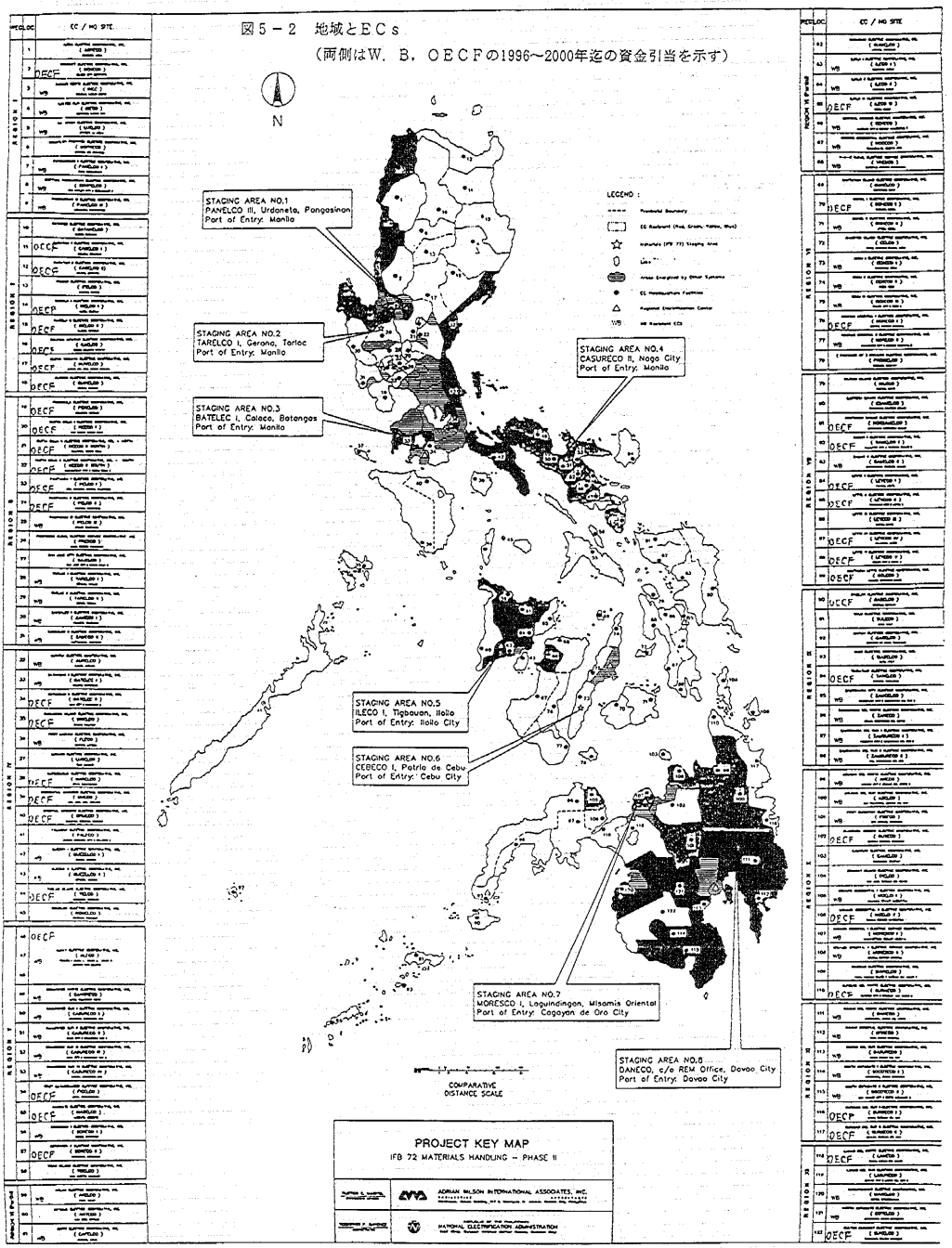
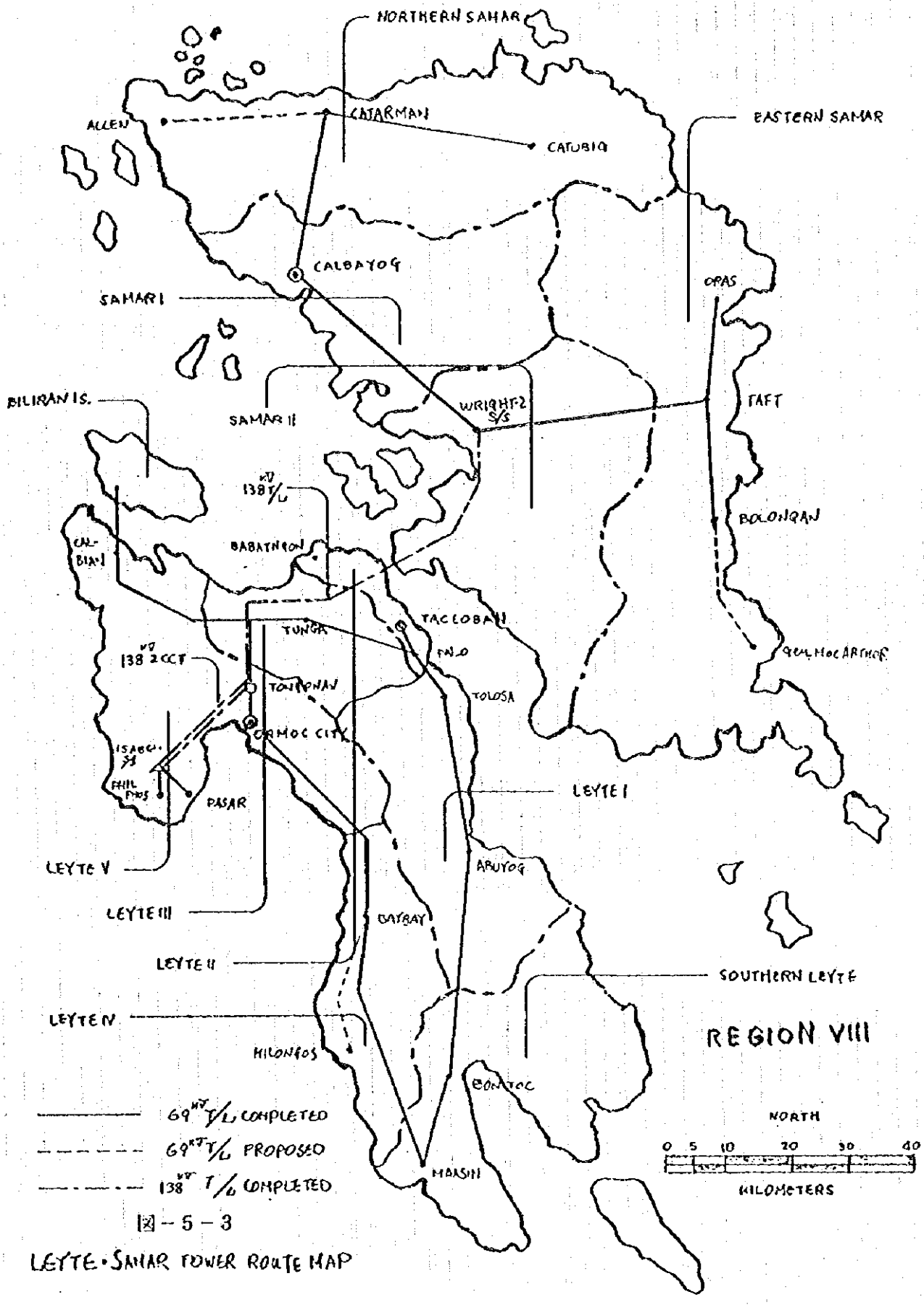
図５－２　地域とＥＣｓ

