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1. ミニッツ (Minutes of Discussions)

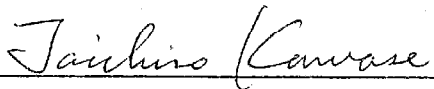
MINUTES OF DISCUSSIONS
ON
THE JAPANESE TECHNICAL COOPERATION
FOR
PROJECT ON ENERGY CONSERVATION
IN THE REPUBLIC OF TURKEY

The Japanese Supplementary Study Team (hereinafter referred to as "the Team") organized by Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Taichiro Kawase, General Manager, Japan International Energy and Environment Cooperation Center, The Energy Conservation Center, Japan, visited the Republic of Turkey from October 13 to October 28, for the purpose of working out the details of the Japanese Technical Cooperation for the Project on Energy Conservation in the Republic of Turkey (hereinafter referred to as "the Project").

During its stay in the Republic of Turkey, the Team exchanged views and had a series of discussions with the authorities concerned of the Government of the Republic of Turkey (hereinafter referred to as "the Turkish side").

As a result of the discussions, both sides reached a common understanding concerning the matters referred to in the document attached hereto.

Ankara, October 27, 1999



Taichiro Kawase

Leader
Japanese Supplementary Study Team
Japan International Cooperation Agency
Japan



Mehmet Demirtola

Acting General Director
General Directorate of Electrical Power
Resources Survey and Development
Administration
The Republic of Turkey

ATTACHED DOCUMENT

1. Name of the Project

As to the name of the Project, both the Team and the Turkish side agreed to the following:
"Project on Energy Conservation in the Republic of Turkey"

2. Implementing Agency of the Project

As to the Turkish agency responsible for the implementation of the Project, the Turkish side explained as follows:

General Directorate of Electrical Power Resources Survey and Development Administration, Energy Resources Survey Department, National Energy Conservation Center (herein after referred to as EIE/NECC) will bear overall responsibility for the implementation of the project under the supervision of Ministry of Energy and Natural Resources (herein after referred to as MENR).

The present organization chart of MENR is shown in ANNEX 1-1.

The present organization chart of EIE/NECC is shown in ANNEX 1-2.

3. Administration of the Project

Director General of EIE as the Project Director will bear overall responsibility for the administration and financial management of the project and will be responsible for providing of necessary facilities.

Head of Energy Resources Survey Department of EIE/NECC as the Project Manager will be responsible for management of the project.

Manager of Industrial Energy Conservation Division as the Project Coordinator will be responsible for the implementation and technical matters of the project. The provisional organization chart for the administration of the project is shown in ANNEX 2.

4. Site for the Project

The Project will be implemented at EIE premises.

Address: General Directorate of Electrical Power Resources Survey and Development Administration, National Energy Conservation Center, Eskişehir Yolu 7.km-ANKARA /TURKEY.

Tel : 0 312 287 84 40 - 287 84 51

Fax : 0 312 287 84 31

Present location map of EIE premises is shown in ANNEX 3.

5. Duration of the Project

Both the Team and the Turkish side confirmed that the duration of the Japanese technical cooperation for the Project would be five (5) years from the date stipulated in the "Record of Discussions (R/D) on the Project" to be signed by both JICA and the Turkish side.

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The Team explained that the date of the commencement is to be finalized in the R/D when the Implementation Study Team is dispatched.

6. Provisional Concept of the Project

(1) Overall Goal, Project Purpose, Outputs and Activities of the Project

1) Overall Goal

By implementing a promotion for the rational use of energy, energy efficiency in the whole country is increased.

2) Project Purpose

The function of EIE/NECC is strengthened in the training, auditing, policy making and promotion activities.

3) Outputs of the Project

0. EIE/NECC's administration and management structure are developed for implementing energy conservation activities.
1. C/Ps are able to operate and maintain the training facilities and measuring equipment.
2. C/Ps acquire the knowledge and skills necessary for the development of energy manager training.
3. Contents of energy manager training course are developed in both theoretical and practical parts.
4. C/Ps carry out energy audit and consultation in industrial factories.
5. The function of EIE/NECC is strengthened in the area of information supply, publicity and policy recommendation.

4) Activities of the Project

0. EIE/NECC's administration and management structure are developed for implementing energy conservation activities
 - 0-1 Allocate personnel according to the project
 - 0-2 Clarify the job function
 - 0-3 Elaborate a plan concerning activities and duties
 - 0-4 Elaborate a budget plan
1. C/Ps are able to operate and maintain the training facilities and measuring equipment
 - 1-1 Elaborate and carry out a plan on procurement and maintenance of the facilities and equipment
 - 1-2 Carry out the installation of donated equipment and instructions on its operation and maintenance
 - 1-3 Complete an operating manual and maintenance manual
2. C/Ps acquire the knowledge and skills necessary for developing energy manager training
 - 2-1 Formulate a plan for C/P training program
 - 2-2 Develop C/P training materials
 - 2-3 Give C/P a guidance and lectures

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3. Contents of energy manager training course are developed in both theoretical and practical parts
 - 3-1 Formulate a program for the training course and an implementation plan
 - 3-2 Provide textbooks for the training course
 - 3-3 Hold the training course
4. C/Ps develop energy audit and consultation in industrial factories
 - 4-1 Recruit factories for energy audit
 - 4-2 Carry out energy audit and report a result
 - 4-3 Prepare manuals for energy audit
5. The function of EIE/NECC is strengthened in the area of information supply, publicity and policy recommendation
 - 5-1 Give recommendation concerning the information services
 - 5-2 Organize seminars and symposia and publish newsletter, etc.
 - 5-3 Give recommendations concerning Energy Efficiency policies

(2) Project Cycle Management (PCM)

The Team explained and the Turkish side understood the concept, the outline of PCM and Project Design Matrix (PDM).

Both sides agreed on the tentative PDM shown in ANNEX 4.

(3) Plan of Operation (PO) and Annual Plan of Operation (APO)

The Team and the Turkish side discussed the details of technology transfer in the following fields and drafted Plan of Operation (PO) and Annual Plan of Operation (APO) as shown in ANNEX 5 and ANNEX 6.


Main topics of the contents of the Project as shown in ANNEX 7.

7. Provisional Scope of Technology Transfer

(1) Training Activities

- 1) Training of energy managers
- 2) Training of engineers related to energy conservation
- 3) Training plant operation training
- 4) Revision of training text books
- 5) Revision of energy manager training course curriculum
- 6) Introduction of new technologies information from Japan
- 7) Development of new training programs such as for Small and Medium Sized Enterprises (SME's)

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(2) Audit and Consultation

Technical assistance for approximately ten selected sectors such as iron and steel, cement, petrochemical, refinery, ceramic, textile and paper sectors not only on general audit methods but also on process audits.

(3) Policy Making and Promotion Activities

- 1) Provision of information and documentation on policy making
- 2) Publishing of energy conservation technical handbook
- 3) Introduction of evaluation method on energy saving potential in Japan for estimation of Turkish energy saving potential
- 4) Recommendation to establish a strategy plan
- 5) Preparation of public awareness publications and posters
- 6) Organization of national and international conferences, seminars and workshops

8. Measures to be taken by the Japanese Side

The project will be carried out under the framework of the Project-Type Technical Cooperation which is the combination of three following components:

(1) Dispatch of Japanese Experts

The Team explained and the Turkish side agreed that the timing of dispatch of the following Japanese experts according to the plan in the Tentative Schedule of Implementation (TSI) as shown in ANNEX 8.

Long-Term Experts

1. Chief Advisor
2. Coordinator
3. Energy Conservation Training Expert
4. Energy Conservation Technology Expert

Short -Term Experts

Both sides agreed that short-term experts would be dispatched to supplement the technology transfer by long term experts if necessity arises. The subject, number and the duration of the short-term experts would be discussed further at the time of dispatching the Implementation Study Team.

Expected technical fields of short-term experts may be as follows:

- Guidance on installation/test run for each group of equipment
- Energy conservation technologies for heat insulation, lighting and Heating, Ventilation, Air Condition (HVAC)
- Introduction of evaluation method on energy saving potential in Japan and guidance on establishment of an energy conservation strategy plan for Turkey (Energy Conservation Master Plan)

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- Guidance on energy conservation policies, incentive programs, energy conservation and programs for SME's
- Introduction of Japan Bench Marking System and guidance for Turkish system
- Guidance on information and publicity
- Energy conservation technologies for Demand Side Management (DSM) and electrical fields
- New technologies for energy conservation
- Energy conservation technology by type of industry (for approximately ten industry)
- Co-generation/district heating and cooling
- Energy conservation technology by effective use of measurement and control
- Energy conservation management technologies for factories
- Other fields that the Japanese side regards as necessary

(2) Training of the Turkish Counterpart Personnel in Japan

The Team explained that the training for the counterpart personnel will be held in Japan to support the long-term experts technical transfer.

