AGREEMENT

No.123.PJ/070/1991/M

BETWEEN

PERUSAHAAN UMUM LISTRIK NEGARA

AND

TOKYO ELECTRIC POWER SERVICES CO., LTD.

IN ASSOCIATION WITH

P.T. YODYA KARYA

AND

P.T. TRIMITRA NUSA ENGINEERING

FOR

ENGINEERING SERVICES

(SERVICES II)

FOR

KOTAPANJANG HYDROELECTRIC POWER AND ASSOCIATED TRANSMISSION LINE PROJECT

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APPENDICES

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between

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P.T. YODYA KARYA

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KOTAPANJANG HYDROELECTRIC POWER AND

ASSOCIATED TRANSMISSION LINE PROJECT

This Agreement made and entered into this 19th day of the month October in the year 1991 by and between PERUSAHAAN UMUM LISTRIK NEGARA (hereinafter referred to as "PLN") with its main office located at Jalan Trunojoyo Blok M I/135, Kebayoran Baru, Jakarta Selatan, Indonesia, on the one part, and TOKYO ELECTRIC POWER SERVICES CO., LTD. with its main office located at 1-4, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo 100, Japan, in association with P.T. YODYA KARYA with its main office located at Jalan D.I. Panjaitan, Kaveling 8. Cawang, Jakarta, Indonesia and P.T. TRIMITRA NUSA ENGINEERING with its main office located at IKPT Bldg. Jalan Bendungan Hilir Raya No. 50, Jakarta, Indonesia (hereinafter referred to as "the ENGINEER") on the other part.

WITNESSETH

Whereas, PLN intends to execute the Construction of Kotapanjang Hydroelectric Power and Associated Transmission Line Project (hereinafter referred to as "the PROJECT");

Whereas, the Overseas Economic Cooperation Fund of Japan (hereinafter referred to as "the FUND") has been requested by the GOVERNMENT to provide foreign and local currencies financing support for the PROJECT consisting of Phase I and Phase II, and has agreed to provide such financing support for Phase II by a Loan Agreement No.IP 374 dated September 25, 1991 between the GOVERNMENT and the FUND (hereinafter referred to as "the Phase II Loan Agreement");

Whereas, PLN desires to employ the ENGINEER to furnish the engineering services for Phase II for the construction supervision of the Metal, Generating Equipment, Equipment, Relocation Road and Bridge Works, and the Transmission Line between Payakumbuh Substation and Pekanbaru Substation through Kotapanjang Switchyard for the PROJECT (hereinafter referred to as "the SERVICES II"); and

Whereas, the ENGINEER represents himself to be technically qualified and experienced in the type of work to be undertaken and has offered to undertake and perform the SERVICES II.

NOW THEREFORE, the parties hereto mutually agree as follows:

ARTICLE 1

DEFINITIONS

Unless the context otherwise requires, the following terms whenever used in this AGREEMENT have the respective meaning:

"AGREEMENT" means the contract together with all APPENDICES attached hereto and forming an integral part hereto entered into between PLN and the ENGINEER to provide engineering services to carry out the PROJECT all as described in this document.

"PLN" means Perusahaan Umum Listrik Negara, a Perusahaan Umum (state owned public corporation), duly established and existing under the laws of the Republic of Indonesia, with its principal offices at Jalan Trunojoyo Blok M I/135, Kebayoran Baru, Jakarta Selatan, Indonesia, which shall include its legal successors and assigns.

"ENGINEER" means Tokyo Electric Power Services Co., Ltd. (TEPSCO) with its principal offices at 1-4, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo 100, Japan, in association with P.T. Yodya Karya (YK) with its main office located at Jalan D.I. Panjaitan, Kaveling 8, Cawang, Jakarta, Indonesia and P.T. Trimitra Nusa Engineering (TNE) with its main office located at IKPT Bldg. Jalan Bendungan Hilir Raya No. 50, Jakarta, Indonesia, who render the SERVICES for the PROJECT whereby TEPSCO is solely responsible firm.

"GOVERNMENT" means Government of the Republic of Indonesia as represented by Directorate General of Electric Power and New Energy, Ministry of Mines and Energy.

"FUND" means Overseas Economic Cooperation Fund of Japan with its principal office at 4 - 1, Ohtemachi 1-chome, Chiyoda-ku, Tokyo 100, Japan.

"SERVICES" means the engineering services for the PROJECT to be furnished to PLN by the ENGINEER's qualified and experienced personnel, and shall consist of the SERVICES I and the SERVICE II.

"SERVICES I" means the engineering services for Phase I for the construction supervision of the Civil Works and the design of the Transmission Line between Payakumbuh Substation and Kotapanjang Switchyard for the PROJECT to be furnished to PLN by the ENGINEER's qualified and experienced personnel.

"SERVICES II" means the engineering services for Phase II for the construction supervision of the Metal, Generating Equipment, Equipment, Relocation Road and Bridge Works, and the Transmission Line between Payakumbuh Substation and Pekanbaru Substation through Kotapanjang Switchyard for the PROJECT to be furnished to PLN by the ENGINEER's qualified and experienced personnel, subject to the Phase II Loan Agreement.

"PROJECT" means Kotapanjang Hydroelectric Power and Associated Transmission Line Project.

"PROJECT SITE" means the lands and places on, under, in or through which the works of the PROJECT is to be executed.

"PERSONNEL" means the experts and administrative staff of the ENGINEER (HOME OFFICE PERSONNEL and FIELD PERSONNEL) who are qualified and experienced to be assigned to perform the SERVICES.

"FIELD PERSONNEL" means ENGINEER's personnel deputed to Indonesia for the performance of the SERVICES.

"HOME OFFICE PERSONNEL" means all TEPSCO experts assigned for the HOME OFFICE work for the purpose of performing the ENGINEER's obligation under the AGREEMENT.

"PROJECT DIRECTOR" means the ENGINEER's senior representative who will direct, supervise and coordinate all works carried out in connection with the PROJECT by the ENGINEER's PERSONNEL and have overall responsibility of the SERVICES and shall liaise with PLN.

"PLN PROJECT MANAGER" means the PLN Pemimpin Proyek who will have final authority at the PROJECT SITE on behalf of PLN.

"RESIDENT ENGINEER" means TEPSCO expatriate personnel stationed in Indonesia for a period of six (6) months or more consecutively, for the performance of the SERVICES.

"RESIDENT MANAGER" means the person designated by the ENGINEER to direct and coordinate the execution of the SERVICES in Indonesia.

"HOME OFFICE" means TEPSCO's principal office in Japan, where the home office work will be carried out.

"FIELD OFFICE" means the offices of the ENGINEER in Indonesia to be established by the ENGINEER for the performance of the SERVICES.

"AUTHORIZED REPRESENTATIVE" means the persons duly authorized by PLN or the ENGINEER as the case may be, in connection with the execution of the SERVICES.

"MONTHLY RATE" means the billing rate of the ENGINEER which comprises basic salary, social charge, overhead, overseas allowances and fee.

"DAILY RATE" means MONTHLY RATE divided by 30.

"LOCAL CONSULTANT" (excluded YK and TNE) and "LOCAL CONTRACTOR" means Indonesian firm or firms, to which works in Indonesia are subcontracted by the ENGINEER with the approval of PLN.

"DEPENDENTS" means a spouse and a maximum of two (2) unmarried children under eighteen (18) years of age.

"DAY", "WEEK", "MONTH", "YEAR", shall mean calendar day, calendar week, calendar month, calendar year respectively.

"Man-Month" shall mean a period of one (1) month worked by one (1) person.

"Writing" or "Written" means any type-written, or printed statement and/or letter duly signed by the AUTHORIZED REPRESENTATIVE of PLN or the ENGINEER and cablegram or telex, as the case may be. Urgent messages may be handwritten, subject to typewritten confirmation.

Should the same word appear in several parts of this AGREEMENT and will there be any ambiguity in the interpretation thereof, the word shall be construed in accordance with the context.

Words indicating the singular number include the plural number and vice versa where the context requires.

ARTICLE 2

OBJECTIVE

The objective of the SERVICES is to execute the engineering services for the PROJECT as described in the Terms of Reference APPENDIX B attached hereto.

ARTICLE 3

DESCRIPTION OF THE PROJECT

The description of the PROJECT is set forth in APPENDIX A attached hereto.

ARTICLE 4

SERVICES

4.1 Scope of the SERVICES

The scope of the SERVICES I and II to be performed by the ENGINEER is described in detail in the Terms of Reference APPENDIX B attached hereto.

The Terms of Reference explain primarily what PLN would like to have from this PROJECT, while the General Approach and Work Plan in APPENDIX H primarily explain the approach, methodology and work plan proposed by the ENGINEER and revised based on the negotiations between the ENGINEER and PLN, as documented in the Minutes of Meetings in APPENDIX I attached hereto.

4.2 Period and Time Schedule of the SERVICES

The ENGINEER shall commence the SERVICES II within four (4) weeks from the date of signing of this AGREEMENT which entered into between PLN and the ENGINEER for Phase II of the PROJECT.

However, this AGREEMENT is subject to the approval of the GOVERNMENT and the FUND.

The SERVICES II shall end within seventy-seven (77) months after the date of its commencement, as stipulated in the schedule of the SERVICES shown in APPENDIX C attached hereto. In case of Change, Modification, Amendment or Force Majeure, as defined in ARTICLES 9 and 11.15 of this AGREEMENT, the period of the SERVICES may be reasonably extended upon mutual written agreement.

ARTICLE 5

ORGANIZATION AND ASSIGNMENT OF PERSONNEL

5.1 Organization

The ENGINEER shall establish a project organization, as shown in APPENDIX D-2, under the overall direct management and supervision of a PROJECT DIRECTOR who will be assisted by a RESIDENT MANAGER and will staff the organization with an adequate component of qualified and experienced PERSONNEL as required for the efficient and timely execution of the SERVICES.

The ENGINEER shall designate a RESIDENT MANAGER from the ENGINEER's PERSONNEL as an AUTHORIZED REPRESENTATIVE to represent and act for the ENGINEER in performing the SERVICES in Indonesia, subject to the approval of PLN.

5.2 Assignment of PERSONNEL

(a) The ENGINEER shall assign its PERSONNEL to the PROJECT whose names and their respective schedules are shown in APPENDIX D-1 attached hereto.

In case the ENGINEER shall have to substitute its PERSONNEL with other than those whose names are specified in APPENDIX D-I, the ENGINEER shall submit curriculum vitae of such PERSONNEL whose qualification and experience is equal or better than the PERSONNEL to be substituted and to be received by PLN at least thirty (30) days before their scheduled assignment.

Substitution for such PERSONNEL shall not be made without prior written approval of PLN. All cost of replacement shall be borne by the ENGINEER.

(b) PLN reserves the right to request the ENGINEER in writing to replace any of its PERSONNEL in Indonesia whose services and/or activities in PLN judgement are found unsatisfactory or for reasons of misconduct, misbehavior or illness considered incapable for working.

The ENGINEER shall take necessary action to comply with such request, and all cost incurred for such replacement (including travelling expenses and transportation cost of personal effects together with that for their DEPENDENTS, if any), shall be borne by the ENGINEER. In the event that, contrary to expectations, any of the assigned PERSONNEL has to be withdrawn from the SERVICES, the ENGINEER shall substitute, at its cost, suitable PERSONNEL of equivalent or better qualifications with prior written approval of PLN.

(c) None of the PERSONNEL shall be withdrawn from their assignment without prior written approval of PLN. Any request for replacement shall be accompanied by a curriculum vitae for the replacement and must be received by PLN at least thirty (30) days prior to his schedule of replacement.

When the approval required for replacement of PERSONNEL has been granted in writing by PLN, the ENGINEER shall allow two (2) weeks overlap to prevent any loss of continuity. All cost of such replacement shall be borne by the ENGINEER.

(d) PERSONNEL should speak and write English.

(e) The ENGINEER shall obtain medical reports confirming that PERSONNEL and any authorized DEPENDENTS assigned to Indonesia for a period of ninety (90) days or more are physically fit prior to their departure for Indonesia.

(f) The RESIDENT MANAGER will be interviewed by PLN before taking up his assignment.

(g) All PERSONNEL shall be permanent employees of the ENGINEER or such other special experts as PLN may approve. They shall have held successfully the same position and responsibility for at least one (1) similar project and shall have capability, authority and responsibility to make decisions/modifications.

(h) In addition to their technical qualifications, the ENGINEER's FIELD PERSONNEL shall :

- Have cleared past record.
- Be familiar with the metric system.
- Fully understand the ENGINEER's responsibility for the SERVICES.
- Be capable and willing to adapt to and understand local conditions and custom.

5.3 Man-Months

To fulfil the SERVICES, the ENGINEER shall mobilize its well qualified and experienced PERSONNEL as specified in APPENDIX D-1 attached hereto.

5.4 Travel, Leave and Disability

(a) PERSONNEL assigned to the SERVICES in Indonesia shall be paid round trips by air, IATA-economy class, to Jakarta by the most practicable direct route.

For each leg of the trip they shall be allowed ten (10) kg of excess baggage per person. The travel time between HOME OFFICE and Jakarta and vice-versa shall not exceed two (2) days each way.

(b) All PERSONNEL's travel to be paid for under this AGREEMENT shall be subject to prior written approval of PLN.

(c) FIELD PERSONNEL shall be entitled to all Indonesian statutory holidays, which time shall be considered as time worked on the SERVICES.

(d) The ENGINEER's company policy covering physical disability will apply to FIELD PERSONNEL under this AGREEMENT and as provided for in the employment contracts between the FIELD PERSONNEL and the ENGINEER. Disability allowances paid by the ENGINEER to the FIELD PERSONNEL are not reimbursable under this AGREEMENT.

(e) FIELD PERSONNEL assigned for twelve (12) consecutive months or more shall be granted twelve (12) working days leave annually, at times approved by PLN and consistent with the PROJECT schedule.

(f) FIELD PERSONNEL shall be granted a maximum cumulative twelve (12) days sick leave (or one (1) month in case of hospitalization) for each full year of continuous service in Indonesia. This sick leave shall be considered as time worked and the FIELD PERSONNEL shall be entitled to full pay.

(g) RESIDENT ENGINEER assigned for more than twenty- four (24) months continuous SERVICES in Indonesia will be entitled to an annual home leave of four (4) weeks from the second year on.

However, the ENGINEER will not be reimbursed for the part of its home leave in excess of the normal leave (as per ARTICLE 5.4.(e)). RESIDENT ENGINEER will be entitled to the extra return trip only if his return to Indonesia is scheduled to serve for a further period of not less than six (6) consecutive months. For carrying out this home leave, the RESIDENT ENGINEER will be entitled to be accompanied by its DEPENDENTS, and the cost of the trip will be reimbursed.

(h) The ENGINEER shall maintain current leave records of the FIELD PERSONNEL and the ENGINEER shall submit monthly statements to PLN of any leave taken.

ARTICLE 6

UNDERTAKING OF THE ENGINEER

6.1 Responsibilities of the ENGINEER

(a) In performing the SERVICES, the ENGINEER shall, following the normal code of ethics for engineers, always act in the interest of PLN, with due diligence and efficiency and in conformity with sound engineering, public utility, administrative and financial practices for the full and satisfactory completion of the SERVICES.

(b) The ENGINEER shall act at all times so as to protect the interests of PLN and will always take all reasonable steps for the PROJECT legally, technically and administratively to keep engineering costs to a minimum, consistent with sound engineering practices.

(c) The ENGINEER shall implement and carry out the SERVICES according to the Terms of Reference in APPENDIX B and General Approach and Work Plan as contained in APPENDIX I, as amended and modified in accordance with Minutes of Meetings in APPENDIX J.

However, in cases where a different interpretation might appear between the General Approach and Work Plan and the Terms of Reference, concerning any matter, then the interpretation of the Terms of Reference shall prevail.

6.2 Cooperation of the ENGINEER

In performing the SERVICES the ENGINEER shall cooperate with PLN and other agencies, and contractors retained by PLN for the satisfactory completion of the SERVICES and shall also furnish all information relating

to the SERVICES and the PROJECT which PLN may from time to time reasonably request.

6.3 Specifications, Designs and Reports

(a) The ENGINEER shall discuss with PLN during the preparation of design reports, specifications and designs to ensure embodying the latest design criteria including PLN standards as far as available and applicable. All documents shall be in presentable form and thoroughly checked before submission to PLN.

(b) The ENGINEER shall ensure that the specifications and designs and all documentation relating to the procurement of goods, construction works and services for the PROJECT are prepared on an impartial basis so as to promote international competitive bidding.

(c) The ENGINEER shall specify technical standards which are accepted and well known among industrial nations. PLN standards shall be used as far as available and applicable.

(d) The ENGINEER shall ensure that any documents relating to the procurement of goods and services for the PROJECT will be in conformity with the FUND's guidelines and PLN's requirements for procurement.

(e) Reports and documents which must be prepared by the ENGINEER are specified in APPENDIX G.

(f) The ENGINEER shall assist PLN in supplying relevant information and preparing reports required by the GOVERNMENT and the FUND during the period of the SERVICES and shall follow all applicable rules and regulations of both.

(g) The ENGINEER will promptly inform PLN the occurrence of any event or condition that might delay or prevent completion of the SERVICES in accordance with the schedule in APPENDIX C indicating what steps are being taken or suggested by the ENGINEER to meet the situation.

(h) In case of failure of the ENGINEER to meet any contractual obligations such as lack in performance, incomplete reporting, delay of submission of reports/documents, failure to report delays promptly, etc., PLN shall withhold all related payments due to the ENGINEER until all obligations are met and assurance given that steps have been taken to guarantee the future compliances.

6.4 Records and Audit

(a) The ENGINEER certifies that the representations made to PLN at the time of the negotiation of this AGREEMENT as to actual MONTHLY RATES and other charges and benefits paid or incurred by the ENGINEER are true and correct to the best of the ENGINEER's knowledge, and the ENGINEER acknowledges that PLN relies on this certification.

(b) The ENGINEER shall keep accurate and systematic records and accounts in respect of the SERVICES in such forms and detail as is customary and as shall be sufficient to establish accurately that the costs and expenditures referred to in ARTICLE 8 have been duly incurred.

(c) The ENGINEER shall permit, or obtain permission for, duly AUTHORIZED REPRESENTATIVE(S) of PLN, the GOVERNMENT's Directorate of State Accounts and/or the FUND (including any auditor or auditing firm appointed by any of them) to inspect from time to time the records and accounts referred to in paragraph (b) above and the records and accounts which verify the representations referred to in paragraph (a) above, to make copies thereof and from time to time to audit such accounts and records.

(d) In the event that such inspection or audit by PLN, GOVERNMENT's Directorate of State Accounts and/or the FUND or their AUTHORIZED REPRESENTATIVES reveals that

(i) there has been a misrepresentation by the ENGINEER at the time of negotiation of this AGREEMENT as to the matters referred to in paragraph (a) hereof, or

(ii) the cost or expenditures referred to in ARTICLE 8 which had been the basis for charges made to PLN had not been duly incurred, and as a result PLN has made payments in excess of payments which would otherwise have been made if no such misrepresentation has been made or if the said costs or expenditures had been duly incurred, then the ENGINEER shall reimburse PLN promptly for any such overpayment.

6.5 Working Hours and Days

Working hours and days of the FIELD PERSONNEL shall be subject to the Site Working Regulations as mentioned in ARTICLE 11.4 of this AGREEMENT.

6.6 Indemnifications

The ENGINEER agrees to indemnify, protect and defend at its own expenses, PLN and their AUTHORIZED REPRESENTATIVE(S) from and against all actions, claims and liabilities arising out of negligent acts done by the ENGINEER or its PERSONNEL in the performance of this AGREEMENT including the use and violation of any copyright works or literary property or patented invention, article or appliance, etc.

6.7 Insurance

(a) The ENGINEER shall for the purpose of the SERVICES take out and maintain adequate insurance against loss of or damage to equipment purchased in whole or in part with funds provided by PLN.

(b) The ENGINEER shall, if necessary in the opinion of the ENGINEER, take out and maintain adequate insurance against claims resulting from acts performed by the ENGINEER or its PERSONNEL in carrying out the SERVICES.

(c) PLN undertakes no responsibility in respect of life, health, accident, travel and other insurance coverage for the PERSONNEL and personnel of LOCAL CONTRACTORS or LOCAL CONSULTANTS of the ENGINEER or for the DEPENDENTS of any such person.

ARTICLE 7

UNDERTAKINGS OF PLN

7.1 Representative of PLN

PLN shall designate its AUTHORIZED REPRESENTATIVE(S) for the SERVICES to represent and act for PLN with respect to technical and field operations and administrative matters under this AGREEMENT. The AUTHORIZED REPRESENTATIVE(S) of PLN thus appointed shall coordinate discussions and communications and cause prompt action and approvals of all documents and other submissions to PLN by the ENGINEER as required for smooth and timely execution of the SERVICES. However, approval by PLN or their AUTHORIZED REPRESENTATIVE(S) shall not release the ENGINEER of its responsibility under this AGREEMENT.

7.2 PROJECT Data

In connection with the SERVICES of the ENGINEER which require cooperation with GOVERNMENT agencies, PLN shall furnish the ENGINEER free of charge, all available relevant data, information, drawings, documents and the like as necessary for the ENGINEER to perform the SERVICES. The ENGINEER, upon prior written approval by PLN, could gather them and expenses shall be reimbursed on actual costs.

7.3 Taxes and Duties

7.3.1 Provided that the established GOVERNMENT procedures and regulations are followed, PLN shall ensure that the following privileges are given to the ENGINEER and any of its FIELD

PERSONNEL (other than personnel who are citizen or permanent resident of the Republic of Indonesia) as the case may be.

(a) 1. The ENGINEER shall be liable for the payment of Personal Income Tax for all SERVICES performed in Indonesia by the ENGINEER's PERSONNEL.

2. The Corporation Income Tax on the payment of the SERVICES, which are financed from the proceeds of the Loan of the Fund, will be borne by the GOVERNMENT.

3. The Value Added Tax (PPN) in a total amounting to ¥93,080,700 (Ninety three million eighty thousand seven hundred Yen) and Rp. 395,232,000 (Three hundred ninety five million two hundred thirty two thousand Rupiah) as set forth in APPENDICES E-2-1, E-2-2, E-3-1 and E-3-2 for the SERVICES II, will be paid by the GOVERNMENT.

4. The stamp duty shall be paid by and on account of the ENGINEER prior to signing of this AGREEMENT.

5. Local taxes such as road taxes, registration fees on personnel automobiles, etc. shall be paid according to the prevailing regulations.

(b) The ENGINEER shall be relieved from custom duties, taxes, a license fees on all equipment, materials and supplies brought into, and subsequently withdrawn from Indonesia for official use in performing the SERVICES, provided that the kind, quality and quantity thereof are previously approved by PLN in writing.

(c) In the event the ENGINEER would not withdraw but dispose of its equipment and materials in Indonesia upon which duties and taxes are relieved according to ARTICLE 7.3.1 (b), the

ENGINEER shall bear such custom duties and taxes in conformity with the regulations of the GOVERNMENT.

(d) The ENGINEER and its FIELD PERSONNEL shall be relieved from custom duties, taxes and license fees on all household appliances and materials brought into and subsequently withdrawn from Indonesia, provided that the kind, quality and quantity thereof are previously approved by PLN in writing.

(e) In the event that the FIELD PERSONNEL would not withdraw but dispose of their household appliances or materials in Indonesia upon which custom duties and taxes are relieved according to ARTICLE 7. 3. 1 (d), the ENGINEER shall bear or cause the FIELD PERSONNEL to bear such custom duties and taxes in conformity with the regulations of the GOVERNMENT.

(f) Should any governmental law, order, regulations and/or by-law having the force of law in existence as on the date of this AGREEMENT and/or those, which may be enacted or promulgated thereafter, result in the imposition of other taxes on the SERVICES of the ENGINEER and its FIELD PERSONNEL, this AGREEMENT shall be amended accordingly and the ENGINEER shall be relieved from such taxes.

(g) Custom duties and taxes, if any, imposed on the equipment and materials which the ENGINEER transfer to PLN on the completion of the SERVICES upon consent of PLN, shall be paid by PLN. In the case where equipment and materials, which are imported into Indonesia by the ENGINEER with exemption of custom duties and taxes, are damaged due to the negligence of the ENGINEER, the ENGINEER shall bear the duties and taxes for the replacement of such equipment and materials in conformity with regulations of the GOVERNMENT.

7.4 Custom and Immigration

PLN shall assist in facilitating and expediting customs procedures in connection with the importation of equipment and materials by the ENGINEER and its FIELD PERSONNEL for the purpose of performing the SERVICES, provided that the kind and amount thereof is previously approved by PLN in writing. PLN shall assist by supporting documents in facilitating the formalities for entry into, stay and work in and depart from Indonesia for the ENGINEER's FIELD PERSONNEL.

7.5 Access to Site

PLN shall provide the ENGINEER, free of charge, with the right of access to lands at the PROJECT SITE required for the execution of the SERVICES. PLN shall arrange that the ENGINEER's FIELD PERSONNEL may have free access to lands as required in performing the SERVICES, and will assume liability for damage to lands and properties, unless such damage is caused by the negligence or fault of the ENGINEER or its FIELD PERSONNEL.

7.6 Security

PLN shall exert its best efforts to avert any factor that may disturb the works and performance of the SERVICES and shall promptly take necessary action at its own expenses to remove any such factor to protect the ENGINEER and its FIELD PERSONNEL against any loss such factor may cause.

7.7 Official Permissions for Field Investigations

PLN shall obtain official permissions from the authorities concerned for execution of geological and topographical investigations at the PROJECT SITE for aerophotographing at the PROJECT SITE and also for use and

storage of explosives and percussion caps to be used for seismic prospecting, geological investigations, excavation of test pits and for other investigations to be carried out at the PROJECT SITE in relation with the performance of the SERVICES.

ARTICLE 8

REMUNERATION AND PAYMENTS

8.1 Remuneration

The total estimated costs of the SERVICES II payable in foreign currency and local currency are set forth in APPENDICES E-1 and E-2, and shall be provided by PLN from the loan proceeds financed by the FUND under Loan No. IP-374.

Notwithstanding anything provided elsewhere in the AGREEMENT, the total payments for the SERVICES II under this Article shall, however, not exceed the foreign currency ceiling amount of Japanese Yen 930,807,000 (Nine hunderd thirty million eight hundred seven thousand Yen) plus VAT Japanese Yen 93,080,700 (Ninety three million eighty thousand seven hundred Yen) and total local currency ceiling amount of Indonesia Rupiah 3,952,320,000 (Three billion nine hundred fifty two million three hundred twenty thousand Rupiah) plus VAT Indonesian Rupiah 395,232,000 (Three hundred ninety five million two hundred thirty two thousand Rupiah).

8.2 Payment of Foreign Currency Portion

Payment to the ENGINEER in foreign currency up to the amount of Japanese Yen 930,807,000 (Nine hundred thirty million eight hundred seven thousand Yen) for the SERVICES II shall be made bi-monthly except the advance payment after the AGREEMENT has become effective.

Such payments shall be made in accordance with the Transfer Procedure of the FUND by Bank Indonesia, Jakarta through the Bank of Tokyo, Ltd., Tokyo, Japan crediting the account of TEPSCO after Bank Indonesia received a Statement of Performance to be issued by PLN.

8.2.1 The foreign currency portion shall cover the items as set out in APPENDIX E-1 for the SERVICES II.

(1) MAN-MONTH Cost

MAN-MONTH Cost shall be determined on the basis of time actually spent by PERSONNEL as supported by time sheets by the applicable MONTHLY RATEs as set forth in APPENDICES E-1-1 and E-1-2 for the SERVICES II in accordance with ARTICLE 8.5 below.

(2) Direct Cost

a. Inland Travel Cost in Home Country

The inland travel cost in Home Country shall be paid on the basis of the number of trips actually made by the PERSONNEL and DEPENDENTS at the applicable fixed unit rate with ceiling amount as set forth in Item 2 (l) of APPENDICES E-1-1 and E-1-2 for the SERVICES II.

b. Travel Documents and Miscellaneous Costs

The travel documents and miscellaneous costs shall be paid on the basis of the number of trips actually made by the PERSONNEL and DEPENDENTS at the applicable fixed unit rate with ceiling amount as set forth in Item 2 (2) of APPENDICES E-1-1 and E-1-2 for the SERVICES II.

c. International Round Air Trip

The costs of international round air trip, IATA economy class air fare by the most direct practicable route from the point of origin and back, via Jakarta, for the purpose of performing the SERVICES by the ENGINEER, including DEPENDENTS, together with the costs of excess baggage not exceeding ten (10) kilograms per leg for one

person and un-accompanied baggage allowance for RESIDENT ENGINEER shall be paid on the basis of the number of trips actually made by TEPSCO's PERSONNEL and the DEPENDENTS at the applicable fixed rates with ceiling amount as set forth in Item 2 (3) of APPENDICES E-1-1 and E-1-2 for the SERVICES II

d. Relocation/Storage Allowance

The cost of relocation/storage allowance shall be paid on the basis of the number of assignments of RESIDENT ENGINEER, single and family status, at the applicable fixed rate with ceiling amount set forth in Item 2 (4) of APPENDICES E-1-1 and E-1-2 for the SERVICES II.

e. Communication and Mail

The cost of communication and mail shall be paid at the applicable fixed monthly rate with ceiling amount as set forth in Item 2 (5) of APPENDIX E-1-1 and Item 2 (5) of APPENDIX E-1-2 for the SERVICES II during the period of the SERVICES.

f. Printing, Book Binding and Reproduction

The costs of printing, book binding and reproduction shall be paid by applicable monthly fixed rate with ceiling amount as set forth in Item 2 (6) of APPENDIX E-1-1 and in Item 2 (6) of APPENDIX E-1-2 for the SERVICES II during the period of the SERVICES.

g. Reference

The cost of reference shall be paid by applicable monthly fixed rate with ceiling amount as set forth in Item 2 (7) of APPENDIX E-1-1 and Item 2 (7) of APPENDIX E-1-2 for the SERVICES II in accordance with the schedule of payment in APPENDICES E-3-1 and E-3-2.

h. Office Supply

The cost of office supply shall be paid by applicable monthly fixed rate with ceiling amount as set forth in Item 2 (8) of APPENDIX E-1-1 and Item 2 (8) of APPENDIX E-1-2 for the SERVICES II during the period of the SERVICES.

i. Tracing

The costs of tracing shall be paid by applicable monthly fixed rate with ceiling amount as set forth in Item 2 (9) of APPENDIX E-1-1 and Item 2 (9) of APPENDIX E-1-2 for the SERVICES II in conformity with the schedule of payment in APPENDICES E-3-1 and E-3-2.

j. Expenses for Factory Tests

The expenses for factory tests shall be paid on the basis of the number of tests actually made at the applicable fixed rate with ceiling amount as set forth in Item 2 (10) of APPENDIX E-1-1 and Item 2 (10) of APPENDIX E-1-2 for the SERVICES II.

k. Various Analyses

The costs of various analyses shall be paid on actual reimbursement basis with ceiling amount as set forth in Item 2 (11) of APPENDIX E-1-1 for the SERVICES II.

l. Special Equipment used in the SERVICES

The cost of special equipment used in the SERVICES shall be paid on actual reimbursement basis with ceiling amount as set forth in Item 2 (12) of APPENDIX E-1-1 for the SERVICES II.

m. Operation and Maintenance Training of PLN Personnel in Japan

The cost of the Operation and Maintenance Training of PLN Personnel in Japan shall be paid on the basis of the actual number of trips made, days spent by participating PLN personnel at the applicable fixed rate with ceiling amount as set forth in Item 2 (13) of APPENDIX E-1-1 for the SERVICES II.

8.2.2 A contingency amount to cover unanticipated additional services, the disposal of which shall be as stipulated in ARTICLE 8.4.

8.2.3 The payment under the FUND's procedure in foreign currency shall be made to TEPSCO in following manner:

(1) An advance payment for the SERVICES II at about twenty (20) percent in the amount of Japanese Yen 182,510,000 (One hundred eighty two million five hundred ten thousand Yen) shall be made upon effectiveness of this AGREEMENT against simple receipt of TEPSCO and a Letter of Guarantee of an equal amount issued by a Bank approved by PLN. This advance payment shall be recovered by deducting about twenty (20) percent of each invoice amount in succeeding invoices for the SERVICES II. The amount of the Letter of Guarantee shall decrease proportionally upon each recovery of the advance payment.

In case the full amount of the advance payment cannot be recovered, an adequate adjustment shall be made in the final invoice for the SERVICES II.

(2) Within sixty (60) days after receipt by PLN of the bi-monthly invoice for the SERVICES II attached with supporting documents i.e.; detailed itemized statement of the cost in foreign currency portion as set forth in ARTICLE 8.2.1. hereof, and in accordance with the performance of

activities specified in APPENDICES B and C assuming there is agreement between the two (2) parties regarding the eligibility of the expenses listed in the invoice, the corresponding amount shall be paid against simple receipt of TEPSCO accompanied by a Payment Certificate and a Statement of Performance to be issued by PLN.

(3) In case the two (2) parties cannot agree within the above mentioned period on the eligibility of the expenses listed in the invoice for the SERVICES II, PLN shall deduct those expenses which are still in dispute and within thirty (30) days of the date it has received the invoice, PLN will issue a Payment Certificate and a Statement of Performance for disbursement of the balance of the invoice (original amount less disputable expenses). Expenses thus held in abeyance will be added to subsequent invoices for the SERVICES II if PLN subsequently agrees that they are eligible.

(4) The final payment for the SERVICES II will be due after the Project Completion Report covering the SERVICES II has been accepted and certified by PLN.

8.2.4 A tentative payment schedule of foreign currency is set forth in APPENDICES E-3-1 and E-3-2 for the SERVICES II.

8.3 Payment of the Indonesian Rupiah Portion

Payment to the ENGINEER in Indonesian Rupiah up to the amount of Rp. 3,952,320,000 (Three billion nine hundred fifty two million three hundred twenty thousand Rupiah) for the SERVICES II shall be made bi-monthly except the advance payment after the effectiveness of this AGREEMENT by Bank Indonesia, Jakarta according to the Transfer Procedure of the FUND against simple original receipt of the ENGINEER after Bank Indonesia received a Payment Certificate and a Statement of Performance to be issued by PLN.

8.3.1 The Indonesian Rupiah Portion shall cover the following items as set forth in APPENDIX E-2 for the SERVICES II.

(1) MAN-MONTH Cost

MAN-MONTH Cost of YK and TNE shall be paid bi-monthly on actual basis at the amount obtained by multiplying the time actually spent by YK and TNE as supported by time sheets by the unit rates stipulated in APPENDICES E-2-1 and E-2-2 for the SERVICES II.

(2) Direct Cost

a. Establishment Allowance

The establishment allowance shall be paid on the basis of the number of entry and extension of assignment of the PERSONNEL and DEPENDENTS at the applicable fixed rate with ceiling amount as set forth in Item 2 (1) of APPENDICES E-2-1 and E-2-2 for the SERVICES II.

b. Mobilization and Demobilization Cost

The air fare shall be paid on the basis of actual number of trips made together with the cost of excess baggage not exceeding ten (10) kilograms per leg for one person and unaccompanied baggage allowance for YK and TNE PERSONNEL and their DEPENDENTS at the applicable fixed rate with ceiling amount as set forth in Item 2 (2) a., b. and c. of APPENDICES E-2-1 and E-2-2 for the SERVICES II.

The taxi charge shall be paid on the basis of actual number of trips made by PERSONNEL and DEPENDENTS at applicable fixed rate with ceiling amount as set forth in Item 2 (2) d. and e. of APPENDICES E-2-1 and E-2-2 for the SERVICES II.

The exit charge shall be paid on the basis of actual number of exit trips made from Indonesia by TEPSCO FIELD PERSONNEL and DEPENDENTS with ceiling amount as set forth in Item 2 (2) f. of APPENDICES E-2-1 and E-2-2 for the SERVICES II.

c. Duty Trip Expenses

The air fare shall be paid on the basis of actual number of duty trips made together with the taxi charge at the applicable fixed rate with ceiling amount as set forth in Item 2 (3) of APPENDICES E-2-1 and E-2-2 for the SERVICE II.

d. Per Diem Allowance for FIELD PERSONNEL out of Duty Station Travel

The per diem allowance for FIELD PERSONNEL out of duty station travel shall be paid on the basis of actual number of such trips made at the applicable fixed rate with ceiling amount as set forth in Item 2 (4) of APPENDICES E-2-1 and E-2-2 for the SERVICES II.

e. Per Diem Allowance for YK and TNE FIELD PERSONNEL without Residence

The per diem allowance for YK and TNE FIELD PERSONNEL without residence shall be paid on the basis of number of days spent by such personnel away from Jakarta and back at the applicable fixed rate with ceiling amount as set forth in Item 2 (5) of APPENDICES E-2-1 and E-2-2 for the SERVICES II.

f. Per Diem Allowance for Short-term PERSONNEL

The per diem allowance for short-term PERSONNEL shall be paid on the basis of number of days spent by such personnel away from HOME OFFICE and back at the applicable fixed rate with ceiling

amount as set forth in Item 2 (6) of APPENDICES E-2-1 and E-2-2 for the SERVICES II.

g. Housing Allowance

The housing allowance shall be paid on the basis of number of days spent by FIELD PERSONNEL at the applicable fixed monthly rate with ceiling amount as set forth in Item 2 (7) of APPENDICES E-2-1 and E-2-2 for the SERVICES II.

h. Transport Facilities

The cost for transport facilities shall be paid with ceiling amount as set forth in Item 2 (8) of APPENDICES E-2-1 and E-2-2 for the SERVICES II in conformity with the schedule of payment in APPENDICES E-4-1 and E-4-2.

i. Office Cost

The office cost shall be paid with ceiling amount as set forth in Item 2 (9) of APPENDICES E-2-1 and E-2-2 for the SERVICES II in conformity with the schedule of payment in APPENDICES E-4-1 and E-4-2.

j. Communication and Mail

The cost for communication and mail shall be paid at monthly rate as set forth in Item 2 (10) of APPENDICES E-2-1 and E-2-2 for the SERVICES II in conformity with the schedule of payment in APPENDICES E-4-1 and E-4-2.

k. Salary for Local Employees

The salary for local employees shall be paid with ceiling amount as set forth in Item 2 (11) of APPENDICES E-2-1 and E-2-2 for the

APPENDICES E-4-1 and E-4-2.

1. Printing, Book Binding and Reproduction

The cost of printing, book binding and reproduction shall be paid with ceiling amount as set forth in Item 2 (12) of APPENDICES E-2-1 and E-2-2 for the SERVICES II in conformity with the schedule of payment in APPENDICES E-4-1 and E-4-2.

8.3.2 A contingency amount to cover unanticipated additional services, the disposal of which shall be as stipulated in ARTICLE 8.4.

8.3.3 The payment of the Indonesian Rupiah Portion shall be made to the ENGINEER in the following manner.

(a) An advance payment at about twenty (20) percent in amount of Indonesian Rupiah 774,960,000 (Seven hundred seventy four million nine hundred sixty thousand Rupiah) for the SERVICES II shall be made upon the effectiveness of this AGREEMENT against a simple receipt of the ENGINEER and a Letter of Guarantee of an equal amount issued by a Bank approved by PLN. This advance payment shall be recovered by deducting about twenty (20) percent of each invoice amount in succeeding invoices for the SERVICES II. The amount of the Letter of Guarantee shall decrease proportionally upon each recovery of the advance payment.

In case the full amount of advance payment cannot be recovered, an adequate adjustment shall be made in the final invoice for the SERVICES II.

(b) Within sixty (60) days after receipt by PLN of the bi-monthly invoice for the SERVICES II attached with supporting documents i.e.: detailed itemized statement of the cost in Indonesian Rupiah portion as set forth in ARTICLE 8.3.1 hereof, the corresponding amount shall be paid against a original receipt of the ENGINEER after Bank Indonesia received a Payment Certificate and a Statement of Performance to be issued by PLN.

(c) In case the two (2) parties cannot agree within the above mentioned period on the eligibility of the expenses listed in the invoice for the SERVICES II, PLN shall deduct those expenses which are still in dispute and within thirty (30) days of the date it has received the invoice, PLN will issue a Payment Certificate and a Statement of Performance for disbursement of the balance of the invoice (original amount less disputable expenses). Expenses thus held in abeyance will be added to subsequent invoices for the SERVICES II if PLN subsequently agrees that they are eligible.

8.3.4 A tentative payment schedule Indonesian of Rupiah currency is set forth in APPENDICES E-4-1 and E-4-2 for the SERVICES II.

8.4 Payment from Contingency Amount

The amount of Japanese Yen 18,250,750 (Eighteen million two hundred fifty thousand seven hundred fifty Yen) and Indonesian Rupiah 77,496,275 (Seventy seven million four hundred ninety six thousand two hundred seventy five Rupiah) may be payable to the ENGINEER for any additional services rendered by the ENGINEER in connection with the SERVICES II upon request by PLN, on an actual basis and at the same rate as specified in APPENDICES E-1 and E-2.

The use of this Contingency Amount shall be at PLN's discretion based upon mutual agreement by the parties hereto under a separate Memorandum, which is an integral part of this AGREEMENT.

8.5 Man-Month and Per-Diem Allowance Calculation

For the purpose of calculation of the MAN-MONTH Cost in foreign currency and Indonesian Rupiah and per diem subsistence allowance in Rupiah, the SERVICES of PERSONNEL dispatched for the field work shall start with the date of their departure from the HOME OFFICE and end with the date of their return to the HOME OFFICE.

Cost of PERSONNEL for period of less than one (1) month shall be calculated on a calendar basis one (1) day being equivalent to one-thirtieth (1/30) of a MONTH. The travel time between HOME OFFICE and Indonesia and vice-versa shall not exceed two (2) days each way.

Calculation of MAN-MONTH Cost and per-diem subsistence allowance of YK and TNE for the field work shall start with the date of their departure from Jakarta and end with the date of their departure from the PROJECT SITE to Jakarta. The travel time between Jakarta and the PROJECT SITE and vice-versa shall not exceed one (1) day each way.

8.6 Currency Conversion

Whenever it shall be necessary to determine the equivalent of an amount in one currency in terms of another for the purpose of making payments in respect of reimbursable expenses, the conversion shall be made at such rate as the GOVERNMENT shall determine, having regard to the currencies utilized in and at the date and place of the original expenditure of transaction.

ARTICLE 9

CHANGE, MODIFICATION OR AMENDMENT

9.1. Change in Contract Amount

The scope and period of the SERVICES shall not be changed without mutual written agreement.

If such changes agreed mutually cause any increase or decrease in the amount under this AGREEMENT, or in the period for its performance, an equitable adjustment shall be made by mutual written agreement and this AGREEMENT shall be modified accordingly in a form of a Memorandum which shall be integrated as part of the AGREEMENT, provided that such adjustment shall be approved by the GOVERNMENT and the FUND.

9.2 Modification or Amendment

Any changes, modifications or amendments to this AGREEMENT except as specifically provided for herein shall be made only by mutual agreement in writing between the parties hereto. This may be done in a form of a Memorandum which shall be integrated as a part of this AGREEMENT. Amendment of the contract price of the AGREEMENT in both Local and/or Foreign Currency and/or the total MAN MONTHS of PERSONNEL and subsequent cost increase or decrease caused by such changes and/or due to variation of unit prices in the contract price shall be made only by mutual agreement in writing between the parties hereto. Such modification or amendment shall be effective only upon approval by the GOVERNMENT and the FUND.

ARTICLE 10

OWNERSHIP OF REPORTS, RECORDS AND EQUIPMENT

10.1 Proprietary Rights of PLN in Reports and Records

Final versions of reports and all relevant data such as maps, diagrams, flow charts, plans, statistics and supporting records or materials compiled or prepared in the course of the SERVICES shall be the absolute property of PLN and shall not be used by the ENGINEER for purposes unrelated to this AGREEMENT without the prior written approval of PLN.

The ENGINEER agrees to deliver all these materials to PLN upon completion of the AGREEMENT, however the ENGINEER shall be permitted to retain copies thereof for its own files, provided that these copies shall not be used by the ENGINEER for purposes unrelated to this AGREEMENT.

10.2 Proprietary Rights of PLN in Equipment

(a) Equipment supplied by PLN for the SERVICES shall remain at all times the property of PLN and shall be returned by the ENGINEER in accordance with the procedures to be determined by PLN.

(b) Equipment purchased by PLN or by the ENGINEER for PLN for the purposes of the SERVICES shall be deemed to be property of PLN.

(c) The equipment and tools brought into Indonesia by the ENGINEER and its PERSONNEL either for the SERVICES or their personal use shall remain the property of the same and shall be re-exported in accordance with the existing GOVERNMENT regulations.

(d) Upon completion of the SERVICES, the ENGINEER shall deliver equipment and vehicles to PLN at the PROJECT SITE in accordance with the instruction of PLN in reasonably good condition, subject to normal wear and tear, the full cost of which has been paid under this AGREEMENT.

(e) The equipment referred to in ARTICLE 10.2 (b) shall, as far as practicable, be marked as being the property of PLN and such markings should be clearly and readily visible.

ARTICLE 11

GENERAL PROVISIONS

11.1 Rights and Obligations

The rights and obligations of this AGREEMENT shall be governed in all respects by laws of the Republic of Indonesia.

11.2 Conformity to Laws

The ENGINEER shall use its best efforts to ensure that the ENGINEER's PERSONNEL, while in Indonesia, and local employees will respect and abide by all applicable laws and regulations of Indonesia and political subdivisions thereof. The ENGINEER shall obtain the working licenses for the ENGINEER's FIELD PERSONNEL as required by regulations of the GOVERNMENT with the assistance of PLN.

11.3 Transfer of Knowledge

One of the important aspects of the ENGINEER's work in these SERVICES will be the transfer of knowledge to PLN counterpart staff and other Indonesian personnel in all fields related to the work concerned. The ENGINEER, therefore, is obliged to transfer knowledge to PLN counterpart staff and other Indonesian personnel. A training program for PLN personnel and other Indonesian personnel assigned to the PROJECT is described in APPENDIX F. Monthly Reports have to be prepared and submitted to PLN by the ENGINEER, stating the execution of the transfer of knowledge and training program during the previous month (according to PLN's Form).

11.4 Site Working Regulations

PLN and the ENGINEER shall confer and agree upon written "Site Working Regulations" which will stipulate the organization and procedure especially between the ENGINEER's FIELD PERSONNEL and PLN staff in connection with the SERVICES.

11.5 Warranty

The ENGINEER represents and warrants that TEPSCO is located in and is a national of Japan, and that the SERVICES under this AGREEMENT will be supplied from this country.

11.6 Assignment of LOCAL CONSULTANT and LOCAL CONTRACTOR

(a) Except with the prior written approval of PLN and the FUND, the ENGINEER shall not assign or transfer this AGREEMENT or any part thereof nor engage any independent consultant and/or contractor to perform any part of the SERVICES.

(b) Any LOCAL CONSULTANT and/or LOCAL CONTRACTOR engaged shall be subject to prior approval by PLN.

(c) The approval by PLN of the assignment of any part of this AGREEMENT or to the engagement by the ENGINEER or LOCAL CONSULTANT or other experts to perform any part of the SERVICES shall not relieve the ENGINEER of any of its responsibility and obligations under this AGREEMENT.

11.7 Confidentiality

Except with the prior consent of PLN, the ENGINEER and its PERSONNEL shall not any time communicate to any person or entity any confidential information disclosed to them for the purpose of the SERVICES or discovered by them in the course of the SERVICES, nor shall the ENGINEER or its PERSONNEL make public any informations as to the recommendations formulated in the course of or as a result of the SERVICES.

11.8 Prohibition on Association

The ENGINEER agrees that, during and after the conclusion of this AGREEMENT until it is terminated, the ENGINEER limits its role to the provision of the SERVICES and hereby disqualifies itself and any other contractor, consulting engineer or manufacturer with which the ENGINEER is associated or affiliated from the provision of goods or services in any capacity with regard to the PROJECT except as PLN and the FUND may otherwise agree.

11.9 Prohibition on Conflicting Activities

No member of the PERSONNEL assigned to the SERVICES under this AGREEMENT shall be engaged, directly or indirectly, either in its name or through the ENGINEER in any other business or professional activities in Indonesia other than the performance of its duties or assignment under this AGREEMENT.

11.10 Language and Measurement System

All written communications between PLN and the ENGINEER under this AGREEMENT shall be prepared and delivered in English.

Technical plans, designs, specifications and other documents shall be prepared in English with Arabic numbers in metric measurement system. The ruling language will be English.

11.11 Suspension

11.11.1 If any of the following events shall have happened and be continuing, PLN may, by written notice to the ENGINEER, suspend in whole or in part payments for the respective payment period to the ENGINEER under this AGREEMENT.

(a) The FUND shall have suspended disbursement from the Loan.

(b) A default shall have occurred in the performance of any obligation of the ENGINEER under this AGREEMENT.

(c) Any other conditions, which have arisen and which in the reasonable opinion of PLN, interferes or threatens to interfere with the successful executions of SERVICES or the accomplishment of the purposes of this AGREEMENT.

(d) Force Majeure

It is understood and agreed that the operation of this article shall be separate for the SERVICES I and the SERVICES II, and any of the above events related solely to either one of the SERVICES I or the SERVICES II shall not affect payment for the other.

11.11.2 If PLN or GOVERNMENT suspends, delays or interrupts the SERVICES of the ENGINEER and does not cure the suspension, delay or interruption within thirty (30) days after receipt of notice from the ENGINEER specifying such suspension, delay

or interruption, the ENGINEER may, by written notice to PLN, suspend in whole or in part of this AGREEMENT.

11.11.3 Suspension by either party in no way affects the right of either party to terminate the AGREEMENT.

11.11.4 During any period of suspension, PLN will pay all fees and other costs and expenses incurred by the ENGINEER as a result of or relating to such suspension. Reasonable efforts will be made to minimize all such costs and expenses.

11.12 Termination of the AGREEMENT by PLN

(a) If any of the following events shall have occurred and be continuing, PLN may, by written notice to the ENGINEER, terminate this AGREEMENT.

(1) Any conditions referred to in ARTICLE 11.11 which continue for a period of thirty (30) days after PLN has given written notice to the ENGINEER of suspension of payments to the ENGINEER under this AGREEMENT.

(2) The Loan Agreement shall have terminated in accordance with its terms.

(b) In any event, PLN may terminate this AGREEMENT by giving written notice to the ENGINEER in advance of not less than thirty (30) days.

11.13 Termination of the AGREEMENT by the ENGINEER

The ENGINEER shall promptly notify PLN in writing of any situation or of the occurrence of any event beyond the reasonable control of the ENGINEER which makes it impossible for the ENGINEER to carry out its obligations hereunder.

Upon confirmation in writing by PLN of the existence of any such situation or event, or upon failure of PLN to respond to such notice within fifteen (15) days of receipt thereof, the ENGINEER shall be relieved from all liability from the date of such receipts for failure to carry out such obligations, and the ENGINEER may thereupon terminate this AGREEMENT by giving written notice thereof in advance of not less than thirty (30) days.

11.14 Termination Procedure

(a) Upon termination of this AGREEMENT under ARTICLE 11.12 (a), receipt of notice of termination under ARTICLE 11.12 (b) or the giving notice of termination under ARTICLE 11.13, the ENGINEER shall take immediate steps to terminate the SERVICES in a prompt and orderly manner and to reduce losses and to keep further expenditures to a minimum.

(b) Upon termination of this AGREEMENT, unless such termination shall have been occasioned by the default of the ENGINEER, the ENGINEER shall only be entitled to be reimbursed in full for such costs as shall have been duly incurred prior to the date of such termination and for reasonable cost incident to the orderly termination of the SERVICES including the return travel of PERSONNEL.

11.15 Force Majeure

(a) If either party is temporarily unable by reason of force majeure to meet any of its obligations under this AGREEMENT and if such party gives to the other party written notice of the event within fourteen (14) days after its occurrence, such obligations of the party as it is unable to perform by reason of the event shall be suspended as stipulated in ARTICLE 11.11.

(b) Neither party shall be liable to the other party for loss or damage sustained by such other party arising from any event referred to in ARTICLE 11.15 (a) or delays arising from such event.

(c) If by virtue of ARTICLE 11.15 (a), either party shall be excused from the performance or punctual performance of any obligation for a continuous period of six (6) months, then the parties shall consult together with a view to agreeing what action should, in the circumstances, be taken.

(d) The term "force majeure", as employed herein shall mean acts of God, strikes, lock-outs or other industrial disturbances, acts of the public enemy, wars, blockades, insurrection, riots, epidemics, landslides, earthquakes, storms, lightning, flood, washouts, civil disturbances, explosions, and any other similar events, beyond the control of either party and which by exercise of due diligence neither party is able to overcome.

11.16 Defense of Suit

In case any action in court is brought against PLN or any AUTHORIZED REPRESENTATIVE of PLN, for failure, omission or neglect of the ENGINEER to perform any of the covenants, acts, matter or thing by this AGREEMENT undertaken, or for injury or damage caused by alleged negligence of the ENGINEER or its PERSONNEL, the ENGINEER shall indemnify and keep PLN and its AUTHORIZED REPRESENTATIVE harmless, from all losses, damages, costs, expenses, judgement or decrees arising out of such action.

11.17 Settlement of Disputes

Any dispute or differences arising out of the AGREEMENT which cannot be amicably settled between the parties shall be finally settled under the Rules

of Conciliation and Arbitration of the International Chamber of Commerce in Paris by one or more arbitrators appointed thereunder and the arbitration shall take place in Jakarta. The resulting award shall be final and binding on the parties and shall be in lieu of any other remedy.

11.18 Special Undertaking

Unless otherwise specified in this AGREEMENT and in the event of the failure or neglect of either party under this AGREEMENT to perform any obligations and undertakings under the AGREEMENT, such failure of any party shall be immediately corrected after notification by the other party so that the AGREEMENT can be performed smoothly and efficiently as scheduled.

11.19 Integrity and Degree of Care

The ENGINEER agrees to use its best efforts in connection with the SERVICES and to exercise good faith and such degree of care which a competent consulting engineer should exercise in the conduct of its business.

11.20 Liability of the ENGINEER

(a) The ENGINEER shall be liable for consequences of errors and omissions on its part or on the part of its employees to the extent of 100 percent of value of Monthly Rates included in the respective local and foreign currency ceiling amounts in ARTICLE 8.1 hereof in case such errors and omissions occur within the scope of the SERVICES II. However, such a ceiling shall not apply in cases where such claims, damages and expenses arise from gross negligence or criminal action from the ENGINEER, its personnels. employees, or agents.

(b) The ENGINEER shall, if necessary in the opinion of the ENGINEER, be covered by professional liability insurance.

(c) The liability of the ENGINEER shall expire after one (1) year from the date of acceptance by PLN of the Project Completion Report.

(d) The ENGINEER shall have no liability whatsoever for any part of the works not designed by him or not under his responsibility, nor for any part of the work for which the liability rests with the contractors or suppliers.

(e) The ENGINEER shall at its own cost be responsible for eliminating errors or omissions incurred in its design works, as identified by PLN. The ENGINEER shall in no event be liable for consequences of such errors or omissions (for instance, loss of kWh production suffered by PLN).

ARTICLE 12

NOTICES, REQUESTS AND COMMUNICATIONS

Any notice or request required or permitted to be given or made under this AGREEMENT shall be in writing in the English language. Such notice or request shall be deemed to be duly given or made when it shall have been delivered by hand, mail, cable or telex to the party to which it is required to be given or made at such address as specified below or to others as either party may specify in writing.

For PLN:

Name:	Director of Planning PERUSAHAAN UMUM LISTRIK NEGARA
Address:	Jalan Trunojoyo Blok M I/135 Kebayoran Baru - Jakarta
Cable:	PLNPST JAKARTA
Telex:	47156 PLNPST IA

For the ENGINEER

Name:	Project Director of Kotapanjang Hydroelectric Power and Associated Transmission Line Project TOKYO ELECTRIC POWER SERVICES CO., LTD.
Address:	1 - 4, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo 100, Japan
Cable:	TEPSCOJAPAN
Telex:	TEPSCO J25674

ARTICLE 13

TERM OF THE AGREEMENT AND EFFECTIVENESS

13.1 Term of the AGREEMENT

This AGREEMENT shall become binding on both parties on the date when it is signed, however, the AGREEMENT is subject to approval by the GOVERNMENT and the FUND, and shall be in full force until the SERVICES and the payment thereof has been satisfactorily fulfilled.

At such time the parties hereto shall be mutually released from any obligations under this AGREEMENT.

13.2 Effectiveness

This AGREEMENT shall become effective on the date of notification of approval by the GOVERNMENT and the FUND and such date shall be conveyed to the ENGINEER. The SERVICES II performed and expenses incurred by the ENGINEER, at the request of PLN, pertinent to the objectives of this AGREEMENT and prior to its respective effective date shall, for the purpose of payment, be deemed to have been performed or incurred after such effective date, as appropriate.

IN WITNESS WHEREOF, the parties hereto have caused this AGREEMENT to be signed in their respective names as of the day and year first above written.

For and on behalf of

TOKYO ELECTRIC POWER SERVICES CO., LTD.

Seiji Kimura

Seiji Kimura
President

For and on behalf of

PERUSAHAAN UMUM LISTRIK NEGARA

Ir. Ermansyah Jamin
Direktur Utama
(President Director)

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APPENDIX A

DESCRIPTION OF THE PROJECT

I. DESCRIPTION OF THE KOTAPANJANG HYDROELECTRIC POWER AND ASSOCIATED TRANSMISSION LINE PROJECT ("PROJECT")

1. PROJECT AREA

In the Province of Riau, the four major rivers, namely the Rokan River, Siak River, Kampar River and Indragiri River originate in the Barisan Mountain Range, run in the northeastern or eastern direction, and pour into the sea of Strait Malacca. Among these rivers, the Kampar River is the largest with a catchment area of 21,530 km^2 and mainly consists of Kampar Kanan River and Kampar Kiri River.

The Kampar Kanan River originates at Mt. Amas (El. 2,271 m), Mt. Hidjau (El. 2,274 m) and others in the Barisan Mountain Range, and, while collecting a number of tributaries through a steep mountain zone, it runs slowly on the quasi-plain plateau. After meeting the Mahat River at Muara Mahat, the river reaches the Kotapanjang dam site. Near Rantau Berangin, the river runs on a flat alluvial plain, and joins the Kampar Kiri River at Langgam about 30 km southeast of Pekanbaru.

The Kotapanjang dam site is located at about 10 km downstream of Muara Mahat, where the confluence of the Kampar Kanan River and Mahat River is located. The dam site is about 85 km from Pekanbaru, the capital city of Riau Province, and about 20 km from Bangkinang, the capital city of the Kampar Regency.

The dam site is easily accessible from the road connecting Pekanbaru, Bukittinggi and Padang.

At the dam site, the Kampar Kanan River has a catchment area of 3,337 km^2 and its annual average discharge is 184.4 m^3/s.

The PROJECT area is in typical monsoon climate with the rainy season from October to May and the dry season during the remainder of the year.

The average annual rainfall is 3,000 - 3,500 mm in the PROJECT area. The daily temperatures in the PROJECT area vary between 22^0 to 36^0 C.

2. Background of the PROJECT

The province of Riau is located in the central region of Sumatra. The province has an extensive land area of 94,562 km^2 in which four major rivers, including the Kampar Kanan River, are situated.

Despite abundant resources, the economy of Riau is relatively underdeveloped compared with other provinces.

The Government of Indonesia, however, is implementing the Fifth Five Year Plan (1989/90 to 1994/95, REPELITA V) in order to improve the quality of living of the general public and to ensure balanced regional development. It is expected, therefore, that regional development including the improvement of social infrastructure, an industrial location plan and transmigration programs in Riau will be accelerated rapidly once such regional development projects are implemented.

In Central Sumatra Region (WILAYAH III), installed capacity owned by PLN in 1988/1989 is 285.1 MW, which is in relatively small scale amounting to 19.6% of whole Sumatra and 3.3% of whole Indonesia.

The capacity in Riau Province is 117.3 MW (41%) and West Sumatra Province 167.8MW (59%), and the component of power sources in Riau Province are all diesel generation but in West Sumatra Province, where electric power development is relatively well, diversified into hydro 46.9%, gas turbine 25.7% and diesel 27.4%.

As for transmission line, there are some around Padang in West Sumatra Province but none in Riau Province.

The installed capacity and areas where power is supplied in Riau Province are rapidly expanded lately and the installed capacity have been grown triple in past four years as well as the areas double. But, due to delayed development other than diesel generation and not yet developed transmission lines, the electrification ratio is 12.3% as the lowest in Sumatra (average ratio : 24.9%).

The speed of power development of PLN in Riau Province is rather slow comparing with the speed of economic development. Installed capacity of captive power as of end 1987/88 in West Sumatra,

where power development of PLN is relatively improved, was only 21 MW but it was 134 MW in Riau Province, where power development of PLN is behind of West Sumatra.

Most of the companies/enterprises which own captive power wanted to be supplied with electric power by PLN considering supply reliability, operation cost, etc.

Application for purchase of electric power to PLN reached over 50 MW in Riau Province and it means that these demands will be transferred to PLN from captive power after Kotapanjang Hydroelectric Power Plant is completed.

In Central Sumatra Region, with rapid economic development back-ground, growth rate of generated power of PLN is 21% (annual average) in 10 years (1976-1985) exceeding 17.8% (average of all Sumatra) and 17.6% (national average).

The break-down of sold electric power in the Region is 171,536 MWH (36%) in Riau Province and 307,551 MWH (64%) in West Sumatra in 1989 but, looking at the growth rate during 1984-1988, the rate of Riau Province is 20% being nearly double of West Sumatra's 11.5%. Especially, growth rate of industrial demand in Pekanbaru area of Riau Province is 43.1% (annual average in past four years) being as high as distinguished, and it reflects the progress of rapid economic development as well as growth of GDP.

But looking at the component of consumers, industrial demand ratio in Riau Province is smaller than in West Sumatra Province. The reason of this fact, referring the installed capacity of captive power in Riau Province, is the limit and restriction of PLN's supplying capability. Considering its actual growth rate and the scale of power purchase application, potential demand in Riau Province seems bigger than in West Sumatra Province.

Power demand forecast in Central Sumatra Region has been studied in detail and reported in October 1986 by "Feasibility Study on Electric Power System Development Project in Central Sumatra (JICA)", and after that, it has been reviewed by PLN in October 1989.

In accordance with this demand forecast of PLN, the average annual growth rate of sold generated power during 1988-2000 is estimated to be 12.3% and the power demand in 2000 will amount to 1,934 GWh. And this forecasted figure is calculated with lower growth rate comparing with 14.2% which is the actual average annual growth rate during 1984-1988.

Considering the of demand transfer from existing captive power source to PLN which will be consequent upon the increase of PLN's power supply, demand for more than 50 MW as maximum power generation and 315 GWh as annual generated power will be necessary to be added in the near future.

According to demand forecast of PLN, necessary power supply in 2000 will be as follows ;

Annual generated energy : 2,583 GWh
Power supply capacity in

Peak Load Time : 482 MW

In order to meet the increasing power demand, PLN has considered utilization of the abundant water resources in the Riau Province, and is actively engaged in the promotion of power project developments such as water resources and establishment of main transmission network systems.

The development of water resources will undoubtedly contribute greatly to the national economy by conserving its petroleum reserves to a large extent. Thus, this hydroelectric power development project can help lowering the amount of oil domestically consumed and thereby making it available for export.

Against this background, it was proposed that the Kotapanjang Hydroelectric Power Development Project be carried out in the middle reaches of the Kampar Kanan River, as the first hydroelectric power project in Riau Province. The Feasibility Study carried out in 1982-1984 and the Engineering Services carried out in 1987-1988 proved that the Project is economical and technically feasible.

As the results of the technical and economic studies completed in the Detail Design of the Project, it is concluded that it will be feasible technically and economically to construct the plant and generate the output of 114 MW commercially in December 1996, if the construction of the main

components of the Project commence in September 1991.

3. Outline of the PROJECT

The Kotapanjang Hydroelectric Power and Associated Transmission Line Project calls for construction of a dam on the middle reaches of the Kampar Kanan River, a system of the Kampar River, to store water obtained from catchment area of 3,337 km^2, and to develop 114 MW of power by a head created by the dam, as well as construction of 150 kV transmission line between Payakumbuh Substation and Pekanbaru Substation through Kotapanjang Switchyard.

In consideration of topography and geology of the site and comparative study of various types, a concrete gravity dam was adopted. The dam will be 58 m high, have a crest length of 257.5 m and a volume of approximately 313,000 m^3.

The reservoir created by the dam will have an effective storage capacity of 1,040 million m^3 which will regulate the annual inflow. A maximum of 348 m^3/s of water will be conveyed through the penstocks each having a diameter of 5.0 m, and each about 86.9 m long, to a powerhouse located on the left bank immediately downstream of the dam. The Kotapanjang Power Station will generate a maximum of 114 MW of electricity at the rated head of 38.1 m and produce 542 Gwh electric power.

The Detail Design was made to finalize the fundamental framework of the PROJECT (other than some part of the Associated Transmission Line) as well as its component structures have been established.

In order to evacuate the generated power of the Kotapanjang Hydro Power Station, a 150 kV double circuits transmission line of total route length of about 154 km will be constructed to run from the Payakumbuh Substation to Pekanbaru Substation through the Kotapanjang Switchyard and Bangkinang Substation as the power network system of these area.

The survey works of the above transmission line route between the Kotapanjang Switchyard and Pekanbaru Substation have been completed in 1988.

The main features of the Project are as follows :

1) Capability of the Power Plant

Maximum Output	: 114,000 kW (38,000 x 3 Units)
Maximum Turbine Discharge	: 348 m^3/s
Effective Head	: 38.1 m
Annual Average Generated Energy	: 542 x 10^6 kWh

2) Reservoir

Reservoir Capacity	: 1,545 x 10^6 m^3
Active Storage Capacity	: 1,040 x 10^6 m^3
High Water Level	: 85.0 m
Low Water Level	: 73.5 m
Surface Area	: 124 km^2
Catchment Area	: 3,337 km^2
Annual Average Inflow	: 184.4 m^3/s

3) Dam

Type	: Concrete Gravity
Height	: 58.0 m
Freeboard	: 2.5 m
Crest length	: 257.5 m
Crest Width	: 5.0 m
Elevation of Nonoverflow Crest	: 87.5 m
Elevation of Overflow Crest	: 67.5 m
Overflow Depth	: 17.5 m
Length	: 71.5 m (11m x 5 Gates + 4m x 4 Piers)
Volume of Dam	: 333,000 m^3
Base Width	: 55.1 m
Slope Upstream Face	: 1 : 0.15
Downstream Face	: 1 : 0.80

4) Spillway

Type	: Gate Overflowing
Capacity	: 8,000 m^3/s
Gate Type	: Roller Gate
H x W x Units	: 18.0 m x 11.0 m x 5 Units

5) Diversion Tunnel Work

Unit	: 2 Units
Length	: 511.3 m (No. 1) 455.5 m (No. 2)
Inside Diameter	: 10 m
Total Design Capacity Discharge	: 1,300 m^3/s

6) Intake

Type		: Submerged on Upstream Face
Elevation of Intake Bed		: 64.0 m
Gate	Type	: Roller Gate
	H x W x Units	: 6.0 m x 6.0 m x 3 Units
Screen	H x W x Units	: 24.6 m x 10 m x 3 Units

7) Penstock

Type	: Partly Embedded, Encased in Concrete
Length	: 86.9 m
Units	: 3 Units
Diameter	: 5.0 m
Thickness	: 15 mm - 19 mm
Material	: SM 41B Class
Design Pressure	: 7.21 kg/cm^2

8) Powerstation

Type	: On Ground
Length	: 80.3 m
Width	: 35.6 m
Height	: 44.0 m

9) Tailrace

Type		: Open Channel
Length		: 60.5 m
Gradient		: 1 : 2 and 0
Section		: Trapezium
Width of Invert		: 58.5 m
Gate	Type	: Sluice Gate
	H x W x Units	: 5.0 m x 6.0 m x 2 Units

10) Turbine

Type	: Vertical Shaft, Kaplan
Installed Capacity	: 39,400 kW x 3 Units
Effective Head	: 38.1 m
Number of Revolutions	: 200 r.p.m.

11) Generator

Type	: 3 Phase AC Synchronous Generator
Capacity	: 45,000 kVA x 3 Units
Voltage	: 11 kV
Frequency	: 50 Hz

12) Main Transformer

Type	: 3 Phase ONAF Outdoor Type
Capacity	: 45,000 kVA x 3 Units
Voltage	: 11/150 kV

13) Transmission Line from Kotapanjang S/Y to Pekanbaru S/S

Length	: 70 km
Phase	: 3-Phase System
Voltage	: 150 kV
Number of Circuits	: Double
Conductor	: ACSR 435/55 mm^2
Support	: Steel Tower
Number of Steel Towers	: 218

14) Transmission Line from Kotapanjang S/Y to Payakumbuh S/S

Length	: 83 Km
Phase	: 3-Phase System
Voltage	: 150kV
Number of Circuits	: Double
Conductor	: ACSR 330/55 mm^2
Support	: Steel Tower
Number of Steel Towers	: 242

15) Substation

Pekanbaru Substation

Location	: Pekanbaru
Type	: 3-Phase, Outdoor type
Capacity	: 30/50 MVA x 2 Units
Voltage	: 150/20 kV

Bangkinang Substation

Location	: Bangkinang
Type	: 3-Phase, Outdoor type
Capacity	: 10 MVA x 1 Unit
Voltage	: 150/20 kV

Payakumbuh Substation (Extention)

Location	: Payakumbuh
Type	: 3-Phase, Outdoor type
Voltage	: 150/20 kV
Feeder Bay Extention	: 2 Bays

16) Switchyard

Location	: Left Bank of Dam Site
Type	: 3-Phase, Outdoor
Capacity	: 10 MVA x 1 Unit
Voltage	: 150/20 kV

APPENDIX B

TERMS OF REFERENCE

TERMS OF REFERENCE

I. OBJECTIVE OF THE SERVICES

The objective of the services is to perform engineering services of construction for Kotapanjang Hydroelectric Power Plant and Associated Transmission Lines, having maximum rating of 114 MW with all ancillaries and auxiliaries, including switchyard and substations.

For the division of the scope of the services as described in Clause II SCOPE OF THE SERVICES.

II. SCOPE OF THE SERVICES

Scope of the Services for consulting services includes following three (3) items :

1. Supervision of the construction of Kotapanjang HPP
2. Design of Transmission Line between Payakumbuh S/S and Kotapanjang S/Y.
3. Supervision of Transmission Line construction between Payakumbuh S/S and Pekanbaru S/S.

However, Consulting Services for Lot-II through Lot-VI of Item 1 and Item 3 will be effected after the Effectuation of Loan Agreement. PLN requested the Consultant to submit proposal including all items of above.

1. Supervision of the Construction of Kotapanjang HPP

(1) Duties of Engineer under Construction and Supply/ Erection Contracts for International Lots, Lot I through VI Inclusive Excluding Lot IV

PLN, in constructing the PROJECT, appoints the ENGINEER as Engineer to the construction and supply/erection contracts for the following Lots :

Lot I		Civil Works
Lot II		Metal Works (Option)
Lot III		Generating Equipment (Option)
	IIIA	Turbine
	IIIB	Generator
	IIIC	Switchyard
Lot V		Equipment (Option)
	VD	Telecommunication System and Radio Communication
Lot VI		Relocation Road and Bridge (Option)
	VIA	National Road
	VIB	National Road
	VIC	Provincial Road
	VID	Bridge and National Road

The ENGINEER shall administer the contracts for the above Lots, and shall carry out such duties in issuing decisions, certificates and orders as are specified in the same contracts.

PLN is the owner and acts as Engineer for contracts other than those mentioned above.

(2) Project Management

The ENGINEER shall establish an overall project construction schedule, budget and cash disbursement schedule including local costs based on PLN Code of Accounts and shall establish Project Management Information System (based on PLN-MIS, by Artemis) and procedures to monitor the progress of construction work and organization chart for construction supervision including job description and responsibilities of the component engineers and staff; submit monthly progress reports to PLN relating the actual progress to the original schedule and advising measures necessary; to maintain the schedule including giving advice on necessary action to be taken to manage interfacing schedule among the contracts within the scope of the PROJECT; monitor project costs and disbursements including local costs and submit periodic reports giving current costs, future anticipated cost and disbursements and relating these to the original budget and disbursement schedule; coordinate of engineering and construction activities by various contractors engaged in different parts of the PROJECT.

(3) Assistance and Advice to PLN in Tendering and Contracting (Lot II through Lot VI excluding Lot IV is Option)

The SERVICES shall comprise the following :

(3).1 Evaluation and making modifications of all tender documents for Lot I through Lot VI excluding Lot IV, whose preparation have been completed in the Engineering Design stage of the Project.

(3).2 Tabulation and making analyses and evaluations of all bids for Lot I through Lot VI inclusive excluding Lot IV, compliance with the specification, reasonableness of prices, and proposed time for completion of the work.

(3).3 Submission to PLN draft evaluation reports for Lot I through Lot VI inclusive excluding Lot IV and assisting PLN in preparing final evaluation reports.

(3).4 Assistance in negotiating the contracts with successful tenderers for Lot I through Lot VI inclusive excluding Lot IV and advice to PLN on all matters pertaining to negotiations of the contracts.

(4) Preparation of Construction Drawings, and Review and Approval of Drawings and Documents

The SERVICES shall comprise the following :

(4).1 Civil Works

(a) Preparation of construction drawings of the Permanent Works and any Temporary Works for whose design the ENGINEER is responsible.

(b) Check and approval of fabrication and assembling drawings and detail reinforcement drawings for the Permanent Works prepared and submitted by the Contractors.

(4).2 Metal Works, Generating Equipment, and Equipment (Option)

Check and approval of design drawings, calculation sheets, construction drawings, samples, patterns and models submitted by the Contractors.

(4).3 Relocation Road Bridge (Option)

(a) Preparation of construction drawings of the Permanents Works.

(b) Check and approval of fabrication and assembling drawings and detail reinforcement drawings for the Permanent Work prepared and submitted by the Contractors.

(c) Check and approval of working drawings including those for the Temporary Works prepared and submitted by the Contractors.

(5) Design Modifications

The ENGINEER shall have a site design team with the adequate number of engineers, draftsmen, topo-surveyors and geologists/geotechnical engineers to make additional tests and investigations and to modify designs as rapidly as possible to realize a swift submission of the drawings to the Contractor.

Where major changes are required, the site design team may refer these to the HOME OFFICE, but such major

changes shall be limited to those where lot becomes necessary to change the type of foundation of major components of structures. Special experts may be called for at site in the event design changes need consultation with special experts.

(6) Supervision of Construction, Testing, Commissioning and Acceptance Tests of the Project

(6).1 Inspection During Manufacture and Delivery Control of Equipment and Steel Structure (Lots II through V excluding Lot IV is Option)

The ENGINEER shall establish a quality assurance and delivery expediting program to ensure;

(a) Timely manufacture, testing in shops and delivery of equipment and materials as necessary to maintain the overall construction schedule.

This shall be achieved through regular reviews of production schedules and delivery schedules of equipment and materials submitted by the Contractors.

(b) Compliance with the specifications and standards through reviewing of factory testing methods and procedures proposed by the Contractors and copies of factory test reading submitted by the Contractors and certification of factory test results.

The ENGINEER as an authorized surveyor shall witness the factory tests of major metal and electro-mechanical equipments and materials (turbines, penstocks, generators, etc.) as needed and shall prepare factory test certificates of those equipment and materials.

Reports giving the findings and results of each visit to manufacturer's works will be submitted to PLN. The items and timing of the witnesses in the factory tests which are attended also by PLN staff shall be agreed on between PLN and the ENGINEER.

(6).2 Construction Supervision (Lot II trough Lot VI excluding Lot IV is Option)

The ENGINEER, as Engineer under the contracts for Lot I through Lot VI inclusive excluding Lot IV as specified in Item 1, shall coordinate, supervise and inspect the construction activities of these Lots which will be carried out by the several Contractors, to ensure compliance with the stipulations of the contract

documents concluded between PLN and Contractors, and shall maintain close communications with PLN in all aspects of the execution and progress of construction. Aspects of these services shall include the following :

(a) Issuing of orders and decisions as specified in the contracts between PLN and Contractors.

(b) Inspection of workmanship, materials, construction equipment and construction methods, and determination of their qualities to ensure compliance with the stipulations of the contract documents between PLN and Contractors.

(c) Interpretation of the contract documents between PLN and the Contractors including drawings and specifications to ensure compliance with the contract documents.

(d) Giving original points, lines and levels of reference, and subsequent approval thereof for setting-up of the construction works by the Contractors.

(e) Review and approval to determine competence of any persons employed by the Contractors including foreign personnel and authorized representative.

(f) Review and approval of any field change which might be required for the proper execution of construction of the PROJECT, subject to prior consultation with PLN

(g) Issuing orders of alterations, additions and omission to the construction works to the Contractors, subject to prior consultation with PLN.

(h) Establishment of test procedures on the site, and engineering supervision and inspection of such field surveys, tests and laboratory services, including concrete test, gunite/ shotcrete test, field welding test, radiographic examination and field tests of generating equipment and preliminary functional tests for generating equipment, as will be done by the Contractors during construction and erection.

(i) Arranging for supervision of tests of materials works, plant and machinery on the PROJECT SITE.

(j) Taking of necessary measurement in accordance with the methods of measurements as specified in the contract documents, to evaluate and approve

the progress of the works as required for the processing of progress payments and for additional works.

(k) Identifying the difficulties during construction and looking for the most favorable way out.

(l) Monitoring, recording and determination of actual construction progress.

(m) Processing of certificates for payments due to the Contractors, in accordance with the conditions of contract.

(n) Maintenance of records and accounts of all commitments incurred an payments made in foreign and local currencies to any contractors employed by PLN for the execution of any part of the PROJECT.

(o) Keeping proper records of the work progress, testing, comments, etc. related to the supervision services and implementation of the PROJECT.

(p) Assistance and advice on obtaining contractors' insurances, as well as guarantees and warranties, and any proceeding in connection with performance bonds, defaults, and insurance claims.

(q) Inspection of preventive safety and environmental control measures applied by the Contractors, giving directives on the safety and environmental control measures on the Site, and reporting to PLN such observations and directives given.

(r) Approval of removal of construction equipment from the Site.

(6).3 <u>Engineering Supervision of Acceptance Tests and Commissioning (Lot II through Lot VI excluding Lot IV is Option)</u>

The ENGINEER shall continue to coordinate, supervise and inspect the commissioning and acceptance testing activities of the Lots I through Lot VI excluding Lot IV of the PROJECT in the same manner as for construction supervision.

Aspects of these services shall include following :

(a) Provide operational supervisors to assist personnel assigned by PLN and the equipment suppliers during the start-up period and the initial operation of the plant and its supporting facilities. The ENGINEER shall exercise close technical supervision of all start-up and initial operation activities as required to safeguard against damage to equipment and to assure maximum operational efficiency. These services shall include preparation of the start-up and testing procedures in cooperation with PLN and the Contractors.

(b) Coordinate the Contractors in conducting all the required performance and acceptance tests.

Planning and scheduling for performance and acceptance test shall seek to achieve the earliest practicable commissioning of the entire plant. In addition to the testing and acceptance of individual items of equipment, the ENGINEER shall make provision for the tests in accordance with the project design criteria , overall plant performance and efficiency under actual operating conditions.

Particular attention shall be paid to the correct identification tagging of all controls in the Indonesian language.

Following each test or series of tests, the ENGINEER shall submit the test results with recommendations to PLN regarding final PLN acceptance of the works.

(c) Issue certificates of completion for civil works and taking-over certificates for metal works, generating equipment, transmission line materials, and equipment which shall be subject to PLN's prior approval.

(6).4 Assistance to PLN for Insurance and Claims

The ENGINEER shall assist PLN in insurance matter and settling disputes or differences which may arise between PLN and the Contractors, in accordance with the stipulations of the contract documents between PLN and the Contractors.

(6).5 Liaison with Assigned PLN Project Management Personnel

Implicit in all of the above supervision activities shall be a requirement for close

(a) Provide operational supervisors to assist personnel assigned by PLN and the equipment suppliers during the start-up period and the initial operation of the plant and its supporting facilities. The ENGINEER shall exercise close technical supervision of all start-up and initial operation activities as required to safeguard against damage to equipment and to assure maximum operational efficiency. These services shall include preparation of the start-up and testing procedures in cooperation with PLN and the Contractors.

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(6).5 Liaison with Assigned PLN Project Management Personnel

Implicit in all of the above supervision activities shall be a requirement for close

liaison with PLN through the Project Manager and his staff, through formal regular meetings (at least weekly) and additional meetings as required to report and discuss progress, problems and programmes of the work.

(7) Assistance to PLN in Operation and Maintenance (Lot II through Lot VI excluding Lot IV is Option)

(7).1 Operation and Maintenance Manuals

The ENGINEER shall coordinate the preparation by the Contractors of operation and maintenance manuals for the operating and maintenance procedures of the plant and structure; assist PLN in developing a system for permanent recording of all essential data; and assist PLN in the preparation of a workable system for determining plant and equipment efficiencies and observing and reporting regular plant performance including Dam Surveillance and Monitoring.

The SERVICES to be provided by the ENGINEER in this connection shall include :

(a) Approving the preparation of operation and maintenance manuals by the Manufacturers/ Contractors and compiling these into Station Operation and Maintenance Manuals.

(b) Assisting PLN in establishing operation and maintenance staff, organization charts, including job description and responsibilities.

(c) Assisting PLN to establish and to implement detailed maintenance procedures and schedules.

(d) Preparing and delivering to PLN, as early as possible after completion of acceptance tests, records for maintenance and operation as follows:

(i) a nameplate inventory

(ii) a summary of all equipment and facilities incorporated into the PROJECT

(iii) "as-built" drawings to show the components of the PROJECT as actually constructed in the form of manufacturers' or construction drawings prepared or marked up by the Contractors

(iv) a breakdown of the final PROJECT costs, including works contracted by PLN with the Rupiah budget for each stage, from feasibility study stage, engineering design and construction stages, and preparatory works up to project commissioning.

(e) The ENGINEER shall furnish advisory services in all respects of plant operation and maintenance by providing one (1) qualified person having substantial experience in the operation and maintenance of a comparable plant for a continuous period of six (6) months for the operation.

In spite of their advisory services, responsibility for proper operation and maintenance of the plant shall pass to PLN.

(7).2 Training of Indonesian Personnel for Supervision of Construction, Operation and Maintenance

The ENGINEER shall provide the following training services to Indonesian Personnel :

(a) Development of a training program for PLN personnel assigned to the operation and maintenance of the plant.

(b) Arranging for training of PLN operating personnel (in respect to the operation and maintenance of the plant) at manufacturer's factories arranged by the Contractors in accordance with the provisions of the contracts between PLN and the Contractors.

(c) Arranging for training of six (6) PLN operating personnel (in respect to the operation and maintenance of the plant) at hydroelectric power stations in Japan for a period of three (3) months.

(d) Training of Indonesian Personnel on dam behavior monitoring and reservoir operation on the site.

(e) Training of Indonesian Personnel for construction supervision on the site.

(8) Services during the Period of Guarantee (Lot II through Lot VI excluding Lot IV is Option)

The ENGINEER shall maintain an office at the PROJECT SITE, with all construction record, until all the maintenance certificates and final certificates are

issued and claims are settled and contractors' staff are off the PROJECT SITE.
During the period of guarantee, the ENGINEER shall provide the following services :

(a) identify defective parts of the plant after acceptance by periodic visits to completed plant or by visits to the plant when some defects take place in the plant.

(b) issue maintenance certificates and final certificates, subject to PLN's prior approval.

(9) Review and Advice to PLN in Environmental Works

The Engineer shall assist PLN in environmental assessment of the Project.
The services shall include :

- review and advise on the environmental works carried out by PLN.
- monitor progress in the environmental works by an expert of consultant in environmental study.
- to prepare a semiannually report for submission by PLN to FUND (OECF) on environmental monitoring of the Project.

(10) Project Completion Report (Lot II through Lot VI excluding Lot IV is Option)

(10).1 On completion of the PROJECT the ENGINEER shall prepare a Project Completion Report which comprises, in summary form :

(a) completion dates of all major stages of the PROJECT, against original planned dates.

(b) final construction costs against original budgeted costs.

(c) final consultant costs against original budgeted costs.

(d) major deviations in design compared with the original costs.

(e) final operating performance achievement against the original specification.

(f) final statement of the PROJECT's financial viability.

(10).2 Contents of Completion Report are :

A. Executive Summary

B. Main Report

1. Introduction
2. Project planning
3. Design of main structures
4. Construction
5. Materials control
6. Instrumentation and monitoring
7. Project construction cost
8. Contract administration
9. Training and transfer of knowledge
10. Environmental aspects

(10).3 Appended to the Completion Report are :

(a) a list of documents handed over

(b) a list of training courses given and of PLN personnel attending

(c) a list of things not yet done and needing still left to be done, at the date of issue of the Project Completion Report

(d) a summary description of the design concept and criteria from technical and economic viewpoints.

(e) a report on claims pending, if any.

(f) surveillance report of the dam

(g) operation and maintenance manual

(11) Transfer of Knowledge and Training of Indonesian Personnel (Lot II through Lot VI excluding Lot IV is Option)

(11).1 For smooth execution of an implementation of the PROJECT the following engineers are assigned for effective transfer of knowledge by the ENGINEER.

- Co-project coordinator
- Senior managing staff experts (Cost control and Progress monitoring)
- Civil Engineer for dam
- Civil Engineer for powerhouse
- Design Engineer
- Architect for powerhouse
- Survey Engineer
- Geologist

- Material Engineer
- Road Engineer
- Bridge Engineer
- Electro-Mechanical Engineer
- Transmission line, Switchyard Engineer
- Grout Engineers
- Environmental Engineer

(11).2 Working as members of the integrated project team they are trained on the job to obtain practical knowledge of how to deal properly with the respective works of field design work, construction supervision and field inspection.

The Indonesian engineers assigned for the field design work and construction supervision will not be given any lectures before they are assigned to the respective tasks. The Engineer will provide on-the-job training in the daily work on the site, but every three (3) months, the Engineer will provide a classroom lesson for the systematical review of what they have done on daily work in the preceding 3 months.

(12) Progress Report

The ENGINEER shall submit monthly and quarterly progress reports to PLN, in PLN standard format as developed during the pre-construction contract period. In monthly reports, which should be produced within 2 (two) weeks after the preceding month, the following shall be taken into consideration :

- progress/delays should be compared with the Project Plan, and accompanied by concise, clear explanations. The effects of delays on the project master programme should be assessed and advice proffered on measures needed to maintain the schedule.

- project costs and disbursements should be shown, related to the original budget and disbursement schedule.

- all variation orders and claims raised by contractors should be listed, together with actual or estimated total costs and any effect these variation orders and claims may have on the programme.

If the ENGINEER detects that contractors appear to be developing as yet unannounced claims, the ENGINEER shall report his anticipations to PLN's Project Manager, separately from other reports and advise any action which may be possible to avert the claims.

The ENGINEER shall also prepare :

- a quarterly report on project costs and disbursements, to the level of detail required by PLN.

2. Design of Transmission Line between Payakumbuh S/S and Kotapanjang S/Y including Bangkinang S/S and Modification due to Relocation of Pekanbaru S/S

(1) Review and Study for the Previous Study Reports, Data and Information

The Engineer shall conduct at least the following services :

a) Review and study for the previous design reports and implementation programs of the Kotapanjang Hydroelectric Power Project, the Ombilin Thermal Power Plant Project and other related projects,

b) Review for power demand and supply program.

(2) Basic Design and Selection of Transmission Line Route and Site of Substation

The Engineer shall set up the basic design parameters, design conditions, criteria and other necessary requirements to select the route and site of transmission line and Substation.

Based on the basic design of all the structural components of the transmission line and substation, a basic route of transmission line and location of substation shall be drawn on the appropriate scale of topographical maps.

The services shall comprise the followings :

a) Review and study for the basic design parameters, data, criteria, standards, design conditions, etc. for transmission line and substations,

b) Basic design for the structural components, electrical equipment & materials and other ancillary facilities of the transmission line and substations,

c) Selection for the basic route of transmission line and location of substation.

(3) Supervision on Investigation and Survey Works

The Engineer shall supervise the detailed investigation and survey works which include at least the followings:

a) Detailed investigation and survey works to settle the transmission line route and location of substation, which shall include but not limited to the followings :

i) For transmission line route survey

- route reconnaissance survey and alignment
- center line survey
- profile survey
- plan survey
- tower site survey
- geological investigation (drilling and in-situ tests, auger boring, cone penetration tests and laboratory tests)

ii) For substation site survey

- control points survey
- topographical survey
- geological investigation (drilling and in-situ tests and laboratory tests)

b) Study and investigation for the environmental aspects and impacts which will be originated by the construction of transmission line and substation,

c) Preparation for the investigation and survey reports and drawings.

(4) Detailed Design and Optimization Study

The Engineer shall conduct the detailed design and optimization study based on the basic design, investigation and survey works, etc. taking into account the environmental aspects, easy access for its construction, operation and maintenance for the transmission line and substations.

The design report shall contain all the layouts and structural design drawings, specifications, calculations sheets, etc. of the transmission line and substation facilities.

The services shall include but not limited to the followings :

(for transmission line)

a) Application for tower types and tower foundation types

b) Determination for the design conditions, criteria and design parameters

c) Selection for conductor, groundwire and those accessories

d) Design for insulation and selection for insulator, insulator strings and hardwares

e) Design for lightning protection

f) Study for optimum span

g) Design for standard type of steel towers

h) Design for standard type of tower foundations

i) Study for construction method

(For Substations)

a) Study for bus-configuration

b) Determination for type and layout of substations

c) Selection and design for ratings of equipment and auxiliaries

d) Determination for the technical specifications of equipment and auxiliaries

e) Design for control, protection and communication systems

f) Design for steel structures and supports

g) Design for grounding system

h) Design for civil structures (foundations of equipment, drain pits, control cable pits, access road, fence, gate, etc.)

i) Design for control building and ancillary facilities

The design report shall also contain the projected construction schedule indicating the key dates/milestones and particularly the critical paths.

(5) Implementation Program

The Engineer shall prepare an implementation program for construction of the transmission line and substations.

The program shall describe the sequence and construction method of all the structural components (civil, electrical, mechanical and architectural works) of the facilities including the overall schedule and the key dates and all the relevant maps/drawings.

(6) Cost Estimation

The Engineer shall conduct the project cost estimation based on the technical specifications of all the structural components of the transmission line and substations including the preparatory works for construction.

The unit price used shall be those prevailing at the time when the cost estimation is prepared (the base price) adding the physical contingencies, the financial contingencies and price escalation during the projected construction period.

(7) Tender Documents

The Engineer shall prepare the tender documents for the International and Local tenders which contain :

- Description of the project
- Instruction to Tenderers
- Tender Forms and Appendices
- General Conditions
- Technical Specifications
- Bill of Quantity
- Schedule of Prices
- Tenderer's Data Sheets
- Tender drawings and Maps
- Overall schedule of the project indicating key dates

(8) Engineering Report

At the final stage of the engineering services of design stage, the Engineer shall prepare the Engineering Report summarizing the whole services undertaken, state their conclusion and recommendation including all other relevant information related the services.

(9) Monthly Progress Report

The monthly progress shall be reported to the PLN within 2 (two) weeks after the preceding month.

The report shall contain the detailed progress of the services, both in the home office and at job site (including bar charts indicating work accomplished versus work schedule), reasons for the delay, if any, and proposed measures to be taken, cost expenditures and balances, etc.

The contents of the report shall be included in the monthly progress report for construction supervision of Kotapanjang HPP.

(10) Transfer of Knowledge

The Engineer is obliged to transfer knowledge effectively to the Indonesian Personnel in the course of tendering the services. To foster the transfer of knowledge, besides the day to day close cooperation in all the activities, full participations/training of the Indonesian Personnel in the Engineer's field office and at the job sites shall be conducted effectively. In this respect, a full participation/ training program of the Indonesian Personnel shall be prepared by the Engineer and be discussed with PLN.

3. Supervision of Transmission Line Construction between Payakumbuh S/S and Pekanbaru S/S (Option)

(1) Duties of Engineer under Design, Manufacturing, Supply, Erection, Construction, Testing and commissioning Contracts for International and Local Lots..

PLN, in constructing the Project, appoints the consultant as Engineer to supervise the design, manufacturing, supply, erection, construction, testing and commissioning works of the international and local contracts for the transmission line between Payakumbuh Substation and Pekanbaru Substation (route length : approx. 154 km), and associated substations, namely Payakumbuh S/S, Bangkinang S/S and Pekanbaru S/S.

The Engineer shall administer the works of the contracts for the above related international and local contract lots, and shall carry out such duties in issuing decisions, certificates, orders, etc. as specified the belows.

(2) Project Management

a) The engineer shall establish an overall project implementation schedule, budget and cash disbursement schedule including local costs based on the PLN Code of Accounts and shall establish a Project Management Information System (based on PLN-MIS, by Artemis) and procedures to monitor the progress of works and organization chart for construction supervision including job description and responsibilities of the component engineers and staffs.

b) The Engineer shall submit the monthly progress reports to PLN relating the actual progress to the original schedule and advising measures necessary.

c) The Engineer shall maintain an original schedule including giving advice on necessary action to be taken to manage interfacing schedule among the contracts within the scope of the Project.

d) The Engineer shall monitor project costs and disbursements including local costs and submit periodic reports giving current costs, future anticipated costs and disbursements and relating these to the original budget and disbursement schedule.

e) The Engineer shall coordinate the engineering and construction activities by various contractors engaged on different parts of the Project.

(3) Assist and Advise to PLN in Tendering and Contracting

The Engineer shall conduct the following services:

a) Review and modification for tender documents for design, manufacturing, supply, erection, construction, testing and commissioning for transmission line and associated substations which have been prepared in the Detailed Design stage of the Engineering Services by the Engineer.

b) Tabulation and making analysis and evaluation of all proposals of bidders, compliance with the specifications, reasonableness of prices, and proposed time for completion of the works.

c) Submit to PLN the draft evaluation reports and assist PLN in preparation of final evaluation reports.

d) Assist in negotiating the contracts with successful bidders and advise to PLN on all matters pertaining to negotiations of the contracts.

(4) Review and Approval for Drawings and Documents

a) Checking and approval of design drawings, fabrication and assembling drawings, calculation sheets, construction drawings, construction methods, reports, documents, samples, etc. to be provided by the Contractors.

b) Filing and storage for the approved drawings and documents at the Engineer's field office and home office.

(5) Design Modifications

The Engineer shall have a right to advise the design modifications, if any, to the Contractors after close coordinating with PLN.

Where major design changes are required, the Engineer shall make studies such major design changes so as not to delay the construction schedule of the Project.

(6) Supervision of Construction, Testing, Commissioning and Acceptance Tests

i) Inspection during Manufacturing and Delivery Control of Equipment, Materials and Steel Structure

The Engineer shall establish a quality assurance program and delivery expediting program to ensure:

a) Timely manufacturing, testing in shops and delivery of equipment, materials and steel structure as necessary to maintain the overall construction schedule.

This shall be achieved through regular reviews of production schedules and delivery schedules submitted by the Contractors.

b) Compliance with the specifications and standards through reviewing of factory testing methods and procedures proposed by the Contractors and copies of factory test submitted by the Contractors and certification of factory test results.

The Engineer as an authorized inspector shall witness the factory tests of major equipment, materials and steel structure as needed subject to PLN's approval and shall prepare factory test certificates of those equipment, materials and steel structure.

Reports giving the finding and results of each visit to manufacturer's works will be submitted to PLN.

ii) Construction Supervision

The Engineer shall coordinate, supervise and inspect the construction activities of related contract lots which will be carried out by the several Contractors to ensure compliance with the stipulations of the contract documents.

Aspects of those services shall include the following :

a) Issuing of orders and decisions as specified in the contracts between PLN and the Contractors.

b) Inspection of workmanship, materials, construction equipment and construction methods, and determination of their quantities to ensure compliance with the stipulations of the contract documents.

c) Giving original points, lines and levels of reference and subsequent approval thereof for setting-up of the construction works.

d) Review and approval to determine competence of any persons employed by the Contractors including foreign personnel and authorized representatives.

e) Review and approval to PLN of major change which might be required for the proper execution of the construction works of the Project, subject to prior consultation with PLN.

f) Issuing orders of alternations, additions and omission to the construction works to the Contractors, subject to prior consultation with PLN.

g) Establishment of test procedures on the site, engineering supervision and inspection of field survey works, tests and laboratory tests which will be conducted by the Contractors according to the specifications of the contract documents.

h) Arrangement and supervision of field tests as specified in the contract documents.

i) Taking necessary measurement in accordance with the methods of measurements as specified in the contract documents, to evaluate and approve the progress of the works as required for the processing of progress payments and for additional works.

j) Identifying the difficulties during construction works and looking for the most favorable way out.

k) Monitoring, recordings and determination of actual work progress.

l) Processing of certificates for payments due to the Contractors, in accordance with the conditions of Contract.

m) Maintenance of records and accounts of all commitments incurred; any payment made in foreign and local currencies to any Contractor employed by PLN for the execution of any part of the Project.

n) Keeping proper records of the work progress, testing comments, etc. related to the supervision services and implementation of the Project.

o) Assistance and advice on obtaining Contractors insurances, as well as guarantees and warranties, and any proceeding in connection with performance bonds, default and insurance claims.

p) Approval for removal of construction equipment from the sites.

iii) Engineering Supervision for Acceptance Tests and Commissioning

The Engineer shall continue to coordinate, supervise and inspect the acceptance and commissioning testing activities of the Contractors.

Aspects of these services shall include the followings :

a) Provide operational supervisors to assist personnel assigned by PLN and the equipment suppliers as well during the individual and integrated test period, and initial operation of the transmission line and substation facilities.

b) Coordinate the Contractors in conducting all the required performance and acceptance tests.

Planning and scheduling for performance and acceptance tests shall seek to achieve the earliest practicable commissioning of the entire facilities of the transmission line and substations.

In addition to the testing and acceptance of individual items of equipment, the Engineer shall make provision for the tests in accordance with design criteria, overall

system performance and efficiency under actual operating conditions.

Particular attention shall be paid to the correct identification of all controls tagging in the Indonesian language.

c) Issuing certificates of all completion and taking-over certificates for the entire works of the contract of the Contractors which shall be subject to PLN's prior approval.

iv) Assistance to PLN for Insurance and Claims

The Engineer shall assist PLN in insurance matter and settling disputes or differences which may arise between PLN and the Contractors, in accordance with the stipulations of the contract documents between PLN and the Contractors.

(7) Assistance to PLN in Operation and Maintenance

The Engineer shall supervise the preparation works of the operation and maintenance manual of the transmission line and substations.

The services to be provided by the Engineer in this connection shall include the followings :

a) Approval for the operation and maintenance manuals prepared by the Contractors.

b) Assistance to PLN in establishing operation and maintenance staffs, organization charts, including job descriptions and responsibilities.

c) Assistance to PLN in establishing detailed maintenance program and schedule.

(8) Monthly Progress Report

The monthly progress shall be reported to PLN within 2 (two) weeks after the preceding month.

The report shall contain, detailed progress of the services, both in the home office and at job site (including bar charts indicating work accomplished versus work schedule), reasons for the delay, if any, and proposed measures to be taken, cost expenditures and balances, etc..

The contents of the report shall be included in the monthly progress report for construction supervision of Kotapanjang HPP.

(9) Project Completion Report

The contents of the project completion report shall be included in the project completion report of Kotapanjang HPP.

i) On completion of the Project, the Engineer shall prepare a Project Completion Report which comprises, in summary form :

a) Completion dates of all major stages of the works compared with original scheduled dates.

b) Final construction costs compared with original budgeted costs.

c) Final engineering services costs compared with original budgeted costs.

d) Major deviations in design compared with the original costs.

e) Final operating performance achievements compared with the original specifications.

f) Final statement of the Project's financial viability.

ii) Contents of Project Completion Report shall include, but not limited to, the followings :

A. Executive Summary

B. Main Report

- Introduction
- Project Planning
- Design of main facilities
- Construction
- Project construction costs
- Actual project and construction schedule
- Contract administration
- Transfer of knowledge and training
- Environmental aspects and countermeasures, if any
- Other particular matters

C. Appendices

- Major as-built drawings
- List of documents handed over to PLN
- Photographs
- Report on claims pending, if any

(10) Transfer of Knowledge

The Engineer is obliged to transfer knowledge effectively to the Indonesian Personnel in the course of tendering the services. To foster the transfer of knowledge, besides the day to day close cooperation in all the activities, full participation/training of the Indonesian Personnel in the Engineer's field office and at the job sites shall be conducted effectively.

In this respect, a full participant/training program of the Indonesian Personnel shall be prepared by the Engineer and discussed with PLN.

III. SCHEDULE OF SERVICES

1. Supervision of the construction of Kotapanjang HPP

   The services shall be completed within 82 months starting from the date of commencement.

2. Design of Transmission Line between Payakumbuh S/S and Kotapanjang S/Y including Bangkinang S/S and Modification due to Relocation of Pekanbaru S/S

   The services shall be completed within 9 months starting from the date of commencement.

3. Supervision of Transmission Line construction between Payakumbuh S/S and Pekanbaru S/S

   The services shall be completed within 48 months starting from the date of commencement.

IV. METRIC SYSTEM AND LANGUAGE

The metric system shall be used in all the engineering services. All reports and documents shall be written in English.

V. ADDITIONAL SERVICES

In case additional services requested in writing by PLN (Owner), for up to 10% of the total man-month in the contract, the same unit rates shall be applied.

VI. DOCUMENTS TO BE SUBMITTED

1. Supervision of the construction of Kotapanjang HPP

   Specification and number of documents/reports to be submitted to PLN are listed below.

   The Engineer shall submit the draft and/or final documents/reports with the consultation of PLN.

Titles of Documents/Reports	No. of Copies
1. Monthly progress report	10
2. Quarterly progress cost and disbursement report	10
3. Training program	10

Titles of Documents/Reports	No. of Copies
4. Draft tender evaluation report of i) Civil Works (Lot I) ii) Metal Works (Lot II) iii) Generating Equipment (Lot III) iv) Equipment (Lot V) vi) Relocation Road (Lot VI)	10
5. Final tender evaluation report of the above	25
6. Station Operation and Maintenance Manuals i) Manual for civil works ii) Manual for metal works iii) Manual for electrical mechanical works	30
7. Name plate inventory	30
8. As built drawings	5 (1 reproducible and 4 blue print)
9. Report on filling system	30
10. Environmental Report	30 (semiannually)
11. Draft Project Completion Report	10
12. Final Project Completion Report	30

2. Design of Transmission Line between Payakumbuh S/S and Kotapanjang S/Y including Bangkinang S/S and Modification due to Relocation of Pekanbaru S/S

Specification and number of documents/reports to be submitted to PLN are listed below.

The Engineer shall submit the draft and/or final documents/reports with the consultation of PLN.

Titles of Documents/Reports	No. of Copies
1. Detailed Design Report (Draft)	10 copies
2. Detailed Design Report (Final)	15 copies
3. Program of Transfer Knowledge/ Training (Draft)	5 copies
4. Program of Transfer Knowledge/ Training (Final)	15 copies
5. Project Cost Estimation (Draft)	5 copies
6. Project Cost Estimation (Final)	5 copies
7. Tender Documents for International Tender and Local Tender (Draft)	10 copies
8. Tender Documents for International and Local Tender (Final)	30 copies
9. Implementation Program (Draft)	10 copies
10. Implementation Program (Final)	15 copies
11. Monthly Progress Report (to be included in Construction Supervision of Kotapanjang HPP)	
12. Engineering Report (Draft)	10 copies
13. Engineering Report (Final)	15 copies

3. Supervision of Transmission Line Construction between Payakumbuh S/S and Pekanbaru S/S

Specification and number of documents/reports to be submitted to PLN are listed below.

The Engineer shall submit the draft and/or final documents/reports with the consultation of PLN.

Titles of Documents/Reports	No. of Copies
1. Monthly Progress Report (to be included in Construction Supervision of Kotapanjang HPP)	
2. Amendment Documents for Tendering (Draft)	10 copies
3. Amendment Documents for Tendering (Final)	30 copies

Titles of Documents/Reports	No. of Copies
4. Evaluation Report of Bids (Draft)	10 copies
5. Evaluation Report of Bids (Final)	15 copies
6. Quality Assurance Program	10 copies
7. Site Tests Procedure	15 copies
8. Procedure of Acceptance Tests and Start-up Operation	15 copies
9. Project Completion Report (to be included in Construction Supervision of Kotapanjang HPP)	

APPENDIX C

SCHEDULE OF SERVICES

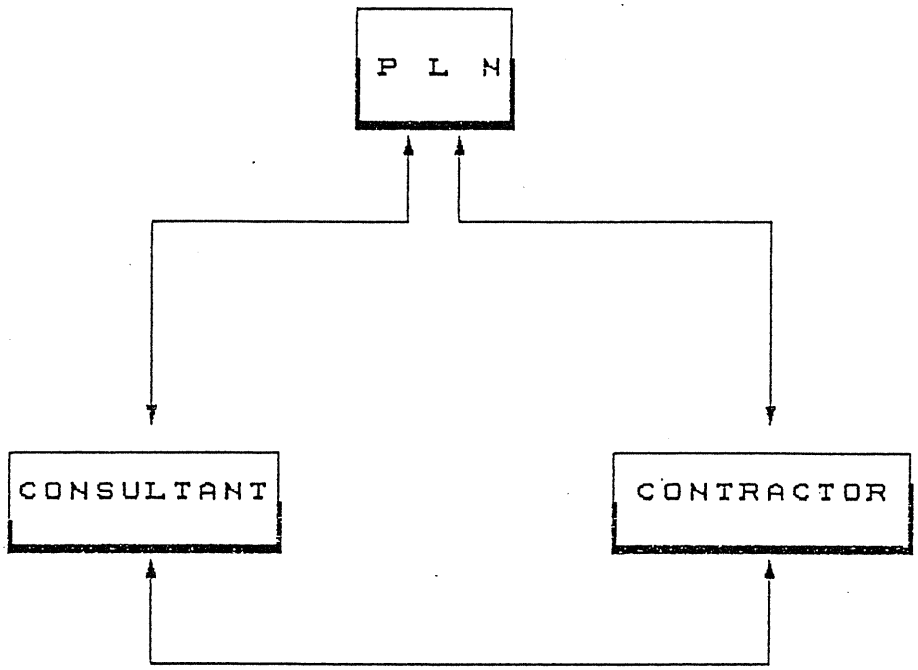
APPENDIX D 1

MANNING SCHEDULE

APPENDIX D 2

ORGANIZATION CHART

APPENDIX D-2 ORGANIZATION CHART



APPENDIX E-1

BREAKDOWN OF COST ESTIMATE IN

FOREIGN CURRENCY PORTION (SERVICES II)

E-1 BREAKDOWN OF COST ESTIMATION IN FOREIGN CURRENCY PORTION (SERVICES II)

NO.	I T E M	OTHER WORKS	T/L SUPERVISION	TOTAL
	Japanese Yen Portion			
1.	MAN-MONTH Cost	504,131,200	197,987,150	702,118,350
	MAN-MONTH Cost for TEPSCO	504,131,200	197,987,150	702,118,350
	a.FIELD OFFICE	463,039,000	159,374,000	622,413,000
	b.HOME OFFICE	41,092,200	38,613,150	79,705,350
2.	Direct Cost	169,348,900	41,089,000	210,437,900
(1)	Inland Travel Cost in the Home Country	603,000	174,200	777,200
(2)	Travel Documents and Miscellaneous Costs	408,700	154,100	562,800
(3)	International Round Air Trip	17,167,500	5,084,100	22,251,600
(4)	Relocation/Storage Allowance	802,100	601,600	1,403,700
(5)	Communication and Mail	13,013,000	9,538,000	22,551,000
(6)	Printing, Book Binding and Reproduction	5,390,000	2,660,000	8,050,000
(7)	Reference	1,620,000	1,140,000	2,760,000
(8)	Office Supply	5,390,000	2,660,000	8,050,000
(9)	Tracing	3,850,000	1,292,000	5,142,000
(10)	Expenses for Factory Tests	29,515,000	17,785,000	47,300,000
(11)	Various Analysis	50,000,000	0	50,000,000
(12)	Special Equipment used in the Services	21,327,600	0	21,327,600
(13)	O&M Training of PLN Personnel in Japan	20,262,000	0	20,262,000
3.	Contingency	13,469,400	4,781,350	18,250,750
4.	Total (1 + 2 + 3)	686,949,500	243,857,500	930,807,000
5.	VAT (PPN) 10%	68,694,950	24,385,750	93,080,700

E-1-1 Supervision of the Other Works Construction of Kotapanjang HPP

NO.	I T E M	ESTIMATED COST
		(Unit : Yen)
1.	MAN-MONTH Cost	504,131,200
	MAN-MONT Cost for TEPSCO	504,131,200
	A. FIELD OFFICE 201.0 M.M.	463,039,000
	B. HOME OFFICE 19.0 M.M.	41,092,200
	(See Attachment 1-1-1)	
2.	Direct Cost	169,348,900
(1)	Inland Travel Cost in the Home Country	603,000
	(Fixed unit rate)	
	a.PERSONNEL Yen 13,400/trip x 45 trips=	603,000
(2)	Travel Documents and Miscellaneous Costs	408,700
	(Fixed unit rate)	
	PERSONNEL	
	1st trip Yen 20,100/trip x 8 trips=	160,800
	Subsequent trip Yen 6,700/trip x 37 trips=	247,900
(3)	International Round Air Trip	17,167,500
	(Actual reimbursement basis)	
	a.Air Fare (TKY-JKT-PKU-JKT-TKY)	
	PERSONEL Yen 315,700/trip x 45 trips=	14,206,500
	b.Excess Baggage	
	PERSONEL Yen2,800/kg x 20kg/trip x 45trips=	2,520,000
	c.Un-Accompanied Baggage Allowance	
	(Personnel with stay of more than 6 months)	
	(For Mobilization and Demobilization)	
	Single status Yen1260/kg x50kg/trip x 7Assi.=	441,000
(4)	Relocation/Storage Allowance	802,100
	(Fixed unit rate)	
	a.Assignment : Up to 2 Years	
	Single status Yen 150,400 x 4 Assignments =	601,600
	b.Assignment : More than 2 Years	
	Single status Yen 200,500 x 1 Assignments =	200,500

NO.	I T E M	ESTIMATED COST
(5)	Communication and Mail (Monthly fixed unit rate) a.International Communication Cost (Telex, Telegram, Telephone and Postage) Yen 85,000/month x 77 months =	13,013,000 6,545,000
	b.International Transportation Cost (Reference data, Drawings, Equipment, Supplies, etc.) Yen 53,000/month x 77 months =	 4,081,000
	c.Transportation Cost for Reports and Documents Yen 31,000/month x 77 months =	 2,387,000
(6)	Printing, Book Binding and Reproduction (Monthly fixed unit rate) Yen 70,000/month x 77 months =	5,390,000 5,390,000
(7)	Reference (Monthly fixed unit rate) (Guidance Books, Literature, Catalogs & etc.) Yen 30,000/month x 54 months =	1,620,000 1,620,000
(8)	Office Supply (Monthly fixed unit rate) Yen 70,000/month x 77 months=	5,390,000 5,390,000
(9)	Tracing (Monthly fixed unit rate) Yen 50,000/month x 77 months =	3,850,000 3,850,000
(10)	Expenses for factory tests (Actual reimbursement basis) (See Attachment 1-1-2) a.Factory out side Japan or b.Factory in Japan	29,515,000 29,515,000
(11)	Various Analyses (See Attachment 1-1-3)	50,000,000
(12)	Special Equipment used in the Services (See Attachment 1-1-4)	21,327,600
(13)	Operation and Maintenance Training of PLN Personnel in Japan 6 persons x 3 months = 18 man-months (See Attachment 1-1-5)	20,262,000
3.	Contingency (2%)	13,469,400
4.	Sub Total (1 + 2 + 3)	686,949,500
5.	VAT (PPN) 10%	68,694,950

DETAILED BREAKDOWN OF EXPENSES FOR FACTORY TEST

1. LOT II Metal Works

   1) In case of all inspection in Japan

      a) Witness Fee (by Inspection Company)
         8 times/total 30 days
         Yen 60,000/day x 30 days = 1,800,000

      b) Direct Cost
         Yen 30,000/day x 30 days = 900,000

      Total Yen 2,700,000

   2) In case of all inspection outside Japan (Europe/America)

      a) Witness Fee (by Inspection Company)
         8 times/total 30 days
         Yen 80,000/day x 30 days = 2,400,000

      b) Direct Cost
         Yen 40,000/day x 30 days = 1,200,000

      Total Yen 3,600,000

2. LOT III (LOT IIIA, IIIB)---Generating Equipment

1) In case of all inspection in Japan

a) Witness Fee		8,400,000
Man-Month Cost of TEPSCO's Engineer		
2,100,000/person x 4.0 Man-months	=	8,400,000
b) Direct Cost		1,800,000
Inland Travel Fee and Others		
30,000/day/person x 60 times	=	1,800,000
	Total Yen	10,200,000

2) In case of all inspection outside Japan (Europe/America)

a) Witness Fee		8,400,000
Man-Month Cost of TEPSCO's Engineer		
2,100,000/person x 4.0 Man-months	=	8,400,000
b) Direct Cost		17,515,000
1) International Round Air Trip (TKY-Europe/America-TKY)		
600,000/Trip x 23 Trips	=	13,800,000
2) Inland Travel Fee and Others		
5,000/Trip x 23 Trips	=	115,000
3) Per Diem Allowance		
30,000/day/person x 120 Days	=	3,600,000
	Total Yen	25,915,000
	G. Total Yen	29,515,000

DETAILED BREAKDOWN OF VARIOUS ANALYSIS

1.	Dam	35,500,000
	(1) Rock mechanical Analysis	
	10 cases x Yen 1,050,000/case =	10,500,000
	- before grauting 5 cases - after grauting 5 cases	
	(2) Heat Transfer and Thermal Stress Analysis	
	10 cases x Yen 750,000/case =	7,500,000
	- Heat Transfer Analysis 5 cases - Thermal Stress Analysis 5 cases	
	(3) Slope Stability of Dam Abutment	
	10 cases x Yen 325,000/case =	3,250,000
	(4) Seepage Analysis of Dam Foundation	
	14 cases x Yen 750,000 =	10,500,000
	- River bed 7 cases - Right bank 7 cases	
	(5) Stress Analysis of Openings in Dam	
	3 structures x Yen 1,250,000/structure =	3,750,000
	- Penstock, Gallery and Temporary Outlet	
2.	Powerhouse	14,500,000
	(1) Stress Analysis for Powerhouse Slab	
	- 10 cases x Yen 750,000/case =	7,500,000
	(2) Stress Analysis of around Barrel and Casing	
	- 4 cases x Yen 1,750,000 =	7,000,000
	G. Total Yen	50,000,000

DETAILED BREAKDOWN OF SPECIAL EQUIPMENT USED IN THE SERVICES

1. Office Equipment

Establishment and operation of the Project cost control and the Project progress monitoring with provision of computer to FILED OFFICE.

(Unit : ¥ Portion)

(1)	Hardware of Operation System		10,562,000
	IBM 8580 - A31 System	2 units	4,416,000
	Keyboard Model 80 (M80 KDB/SG)	2 units	71,400
	Color Display (8515)	2 units	320,000
	Co-processor 25M 80387 MATH	2 units	414,400
	4 MB S.B Extension Hard Disk Kit	2 units	678,400
	2M/8MB MEM-EXP (80386)	2 units	474,400
	2MB MEM MOD-KIT (85 NS)	6 units	1,015,200
	Mouse (Personal SYS/2)	2 units	37,400
	Sysgen 5" Exp. FDD M80	2 units	196,000
	Streamer 120 MB	2 units	585,600
	Printer L-980 (kyo sera)	2 units	1,576,000
	Printer Cable	2 units	18,900
	Plotter HP 7570A (A1/A2)	1 unit	750,000
	Plotter HP 7440A (A4)	1 unit	8,300
(2)	Software of Operation System		2,265,600
	IBM OS/2 EE 1.2 (3.5)	2 sets	265,600
	Artemis System	2 sets	1,600,000
	Communication software	2 sets	400,000
		Total Yen	12,827,600

2. Field Equipment

(1) Electronic Digital Theodolite model T-2002 WILD
¥ 5,500,000 x 1 sets = 5,500,000

(2) Electronic Distance Meter model DI-1600
¥ 2,500,000 x 1 sets = 2,500,000

(3) Level
¥ 500,000 x 1 sets = 500,000

Total Yen = 8,500,000

G. Total Yen = 21,327,600

DETAILED BREAKDOWN OF OPERATION AND MAINTENANCE TRAINING OF PLN PERSONNEL IN JAPAN

Six (6) Persons x Three (3) Months (18 Man-Months)

1. Air Fare (JKT/TKY/JKT)

   ¥ 315,700/Trip x 6 Trips = ¥ 1,894,200

2. Excess Baggage

   ¥ 2,800/Trip x 20 kg x 6 Trips = ¥ 336,000

3. Per-diem Allowance

   ¥ 19,500/Man-day x 30 Days x 18 M/M = ¥ 10,530,000

4. Inland Travel Cost in Japan

   ¥ 75,000/Person x 6 Persons = ¥ 450,000

5. Atendants's Cost (3 Man-Months)
   1 Person x 3 Month = 3

   a) Inland Travel Cost

      ¥ 50,000/Person x 3 Persons = ¥ 150,000

   b) Attendant Fee

      ¥ 2,100,000/Man-Month x 3 Months = ¥ 6,300,000

6. Materials for PLN Participation

   ¥ 100,300 x 6 Persons = ¥ 601,800

Total ¥ 20,262,000

E-1-2 Supervision of Transmission Line Construction between Payakumbuh S/S and Pekanbaru S/S

NO.	ITEM	ESTIMATED COST
		(Unit : Yen)
1.	MAN-MONTH Cost	197,987,150
	MAN-MONTH Cost for TEPSCO (See Attachment 1-2-1)	197,987,150
	a.FIELD OFFICE 78.5 M.M.	159,374,000
	b.HOME OFFICE 21.5 M.M.	38,613,150
2.	Direct Cost	41,089,000
(1)	Inland Travel Cost in the Home Country (Fixed unit rate)	174,200
	a.PERSONNEL Yen 13,400/trip x 13 trips=	174,200
(2)	Travel Documents and Miscellaneous Costs (Fixed unit rate)	154,100
	a.PERSONNEL	
	1st trip Yen 20,100/trip x 5 trips=	100,500
	Subsequent trip Yen 6,700/trip x 8 trips=	53,600
(3)	International Round Air Trip (Actual reimbursement basis)	5,084,100
	a.Air Fare (TKY-JKT-PKU-JKT-TKY) PERSONEL Yen315,700/trip x 13 trips=	4,104,100
	b.Excess Baggage PERSONEL Yen2,800/kg x 20kg/trip x 13trips=	728,000
	c.Un-Accompanied Baggage Allowance (Personnel with stay of more than 6 months) (For Mobilization and Demobilization) Single status Yen1,260/kg x50kg/trip x4Assi.=	252,000
(4)	Relocation/Storage Allowance (Fixed unit rate)	601,600
	a.Assignment : Up to 2 Years Single status Yen 150,400 x 4 Assignments =	601,600
(5)	Communication and Mail (Monthly fixed unit rate)	9,538,000
	a.International Communication Cost (Telex, Telegram, Telephone and Postage) Yen150,000/month x 38 months =	5,700,000
	b.International Transportation Cost (Reference data, Drawings, Equipment, Supplies, etc.) Yen70,000/month x 38 months =	2,660,000
	c.Transportation Cost for Reports and Documents Yen 31,000/month x 38 months =	1,178,000

NO.	ITEM	ESTIMATED COST
(6)	Printing, Book Binding and Reproduction (Monthly fixed unit rate) Yen 70,000/month x 38 months =	2,660,000 2,660,000
(7)	Reference (Monthly fixed unit rate) (Guidance Books, Literature, Catalogs & etc.) Yen 30,000/month x 38 months =	1,140,000 1,140,000
(8)	Office Supply (Monthly fixed unit rate) Yen 70,000/month x 38 months =	2,660,000 2,660,000
(9)	Tracing (Monthly fixed unit rate) Yen 34,000/month x 38 months =	1,292,000 1,292,000
(10)	Expenses for factory tests (Actual reimbursement basis) (See Attachment 1-2-2) a.Factory out side Japan Yen 17,785,000 or b.Factory in Japan Yen 6,600,000	17,785,000 17,785,000
3.	Contingency (2%)	4,781,350
4.	Sub Total (1 + 2 + 3)	243,857,500
5.	VAT (PPN) 10%	24,385,750

DETAILED BREAKDOWN OF EXPENSES FOR FACTORY TESTS

1. Substation/Switchyard Equipment

1) In case of all inspection in Japan

a) Witness Fee	=	3,150,000
Monthly Rate of TEPSCO's Engineer		
2,100,000/person x 1.5 Man-months	=	3,150,000
b) Direct Cost		900,000
Inland Travel Fee and Others		
30,000/day/person x 30 Times (Outside of Tokyo)	=	900,000
	Total Yen	4,050,000

2) In Case of all inspection outside Japan (Europe/America)

a) Witness Fee		3,150,000
Monthly Rate of TEPSCO's Engineer		
2,100,000/person x 1.5 Man-months	=	3,150,000
b) Direct Cost		8,610,000
1) International Round Air Trip (TKY-Europe/America-TKY)		
600,000/Trip x 12 Trips	=	7,200,000
2) Inland Travel Fee and Others		
5,000/Trip x 12 Trips	=	60,000
3) Per Diem Allowance		
30,000/day/person x 45 Days	=	1,350,000
	Total Yen	11,760,000

2. Transmission Line Materials (Payakumbuh - Pekanbaru)

1) In case of all inspection in Japan

a) Witness Fee 2,100,000

Man-Month Cost of TEPSCO's Engineer

2,100,000/person x 1.0 Man-months = 2,100,000

b) Direct Cost 450,000

Inland Travel Fee and Others

30,000/day/person x 15 Times = 450,000
(Outside of Tokyo)

Total Yen 2,550,000

2) In Case of all inspection outside Japan (Europe/America)

a) Witness Fee 2,100,000

Man-Month Cost of TEPSCO's Engineer

2,100,000/person x 1.0 Man-months = 2,100,000

b) Direct Cost 3,925,000

1) International Round Air Trip
(TKY-Europe/America-TKY)

600,000/Trip x 5 Trips = 3,000,000

2) Inland Travel Fee and Others

5,000/Trip x 5 Trips = 25,000

3) Per Diem Allowance

30,000/day/person x 30 Days = 900,000

Total Yen 6,025,000

G. Total Yen 17,785,000

APPENDIX E-2

BREAKDOWN OF COST ESTIMATE IN

INDONESIAN CURRENCY PORTION (SERVICES II)

E-2 BREAKDOWN OF COST ESTIMATE IN INDONESIAN RUPIAH CURRENCY PORTION (SERVICES II)

NO.	I T E M	HPP2	T/L Super.1	TOTAL
	Indonesian Rupiah Portion			
1.	MAN-MONT Cost for YK and TNE	432,262,500	201,445,000	633,707,500
	FIELD OFFICE	432,262,500	201,445,000	633,707,500
2.	Direct Cost	2,386,274,651	854,841,574	3,241,116,225
(1)	Establishment Allowance	8,400,000	2,750,000	11,150,000
(2)	Mobilization and Demobilization Cost	24,709,200	9,182,000	33,891,200
(3)	Duty Trip Expenses	76,540,800	35,985,600	112,526,400
(4)	Per Diem Allowance for FIELD PERSONNEL out of duty station travel	54,746,000	48,530,000	103,276,000
(5)	Per Diem Allowance for YK and TNE FIELD PERSONNEL without Residence	71,400,000	9,528,000	80,928,000
(6)	Per Diem Allowance Short-term PERSONNEL	287,161,875	86,872,500	374,034,375
(7)	Housing Allowance	268,350,000	65,000,000	333,350,000
(8)	Transport Facilities	294,534,109	217,233,474	511,767,583
(9)	Office Cost	443,763,667	231,796,000	675,559,667
(10)	Communication and Mail	50,820,000	25,080,000	75,900,000
(11)	Salary for Local Employees	691,350,000	97,500,000	788,850,000
(12)	Printing, Book Binding and Reproduction	114,499,000	25,384,000	139,883,000
3.	Contingency	56,370,645	21,125,630	77,496,275
4.	Total (1 + 2 + 3)	2,874,907,796	1,077,412,204	3,952,320,000
5.	VAT (PPN) 10%	287,490,780	107,741,220	395,232,000

E-2-1 Supervision of the Other Works Construction of Kotapanjang HPP

NO.	I T E M	ESTIMATED COST
		(Unit : Rp.)
1.	MAN-MONT Cost for YK and TNE FIELD OFFICE 184.0 M.M. (See Attachment 2-1-1)	432,262,500
2.	Direct Cost	2,386,274,651
(1)	Establishment Allowance (Fixed unit rate)	8,400,000
	a.Assignment less than 6 months PERSONNEL 1st entry Rp150,000/time x36times=	5,400,000
	b.Assignment 6 months or more but less than 12 months PERSONNEL 1st entry Rp200,000/time x 2 times=	400,000
	c.Assignment more than 12 months PERSONNEL 1st entry Rp200,000/time x 5 times=	1,000,000
	PERSONNEL Extention Rp200,000/time x 8 times=	1,600,000
(2)	Mobilization and Demobilization Cost	24,709,200
	a.Air Fare (JKT/PKU/JKT) (Actual reimbursement basis) YK&TNE PERSONNEL Rp381,200/trip x 20 trips=	7,624,000
	YK&TNE DEPENDENTS Rp381,200/trip x 6 trips=	2,287,200
	b.Excess Baggage YK & TNE PERSONNEL Rp2,400/kg x 20 kg/trip x 20 trips =	960,000
	YK & TNE DEPENDENTS Rp2,400/kg x 20 kg/trip x 6 trips =	288,000
	c.Un-Accompanied Baggage Allowance Single status Rp1,000/kg x50kg/trip x 4Assi.=	200,000
	Family status Rp1,000/kg x80kg/trip x 5Assi.=	400,000
	d.Taxi Charge at Jakarta TEPSCO PERSONNEL Rp25,000/way x 4 ways x 45 trips=	4,500,000
	YK and TNE PERSONNEL Rp25,000/way x 2 ways x 18 trips=	900,000
	DEPENDENTS Rp25,000/way x 2 ways x 2 trips=	100,000
	e.Taxi Charge at Pekanbaru TEPSCO PERSONNEL Rp40,000/way x 2 ways x 45 trips=	3,600,000
	YK and TNE PERSONNEL Rp40,000/way x 2 ways x 18 trips=	1,440,000
	DEPENDENTS Rp40,000/way x 2 ways x 2 trips=	160,000

NO.	I T E M	ESTIMATED COST
	f.Exit Charge	
	(Personnel with stay of more than 6 months)	
	TEPSCO PERSONNEL Rp250,000/time x 9 times=	2,250,000
(3)	Duty Trip Expenses	76,540,800
	(Trip number basis)	
	a.Air Fare (PKU/JKT/PKU)	
	TEPSCO PERSONNEL Rp381,200/trip x 72 trips=	27,446,400
	YK&TNE PERSONNEL Rp381,200/trip x 62 trips=	23,634,400
	b.Taxi Charge at Jakarta	
	TEPSCO PERSONNEL Rp110,000/trip x 72 trips=	7,920,000
	YK&TNE PERSONNEL Rp110,000/trip x 62 trips=	6,820,000
	c.Taxi Charge at Pekanbaru	
	TEPSCO PERSONNEL Rp80,000/trip x 72 trips=	5,760,000
	YK&TNE PERSONNEL Rp80,000/trip x 62 trips=	4,960,000
(4)	Per Diem Allowance for FIELD PERSONNEL out of duty station travel	54,746,000
	(Fixed unit rate)	
	a.Jakarta	
	TEPSCO Rp68,000/day x 4days/trip x 72 trips=	19,584,000
	b.Pekanbaru, Padang	
	TEPSCO Rp68,000/day x 2days/trip x 124trips=	16,864,000
	YK&TNE Rp68,000/day x 2days/trip x 103trips=	14,008,000
	c.Bukittinggi	
	TEPSCO Rp55,000/day x 2days/trip x 18trips=	1,980,000
	YK&TNE Rp55,000/day x 2days/trip x 21trips=	2,310,000
(5)	Per Diem Allowance for YK and TNE FIELD PERSONNEL without Residence	71,400,000
	(Fixed unit rate)	
	Rp.68,000/day x 30days/month x 35 man-months=	71,400,000
(6)	Per Diem Allowance for Short-term PERSONNEL	287,161,875
	(Fixed unit rate)	
	Rp.160,875/day x 30 days x59.5months=	287,161,875
(7)	Housing Allowance	268,350,000
	(Fixed unit rate)	
	a.TEPSCO	
	Single status Rp700,000/month x 141.5 H.M.=	99,050,000
	b.YK and TNE	
	Single status Rp300,000/month x 131 H.M.=	39,300,000
	c.Local Staff (Construction and Operation)	130,000,000
(8)	Transport Facilities	294,534,109
	a.Rental Basis	
	(Monthly fixed unit rate)	
	Vehicle Rp.949,452/vehicle x 19.5 car-months=	18,514,314
	b.Purchase	
	(Fixed unit rate)	
	Jeep Rp.32,600,625/vehicle x 2 vehicles =	65,201,250
	Kijang Rp.20,225,625/vehicle x 3 vehicles =	60,676,875
	Motor Cycle Rp.2,521,700/unit x 1 units =	2,521,700
	c.Operation and Maintenance Cost	
	(Monthly fixed unit rate)	
	Vehicle Rp.646,635/month x 222vehicle-months=	143,552,970
	Moter cycle Rp.83,000/month x 49 unit-months=	4,067,000

NO.	I T E M	ESTIMATED COST
(9)	Office Cost	443,763,667
	a.Office Rental	
	Pekanbaru 100m2 x Rp.29,043/m2 x 35months=	101,650,500
	b.Office Facility	
	Communication Facility	249,855,840
	c.Office Furniture	
	Bankinang Office	
	Rp.444,757/month x 73 months =	32,467,261
	Jakarta Office	
	Rp.149,913/month x 73 months =	10,943,649
	d.Office Supply and Consumable	
	Bankinang Office	
	Rp.469,814/month x 73 months =	34,296,422
	Jakarta Office	
	Rp.199,315/month x 73 months=	14,549,995
(10)	Communication and Mail	50,820,000
	(Monthly fixed unit rate)	
	a.Pekanbaru Office	
	Rp.467,400/m x 77 months =	35,989,800
	b.Jakarta Office	
	Rp.192,600/m x 77 months =	14,830,200
(11)	Salary for Local Employees	691,350,000
	(See Attachment 2-1-2)	
(12)	Printing, Book Binding and Reproduction	114,499,000
	(Monthly fixed unit rate)	
	Rp 1,487,000/month x 77 months =	114,499,000
3.	Contingency (2%)	56,370,645
4.	Sub Total (1 + 2 + 3)	2,874,907,796
5.	VAT (PPN) 10%	287,490,780

ATTACHMENT 2-1-2

DETAILED BREAKDOWN OF SALARY FOR LOCAL EMPLOYEES

E-2-1 Supervision of Other Works Construction of Kotapanjang Hpp

M.M. : Man Month
Unit : Rp. 1,000

Office at Bangkinang

Description	1991			1992			1993			1994			1995			1996			1997			Total	
	M.M.	Unit rate	Amount	M.M.	Unit Rate	Amount	M.M.	Unit Rate	Amount	M.M.	Unit Rate	Amount	M.M.	Unit Rate	Amount	M.M.	Unit Rate	Amount	M.M.	Unit Rate	Amount	M.M.	Amount
1. Draftman (4 persons)	0	700	0	24	700	16,800	48	700	33,600	36	700	25,200	24	700	16,800	12	700	8,400	0	700	0	144	100,800
2. Inspectors (6 persons)	0	700	0	36	700	25,200	72	700	50,400	54	700	37,800	36	700	25,200	18	700	12,600	0	700	0	216	151,200
3. Topo Survey Team (2 team/4 persons)	0	700	0	48	700	33,600	96	700	67,200	96	700	67,200	48	700	33,600	24	700	16,800	0	700	0	312	218,400
4. Labour (10 persons)	0	250	0	120	250	30,000	120	250	30,000	120	250	30,000	120	250	30,000	60	250	15,000	0	250	0	540	135,000
5. Office Boy (6 persons)	25	225	5,625	48	225	10,800	72	225	16,200	72	225	16,200	72	225	16,200	60	225	13,500	33	225	7,425	382	85,950
Total			5,625			116,400			197,400			176,400			121,800			66,300			7,425		691,350

E-2-2 Supervision of Transmission Line Construction between Payakumbuh S/S and Pekanbaru S/S

NO.	I T E M	ESTIMATED COST
		(Unit : Rp.)
1.	MAN-MONTH Cost for YK and TNE	201,445,000
	FIELD OFFICE 82.0 M.M. (See Attachment 2-2-1)	201,445,000
2.	Direct Cost	854,841,574
(1)	Establishment Allowance (Fixed unit rate)	2,750,000
	a.Assignment less than 6 months PERSONNEL 1st entry Rp150,000/time x 9times=	1,350,000
	b.Assignment 6 months or more but less than 12 months PERSONNEL 1st entry Rp200,000/time x 1 times=	200,000
	c.Assignment more than 12 months PERSONNEL 1st entry Rp200,000/time x 3 times=	600,000
	PERSONNEL Extention Rp200,000/time x 3 times=	600,000
(2)	Mobilization and Demobilization Cost	9,182,000
	a.Air Fare (JKT/PKU/JKT) (Actual reimbursement basis) YK&TNE PERSONNEL Rp381,200/trip x 10trips=	3,812,000
	b.Excess Baggage YK & TNE PERSONNEL Rp2,400/kg x 20 kg/trip x 10 trips =	480,000
	c.Un-Accompanied Baggage Allowance Single status Rp1,000/kg x50kg/trip x5Assi.=	250,000
	d.Taxi Charge at Jakarta TEPSCO PERSONNEL Rp25,000/way x 4 ways x 13 trips=	1,300,000
	YK and TNE PERSONNEL Rp25,000/way x 2 ways x 10 trips=	500,000
	e.Taxi Charge at Pekanbaru TEPSCO PERSONNEL Rp40,000/way x 2 ways x 13 trips=	1,040,000
	YK and TNE PERSONNEL Rp40,000/way x 2 ways x 10 trips=	800,000
	f.Exit Charge (Personnel with stay of more than 6 months) TEPSCO PERSONNEL Rp250,000/time x 4 times=	1,000,000

NO.	I T E M	ESTIMATED COST
(3)	Duty Trip Expenses (Trip number basis) a.Air Fare (PKU/JKT/PKU) TEPSCO PERSONNEL Rp381,200/trip x 30 trips= YK&TNE PERSONNEL Rp381,200/trip x 33trips= b.Taxi Charge at Jakarta TEPSCO PERSONNEL Rp110,000/trip x 30 trips= YK&TNE PERSONNEL Rp110,000/trip x 33 trips= c.Taxi Charge at Pekanbaru TEPSCO PERSONNEL Rp80,000/trip x 30 trips= YK&TNE PERSONNEL Rp80,000/trip x 33 trips=	35,985,600 11,436,000 12,579,600 3,300,000 3,630,000 2,400,000 2,640,000
(4)	Per Diem Allowance for FIELD PERSONNEL out of duty station travel (Fixed unit rate) a.Jakarta (See the Attachment 1.18 and 2.5) TEPSCO Rp68,000/day x 4days/trip x 30 trips= b.Pekanbaru, Padang TEPSCO Rp68,000/day x 2days/trip x 117trips= YK&TNE Rp68,000/day x 2days/trip x 103trips= c. Bukittinggi TEPSCO Rp55,000/day x 2days/trip x 66trips= YK&TNE Rp55,000/day x 2days/trip x 29trips=	48,530,000 8,160,000 15,912,000 14,008,000 7,260,000 3,190,000
(5)	Per Diem Allowance for YK and TNE FIELD PERSONNEL without Residence (Fixed unit rate) a.Pekanbaru & Padang Rp.68,000/day x 30days/month x 3.7 manmonths= b.Bukittinggi Rp.55,000/day x 30days/month x 1.2 manmonths=	9,528,000 7,548,000 1,980,000
(6)	Per Diem Allowance for Short-term PERSONNEL (Fixed unit rate) Rp.160,875/day x 30 days x18 months=	86,872,500 86,872,500
(7)	Housing Allowance (Fixed unit rate) a.TEPSCO Single status Rp.700,000/month x 60.5 H.M. = a.YK and TNE Single status Rp300,000/month x 75.5 H.M.=	65,000,000 42,350,000 22,650,000
(8)	Transport Facilities a.Rental Basis (Monthly fixed unit rate) Vehicle Rp.949,452/month x 7 car-months = b.Purchase (Fixed unit rate) Jeep Rp.32,600,625/vehicle x 2 vehicles= Kijang Rp.20,225,625/vehicle x 3 vehicles= c.Operation and Maintenance Cost (Monthly fixed unit rate) Vehicle Rp.646,635/month x 131vehicle-months=	217,233,474 6,646,164 65,201,250 60,676,875 84,709,185
(9)	Office Cost a.Office Rental Bukittinggi 48m2 x Rp.29,000/m2 x 28 months = Pekanbaru 100m2 x Rp.29,000/m2 x 28 months= b.Office Facility -Purchase Xerox Copy Rp38,500,000/unit x1 unit= Blue Copy Rp18,000,000/unit x 1 unit= Typewriter Rp2,000,000/unit x 2 unit= Personal Computer Rp9,600,000/unit x 2 unit= c.Office Furniture Rantau Berangin Office Rp 300,000/month x 28 months = Bukittinggi Office Rp 300,000/month x 28 months=	231,796,000 38,976,000 81,200,000 38,500,000 18,000,000 4,000,000 19,200,000 8,400,000 8,400,000

NO.	I T E M	ESTIMATED COST
	d.Office Supply and Consumable	
	Rantau Berangin Office	
	Rp 240,000/month x 28 months =	6,720,000
	Bukittinggi Office	
	Rp 300,000/month x 28 months	8,400,000
(10)	Communication and Mail	25,080,000
	(Monthly fixed unit rate)	
	a.Bukittinggi Office	
	Rp.428,400/month x 38 months =	16,279,200
	b.Jakarta Office	
	Rp.231,600/month x 38 months =	8,800,800
(11)	Salary for Local Employees	97,500,000
	(See Attachment 2-2-2)	
(12)	Printing, Book Binding and Reproduction	25,384,000
	Rp668,000/month x 38 months =	25,384,000
3.	Contingency (2%)	21,125,630
4.	Sub Total (1 + 2 + 3)	1,077,412,204
5.	VAT (PPN) 10%	107,741,220

ATTACHMENT 2-2-2

DETAILED BREAKDOWN OF SALARY FOR LOCAL EMPLOYEES

E-2-2 Supervision of Transmission Line Construction between Payakumbuh S/S of Pekanbaru S/S

M.M. : Man Month
Unit : Rp. 1,000

Office at Bukittinggi

Description	1991			1992			1993			1994			1995			1996			1997			Total	
	M.M.	Unit rate	Amount	M.M.	Unit Rate	Amount	M.M.	Unit Rate	Amount	M.M.	Unit Rate	Amount	M.M.	Unit Rate	Amount	M.M.	Unit Rate	Amount	M.M.	Unit Rate	Amount	M.M.	Amount
1. Draftman (1 person)	0	700	0	0	700	0	9	700	6,300	12	700	8,400	0	700	0	0	700	0	0	700	0	21	14,700
2. Inspectors (2 persons)	0	700	0	0	700	0	24	700	16,800	24	700	16,800	0	700	0	0	700	0	0	700	0	48	33,600
3. Clerk (1 person)	0	700	0	0	700	0	12	700	8,400	12	700	8,400	0	700	0	0	700	0	0	700	0	24	16,800
4. Typist (1 person)	0	400	0	0	400	0	12	400	4,800	12	400	4,800	0	400	0	0	400	0	0	400	0	24	9,600
5. Office Boy (2 persons)	0	225	0	0	225	0	24	225	5,400	24	225	5,400	0	225	0	0	225	0	0	225	0	48	10,800
6. Labour (2 persons)	0	250	0	0	250	0	24	250	6,000	24	250	6,000	0	250	0	0	250	0	0	250	0	48	12,000
Total			0			0			47,700			49,800			0			0			0		97,500

APPENDIX E-3

TENTATIVE SCHEDULE OF

FOREIGN CURRENCY PAYMENT (SERVICES II)

APPENDIX E-4

TENTATIVE SCHEDULE OF

INDONESIAN RUPIAH CURRENCY PAYMENT (SERVICES II)

APPENDIX F

PROGRAM OF TRANSFER OF KNOWLEDGE AND KNOWHOW,

AND

TRAINING OF INDONESIAN PERSONNEL

PROGRAM OF TRANSFER OF KNOWLEDGE AND KNOWHOW AND TRAINING OF INDONESIAN PERSONNEL

1. General

The transfer of the knowledge and knowhow, and training of Indonesian Personnel during the period of the SERVICES I and II, will be implemented in the manners of on-the-job and off-the-job training.

The on-the-job training aims at the development of personnel's ability on construction supervision through actual day-by-day work of the SERVICES I and II.

The off-the-job training will be organized to give more conscious and systematic transfer of knowledge through lectures by the Engineer at the FIELD OFFICE and the through operation and maintenance training of PLN Personnel in Japan.

2. On-the-Job Training

(1) On-the-job training will be implemented at the FIELD OFFICE and PROJECT SITE in Indonesia day-by-day as the construction of the PROJECT progresses and Indonesian personnel working as integral members of the respective work field team. It will be intended to transfer practical knowledge on how to deal properly with the respective works of field design work, construction supervision and field inspection.

(2) The Engineer will assign the following engineers as experts in their technical fields for

implementation of the SERVICES as well as for effective transfer of knowledge.

- Co-project coordinator
- Senior managing staff experts (cost control and Progress monitoring)
- Civil Engineer for dam
- Civil Engineer for powerhouse
- Design Engineer
- Architect for powerhouse
- Survey Engineer
- Geologist
- Material Engineer
- Road Engineer
- Bridge Engineer
- Electro-Mechanical Engineer
- Transmission line, Switchyard Engineer
- Grout Engineers
- Environmental Engineer

3. Off-the-job Training

In accordance with a lecture program prepared by the ENGINEER in consultation with PLN, a lecture per three (3) months in principle will be held at ENGINEER's FIELD OFFICE or job sites consistently with actual progress of the PROJECT works.

The ENGINEER will provide :

(1) Lectures on the basic knowledge necessary for survey works, design works, construction works, inspections, tests as well as supervision of construction works, etc., according to the ability and grade of the participants and work progress during actual execution of the SERVICES.

Such lectures will be arranged for respective technical fields and the contract lots by experts in charge.

(2) Lecture on construction supervision technique, such as a project management information computer system "Artemis".

(3) Lecture on themes selected consciously and become necessary through the SERVICES, or for review of daily work.

(4) Operation and Maintenance training of PLN Personnel in Japan, training for six (6) PLN operation personnel (in respect to the operation and maintenance of the power plant) at hydroelectric power stations in Japan for a period of three (3) months.

Please refer item I.1.(7).2 (c) of APPENDIX B "TERMS OF REFERENCE".

APPENDIX G

REPORTS AND DOCUMENTS

TO BE PREPARED BY THE ENGINEER

REPORTS AND DOCUMENTS TO BE PREPARED BY THE ENGINEER

SERVICE II

1. Supervision of the Other Works Construction of Kotapanjang HPP

Titles of Documents/Reports	No. of Copies
1. Monthly progress report (to be combined in report of SERVICE I)	10
2. Quarterly progress cost and disbursement report (to be combined in report of SERVICE I)	10
3. Training Program	10
4. Draft of Amendment for Tender Documents	10
5. Final Amendment for Tender Documents	30
6. Draft tender evaluation report of i) Metal Works (Lot II) ii) Generating Equipment (Lot III) iii) Equipment (Lot V) iv) Relocation Road (Lot VI)	10
7. Final tender evaluation report of the above	25
8. Station Operation and Maintenance Manuals i) Manual for metal works ii) Manual for electrical mechanical works	30
9. Name plate inventory	30
10. As built drawings	5 (1 reproducible and 4 blue print)
11. Draft Project Completion Report (to be combined in report of SERVICE I)	10
12. Final Project Completion Report (to be combined in report of SERVICE I)	30

2. Supervision of Transmission Line Construction between Payakumbuh S/S and Pekanbaru S/S.

Titles of Documents/Reports	No. of Copies
1. Monthly Progress Report (to be combined in report of SERVICE I)	
2. Quarterly progress cost and disbursement report	10
3. Amendment Documents for Tendering (Draft)	10
4. Amendment Documents for Tendering (Final)	30
5. Draft Tender Evaluation Report	10
6. Final Tender Evaluation Report	15
7. Quality Assurance Program	10
8. Site Tests Procedure	15
9. Procedure of Acceptance Tests and Start-up Operation	15
10. Draft Project Completion Report (to be combined in report of SERVICE I)	

APPENDIX H

GENERAL APPROACH AND WORK PLAN

I GENERAL APPROACH

1. Supervision of the Construction of Kotapanjang HPP

1.1 Duties of Engineer under Construction and Supply/Erection Contracts for International Lots, Lot I through VI Inclusive excluding Lot IV

The scope of construction and supply/erection contracts of the PROJECT to be supervised by the ENGINEER covered in this section will be the following Lots.

It should be noted that the consulting services for Lot II through Lot VI, excluding Lot IV will be covered by the SERVICES II of the Services, which is expected in Phase 2 of the PROJECT.

Lot I	Civil Works (SERVICES I)
Lot II	Metal Works (SERVICES II)
Lot III	Generating Equipment (SERVICES II)
IIIA	Turbine
IIIB	Generator
IIIC	Switchyard
Lot V	Equipment (SERVICES II)
VD	Telecommunication System and Radio Communication
Lot VI	Relocation Road and Bridge (SERVICES II)
VIA	National Road
VIB	National Road
VIC	Provincial Road
VID	Bridge and National Road

The ENGINEER will administrate the contracts of the above Lots, and will carry out such duties in issuing decisions, certificates and orders as are specified in the same contracts.

It is acknowledged that PLN is the owner and acts as ENGINEER for contracts other than those mentioned above.

1.2 Project Management

The ENGINEER will carry out the works for constructing an overall project construction schedule, budget and cash disbursement schedule in accord with PLN Code of Accounts and will formulate a project management information system (in accord with PLN-MIS) and procedures to monitor the progress of construction work and organization chart for construction supervision including job description and responsibilities of the component engineers and staff; submit monthly progress reports to PLN relating the actual progress to the original schedule and advising measures necessary; to maintain the schedule including giving advice on necessary action to be taken to manage interfacing schedule among the contracts within the scope of the PROJECT; monitor project costs and disbursements and submit periodic reports giving current costs, future anticipated cost and disbursement and relating these to the original budget and disbursement schedule; coordinate of engineering and construction activities by various contractors engaged in different parts of the PROJECT.

1.3 Assistance and Advice to PLN in Tendering and Contracting (Lot II through Lot VI excluding Lot IV is SERVICES II)

The SERVICES covered in this section will comprise the following :

(1) Evaluation and making modifications of all tender documents for Lot I through Lot VI excluding Lot IV, whose preparation have been completed in the Engineering Design stage of the PROJECT.

(2) Tabulation and making analyses and evaluations of all bids for Lot I through Lot VI inclusive excluding Lot IV, compliance with the specification, reasonableness of prices, and proposed time for completion of the work.

(3) Submission to PLN draft evaluation reports for Lot I through Lot VI inclusive excluding Lot IV and assisting PLN in preparing final evaluation reports.

(4) Assistance in negotiating the contracts with successful tenderers for Lot I through Lot VI inclusive excluding Lot IV and advice to PLN on all matters pertaining to negotiations of the contracts.

1.4 Preparation of Construction Drawings, and Review and Approval of Drawings and Documents

The ENGINEER will prepare construction drawings, and review and approve drawings and documents of the related international Lots.

The SERVICES covered in this section will comprise the following :

(1) Civil Works

(a) Preparation and issuing the construction drawings of the Permanent Works including Diversion Works and any Temporary Works for whose design the ENGINEER is responsible.

(b) Check and approval of fabrication and assembling drawings and detail reinforcement drawings for the Permanent Works prepared and submitted by the Contractors.

(c) Check and approval of construction drawings of the Temporary Works prepared and submitted by the Contractors.

(2) Metal Works, Generating Equipment, and Equipment (SERVICES II)
Check and approval of design drawings, calculation sheets, construction drawings, samples, patterns and models submitted by the Contractors.

(3) Relocation Road Bridge (SERVICES II)

(a) Preparation of construction drawings of the Permanent Works.

(b) Check and approval of fabrication and assembling drawings and detail reinforcement drawings for the Permanent Works prepared and submitted by the Contractors.

(c) Check and approval of working drawings including those for the Temporary Works prepared and submitted by the Contractors.

1.5 Design Modifications

The ENGINEER will have a site design team with an adequate number of engineers, draftsmen, topo-surveyors and geologist/geotechnical engineers to make additional tests and investigations and to modify designs as rapidly as possible to realize a swift submission of the drawings to the Contractors.

Where major changes are required, subject to PLN's approval the ENGINEER's site design team will refer these to the ENGINEER's Home Office, but such major changes will be limited to those where it becomes necessary to change the type of foundation of major components of structures. The ENGINEER will call for special experts at site in the event design changes need consultation with special experts.

1.6 Supervision of Construction, Testing, Commissioning and Acceptance Test of the Project

(1) Inspection During Manufacture and Delivery Control of Equipment and Steel Structure (Lots II through V excluding Lot IV is SERVICES II)

The ENGINEER will establish a quality assurance and delivery expediting program to ensure;

(a) Timely manufacture, testing in shop and delivery of equipment and materials as necessary to maintain the overall construction schedule.

This will be achieved through regular reviews of production schedules and delivery schedules of equipment and materials submitted by the Contractors.

(b) Compliance with the specifications and standards through reviewing of factory testing methods and procedures proposed by the Contractors and copies of factory test reading submitted by the Contractors and certification of factory test results.

The ENGINEER as an authorized surveyor will witness the factory tests of major metal and electro-mechanical equipments and materials (turbines, penstocks, generators, etc.), subject to prior approval of PLN and will prepare factory test certificates of those equipment and materials.

The ENGINEER will submit to PLN reports giving the findings and results of each visit to manufacturer's works. The items and timing of the witnesses in the factory tests which are attended also by PLN staff will be agreed on between PLN and the Engineer.

(2) Construction Supervision

(Lot II through Lot VI excluding Lot IV is SERVICES II)

The ENGINEER, as the SERVICES under the contracts for Lot I through Lot VI inclusive excluding Lot IV as specified in Section 1, will coordinate, supervise and inspect the construction activities of these Lots which will be carried out by the several Contractors, to ensure compliance with the stipulations of the contract documents concluded between PLN and Contractors, and will maintain close communication with PLN in all aspects of the execution and progress of construction. Aspects of these services will include the following :

(a) Issuing of orders and decisions as specified in the contracts between PLN and Contractors.

(b) Inspection of workmanship, materials, construction equipment and construction methods, and determination of their qualities to ensure compliance with the stipulations of the contract documents between PLN and the Contractors.

(c) Interpretation of the contract documents between PLN and the Contractors including drawings and specifications to ensure compliance with the contract documents.

(d) Giving original points, lines and levels of reference, and subsequent approval thereof for setting-up of the construction works by the Contractors.

(e) Review and approval to determine competence of any persons employed by the Contractors including foreign personnel and authorized representatives.

(f) Review and approval of any field change which might be required for the proper execution of construction of the Project, subject to prior approval of PLN.

(g) Issuing orders of alternations, additions and omission to the construction works to the Contractors, subject to prior approval of PLN.

(h) Establishment of test procedures on the site and engineering supervision and inspection of such field surveys, test and laboratory services, including concrete test, gunite/shotcrete test, field welding test, radiographic examination and field tests of generating equipment and preliminary functional tests for generating equipment as will be done by the Contractors during construction and erection.

(i) Arranging for supervision of tests of materials, works, plant and machinery on the PROJECT Site.

(j) Ensuring that measurement of the Works is done in accordance with the methods of measurements as specified in the contract documents, to evaluate and approve the progress of the works as required for the processing of progress payments and for additional works.

(k) Identifying the difficulties during construction and looking for the most favorable way out.

(l) Monitoring, recording and determination of actual construction progress.

(m) Processing of certificates for payments due to the Contractors, in accordance with the conditions of contract.

(n) Maintenance of records and accounts of all commitments incurred; such as an payment made in foreign and local currencies to any contractors employed by PLN for the execution of any part of the Project.

(o) Keeping proper records of the work progress, testing, comments, etc. related to the supervision services and implementation of the PROJECT.

(p) Assistance and advice on obtaining Contractors insurances as well as guarantees and warrantees, and any proceeding in connection with performance bonds, defaults and insurance claims.

(q) Inspection of preventive safety and environmental control measures applied by the Contractors, giving directives on the safety and environmental control measures on the site, and reporting to PLN such observations and directives given.

(r) Approval of removal of construction equipment from the Site.

(3) Engineering Supervision of Acceptance Tests and Commissioning (Lot II through Lot VI excluding Lot IV is SERVICES II)

The Engineer will continue to coordinate, supervise and inspect the commissioning and acceptance testing activities of the Lot I through Lot VI excluding Lot IV of the PROJECT in the same manner as for construction supervision.

Aspects of these services will include the following :

(a) Provide operational supervisors to assist personnel assigned by PLN and the equipment suppliers during the start-up period and

the initial operation of the plant and its supporting facilities. The ENGINEER will exercise close technical supervision of all start-up and initial operation activities as required to safeguard against damage to equipment and to assure maximum operational efficiency. These services will include preparation

of the start-up and testing procedures in cooperation with PLN and the Contractors.

(b) Coordinate the Contractors in conducting all the required performance and acceptance tests.

Planning and scheduling for performance and acceptance test shall seek to achieve the earliest practicable commissioning of the entire plant. In addition to the testing and acceptance of individual items of equipment, the ENGINEER will make provision for the tests in accordance with the project design criteria, overall plant performance and efficiency under actual operating conditions. Particular attention will be paid to the correct identification tagging of all controls in the Indonesian language. Following each test or series of tests, the ENGINEER will submit the test results with recommendations to PLN regarding final PLN acceptance of the works.

(c) