付　属　資　料

1．調査団協議議事録（M/M）
2．PDM Ver.2
3．評価結果（評価グリッド）
4．評価表要約
5．質問票集計結果
6．石炭鉱業政策団員報告資料
7．坑内採掘技術団員報告資料
8．運営指導調査報告（2002年 9 月実施）
9．運営指導調査報告（2003年 6 月実施）
10．石炭坑内採掘技術需要予測調査報告

MINUTES OF MEETING BETWEEN THE JAPANESE MID-TERM EVALUATION TEAM AND THE EDUCATION AND TRAINING AGENCY OF ENERGY AND MINERAL RESOURCES OF MINISTRY OF ENERGY AND MINERAL RESOURCES OF THE REPUBLIC OF INDONESIA ON THE JAPANESE TECHNICAL COOPERATION FOR THE COAL MINING TECHNOLOGY ENHANCEMENT PROJECT AT EDUCATION AND TRAINING UNIT FOR UNDERGROUND MINING

The Japanese Mid-term Evaluation Team (hereinafter referred to as "the Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Masami Fuwa visited the Republic of Indonesia from November 16 to 21, 2003 in order to conduct mid-term evaluation of the activities of the Coal Mining Technology Enhancement Project at Education and Training Unit for Underground Mining (hereinafter referred to as "the Project").

During its stay in Indonesia, the Team had a series of discussions and exchanged views with the Education and Training Agency of Energy and Mineral Resources of Ministry of Energy and Mineral Resources of the Republic of Indonesia (hereinafter referred to as "the Indonesian side") for the successful implementation of the Project. The Team also discussed with the Directorate General of Geology and Mineral Resources.

As a result of the discussions, the Indonesian and Japanese sides agreed upon the matters referred to in the document attached hereto.

Jakarta, November 21st, 2003

Mr. Masami Fuwa
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Mid-term Evaluation Team
Japan International Cooperation Agency
Japan

Prof. Dr. Surna T. Djajadiningrat
Head
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Ministry of Energy and Mineral Resources
The Republic of Indonesia

The Attached Document

The Project was started in April 2001 and two and a half years have been spent. Following the June 2003 mission, the JICA sent a mid-term evaluation mission at this moment and held discussion and conducted joint mid-term evaluation according to the article V. in the "Record of Discussions" agreed and signed on Oct. 19, 2000.

I. Results of mid-term Evaluation

The counterpart personnel (C/P) from Ombilin Mine (UPO) left the Project caused by the rationalization of the company, and the C/Ps from the P3TMB had been absent for the long time, these instabilities of the C/P exerted bad influences upon the Project. But the influences controlled by means of the employment of young persons with high morale and ex-UPO staffs with underground- mining-experience; and talking about the Introductory Courses, it is estimated that the Project Purpose will be achieved within the Project period. However the increase of the underground mines is less than the original plan and the trainings of the staffs of the local government and mine inspectors has been urgent business, because the authority to manage the mineral and coal mining industry was decentralized from the central to the local government. Indonesian Government strengthen the national standardization activities in qualification and standard. Also the Ministry of Energy and Mineral Resources set up the national standardization activities in qualification and standard related to the ministry. The Education and Training Agency of Energy and Mineral Resources (Hereinafter refer to as ' the Agency') intend to appoint the P3TMB and also the BDTBT as the training organization of the mining qualification (But there are some barriers such as review of regulations, the issue of the stakeholders and a small number of existing underground coal mines to approve the appointment immediately).

It is required to BDTBT to modify the Input, Activities, Output and Project Purpose to cope with the change of coal mining circumstance and diversification into coal mining training. The needs survey clarifying the content and size of the training has to be carried out for the purpose of reviewing the above mentioned item of Project Design Matrix (PDM) and preparing the concrete financial plan to raise the sustainability as UPT.

1. Detailed explanation of evaluation results

1-1 Efficiency

The efficiency of basic courses is high.

With the Input, personnel, equipment and facilities, which have been timely arranged and functioned effectively, appropriate Outputs have been produced at the basic courses that are executed recently in the Introductory Courses, except the following;

- The achievement of the Outputs has been delayed at a training course due to the shortage of the C/P activities that were generated by the external condition.
- The change of activity (training courses) caused by the delay of budget execution.
- Three months delay of experimental tunnels construction was due to the significant difference between the budget and the quotation in unit price.

The textbooks is compiled as one of the training materials for introductory courses, they are made from practical basic of operation and/or safely to the high level of knowledge and skill; therefore the C/P was required especially to acquire so many field experience thorough the OJT provided at domestic mines also at foreign mines to achieve the technology transfer in the Introductory Courses. If the target group are still supposed to be the middle class engineers at the mine site, it is evaluated that the efficiency is low because of the low degree of mine experience of C/Ps. If the target group is supposed to be mining inspector/ government staff, the legal training has to be added, the present Inputs are

sufficient for the training, therefore it can say the efficiency is high.