（両側はW．B．ＯＥＣＦの1996～2000年迄の資金引当を示す）





Ⅸ – 5 – 3

LEYTE-SAMAR POWER ROUTE MAP

図5－4　LEYECOVの系統図

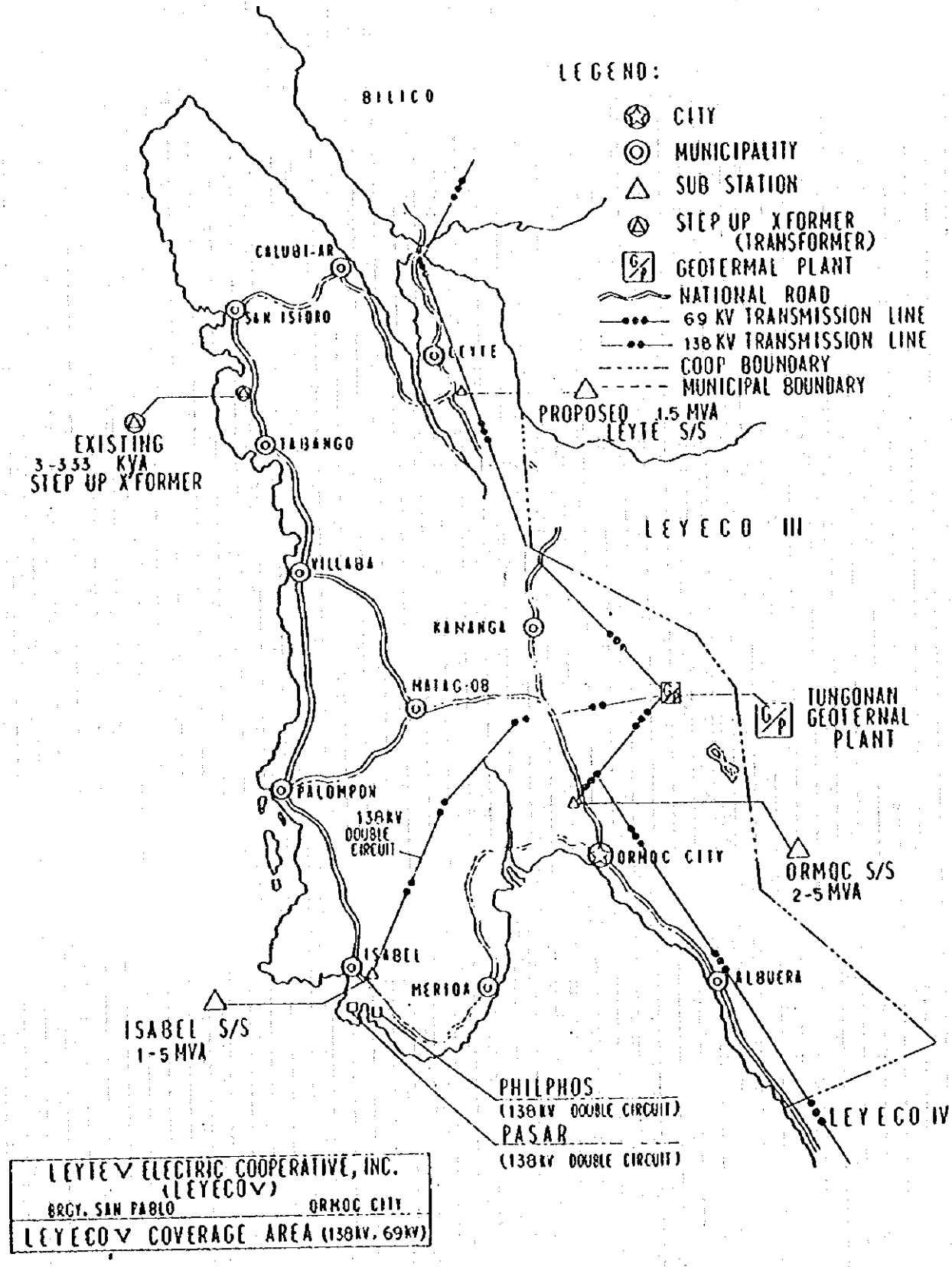


図５－５　レイテ潮流図

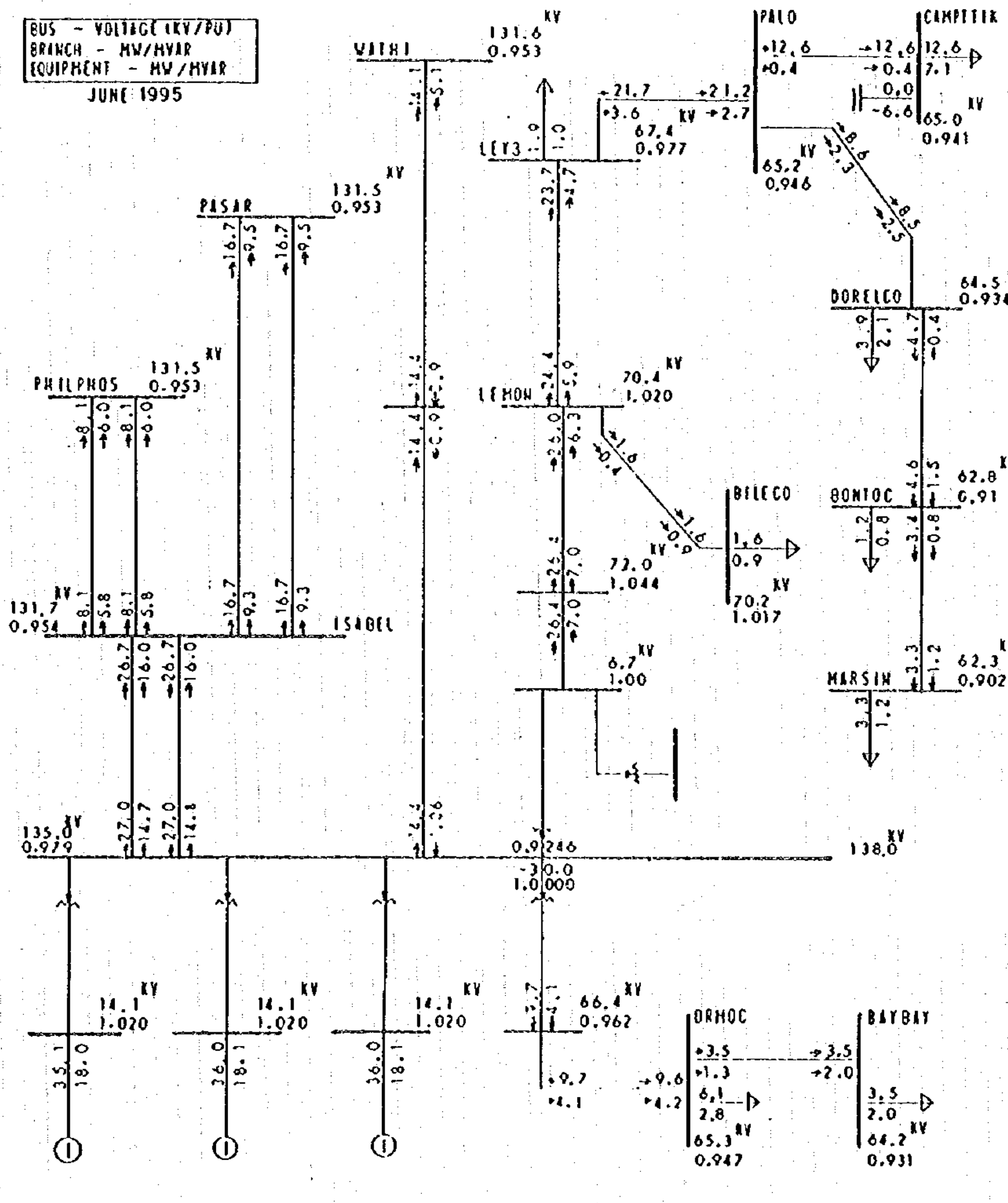

BUS - VOLTAGE (KV/PU)
BRANCH - MW/MVAR
EQUIPMENT - MW/MVAR
JUNE 1995
VATRI
131.6 KV
0.953
PASAR
131.5 KV
0.953
PHILPHOS
131.5 KV
0.953
ISABEL
131.7 KV
0.954
LEY3
67.4 KV
0.977
LEMON
70.4 KV
1.020
72.0 KV
1.044
6.7 KV
1.00
PALO
65.2 KV
0.946
CAMPTTIK
65.0 KV
0.941
DORELCO
64.5 KV
0.934
BILECO
70.2 KV
1.017
BONTOC
62.8 KV
0.91
MARSIN
62.3 KV
0.902
135.0 KV
0.979
138.0 KV
14.1 KV
1.020
66.4 KV
0.962
ORMOC
65.3 KV
0.947
BAYBAY
64.2 KV
0.931

図5－6　SAMELCOII

TRANSFORMER AND SUBSTATION EQUIPMENT

One Line Diagram

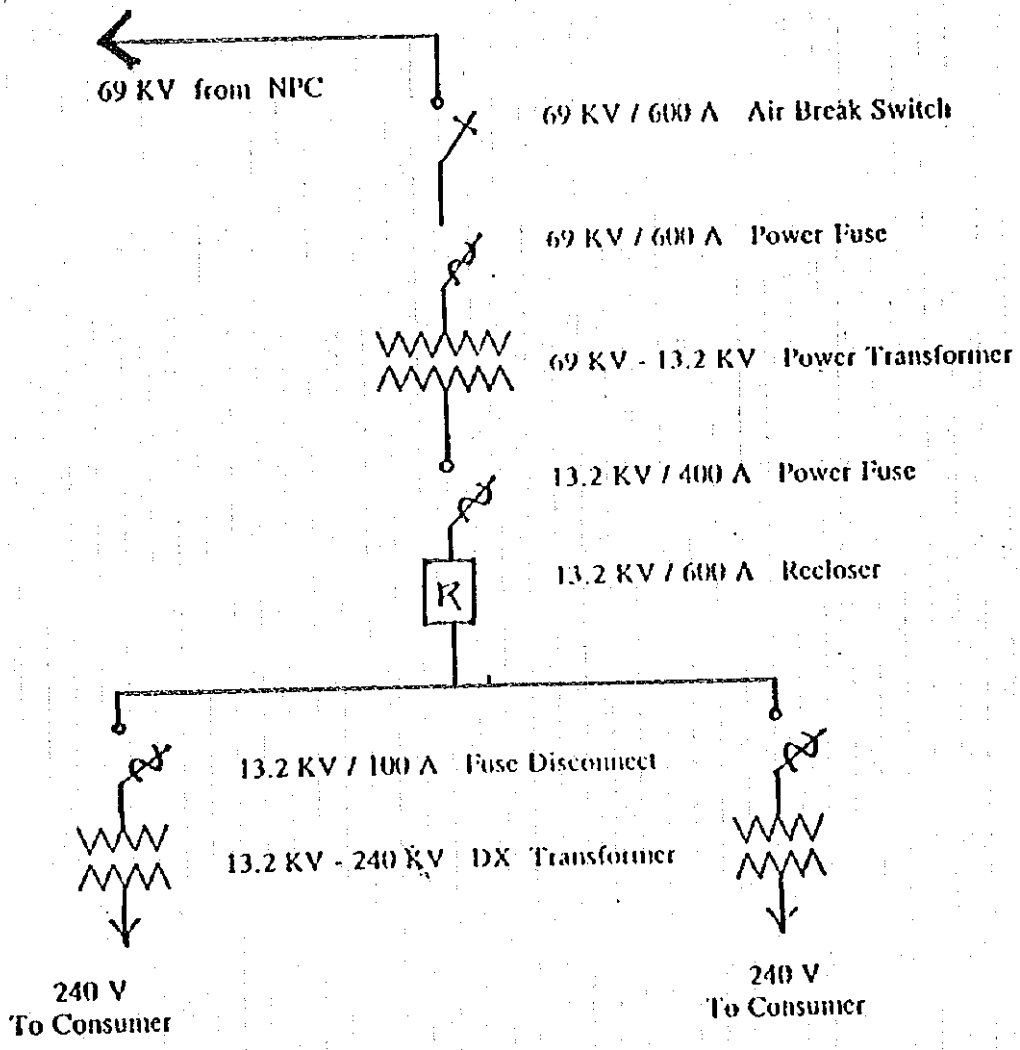
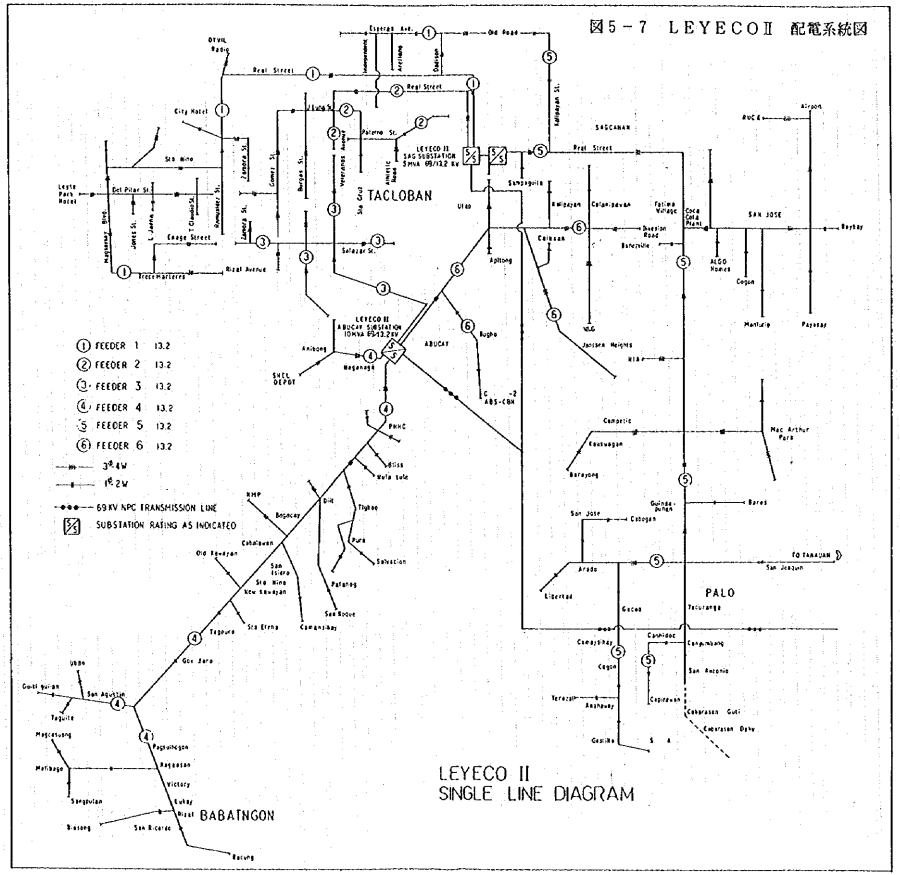