About one (1) to three (3) Turkish counterpart personnel from EIE/NECC will be accepted for training in Japan each year. The Team explained that the Turkish side should submit A2A3 form to JICA for the official nomination six (6) months before the training starts.

(3) Provision of Machinery and Equipment

The Team explained and the Turkish side discussed in detail and agreed tentatively upon the machinery and equipment which would be provided for the project to conduct the project effectively. The tentative list of necessary machinery and equipment for the Project is shown in ANNEX 9. The Team explained that the provision of the machinery and equipment will be finally decided by the Japanese Government taking account of its budgetary condition.

The team explained and the Turkish side agreed that the responsibility and cost necessary for domestic transport, maintenance of machinery and equipment should be borne by the Turkish side. The Japanese side also explained that installation of the equipment and machinery will be borne by the Turkish side, however the Turkish side explained that budgetary condition has been changed after the Earthquake which occurred in August 17, 1999. As shown in ANNEX 14-2 current budgetary condition does not allow the additional allocation for the Project. Besides, estimation of construction cost approximately doubled made Turkish side not possible to shift any amount from the other budget items for the installation. The Team stated that they will discuss this issue after they return to Japan and Turkish side stated that they will try to find a solution on this issue before the arrival of Implementation Study Team.

On the other hand the Japanese side agreed to provide necessary drawings for the installation of equipment and machinery. The Turkish side requested that provided equipment will be insured to the EIE/NECC building address.

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9. Measures to be taken by the Turkish Side

(1) Preparation of the Building and Facilities for the Project

The buildings and facilities necessary for the implementation of the Project will be prepared. Office space for Japanese experts equipped properly with office equipment will be prepared before the start of the Project.

The tentative floor plan for the seminar and office room is shown in ANNEX 10. The present location of Training Center (seminar rooms/offices and training plant) is shown in ANNEX 11.

(2) Procurement of Machinery, Equipment and Materials

The Turkish side will supply or replace at its own expense auxiliary equipment and other materials necessary for the implementation of the Project other than those provided by JICA.

The list of existing machinery and equipment of EIE/NECC for the Project is shown in ANNEX 12.

(3) Assignment of Counterpart Personnel

For the successful implementation of the Project, the Turkish side will provide the services of the Turkish counterpart personnel as necessary. The allocation plan of counterpart personnel (tentative) is as listed in ANNEX 13.

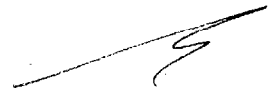
Should the allocation of counterpart personnel be changed for either personal or administrative reasons, the Turkish side will immediately take necessary measures to supplementarily assign appropriate number of personnel as counterpart for the Project.

(4) Appropriation of Local Costs

Necessary amount of local costs by the Turkish side will be indispensable for the implementation of the Project. Budget allocation plan of EIE/NECC for the Project has been agreed by both sides and shown in ANNEX 14-1.

Earthquake occurred in August 17, 1999 made Turkish government prohibit a new investment by issuing a Circular from Prime Minister Office as shown in ANNEX 14-2. According to the Circular, by reevaluating the investment Program for 1999 and 2000, basically Government's financial resources will be used in Earthquake Region to compensate for the damages. However, after the negotiation between SPO and EIE/NECC this Project will not be considered under the Circular.

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(5) Privileges, Exemptions and Benefits to the Japanese Experts

Both side reconfirmed that the Turkish side will grant in the Republic of Turkey privileges, exemptions and benefits to the Japanese experts and their families no less favorable than those accorded to experts of third countries working in the Republic of Turkey.

10. Joint Coordinating Committee for the Project

Both side reconfirmed that the Joint Coordinating Committee, composed of members appointed by both sides, will be established for smooth implementation of the Project, and convened at least once a year. Its functions and composition are described in ANNEX 15.

11. Joint Evaluation

Both side reconfirmed that the evaluation of the project will be conducted jointly by the two governments through JICA and the Turkish side approximately at the middle and six months before the termination of the cooperation period, in order to examine the level of achievement of the objective of the Project. Furthermore, both sides agreed to use the methodology of evaluation, especially, the Five (5) Basic Evaluation Components as shown in ANNEX 16.

12. Schedule of the Project

The Team explained that the Implementation Study Team would be dispatched with following schedule for the purpose of conducting the R/D to implement the Project between both governments.

February 28, 2000 to March 13, 2000	Dispatch of Implementation Study Team
June 1, 2000	Start of the Project (Dispatch of Long-Term Experts)

However, the Team explained and the Turkish side understood that the schedule above is tentative and may be subject to changes. The sample of the R/D is shown in ANNEX17.

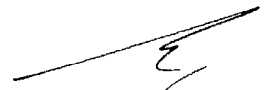
13. Sustainability of the Project

The Turkish Side will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of the Japanese technical cooperation, through the full and active involvement in the Project by all related authorities and institutions so that the technologies and knowledge acquired by the Turkish counterpart personnel through the Project will ultimately contribute to economic and social development of the Republic of Turkey.

14. Others

- (1) Both sides agreed that common language should be English.
- (2) The attendance at the discussion is listed in ANNEX 18.

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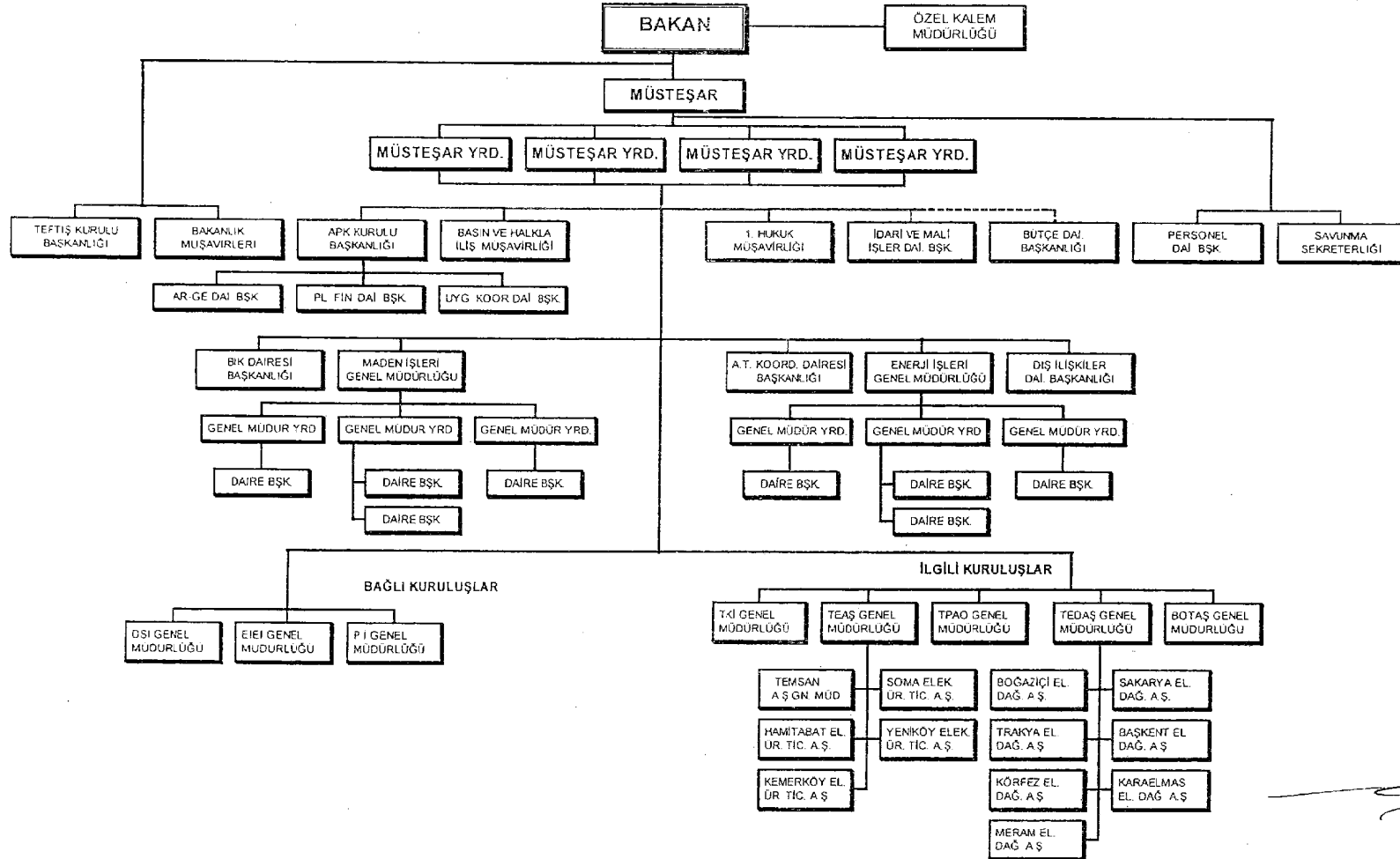
LIST OF ANNEXES