And if the BDTBT acts as the training organization for the mining qualifications, and the cooperation and mutual reinforcement with P3TMB are conducted, the trainings are possible, so it can be say the training for the qualification is efficient.

1-2 Effectiveness

The effectiveness of the basic courses is high.

As mentioned before, the achievement of the Outputs were delayed due to the external conditions, and target group changed to mine inspectors and coal mining engineers. On account of these matters, the Project Purpose is changed, and the evaluation of the effectiveness is complicated.

At first, administrative system of the project established within one year after the project started, and operation and maintenance of the equipment and machineries have been carried out by almost C/Ps.

And the curriculums and textbooks were prepared JFY2002, except the Environment Course that was started JFY 2003. The Regularly Courses training were held in 2002, and in 2003. Number of the courses were 17 in total and all trainees participated were 327. And Special Courses were held twice. Many of the C/Ps are capable to plan and manage the training with in the field of transferred technology.

Therefore it can say that the effectiveness is high at the basic courses that are executed recently in the Introductory Courses. In regard to the inspector training, the high level of the field experience were not required to the C/Ps. So the effectiveness of the inspector training is high. From the similar point of view, the efficiency of the training for the qualification is high. As for the training of middle class mining engineer, judging from the original plan, the C/P training shall be carried out fully five 5 years, but the many C/Ps (especially new graduates) did not receive the sufficient OJT before joining the Project, it can not evaluate that the most of C/Ps experienced half of skill that were required for the technology transfer at present; therefore the effectiveness is low.

1-3 Impact

The following positive Impact occurred.

Two universities sent short-term student apprentice, it is expected that this activities trigger the research and development of underground coal mining technology in Indonesia.

In the Suwahlunto area the two Japanese Coorperations, namely JICA and NEDO, are tied up some area of technical transfer, it will be strengthen the coal technology in Indonesia.

It is important for the Project to review the content of the training thoroughly to cope with the actual demand, and to create the positive impact

1-4 Relevance

There is no change of the importance of coal in the government strategy of energy and economy. Because of the coal circumstances, sluggish the investment to coal caused by social, economical, financial instability in Indonesia the development of the underground delayed; however the results of the needs survey on March, 2003 done by JICA, the number of underground coal mines and production from the underground will increase gradually. And the great stock of experienced underground mining technology is transferred. Therefore the Project has relevance. If the technology transfers, which consider the cost effectiveness more, the relevance of the technological support become more higher.

1-5 Sustainability

After the Project completion, BDTBT shall be maintained and be succeeded as the one of the division of P3TMB. The Agency has reviewed the concept plan of financing, such as the local cost will be born by the government, and the training fees will be born by the organization who sent the trainee to the BDTBT.

However to guarantee the sustainability, concrete financial Plan shall be established immediately, and how the unique position, namely the UPT, of BDTBT will be treated by the government shall be analyzed its sensibilities. For the purpose, the needs survey shall be continue to grasp the training needs and content of the related organizations; then review the training courses and size of the training.

2. Conclusions

From the point of view that the technology transfer has been carried out toward the basic courses, it is evaluated that the both of the efficiency and effectiveness are high. However as the forecast of in future, the review of the Project is required to create a Project that have a lot of actual demand, and the efficiency and the effetivity are higher and affect a lot of positive impact., cope with the diversification of target group. So the more enhanced training needs survey is required. And after the survey, its results will be utilize to prepare the concrete financial plan . Then the sustainability of BDTBT will be secured.

3. Recommendations

It is the most important to design the development plan of the BDTBT in self-sufficient manner.

Recognizing the fact that underground coal production in Indonesia grows much slower than expected before, it is recommended to review and revise the original plan of the Project, i.e., revision of the Project Design Matrix (PDM) in near future. It is necessary to keep the function of existing facilities and equipment, and to improve and stabilize the capabilities of the Indonesian counterpart personnel. In addition, urgent matter may include identifying possible demand for technical training for underground coalmines in the country. Considering the characteristics and mandate of the BDTBT, it is also urgent task to establish national qualification system for underground mine safety and environmental preservation. especially

II. Others

According to the result of the discussion, both parties agreed upon the following points:

1. Title of the Project

According to the status change of the former Ombilin Mines Training College to the Education and Training Unit for Underground Mining or Balai Diklat Tambang Bawah Tanah (BDTBT), the title of the Project was changed to "The Coal Mining Technology Enhancement Project at Education and Training Unit for Underground Mining".

2. Next mission

After assignment of the successor of Head, the Education and Training Agency of Energy and Mineral Resources, possibly in next March, the JICA would send another mission to discuss revision of Project Design Matrix (PDM) according to some modification of target group and training activities to be implemented by the time of termination of the Project, and some progress of qualification system on safety and environmental preservation. The main point of discussion will be sustainability of the BDTBT.

