

PSWAA 246

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A.I.D. Project No. 936-5724

PROJECT
GRANT AGREEMENT
Between
THE REPUBLIC OF THE PHILIPPINES
and the
UNITED STATES OF AMERICA
for the
FEASIBILITY OF INTRODUCING
CWM-FUELS TO THE PHILIPPINES

Dated: March 26, 1984

TABLE OF CONTENTS

	<u>Page</u>
Article 1: The Agreement	1
Article 2: The Project	
Section 2.1. Definition of Project	1
Section 2.2. Grant Nature of Project	2
Article 3: Financing	
Section 3.1. The Grant	2
Section 3.2. Grantee Resources for the Project	3
Section 3.3. Project Assistance Completion Date	4
Article 4: Conditions Precedent to Disbursement and Covenants	
Section 4.1. Conditions Precedent to Disbursement	5
Section 4.2. Special Covenants	5
Article 5: Procurement Source	
Section 5.1. Foreign Exchange Costs	6
Section 5.2. Local Currency Costs	6
Article 6: Disbursements	
Section 6.1. Disbursement for Foreign Exchange Costs	6
Section 6.2. Disbursement for Local Currency Costs	7
Section 6.3. Other Forms of Disbursement	8
Section 6.4. Rate of Exchange	8
Article 7: Miscellaneous	
Section 7.1. Communication	8
Section 7.2. Representatives	9
Section 7.3. Standard Provisions Annex	10
 <u>ANNEX I - PROJECT DESCRIPTION AND BUDGET</u>	
 <u>ANNEX II - STATEMENT OF WORK AND BUDGET FOR ECONOMIC DEVELOPMENT FOUNDATION</u>	
 <u>ANNEX III - PROJECT GRANT STANDARD PROVISIONS</u>	

2

PROJECT GRANT AGREEMENT

Dated: March 26, 1984.

Between

The Republic of the Philippines ("Grantee")

And

The United States of America, acting through the
Agency for International Development ("A.I.D.").

Article 1: The Agreement.

The purpose of this Agreement is to set out the understandings of the parties named above ("Parties") with respect to the undertaking by the Grantee of the Project described below, and with respect to the financing of the Project by the Parties.

Article 2: The Project.

Section 2.1. Definition of Project. The Project concerns the utilization of coal as a coal-water-mix (CWM) fuel - a homogenous suspension of finely powdered coal in water having the handling and combustion properties of a liquid. The Project also concerns the introduction of CWM fuels into the Philippines for use to replace residual fuel oil in power generation and in industrial steam raising. The Project is structured in three phases, with a specific objective to be achieved in each phase.

Phase I concerns feasibility, and is described in detail in Annex I. Its objective is to determine the feasibility of CWM-fuel utilization in the Philippines and, if feasible, provide the justification and estimates of costs

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to undertake a demonstration performance of CWM-fuels in a large steam generator in the Philippines. This Project Grant Agreement covers activities only for achieving the objectives of Phase I.

Phase II concerns demonstration, and its details will be a product of the feasibility determination in Phase I. Its objective is to demonstrate the acceptable performance of CWM fuel in a steam generator. USAID may consider further grants for technical assistance depending on the results in Phase I.

Phase III concerns adaptation of CWM-fuel utilization to a major electricity generation station in the Philippines. Its objective is to achieve total retrofit and continuous utilization of CWM-fuel in the station. The details will be a product of the Phase II activities. The adaptation activities should represent a project that can be commercially financed.

Section 2.2. Grant Nature of the Project. A.I.D.'s contribution to the Project will be provided partly as a grant to fund the activities of the Development Bank of the Philippines' (DBP) research and project coordinating contractor. The scope of work to be covered by this grant is in Annex II. The remainder of A.I.D.'s contribution to the Project will be as grants of services supplied by appropriate contractors from the United States.

Article 3: Financing.

Section 3.1. The Grant. To assist the Grantee to meet the costs of acquiring the services of the DBP contractor, A.I.D., pursuant to the Foreign Assistance Act of 1961, as amended, agrees to grant the Grantee under the terms of this Agreement a sum not to exceed One Hundred Forty Thousand ("U.S.") Dollars (\$140,000) ("Grant").

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The Grant may be used to finance foreign exchange costs, as defined in Section 6.1, and local currency costs, as defined in Section 6.2, of the goods and services required for the Project which are to be supplied by the DBP local contractor in accordance with the Statement of Work in Annex II as noted in Section 2.2. It is intended that the DBP will contract with the Economic Development Foundation (EDF), Manila, for these services as recommended by the project design consultants and the AID/W Energy Office. (See Annex II.)

A.I.D. also agrees to grant the Grantee, under the terms of this Agreement, the services of organizations from the United States of required competence to undertake the experimental, technology/engineering program and project feasibility programs outlined in Annex I upto a value estimated at U.S. dollars 560,000. This services grant shall be used to support the services to be provided by the DBP Contractor. The actual value of these services will be made final after negotiation by AID/Washington of agreements with the firms/organizations to be contracted to perform the services.

Section 3.2. Grantee Resources for the Project.

(a) The Grantee agrees to provide or cause to be provided for the Project all funds, in addition to the Grant, and all other resources required to carry out the Project effectively and in a timely manner.

(b) The resources provided by the Grantee for the Project will be borne on an "in-kind" basis.

Illustrations of "in-kind" resources are the following:

The services of technical and administrative personnel from the Marinduque Mining and Industrial Corporation and the National Power Corporation, and other organizations as may be found relevant, to participate with personnel of the U.S. contractors in the Philippines in producing

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products useful to the objectives of their work; the facilities of drafting rooms and services of draftsmen to produce charts, drawings, and other graphic materials that will appear in the final reports of the work or will be useful in oral presentations in the Philippines; ground transportation outside of Manila; office space, secretarial services, and similar support that may be required for work in the Philippines; and other support of these characteristics that may appear needed.

Section 3.3. Project Assistance Completion Date.

(a) The "Project Assistance Completion Date" (PACD), which is January 31, 1985, or such other date as the Parties may agree to in writing, is the date by which the Parties estimate that all services financed under the Grant will have been performed and all goods financed under the Grant will have been furnished for the Project as contemplated in this Agreement.

(b) Except as A.I.D. may otherwise agree in writing, A.I.D. will not issue or approve documentation which would authorize disbursement of the Grant for services performed subsequent to the PACD or for goods furnished for the Project, as contemplated in this Agreement, subsequent to the PACD.

(c) Requests for disbursement, accompanied by necessary supporting documentation prescribed in Project Implementation Letters, are to be received by A.I.D. or any bank described in Section 7.1 no later than nine (9) months following the PACD, or such other period as A.I.D. agrees to in writing. After such period, A.I.D., giving notice in writing to the Grantee, may at any time or times reduce the amount of the Grant by all or any part thereof for which requests for disbursement, accompanied by necessary supporting documentation prescribed in Project Implementation Letters, were not received before the expiration of said period.

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Article 4. Conditions Precedent to Disbursement and Covenants.

Section 4.1. Conditions Precedent to Disbursement

Prior to the first disbursement under the Grant, or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made, the Grantee will, except as the Parties may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D., a copy of the contract between the DBP and its local contractor for A.I.D. review and acceptance.

Section 4.2. Special Covenants

(a) Feasibility of Utilizing Philippine Coals.

Complete disbursement of the Grant, whether as funding or as services, requires the determination at an early stage that at least one Philippine coal should be found in the experimental program judged to have attractive properties to produce a CWM-fuel. Should the Parties to the Agreement find that such a finding cannot be validated, this Agreement may be terminated by concurrence of the Parties, and all further activity shall cease except for the preparation of written reports for the record.

(b) Role of the National Power Corporation.

The National Power Corporation has the clear potential to be the major consumer of CWM-fuels in the Philippines. Thus, its participation in the feasibility determination activities will be critical to the acceptability of the results. The National Power Corporation will provide all support that is reasonable toward achieving the objectives in an acceptable manner through participation of its personnel in appropriate activities.

(c) Availability of Physical Facilities and Installations

Should the activities referred to above in Section 2.1, Definition of the Project, produce attractive results which can lead to the provision of necessary funds for the activities defined for the demonstration phase, the

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appropriate parties to this Agreement agree further to make available the physical facilities and installations, for which the attractive results were obtained, as the subjects for the demonstration activities

Article 5: Procurement Source

Section 5.1. Foreign Exchange Costs. Disbursements pursuant to Section 6.1 will be used exclusively to finance the costs of goods and services required for the Project having their source and origin in the United States (Code 000 of the A.I.D. Geographic Code Book as in effect at the time orders are placed or contracts entered into for such goods or services) ("Foreign Exchange Costs"), except as A.I.D. may otherwise agree in writing, and except as provided in the Project Grant Standard Provisions Annex, Section C.1(b), with respect to marine insurance.

Section 5.2. Local Currency Costs. Disbursements pursuant to Section 6.2 will be used exclusively to finance the costs of goods and services required for the Project having their source and, except as A.I.D. may otherwise agree in writing, their origin in the Republic of the Philippines ("Local Currency Costs"). To the extent provided for under this Agreement, "Local Currency Costs" may also include the provision of local currency resources required for the Project.

Article 6. Disbursement.

Section 6.1. Disbursement for Foreign Exchange Costs.

(a) The Grantee may obtain disbursements of funds under the Grant for the Foreign Exchange Costs of goods or services required for the Project in accordance with the terms of this Agreement, by such of the following methods as may be mutually agreed upon:

(1) by submitting to A.I.D., with necessary supporting documentation as prescribed in Project Implementation Letters, (A) requests for reimbursement for such goods or services, or, (B) requests for A.I.D. to procure commodities or services in Grantee's behalf for the Project; or,

(2) by requesting A.I.D. to issue Letters of Commitment for specified amounts (A) to one or more U.S. banks, satisfactory to A.I.D. committing A.I.D. to reimburse such bank or banks for payments made by them to contractors or suppliers, under Letters of Credit or otherwise, for such goods or services, or (B) directly to one or more contractors or suppliers, committing A.I.D. to pay such contractors or suppliers for such goods or services.

(b) Banking charges incurred by the Grantee in connection with Letters of Commitment and Letters of Credit will be financed under the Grant unless the Grantee instructs A.I.D. to the contrary. Such other charges as the Parties may agree to may also be financed under the Grant.

(c) Costs incurred by U.S. contractors contracted by AID/Washington will be paid directly by AID/Washington.

Section 6.2. Disbursement in Support of Local Currency Costs.

(a) The Grantee may obtain disbursements of funds under the Grant for Local Currency Costs required for the Project in accordance with the terms of this Agreement, by submitting to A.I.D., with necessary supporting documentation as prescribed in Project Implementation Letters, requests to finance such cost elements of the Project.

(b) The local currency needed for such disbursement hereunder may be obtained:

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(1) by acquisition by A.I.D. with U.S. dollars by purchase or from local currency already owned by the U.S. Government; or

(2) by A.I.D. requesting the Grantee to make available the local currency for such costs, and thereafter reimbursing an amount of U.S. dollars equal to the amount of local currency made available by the Grantee.

Section 6.3. Other Forms of Disbursement. Disbursements of the Grant may also be made through such other means as the Parties may agree to in writing.

Section 6.4. Rate of Exchange. Except as may be more specifically provided under Section 7.2, if funds provided under the Grant are introduced into the Republic of the Philippines by A.I.D. or any public or private agency for purposes of carrying out obligations of A.I.D. hereunder, the Grantee will make such arrangements as may be necessary so that such funds may be converted into currency of the Republic of the Philippines at the highest rate of exchange which, at the time the conversion is made, is not unlawful in the Republic of the Philippines.

Article 7: Miscellaneous.

Section 7.1. Communications. Any notice, request, document, or other communication submitted by either Party to the other under this Agreement will be in writing or by telegram or cable, and will be deemed duly given or sent when delivered to such Party at the following addresses:

To the Grantee:

Mail Address: National Economic and Development Authority
P.O. Box 419, Greenhills, Metro Manila,
Philippines

Alternate address for cables: NEDAPHIL

To A.I.D.:

Mail Address: United States Agency for International Development
c/o The American Embassy
Manila, Philippines

Alternate address for cables: USAID/AMEMB MANILA

All such communications will be in English, unless the Parties otherwise agree in writing. Other addresses may be substituted for the above upon giving notice.

Section 7.2. Representatives. For all purposes relevant to this Agreement, the Grantee will be represented by the individual holding or acting in the office of the Director General, National Economic and Development Authority and A.I.D. will be represented by the individual holding or acting in the office of the Director, United States A.I.D. Mission to the Philippines, each of whom, by written notice, may designate additional representatives for all purposes other than exercising the power under Section 2.1 to revise elements of the amplified project description in Annex I. The names of the representatives of the Grantee, with specimen signatures, will be provided to A.I.D., which may accept as duly authorized any instrument signed by such representatives in implementation of this Agreement, until receipt of written notice of revocation of their authority.

Section 7.3. Standard Provisions Annex. A "Project Grant Standard Provisions Annex" (Annex III) is attached to and forms part of this Agreement.

IN WITNESS WHEREOF, the Grantee and the United States of America, each acting through its duly authorized representatives, have caused this Agreement to be signed in their names and delivered as of the day and year first above written.

REPUBLIC OF THE PHILIPPINES

UNITED STATES OF AMERICA

By: *Vicente B. Valdepeñas Jr.*
Vicente B. Valdepeñas, Jr.

By: *Mary C Kilgour*
Mary C. Kilgour

Title: Director-General
National Economic and
Development Authority

Title: Acting Director
U.S. Agency for
International Development

DEVELOPMENT BANK OF THE PHILIPPINES

NATIONAL POWER CORPORATION

By: *Cesar C. Zalamea*
Cesar C. Zalamea

By: *Gabriel Y. Itchon*
Gabriel Y. Itchon

Title: Chairman

Title: President

**PROJECT DESCRIPTION
INTRODUCTION OF CWM-FUELS TO THE PHILIPPINES**

Introduction

The two energy resources in the Philippines which are the most promising alternatives to petroleum fuel oil in electric power generation are geothermal reservoirs and indigenous coal. Geothermal energy development has been proceeding at a fast pace, such that current generation capacity is 784 MW, making the Philippines one of the world's foremost geothermal electricity producers. New fossil thermal electricity generation capacity, now under construction, is based on pulverized coal firing. The current proven coal reserves in the Philippines are (as of December 1982) 263.2 million metric tons. They are widely distributed in the country and exploration activities are underway. Meanwhile, the country continues to operate a significant thermal generation capacity based on firing petroleum fuel oils.

National energy policy in the Philippines dictates the reduction in petroleum product consumption in all sectors. Accordingly, considerable interest has been focused on retrofitting existing oil-fired electricity generation plants to burn coal. Technical considerations and limited capital resources have pointed toward retrofitting this generation capacity to use coal-water-mix (CWM) fuels as potentially a most cost-effective route to achieve this policy objective in the quickest time.

CWM-fuels are synthetic fuels in which finely-powdered coal is dispersed in water and suspended in such a manner that a stable homogeneous fluid is produced containing from 60 to 75 percent coal by weight depending on the preparation technique. The CWM-fuel can then be pumped and handled like a fuel oil and used in existing oil-fired equipment with relatively little equipment retrofit. Otherwise, the conversion of an existing steam-generator to burn a solid coal would require the installation of considerable new equipment to handle, store, pulverize, and feed pulverized coal to new burners. Finally, a steam generator, designed to burn residual fuel oil is likely to require less derating with a CWM-fuel than it would require with a pulverized-coal fuel.

The elements of a project to accomplish such a retrofit were identified in 1983 by a team from Development Sciences, Inc. (Sagamore, Mass.) based on the prospective availability of a surplus 30 MW steam generator at the Nonoc Island nickel production plant of the Marinduque Minerals and Industrial Corporation (MMIC) for demonstration of CWM-fuel performance and the subsequent retrofitting of the Sucat Station of the National Power Corporation to use CWM-fuels permanently.

The project identified comprises three phases of activity: (1) project feasibility determination; (2) demonstration of CWM fuel performance; and (3) adaptation of the experience gained to an operating oil-fired electric-generating station. The agreement reached between the Government of the Philippines and the USAID Mission to the Philippines will fund the first activity, that is, project feasibility determination.

The project also comprises a one-time effort to address the prospect that a bank of oil-fired reducing-atmosphere ore roasters at the Marinduque Nickel Plant on Nonoc Island can be retrofitted to demonstrate CWM-fuels concomitant performance with the Nonoc steam generator.

Purpose and Scope

The objectives of the activities in the first phase, project feasibility determination, are the following:

- to define and specify the activities required to demonstrate the acceptable performance of a large-scale steam generator in the Philippines,
- to estimate the total costs of such activities in local and foreign currencies,
- to provide the technical and economic justification for undertaking the CWM-fuel performance demonstration activities, and
- to establish the options to finance the costs of the demonstration activities .

The scope of the activities to determine project feasibility is to include an evaluation of one, or possibly two, steam generator option(s) which are to be defined as part of the work. The scope also includes, experimental work addressing the use of Philippine coals in the preparation of CWM fuels. Finally, work is to be undertaken to explore the feasibility of retrofitting the reducing ore roasters in the Marinduque plant.

Approach

Project feasibility is to be determined by a complementary set of four work programs to be coordinated by the central Office of Energy (ST/EY) of the Agency for International Development in Washington and the Development Bank of the Philippines working in a counterpart relationship and depending on the collaboration and cooperation of the National Power Corporation. Figure 1 shows the coordination plan for this effort, combined results of which can serve to provide the justification and the demonstration program to enable a decision to undertake the second phase, that is, the demonstration of CWM-fuel performance.

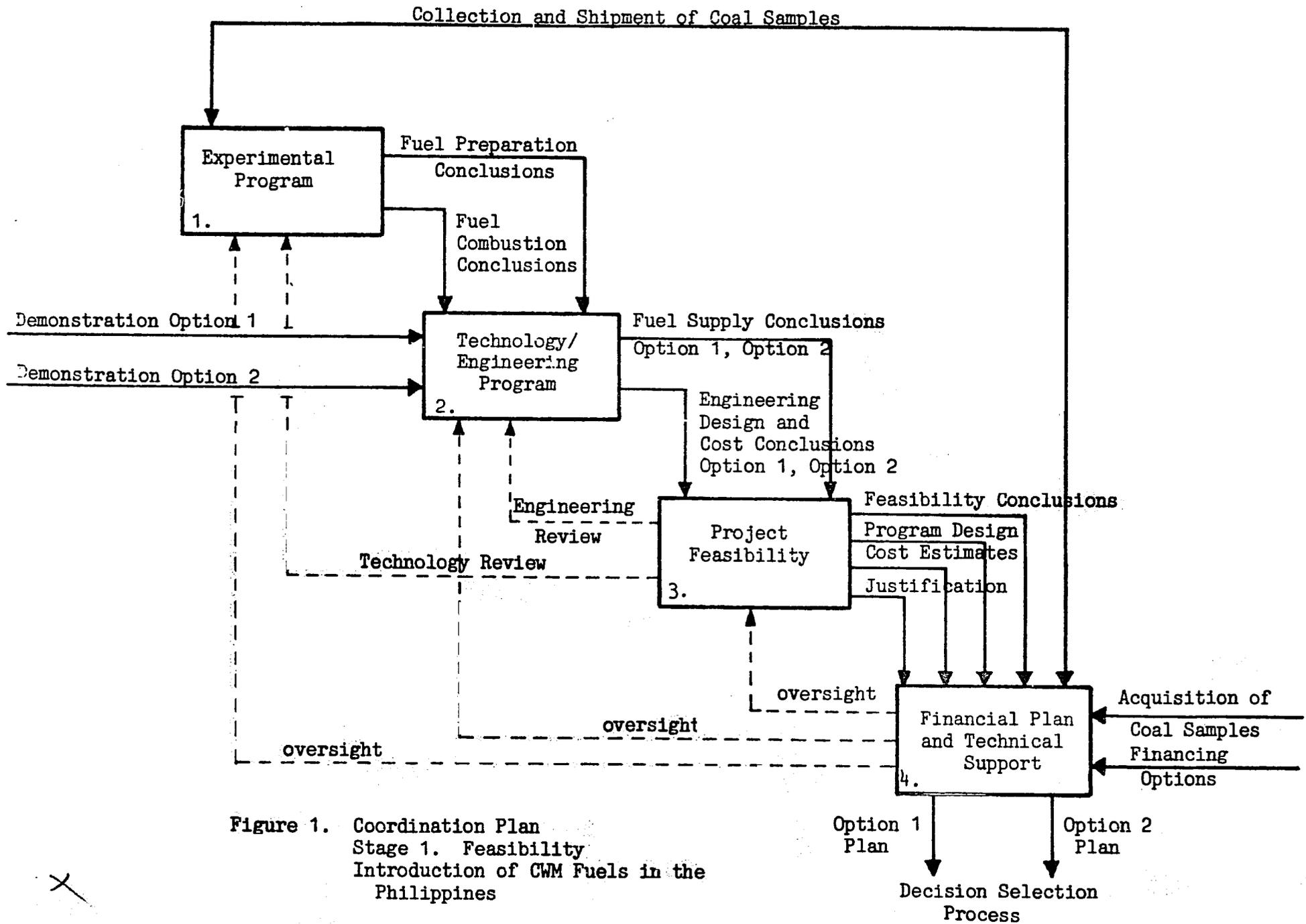


Figure 1. Coordination Plan
 Stage 1. Feasibility
 Introduction of CWM Fuels in the
 Philippines

15

The expectations are that the services to accomplish the Experimental Program (1 in Figure 1) will be provided by a laboratory of the U.S. Department of Energy; services to accomplish the Technology/Engineering Program (2 in Figure 1) by an engineering firm currently listed as a USAID indefinite quantity contractor; and services to accomplish the Project Feasibility Determination (3 in Figure 1) to be provided likewise.

The financial plan and technical support (#4 in Figure 1) will be provided by the Development Bank of the Philippines' local contractor.

Each work program addresses a specific set of objectives and each program will be addressed by an appropriate statement of work. The Statement of Work covering the activities for the DBP contractor is in Annex II. Included in the appropriate Statements of Work is a one-time effort to evaluate the feasibility of retrofitting a bank of reducing ore roasters at the MMIC plant to utilize coal-water-mix fuels instead of fuel oil.

Work Program 1, Experimental Program

The objectives are:

- o To prepare at least one coal-water-mix fuel from a Philippine coal having chemical and physical properties considered acceptable by conventionally used criteria.
- o To burn the coal-water-mix fuel in a test furnace under conditions of acceptable excess air ratios and residual combustibles in the ash.
- o To burn the coal-water-mix fuel in a test furnace under deficient air ratios and acceptable residual combustibles in the ash.

The specific tasks to be undertaken to meet these objectives involve a laboratory investigation of the use of Philippine coals in CWM-fuels and of their combustion. These tasks are:

- o Preparing a work plan in which six selected Philippine coal samples are subjected to four CWM-fuel/preparation technologies. One of these technologies will be the preparation of additive-free CWM fuels. Combustion tests are to be specified in both the total and partial combustion modes.
- o Upon approval of this work plan, the accomplishment of the activities specified in the work plan.
- o Evaluating the results obtained to determine the extent to which the objectives have been reached.

- o Preparing a written report to contain the record of the experimental work done, the evaluations performed, the conclusions reached, and the recommendations made.

The expectations are that at least one Philippine coal will be found to produce a CWM-fuel judged to have attractive properties. Continuation of the work requires validation of this expectation.

Work Program 2, Technology/Engineering Program

The objectives are:

- o To isolate from the current state-of-the-art of coal-water-mix fuel preparation and use the technology factors suited for transfer and demonstration in prospective steam generation equipment in the Philippines.
- o To analyze and define the engineering aspects for retrofitting the steam generators chosen as the prospective candidates for demonstration of coal-water-mix fuel performance.
- o To specify the characteristics of the operations that can demonstrate the performance of the fuels.
- o To estimate the foreign and local costs of the retrofit and the operation of the test runs.
- o To assess the feasibility of retrofitting the bank of reducing roasters in the MMIC plant to use coal-water-mix fuels.

The specific tasks to be undertaken to meet these objectives involve the assessment of the technology transfer, engineering cost, and operational aspects of activities to retrofit an existing large steam-generator in the Philippines as the subject for demonstrating the performance of a Philippine CWM fuel. They also involve an assessment of the retrofit needs for the reducing ore roasters on Nonoc Island to utilize CWM-fuel instead of fuel oil. The tasks are:

- o Preparing a state-of-the-art statement for available fuel preparation technologies in terms of technical readiness to supply the CWM-fuel needs of a demonstration program. The statement is to include estimates of costs for the construction of a preparation plant of adequate size to support the test runs
- o For each of the options to be defined, preparing a statement describing the retrofit needs and the options by which these needs can be met. The statement will include instrumentation and sampling requirements.

- o For each of the options, performing a minimum level of engineering work to produce a clear picture of the retrofit effort and adequate estimates of retrofit costs.
- o For each of the options, defining of good practices for operating the equipment including startup and shut down and data acquisition.
- o For each of the options, preparing estimates of capital costs to retrofit the equipment. Costs shall be allocated to local and foreign exchange, and to the steam generator and CWM-fuel supply components.
- o Preparing a final report containing separately for each option, the engineering definition of the retrofit, the cost estimates, and the operating practices to be followed.
- o For the bank of roasters, preparing a plan (if any is found feasible) for performing a demonstration of one or more burner installations. (The burner installation appears likely to be based on the first stage of a two-stage slagging burner now emerging for low nitrogen-oxide emissions.)

WORK PROGRAM 3, Project Feasibility

The objectives are:

- o To establish the market potential for coal-water-mix fuels in the Philippines in steam generation.
- o To specify the fuel procurement plan for supporting the demonstration activities.
- o To determine the total foreign and local costs involved in the demonstration activities.
- o To establish the criteria for judging the attractiveness of demonstration results.
- o To identify the characteristics of follow-on activities, given a determination of attractive demonstration results.
- o To establish the justification and rationale for costs involved in the demonstration activities.

The specific tasks to be undertaken to meet these objectives will address the feasibility of undertaking a Philippines CWM-fuel demonstration project. The tasks are:

- o Evaluating of the technical inputs produced from the experimental and the engineering/technology programs in terms of assuring their completeness, technical consistency, and usefulness in the feasibility determination.
- o Assessing the Philippine market for CWM-fuels, with primary emphasis in electric power generation and secondary emphasis on the industrial market that could materialize once use in the electric sector makes CWM-fuels generally available.
- o Assessing the technical, infrastructural, and institutional obstacles to be overcome in serving these markets. Included in the assessment will be an analysis of the Philippine coal demand/supply imbalance and new coal exploration and production needs to serve conventional markets and those based on CWM. Estimating of the market potential for CWM using a positive and negative scenario for overcoming obstacles.
- o Delineating criteria by which CWM-fuel performance will be evaluated.
- o Designing the demonstration runs for each option in terms of the number of runs (including 100% fuel oil as the baseline), length of runs, data to be logged, performance factors to be calculated, and format for presenting results.
- o Preparing a complete estimate of the costs, for each option considered, including the retrofit, the operational program, evaluation of the results, and the reporting. The estimates shall be disaggregated to reflect the main functions involved in cost estimating.
- o For each option, identifying and characterizing a follow-on program for expanding the introduction and use of CWM fuels, given attractive demonstration results.
- o From the above results, assessing of the benefits that may be expected from introducing CWM-fuels in the Philippines in terms of such factors as foreign exchange savings, new employment generation, creation of new business opportunities, and export prospects
- o Correlating all results in a format that provides justification to finance the demonstration program, for example, benefit/cost ratios, for use below in preparing a financial prospectus.

Work Program 4, Technical Support and Financial Plan

The objectives are:

- o To provide local support of all activities relevant to data collection and evaluation.
- o To prepare a plan for securing funding of the demonstration program.

The specific tasks to be undertaken to meet these objectives are defined in Annex II. In summary, they are the following:

- o Collecting six Philippine coal samples of adequate quantity, securely packed, and shipping by air to the site of the experimental program. Performing check analyses of these samples. Preparing a written report adequately describing the sampling procedure.
- o Delineating of the steam-generator options to be considered in feasibility determination in terms of the practicality and constraints on their use because of prior commitment.
- o Identifying criteria to be met if results of the demonstration of CWM-fuel performance are to be considered attractive in a National Power Corporation context.
- o Overseeing the work programs above to provide coordination to gather familiarity with all activities as they may relate to preparing a financial plan, and to enable independent review.
- o Preparing a financial plan in a format that enables presentation to potential funding sources and its subsequent defense.

Schedule

The four work programs are scheduled to be completed in November 1984 with work beginning in selected areas in March 1984. The preliminary scheduling of various tasks described above is shown in Figure 2.

Reports

A final report is to be prepared on the conclusion of each work program. An oral presentation of the comprehensive results, will be given to a selected audience in Manila in late October 1984. An internal reporting/coordination meeting covering the four work programs will be conducted in the United States in late June 1984.

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		Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8
SOW-1	Experimental Work Plan								
	Experimental Work Evaluation Work Final Conclusions					Final Report			
SOW-2	SOA Fuel Prep. Tech. Retrofit Aspects								
	Retrofit Engineering Operation Plan Costs Final Conclusions					Final Report			
SOW-3	Evaluate Tech. Inputs Market Studies Obstacles								
	Demonstration Design Cost Estimates Criteria Follow-On Program Benefits Estimates Financial Plan Inputs								Final Report
SOW-4	Coal Samples Steam Generator Options	1/							
	Performance Criteria Coordination with SOW-3 Financial Plan	2/							Final Report

1/ Six Samples-Sequential Shipment over a two-month period.
 2/ Options appear to be (1) Nonoc and (2) one Sucat Unit.
 Possibly (3) Naga/Sucac Sequence.

Orlando
CMM
Symposium

Manila
Oral
Presentation

Figure 2. Preliminary Schedule. Stage 1 - Feasibility Introduction of CMM Fuels in the Philippines

12

ESTIMATED PROJECT BUDGET

<u>Statement of Work (Work Program) ^{1/}</u>	<u>Candidate</u>	<u>Amount</u>
No. 1	Brookhaven National Laboratory	\$175,000
No. 2	Burns and Roe, Ebasco, or Stone, and Webster	185,000
No. 3	Development Sciences, Inc.	200,000
No. 4	Development Bank of the Philippines' local contractor	<u>140,000</u>
	Total ^{2/}	\$700,000

1/ The Costs of work programs Nos. 1-3 will be funded and contracted by AID/W work program No. 4 will be funded and contracted under this grant.

2/ Vouchers for costs incurred under Statement of Work No. 4 will be channeled through USAID to pay DBP's local contractor. Costs for Statements of Work 1-3 will be paid directly by AID/Washington.

STATEMENT OF WORK
INTRODUCTION OF COAL-WATER-MIX (CWM) FUELS
INTO THE PHILIPPINES
PREPARATION AND TECHNICAL SUPPORT OF THE FINANCIAL PLAN

1. BACKGROUND

The current project agreement between the Government of the Philippines on behalf of the Development Bank of the Philippines (DBP) and the National Power Corporation (NPC), and the USAID Mission to the Republic of the Philippines covers the first phase of three phases of activities that are foreseen as required for a large-scale introduction of CWM-fuels into the Philippine energy consuming sector.

The first phase of activities is aimed at determining the feasibility of achieving such a goal, and comprises four distinct, but related, efforts. Each effort is covered by a separate statement of work which may be listed and described as follows:

Statement of Work - 1

Performing an experimental program to demonstrate that Philippine coals are amenable to the preparation of CWM-fuels of acceptable handling and complete and partial combustion characteristics.

Statement of Work - 2

Establishing the technology, engineering, and cost bases upon which a large-scale demonstration of the performance of a Philippine CWM-fuel in a Philippine steam generator can be undertaken. Included is a parallel effort directed at performance in a bank of reducing-atmosphere ore roasters.

Statement of Work - 3

Determining of the technical, economic, and financial feasibility of undertaking the second phase of activities, i.e., the actual demonstration of CWM-fuels performance; and, also, the justification for such an undertaking.

Statement of Work - 4

Providing technical support of all activities relevant to data collection and evaluation, and preparing a financial plan to secure funds for the demonstration phase. The contractor (selected) for this statement of work is the Economic Development Foundation (EDF) of Manila. EDF has been identified by the project design consultants and the DBP as the predominant Philippine

research group in the CWM area. (See "Identification and Description of A Technical Assistance Program in Coal Development for the Government of the Philippines", Final Report, Development Sciences, Inc., January 13, 1984.) This selection is further supported by the AID/W Energy Office in State Department Telegram No. 019002. EDF is hereinafter called the "Contractor". The substantive content below refers to this statement of work.

2. PURPOSE AND SCOPE

The purposes of the work are the following:

- o To provide technical support of all activities involved in the four statements of work through the delineation and provision of needed inputs.
- o To provide institutional support of all activities, such as the physical facilities needed for effective work, dissemination of public information, and the organization, planning, and management of relevant meeting functions.
- o To prepare and present a plan, with its justification, for securing the funds required in the Phase 2 of the activities, i.e., the demonstration of CWM-fuel performance in a large Philippine steam generator.

The scope of the work to achieve these objectives involves not only the performance of the tasks described below, but also an oversight of the activities being performed in connection with the other scopes of work. The objective is the prospective strengthening of support for the financial plan which is to emerge from this work.

3. TASKS

The tasks foreseen fall into three categories: (1) those which serve to provide needed technical inputs for the activities in the other three statements of work; (2) those which provide administrative support of the activities; and (3) those which serve to establish and support the financial plan.

3.1 Technical Inputs

3.11 Coal Samples

The Contractor shall collect six samples of Philippine coal which so far have been identified as the following:

1. Semirara - Sample from active mine at Unong. Open-pit mine ± 12 meter seam.

2. Southern Cebu - Select Luvimin Mining Company mine. Underground mine + 3.0 meter seam.
3. Samar - MMIC coal mine area near Bagagcay - Developed coal seam - 2.5 meters thick. Open-pit mine.
4. Surigao - Bislig Area - PNOC mine. underground + 2.0 meter seam.
5. Lianga - Area and mine to be determined.
6. Zamboanga - Area and mine to be determined.

The sampling and packing method shall be equal to that described in Appendix C of the Report by Development Sciences, Inc. entitled "Identification and Description of a Technical Assistance Program in Coal Development for the Government of the Philippines", dated January 13, 1984. The quantity of each sample and the address for shipment by air will be supplied to the Contractor.

The Contractor shall extract a quantity of coal from each sample sufficient for chemical analysis in the Philippines. The analytical details will be supplied to the Contractor.

The complete and detailed procedures followed shall be recorded in a written report organized so that a future technical reader can feel fully aware of the validity of the sampling procedures and analyses.

During the performance of the experimental work covered by Statement of Work - 1, the need for a single larger sample of coal should arise for the purpose of undertaking combustion tests. In this event, the Contractor shall provide the single, larger sample by following the procedure outlined above.

3.12 Demonstration Options

The Contractor shall consult with appropriate Philippine agencies to identify and describe steam generator equipment options for demonstrating the performance of CWM-fuels. The descriptions shall be furnished to the U.S. Contractors selected to perform the statements of work 2 and 3. However, preliminary work has already identified two options:

- (1) The use of a 30 MW oil-fired design steam generator at the Marinduque Nickel plant on Nonoc Island and/or the 55 MW on-line coal-fired design steam generator in the National Power Corporation station at Naga (Cebu), in an operational sequence yet to be defined. The operational results will be evaluated to establish the attractiveness of the fuel for retrofitting the steam generators in NPC's Sucat Station.

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- (2) The use of the operational results from the experimental program conducted at a power plant steam generator in New Brunswick Province, Canada, for direct adaptation to the Sucat Station. These results will be evaluated to establish the feasibility of by-passing a formal Philippine demonstration before retrofitting the steam generators in the Sucat Station of the National Power Corporation to utilize CWM-fuels.

