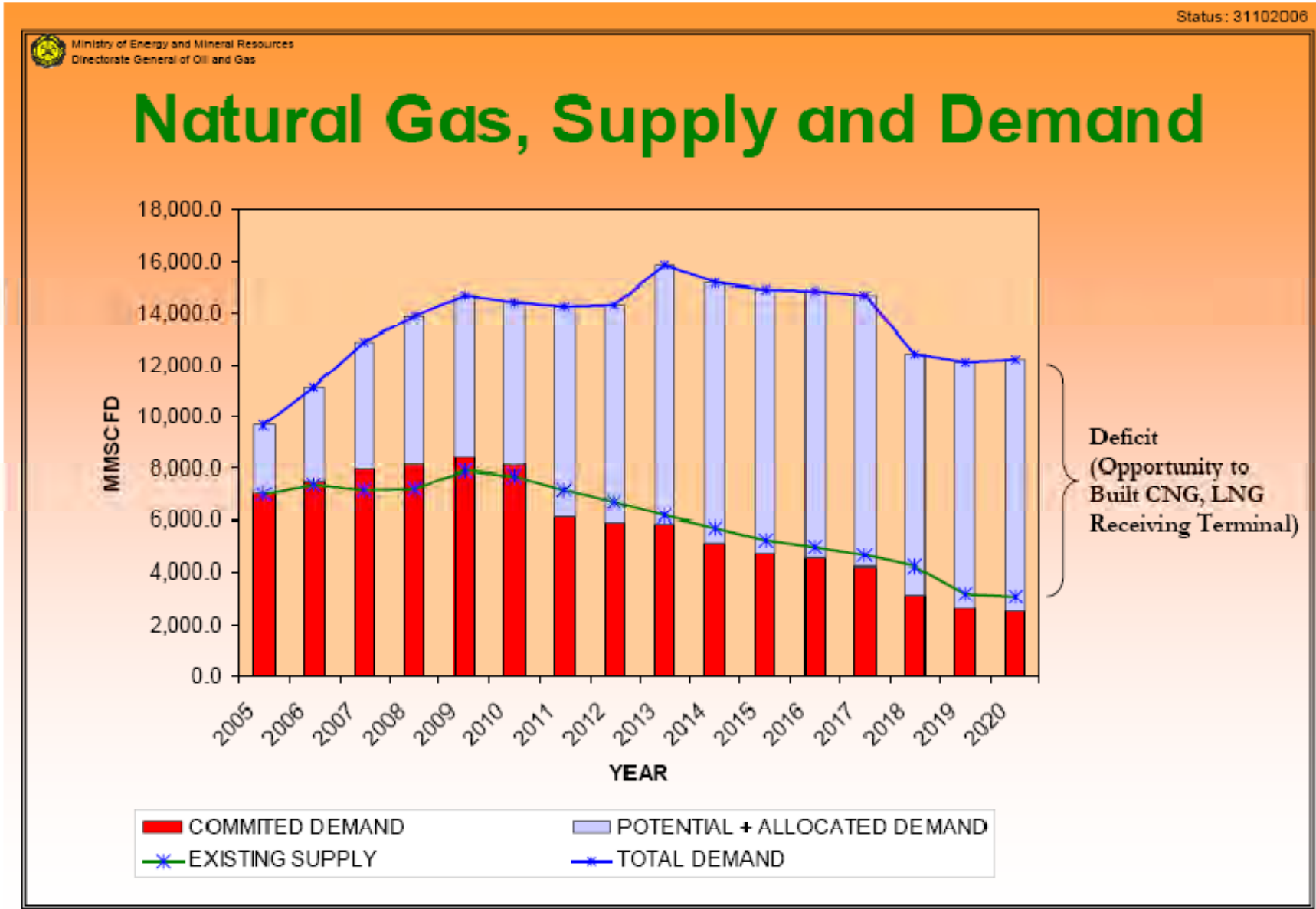
- ◆ Indonesian gas reserves, proven and potential are increasing. In 2006, total gas reserves were 182,5 trillion cubic feet (TCF). This is made up of 94,78 TCF proven reserves, and 87,73 TCF potential, able to be produced in 64 years. The gas reserves are concentrated in the Western part of Indonesia, therefore in the future, the exploration activities needs to be emphasized in the eastern part of Indonesia.