- ANNEX 1 -1 Organization Chart of MENR
- ANNEX 1-2 Organization Chart of EIE/NECC
- ANNEX 2 Provisional Organization Chart for the Administration of the Project
- ANNEX 3 Present Location Map of EIE/NECC Premises
- ANNEX 4 Project Design Matrix (PDM)
- ANNEX 5 Plan of Operation (PO)
- ANNEX 6 Annual Plan of Operation (APO)
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- ANNEX 8 Tentative Schedule of Implementation (TSI)
- ANNEX 9 List of Necessary Machinery and Equipment for the Project (Tentative)
- ANNEX 10 Floor Plan of the Project
- ANNEX 11 Present Location Map of Training Center
- ANNEX 12 List of Existing Machinery and Equipment of EIE/NECC for the Project
- ANNEX 13 Allocation Plan of Counterpart Personnel (Tentative)
- ANNEX 14-1 Budget Allocation Plan of EIE/NECC for the Project
- ANNEX 14-2 Circular of Prime Minister Office on Saving Measures to Recover Earthquake
- ANNEX 15 Provisional Functions and Compositions of Joint Coordinating Committee
- ANNEX 16 The Five Basic Evaluation Components
- ANNEX 17 Sample of the Record of Discussions (R/D)
- ANNEX 18 List of Attendance in the Discussion.

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ANNEX I -1 Organization Chart of MENR

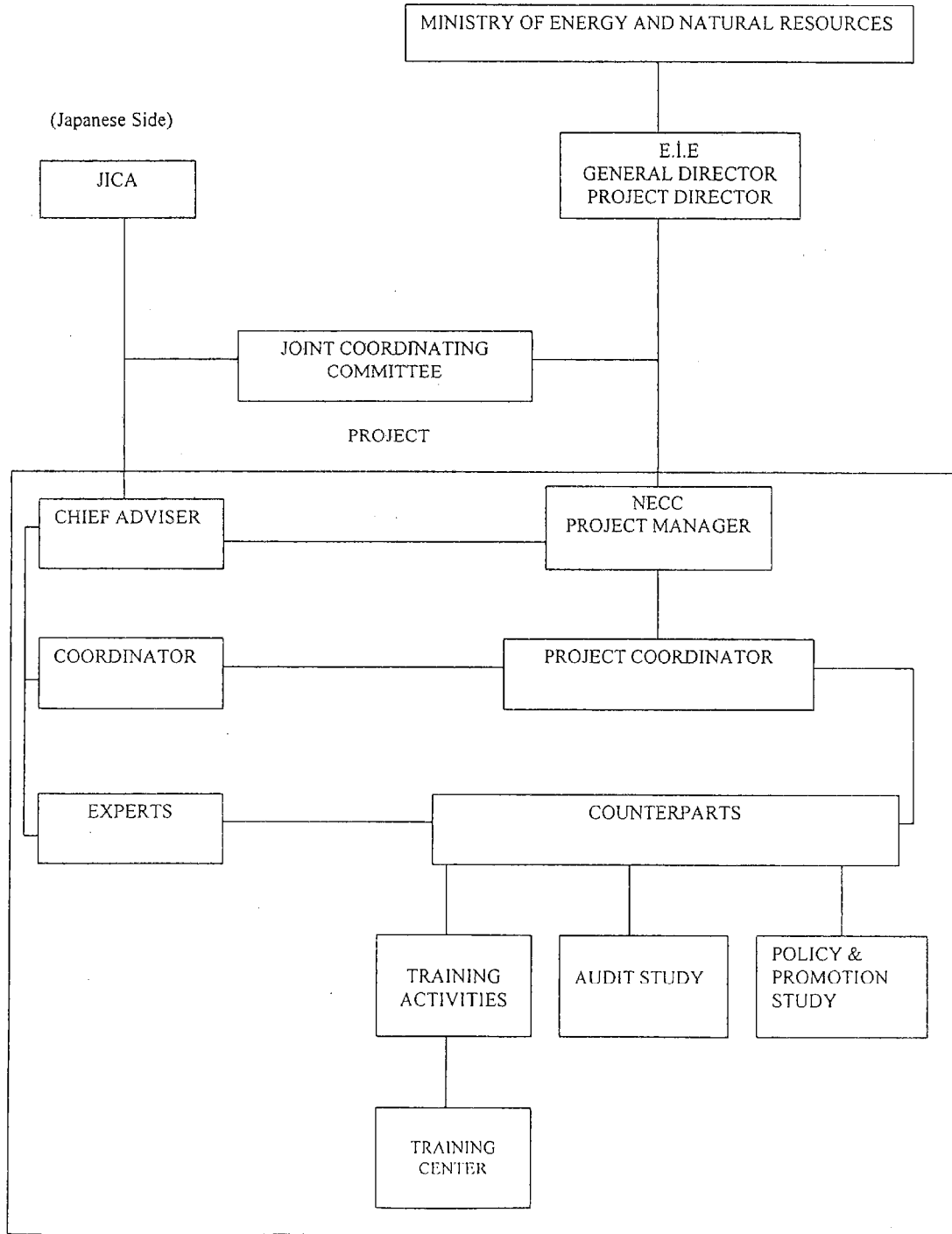
ENERJİ VE TABİİ KAYNAKLAR BAKANLIĞI ORGANİZASYON ŞEMASI



APK KURULU, Haziran 1999

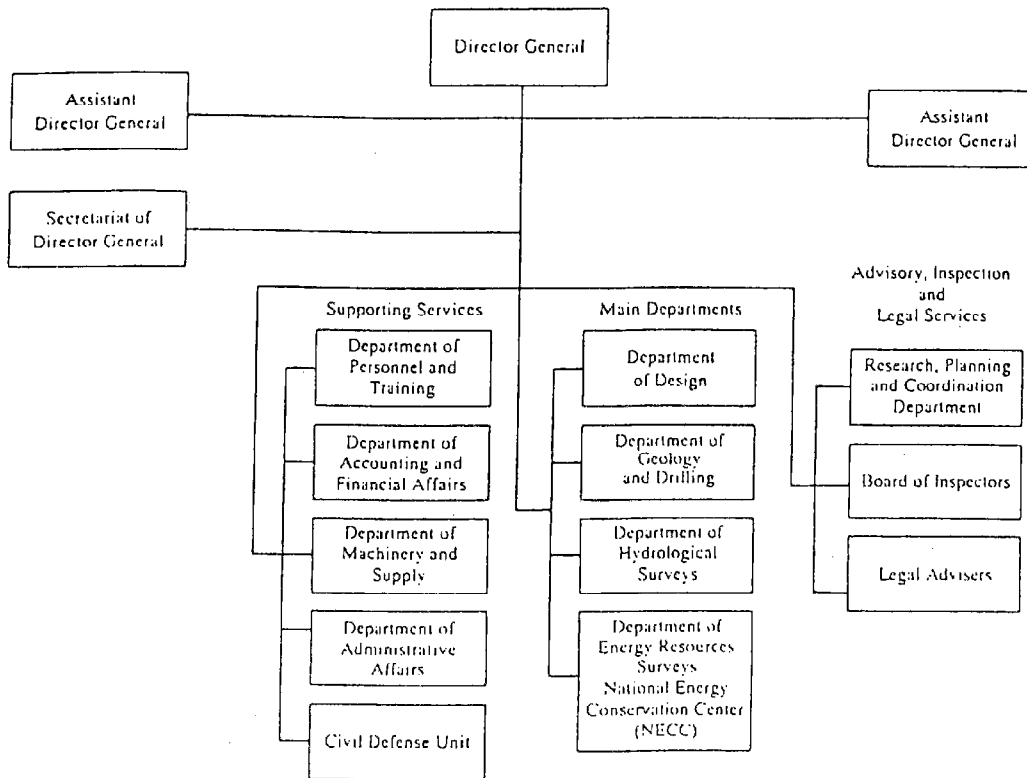
ANNEX 2 Provisional Organization Chart for the Administration of the Project

(Turkish Side)