3. Japanese Input in JFY 2004

As for Japanese input in the Japanese fiscal year of 2004 starting April 1st, the JICA will assign long term experts as following:

a) an chief advisor (tem leader) serving also as an expert in the field of mining technology;
b) a project coordinator;
c) an expert in the field of mining electricity technology serving also an expert in the field of mining machinery technology;
d) an expert in the field of mine environmental technology

Above mentioned experts work basically at Sawahlunto, West Sumatra, and

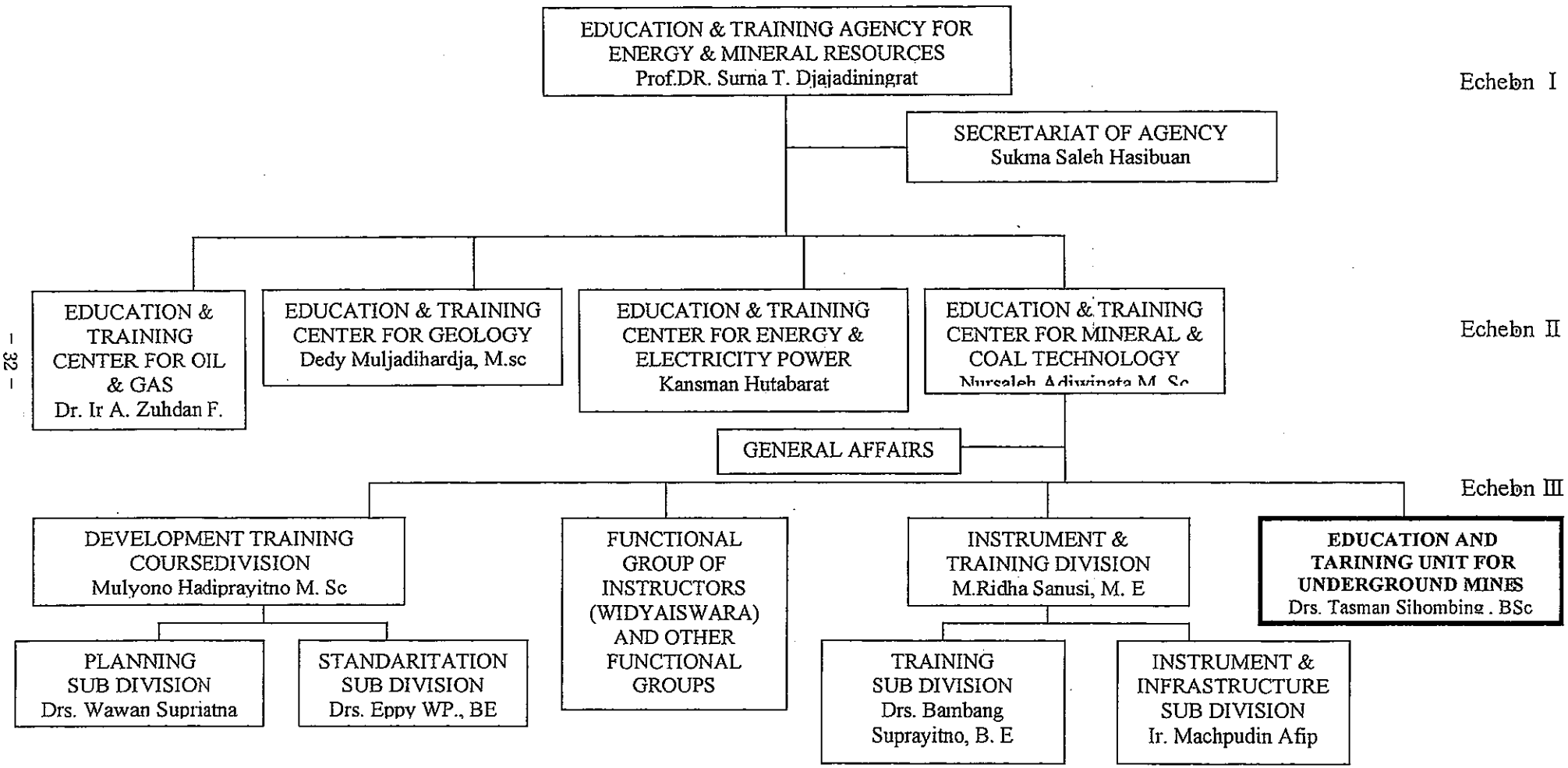
e) an expert in the field of mine safety technology serving also as a sub leader, who works basically at Jakarta, Bandung and Sawahlunto, West Sumatra.

It is noted that a sub leader who is also an expert in underground mine safety technology will assist the work for establishing competency standard on underground mine safety and environmental preservation in cooperation with not only the Education and Training Agency of Energy and Mineral Resources but also with Directorate General of Geology and Mineral Resources.

LIST OF ANNEXES

ANNEX 1

ORGANIZATION STRUCTURE OF EDUCATION & TRAINING AGENCY FOR ENERGY & MINERAL RESOURCES



ANNEX 2

Project Design Matrix (PDM ver.1) for Coal Mining Technology Enhancement Project at Ombilin Mines Training College (OMTC) in the Republic of Indonesia

Project Name: Coal Mining Technology Enhancement Project at Ombilin Mines Training College in the Republic of Indonesia
Project Site: Sawahluntto, West Sumatra, Republic of Indonesia

Duration: 5 Years
Target Group: Coal Mining Supervisor
Date: June 23, 2000

	Narrative Summary	Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal	Underground coal mining technology is enhanced in the Republic of Indonesia.	・Coal production from underground mine ・Accident rates of underground mine ・Status of employment and job category of coal mining supervisor (OMTC graduate)	・Coal production statistics of Directorate General of Mines (DGM) ・Accident statistics of Directorate General of Mines(DGM) ・Follow-up survey for OMTC graduate	・Smooth progress of Energy Supply & Demant Scheme ・Coal policy will not be shifted. ・Master Plan on Human Resources development will not be shifted.
Project Purpose	Ombilin Mines Training College (OMTC) is able to train underground mining supervisors.	・Number of C/P and qualification of C/P as trainers in OMTC ・Number of coal mining supervisors as trainees completed and registered in OMTC	・Statistic of MDCM ・Statistic of OMTC	・Trained coal mining supervisor continues to engage in activities related to underground mining technology in respective organization. ・Central and local Governments will support and cooperate with OMTC.
Outputs	①Administrative system of the project is established. ②Operation and maintenance system of machinery and equipment of the project is established by Counterparts. ③Preparation for implementation of the following courses by Counterpart is completed. ・Underground Coal Mining Technology Training Course ・Underground Coal Mining Safety Technology Training Course ・Underground Coal Mining Machinery Technology Training Course ・Underground Coal Mining Electricity Technology Training Course ・Underground Coal Mining Environment Technology Training Course ④The following course are being implemented at OMTC ・Underground Coal Mining Technology Training Course ・Underground Coal Mining Safety Technology Training Course ・Underground Coal Mining Machinery Technology Training Course ・Underground Coal Mining Electricity Technology Training Course ・Underground Coal Mining Environment Technology Training Course	①-1 Assignment of C/P and allocation of OMTC budget -2 Number of courses, classes and trainees planned ②-1 Inventory, maintenance and utilization status of training machinery and equipment -2 C/P operational and maintenance skill for training machinery and equipment ③-1 Curriculum and educational materials of each course -2 Certificate for Trainer required to teach courses -3 Qualification of C/P ④-1 Number of courses, classes and trainees completed -2 Certificate for Trainees required to complete courses -3 Number of Certificate awarded to trainees and graduates	①-1 Administrative and account report -2 Records of training activity ②-1 Asset list and check list of training machinery and equipment -2 Evaluation report of operational and maintenance skill of C/P ③-1 Guideline for curriculum and training materials -2 Guideline of Certificate for Trainer -3 Certificate status of each C/P ④-1 Records of training activity -2 Guideline of Certificate for Trainee -3 Academic performance record of trainees and graduates	・Needs for educational opportunities of underground coal mining technology do not change from the Project start date.

Activities	Narrative Summary	Inputs		Important Assumptions
		Japanese side	Indonesia side	• Trained C/P continue to teach and assist courses at OMTC. • Appropriate number of trainee continuously applies to OMTC recruitment. • Training courses are reviewed and upgraded continuously.
	①-1 Allocate necessary personnel as planned -2 Clarify the division of work -3 Make plans of activity -4 Prepare facilities and equipment for the project -5 Make Annual Plan of Operation ②-1 Make a plan for procurement, installment and maintenance of machinery and equipment -2 Procure, install and maintain machinery and equipment -3 Make operational and maintenance manuals of machinery and equipment -4 Evaluate operation and maintenance capability of machinery and equipment ③-1 Make a plan of each training course -2 Prepare curriculums and materials for each training course -3 Make a recruiting plan of trainees -4 Recruit trainees ④-1 C/P acquires necessary knowledge for lecture of each training course and give lectures -2 C/P acquires necessary skills to operate machinery and equipment for exercises of each course and give exercises -3 Evaluate each training course -4 Conduct follow-up survey for graduated trainee	① Dispatch of Long-term experts (Total 7 fields of expertise) • Team Leader 1 • Coordinator 1 • Underground Mining Technology1 • Underground Mining Safety Technology1 • Underground Machinery Technology 1 • Underground Electricity Technology 1 • Underground Environmental Technology 1 ② Dispatch of Short-term expert • Coal Mine Management and Evaluation 1 ③ Counterpart Training in Japan 1-3 peoples/year ④ Provision of education materials and equipment • Material and equipment for Underground Mining Technology Training • Material and equipment for Underground Safety Technology Training • Material and equipment for Underground Mechanical Technology Training • Material and equipment for Underground Electrical Technology Training • Material and equipment for Underground Environmental Technology Training • Dummy gallery for training purpose • Administrative materials and audio visual facility • Vehicles for local transport of expert • Others (if necessary Project Center)	① Assignment of full-time counterparts ② Allocation of local portion of expenditure ③ Provision and maintenance of building, facility, laboratory, equipment, etc. • Office for Japanese experts • Classroom, Meeting room, Library, Exercise room, Warehouse for equipment, etc. • Dormitory for trainees • Accommodation for Japanese experts ④ Provision of equipment Provision of educational materials and equipment besides Japanese provision ⑤ Privileges for Japanese experts, Import tax exemption for provision of educational materials and equipment from Japanese side and carried materials by Japanese Expert	Pre-conditions: ① Facilities and Equipment in the Project site should be prepared by Indonesian side before R/D is made. ② Department Mines and Energy should support OMTC. ③ DGM should assist the recruiting activity of trainee. ④ Excellent Indonesian lecturer and staff should be prepared for C/P. ⑤ Certificate for C/P shall be issued by DGM/MDCM and JICA. ⑥ Certificate for trainees shall be issued by DGM/MDCM.

ANNEX 3

Tentative Schedule of Implementation (TSI)

Calendar Year	2000				2001				2002				2003				2004				2005				2006		Remarks
Quarter	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	
1. Duration of the project																											
2. Dispatch of Mission Team to Indonesia																											
1) Preliminary study																											
2) Supplementary study																											
3) Implementation study																											
(R/D: Record of Document)																											
4) Management consultation team																											plan of dispatch of experts in JFY 2005 will be discussed with the Management consultation team that will be held in 3rd quarter of 2004.
5) Mid-Term evaluation team																											
3. Japanese side																											
3.1 Long term experts																											
(1)Team Leader																											also serves as an expert of Mining Technology.
(2)Coordinator																											
(3)Mining Technology																											
(4)Mine Safety Technology																											also serves as a sub-leader who works basically at Jakarta, Bandung and Sawahlunto.
(5)Mining Machinery Technology																											
(6)Mining Electricity Technology																											also serves as an expert of Mining Machinery Technology.
(7)Mine Environment Technology																											
3.2 Short term experts																											According to the
(1)Mining Technology																											necessity of the dispatch
(2)Mine Safety Technology																											ditto
(3)Machinery-Electricity Technology																											ditto
(4)Environment Technology																											ditto
(5)Machine installation/operation /maintenance																											ditto
(6)Others																											ditto
3.3 Provision of machinery and equipment																											
3.4 Counterpart training in Japan																											
4. Indonesia side																											
4.1 Budget allocation																											
4.2 Buildings and facilities for project																											
4.3 Machinery,equipment and materials																											
4.4 Assignment of Full-time counterpart																											
4.5 Privileges, exemptions and benefits to the Japanese experts																											
4.6 Qualification system																											
4.7 Measures for sustainability for the project																											

Annex 4 Dispatch of Japanese Experts

<Long term expert>

	Name	Technical field	Assigned Term
1	Mr. TATSUNO Hiroaki	Team Leader	2001.4.1 - 2004.3.31
2	Mr. TSUTSUI Masahiro	Project Coodinator	2001.4.1 - 2003.6.30
3	Mr. KIZAKI Hiroshi	Underground Coal Mining	2001.4.1 - 2003.3.31
4	Mr. KAKITA Tsuyoshi	Underground Coal Mining Safety	2001.4.1 - 2004.3.31
5	Mr. MURASE Yoshiharu	Underground Coal Mining Machinery	2001.4.24 - 2004.4.23
6	Mr. HISADOMI Koji	Underground Coal Mining Electricity	2001.6.1 - 2004.5.31
7	Mr. SHIMODA Yoshihisa	Underground Coal Mining Environment	2002.4.1 - 2004.3.31
8	Mr. SEO Katsuhiko	Underground Coal Mining	2003.4.1 - 2004.3.31
9	Mr. IZUMI Mamoru	Project Coodinator	2003.6.14 - 2004.6.13