Examples: access data from web site DIC of EMR

INDONESIAN GAS PIPELINES NETWORKS



Examples: access data from web site DIC of EMR

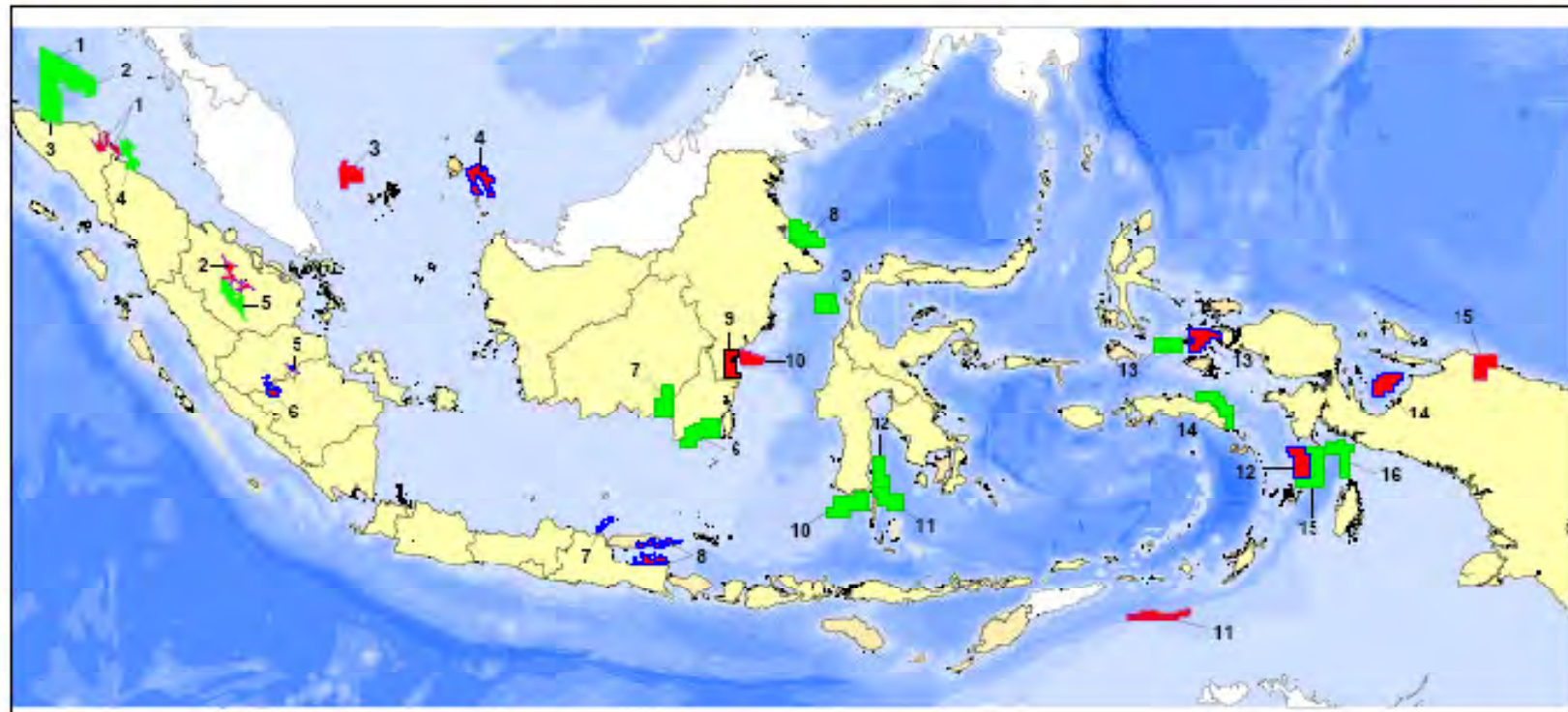


Examples: access data from Inameta



Examples: access data from Inameta

INDONESIA PETROLEUM BIDDING 2nd ROUND YEAR 2008



Legend:

■ Regular Tender ■ Direct Proposal

OFFERED AREA :

REGULAR TENDER :

- | | | |
|------------------------|-------------------|-------------------|
| 1 ANDAMAN -I | 7 SW TANJUNG AREA | 12 KAMBUNO |
| 2 ANDAMAN-II | 8 SOUTH BULUNGAN | 13 SE HALMAHERA |
| 3 ANDAMAN-III | 9 NORTH SURUMANA | 14 EAST BULA |
| 4 WEST GELAGAH KAMBJNA | 10 KARAENG | 15 ARU |
| 5 SOUTH BENTU SEGAI | 11 SELAYAK | 16 WESTI PAPUA-IV |
| 6 NORTH SUMBAWA-I | | |