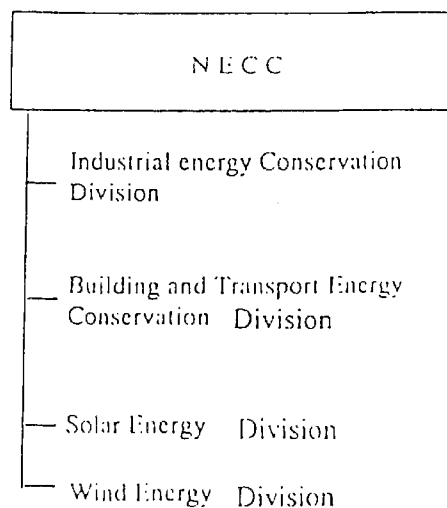


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ANNEX 1-2 Organization Chart of EIE/NECC



Organization Chart of NECC



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Organization Chart of NECC

26/10/1999

DEPARTMENT OF ENERGY RESOURCES SURVEY, NECC	HEADED BY	MR. KEMAL KOMAN (1)
	SECRETARIAL OFFICE	(3)
INDUSTRIAL ENERGY CONSERVATION DIVISION *1	HEADED BY	MRS. TÜLİN KESKİN (21)
BUILDING AND TRANSPORT ENERGY CONSERVATION DIVISION *2	HEADED BY	MRS. AYĞÜN ERDEM (8)
WIND ENERGY DIVISION	HEADED BY	MR. ADNAN TEMİZ (10)
SOLAR ENERGY DIVISION	HEADED BY	MR. YUSUF KÖRUCÜ (7)
TOTAL		(50)

***1 INDUSTRIAL ENERGY CONSERVATION DIVISION**

ENERGY AUDITS, TRAINING AND OTHER TECHNICAL STUDIES	P.HEDİYE YILLIKÇI ÖMER KEDİCİ SÜREYYA AKMAN ERDAL ÇALIKOĞLU B.HAKKI BUYRUK CEMAL ÇELİK MEHMET SEZER BORA OMURTAY FATİH KAYMAKÇIOĞLU H.İBRAHİM GÜNDOĞAN EROL YALÇIN BİRGÜL DUMAN DR.FİGEN AR İ.YENAL CEYLAN MEHMET BALCI HÜSEYİN ÇİFTÇİ	CHEMICAL ENGINEER PHYSIC ENGINEER CHEMICAL ENGINEER MECHANICAL ENGINEER MECHANICAL ENGINEER MECHANICAL ENGINEER ELECTRICAL ENGINEER ELECTRICAL ENGINEER ELECTRICAL ENGINEER MECHANICAL ENGINEER INDUSTRIAL ENGINEER INDUSTRIAL ENGINEER CHEMICAL ENGINEER MECHANICAL ENGINEER PHYSIC ENGINEER ELECTRICAL TECHNICIAN
PUBLICATION AND POLICY STUDIES	SÜHEDA GÜMÜŞDERELİOĞLU SELMİN YAYKIN	CHEMICAL ENGINEER POLITICAL SCIENE
DATA BASE STUDIES	NECİP ÖZTÜRK NESRİN ŞENOL	INDUSTRIAL ENGINEER ECONOMIST

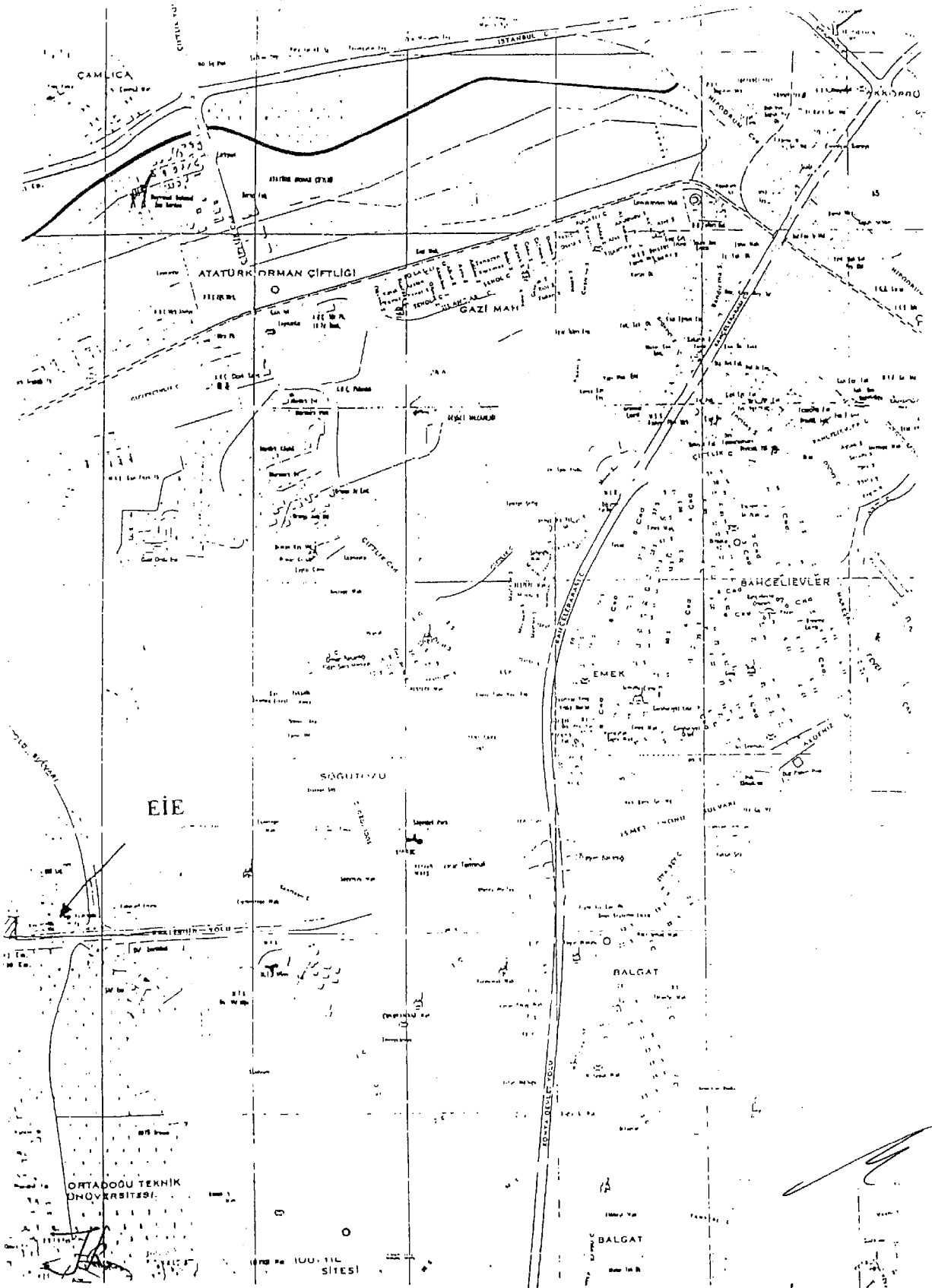
***2 BUILDING AND TRANSPORTATION ENERGY CONSERVATION DIVISION**

AHMET DEMİRTOP YÜKSEL ÇAYIRLI DİLEK KARADELİ SERHAT ERTEN İLKUR YORULMAZ ZİYA CAN KOÇAK SEZGİN ÖZTÜRK	MECHANICAL ENGINEER CIVIL ENGINEER MECHANICAL ENGINEER MECHANICAL ENGINEER ELECTRONIC ENGINEER INDUSTRIAL ENGINEER INDUSTRIAL ENGINEER
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ANNEX 3 Present Location Map of EIE Premises



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ANNEX 4 Project Design Matrix (Tentative)
 Project on Energy Conservation in the Republic of Turkey
 Target Group: The staff of EIE/NECC