<Short term expert>

	Name	Technical field	Assigned Term
1	Mr. SUZUKI Tadashi	Gas and Coal Dust Explosion Experiment	2001.11.22 - 2001.12.3
2	Mr. KIMURA Fumio	Oxygen Breathing Apparatus	2001.12.4 - 2001.12.14
3	Mr. NOBATA Hajime	Underground Coal Mining Design	2002.1.16 - 2002.2.13
4	Mr. HOTTA Masao	Gas Chromatograph	2002.2.17 - 2002.3.2
5	Mr. TORITSUKA Hisao	Underground Loading	2002.3.3 - 2002.3.11
6	Mr. ABE Mitsuaki	Underground Boring	2002.3.10 - 2002.3.17
7	Mr. CHITOSE Tsunemori	Centralized Monitoring System	2002.3.14 - 2002.4.12
8	Mr. UEHARA Masafumi	Management of Mining Law and Qualification System for the Underground Coal Mine	2002.9.8 - 2002.11.8
9	Mr. ISHII Shunji	Preventive Maintenance in Underground Coal Mine Machines	2002.9.17 - 2002.9.29
10	Mr. HIROTA Masahiro	Mine First-aid	2002.11.9 - 2002.11.23
11	Mr. SUZUKI Osamu	Dust Measurement	2003.1.18 - 2003.1.26
12	Mr. UCHIDA Kagemi	Site Management System	2003.1.25 - 2003.2.1
13	Mr. FURUKAWA Kazuhiko	Development and Utilization of Coal Seam Gas	2003.2.2 - 2003.2.9
14	Mr. TAKAYA Koichi	Mining Inspector	2003.2.15 - 2003.2.23
15	Mr. KUMAGAI Kenichi	Investigation into Needs of Underground Coal Mining Technology	2003.3.2 - 2003.3.22
16	Mr. OTSUBO Hideichi	Investigation into Needs of Underground Coal Mining Technology	2003.3.2 - 2003.3.22
17	Mr. KOYANAGI Nobuhiro	Preparation Plant System and Water Treatment Model	2003.3.9 - 2003.3.22
18	Mr. SAITO Akitoshi	Coal Analyzing Technology	2003.7.14 - 2003.7.17
19	Mr. YAMASHITA Mitsuo	Mine Rescue	2003.9.8 - 2003.9.18

ANNEX 5 List of the equipment procured

1.Underground Coal Mining Technology

No.1

Classification		Items	Responsible side	Procurement schedule	Place of purchase
(1)Mapping System	1	Clinometer	Japanese	Already	Japan
	2	Hand level	Japanese	Already	Japan
	3	Compass	Japanese	Already	Japan
	4	Sketching board, Paper, etc.	Japanese	Already	Japan
	5	Hammer	Japanese	Already	Japan
	6	GPS	Japanese	Already	Japan
(2)Geological Analysis System	7	Geological analysis software	Japanese	Already	Indonesia
	8	Coal area calculator device	Japanese	Already	Japan
(3)U/G Boring System	9	U/G Boring machine	Japanese	Already	Japan
(4)U/G Surveying System	10	Level	Japanese	Already	Japan
	11	Measurement devices (Transit)	Japanese	Already	Japan
	12	Light distance measure	Japanese	Already	Japan
	13	Transceiver	Japanese	Already	Japan
	14	Computer aided design system(CAD)	Japanese	Already	Japan
(5)Blasting System	15	Hammer	Japanese	Already	Japan
	16	Hammer tools	Japanese	Already	Japan
	17	Auger	Japanese	Already	Japan
	18	Auger tools	Japanese	Already	Japan
	19	Explosives (Model)	Japanese	Already	Japan
	20	Blasting tester (Ω meter)	Japanese	Already	Japan
	21	Detonator (Model)	Japanese	Already	Japan
	22	Tester (Ω meter)	Japanese	Already	Japan
(6)Coal Mining System	23	Single prop	Japanese	Already	Japan
	24	Iron Bar	Japanese	Already	Japan
	25	Coal pick	Japanese	Already	Japan
	26	Air block	Japanese	Already	Japan
	27	Lever block	Japanese	Already	Japan
	28	Chain block	Japanese	Already	Japan
	29	Power roof support (Model)	Japanese	Already	Japan
	30	Mechanized long wall (Model)	Japanese	Already	Japan
(7)Development System	31	Side dump loader	Japanese	Already	Japan
	32	U/G structure (Model)	Japanese	Already	Japan
	33	Road header (Model)	Japanese	Already	Japan
(8)Strata Control System	34	Strata pressure calculation software	Japanese	Already	Japan
	35	Strata pressure (Model)	Japanese	Already	Japan
	36	Rock bolt and tools	Japanese	Already	Japan
	37	Displacement measure device and tools	Japanese	Already	Japan
	38	Schmidt Hammer	Japanese	Already	Japan