DIRECT PROPOSAL :

- | | | |
|--------------------|------------------|--------------------|
| 1. SOUTH BLOCK "A" | 6. WEST BELIDA | 11. SERMATA |
| 2. EAST PAMAI | 7. TERUMBU | 12. KUMAWA |
| 3. PENYU | 8. SE MADURA | 13. KOFIAU |
| 4. SOKANG | 9. PASIR | 14. CENDRAWASIH |
| 5. SENAMI-BAHAR | 10. SOUTH SESULU | 15. NORTHERN PAPUA |



FISCAL TERM AND CONDITION TENDER YEAR 2006 (NEW ACREAGE)

(1)

NO	BLOCK	LOCATION	SIZE (Sq Km)	GOVERNMENT TAKE (%)			CONTRACTOR TAKE (%)		INVESTMENT CREDIT
				AFTER TAX		FIRST TRANCHE PETROLEUM	AFTER TAX		
				OIL	GAS		OIL	GAS	
1	CUCUT	OFF. NATUNA	5,742.69	75	60	10	25	40	-
2	TUNA	OFF. NATUNA	4,991.96	75	60	10	25	40	-
3	DOLPHIN	OFF. NATUNA	5,374.76	75	60	10	25	40	-
4	WEST AIR KOMERING	ON. SUMSEL	3,988.23	85	70	10	15	30	-
5	S.E. MAHAKAM	OFF. KALTIM	2,004.58	80	70	10	20	30	-
6	KARAMA	MAKASSAR STRAIT	4,287.37	65	60	10	35	40	-
7	MALUNDA	MAKASSAR STRAIT	5,148.68	65	60	10	35	40	-
8	MANDAR	MAKASSAR STRAIT	4,196.25	65	60	10	35	40	-
9	SADANG	MAKASSAR STRAIT	3,700.54	65	60	10	35	40	-
10	SOUTH MANDAR	MAKASSAR STRAIT	3,882.08	65	60	10	35	40	-
11	SAGERI	MAKASSAR STRAIT	3,878.19	65	60	10	35	40	-
12	SOUTH SAGERI	MAKASSAR STRAIT	3,889.10	65	60	10	35	40	-

NOTES:

- First Tranche Petroleum (FTP) undivided (not to be shared with Contractor)