Narrative Summary of the NECC Project	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>Overall Goal By implementing a promotion for the rational use of energy, energy efficiency in the whole country is increased.</p>	<p>Energy intensity is reduced .</p>	<p>Statistical study Questionnaire</p>	
<p>Project Purpose The function of EIE/NECC is strengthened in the training, audit, policy-making and promotion activities.</p>	<p>Number and effectiveness of enterprises in Turkey which carry out energy conservation activities are increased.</p>	<p>Statistical data and monitoring energy manager's studies by EIE/NECC.</p>	<p>a.The Turkish Government will keep supporting the energy conservation activities.</p>
<p>Outputs 0) EIE/NECC's administration and management structure are developed for implementing energy conservation activities 1) C/Ps are able to operate and maintain the training facilities and measuring equipment. 2) C/Ps acquire the knowledge and skills necessary for developing energy manager training. 3) Contents of energy manager training course is developed in both theoretical and practical parts. 4) C/Ps develop energy audit and consultation in industrial factories. 5) Information supply, publicity and policy recommendation.</p>	<p>0) Staff, equipment allocation and budget preparation 1) C/Ps are able to utilize training facilities in national/international training programs. 2) A knowledge and skills of C/Ps concerning energy efficiency is enhanced. 3) Number and quality of certificated energy managers will be increased. 4) The Number of factories increases to which C/Ps give a service of energy audit and consultation. 5)-1 Energy efficiency related information are accumulated increasingly. 5)-2 The frequency of holding seminar, issuing newsletter increases 5)-3 Policy recommendations for new energy conservation law and regulations are made.</p>	<p>0) List of C/P, equipment and budget documents 1) Number of national/international training program organized by EIE/NECC 2) Evaluation questionnaires after each course and audit implementation 3) Questionnaires on satisfaction of training course participants 4) Number of energy audit reports 5) Annual report on EIE/NECC activities</p>	<p>a. C/P staff remain in EIE/NECC. b.Guidance of EIE/NECC on energy conservation will be continued in industrial sectors.</p>

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ANNEX 5 Plan of Operation(2000.6-2005.6)

Project on Energy Conservation in the Republic of Turkey

Japanese Fiscal year	1999				2000				2001				2002				2003				2004				2005		responsible person	Input	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2		Japanese side	Turkish side
Activities	Progress																										Japanese side	Turkish side	
Term of Technical Cooperation	2000(6/1)																								2005(5/31)				
0. FIENEC's administration and management structure are developed for implementing energy conservation activities																													
0-1 Allocate personnel according to the project																									PM		LE	CP	
0-2 Clarify the job function																									PM		LE	CP	
0-3 Elaborate a plan concerning activities and duties																									PM		LE	CP	
0-4 Elaborate a budget plan																									PM		LE	CP	
1. C/Ps are able to operate and maintain the training facilities and measuring equipment																													
1-1 Elaborate and carry out a plan on procurement and maintenance of the facilities and equipment																									CA		LE	CP	
1-2 Carry out the installation of donated equipment and instructions on its operation and maintenance																									PC/CA		LE/SE	CP	
1-3 Complete an operating manual and maintenance manual																									CA		LE/SE	CP	
2. C/Ps acquire the knowledge and skills necessary for developing energy manager training																													
2-1 Formulate a plan for C/P training program																									CA		LE	CP	
2-2 Develop C/P training materials																									PC/CA		LE/SE	CP	
2-3 Give C/P a guidance and lectures																									CA		LE	CP	
3. Contents of energy manager training course is developed in both theoretical and practical parts																													
3-1 Formulate a program for the training course and an implementation plan																									PC		LE	PC/CP	
3-2 Provide textbooks for the training course																									PC/CA		LE	CP	
3-3 Hold the training course																									PC/CA		LE	CP	
4. C/Ps develop energy audit and consultation in industrial factories																													
4-1 Recruit factories for energy audit																									PC/CA		LE	CP	
4-2 Carry out energy audit and report a result																									PC/CA		LE	CP	
4-3 Prepare manuals for energy audit																									PC/CA		LE/SE	CP	
5. Information supply, publicity and policy recommendation																													
5-1 Give recommendation concerning the information services																									PC		LE/SE	CP	
5-2 Organize seminars and symposia and publicize newsletter, etc.																									PC		LE	CP	
5-3 Give recommendations concerning Energy Efficiency policies																									PC		LE	CP	

Japanese side : PM - Project Manager, PC - Project Coordinator, CP - Consultant
 Turkish side : CA - Chief Advisor, LE - Long-term Expert, SE - Short-term Expert

ANNEX 6 (1) Annual Plan of Operation (Year of 2000)

Project on Energy Conservation in the Republic of Turkey

SR

C/Ps are able to operate and maintain the training facilities and measuring equipment

Calendar Year Fiscal year Month	2000												2001			A person in charge	Inputs		
	1999			2000									2001				Japanese side	Turkish side	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3				
Term of Technical Cooperation																			
1)-1 Elaborate and carry out a plan on procurement and maintenance of the facilities and equipment																			
Understand an introduction purpose of the facilities and equipment																	CA	LE	CP
1)-2 Carry out the installation of donated equipment and instructions on its operation and maintenance																			
Conduct a pre-installation works for the training plant																	PC/CA	LE/SE	CP
Install, start up and the training plant																	PC/CA	LE/SE	CP
Instruct CPs in an operation method of the training plant																	CA	LE/SE	CP
Prepare a set of textbooks for a training in the plant																	CA	LE/SE	CP
1)-3 Complete an operating manual and maintenance manual																			
Prepare a set of operation manuals and maintenance manuals for the training plant																	CA	LE/SE	CP
Prepare a set of operation manuals and calibration manuals for the measuring equipment																	CA	LE/SE	CP

Turkish side : PM-Project Manager, PC-Project Coordinator, CP-Couterpart
 Japanese side : CA-Chief Advisor, LE-Long-term Expert, SE-Short-term Expert

ANNEX 6 (2) Annual Plan of Operation (Year of 2000)

Project on Energy Conservation in the Republic of Turkey

JR

CPs acquire the knowledge and skills necessary for developing energy manager training

Calendar Year Fiscal year Month	2000												2001			A person in charge	Inputs		
	1999			2000									2001				Japanese side	Turkish side	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3				
Term of Technical Cooperation																			
2)-1 Formulate a plan for C/P training program																			
Formulate a plan for C/P training program with a target of technological level of CPs				●	-----	●											→	CA	LE CP
Prepare criteria for evaluating a technological level of CPs				●	-----	●											→	CA	LE CP
2)-2 Develop C/P training materials																			
Provide training material on common technology of energy efficiency				●	-----	●											→	PC/CA	LE/SE CP
Provide training material on management method in the factory				●	-----	●											→	PC/CA	LE/SE CP
Provide training material on energy efficient technology in the industrial subsections																●	→	PC/CA	LE/SE CP
Provide training material on new and emerging technology in the energy conservation																●	→	PC/CA	SE CP
2)-3 Give C/P a guidance and lectures																			
Instruct CPs in a preparation of training materials				●	-----	●											→	CA	LE CP
Give a lecture on Japanese successful cases in the field of energy management				●	-----	●										●	→	CA	LE/SE CP
Give a lecture on Japanese successful cases in the field of energy efficiency technology																●	→	CP	LE/SE CP

Turkish side : PM-Project Manager, PC-Project Coordinator, CP-Couterpart
 Japanese side : CA-Chief Advisor, LE-Long-term Expert, SE-Short-term Expert

ANNEX 6 (3) Annual Plan of Operation (Year of 2000)

Project on Energy Conservation in the Republic of Turkey

3. Contents of energy manager training course is developed in both theoretical and practical parts

Calendar Year Fiscal year Month	2000												2001			A person in charge	Inputs				
	1999			2000													Japanese side	Turkish side			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3						
TR Term of Technical Cooperation																					
3>1 Formulate a program for the training course and an implementation plan																					
Prepare a course curriculum and set a target on an achievement level				●			●											▶	PC	CA	PC
Provide a training program and make an implementation plan				●			●											▶	PC	LE	CP
3>2 Provide textbooks for the training course																					
Provide training materials on common technology for energy manager training course				●			●											▶	PC/CA	LE	CP
Provide training materials on factory energy management for energy manager training course				●			●											▶	PC/CA	LE	CP
Provide training materials on energy efficient technology in the industrial subsectors for energy manager training course				●			●											▶	PC/CA	LE	CP
Provide training materials on new and emerging technology in the energy conservation for energy manager training course				●			●											▶	PC/CA	LE	CP
Provide training materials on the practice in the training plant for energy manager training course				●			●											▶	PC/CA	LE	CP
Provide training materials on the on-the-job training in the factory for energy manager training course				●			●											▶	PC/CA	LE	CP
Provide training materials on the practice of measurement for energy manager training course				●			●											▶	PC/CA	LE	CP
3>3 Hold the training course																					
Implement energy manager training course				●			●											▶	PC/CA	LE	CP
Follow up and review the result of energy manager training course				●			●											▶	PC/CA	LE	CP

Turkish side : FM-Project Manager, PC-Project Coordinator, CP-Couterpart
 Japanese side : CA-Chief Advisor, LE-Long-term Expert, SE-Short-term Expert

ANNEX 6 (4) Annual Plan of Operation (Year of 2000)