図5－7　LEYECOII　配電系統図



第6章　本格調査及び本格調査時に留意すべき点

1．調査の目的

本調査の目的はフィリピン電気事業の民営化対策の一環として行われるものである。現在ＤＯＥによりＮＰＣの分割，ほか電気事業の民営化案が議会に提案審議中であるが，今回はＮＥＡの意向により，69kV系の Subtransmission System を地方電化協同組合（今後民営化されていく予定）への移管を前提に，リージョンⅧのレイテ，サマールにおける各ＥＣを対象に事業面，技術面，法制度各面の調査と具体案を取り纏めるものである。

2．調査の範囲及び内容

フィリピン・ビサヤ地区のレイテ，サマールの二島，リージョンⅧ管区とし，ＮＰＣ所有の69kV送電施設の民営化移管計画である。具体的にはレイテ，サマールの69kV送電線はＮＰＣの変電所２次 69kV 側から地方電化協同組合（Rural Electric Cooperative, ＥＣ）の変電所１次，69kV側迄の１回線単一回路で，キャパシターバンク等の関連施設が含まれる。レイテ，サマールはＥＣ以外にまとまった配電会社はないので対象相手としてはリージョンⅧの11ＥＣが主力となると考えられる。

2-1. 調査の種類

2005年を目標とする民営化移管計画の作成である。

2-2. 調査期間

本格調査はフィリピン国内での現地調査及び日本国内作業で構成され，その期間はＳ／Ｗに示す通り，全体で12ヶ月を予定している。

2-3. 調査内容（Scope of Work）

調査は「フェーズⅠ」と「フェーズⅡ」に分かれ，それぞれ下記のとおりである。

〔フェーズⅠ：既存データ，情報のレビュー及び現状分析〕

1）一般情報の収集

経済指標，Omnibus ACT 等

2）ＥＣｓの現状調査

(A)　ＥＣｓの事業調査

(1)　各ＥＣの組織

(2)　財務状態

(3)　事業運営

資金計画では海外から借款がどういう形で組み込まれているか（例えばＮＥＡからの補助金）実質的事業運営を調査する上で留意する必要がある。

(B) 売・買電気料金と算出根拠

(C) 電気料金の請求，集金システム
電力計の普及率も併せて調査する

(D) 電力需要

(1) 変・配電の変圧器容量と台数
変電は2nd Hand 品が多いが配電用は不明である。

(2) 配電線の拡張計画と供給政策
長期計画では電化率100%を目標にしているが採算ベースに乗らない僻地での少数民家への電力供給ポリシーに付き現状調査と共に各ＥＣのポリシーを聴取する。

(3) 需要予測
産業振興，工場誘致等を含めて2005年迄の電力需要予測を行う。リージョンⅦではレイテＶとレイテⅡが電力消費地帯で特にレイテＶは現在ＮＰＣ 138kVで直接電力供給を行っている。PASAL（銅精錬），PHILPHOS（肥料）の2大工場があり，またトンゴナンのＮＰＣ地熱発電所がある故かレイテＶの需要計画は群を抜いている。サマールＩでは建設中のパーム・オイル工場用の69/138kV変電所を建設していたが，人口増加を含めて需要予測を行う。

(E) 各ＥＣによる拡張計画と拡張プログラム
変電所，配電線と共に配電線改修計画，変圧器の容量増計画をも含めて調査する。

3) 既存の送・変・配電設備

(A) ＥＣｓ 69kV 変電所を含めた 69kV 送電線ルート・マップと単線結線図

(B) 既存設備

(1) 送電線と配電線（電圧，系統構成，電圧降下，容量，回線数，建設時期等）
ＮＰＣ 69kV 送電線は単一回路で簡明であるが，送り出し側のトンゴナン地熱発電所の 69kV 設備は不明である。
13.8kV配電線は1～2を除いて不明であり，各ＥＣ単独の回路かＥＣｓ相互で連携しているかも不明である。ルート・マップも手書き程度のもので正規のものがあるや否や不明であった。配電線のルート・マップは将来計画にも関係があるので無い場合は作成する。
設備としては傾斜しているもの，樹木に接近しているもの等問題は多い。これの診断と対策を検討する。

(2) 変電所（電圧，容量，無効電力調整，保護システム，建設時期等）

一部を除いて構造物は全て木柱であり，機器の設置位置，配線等改修を要すると思われる所も多い。構造物全体の改修も必要かと思われる。13.8kV側電圧降下に対しては直列電圧調整器を設置してあるが満足に動いているのは少ない。電圧降下対策としては如何なる方法を取っているのか，現状調査と対策を立案する。

(3) 13.8kV 配電設備（変圧器の台数と容量，配電線の恒長と総延長，木柱等）

メイン・ストリートは概ね良好であるが一部に「つた状」植物がポールの頂上，配電線にまつわりついているのも見受けられる。裏通りに入ると倒れ掛かっているものもあり，良好とは言えない。

(4) ＮＰＣとＥＣの責任分界点

現在はＥＣの受電変電所の 69kV 開閉器であるようであるが，69kV送電線の移管後は何処になるのか，ＥＣの保護設備も考慮に入れてＮＰＣ側との協議が必要である。

(C) 電力系統の運転制御

(1) 中央制御システム

(2) 通信システム

(3) 潮流図

(4) 系統の解析

現在は単一回路であるので通信と潮流図以外は無い。

通信はＮＰＣはＰＬＣでトンゴナン地熱発電所を中心にイザベル，ライト－２間で行い，ＥＣはＨＦでマニラのＮＥＡ及びリージョンⅧのＥＣ，ＮＰＣの変電所と通信を行っている。今回はＮＰＣ 69kV のＥＣへの移管であるので，将来的に 69kV のネットワークがどうなるかによって考慮される問題である。

(D) システム・ロス（1985～1995，13.8kV，69kV）

ＮＰＣのロスはビサヤ地区ということでリージョン８に付いては不明である。

ＥＣのロスは算出根拠が不明である。

(E) 自然条件と停電の頻度

停電には "Nature" と "Man Made" があり，Nature には台風，近接樹林，時に地震があるようである。"Man Made" は人的原因であるが，この "Man Made" の内容は明瞭ではない。ＥＣｓでは停電の原因はＮＰＣ側に多い，という事であるが，これが 69kV 系か 138kV 系か，変電所機器の問題か不明である。

4) 既存 69kV 施設の評価

民営化の際の重要な問題である。第1にＮＰＣとの責任分界点が必要である。

(A) コストとメインテナンス要員

(B) 資産評価

5) ＮＰＣとＥＣの技術基準

6) 送・変・配電施設の既存の法律と規定

日本の“電気事業法”に相当するもの，“主任技術者の選任”“保安規定”等の調査である。国営から民間へと法整備も必要と考える。

〔フェーズⅡ：69kV 送電施設の移管計画〕

1) 69kV送電施設移管に対する選択案の作成

69kV送電施設の民間への移管に伴う事業運営と技術的問題の調査及び複数案の作成

(A) 事業面

(1) 施設の合理化と組織

(2) 新施設に対する適切なる運営

(3) 設備のメインテナンス，運転と検査に対する人的資源

(4) その他必要事項

(B) 技術面

(1) 既存の技術基準，メインテナンス，運転と検査ルールの見直し

(2) 移管後の 69kV 送電線の費用

a) 新しく建設する場合のコスト

b) 改修費

(3) 69kV 送電線の建設技術とメインテナンスの改善

(4) 69kV 系と 138kV 系の系統運用

ＮＰＣ 138kV 系或は将来の高電圧系統と移管後の 69kV 系統の系統運用の協調性である。

(5) その他必要事項

2) 移管計画に対しての選択案（代案）の評価

(A) 技術面での評価

(B) 財務面での評価

(C) 合理化面での評価

(D) 69kV 送電線施設の資産評価

(E) ＮＰＣと民営化施設との間の電気料金

3) 最適案の選択と実施への提言

4) 法律と基準

本格調査チームは以下の項目についての実施計画についてＮＥＡに立法化プログラムを提言する。

(A) Omnibus Electric Power Industry Act of 1996
現在議会で審議中であるがこの推移を注視する。

(B) 69kV 送電施設について

(C) 送・変電施設の建設とメインテナンスに対する環境基準

(D) 送・変電施設メインテナンス，運転，検査に対しての規定

3．本格調査時に留意すべき点

3-1. ＮＰＣの民営化と分割案

議会に提案されている法案は

AN ACT

"To Ordain reforms in the Electric Power sector to ensure the Optimal Electrification of the PHILIPPINES and sustain participation of the Private sector in Power Generation, Transmission and Distribution and for other purposes"

（通称 Omnibus Electric Power Industry ACT of 1996と呼ばれている）で時期及び具体案は示されていない。基本法であるので細則はない。

電気事業は，発電，送・変電，配電に分割，これを更に細分化して民営化に移行せしめる話しもあるが，何れも話しの範囲をでていない。またこの法案について議会での修正もあり得るのでその動きには注目しておく必要がある。（第３章の２－２参照）

3-2. ＵＳＡＩＤとの協力関係

ＵＳＡＩＤ (UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT) はＤＯＥの依頼により北部ミンダナオで民営化調査を行い1996年４月レポートを提出している。
(STUDY OF OPTIONS FOR RESTRUCTURING THE DISTRIBUTION SECTOR, April 1996)
現在更にパナイ，セブ，ボホール及び北部ルソンを対象に調査中であるが，予備調査時に今後の情報交換等ＪＩＣＡ，ＵＳＡＩＤで協力関係を保つことで合意しているので留意の要がある。