2.Underground Coal Mining Safety Technology

(1)Gas Detect / Analysis System	39	CH4 detector (Portable type)	Japanese	Already	Japan
	40	CO2 detector (Portable type)	Japanese	Already	Japan
	41	CO detector (Portable type)	Japanese	Already	Japan
	42	Oxygen detector(Portable type)	Japanese	Already	Japan
	43	Gas alarm detector	Japanese	Already	Japan
	44	Multiple gas detector	Japanese	Already	Japan
	45	Kitagawa type gas detector	Japanese	Already	Japan
	46	Gas chromatograph	Japanese	Already	Japan
	47	CO mask	Japanese	Already	Japan
(2)Gas/Coal Dust Explosion System	48	Gas explosion experiment devices	Japanese	Already	Japan
(3)Mine Dust Measurement System	49	Dust detector	Japanese	Already	Japan
	50	Dust sampler	Japanese	Already	Japan
	51	Auto balance	Japanese	Already	Japan
	52	Dust mask	Japanese	Already	Japan
	53	Protective glasses	Japanese	Already	Japan
(4)Ventilation System	54	Axial fan	Japanese	Already	Japan
	55	Biram velocity detector(Handy)	Japanese	Already	Japan
	56	Smoke Tester	Japanese	Already	Japan
	57	Thermo-hydrometer	Japanese	Already	Japan
	58	Windgauge	Japanese	Already	Japan
	59	Atmospheric pressure detector	Japanese	Already	Japan
	60	Ventilation analysis system	Japanese	Already	Japan
(5)Spontaneous Combustion System	61	Grouting device	Japanese	Already	Japan
(6)Fire Fighting System	62	Fire fighting pump	Japanese	Already	Japan
	63	Fire fighting pump tools	Japanese	Already	Japan
	64	Fireplug equipment	Japanese	Already	Japan
(7)Fire Extension-proof System	65	Auto-spray facility	Japanese	Already	Japan
(8)Rescue Team System	66	Oxygen breathing apparatus	Japanese	Already	Japan
	67	Emergency camber	Japanese	Already	Japan
	68	Check devise(3 type tester)	Japanese	Already	Japan
	69	Resasiater(Dummy for first aid)	Japanese	Already	Japan
	70	Stretcher	Japanese	Already	Japan
(9)Centralized Monitoring System	71	Monitoring System	Japanese	Already	Japan

3.Underground Coal Mining Machinery Technology

Classification		Items	Responsible side	Procurement schedule *1)	Place of purchase
(1)Conveyor System	72	Belt conveyor (only Belt)	Japanese	Already	Indonesia
	73	Emergency stop	Japanese	Already	Japan
	74	Monitoring devices	Japanese	Already	Japan
(2)Transportation System	75	Hoist(included wire-rope)	Japanese	Already	Japan
	76	Roller(Vertical, horizontal)	Japanese	Already	Indonesia
	77	Wire rope connector	Japanese	Already	Japan
	78	Signal equipment	Japanese	Already	Japan
	79	Sled transport (Motor)	Japanese	Already	Japan
	80	Rope, guide roller, sheave	Japanese	Already	Indonesia
(3)Hydraulic System	81	Hydraulic system (for teaching)	Japanese	Already	Japan
(4)Compressed Air System	82	Compressor (from OMTC)	Indonesian	Already	
	83	Hose	Japanese	Already	Japan
(5)Water Drainage System	84	Water pump	Japanese	Already	Japan
	85	Air pump	Japanese	Already	Japan
	86	Water Mesurement system		Already	Indonesia
	87	Check valve and tools	Japanese	Already	Japan
(6)Piping System	88	Pipe and tools	Japanese	Already	Japan
(7)Face/Development Mechanized System	89	Plunger pump (from OMTC)	Indonesian	Already	
	90	Setgun for prop	Japanese	Already	Japan
	91	Valve	Japanese	Already	Japan
	92	High pressure hose and tools	Japanese	Already	Japan

4.Underground Coal Mining Electricity Technology

(1)Explosion Proof system	93	Distribution panel	Japanese	Already	Japan
	94	Breaker	Japanese	Already	Japan
	95	Electromagnetic switch	Japanese	Already	Japan
	96	Transformer	Japanese	Already	Japan
	97	Automatic alarm	Japanese	Already	Japan
	98	Smoke detector	Japanese	Already	Japan
(2)Cable devise system	99	Cables	Japanese	Already	Japan
	100	Cable joint (for Inter-lock)	Japanese	Already	Japan
(3)Communication system	101	Induction type communication	Japanese	Already	Japan
	102	U/G Telephone	Japanese	Already	Japan
(4)Lighting system	103	Explosive-proof electric lamp	Japanese	Already	Japan
	104	Signal equipment	Japanese	Already	Japan
	105	Caplamp	Japanese	Already	Japan
	106	Charging unit	Japanese	Already	Japan

5.Coal Mining Environment Technology

(1)Water Quality Control System	107	PH measurement device	Japanese	Already	Japan
	108	Measurement of dirty water (SS)	Japanese	Already	Japan
	109	Water treatment model	Japanese	Already	Japan
(2)Coal Preparation System	110	Mini preparation plant	Japanese	Already	Japan
(3)Coal Analysis System	111	Proximate analysis device	Japanese	Already	Japan
	112	Calorie meter	Japanese	Already	Japan