3.13 Performance Criteria

The Contractor shall consult with the National Power Corporation, and other organizations in the Philippines, operating oil-fired steam generator capacity for utility electricity generation to establish criteria to be used in evaluating the operational results from a demonstration effort in terms of attractiveness for retrofitting on-line steam generation equipment. The criteria established will become an input to the feasibility determination covered by the Statement of Work - 3.

3.14 Local Constraints

The Contractor shall provide assessments in writing of technological and institutional constraints to the transfer of CWM-fuel preparation and utilization technology for use as guidance by the Contractors for Statements of Work 2 and 3. In this respect, the Contractor shall fund the costs of attendance of a qualified university faculty member to attend the review/coordination seminar specified in Section 3.24 below, to provide the technological background to delineate in a written report the prospective role for a Philippine university in the technology transfer process.

3.2 Follow-on Funding Plan

3.21 Technical Reviews

In order to develop a plan for funding follow-on activities in Phase 2, the Contractor shall undertake independent reviews of the results and procedures for the other three Statements of Work as follows:

- With respect to the Statements of Work 2 and 3, review the technical aspects of CWM-fuels preparation and utilization and their applicability to operating a public utility electricity supply system.
- With respect to the Statements of Work 3 and 4, review the economic and financial aspects of the plan to obtain funding for the follow-on activities.

3.22 Formal Presentation Seminar

Upon completion of all work statements, the Contractor shall organize, plan, and conduct a seminar in Manila, during which results of project activities will be presented to an audience with potential interest in providing financial support. The participants in the presentation shall represent all contractors and subcontractors engaged in the preparation of the results.

The seminar shall permit questioning, and responses may be used to provide further inputs to the final report.

3.23 Private Sector Role

During the course of its work, the Contractor shall brief the Philippine private sector on prospective business opportunities arising from successfully introducing CWM-fuels into the Philippines. The audience shall include representatives from private coal mining firms and their trade organizations, and from the owner/operator of the Batangas/Sucat black-oil pipeline. The substantive content of the briefing shall include discussions of the merits of integrating the CWM-fuel preparation step with coal mining operations, and prospective technical problems of pipeline operation with CWM-fuels.

3.24 Review/Coordination Seminar

A review/coordination seminar will be conducted in the U.S. in late June by the U.S. contractor for the Statement of Work - 1. The Contractor shall be represented and participate in this seminar.

3.3 Local Support

In order to support the U.S. contractors during the performance of field activities for Statements of Work 2 and 3, the Contractor shall assist in providing facilities and services described in Section 3.2 of the Project Grant Agreement. These facilities and services will be provided directly by the Contractor and/or the NPC and the MMIC, whichever is most convenient and available. Excluded shall be local taxi transport, internal and international commercial air travel, and international telex and telephone communications.

4. Reports

The final report shall be prepared and submitted after the completion of the Formal Presentation Seminar, so that seminar results can be incorporated. This report shall be designed to use the final reports of the contractors for the Statements of Work 1, 2, and 3 as annexes or reference documents. The organization of the report and the annexes shall be internally consistent to permit quick comprehension.

27

Finally, the Contractor shall prepare an executive summary as part of an investment prospectus.

5. Period of Performance

All work shall be completed by November 30, 1984

PROJECT GRANT STANDARD PROVISIONS

Definitions: As used in this Annex, the "Agreement" refers to the Project Grant Agreement to which this Annex is attached and of which this Annex forms a part. Terms used in this Annex have the same meaning or reference as in the Agreement.

Article A: Project Implementation Letters.

To assist Grantee in the implementation of the Project, A.I.D., from time to time, will issue Project Implementation Letters that will furnish additional information about matters stated in this Agreement. The Parties may also use jointly agreed-upon Project Implementation Letters to confirm and record their mutual understanding on aspects of the implementation of this Agreement. Project Implementation Letters will not be used to amend the text of the Agreement, but can be used to record revisions or exceptions which are permitted by the Agreement, including the revision of elements of the amplified description of the Project in Annex I.

Article B: General Covenants.

Section B.1. Consultation. The Parties will cooperate to assure that the purpose of this Agreement will be accomplished. To this end, the Parties, at the request of either, will exchange views on the progress of the Project, the performance of obligations under this Agreement, the performance of any consultants, contractors, or suppliers engaged on the Project, and other matters relating to the Project.

Section B.2. Execution of Project. The Grantee will:

(a) Carry out the Project or cause it to be carried out with due diligence and efficiency, in conformity with sound technical, financial, and management practices, and in conformity with those documents, plans, specifications, contracts, schedules, or other arrangements, and with any modifications therein, approved by A.I.D. pursuant to this Agreement; and

(b) Provide qualified and experienced management for, and train such staff as may be appropriate for the maintenance and operation of the Project, and, as applicable for continuing activities, cause the Project to be operated and maintained in such manner as to assure the continuing and successful achievement of the purposes of the Project.

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Section B.3. Utilization of Goods and Services.

(a) Any resources financed under the Grant will, unless otherwise agreed in writing by A.I.D., be devoted to the Project until the completion of the Project, and thereafter will be used so as to further the objectives sought in carrying out the Project.

(b) Goods or services financed under the Grant, except as A.I.D. may otherwise agree in writing, will not be used to promote or assist a foreign aid project or activity associated with or financed by a country not included in Code 935 of the A.I.D. Geographic Code Book as in effect at the time of such use.

Section B.4. Taxation.

(a) This Agreement and the Grant will be free from any taxation or fees imposed under laws in effect in the territory of the Grantee.

(b) To the extent that (1) any contractor, including any consulting firm, any personnel of such contractor financed under the Grant, and any property or transactions relating to such contracts; and (2) any commodity procurement transaction financed under the Grant are not exempt from identifiable taxes, tariffs, duties, or other levies imposed under laws in effect in the territory of the Grantee, the Grantee, will, as and to the extent provided in and pursuant to Project Implementation Letters, pay or reimburse the same with funds other than those provided under the Grant.

Section B.5. Reports, Records, Inspections, Audit. The Grantee will:

(a) Furnish A.I.D. such information and reports relating to the Project and to this Agreement as A.I.D. may reasonably request;

(b) Maintain or cause to be maintained, in accordance with generally accepted accounting principles and practices consistently applied, books and records relating to the Project and to this Agreement, adequate to show, without limitation, the receipt and use of goods and services acquired under the Grant. Such books and records will be audited regularly, in accordance with generally accepted auditing standards, and maintained for three years after the date of last disbursement by A.I.D.; such books and records will also be adequate to show the nature and extent of solicitations of prospective suppliers of goods and services acquired, the basis of award of contracts and orders, and the overall progress of the Project toward completion; and

(c) Afford authorized representatives of a Party the opportunity at all reasonable times to inspect the Project, the utilization of goods and services, financed by such Party, and books, records, and other documents relating to the Project and the Grant.

Section B.6. Completeness of Information. The Grantee confirms:

(a) That the facts and circumstances of which it has informed A.I.D., or caused A.I.D. to be informed, in the course of reaching agreement with A.I.D. on the Grant, are accurate and complete, and include all facts and circumstances that might materially affect the Project and the discharge of responsibilities under this Agreement; and

(b) That it will inform A.I.D. in timely fashion of any subsequent facts and circumstances that might materially affect; or that it is reasonable to believe might so affect, the Project or the discharge of responsibilities under this Agreement.

Section B.7. Other Payments. Grantee affirms that no payments have been or will be received by any official of the Grantee in connection with the procurement of goods or services financed under the Grant, except fees, taxes, or similar payments legally established in the country of the Grantee.

Section B.8. Information and Marking. The Grantee will give appropriate publicity to the Grant and the Project as a program to which the United States has contributed, identify the Project site, and mark goods financed by A.I.D., as described in Project Implementation Letters.

Article C: Procurement Provisions.

Section C.1. Special Rules.

(a) The source and origin of ocean and air shipping will be deemed to be the ocean vessel's or aircraft's country of registry at the time of shipment.

(b) Premiums for marine insurance placed in the territory of the Grantee will be deemed an eligible Foreign Exchange Cost, if otherwise eligible under Section C.7(a).

(c) Any motor vehicles financed under the Grant will be of United States manufacture, except as A.I.D. may otherwise agree in writing.

(d) Transportation by air, financed under the Grant, of property or persons, will be on carriers holding United States certification, to the extent service by such carriers is available. Details on this requirement will be described in a Project Implementation Letter.

Section C.2. Eligibility Date. No goods or services may be financed under the Grant which are procured pursuant to orders or contracts firmly placed or entered into prior to the date of this Agreement, except as the Parties may otherwise agree in writing.

Section C.3. Plans, Specifications and Contracts. In order for there to be mutual agreement on the following matters, and except as the Parties may otherwise agree in writing:

- (a) The Grantee will furnish to A.I.D. upon preparation:
- (1) any plans, specifications, procurement or construction schedules, contracts, or other documentation relating to goods or services to be financed under the Grant, including documentation relating to the prequalification and selection of contractors and to the solicitation of bids and proposals. Material modifications in such documentation will likewise be furnished A.I.D. on preparation; and
 - (2) such documentation will also be furnished to A.I.D., upon preparation, relating to any goods or services, which, though not financed under the Grant, are deemed by A.I.D. to be of major importance to the Project. Aspects of the Project involving matters under this subsection (a)(2) will be identified in Project Implementation Letters.
- (b) Documents related to the prequalification of contractors, and to the solicitation of bids or proposals for goods and services financed under the Grant will be approved by A.I.D. in writing prior to their issuance, and their terms will include United States standards and measurements;
- (c) Contracts and contractors financed under the Grant for engineering and other professional services, for construction services, and for such other services, equipment, or materials as may be specified in Project Implementation Letters, will be approved by A.I.D. in writing prior to execution of the contract. Material modifications in such contracts will also be approved in writing by A.I.D. prior to execution; and
- (d) Consulting firms used by the Grantee for the Project but not financed under the Grant, the scope of their services and such of their personnel assigned to the Project as A.I.D. may specify, and construction contractors used by the Grantee for the Project but not financed under the Grant shall be acceptable to A.I.D.

Section C.4. Reasonable Price. No more than reasonable prices will be paid for any goods or services financed, in whole or in part, under the grant. Such items will be procured on a fair and, to the maximum extent practicable, on a competitive basis.

Section C.5. Notification to Potential Suppliers. To permit all United States firms to have the opportunity to participate in furnishing goods and services to be financed under the Grant, the Grantee will furnish A.I.D. such information with regard thereto, and at such times, as A.I.D. may request in Project Implementation Letters.

Section C.6. Shipping.

(a) Goods which are to be transported to the territory of the Grantee may not be financed under the Grant if transported either:

(1) on an ocean vessel or aircraft under the flag of a country which is not included in A.I.D. Geographic Code 935 as in effect at the time of shipment; or

(2) on an ocean vessel which A.I.D., by written notice to the Grantee has designated as ineligible; or

(3) under an ocean or air charter which has not received prior A.I.D. approval.

(b) Costs of ocean or air transportation (of goods or persons) and related delivery services may not be financed under the Grant, if such goods or persons are carried:

(1) on an ocean vessel under the flag of a country not, at the time of shipment, identified under the paragraph of the Agreement entitled "Procurement Source: Foreign Exchange Costs," without prior written A.I.D. approval; or

(2) on an ocean vessel which A.I.D., by written notice to the Grantee, has designated as ineligible; or

(3) under an ocean vessel or air charter which has not received prior A.I.D. approval.

(c) Unless A.I.D. determines that privately owned United States-flag commercial ocean vessels are not available at fair and reasonable rates for such vessels:

(1) at least fifty percent (50%) of the gross tonnage of all goods (computed separately for dry bulk carriers, dry cargo liners and tankers) financed by A.I.D. which may be transported on ocean vessels will be transported on privately owned United States-flag commercial vessels; and

(2) at least fifty percent (50%) of the gross freight revenue generated by all shipments financed by A.I.D. and transported to the territory of the Grantee on dry cargo liners shall be paid to or for the benefit of privately owned United States-flag commercial vessels. Compliance with the requirements of (1) and (2) of this subsection must be achieved with respect to any cargo transported from U.S. ports and also any cargo transported from non-U.S. ports, computed separately.