3-3. 69kV系のＥＣｓへの移管に伴う諸問題

1) 移管費用

現在決っていない，建設コスト，減価償却費等より移管費用の基準を調査する。
また，この69kV系はかつてはＥＣが保有していたもので，電力国営化によりＮＰＣに

譲渡した経緯があったが，その対価が未払になっているという話もある。今回の69kV移管にはその点は明らかにしておく必要がある。

2) 移管に際しての改修計画

移管対象と考えられる69KV系の線路はほとんど木柱で山中を通過しており，樹林に近接しているもの傾斜しているもの等が多く見られ，保守の状況は良いとはいえない。停電事故の原因がＮＰＣ69KV系に可成りあることもあり，移管に際して此の取り扱いを調査して置く必要がある。樹林の伐採，傾斜支柱の改修，又，台風地区の木柱からスチール・ストラクチュアーへの切り換え等を検討する。

3) 技術移転

69KV送電線の保守・点検，建設，改修工事等はＮＰＣが行っているが，移管後は各ＥＣｓが担当することになり，現在のＮＰＣ保守，点検マニュアル，建設，改修工事基準，技術的問題，資機材等問題は多いと考えられる。単に技術の移管のみでよいのか，或はＮＰＣの担当要員をも移管の要があるのかも含め調査検討を行う。

4) 全島送電線の連携計画

直流送電を主力に全島の連携計画がすすんでいるが，これは今回の調査対象ではない。然しながら直流送電はサマール，レイテを経由してミンダナオに連携する計画でこれを中心にビサヤ地区の電力網はかなり変わって来ると考えられその意味での聞き取り調査は必要と考える。

5) 69kVの保護設備と系統解析

現在ＥＣｓの保護設備としては１次側 69kV 側に遮断器を有する所は少なく殆どは避雷器とフューズ・ディスコンのみで，13.8kV 側はこれもまた遮断器を有するものは殆ど無くリクローザーのみである。保護継電器は 69kV 側 13.8kV 側共に無い。
従って当面 69kV 線路の保護施設はＮＰＣに依存せざるを得ず，これを如何にするか検討の要がある。

系統解析は今の所一回線で各ＥＣｓに電力供給を行っている現状からそれ程問題視する必要はないが，ＮＰＣの発電所建設の将来計画はレイテ，トンゴナンの地熱利用がかなりあり，全島連携計画と併せて 69kV 系の将来構想を設定し，その時点でどこが担当するかの区分設定は必要と考えられる。
図５－５の潮流図はＮＰＣが作成しているものである。

3-4. 送電線連携計画

今回の直接的対象ではないがフィリピンは D・C 350kV，200kVを中心に全島の縦貫計画があり，サマール，レイテはルソン本島とミンダナオ，更にビサヤ地区の連携の

主要地である。その意味で将来の 69kV 送電線の開発計画，ネット・ワーク化にも関連があることが予想されるので聞き取り調査を行う。

3-5. 電気事業法による保安規定

日本では事業用電気工作物に対しては主任技術者の選任，或は保安協会，電気管理技術者協会による保安・点検等の業務があるが，フィリピンでこのようなシステムがあるのか否かは摑めていない。ＮＰＣでは発・送・変電については点検基準を持ち，点検を行っているが，ＮＥＡではどうなっているか，規定はあると言っているが資料としては出て来ていない。特に民間事業用電気工作物については不明である。一般に東南アジアでは保守・点検についてはそれ程重要視されていない面もあり今回の69kV送電施設移管計画に関連して調査する事は将来の電気施設の管理，或は一事業分野の形成を図り得る事になり必要な事と考える。

3-6. 安全対策

事前調査の段階では East Samar での調査は危険である，との理由でＮＥＡより中止された。今回の地域対象はレイテ，サマールの全地域であるが，ＮＥＡと充分なる協議の上ＮＥＡの指示に従って行動することとする。

3-7. 今回の調査

今回の調査はレイテ，サマール地区のＮＰＣ所有の 69kV 送電施設の民営化プログラムであり，その対象は地方電化協同組合（ＥＣ）であるが，“ＥＣ”とせずに“民営化”とされたのは，ＥＣは長い伝統と地域での人脈関係を有しており，直接ＥＣを受け皿としてプログラムを作成するのは利害関係上トラブルを生じ易く，従って“民営化”と表現したと考えられる。然し対象の主体は“ＥＣ”で，たとえ受け皿として新しい会社を設立しても“ＥＣ”は何等かの形で関与せざるを得ない。元来，ＮＰＣの69kVの送電施設だけに限定すれば，ＥＣに無関係に事業化プランの作成は可能であるが，背景には“ＥＣ”があり，従って，各ＥＣの事業内容調査も行うのである。この点，やり難い面もあると思われるが，これはＳ／Ｗの「フェーズ２」で述べられているように，考えられる“選択案の作成”ということでＮＥＡ，ＥＣｓ，或はＮＰＣと協議してゆくことが大切であると考える。

4．コンピューターによる集計業務の導入

ＮＥＡはコンピューターを導入し，各ＥＣのデータを集計，現状把握と運営管理を行う事を希望しており，これがプログラムの作成とコンピューター導入計画を本業務に含むものとする。

「付 属 資 料」

1. Termes of Reference.
   Application for the Technical Cooporation [Development Study By the Government of JAPAN] NEA.

2. Scope of Work.

3. Minutes of Meeting.

4. Division of Technical Undertakings by JICA and NEA.

5. Questionaire(Riveised Questionaire, July '96).

6. Minutes of Meeting for Feasibility Study(予備調査).

7. 収集資料リスト.

APPLICATION FOR THE TECHNICAL COOPERATION (DEVELOPMENT STUDY) BY THE GOVERNMENT OF JAPAN

1.0 *PROJECT DIGEST*

(1) PROJECT TITLE : Feasibility Study on the Transfer of Facilities and Management of the 69 KV Transmission Lines and Systems from the National Power Corporation (NPC) to the Electric Cooperatives (ECs)

(2) LOCATION : (Please see attached location map.)

(3) IMPLEMENTING AGENCY

Name of the Agency: National Electrification Administration
Number of the Staff of the Agency : 773
Organization Chart (Please see attached)

(4) JUSTIFICATION OF THE PROJECT

The Philippines is on its way toward a broad and self-sustaining collaboration between private and public interests to supply the country's electricity needs.

The Government of the Philippines adopted an Infrastructure Privatization Program as its number-one priority. Privatization is a policy commitment borne out of short-term necessity and long-term faith in free-market competition. The Philippine government has amended The BOT law (Republic Act No. 6957) further liberalizing the ability for the private sector to participate in infrastructure improvement projects.

Presidential Decree (PD) 40 assured National Power Corporation (NPC) of a monopoly of all transmission lines throughout the country. NPC owns most high voltage transmission lines and intermediate voltage subtransmission facilities. Manila Electric Company (MERALCO), the biggest private investor-owned utility, owns some high voltage (69 kV and 138 kV) lines which is used to draw electricity from NPC's delivery points on the fringes of its service area into its urban core.

In the past, the subtransmission networks were owned and operated by the distribution utilities. In 1981, NPC took over the 69 kV network in response to some electric cooperatives' (ECs) financial problems which caused the deterioration of the lines. Hence, even these relatively low voltages came under its

exclusive control. As a result, the distribution utilities had to rely on NPC for virtually all of their electricity supplies. Because NPC controlled the 69 kV network, it was authorized to serve directly some higher voltage consumers who qualified according to the criteria set by the Board of Investments (BOI). About 90 industrial consumers receive direct service from NPC at wholesale rate and those that were not allowed took their supplies from their local electric utility at substantially higher retail rates.

A total of 6,224.48 kilometers make up the 69 kV transmission lines in the seven (7) NPC grids in the entire country. Luzon and Mindanao grids account for 41.1% (2,555.32 kms) and 36.2% (2,254.36 kms), respectively, of the total. The remainder 22.7% (1,414.8 kms) is spread over five (5) grids in the Visayas.

NPC has expressed an interest in divesting itself of the subtransmission networks; however, only a few of the distribution utilities have the institutional and financial capabilities of managing these facilities properly. Despite this however, many of the ECs have realized major improvement in their operation and have expressed an interest in broadening their activities while NPC has been seeking to devolve increasing responsibility for sector development to them.

(5) DESIRABLE OR SCHEDULED TIME OF THE COMMENCEMENT OF THE PROJECT - 1995

2.0 TERMS OF REFERENCE OF THE PROPOSED STUDY

(1) NECESSITY/JUSTIFICATION OF THE STUDY

Recent developments in the Philippines offer an opportunity to privatize the subtransmission (69 kV) Power System presently owned and operated by NPC.

NPC has expressed interest in divesting itself of the subtransmission networks (69 kV) and since some of these systems were originally owned and operated by the ECs, an updated feasibility study on the viability of the ECs to manage these networks is necessary before embarking on the takeover of such facilities.

In addition, the ECs' financial operations will most likely improve since owning the 69 kV network will give them authority to serve directly large load consumers.

(2) NECESSITY/JUSTIFICATION OF THE JAPANESE TECHNICAL COOPERATION

The Japanese Technical Cooperation Assistance is an essential component in the undertaking of this study. NEA will require the financial assistance of JICA in providing the necessary expertise and resources in the study preparation and in determining the prioritization in terms of areas where transfer of the 69 kV would most likely succeed.

(3) OBJECTIVES OF THE STUDY

The study aims to determine and explore the feasibility of the electric cooperatives taking over from NPC the facilities and management of the 69 kV networks.

The pilot feasibility study is also recommended to determine the technical, economic and institutional basis for establishing a viable structure in terms of assets, operating costs, tariff arrangements and resources for acceptance by NEA/ECs of the 69 kV from NPC.

(4) AREA TO BE COVERED BY THE STUDY

Initially, the study will cover all the small grids located in the Visayas. The study may look into the possibility of forming a secondary cooperative in the Negros grid where power distribution is done exclusively by the ECs, namely: NOCECO, CENECO, VRESCO, NORECO I and NORECO II. Another alternative may be tried in the Bohol grid. Under this option, the two ECs, BOHECO I and BOHECO II may elect to merge or consolidate for the management and operation of the 69 kV transmission system since they are receiving power from a common network. The same may be done in the Cebu grid. One other alternative to be considered is the option that NEA will manage the 69 kV network as Trustee of NPC or of party or parties which may eventually assume ownership of the transmission facilities.

In any case, the study should recommend the kind of structure and the most feasible area where to start on a pilot basis.

(5) SCOPE OF THE STUDY

Work by the JICA experts/Study Team would include but not be limited to:

a) define the extent of the island transmission systems in terms of 69 kV facilities and the extent of programmed or planned distribution;

b) determine the investment needs for expanding distribution to reduce losses and meet expected loads and the complimentary transmission development needed to support it;

c) determine whether all subtransmission lines, substations and associated plants needed to maintain and operate the system are in useful condition and/or what kind of rehabilitation need to be undertaken;

d) determine the scope of operations of a transmission company taking into account the needs of the ECs to meet their obligations under their franchises;

e) identify alternative ways of establishing a transmission company (i.e. consolidation of privately-owned electric utilities with ECs), the structure needed to operate it and how ownership can best be established;

f) investigate potential savings to ECs by having the 69 kV transmission lines transferred to serve clusters of ECs.