6.Educational Facility

(1)Audio-visual Education System	113	Copy machine	Japanese	Already	Indonesia
	114	OHP	Japanese	Already	Indonesia
	115	PC visual presenter	Japanese	Already	Japan
	116	Screen	Japanese	Already	Indonesia
	117	Copy white board	Japanese	Already	Indonesia
	118	Video camera	Japanese	Already	Japan
	119	Digital camera	Japanese	Already	Japan
	120	Video deck	Japanese	Already	Japan
	121	Scanner	Japanese	Already	Japan
	122	Monitor	Japanese	Already	Japan
(2)Data Analysis	123	Computer	Japanese	Already	Indonesia
	124	Printer	Japanese	Already	Indonesia
	125	Application software	Japanese	Already	Indonesia
(3)Training Material	126	Video tapes	Japanese	Already	Japan

7.Vehicle

(1)Vehicle	127	Land cruiser	Japanese	Already	Indonesia
	128	Mni-Bus	Japanese	Already	Indonesia

ANNEX 6 Allocation of counterpart personnel

Field	Name	Origin	Duration (months)
Mining	Drs. Tasman Sihombin, B.Sc	P3TMB	2001.4 ~ (31)
	Dadan M. Hamdani, ST	P3TMB	2001.4 ~ (31)
	Drs. Bambang Heriyadi, MT	UNP	2001.4 ~ (31)
	Handoko Setiadji, ST	P3TMB	2003.4 ~ (7)
Safety	Ir. Dadzui Ismail	UPO	2001.4 ~ 2002.3 (12)
	Ir. Moh. Zulfahmi Kafrawi	UPO	2001.4 ~ 2002.6 (15)
	Zul Ichwan, ME (Hons)	P3TMB	2001.4 ~ 2003.3 (24)
	Asep Suryana, ST	P3TMB	2001.4 ~ (31)
	Drs. Rijal Abdullah, MT	UNP	2003.1 ~ (10)
	Harry Wibawa, ST	P3TMB	2003.4 ~ (7)
	Yudiana Hadiyat, ST	P3TMB	2003.4 ~ (7)
Machinery	Drs. Asmara Karma	UPO	2001.4 ~ 2002.6 (15)
	Alexander Tomasoa	UPO	2001.4 ~ 2003.2 (23)
	Yones Simanjuntak	UPO (Ex)	2001.4 ~ (31)
	Drs. Sumantri, MT	UNP	2001.4 ~ (31)
	Marbun Sirait	UPO (Ex)	2003.4 ~ (7)
Electricity	Uun Machrun, BE	P3TMB	2001.4 ~ (31)
	Drs. Muryanto	UPO	2001.4 ~ 2003.2 (23)
	Gusti A Wahyudi, SE	UPO	2001.4 ~ 2003.2 (23)
	Marsudi, BE	UPO	2001.4 ~ 2002.6 (15)
	H. Arifin, MB	UPO (Ex)	2003.4 ~ (7)
	Sudarmanto	UPO (Ex)	2003.4 ~ (7)
Environment	Drs. Ichsan E. Nasution, BE	P3TMB	2002.4 ~ (19)
	Drs. Yunasril, M.Si	UNP	2003.1 ~ (10)
	Drs. Paulus P. Siboro, BE	P3TMB	2003.10 ~ (1)
	Ahmad Helmi, ST	P3TMB	2003.4 ~ (7)

ANNEX 7

List of Attendants

1. Japanese side

(1) Mid-Term Evaluation Study Team

Mr. Fuwa Masami	Leader
Mr. Tanaka Tetsuji	Coal Mining Policy
Mr. Hosaka Komao	Underground Coal Mining Technology
Mr. Kusunoki Yosuke	Cooperation Planning
Mr. Kumagai Kenichi	Consultant

(2) JICA Experts

Mr. Tatsuno Hiroaki	Team Leader
Mr. Seo Katsuhiko	Underground Coal Mining
Mr. Hisadomi koji	Underground Coal Mining Electricity
Mr. Murase Yoshiharu	Underground Coal Mining Machinery
Mr. Izumi Mamoru	Project Coordinator

(3) JICA Jakarta Office

Mr. Takeuchi Hiroshi	Assistant Resident Representative
Ms. Sulisiyo Wardani	National Staff

2. Indonesian side

Prof. Dr. Surna T. Djajadiningrat	Head of Education and Training Agency of Energy and Mineral Resources, Ministry of Energy and Mineral Resources
Mr. Kansman Hutabarat	Head of Education and Training Center for Energy and Electricity, Education and Training Agency of Energy and Mineral Resources, Department of Energy and Mineral Resources
Mr. Nursaleh Adiwinata MSc	Team Leader-Head of Education and Training Center of Mineral and Coal Technology
Dr. Ir. Irwan Bahar	Education and Training Center of Mineral and Coal Technology
Mr. Mulyono Hadiprayino MSc	Head of Development Training Division, Education and Training Center of Mineral and Coal Technology
Mr. Wawan Supriatna	Head of Planning Sub-Division, Education and Training Center of Mineral and Coal Technology
Drs. Tasman Sihombing, B.Sc	Education and Training Institute for Underground Mines, Education and Training Center of Mineral and Coal Technology