Examples: access data from web site DIC of EMR

Status: 31102008

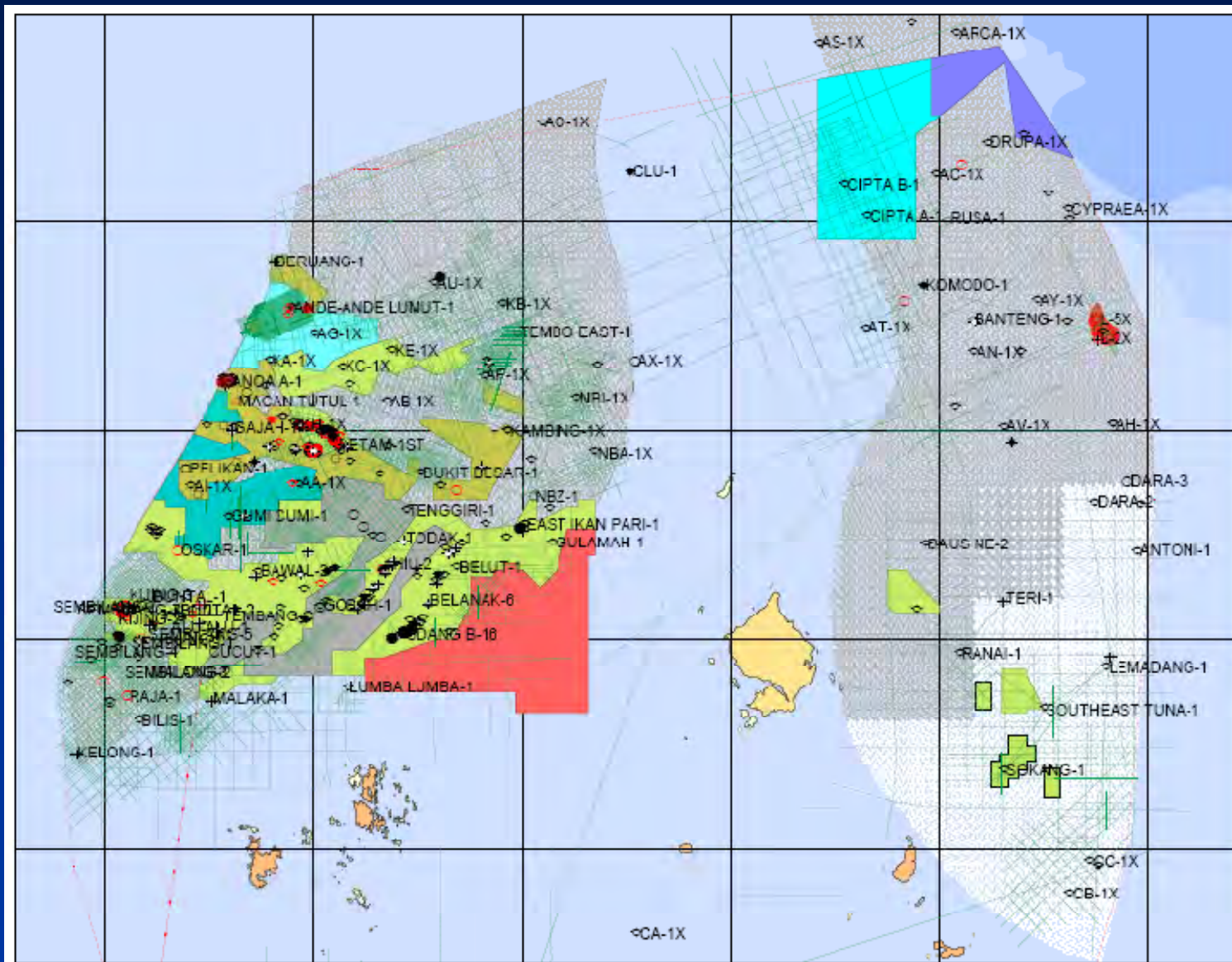


Ministry of Energy and Mineral Resources
Directorate General of Oil and Gas

GAS UTILIZATION

- Increasing of Gas utilization for domestic demand;
- Business Entity or Permanent Establishment shall submit 25% of their production as Domestic Market Obligation (DMO);
- Optimal utilization of gas resources in specific area by concerning reserves, demand/market (capacity/location), and gas infrastructures, technical and economical feasibility (specification / deliverability).

Examples: access data from PND (Inameta)



Examples: access data from Inameta

Migas Data Management (MDM)

SEISMIC DATA

SURVEY	LINE NAME	SURVEY YEAR	PROCESS YEAR	BARCODE	SEISMIC SECTION				DIGITAL DATA				BOX
					FSP	LSP	KM	PROCESS TYPE	FSP	LSP	KM	PROCESS TYPE	
ISSA					PAPER-COPY				DIGITAL				
line(s) : 2					STACK 33,17 KM				STACK KM				
					MIGRATION KM				MIGRATION KM				
									FIELD TAPE KM				
2209		01/02/1982		MDSW4826	1	439	19,71	STACK					
3018		01/12/1982		MDSW5458	1	300	13,46	STACK					
PT. CALTEX PACIFIC INDONESIA					PAPER-COPY				DIGITAL				
line(s) : 10					STACK 107,50 KM				STACK KM				
					MIGRATION 19,38 KM				MIGRATION KM				
									FIELD TAPE KM				
1204				00568697	1	99	3,92	STACK					
1232				00406492	1	390	11,67	STACK					
2207				00178949	258	26	4,64	STACK					
3009				00178895	627	775	8,88	MIGRATION					
3012		01/03/1976	01/03/1976	00286483	300	497	5,91	STACK					
		01/03/1976	01/03/1976	00286483	300	497	5,91	STACK					
		01/03/1976	01/03/1976	00178911	614	498	3,48	MIGRATION					
		01/03/1976	01/03/1976	00178911	614	498	3,48	MIGRATION					
3023		01/03/1976	01/03/1976	00286480	22	362	40,80	STACK					
3072				00740848	624	731	6,42	STACK					
3074				00231259	695	636	3,54	MIGRATION					
3077				00286478	1	531	15,90	STACK					
3083				00178856	40	451	12,33	STACK					
PT. STANVAC INDONESIA					PAPER-COPY				DIGITAL				
line(s) : 1					STACK KM				STACK KM				
					MIGRATION 6,09 KM				MIGRATION KM				
									FIELD TAPE KM				
591-81		01/04/1981	01/04/1981	00195481	2001	2175	6,09	MIGRATION STACK					