(6) STUDY SCHEDULE

It would be preferable to have the study undertaken within the 1st semester of 1995 or at the soonest possible time that JICA can provide the grant.

(7) EXPECTED MAJOR OUTPUTS OF THE STUDY

The study will be the basis for deciding whether or not to pursue the taking over of the management of the 69 kV transmission networks of the ECs from NPC.

3.0 FACILITIES AND INFORMATION FOR THE STUDY TEAM

(1) ASSIGNMENT OF COUNTERPART PERSONNEL OF THE IMPLEMENTING AGENCY FOR THE STUDY

The JICA experts/Study Team will be assisted by NEA engineers and concerned EC staff.

(2) AVAILABLE DATA, INFORMATION, DOCUMENTS, MAPS, ETC. RELATED TO THE STUDY

Please see attached Map of the Visayas Grids, Transmission Line Parameters of Bohol and Negros Grids, Substation Status Report.

(3) INFORMATION ON THE SECURITY CONDITIONS IN THE STUDY AREA

The Visayas, the study area considered is one of the most peaceful area in the country. The JICA experts/Study Team is assured of their safety.

4.0 *GLOBAL ISSUES (ENVIRONMENT, WOMEN IN DEVELOPMENT, POVERTY, ETC.)*

(1) ENVIRONMENTAL COMPONENTS OF THE PROJECT, IF ANY

The project conforms with the environmental regulations and has secured the necessary permit for operation from the Environmental Management Bureau. This project is already in operation. The study is concerned only with the management aspect of the project.

(2) ANTICIPATED ENVIRONMENTAL IMPACTS (BOTH NATURAL AND SOCIAL) BY THE PROJECT, IF ANY

The project is a vital component for the country's development and the preservation of the environment has always been a prime concern of the project implementors.

(3) WOMEN AS MAIN BENEFICIARIES OR NOT

Women are consumers, thereby making them beneficiaries of the project as well. Regardless of gender, all consumers will benefit especially if the project impact will cause lower rates and reliable service.

(4) CONSTRAINTS AGAINST THE LOW INCOME PEOPLE CAUSED BY THE PROJECT

None. Improvement in power distribution will in fact contribute to improved quality of life.

5.0 *UNDERTAKINGS OF THE GOVERNMENT OF THE PHILIPPINES*

In order to facilitate a smooth and efficient conduct of the study, the Government of the Philippines shall take necessary measures:

(1) to secure the safety of the Study Team.

(2) to permit the members of the Study Team to enter, leave and sojourn in the Philippines in connection with their assignment therein, and exempt them from alien registration requirement and consular fees.

(3) to exempt the Study Team from taxes, duties and any other charges on equipment, machinery and other

materials brought into and out of the Philippines for the conduct of the Study.

(4) to exempt the Study Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Study Team for their services in connection with the implementation of the Study.

(5) to provide necessary facilities to the Study Team for remittance as well as utilization of the funds introduced in the Philippines from Japan in connection with the implementation of the Study.

(6) to secure permission or entry into private properties or restricted areas for the conduct of the Study.

(7) to secure permission for the Study to take all data, documents and necessary materials related to the Study out of the Philippines to Japan.

(8) to provide medical services as needed. Its expenses will be chargeable to members of the Study Team.

6.0 *The Government of the Philippines shall bear claims, if any arises, against member(s) of the Japanese Study Team resulting from, occurring in the course of or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the member of the Study Team.*

7.0 *The National Electrification Administration shall act as counterpart agency to the Japanese Study Team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.*

The Government of the Philippines assured that the matters referred in this form will be ensured for a smooth conduct of the Development Study by the Japanese Study Team.

Signed: TEODORICO P. SANCHEZ

Title: Administrator
National Electrification
Administration

On behalf of the Government of the Philippines

September 1994.

SCOPE OF WORK

FOR

FEASIBILITY STUDY

ON

THE TRANSFER OF FACILITIES AND MANAGEMENT OF THE 69KV TRANSMISSION LINES AND SYSTEMS FROM THE NATIONAL POWER CORPORATION (NPC) TO THE PRIVATE DISTRIBUTION UTILITIES

IN

THE REPUBLIC OF PHILIPPINES

AGREED UPON BETWEEN

NATIONAL ELECTRIFICATION ADMINISTRATION

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

MANILA, JULY 29, 1996

MR. TEODORICO P. SANCHEZ
ADMINISTRATOR
NATIONAL ELECTRIFICATION
ADMINISTRATION

MR. TAKESHI NARUSE
LEADER,
JAPAN INTERNATIONAL COOPERATION
AGENCY

I. INTRODUCTION

In response to the request of the Government of the Republic of Philippines (hereinafter referred to as "the Government of Philippines"), the Government of Japan has decided to conduct the Feasibility Study on the Transfer of Facilities and Management of the 69kV Transmission Lines and Systems from the National Power Corporation (hereinafter referred to as "NPC") to the Private Distribution Utilities in the Republic of Philippines (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of the Government of Japan, will undertake the Study in close cooperation with the authorities concerned of the Government of Philippines.

The present document sets forth the scope of work with regard to the Study.

II. OBJECTIVE OF THE STUDY

The objective of the Study is to determine and explore the feasibility of the private distribution utilities taking over the facilities and management of the 69kV transmission lines and systems from the NPC.

The Study is recommended to determine the technical, financial, institutional, legislative and regulative basis for establishing a viable structure in terms of assets, operating costs, tariff arrangements and resources for acceptance by the National Electrification Administration (hereinafter referred to as "NEA") / private distribution utilities of the 69kV transmission lines and systems from NPC.

III. STUDY AREA

The Study covers the Leyte-Samar grid consisting of 11 (eleven) Electric Cooperatives (hereinafter referred to as "ECs") (LEYECO I, LEYECO II, LEYECO III, LEYECO IV, LEYECO V, SOLECO, BILECO, NORSAMELCO, SAMELCO I, SAMELCO II, ESAMELCO).

The Study covers plans and programs of ECs up to 2005.

IV. SCOPE OF THE STUDY

[Phase I : Review and Analysis of existing data and information in Region VIII]

1 General information (Economical statistics, Meteorological data etc)

2 Present conditions of ECs (1985-1995)

(A) Management conditions of ECs
- (1) Organization of each EC
- (2) Financial condition
- (3) Institutional management

(B) Purchase and selling electricity rate and the basis of computation

(C) Billing and collection system of electricity revenue

(D) Electric power demand
- (1) Capacity of substation and distribution transformers
- (2) Line extension and connection policy
- (3) Demand forecast

(E) Expansion plans and programs by ECs

3 Existing transmission and distribution facilities

(A) Electric power route maps and single line diagrams of 69kV transmission lines including receiving 69kV substation

(B) Existing facilities
- (1) Transmissions and distributions (voltage, line system, voltage drop, capacity, number of circuits, constructed year, etc.)
- (2) Substations (voltage, capacity, facilities of var control, protection system, constructed year, etc.)
- (3) Distribution facilities of 13.2kV lines (number of transformers, length of distribution lines, line pole,etc)

(4) Delivery point between NPC and EC

(C) Coordination and operation system for electric power network

(1) Central control system for supply and operation

(2) Telecommunication system

(3) Electricity flow diagram

(4) System analysis

(D) System loss (1985-1995, 13.2kV, 69kV)

(E) Nature and number of outages (1985-1995, 13.2kV, 69kV)

4 Evaluation of existing 69kV line facilities

(A) Cost and personnel for maintenance

(B) Assets evaluation

5 Applied technical standard for EC and NPC

6 Existing laws and regulations of transmission and distribution facilities

[Phase II : Program for the transfer of 69kV transmission lines]

1 Prepare optional plans for the transfer of 69kV transmission lines

Make study of institutional management and technical operation of 69kV transmission lines transfered to private distribution utilities and prepare alternative transfer plans

(A) Institutional aspect

(1) Organizational form(s) for the rationalized distribution entities

(2) Competent management to operate the newly formed entities

(3) Human resource for maintenance, operation and inspection of the facilities

(4) Other necessities

(B) Technical aspect

(1) Reconfiguration of existing technical standards, rules of maintenance, operation and inspection

(2) Cost estimation for transferred 69kV transmission lines

a) New construction

b) Rehabilitation

(3) Improvement of technique on construction and maintenance for 69kV transmission lines

(4) Coordination method between 69kV transmission line system and up-stream transmission system for operation of transferred 69kV transmission system

(5) Other necessities

2 Evaluation for proposed alternative transfer plans

(A) Technical grade for each alternative plans

(B) Financial grade for each alternative plans

(C) Rationalization

(D) Estimate value of transferred assets from NPC

(E) Electricity rate at delivery point between NPC and private distribution utilities

3 Selection of suitable feasibility plan and recommendation of implementation activties

4 Laws and Regulations

Study team will recommend to NEA the necessary legislative bills for the recommended action plan focusing on following points:

(A) Omnibus Electric Power Industry Act of 1996

(B) Laws about rights of way for 69kV transmission lines

(C) Environmental regulations for construction and maintenance of transmission lines including substations

(D) Rules of maintenance, operation and inspection of transmission lines including substations

V. WORK SCHEDULE

The Study will be carried out in accordance with the attached Tentative Work Schedule shown in Appendix I.

VI. REPORTS

JICA shall prepare and submit the following reports in English to the Government of Philippines.

1. Inception Report (20 copies)

2. Progress Report (20 copies)

3. Interim Report (20 copies)

4. Draft Final Report (30 copies)

The Government of Philippines shall provide its comments on the Draft Final Report within one (1) month after the submission of the Draft Final Report.

5. Final Report (50 copies)

Within two (2) months after receiving the comments of the Government of Philippines on the Draft Final Report.

VII. DIVISION OF TECHNICAL UNDERTAKINGS

The division of technical undertakings for the study by both sides is outlined in the Appendix II.

VIII. UNDERTAKINGS OF THE GOVERNMENT OF Philippines

1. To facilitate smooth conduct of the Study, the Government of Philippines shall take necessary measures;

(A) To secure the safety of the Japanese study team,

(B) To permit the members of the Japanese study team to enter, leave and sojourn in Philippines for the duration of their assignment therein, and exempt them from foreign registration requirements and consular fees,

(C) To exempt the members of the Japanese study team from taxes, duties, fees and any other charges on equipment, machinery and other materials brought into Philippines and out for the conduct of the Study,

(D) To exempt the members of the Japanese study team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Japanese study team for their services in connection with the implementation of the Study,

(E) To provide necessary facilities to the Japanese study team for remittance as well as utilization of the funds introduced into Philippines from Japan in connection with the implementation of the Study,

(F) To secure permission for entry into private properties or restricted areas for the implementation of the Study,

(G) To secure permission for the Japanese study team to take all data and documents including maps and photographs related to the Study out of Philippines to Japan,

(H) To provide medical services as needed. Its expenses will be chargeable on members of the Japanese study team.