Section C.7. Insurance.

(a) Marine insurance on goods financed by A.I.D. which are to be transported to the territory of the Grantee may be financed as a Foreign Exchange Cost under this Agreement provided:

(1) such insurance is placed at the lowest available competitive rate; and

(2) claims thereunder are payable in the currency in which such goods were financed or in any freely convertible currency. If the Grantee (or government of Grantee), by statute, decree, rule, regulation, or practice discriminates with respect to A.I.D.-financed procurement against any marine insurance company authorized to do business in any State of the United States, then all goods shipped to the territory of the Grantee financed by A.I.D. hereunder will be insured against marine risks and such insurance will be placed in the United States with a company or companies authorized to do a marine insurance business in a State of the United States.

(b) Except as A.I.D. may otherwise agree in writing, the Grantee will insure, or cause to be insured, goods financed under the Grant imported for the Project against risks incident to their transit to the point of their use in the Project; such insurance will be issued on terms and conditions consistent with sound commercial practice and will insure the full value of the goods. Any indemnification received by the Grantee under such insurance will be used to replace or repair any material damage or any loss of the goods insured or will be used to reimburse the Grantee for the replacement or repair of such goods. Any such replacement will be of source and origin of countries listed in A.I.D. Geographic Code 935 as in effect at the time of replacement, and, except as the Parties may agree in writing, will be otherwise subject to the provisions of the Agreement.

Section C.8. U.S. Government-Owned Excess Property. The Grantee agrees that wherever practicable United States Government-owned excess personal property, in lieu of new items financed under the Grant, should be utilized. Funds under the Grant may be used to finance the costs of obtaining such property for the Project.

Article D: Termination; Remedies.

Section D.1. Termination. Either Party may terminate this Agreement by giving the other Party 30 days written notice. Termination of this Agreement will terminate any obligations of the Parties to provide financial or other resources to the Project pursuant to this Agreement, except for payment which they are committed to make pursuant to noncancellable commitments entered into with third parties prior to the termination of this Agreement. In addition, upon such termination A.I.D. may, at A.I.D.'s

expense, direct that title to goods financed under the Grant be transferred to A.I.D. if the goods are from a source outside Grantee's country, are in a deliverable state and have not been off-loaded in ports of entry of Grantee's country.

Section D.2. Refunds.

(a) In the case of any disbursement which is not supported by valid documentation in accordance with this Agreement, or which is not made or used in accordance with this Agreement, or which was for goods or services not used in accordance with this Agreement, A.I.D., notwithstanding the availability or exercise of any other remedies under this Agreement, may require the Grantee to refund the amount of such disbursement in U.S. Dollars to A.I.D. within sixty (60) days after receipt of a request therefor.

(b) If the failure of Grantee to comply with any of its obligations under this Agreement has the result that goods or services financed under the Grant are not used effectively in accordance with this Agreement, A.I.D. may require the Grantee to refund all or any part of the amount of the disbursements under this Agreement for such goods or services in U.S. Dollars to A.I.D. within sixty (60) days after receipt of a request therefor.

(c) The right under subsection (a) or (b) to require a refund of a disbursement will continue, notwithstanding any other provision of this Agreement, for three years from the date of the last disbursement under this Agreement.

(d) (1) Any refunds under subsection (a) or (b), or (2) any refund to A.I.D. from a contractor, suppliers, bank or other third party with respect to goods or services financed under the Grant, which refund relates to an unreasonable price for or erroneous invoicing of goods or services, or to goods that did not conform to specifications, or to services that were inadequate, will (A) be made available first for the Project, to the extent justified, and (B) the remainder, if any, will be applied to reduce the amount of the Grant.

(e) Any interest or other earnings on Grant funds disbursed by A.I.D. to the Grantee under this Agreement prior to the authorized use of such funds for the Project will be returned to A.I.D. in U.S. Dollars by the Grantee.

Section D.3. Nonwaiver of Remedies. No delay in exercising any right or remedy accruing to a party in connection with its financing under this Agreement will be construed as a waiver of such right or remedy.

Section D.4. Assignment. The Grantee agrees, upon request, to execute an assignment to A.I.D. of any cause of action which may accrue to the Grantee in connection with or arising out of the contract actual performance or breach of performance by a party to a direct U.S. Dollar contract which A.I.D. financed in whole or in part out of funds granted by A.I.D. under this Agreement.

MEMORANDUM

TO : USAID/Manila, Lawrence Ervin

23 February 1984

FROM : S&T/EY, Charles Bliss (TDY) *CB*

SUBJECT: Trip Report, 12-23 February 1984
Conventional Energy Technical Assistance, 936-5724
Project to Introduce Coal-Water-Mix (CWM) Fuels to the
Philippines

Readers who are not completely familiar with the subject project should read Annex I, Project Description, in the attached draft Project Grant Agreement before continuing below.

During the TDY in Manila, I had numerous meetings with the Economic Development Foundation personnel (Purita Festin, Cesar Sarino, and Gil Guevara) and through them with Alex Melchor; two meetings with the First Philippine Industrial Corporation (Edilberto G. Gamboa, Senior VP and GM; Jose P. Cruz, Jr., Senior Manager, Coordinating and Technical Services; and Eustaquio E. Generoso, Jr., Asst VP, Operation and Maintenance); conversations within the Mission; and conversations with National Power Corporation (Jose U. Jovellanos, Special Assistant to the Chairman, and Avelino T. Galvez, Manager, Mechanical Planning Division, Projects Development Department).

On 18 February, in the company of EDF (Guevara), NPC (Galvez) and PNOC-Coal (Marcelino Soriano), I visited the physical installations at the terminals of the Batangas/Sucacat black products pipeline and the steam generators at the Sucacat Station.

On 20 February, in the company of EDF (Guevara), I visited the nickel production plant of the Marinduque Mining and Industrial Company on Nonoc Island and inspected the steam generators and ore roasters installations, the coal receiving and handling facilities, the steam-turbine/generator installations, and the general plant layout. The MMIC operations manager (Edwin J. Asiain) conducted the tour and we reported both before and after to the VP and general manager of the plant (Lauro S. Perez).

These activities related to providing assistance to the Mission in the preparation of a Project Grant Agreement to enable project activities to begin.

PRODUCTS

Draft Project Agreement. A draft project grant agreement is attached, which I have reviewed with respect to its technical content and relevance to the objectives to be attained in the first phase of the three-phase effort now envisioned to achieve successful large-scale introduction of CWM-fuels to the Philippines. The project grant agreement covers only the first phase of

effort, which is to determine the feasibility and justification for financing and undertaking the second phase, the actual demonstration of CWM-fuel performance on a large scale.

EDF Budget. The Economic Development Foundation is intended to be the Philippine member of the coordinated four-contractor team described in Annex I of the Project Grant Agreement. Their services will be contracted for by the Government of the Philippines through the Development Bank of the Philippines, a signatory of the Project Grant Agreement, in accordance with USAID Procurement practices. The EDF has accepted an eventual budget for their services to be provided in accordance with the Statement of Work for the Philippine Contractor, Annex II of the Project Grant Agreement. This budget sum is \$139,900, and is the sum to be granted in the Agreement. The ordinary line-item budget to support this sum is attached. We expect that the final line item budget can vary, but that the total sum will remain fixed. The remaining three contractors will be U.S. organizations, and their services will be granted, rather than the funds to cover them.

OBSERVATIONS

I would like to make a number of technical observations for the record on the situation in the Philippines relevant to utilization of CWM-fuels.

1. General

S&T/EY has been monitoring the emergence of coal-water-mix fuels as a viable substitute for residual petroleum fuels since they began to receive serious attention in 1981. Now, from the present TDY results, the technical details of the Philippine situation have become clear, as well as the activities that need to be undertaken to take advantage of this situation.

The conditions in the Philippines for undertaking a large demonstration of CWM-fuel performance are as close to ideal as anyone can reasonably expect in the real world. The physical installations contain all of the major high-capital cost equipment items that will be needed for the project activities in the second phase (Demonstration). All personnel that I met and talked with seemed enthusiastic and motivated to cooperate with the project activities in the feasibility determination. The potential for economic benefit from using CWM-fuels to avoid domestic petroleum fuel oil consumption represents a significant impact as reducing foreign exchange demand, while at the same time representing a potential to achieve this impact with considerably less capital investment than a retrofit of large fuel-oil consuming to coal itself. It is clear to me, from prior discussions in the U.S., that a successful demonstration of CWM-fuel performance in the Philippines can accelerate the present rate of introduction of CWM-fuels into U.S. fuel-oil burning utilities.

2. Nonoc Nickel Plant

The three oil-fired steam generators at Nonoc are now idle and "moth balled". Their thermal design reflects the low fuel oil prices that prevailed in the late 1960s. There are even no air heaters provided for the combustion air.

38

Air preheat is prerequisite for CWM-fuel combustion. Nevertheless, given a demonstration of CWM-fuel performance with attractive results, these three units can be retrofitted for permanent higher thermal efficiency operation, and a cogeneration operation appears viable.

The present turbo-generator building has an empty bay near an end wall for an additional generation unit. Moreover, this end wall can be moved outward to provide space for two more generation units. Surigao City, at the north eastern tip of Mindanao, is a "row boat" distance away from Nonoc Island, and the National Power Corporation indicates an interest in considering accepting an export of electric power from the Nonoc plant to the Mindanao grid.

The present processing configuration of the nickel production facilities at Nonoc requires quantities of low-pressure steam. This requirement is suited to conventional cogeneration through the use of tapping turbines. In fact two of the three units now installed are tapping units. One activity for the technology/engineering contractor should be the review and identification of the plant steam balance as an input to the postulation of a cogeneration operation as a potential benefit to be evaluated in the determination of feasibility.

MMIC operations at Nonoc may be restructured to eliminate the ore drying and reducing ore-roasting unit and to substitute a high-pressure acid leaching step for solubilizing the nickel/cobalt content with higher yields. This option is now being studied by Kaiser Engineers on behalf of the California Nickel group. John Loftes of Kaiser is the contact. This alteration can radically affect the plant steam balance and the viability of a cogeneration concept. The prospect that this modification will actually occur needs to be reviewed before the assessment of a cogeneration benefit is made.

The plant is equipped with 3 - 250,000 barrel fuel oil storage tanks, of which two are considered surplus, and which could be made available for storage of CWM during the demonstration phase. An extraordinarily large concrete-paved coal storage area is available, where it is likely a CWM-fuel preparation plant, sized to serve the demonstration activities could be installed in the corner closest to the storage tanks. About a 500-1000 meter pipeline between preparation and storage tanks would be required which could be supported on the coal conveyor structure.

The plant management indicated the availability of staff from its process engineering department to collaborate and assist in the feasibility and demonstration activities.

3. Batangas/Sucac Facilities

These facilities are relevant to the adaptation of the Nonoc demonstration results to the retrofit of the 850 MW, 4-unit, Sucac (Gardner-Synder) station of the National Power Corporation from petroleum fuel oil firing to CWM-fuel firing. This station currently receives its fuel oil supply from Batangas through a 16-inch black products pipeline operated by the First Philippine Industrial Corporation. Batangas is the site of a coal receiving and storage depot to be operated when completed by PNOC-Coal.

The Batangas pumping station contains four diesel driven centrifugal pumps and provided with its own oil storage tanks. The intermediate pumping station was not visited. The destination terminal is equipped with storage tanks from which it serves the Sucat Station, and other fuel oil consuming stations nearby by pipeline and barge.

The prospect that an experimental pipeline loop could be built at Nonoc as part of the demonstration activities was discussed with the pipeline management. The experimental design would enable the management to minimize technical risk when it became necessary to retrofit the Batangas/Sucat line to carry CWM-fuel as an additional commodity.