Project on Energy Conservation in the Republic of Turkey

4. CPs develop energy audit and consultation in industrial factories

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Calendar Year Fiscal year Month	2000												2001			A person in charge	Inputs			
	1999			2000													Japanese side	Turkish side		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3					
Term of Technical Cooperation																				
4-1 Recruit factories for energy audit																				
Visit factories. Gather information and provide PR pamphlets				●	-----	●												PC/CA	LE	CP
Prepare pamphlets for energy audit business																		PC/CA	LE	CP
Instruct and advise CPs in consultation technology				●	-----	●												PC/CA	LE	CP
4-2 Carry out energy audit and report a result																				
Conduct factory energy audit				●	-----	●												PC/CA	LE	CP
Conduct factory energy audit in the field of HVAC																		PC/CA	LE	CP
4-3 Prepare manuals for energy audit																				
Provide energy audit manual for each industrial subsector				●	-----	●												PC/CA	LE/SE	CP
Provide energy audit manual for each energy efficient technology																		PC/CA	LE/SE	CP
Provide energy audit manual for factory energy management				●	-----	●												PC/CA	LE/SE	CP
Provide energy audit manual for demand side management																		PC/CA	LE/SE	CP

Turkish side : PM-Project Manager, PC-Project Coordinator, CP-Couterpart
 Japanese side : CA-Chief Advisor, LE-Long-term Expert, SE-Short-term Expert

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ANNEX 6 (5) Annual Plan of Operation (Year of 2000)

Project on Energy Conservation in the Republic of Turkey

5. Information supply, publicity and policy recommendation on energy conservation

Calendar Year Fiscal year Month	2000												2001			A person in charge	Inputs		
	1999			2000									2001				Japanese side	Turkish side	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3				
Term of technical Cooperation																			
51-1 Give recommendation concerning the information services																			
Compile and Publish energy conservation technical handbook																	PC/CA	LE/SE	CP
Assist CPs in building an energy evaluation system																	PC/CA	LE/SE	CP
Assist CPs in construction an energy benchmarking system																	PC/CA	LE/SE	CP
51-2 Organize seminars and symposia and publicate newsletter, etc.																			
Hold seminars, symposia, etc.																	PC/CA	LE	CP
Issue energy efficiency newsletters																	PC/CA	LE	CP
Introduce Japanese successful examples of energy conservation																	PC/CA	LE	CP
51-3 Give recommendation concerning Energy Efficiency policies																			
Introduce Japanese / APEC** energy conservation policies																	PC/CA	LE	CP
Guide and advise CPs on energy policy making																	PC/CA	LE	CP

Turkish side : PM-Project Manager, PC-Project Coordinator, CP-Couterpart
 Japanese side : CA-Chief Advisor, LE-Long-term Expert, SE-Short-term Expert
 (*)APEC : Asia - Pacific Economic Cooperation

ANNEX 7 Contents of the Projects

1. Training Activities

(1) Curriculum

- Classroom courses: Basic common technologies, factory energy conservation management, energy conservation technology by type of industry, topics including new technologies, etc.
- Practical courses: Practicing the use of training equipment, on-the-job training (simplified energy auditing), visits to model factories

(2) Preparation of training text books

Classroom courses	Common basic technologies	Use of existing teaching materials in Turkey
	Factory energy conservation management	Transfer of data accumulated by Japan side
	Energy conservation technology by type of industry	Transfer of data compiled by Caddet/ Japan side
	Topics including new technologies	Utilization of data supplied by short-term experts
Practice courses	Practicing the use of training equipment	Transfer of Japan side texts
	Factory training (Simplified energy auditing)	Transfer of Japan side method
	Visits to model factories	Visits to factories that have achieved a significant results in terms of energy conservation

(3) Main subjects

- Factory energy conservation management
Energy conservation law, regulations, tax incentives, etc.
Measurement and control
Energy conservation for buildings (heat insulation, HVAC, lighting)
DSM
Energy conservation technology by type of industry
Energy conservation R & D

(4) Training method

- Problem solution type Introduction of Japan side training method which needs to be modified for Turkey
- Case method type Introduction of Japan side group training method (Presentation of country report)

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2. Audit and Consultation

(1) Preparation of manuals for energy auditing technologies

Manual for Each Type of Industry	Ten principal industrial categories(Sub-sectors to be set depending on the type of industry)
Manual for Each Type of Technology	Combustion equipment, rotating machines, steam equipment, compressed air, buildings, water facilities, district heating and cooling, some special subjects such as drying systems and washing systems etc.
Manual for Energy Management	Operation improvement diagnosis, diagnosis of energy conservation through organizational activities, benchmarking diagnosis
Manual for DSM	DSM diagnostic technology and ESCO technology, etc.

(2) Guidance through OJT

(3) Consultation technologies

Techniques for finding energy saving potentials and an example

Techniques for preparation of a report and an example

(4) Target groups

All kinds of industrial enterprises including small- and medium-sized enterprises

Public organizations

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3. Policy Making and Promotion Activities

(1) Policies

Energy conservation laws and regulations:	Providing advice and guidance using successful cases in Japan as an example case
Incentives for energy conservation	Transfer of incentive system practiced in Japan
Evaluation of energy-saving equipment	Provision of advice and guidance using successful cases in Japan as an example (Top Runner Program, etc.)

(2) Information

Preparation of a technical handbook on energy conservation	Transfer of the handbook edited by Japan side
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Development of bench marking system	Focused on major industrial subsectors
Introduction of evaluation method of energy saving potential in Japan	Transfer of the method used in Japan
Recommendation to elaborate energy conservation strategy plan	

(3) Publicity

Transfer of publicity technologies proven in Japan
Holding of national conferences on energy conservation
System for awarding factories that have achieved outstanding results in energy conservation
Summer campaigns, etc.

4. Building Activities

- (1) Hold Commercial building energy audit
- (2) Prepare training program for energy managers
- (3) Provide information, documents, software

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ANNEX 8 Tentative Schedule of Implementation (TSI)

Calendar Year	1999				2000				2001				2002				2003				2004				2005		
Japanese Fiscal Year	1999				2000				2001				2002				2003				2004				2005		
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	
Term of Technical Cooperation					6/01																						
Japanese Side																											
1. Dispatch of Study System																											
1) Preliminary Study Team	-																										
2) Supplementary Study Team			-																								
3) Implementation Study Team				-																							
4) Technical Guidance Study Team								-																			
5) Consultation Study Team												-															
6) Technical Guidance Study Team																											
7) Final Evaluation Team																											
2. Dispatch of Experts																											
1) Long Term Experts																											
1) Chief Advisor																											
2) Coordinator																											
3) Training																											
4) Technology																											
2) Short Term Experts																											
Install/startup																											
3. Training of C/P in Japan																											
C/P Training																											
4. Provision of Machinery & Equipment																											
Turkish Side																											
1. Assignment of C/P & other staffs																											
2. Machinery & Equipment																											
3. Space, Buildings & Facilities																											
1) Office Building																											
2) Plant Building																											
3) Utilities																											
4. Allocation of Local Costs																											

Planned -----
 Executed _____

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ANNEX 9 List of Necessary Machinery & Equipment for the Project (Tentative)

♦ Training plant machinery and equipment

Item	Name of item	Specification	Adoption/ rejection	Remarks
1	Steam Boiler Capacity : 1,200 kg/h Pressure : 10 kg/cm ² G Fuel : Natural gas		Adopted	Purpose : <ul style="list-style-type: none"> To supply steam to the steam training facility To train in energy-saving operation technologies for boilers To practice heat balancing of industrial boilers To understand the principles of automatic control system and practice the setting of control constants Necessity : Most of medium and small enterprises in Turkey employ small boilers. It is thus important to have them acquire energy-saving operation technologies and thereby understand the importance of conversion to energy saving type boilers.
2	Industrial Furnace Capacity : 200,000 kcal/h Fuel : Natural gas and Fuel Oil		Adopted	Purpose : <ul style="list-style-type: none"> To practice heat balancing of heating furnaces for industrial use To practice energy-saving operation of industrial burners. To practice operating the energy-saving equipment (economizer) To practice handling the energy-saving measuring equipment To practice calculating the energy conservation effect of heat insulating materials for industrial furnaces To practice combustion control technologies Necessity : <ul style="list-style-type: none"> In order to achieve energy conservation, it is very important to understand energy consumption and loss. To this end, training in heat balancing should be carried out. For energy conservation of industrial furnaces, combustion control should be carried out properly. For this purpose, it is necessary to get well versed in energy-saving operation of industrial burners, as well as handling of energy-saving measurement instruments. To have them understand the theory and practical applications of energy-saving equipment/materials through practices of using economizers and heat-insulating materials, and heat balancing.
3	Steam trap training unit		Adopted	Purpose : <ul style="list-style-type: none"> To practice learning the operating principles of each type of steam trap and proper use conditions. To practice diagnosing a faulty or malfunctioning trap by means of dedicated diagnostic equipment To practice operating a steam condensate recovery system Necessity : Steam loss through a faulty trap is very large. Also, a selection of an improper trap may result in a significant amount of loss. The reasons for these losses are to be understood through equipment
4	Chiller unit with cooling tower		Not Adopted	Background: <ul style="list-style-type: none"> Although an absorption type chiller is an energy-saving device, it is not essential for training in energy conservation practices. In addition, its equipment cost is high and the operation and handling are less easy. Thus it is not suitable as training equipment.
5	Exhibition model		Adopted	Purpose : To exhibit the typical 3 types of steam trap cut models (mechanical, thermodynamic and thermostatic), together with explanatory panels in the exhibit room
6	Flow calibration unit		Not Adopted	Background: This unit is not essential for training in energy conservation. The situation in Turkey is different from that in Argentina.

2/2

7	Rotating machinery unit a) Fan unit b) Pump unit		a) Adopted b) Adopted	<p>Purpose :</p> <ul style="list-style-type: none"> To practice using energy conservation technologies of rotating machines To demonstrate principles of inverters and energy conservation effect To have them understand the factors that increase energy consumption, such as resistance in the piping system, and practice technologies for eliminating such factors. To practice power measurements using a practical clamp watt-hour meter for a three-phase connection measuring instrument <p>Necessity :</p> <p>The required power of rotating machinery depends on the resistance of the piping system and the efficiency of the machine itself. Measures for reducing such resistance in these units and measures, such as inverters, to improve the efficiency of the machine itself are to be studied through practices.</p>
8	Compressed air unit		Adopted	<p>Purpose :</p> <ul style="list-style-type: none"> To practice detecting air leakage places To practice estimating air leakage amounts and setting optimum pressures of compressed air To have them understand factors for increasing energy consumption, such as resistance in the piping system, and practice their eliminating technologies <p>Necessity :</p> <p>Many cases of energy conservation in medium and small enterprises through enhancement of compressed air control have been reported. Training equipment for troubleshooting of air leakage places and for optimum operation of compressors will thus achieve a significant effect</p>
9	Energy conservation kits		Adopted	<p>Exhibits :</p> <ul style="list-style-type: none"> Energy conservation type model house (half-split structure with the inside visible) Various types of heat-insulating material Multiple-layered glass (Nippon Sheet Glass, Product name: Spacea) Sensors (Human occupancy sensor, luminance sensor) Latest air conditioner model Regenerative burner model <p>Manufacturers are requested to donate these units.</p>

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♦ Measurement and analysis equipment

Item No.	Name of item	Description	Adoption/rejection	Set	Remarks
1	Portable ultrasonic flowmeter	In order to measure flow rate of clean liquids such as boiler feed water and condensate from outside of pipe Pipe diameter : 12.5 mm-1000 mm Fluid flow : 0-10 m/s Fluid temperature : (-20)-(+150) °C	Adopted	1	Purpose : • To practice operating the measurement equipment • Simple measurement during factory energy auditing Application: Measurement of flow rate of boiler feedwater and water for industrial use
2	Air velocity meter and appropriate Pitot tube	In order to measure positive or negative pressure relative to atmosphere or differential pressure obtained from a pitot tube and to measure air or gas velocity in a duct Pressure : 0-2500 Pa Velocity : 0-50 m/s	Adopted	1	Purpose : • To practice operating the measurement equipment • Simple measurement during factory energy auditing Application: Measurement of flow rate of combustion air and combustion gas
3	Portable sulphurdioxide analyzer	In order to measure sulphurdioxide level of flue gas in a duct Sulphurdioxide : 0-200ppm	Not Adopted	1	Purpose : • To practice operating the measurement equipment • Simple measurement during factory energy auditing Application: Measurement of sulfur oxides in combustion gas
4	Non-contact infrared pyrometer with target laser specification	In order to measure temperature of a structure that is not possible to come closer such as rotary kiln surface or pipe lines at high level Temperature : max 2000°C 2 different range : 1 for 0-600 °C 1 for 600-2000 °C	Adopted	1	Purpose : • To practice operating the measurement equipment • Simple measurement during factory energy auditing Application: Measurement of combustion temperature of industrial furnaces and surface temperature of refractory
5	Portable temperature indicator	In order to measure all kind of temperature such as air, water, liquids, surface Electronic Indicator : has automatic cold junction compensation specification Temperature : (-50)-(+1200) °C Appropriate (K) Type temperature probes for ♦ Water : 250 °C ♦ Standard Chiesel : 250 °C ♦ Heavy Duty Surface : 650 °C ♦ Heavy Duty : 850 °C ♦ Air : 1000 °C ♦ Semi Flexible : 1200 °C	Adopted	1	Purpose : • To practice operating the measurement equipment • Simple measurement during factory energy auditing Application: Measurement of various surface temperatures and fluid temperatures

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Item No.	Name of item	Description	Adoption/rejection	Set	Remarks
6	Portable clamp-on meter Clamp size : 15 cm ϕ (minimum)	In order to measure all kind of electrical parameters ♦ Voltage : 600V ♦ Current : 1000A ♦ Power Factor : 0-1 ♦ Power : ...kW	Adopted	1	Purpose : • To practice operating the measurement equipment • Simple measurement during factory energy auditing Application: Measurement of voltage, current, power factor, and power (active, reactive)
7	Harmonic measuring equipment	In order to determine and to measure harmonic type and level which is generated by electronic equipments such as electronic ballast, soft starters etc.	Adopted	1	Purpose : • To practice operating the measurement equipment • Simple measurement during factory energy auditing Background: Since higher harmonics may cause power loss, this instrument should be used to take some appropriate countermeasure.
8	Portable power analyzer with large clamp and printer Two different clamp size. consist of Clamp size : ordinary type Clamp size : 15 cm ϕ (minimum)	In order to measure all kind of electrical parameters ♦ Voltage : 600V ♦ Current : 1000A ♦ Power Factor : 0-1 ♦ Power : ♦ Energy (active) : kWh ♦ Energy (reactive) : kWh	Adopted	2	Purpose : • To practice operating the measurement equipment • Simple measurement during factory energy auditing Application: Measurement of voltage, current, power factor, and power (active, reactive)
9	Flue gas analyzer	In order to measure ♦ O ₂ , CO, SO ₂ , NOx ♦ Flue gas temperature. ♦ Combustion efficiency	Adopted	2	Purpose : • To practice operating the measurement equipment • Simple measurement during factory energy auditing Application: Measurement of O ₂ , CO, SO ₂ and NOx in combustion gas
10	Hot wire anemometer	In order to measure velocity of air in a air conditioning duct	Adopted	1	Purpose : • To practice operating the measurement equipment • Simple measurement during factory energy auditing Application: Measurement of air velocity in an air duct
11	Data logger with transducer	Portable, convenient data analysis on PC using windows programs Displaying and recording Inside/outside temperature (range -20 to + 70°C) Relative humidity (range 0 to % 97)	Adopted	2	Background: In factory energy auditing, it is important to collect a large amount of information from measurement equipment and process such information into data suitable for use.
12	Lux meter	In order to measure illumination level of Lighting System	Not Adopted	1	
13	Heat flux meter	In order to measure heat emission	Adopted	1	Background: Although an indirect method may be used to measure radiation heat loss, it involves a problem in accuracy. This heat flux meter can be used for direct measurement of radiation heat loss.
14	Handy FM transceiver	Communication is quite difficult in noisy factories in noisy situations. When a factory visited as a practical study or in order to get more industrial knowledge usually plant people give some information and explanation at site. At this kind of situations this kind of transceiver is useful to heat them.	Adopted	4	Background: Factory auditing is, in many cases, performed amid noises. Therefore, this handy FM transceiver is very useful for accomplishing this project. Currently, 4 sets for 1 plant are available. Another 4 sets for 1 plant have to be purchased.