2. The Government of Philippines shall bear claims, if any arising, against the members of the Japanese study team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the members of the Japanese study team.

3. NEA shall act as counterpart agency to the Japanese study team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

4. NEA shall, at its own expense, provide the Japanese study team with the following, in cooperation with other organizations concerned;

(A) Available data and information related to the Study,

(B) Counterpart personnel,

(C) Suitable office space with necessary equipment and facilities in Manila,

(D) Credentials or identification cards,

(E) Arrangement necessary for vehicles with drivers, fuel and spare parts.

IX. UNDERTAKINGS OF JICA

For the implementation of the Study, JICA shall take the following measures;

1. To dispatch, at its own expense, study teams to Philippines,

2. To pursue technology transfer to Philippines' counterpart personnel.

X. CONSULTATION

JICA and NEA shall consult with each other in respect of any matter that may arise from or in connection with the Study.

APPENDIX I TENTATIVE WORK SCHEDULE

Working Item	Project Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Phase I: Review and Analysis																		
1. Present condition of ECs (1985-1995)																		
2. Existing facilities																		
3. NPC 69kV facilities																		
4. Laws and regulations of transmission and distribution																		
Phase II: Formulation of action plan																		
1. Institutional aspect																		
2. Technical aspect (13.2kV-138kV)																		
3. Finance																		
4. Laws and regulations																		
Reports		△ I/R							△ Pr/R				△ F/R			△ D/R		△ F/R

JICA work in Philippines

JICA work in Japan

MINUTES OF MEETING
FOR
FEASIBILITY STUDY
ON
THE TRANSFER OF FACILITIES AND MANAGEMENT OF THE 69 KV TRANSMISSION LINES AND SYSTEMS FROM THE NATIONAL POWER CORPORATION (NPC) TO THE PRIVATE DISTRIBUTION UTILITIES
IN
THE REPUBLIC OF THE PHILIPPINES

The Preparatory Study Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") of the Government of Japan, headed by Mr. Takeshi NARUSE, Leader of the Team, visited the Republic of Philippines from July 22 to July 30, 1996 for the purpose of making clarifications on the study scope, methodology, responsibilities to be taken by each party and other necessary matters for defining the scope of work (s/w) for the Feasibility Study on the Transfer of Facilities and Management of the 69kV Transmission Lines and Systems from the National Power Corporation (NPC) to the private distribution utilities in the Republic of Philippines (hereinafter referred to as "the Study").

The Team had a series of discussions with the authorities concerned of the Government of Philippines ; the Department of Energy (DOE), the National Economic Development Authority (NEDA), the National Electrification Administration (NEA), the National Power Corporation (NPC) and the Electric Cooperatives (ECs) (hereinafter referred to as "Philippines' side").

The main results of the discussions are as follows:

1. With regard to the security conditions in some areas of Samar island,both sides discussed carefully how to cope with the matter in order to fulfill the study, and concluded that Philippine side will always provide the study team with necessary security informations and the team will carry the study depending on the data and informations obtainable without the field survey in the any case that the team sees the uncertainty in the security.

2. Philippine side understood the undertakings for the study however, Japanese side was requested to procure necessary transportation on their own due to the financial difficulties in Philippine side.

3. Philippine side requested the acceptance of counterpart personnels in Japan for their technical training.

4. Philippine side requested that Japanese side shall take necessary measures to begin the study as soon as possible, and to shorten the study period as much as possible due to the priority of its implementation in Philippine side.

5. Philippine side requested that Japanese side shall transfer the technology of computing data analysis in the course of the study.

6. In order to cooperate with JICA Study team and to enhance of technology transfer, NEA will assign the counterpart personnel in the course of the Study.

MANILA, JULY 29, 1996

MR. TEODORICO P. SANCHEZ
ADMINISTRATOR,
NATIONAL ELECTRIFICATION
ADMINISTRATION

MR. TAKESHI NARUSE
LEADER,
PREPARATORY STUDY TEAM,
JAPAN INTERNATIONAL
COOPERATION AGENCY

Appendix II

Division of Technical Undertakings by JICA and NEA

Working Items	Undertakings by JICA	Undertakings by NEA
Phase I: Review and Analysiis of existing data and information in Region VIII		
1.General information (Economical statistics, Meteorological data etc)	1 Review and analysis	1 Additional information
2 Present conditions of ECs (1985-1995)	2 Review and analysis	2
(A) Management conditions of ECs (1) Organization of each EC (2) Financial condition (3) Institutional management		(A) (1) ECs oganization chart including sub officiers (2) Collection data except Leyte I, II, V, Samar I, II (3) Collection data except Leyte I, II, V Samar I, II
(B) Purchase and selling electricity rate and the basis of computation		(B) Additional information
(C) Billing and collection system of electricity revenue		(C) Data collection
(D) Electric power demand (1) Capacity of substation and distribution transformers (2) Line extension and connection policy (3) Demand forecast		(D) Additional information
(E) Expansion plans and programs by ECs		(E) Data collection
3. Existing transmission and distribution facilities	3 Review and analysis	3
(A) Electric power route maps and single line diagrams of 69kV transmission lines including receiving 69kV substation		(A) Data collection including 138kV and 13.2kV if necessary
(B) Existing facilities (1)Transmissions and distributions (voltage,line system, voltage drop ,capacity,number of circuits , constructed year,etc)		(B) Data collection

Working Items	Undertakings by JICA	Undertakings by NEA
(2) Substations(voltage, capacity, facilities of var control, protection system, constructed year, etc)		
(3) Distribution facilities of 13.2kV lines(number of transformers, length of distribution lines, line pole, etc)		
(4) Delivery point between NPC and EC		
(C) Coordination and operation system for electric power network		(C) Data collection
(1) Central control system for supply and operation		
(2) Telecommunication system		
(3) Electricity flow diagram		
(4) System analysis		
(D) System loss (1985-1995, 13.2kV, 69kV)		(D) Data collection (Best effort on 69kV)
(E) Nature and number of outages (1985-1995, 13.2kV, 69kV)		(E) Data collection (Best effort on 69kV)
4. Evaluation of existing 69kV line facilities	4 Review and analysis	4
(A) Cost and personnel of maintenance		(A) Best effort on data collection
(B) Assets evaluation		(B) Work with JICA team
5. Applied technical standard for EC and NPC	5 Review and analysis	5 Data collection (Best effort on NPC)
6. Existing laws and regulations of transmission and distribution facilities	6 Review and analysis	6 Data collection

Working Items	Undertakings by JICA	Undertakings by NEA
Phase II : Program for the transfer of 69kV transmission lines		
1. Prepare optional plans for the transfer of 69kV transmission lines	1 Study and prepare alternative transfer plans	1 Work with JICA team
(A) Institutional aspect		
(1) Organizational form(s) for the rationalized distribution entities		
(2) Competent management to operate the newly formed entities		
(3) Human resource for maintenance, operation and inspection of the facilities		
(4) Other necessities		
(B) Technical aspect		
(1) Reconfiguration of existing technical standards, rules of maintenance, operation and inspection		
(2) Cost estimation for transferred 69kV transmission lines a) New construction b) Rehabilitation		
(3) Improvement of technique on construction and maintenance for 69kV transmission lines		
(4) Coordination method between 69kV transmission line system and up-stream transmission system for operation of transferred 69kV transmission system		
(5) Other necessities		

Working Items	Undertakings by JICA	Undertakings by NEA
2. Evaluation for proposed alternative transfer plans (A) Technical grade for each alternative plans (B) Financial grade for each alternative plans (C) Rationalization (D) Estimation value of transferred assets from NPC (E) Electricity rate at delivery point between NPC and private distribution utilities	2 Study and evaluation	2 Work with JICA team
3. Selection of suitable feasibility plan and recommendation of implementation activities	3 Study and recommendation	3 Work with JICA team
4. Laws and Regulations (A) Omnibus Electric Power Industry Act of 1996 (B) Laws about rights of way for 69kV transmission lines (C) Environmental regulations for construction and maintenance of transmissin lines including substations (D) Rules of maintenance, operation and inspection of transmission lines including substations	4 Study and recommendation	4 Work with JICA team

QUESTIONNAIRE

FOR

Feasibility Study

ON

The Transfer of Facilities and Management of the 69KV Transmission Lines and Systems from the NPC to the the Private Utilities

IN

REPUBLIC OF THE PHILIPPINES

(Revised Questionare, July 96')

July. 1996

PREPARATORY STUDY TEAM OF JICA

LEGEND OF AVAILABILITY

A : Collected by Preparatory Study Team

B : To be Collected by the Master Plan Study Team

C : Collected Already

D : Additional Proposal

E : No Data

N : Necessary

U : Unnecessary

1. GENERAL INFORMATION

ITEM	DESCRIPTION	AVAILABILITY	REMARKS
1. The authorities concerned to this project	- Name : DOE, ERB, NPC, NEA, EC, PEU - Organization - Annual report	A, D	NPC,EC & MERALCO→C NEA → N DOE,ERB → U
2. Statistics (1985～1995)	- GDP growth - Population - Population for 2 Island, LEYTE, SAMAR - Economical indices (Wages, prices of commodities etc)	A, D	U N
3. Meteological data	- For 2 Island, LEYTE, SAMAR - Rain fall per each month - Temperature (maximum and minimum) and relative humidity per each month - Wind velocity - Earthquake - Typhoon (91'～95) No.of year, maximum wind velocity m/sec	A, D	 U N
4. Energy sources	- River and water discharge (m^3/S) - Geothermal energy	A, D	U U

2. STUDY FOR MANAGEMENT OF ELECTRIC POWER INDUSTRIES (For each Island, each EC)

ITEM	DESCRIPTION	AVAILABILITY	REMARKS
1. Policy	- Transfer to EC, 69KV transmission facilities	A	U
	- Economical support to EC	E	N
2. Electricity rate and system (1985~1995)	- Domestic, commercial, industries, others, total average	A,D	
	- Buying rate from NPC		
	- Buying rate from PEU		
	- Collect system of electricity rate		N
3. Demand of electric power	- For domestic, commercial, industries, others, total average	A	
	- Total of a island		
	- Each EC by each island		
	- Direct sales from NPC 69KV line		
	- Others		
4. Demand forecast (1995~2000)	- For each customers	A	
	- KW/ KWh		
	- Peak Demand		
5. Electrified factor (1991~1995)	- Location, population, household, etc.	A	
6. Balance sheet of EC (1991~1995)	- Each EC	A	
7. Statement of income (1991~1995)	- Each EC	A	