The Sucat Station is equipped with one 150 MW, two 200 MW, and one 300 MW units. Particulate collection is limited to cyclones. Sulfur content in the fuel oil is about 3-3.5%. Space seems available for electrostatic precipitators by mounting off the rear wall of the station building and rearranging ductwork.

The NPC, through CIDA assistance, has a recent study made by Intercontinental Engineering Consultants covering the retrofit of the station to solid coal. The study is based on complete steam generator replacement in a new area and is not clear on how solid coal will be provided and stored in a suburban Manila location. The results, however, can provide a good baseline for comparing the capital requirements of a CWM option and establishing a capital-reduction benefit. in addition to a foreign exchange saving.

Both the new one-unit 300 MW Calaca coal-fired station and the 625 MW nuclear station should be in production in early 1985. This should ease dependence on the Sucat output whenever a retrofit is to be undertaken.

Other fuel oil fired electricity generation stations in the Manila area appear to be two units at the Tegen Station, eight units at the Rockwell Station, two at the Malaya Station, and two at the Bataan Station.

NEXT STEPS

The important next step is, of course, converting the attached draft Project Grant Agreement to a signed document. I consider the contents technically acceptable on behalf of S&T/EY. At this writing, the funding citation, needed by the Mission as part of their authorization for signature, has not yet arrived. Until this signed agreement is available no funding obligations can be made.

In the meantime, the Statement of Work for the Philippine Contractor has been established and is Annex II of the draft Project Grant Agreement. Upon signature of the Agreement, the expectations are that the Economic Development Foundation will be contracted to undertake this work.

From the S&T/EY point of view, the most important single step is to arrange for contracted services to cover the Statement of Work - 1, the Experimental Program. S&T/EY expects this Contractor will be the Brookhaven National

Laboratory. Their work program will determine the size of the coal samples to be shipped to the U.S. for experimentation. S&T/EY will begin efforts to enable the obligation of funds to this Contractor about the time of signature of the Project Grant Agreement.

Less critical are the contracted services for the Technology/Engineering Contractor and the Feasibility Determination Contractor. S&T/EY will begin as soon as expedient to prepare the Statements of Work and negotiate budgets for these two contracts from IQC sources. The candidates for the Technology/Engineering work are Burns and Roe, Ebasco, and Stone and Webster Engineering Corporation. The candidate for the Feasibility Determination work is Development Sciences, Inc., who were involved in the previous work on this subject in 1983.

Atch: As stated

cc: S&T/EY, Alan B. Jacobs
ASIA/TR/E/E, Robert Ichord
ASIA/PTB, Carl Penndorf

REVISED
ARTICLES OF INCORPORATION
OF THE
ECONOMIC DEVELOPMENT FOUNDATION, INC.

KNOW ALL MEN BY THESE PRESENTS

That we, all of legal age, and a majority of whom are residents of the Philippines, have this day voluntarily associated ourselves together for the purpose of forming a non-stock, non-profit corporation under the laws of the Philippines.

AND WE HEREBY CERTIFY:

FIRST - That the name of the corporation shall be "THE ECONOMIC DEVELOPMENT FOUNDATION, INC."

SECOND - That the purposes for which said corporation is formed are as follows:

1. To encourage, promote, and develop industrial research guidance in the Philippines and to hold lectures, seminars, meetings, classes, conferences and exhibitions calculated to attain that purpose; to promote and encourage the dissemination of the results of scientific and technological research and the general application thereof; to foster and advance studies for technical, managerial and investment advisory service and guidance to individuals and industrial enterprises, and through said technical, managerial and investment guidance, to promote, initiate and develop industries of private ownership, and to identify, develop and promote industrial project and/or industrial research.

2. To conduct research, investigations and examinations on businesses and enterprises of every kind and description throughout the world with the aim of securing information and particulars for the investment and employment of capital.

3. To undertake and transact all kinds of business relative to the gathering and distribution of financial and investment information and statistics throughout the world.

4. To acquire, purchase, own, hold, operate, develop, lease, mortgage, pledge, exchange, sell, transfer, or otherwise, in any manner permitted by law, real and personal property of every kind and description or any interest therein as may be necessary to carry out its purposes.

the purposes of the corporation and from time to time, without limit as to amount, to draw, make, accept, endorse, guarantee, execute and issue promissory notes, drafts, bills of exchange, warrants, debentures, and other negotiable or non-negotiable instruments and evidence of indebtedness, and to secure the payment thereof and of the interest thereon by mortgage on, or pledge, conveyance or assignment in trust of, the whole or any part of the assets of the corporation, real, personal, or mixed, including contract rights, whether at the time owned or thereafter acquired, and to sell, pledge or otherwise dispose of such securities or other obligations for the corporation for its corporate purposes.

6. In furtherance of its purposes, to extend financial assistance and to enter into, make, perform and carry out, or cancel and rescind contracts of every kind and for any lawful purpose with any person, firm, association, corporation, syndicate, domestic or foreign, or others in which it has a lawful interest.

7. To invest funds, as it may be able to obtain from donations, grants, or loans, in securities from the returns of which the corporation hopes to subsist and carry on the activities and purposes for which it was formed.

8. As may be necessary to carry out and in connection with its purposes, to make any guaranty respecting securities, indebtedness, interest, contracts and other obligations so far as the same may be permitted to be done under the laws of the jurisdiction of incorporation of this corporation.

9. To act as attorney in fact for any person, corporation, association, partnership or other legal entity of similar nature under such terms as may be agreed upon.

10. In general to carry on any activity and to have and exercise all of the powers conferred by the laws of the jurisdiction of incorporation of this corporation; and to do any and all of the acts and things herein set forth to the same extent as juridical persons could do, and in any part of the world, as principal, factor, agent, or otherwise, either alone or in syndicate or otherwise in conjunction with any person, entity, syndicate partnership, association or corporation, domestic or foreign; to establish and maintain offices and agencies and to exercise all or any of the corporate powers and rights throughout the world.

THIRD - That the corporation shall be maintained by the contributions of and endowments from persons, corporations and other entities and supporters thereof, whether domestic or foreign, and the fees of its members. The solicitation of contribution from the public shall be subject to the provisions of Republic Act No. 4075.

FOURTH - (a) That at least sixty (60%) percent of its gross income, as defined in the Revised National Internal Revenue Code, and unrestricted donations, shall be devoted to undertaking, directly financing, or assisting pure, fundamental, or applied research, developmental work and/or economic evaluation and/or granting of scholarship for scientific and technological manpower training, including the establishment of professorial chairs, in any or all of the following fields:

- | | |
|---|--|
| (a) Industry | (e) Atomic Energy |
| (b) Agriculture | (f) Food and Nutrition |
| (c) Health Science | (g) Engineering |
| (d) Biological and
Physical Sciences | (h) Social Science and
the Humanities |

(b) Not more than thirty (30) percent of the gross income of the Foundation and not more than ten (10%) percent of the unrestricted donations to the Foundation shall be devoted to general and administrative expenses; (c) All donations to be received by the Foundation from another Foundation certified under the Rules and Regulation of the National Science and Development Board shall be subject to prior approval by the NSDB.

FIFTH - (a) That upon its dissolution as an NSDB-certified Foundation, its remaining assets shall be disposed of and turned over to any NSDB-certified Foundation of its choice or to the Republic of the Philippines or any of its agencies or instrumentalities or political subdivisions; (b) That in case of failure on the part of the Foundation to secure renewal of its certification as an NSDB-certified Foundation, or failure to comply with the pertinent regulations of the NSDB, the Foundation shall be charged an amount equivalent to the taxes that should have been paid without the benefit of NSDB certification from the date of last certification, the amount to be determined jointly by the NSDB and the BIR.

SIXTH - That the place where the principal office of the corporation is to be established or located is at Manila, Philippines.

44

SEVENTH - That the term for which said corporation is to exist is FIFTY (50) YEARS from and after the date of incorporation.

EIGHTH - That the names and residences of the incorporators of the said corporation are as follows:

<u>NAMES</u>	<u>RESIDENCES</u>
HILARION M. HENARES, JR.	2511 Aurora St., Pasay City
RICHARD V. BERNHART	21 Saturn St., Bel-Air Village Makati, Rizal
ANTONIO C. DELGADO	57 Victoria Avenue, New Manila Quezon City
FILEMON C. RODRIGUEZ	52 Panay Avenue, Quezon City
SIXTO K. ROXAS	7 Second St., Villamar Court Parañaque, Rizal
ROBERTO T. VILLANUEVA	42 Banaba, Forbes Park Makati, Rizal
R. A. MEYJES	48-A McKinley Road, Forbes Park Makati, Rizal

NINTH - That the number of Trustees of said corporation shall be FIFTEEN (15) and that the names and residences of the Trustees of the corporation who are to serve until successors are elected and qualified as provided by the By-laws are as follows:

<u>NAMES</u>	<u>RESIDENCES</u>
HILARION M. HENARES, JR.	2511 Aurora St., Pasay City
RICHARD V. BERNHART	21 Saturn St., Bel-Air Village Makati, Rizal
ANTONIO C. DELGADO	57 Victoria Avenue, New Manila Quezon City
FILEMON C. RODRIGUEZ	52 Panay Avenue, Quezon City
SIXTO K. ROXAS	7 Second St., Villamar Court Parañaque, Rizal
ROBERTO T. VILLANUEVA	42 Banaba, Forbes Park Makati, Rizal
R. A. MEYJES	48-A McKinley Road, Forbes Park Makati, Rizal

TENTH - That Sixto K. Roxas has been elected by the incorporators as Treasurer of the corporation to act as such until his successor is duly elected and qualified in accordance with the By-laws and as such Treasurer he has been authorized to receive all fees, contributions or endowments given to, received by and appertaining to the said corporation.

ELEVENTH - THAT ANY MANAGEMENT CONTRACT, TRUST AGREEMENT OR ANY OTHER CONTRACT TO BE ENTERED INTO BY THE FOUNDATION FOR THE MANAGEMENT OF ANY OF ITS ACTIVITIES SHALL BE SUBJECT TO APPROVAL BY THE NATIONAL SCIENCE DEVELOPMENT BOARD.

TWELFTH - THAT A MEMBER OF THE NSDB COMMITTEE ON SCIENCE FOUNDATIONS OR ITS AUTHORIZED REPRESENTATIVE SHALL BE ALLOWED TO SIT WITH THE BOARD OF TRUSTEES OF THE FOUNDATION AS A REPRESENTATIVE OF THE NSDB.

THIRTEENTH - That the Foundation shall allow the NSDB, thru its duly authorized representative, to inspect its investment portfolio for verification purposes.

FOURTEENTH - That any proposed amendment to these Articles of Incorporation or the Code of By-laws of the Foundation shall hereafter be subject to approval by NSDB prior to registration with the Securities and Exchange Commission.

FIFTEENTH - That the Foundation shall furnish the NSDB a certified true copy of the minutes and resolutions adopted in all meetings of the Board of Directors, committees or members of the Foundation within thirty (30) days after such meeting.

IN WITNESS WHEREOF, we have hereunto affixed our signatures in the City of Manila, Philippines, this 13th day of May, 1964.

(SGD.) HILARION M. HENARES, JR. (SGD.) RICHARD V. BERNHART
(SGD.) ANTONIO C. DELGADO (SGD.) FILEMON C. RODRIGUEZ
(SGD.) SIXTO K. ROXAS (SGD.) ROBERTO T. VILLANUEVA
(SGD.) R. A. MEYJES

SIGNED IN THE PRESENCE OF:

(SGD.) MARTIN P. BONOAN (SGD.) ARTEMIO RAYMUNDO

C E R T I F I C A T I O N

WE, the undersigned officers of the Economic Development Foundation, Inc., pursuant to the requirements of Act No. 1459, as amended, otherwise known as The Corporation Law of the Philippines, do hereby certify to be true and correct the foregoing copy of the Revised Articles of Incorporation of the Economic Development Foundation, Inc. These revised Articles of Incorporation incorporate amendments adopted by the membership of the Foundation at its meeting duly called and constituted for the purpose and where a quorum was present on December 12, 1978.

December 12, 1978 at Makati, Metro Manila, Philippines.