Examples: access data from Inameta

Migas Data Management (MDM)

WELL LOGS

WELL NAME	CONTRACTOR	WELL LOCATION		SPUD DATE	HEAD LABEL	RUN	FORMAT	BARCODE	BOX
		LONGITUDE	LATITUDE						

AREA: DUMAI-PAMAI TALUK

KATALAU-1	ESSO EXPLORATION AND PRODUCTION DUMAI INC.	1° 11' 32,076	101° 44' 18,8	14/03/1989	8 Log(s)
-----------	--	---------------	---------------	------------	----------

DLL-GR-LSS-CAL-AMS-SP
 DLL-GR-LSS-CAL-AMS-SP
 DLL-GR-LSS-MSFL-AMS-SP
 DLL-GR-LSS-MSFL-AMS-SP
 DLL-GR-LSS-SP
 LDL-CNL-GR-AMS
 LDL-CNL-GR-AMS
 WSS-CSS

UNGUS-1	ESSO EXPLORATION AND PRODUCTION DUMAI INC.	1° 3' 26,73 N	101° 49' 29,6	27/03/1989	8 Log(s)
---------	--	---------------	---------------	------------	----------

CST SWS
 DLL GR LSS CAL AMS SP
 DLL GR LSS CAL AMS SP
 DLL GR MSFL LSS AMS SP
 DLL GR MSFL LSS AMS SP
 DLL GR MSFL LSS AMS SP
 LDL CNL GR AMS
 LDL CNL GR AMS

Number of Well(s): 2

Total Log(s): 16

Examples: access data from Inameta

Migas Data Management (MDM)

WELL REPORT

WellName	Contractor	Well Location		Spud Date	Report Title	Report Date	Report Author	Pages	Encl	Format	Barcode	Box
		Latitude	Longitude									

AREA: DUMAI-PAMAI TALUK

KATIALAU-1	ESSO EXPLORATION AND PRODUCTION DUMAI INC.	1° 11' 32,076	101° 44' 18,83	14/03/1989	4 Title(s)			Page(s)	0	Enclosure(s)	
					A .PETROLEUM GEOCHEMICAL EVALUATION			0			
					BIOSTRATIGRAPHY AND ENVIRONMENT			0			
					GEOLOGIC COMPLETION REPORT			0			
					WELL PROPOSAL			0			
UNGUS-1	ESSO EXPLORATION AND PRODUCTION DUMAI INC.	1° 3' 26,73 N	101° 49' 29,67	27/03/1989	4 Title(s)			Page(s)	0	Enclosure(s)	
					A .PETROLEUM GEOCHEMICAL EVALUATION OF THE 200 TO4888	01/06/1989		0			
					GEOLOGIC COMPLETION REPORT	01/06/1989		0			
					THE BIOSTRATIGRAPHY AND PALEONVIRONMENTS OF THE INTERVAL 180-4988	01/06/1989		0			
					WELL PROPOSAL	02/11/1988		0			
Number of Well(s):		2		Total Report(s):		8		Number of Page(s):		0	
Number of Enclosure (s):		0									

2.g) Challenges to Indonesia national database management

- Huge and spread of the existing data
- Less Communication among adjacent institutions
- Lost information/record of vital content
- Various database system, especially in navigation references system
- Very high cost of investment
- Less of high competency of local human resources

2.h) Ongoing or future plans to improve database management

- Indexation/catalog & classification
- Digitalization of physical old data/document that obtained before year nineties, ex. Core data, seismic, well log and others related exploration oil and gas data.(before 1980)
- Competency improvements of local human resource, especially, in quality control system, data management and entrepreneur ship
- Modern National Data Warehouse/Storage Building
- Applied one standard, well organization relationship, easy to access/web base, cheap and user friendly