ITEM	DESCRIPTION	AVAILABILITY	REMARKS
8. Rationalization and streamlining for management of electric power industries	- Information system - Management system - Service system - Emploees	A	
9. Make into unification	- Each EC - Each EC and each PEU	D	N
10. Laws and regulations	- Laws of electric power industries - The related laws or regulations - Laws or regulations for electric technical standard	E A	N
11. Loan by foreign countries (1991~1995)	- Amount of loan - Country name - Objection - Interest	A	
12. No of employees (1991~1995)	- For each class, school carrier, average duty duration	D	N, except LEYECO Ⅱ, Ⅴ
13. Salary system (1991~1995)	- Manager(Average) - Officer (〃) - Engineer (〃) - Operator (〃) - Worker (〃)	A,D	N, except LEYECO Ⅱ, Ⅴ
14. Actual results of construction (1991~1995)	- 69kV Transmission lines - Substations - Distribution lines	A,D	N, except SAMELCO Ⅱ, LEYECO Ⅱ

ITEM	DESCRIPTION	AVAILABILITY	REMARKS
15. Actual results of maintenance, restoration improvement, repairs (1991～1995)	- 69kV Transmission lines - Substations - Distribution lines	A,D	N, except SAMELCO Ⅱ, LEYECO Ⅱ
16. Related term for transfere to EC from NPC 69KV facilities	- Evaluation of existing facilities - Maintenance cost and construction cost - Transfere system of NPC 69KV facilities	D	N (most necessary)

3. STUDY OF EXISTING TRANSMISSION FACILITIES (For Each Island, Each EC)

ITEM	DESCRIPTION	AVAILABILITY	REMARKS
1. Electric power route map	- Each EC include NPC 69KV transmission facilities	A	N, one drawing on Region VIII
2. Transmission line facilities	- Voltage, Number of lines, wire size - Hang or support system for wire - Kind of tower or pole - Contructed year	B	N
3. Substations facilities	- Transformer and substations equipments - One line diagram - Bus system - Constructed year	A	N, except SAMELCO II
4. Distribution line facilities	- Voltage, wire size - Kind of tower or pole - Constructed year	A	U
5. Coordination system operation for Region VIII	- Electric power supply system - Central Control system - Telecommunication System - Electric power flow diagram - Transmission line analisis	B	N
6. System loss (1985~1995)	- Changes system losses - Var control - Power factor	D	N
7. Reliability of power supply	- Existing state of transmission facilities - Protective relay system	D	N

ITEM	DESCRIPTION	AVAILABILITY	REMARKS
	- Kind of outage (69kV transmission lines, substations and distribution lines) - Number of outage per year (1991~1995) - Total hours of power service interruption	D	N, except SAMELCO II
8. Extension or New construction plan	- Transmission line - Substation - Distribution line - Technics and finance	D	N, except SAMELCO II
9. Environmental problems for construction	- Nature Destruction - Residents - Other - Related laws	A,D	N

4. Additional requisition, about 69kV exsting Region Ⅷ each EC

ITEM	DESCRIPTION	AVAILABILITY	REMARKS
1. No. of substation and installation capacity(kVA)	- 69kv receirring substation - for each EC	} E	N
2. Protection facilities (circuit breaker, relays etc) for 69kV receiving and NPC side, 13.8kV EC sending side	- one line diagram - type of relay, circuit breaker	A,E E	N N
3. Technical standard of maintenance and inspection		E	N
4. Yearly schedule of maintenance and inspection	- for each EC	E	N
5. Electric laws concerning maintenance and inspection in EC	- to be applied laws	E	N
6. Cost of maintenance and inspection -Substation U.S.D/1 substation	- for each EC	E	N
7. Cost of construction -Substation U.S.D/1 substation	- for each EC	E	N

5. Additional requisition, about NPC 69kV transmission line and substations of secondary side

ITEM	DESCRIPTION	AVAILABILITY	REMARKS
1. Total length(km)of transmission line and No.of substation	- total length response to substation to substation	E	N
2. Technical standard of maintenance and inspection	- NPC or government standard	E	N
3. Yearly schedule of maintenance and inspection	- same as above	E	N
4. Electric laws concerning maintenance and inspection in Phillipines	- government	E	N

合意したM/M

MINUTES OF MEETING

FOR

FEASIBILITY STUDY

ON

THE TRANSFER OF FACILITIES AND MANAGEMENT OF THE 69 KV TRANSMISSION LINES AND SYSTEMS FROM THE NATIONAL POWER CORPORATION (NPC) TO THE PRIVATE UTILITIES

IN

THE REPUBLIC OF THE PHILIPPINES

AGREED UPON BETWEEN

NATIONAL ELECTRIFICATION ADMINISTRATION

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

MANILA, FEBRUARY 26, 1996

MR. TEODORICO P. SANCHEZ
ADMINISTRATOR,
NATIONAL ELECTRIFICATION
ADMINISTRATION

MR. NOBUYUKI YAMAURA
LEADER,
PREPARATORY STUDY TEAM,
JAPAN INTERNATIONAL
COOPERATION AGENCY

The preparatory Study Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") of the Government of Japan, headed by Mr. Nobuyuki YAMAURA, Leader of the Team, visited the Republic of the Philippines from February 19 to February 28, 1996 for the purpose of discussing the outline of the Feasibility Study on the Transfer of Facilities and Management of the 69 kV Transmission Lines and Systems from the National Power Corporation (NPC) to the Private Utilities in the Republic of the Philippines (hereinafter referred to as "the Study").

The Team made a series of discussions with the authorities concerned of the Government of the Philippines ; the Department of Energy (DOE), the National Economic Development Authority (NEDA), the National Electrification Administration (NEA), NPC, and the Electric Cooperatives (ECs). (hereinafter referred to as "Philippines' side).

The salient result of the discussion mutually confirmed are as follows:

1. General

1.1 Project title

Both side agreed that the title of the Study is the "Feasibility Study on the Transfer of Facilities and Management of the 69 kV Transmission Lines and Systems from the National Power Corporation (NPC) to the Private Utilities in the Republic of the Philippines.

1.2 Objectives of the Study

The objective of the Study is to determine and explore the feasibility of the Private Utilities taking over the facilities and management of the 69 kV transmission lines and systems from NPC.

The study is recommended to determine the technical, financial, institutional, legislative, and regulative basis for establishing a viable structure in terms of assets, operating costs, tariff arrangements and resources for acceptance by NEA/Private Utilities of the 69 kV transmission lines and systems from NPC.

1.3 Study area and target year

The Study covers the Leyte-Samar grid consisting of 11 (eleven) ECs (LEYECO I, LEYECO II, LEYECO III, LEYECO IV, LEYECO V, SOLECO, BILECO, NORSAMELCO, SAMELCO I, SAMELCO II, ESAMELCO).

The Study covers plans and programs of ECs up to 2005.

1.4 Identification of counterpart organization

In coordination with DOE and NPC, NEA is the counterpart authority for JICA to consult on matters that may arise in connection with the Study.

1.5 Formulation of a Steering Committee

A Steering Committee will be formed for the consideration and discussion of the issues that will emanate from the Study. It will be composed of representatives from the following agencies:

i) DOE
ii) NEA
iii) NPC
iv) EC

1.6 Assignment of counterpart personnel by NEA

To provide assistance and to enhance the technology transfer, NEA will assign the counterpart personnel in the course of the Study to the JICA Study Team.

2. Situation of the Study

2.1 Present condition of privatization of NPC and the situation of the Study

Philippines' side explained that a bill to ordain reforms on the Electric Power Sector was submitted to Congress in 1995. The bill encourages that the entry of new investors in distribution and sub transmission sub sector.

The Study will recommend concrete action plans in connection with the bill.

NPC expressed willingness to hand over the 69 kV transmission lines and system to private utilities taking into consideration the technical, financial and institutional capability of the recipients.

2.2 JICA and USAID study areas

JICA's study would cover Leyte-Samar grid, while USAID study includes Northern-Mindanao, Panay, Cebu, Bohol and Northern Luzon areas.

DOE will make the best use of the results of these two studies in pursuit of its restructuring and privatization efforts in energy sector.

3. Scope of the Study (Draft)

[Phase I : Review and Analysis]

3.1 Present conditions of ECs (1985 - 1995)

3.1.1 Collection of general information

3.1.2 Management conditions of ECs
- 1) Organization of each EC
- 2) Financial condition
- 3) Institutional

3.1.3 Cost and retail electricity rate

3.1.4 Power demand
- 1) Power demand
- 2) Status of electrification
- 3) Demand forecast (1996 - 2005)

3.1.5 Plans and Programs by ECs

3.2 Existing facilities (13.2kV - 138kV)

3.2.1 Electric power route map and single line diagram

3.2.2 Existing facilities

1) Line (voltage, line system, capacity, number of circuits, constructed year, etc.)
2) Substations (voltage, capacity, facilities of var control, protection system, constructed year, etc.)
3) Interface facilities between NPC and EC

3.2.3 Coordination and operation system for electric power system

1) Central control system for supply and operation
2) Telecommunication system
3) Electricity flow diagram
4) System analysis

3.2.4 System losses (Leyte-Samar grid, 1985 - 1995)

3.2.5 Nature and number of outages (1985 - 1995)

3.2.6 Existing expansion plans

3.3 NPC 69kV facilities

3.3.1 Cost and staff of maintenance

3.3.2 Assets evaluation

3.4 Laws and regulations of transmission and distribution

3.4.1 ECs

3.4.2 Technical standard

3.4.3 Restructuring and privatization in distribution and transmission

[Phase II : Formulation of action plan]

3.5 Action plan

3.5.1 Institutional and financial aspect

3.5.2 Technical aspect

3.5.3 Financial

3.5.4 Laws and regulations

4. Others

4.1 Answer to the Questionnaire

NEA will submit the data and information in reply to the Questionnaire to JICA within one (1) week from the date of signing of this Minutes of Meeting.

Communication and information exchange shall be performed between NEA (Mr. Leonardo Olaño, Deputy Administrator for Technical Services) and JICA (Mr. A. Hashimoto, 12th Floor, Pacific Star Building, Sen. Gil J. Puyat Avenue Extension Corner, Makati Avenue, Metro Manila [893.3081]).

収集資料リスト

番号	資料名称	ページ数	オリジナル・コピーの区別	発行機関
I	National Electrification Administration (NEA)			
1-1	Vital Documents on the Philippine Rural Electrification Program	62	オリジナル	NEA (Presidential Decree)
1-2	Delete			
1-3	Rural Electrification CHRONICLE	286	オリジナル	NEA
1-4	Rural Electrification Plan (1996～2025)	153	オリジナル	NEA
1-5	JICA－NEA (Project Digest) Coordination Meeting (Feb 20,1996)	21	コピー	NEA
1-6	NEA－JICA Transfer of Facilities and Management of the 69KV Transmission Lines and Systems from the NATIONAL POWER Corporation (NPC) to the Private Utilities	145	コピー	NEA
1)	Overview of the Rural Electrification Program	12	コピー	NEA
2)	Linkages between Agencies in the Energy Sector	2	コピー	NEA
3)	Population (Leyte, Samar)	1	コピー	NEA
4)	Meteorological, Climatological Data	3	コピー	NEA
5)	Policy Merger/Consolidation of ECS Restructuring of Private & ECS	11	コピー	NEA
6)	Rates NEA Basic Rate Schedule NPC Effective Rates	3	コピー	NEA

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番号	資料名称	ページ数	オリジナル・コピーの区別	発行機関
7)	Sales Forecast (1993～2004)	12	コピー	NEA
8)	Balance Sheet/Income Statement Leyte Ⅰ, Ⅱ, Ⅴ, Samar Ⅰ, Ⅱ,	44	コピー	NEA
9)	EC Organization Chart	6	コピー	NEA
10)	Status of Energization	1	コピー	NEA
11)	Projects Expansion, Rehabilitation, 1996 Locally-Funded 1996～1998, OECF 18th YEN	34	コピー	NEA
12)	Actual Results of construction, Maintenance, Restoration, Improvement, Reprair (1991～1995)	2	コピー	NEA
13)	Power Market Report	6	コピー	NEA
14)	Foreign Loans (1996～2000)	1	コピー	NEA
15)	Category of ECS (1982～1994)	3	コピー	NEA
16)	Other Data One Line Diagram SamarⅡ, Exist, T/L Facilities SamarⅡ, Depreciation LeyteⅡ, Number of Employees LeyteⅡ	4	コピー	NEA
1-7	Drawing of 5^{MVA} Substation (A-1)	6	コピー	NEA
1-8	Project Key Map. PhaseⅡ (A-1)	1	コピー	NEA
Ⅱ	Leyte Ⅰ, Leyeco Ⅰ			
2-1	Systems Loss Computation (1989～1995)	7	コピー	Leyeco Ⅰ
2-2	Power Rate Schedule(1994～1996)		コピー	Leyeco Ⅰ
2-3	Power Bill Payments(1993～1994)	3	コピー	Leyeco Ⅰ
Ⅲ	LeyecoⅡ			
3-1	One Line Diagram 2×5^{MVA} Substation	1	オリジナル	LeyecoⅡ

収集資料リスト

番号	資料名称	ページ数	オリジナル・コピーの区別	発行機関
3-2	NPC 69^{KV} One Line Power blow Diagram (Leyte Island)	1	コピー	NPC
3-3	Region Ⅷ Energy Consumption & Losses	3	コピー	LeyecoⅡ
Ⅳ	LeyecoⅤ			
4-1	LeyecoⅤ, Electric Cooperative Summary	12	コピー	LeyecoⅤ
4-2	Project Profile (Ormoc)	1	コピー	LeyecoⅤ
4-3	Electric Cooperatives Categorization—1993	2	コピー	——
4-4	LeyecoⅤ Organizaion	4	コピー	LeyecoⅤ
4-5	LeyecoⅤ Coverage Area	1	コピー	LeyecoⅤ
4-6	LeyecoⅤ One Line Dictribution Diagram	1	コピー	LeyecoⅤ
4-7	Financial Highlights 1995	6	コピー	LeyecoⅤ
4-8	Financial Highlights 1994	6	コピー	LeyecoⅤ
4-9	Monthly Financial and Statistical Report 1993	3	コピー	LeyecoⅤ
4-10	Monthly Financial and Statistical Report 1992	5	コピー	LeyecoⅤ
4-11	Monthly Financial and Statistical Report 1991	3	コピー	LeyecoⅤ
4-12	Financial Highlights(1993,94,95)	2	コピー	LeyecoⅤ
4-13	Cost Data	2	コピー	LeyecoⅤ
4-14	Maintenance, Restoration, Improvement & Repairs Cost	1	コピー	LeyecoⅤ
4-15	Total Basic Rate Effective January 1996	1	コピー	LeyecoⅤ
4-16	Estimated NPC Rate Level in the Implementation of ERB's Decision	5	コピー	LeyecoⅤ

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番号	資料名称	ページ数	オリジナル・コピーの区別	発行機関
4-17	Status of Electrification Dec. 31. 1995	1	コピー	LeyecoV
4-18	LeyecoV Load Factor	1	コピー	LeyecoV
4-19	Monthly KWH Purchased, Sold & System Loss(1995)	3	コピー	LeyecoV
4-20	LeyecoV System Loss(1985～1995)	2	コピー	LeyecoV
4-21	Data of Sub-Station	2	コピー	LeyecoV
4-22	Distribution Line Datas	2	コピー	LeyecoV
4-23	Number of Employees and Salary System	1	コピー	LeyecoV
4-24	Service System	1	コピー	LeyecoV
4-25	Institutional Services Development Department Workplan 1996	4	コピー	LeyecoV
V	SamelcoⅠ			
5-1	Classification of Energy Consumption	3	コピー	SamelcoⅠ
5-2	Monthly Financial and Statistical Report	2	コピー	SamelcoⅠ
5-3	Monthly Financial and Statisical Report TON-OK MINI-HYORO	2	コピー	SamelcoⅠ
5-4	69^{KV} Transmission Line	1	コピー	SamelcoⅠ
Ⅵ	SamelcoⅡ			
6-1	Comparative Key Performance Indicator November and December '95	1	オリジナル	SamelcoⅡ
6-2	Systems Loss 1985～1995	1	オリジナル	SamelcoⅡ
6-3	System's Operating Map	1	コピー	SamelcoⅡ
Ⅶ	Development of Energy (DOE)			

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番号	資料名称	ページ数	オリジナル・コピーの区別	発行機関
7-1	Suggested Scope of Work for Technical Assistance on the Restructuring of Private Distribution Utilities and Rural Electric Cooperatives	9	コピー	US, AID
7-2	The DOE's Vision of Electricity Industry Restructuring in the Philippins	21	コピー	DOE
7-3	The DOE's vision of the Restructuring of the Power Industry of the Philippines (O・H・P Data)	22	コピー	DOE
7-4	An ACT to Ordain Reforms in the Electric Power Sector	14	コピー	DOE
Ⅷ	National Power Corporation (NPC)			
8-1	National Power Corporation Rules on the Sale of Electricity Feb. 1995	54	オリジナル	NPC
8-2	NPC's Technical Specifications for Installation of Various Substation Equipment	152	コピー	NPC Electrical Engineering Design Department
8-3	Protection Scheme (One Line Diagram)	5	コピー	NPC
8-4	1 Set of Drawing for SAN ROQUE Load and Substation	11	コピー	NPC Technical Division
8-5	Technical Standard, Insulation, Clearance etc.	4	コピー	NPC Technical Division
8-6	69^{KV} Transmission Line Design Data	11	コピー	NPC Technical Division
8-7	Electric Rate Schedule for Each Grid	10	コピー	NPC Technical Division
8-8	DENR Administrative Order No.21 (Environmental Impact Statement System)	50	コピー	Environmental Management Bureau

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番号	資料名称	ページ数	オリジナル・コピーの区別	発行機関
8-9	Rules and Regulations Implementing P.D. No.1586, Establishing the EIS System and Related Documents (The Philippine Environmental Policy)	22	コピー	NPC
8-10	Civil Works Guide line to prevent on Minimize Water Pollution at Transmission Line, Substation, Cable Terminal Station and Submarine Cable Construction Sites	9	コピー	NPC Environmental Department
8-11	NPC Annual Report (1994)	1set	オリジナル	NPC
8-12	Revised Charter of NPC	19	コピー	Government
8-13	Memorandum for the President	9	コピー	Government
8-14	An ACT Revising the Charter of the NPC	13	コピー	Official Gazette
8-15	Presidential Decrees	62	コピー	Government
8-16	Creating the Energy Regulatory Board	8	コピー	Government
8-17	An ACT Creating the Department of Energy, Rationalizing the Organization and Functions of Government Agencies Related to Energy and for Other Purposes. July 27. 92'	8	コピー	Government
IX	US AID			
9-1	Restructuring and Privatization of the Electricity Industry in the Philippines. Final Report 31. Aug. 94'	125	オリジナル	US AID
9-2	Restructuring and Privatization of the Electricity Industry in the Philippines. APENDIX 31. Aug. 94'	108	オリジナル	US AID

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番号	資料名称	ページ数	オリジナル・コピーの区別	発行機関
9-3	Meeting on the Study of the Options for Restructuring the Electricity Distribution Sector (Pilot Study on Nothern Mindanao) 19. JAN. 96'	42	コピー	DOE
9-4	Options for Restructuring the Distribution Sector Pilot Study of Nothern Mindanao Draft Final Recommendations and Conclusions FEB 19.96'	18	コピー	RMI
9-5	Philippine Electric Industry Restructuring and Privatization Plan OCT. 957	93	コピー	DOE
9-6	A Survey of the Philippine Energy Sector DEC. 95'	30	コピー	不明
9-7	Bulk Power Pricing in Argentina Would if Work in the Phillipp-ines? NOV. 21. 95'	47	コピー	RMI
9-8	Yes, DSM is Needed after Restructuring	8		RMI
X	Philippines, Private Sector Symposium Tokyo, (DEC. 8. 95')	12	コピー	World Bank
XI	Philippines, A Strategy to Fight Poverty (NOV. 13, 95')	83	コピー	World Bank
XII	Meralco Annual Report (1994)	56	オリジナル	Meralco
XIII	Philippines Electrical Code Part 2. 1988	775	オリジナル	Institute of Integ-rated Electrical Engineers of the Phils, INC.

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番号	資料名称	ページ数	オリジナル・コピーの区別	発行機関
XIV	Philippines Power Sector Study, Structural Frame Work for the Power Sector (NOV. 30. 94')	157	コピー	World Bank
XV	The Rural Electrification Program	36	コピー	NEA
XVI	Delete			
XVII	BOHECO I, History and Profile	17	コピー	BOHECO I
XVIII	JICA Coordination Meeting OCT. 20 95' (O・H・P Data)	27	コピー	NEA
XIX	IFB-72 Recipient EC's WB-RERP Projects	1	コピー	NEA
XX	IFB-72 Recipient ECs WB-RERD Projects	1	コピー	NEA
XXI	DOE, NPC, NEA の JICA への文書	6	コピー	JICA
XXII	JICA Coordination Meeting OCT. 20 95'	31	コピー	NEA
XXIII	1996.Power Development Program (1996～2005)	24	コピー	NPC
XXIV	Substation Maintenance Procedure on SAMAR Sub-Area	90	コピー	NPC, Smar
XXV	Safety Procedure Wright Substation SAMAR Sub-Area	200	コピー	NPC, Smar
XXVI	Study of Options For Restructuring The Distribution Sector (Pilot Study on Northen Mindanao) Final Report	213	コピー	USAID, RMI
XXVII	Engineering Bulletins Volume 2, August 1993	62 (31)	コピー	NEA (Even number's page is missing)