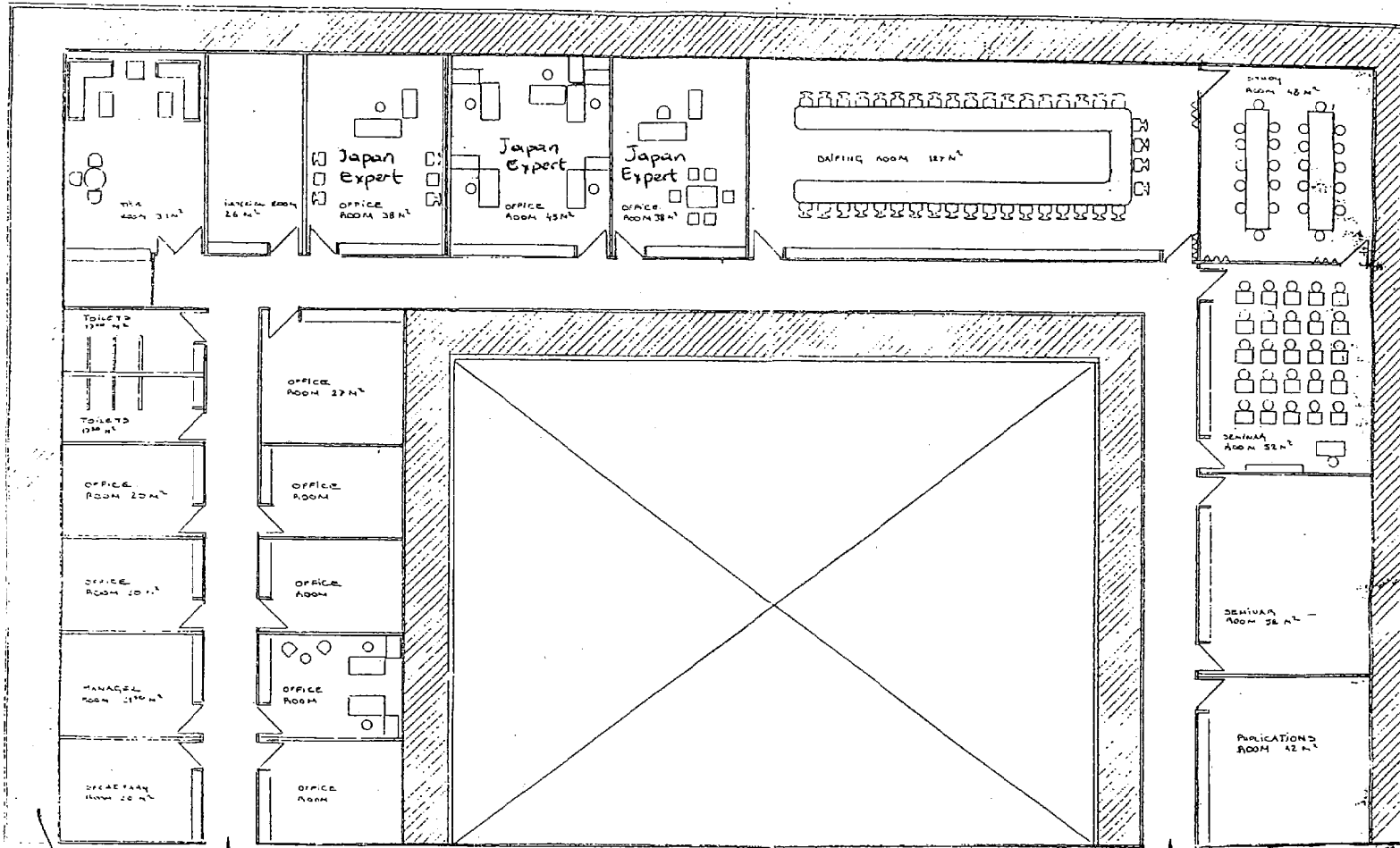
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• Lecture room equipment

Item No.	Name of item	Description	Adoption/rejection	Set	Remarks
1	Multisystem TV set	Multisystem (Pal, Secam, NTSC) TV Set	Adopted	2	This multisystem TV set is necessary for implementing training, and seminars.
2	Hi-Fi stereo video cassette recorder	Hi-Fi Stereo Video Cassette Recorder, VHS World Wide Video System (Pal, Secam, NTSC)	Adopted	2	
3	Overhead projector	Overhead Projector (with carrying table)	Adopted	2	
4	Color projection system	Color Projection System (from Computer and Video to Screen, portable)	Adopted	1	
5	White board	White Board with Scanner and Photocopying System	Adopted	3	
6	Rolling white screen	Rolling White Screen for Overhead Projector (2m x 2m)	Adopted	2	
7	Slide projector		Not adopted		
8	Photocopy machine		Adopted	1	
9	Laser pointer		Not adopted		
10	Desktop computer	Computer (Desktop, Pentium*, 128MB Ram, 4GB Hard Disc, 3.5 inch 1.44MB Floppy)	Adopted	6	
11	Laptop computer	Computer (Laptop, Color LCD Screen, Pentium*, 32 MB Ram, 4 GB Hard Disc, 3.5 inch 1.44MB Floppy)	Adopted	3	
12	Color Ink jet printer	Color Ink Jet Printer (A3 Format)	Adopted	1	
13	Laser printer	Laser Printer (A3 - A4 Format)	Adopted	1	
14	Laser printer	Laser Printer (A4 Format)	Adopted	1	
15	UPS	UPS (4KW)	Adopted	1	

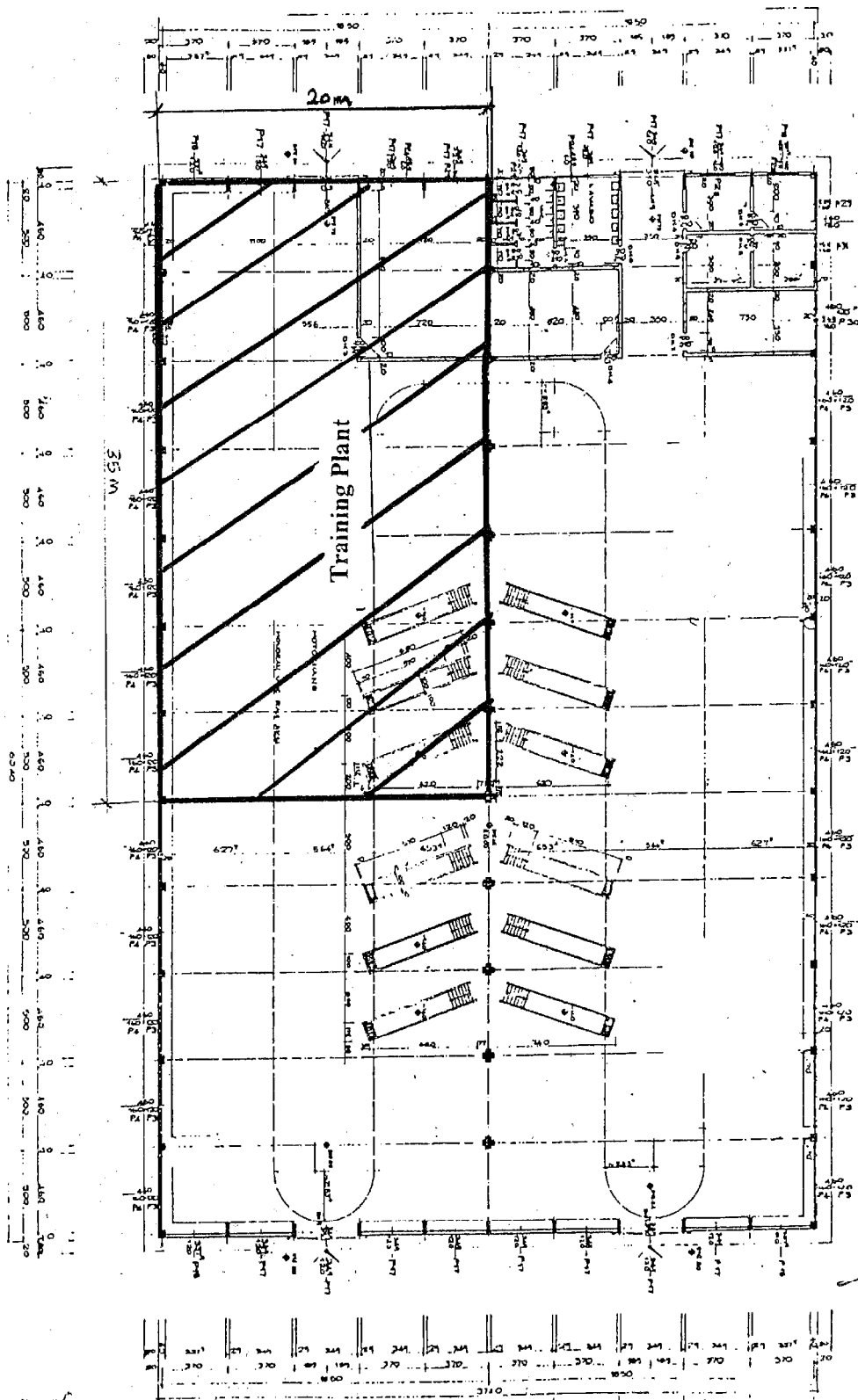
Pentium*: Pentium the latest version

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ANNEX 10 Floor Plan of the Project

Seminar and Office Rooms



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