AVAILABLE AND ACCESS DATA

Seismic Data

Available

Stack Seismic = 204.35 Km

Migration Seismic = 25.47 Km

Accessible

Stack Seismic = 111.5 Km

Migration Seismic = 19.2 Km

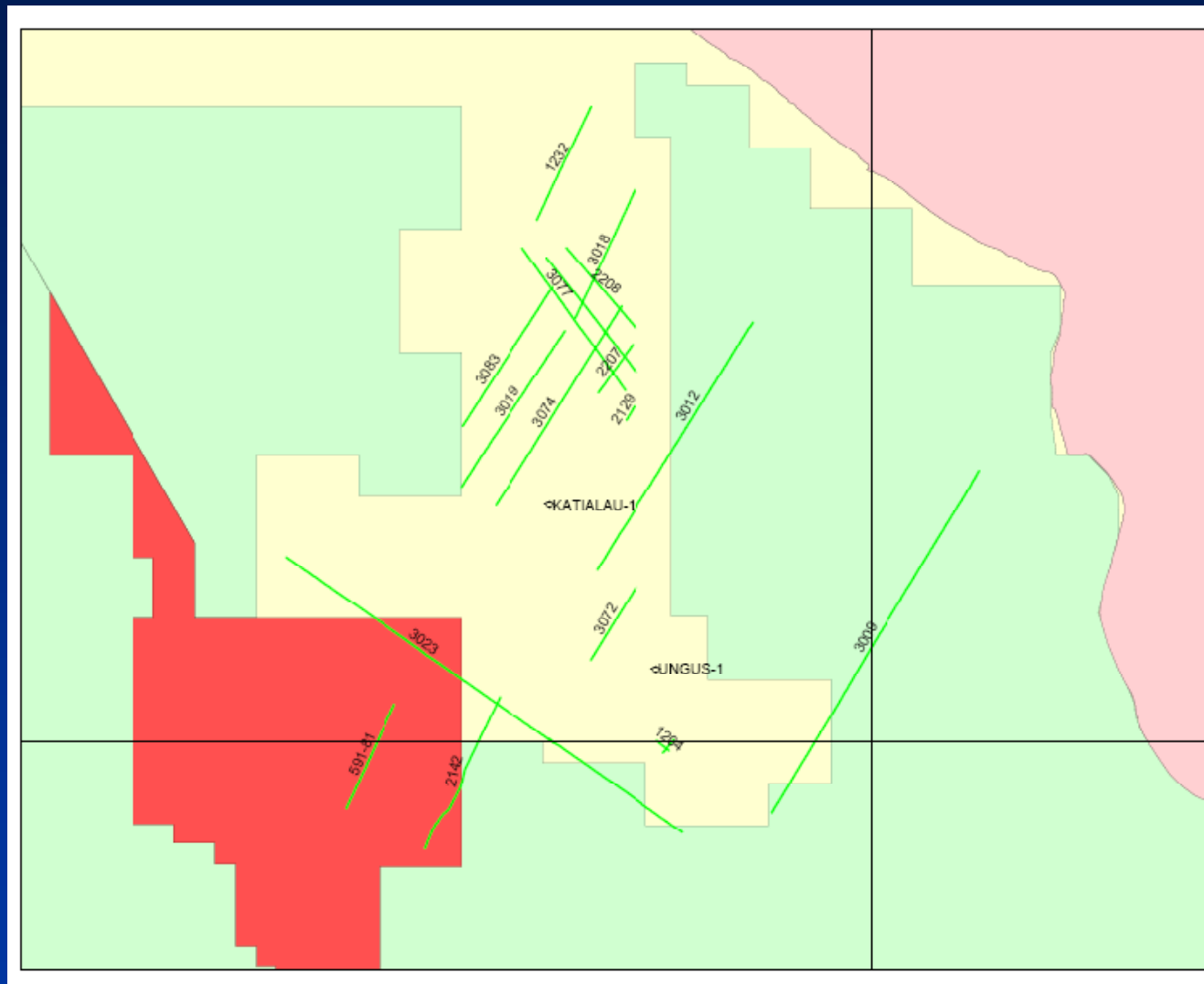
Well Data = 8 Well

Standard Logs

Well Report

Previous Study

AVAILABLE AND ACCESS DATA



PND

ACCESSABLE DATA DISTRIBUTION

3. Recommendations

3.a) CCOP natural gas metadata design and structure

- Continue improvements and promote general design interface that could be applied by members
- Suggestions general standard for the CCOP purposes

3.b) Required capacities to be developed by member countries

- Held the advance course to achieve personal capability
- Technical assistance by sponsor/donor institutions that approved by CCOP TS

3.c) How knowledge learned from the CCOP Metadata workshops can be shared to your organization

- Joint study
- Published frequently by using the CCOP's media and institutional access to member country and it's personal expert

Thank you – terima kasih