(SGD.) EMILIO ABELLO
Chairman and Trustee

(SGD.) FRANCISCO DEL ROSARIO
Trustee

(SGD.) ERNESTO ABOITIZ
Trustee

(SGD.) BENJAMIN SANVICTORES
Trustee

(SGD.) ROMAN CRUZ, JR.
Trustee

(SGD.) CESAR N. SARINO
President and Trustee

(SGD.) WILLIAM DUNNING
Trustee

(SGD.) GERARDO SICAT
Trustee

(SGD.) NORMAN FAPR
Trustee

(SGD.) RICARDO SILVERIO, SR.

(SGD.) JOSE FERNANDEZ, JR.
Trustee

(SGD.) DAVID SYCIP
Trustee

(SGD.) VICENTE JAYME
Trustee

(SGD.) ROBERTO VILLANUEVA
Trustee

(SGD.) JAIHE M. SALAZAR, JR.
Corporate Secretary

Available Document

ARTICLE I

DEFINITIONS AND ABBREVIATIONS

As used in this Code of By-Laws, when capitalized:

- Section 1.01 "Foundation" means the Economic Development Foundation, Incorporated
- 1.02 "Corporation Law" when used in the text, means Act No. 1459, as amended from time to time.
- 1.03 "Articles of Incorporation" means the Articles of Incorporation of the Foundation, as amended from time to time.
- 1.04 "Code of By-laws" means the Code of By-laws of the Foundation, as amended from time to time.

ARTICLE II

IDENTIFICATION

Section 2.01 N A M E

The name of this corporation is Economic Development Foundation, Incorporated.

Section 2.02 T Y P E

The Foundation is designed and established as a privately-operated, non-political, non-stock, non-profit service corporation.

Section 2.03 PURPOSES AND POWERS

The purposes for which the Foundation is formed and the powers that it may exercise are set forth in its Articles of Incorporation.

Section 2.04 CORPORATE SEAL

The seal of the Foundation shall be circular in form and mounted upon a metal die, suitable for impressing the same upon paper. About the upper periphery of the seal shall appear the words "Economic

18

Development Foundation", and about the lower periphery thereof the word "Philippines". In the center of the seal shall appear the initials "EDF" superimposed upon a miniature reproduction of a map covering the territorial jurisdiction of the Republic of the Philippines.

Section 2.05 **FISCAL YEAR**

The fiscal year of the Foundation shall begin on the first day of January in each year and end on the last day of December in the same year.

ARTICLE III

MEMBERSHIP

Section 3.01 **CLASSIFICATION OF MEMBERS**

There shall be FOUR classes of (1) Donor member, (2) Sponsor member, (3) Regular member, and, (4) Associate members.

Sections 3.02 **ELIGIBILITY**

Any person, firm, partnership corporation, or association hereunder specified, who pays such membership contributions or fees and/or otherwise qualifies under such other conditions as hereinafter provided may become a member of the Foundation.

Section 3.03 **ADMISSION OF MEMBERS**

(a) Any person, firm, partnership, corporation, or association may become a donor member of the Foundation by making an unconditional and irrevocable donation in favor of the latter of cash or valuable property worth at least Fifteen Thousand (P15,000) pesos. A donor-member shall be a permanent member of the Foundation. The donor of cash or property valued at less than Fifteen Thousand (P15,000) shall be considered a regular member under subsection (c) hereof for a term of years computed at one year per thousand pesos or fraction thereof donated to the Foundation.

(b) Sponsor members shall consist of either of two types: (1) those which qualified and were sponsors of the Foundation as of April 27, 1967, and which convert their respective contributions into non-interest-bearing notes payable in equal installments over a period of three years beginning on December 29, 1979; and (2) those which shall hereafter grant non-interest-bearing loans of Fifteen Thousand (P15,000) pesos each to the Foundation payable in equal installment for a period of three years beginning on the fifteenth year from the date of the note evidencing the loan.

A sponsor member shall be a member of the Foundation until the full amount of his loan to the Foundation has been repaid.

(c) Any person, firm, partnership, or corporation desirous of becoming a regular member may make proper application therefor to the Foundation. The regular membership status of such person or entity when admitted shall be dependent upon his/its remittance to the Foundation of the fee of one thousand (P1,000) pesos, payable annually.

(d) The associate members shall consist of either of two types: (1) the members of the Steering Committee who served in the ad-interim Board of Trustees, which committee was organized to form the Foundation and to procure for it the rights and instrumentalities by which it is to carry out the purposes set forth in its Articles of Incorporation: Provided, however, That unless they qualify and be admitted either as sponsor or regular member within one year from and after the date of incorporation of the Foundation, the rights and privileges of membership of said memers of the Steering Committee shall cease and terminate after the expiration of said one year period; (2) the authorized representative of any institution from which the Foundation shall borrow for the purposes of acquiring and maintaining adequate capital to finance its operational requirements may, by contract or otherwise, be conferred by the Board of Trustees, an associate membership in the Foundation, which membership shall be subject to such restrictions as may be agreed upon and shall be effective only while the loan is outstanding and unpaid. Such action by the Board shall be subject to ratification by the members of record of the Foundation entitled to vote at any of its annual or special meetings.

50

Association of banks, insurance companies, and financing companies, may qualify and be admitted as a sponsor or regular member of the Foundation under such terms and conditions as the Board of Trustees shall prescribe.

Section 3.04 CORPORATE MEMBER TO SPECIFY REPRESENTATIVE

Should an applicant for membership in the Foundation be a partnership, firm, corporation or association, it shall upon admission to membership communicate in writing to the Secretary of the Foundation the name, title, and address of the person authorized to represent it.

Section 3.05 CERTIFICATE OF MEMBERSHIP

A certificate of membership shall be issued by the Foundation to each class of members which shall be in such form as may be prescribed by the Board of Trustees, but shall not be transferable.

Section 3.06 LOST CERTIFICATE

In case a certificate is lost, destroyed or mutilated, a new certificate may be issued therefor upon payment of a reasonable replacement fee as the Board of Trustees in its discretion shall determine.

Section 3.07 PRIVILEGES OF MEMBERS

The Board of Trustees shall determine the privileges to which members of the Foundation shall be entitled. At the discretion of the Board, members shall, as far as practicable, have preference on all Foundation - sponsored activities.

Section 3.08 MEMBER TO RECEIVE BY-LAWS

Each member shall receive a copy of this Code of By-laws, and each revision thereof, and shall acknowledge receipt in writing.

Section 3.09 DUTIES OF MEMBERS

Every member must agree to obey the rules of the Foundation as set forth in this Code of By-laws, or elsewhere and the decisions of the general membership meeting or of the Board of Trustees. He must do his utmost to promote the aims and purposes of the Foundation and the success of its operations. Members shall agree to pay all charges and assessments voted by the Board or by the members.

The membership privileges of a sponsor or regular member in arrears in the payment of service charges or other charges beyond thirty (30) days shall be automatically suspended until satisfactory payment of such charges in arrears plus reasonable penalties at the discretion of the Board of Trustees; the membership privileges of a regular member shall be automatically terminated upon failure of said member to pay when due the annual membership fee; the privileges of associate members shall cease when the conditions for termination provided in Article III, Section 3.03 (d) shall take place.

ARTICLE IV

MEETING OF MEMBERS

Section 4.01 ANNUAL MEETING

The first annual meeting of the members for the election of the Board of Trustees, and for the transaction of such other business as may properly come before the meeting shall be held on November 16, 1964 at the principal office of the Foundation at 4:00 o'clock in the afternoon. Thereafter, and for the purpose of adjusting to a calendar year period, the annual meeting shall be held at the same hour and place on the second Monday of April of each year, if such day is not a legal holiday, and if a holiday, then on the first following day that is not a legal holiday. (As amended by the Members at their Second Annual Meeting on May 20, 1966.)

If for any reason the annual meeting of the members shall not be held at the time and place herein provided, the same may be held at any time thereafter, or the business to be transacted at such annual meeting may be transacted at any special meeting called for that purpose.

Section 4.02 SPECIAL MEETING

At any time in the interval between annual meetings, special meetings of the members may be called by the President of the Foundation, or by order of the majority of the Board. On request in writing delivered to the President or Secretary of the Foundation of twenty (20%) per centum or more of members, it shall be the duty of the President or the Secretary to call forthwith a meeting of the members. Such request shall state the purpose or purposes of the proposed special meeting and shall be contained in the notice of such meeting.

Written notice stating the place, day and hour of annual or special meetings of the members shall be given either personally or by mail, addressed to each member of record entitled to vote at the address left by such member with the Secretary of the Foundation, or at his last known Post-Office address, at least ten (10) days before the date set for such meeting. Notices of meetings need not be published in the newspapers except when necessary to comply with certain mandatory requirements of the Corporation Law.

Section 4.04

VOTING AT MEETING OF MEMBERS

Clause 4.041. RIGHT TO VOTE - Except as otherwise withheld by the Corporation Law, by the provisions of the Articles of Incorporation, or by this Code of By-laws, every member shall be entitled to vote in person or by proxy on all questions before any and all membership meetings.

Clause 4.042. PROXIES - A member may vote by proxy executed in writing by the member. Such proxy shall be filed with the Secretary of the Foundation at least forty-eight (48) hours before the time of the meeting. No proxy shall be valid unless it shall designate the particular meeting at which it is to be voted, and no proxy shall be voted at any meeting other than the one so designated or any adjournment thereof. The presence of a member at a meeting shall revoke a proxy theretofore executed by him and such member shall be entitled to vote at such meeting in the same manner and with the same effect as if he had not executed a proxy.

Clause 4.043. VOTING PROCEDURE - Except as otherwise specified in these By-laws, voting shall be by voice, but the Chairman may require a show of hands, a standing vote, or a rollcall vote while one-third of the members present in person or by proxy, may require a secret ballot.

Trustees shall be elected by secret ballot. Each member may vote for as many nominees as there are Trustees to be elected, but may not cast more than one vote for each nominee, and the nominees equal to the number of Trustees to be elected who have received the highest number of votes shall be declared elected.

Clause 4.044. PROHIBITION AGAINST VOTING - No member shall be permitted to vote at any meeting under the following circumstances:

Item 4.0441. Unpaid installment on contribution - Where any installment is due and unpaid on a sponsorship contribution, the sponsor concerned shall not be permitted to vote on any or all questions before any meeting.

Item 4.0442. End of Member's term - Any regular member who fails to renew his annual membership status and any associate member who does not qualify and get admitted either as sponsor or regular member on or before the expiration of his term as such member, shall lose his voting rights.

Clause 4.045. FIXING OF RECORD DATE TO DETERMINE MEMBERS ENTITLED TO VOTE - The Board of Trustees is authorized to fix a date not exceeding thirty (30) days preceding the date of any members' meeting as a record date for determination of members entitled to notice of and to vote at such meeting, and only members of record on such date, and no others, shall be entitled to notice of and to vote at such meeting.

Clause 4.046. VOTING LISTS - A complete list of members entitled to vote at any meeting of members, arranged in alphabetical order, with the address of each, shall be on file at the principal office of the Foundation and subject to inspection by any member. Such list shall be produced and kept open at the time and place of any such meeting and subject to the inspection of any member during the holding of such meeting.

The Secretary of the Foundation, who may call on any officer or employee of the Foundation for assistance, shall make all necessary and appropriate arrangements for the meetings of the members, receive all proxies, and ascertain and report to each meeting of the members the number of members present in person or by proxy and entitled to vote at such meeting.

Clause 4.047. QUORUM - A quorum for any meeting of the members shall consist of a majority of the total number of members of record entitled to vote, and a majority of such quorum shall decide any question at the meeting, save and except in those matters where the Corporation Law requires the affirmative vote of a greater proportion.

Clause 4.048. ORDER OF BUSINESS - The order of business at the annual meeting of the members and, so far as appropriate, at all other meetings of the members, shall be essentially as follows:

Item 4.0481. Proof of due notice of meeting.

Item 4.0482. Call of roll.

Item 4.0483. Reading and disposal of any unapproved minutes.

Item 4.0484. Annual reports of officers and committees.

Item 4.0485. Unfinished business.

Item 4.0486. New business.

Item 4.0487. Election of Trustees.

Item 4.0488. Adjournment.

ARTICLE V

BOARD OF TRUSTEES

Section 5.01 GENERAL POWERS

The Board of Trustees in its corporate capacity shall have general supervision and control of the business and the affairs of the Foundation, and shall make all rules and regulations not inconsistent with law or with those by-laws for the management of the business and the guidance of the members, officers, employees and agents of the Foundation.

Section 5.02 AGREEMENTS WITH MEMBERS

The Board of Trustees shall have the power to carry out all agreements of the Foundation with its members in every way advantageous to the Foundation representing the members collectively. In all contractual arrangements with the members or clients of the Foundation, the Board shall provide such needful measures as are calculated to maintain the confidence of the relationship and the results.

Section 5.03 NUMBER AND TENURE OF OFFICE

The Foundation shall have a Board of Trustees of fifteen (15) members. During the initial period of operation and before the first annual meeting of the members can be held, those that compose the Steering Committee which was formed for the purpose of promoting and organizing the Foundation shall act as the ad-interim Board of Trustees. At the first annual meeting of the members of the Foundation the regular Board of Trustees shall be elected and they shall hold office until the next annual meeting, or until their respective successors are chosen and qualified.

Section 5.04 PROCEDURE FOR NOMINATION

Not less than twenty (20) days before the annual meeting at which trustees are to be elected, the Chairman of the Board of Trustees shall appoint a nominating committee of 3 or more members, none of whom is a trustee.

The Committee shall prepare and report to the Chairman of the Board a list of nominees three days before the members' meeting which list shall consist of at least twice the number of trustees to be elected and shall as much as practicable be representative of the financial, business, agricultural, and industrial sectors. Additional nominees may be entertained before the start of the members' meeting upon request in writing submitted by at least three members in good standing. Compliance with this procedure shall not however, be mandatory for the election of a Trustee to fill a vacancy as hereinafter provided.

Section 5.05 VACANCIES

Whenever a vacancy occurs in the Board of Trustees, other than from the expiration of a term of office, the remaining trustees shall appoint a member to fill the vacancy until the next annual meeting of the members.

Section 5.06 REGULAR BOARD MEETINGS

The regular meetings of the Board of Trustees shall be held quarterly or at such other times and at such places as the Board may determine.

Section 5.07 SPECIAL BOARD MEETINGS

A special meeting of the Board of Trustees shall be held whenever called by the President or by a majority of the Trustees. Notices of all special meetings of the Board of Trustees shall be mailed to each trustee at his last known post-office address, or delivered to him personally, or transmitted by telegraph or telephone at least twenty-four (24) hours previous to the date fixed for the meeting.

Section 5.08 Q U O R U M

A majority of the Board of Trustees shall constitute a quorum at any meeting of the Board.

Section 5.09 COMPENSATION

The compensation, if any, of the members of the Board of the Trustees shall be determined by the members of the Foundation at any annual or special meeting of the Foundation.

56

ARTICLE VI

EXECUTIVE COMMITTEE

Section 6.01 DESIGNATION OF EXECUTIVE COMMITTEE

The Board of Trustees, by resolution adopted by a majority of the whole Board, may designate five or more of its number (including the Chairman of the Board who shall be its presiding officer), to constitute an Executive Committee, which committee, to the extent provided in such resolution, shall have and exercise all of the authority of the Board of Trustees in the management of the Foundation. No member of the Executive Committee shall continue to be a member thereof after he ceases to be a trustee of the Foundation. The Board of Trustees shall have the power at any time to increase or diminish the number of members of the Executive Committee, to fill vacancies thereon, to change any member thereof, and to change the functions or terminate the existence thereof.

Section 5.02 POWERS OF THE EXECUTIVE COMMITTEE

During the intervals between meetings of the Board of Trustees, and subject to such limitations as may be required by law or by resolution of the Board of Trustees, the Executive Committee shall have and may exercise all of the powers of the Board of Trustees and the management of the business and affairs of the Foundation, including power to authorize the seal of the Foundation to be affixed to all papers which may require it. The Executive Committee shall keep minutes of its proceedings and shall report the same to the Board at the meeting next succeeding, and any action by the Executive Committee shall be subject to revision and alteration by the Board, provided that no rights of third persons shall be affected by any such revision or alteration.

Section 6.03 MEETINGS, QUORUM

The Chairman of the Board shall, if present, act as Chairman at all meetings of the Executive Committee, and the Secretary of the Foundation shall, if present, act as secretary of the meeting. In case of the absence from any meeting of the Executive Committee of the Chairman of the Board or the Secretary of the Foundation, the Executive Committee shall appoint a chairman, or secretary to constitute a quorum for the transaction of any business, and the act of a majority of the members present at a meeting at which a quorum exists shall be the act of the Committee.

Section 6.04

NOTICE OF MEETINGS, ETC.

Regular meetings of the Executive Committee, of which no notice shall be necessary, shall be fixed by resolution adopted by a majority of the Committee. Special meetings of the Executive Committee shall be called at the request of any member of the Committee. Written notice of each special meeting of the Executive Committee shall be sent by the Secretary to each member thereof by letter, telegram, or radiogram, at such time that, in regular course, the notice would reach such place not later than the day immediately preceding the day for such meetings; or may be delivered by the Secretary to a member personally at any time during such immediately preceding day. Notice of any such meeting need not be given to any member of the Executive Committee who has waived such notice either in writing or by telegram or radiogram, arriving either before or after such meeting, or who shall be present at the meeting. Any meeting of the Executive Committee shall be a legal meeting, without notice thereof having been given, if all the members of the Executive Committee who have not waived notice thereof in writing or by telegram or radiogram shall be present in person. The Board of Trustees may vote to the members of the Executive Committee a reasonable fee as compensation for attendance at meetings of such committee.

ARTICLE VII

OFFICERS OF THE FOUNDATION

Section 7.01

ELECTION OF OFFICERS

Immediately following each election of Trustees, the Board shall convene and elect from among their number a Chairman, a President and a Treasurer. The Board shall also appoint an Executive Vice President, if found necessary, and a Secretary who shall be a resident and citizen of the Philippines.

Section 7.02

OTHER OFFICERS AND AGENTS

The Board may appoint such other officers and agents as it shall deem necessary, who shall hold their offices for such terms and shall exercise such powers and perform such duties as shall be determined by the Board. The Board may, from time to time, authorize the Executive Committee or any officer to appoint and remove subordinate officers and agents and prescribe their duties.

Section 7.03 DUTIES OF THE CHAIRMAN

The Chairman of the Board of Trustees shall preside at all meetings of the members and of the Board of Trustees, including all meetings of the Executive Committee. He shall sign certificates of membership of the Foundation, and to perform other duties as may be determined by the Board.

Section 7.03-A DUTIES OF THE PRESIDENT

The President shall be the Chief Executive Officer of the Foundation. He shall sign all contracts, documents and evidence of indebtedness, securing the same, for and in the name of the Foundation, and perform such other duties as the Board may authorize and direct and those which are incidental to such office. The Board of Trustees may, however, authorize any other officer of the Foundation to sign checks, contracts and other instruments in writing on behalf of the Foundation.

During the absence or temporary incapacity of the Chairman of the Board of Trustees, the President shall act as acting Chairman and shall discharge the duties incumbent in such office. The President shall, likewise, become IPSO FACTO member of the Executive Committee.

Section 7.04 DUTIES OF THE EXECUTIVE VICE-PRESIDENT

The Executive Vice-President shall have such powers and perform such duties as the Board of Trustees may from time to time prescribe or as the President may from time to time delegate to him. Subject to the direction of the President, he shall have general charge of the ordinary and usual business operations of the Foundation. During the President's absence or inability to act, he shall temporarily act in his place.

Section 7.05 DUTIES OF THE TREASURER

The Treasurer shall be the financial officer of the Foundation. He shall perform such duties with respect to the finances of the Foundation as may be prescribed by the Board of Trustees.

Section 7.06 DUTIES OF THE SECRETARY

The Secretary shall record the attendance and proceedings of all meetings of the members of the Board or of the Executive Committee. He shall see to it that all notices are duly given in accordance with those By-laws or as required by law. He shall be the custodian of the seal of the Foundation which shall be affixed to such instruments as may require it and thereupon be attested by his signature or that of the Treasurer. He shall keep a register of the names and post office address of all members and keep on file at all times a complete copy of the certificate of incorporation and by-laws of the Foundation. In general, he is to perform all duties incident to the office of the Secretary.

The Foundation, thru the Secretary, shall also furnish the National Science Development Board a certified true copy of the minutes of, and resolutions adopted in all meetings of the Board of Trustees, committees or members of the Foundation within thirty (30) days after such meeting.

Section 7.07 COMPENSATION OF THE OFFICERS

The compensation of all officers of the Foundation shall be fixed by the Board of Trustees.

ARTICLE VIII

FINANCIAL TRANSACTIONS

Section 8.01 NON-PROFIT REQUIREMENTS

No part of the net income of the Foundation shall inure to the benefit of any of its members.

Section 8.02 CAPITAL FUND

A Capital Fund for investment, the net return from which shall be utilized to conduct and carry out the economic, scientific, and technological research and counselling activities of the Foundation shall be created and maintained under the supervision and control of the Board of Trustees. Said Capital Fund shall consist of the contribution of Sponsors, long term loans that may be arranged by the Board, endowments from public and private institutions in the Philippines or elsewhere.

Section 8.03 DEPOSITORY

The Board of Trustees shall have power to select one or more banks to act as depositories of the funds of the Foundation and to determine the manner of receiving, depositing, and disbursing the funds of the Foundation and the form of checks and the person or persons by whom they shall be signed, with the power to change such bank and the person or persons signing such checks and the form thereof at will.

Section 8.04 AUDITORS

At least once in each year the Board of Trustees shall secure the services of a competent and disinterested accounting firm which shall make a careful audit of the books and accounts of the Foundation and render a report thereon in writing which report shall be submitted to the members of the Foundation at their annual meeting.

60

ARTICLE IX

AMENDMENTS

Section 9.01 AMENDMENTS

"Any proposed amendments to this code of By-laws shall take effect immediately upon approval and ratification by the majority vote of the members present during the annual or special meeting of members called for the purpose".

ARTICLE X

DISSOLUTION

Section 10.01 DISSOLUTION OF ASSETS ON DISSOLUTION

In case of dissolution of the Foundation, all its debts and liabilities shall first be paid according to their respective priorities. Any property remaining after discharging the debts and liabilities of the Foundation shall be turned over to another Foundation dedicated to scientific pursuit of its choice or to the Republic of the Philippines or any of its agencies, instrumentalities or political sub-divisions.

C E R T I F I C A T I O N

We, the undersigned officers of the Economic Development Foundation, pursuant to the requirements of Section 23 of Act No. 1459, as amended, do hereby certify to be true and correct the foregoing copy of the Revised Code of By-laws of the Economic Development Foundation, Inc. and that the same is in accordance with a resolution adopted by the Board of Trustees on December 22, 1980, amending Sections 7.01, 7.03 and 9.01 of said By-laws to conform with the provisions of NSDB Regulations No. 1 dated January 17, 1967, governing the organization and operation of scientific foundations, and for other purposes.

December 22, 1980, Makati, Metro Manila, Philippines.

CESAR N. SARINO
Trustee/President

GREGORIO S IMPERIAL, JR.
Trustee

ERNESTO ABOITIZ
Trustee

VICENTE R. JAYME
Trustee

JEAN PIERRE BAILLEUX
Trustee

CLAUDIO DE LUZURRIAGA
Trustee

CESAR BUENAVENTURA
Trustee

ANTONIO V. DEL ROSARIO
Trustee

PEDRO COJUANGCO
Trustee

GERARDO P. SICAT
Trustee

ROMAN CRUZ, JR.
Trustee

RICARDO SILVERIO, SR.
Trustee

JOSE FERNANDEZ, JR.
Trustee/Treasurer

RAMON L. SIY
Trustee

DON EMILIO ABELLO
Trustee
Board Chairman

SENON B. POSADAS
Secretary

62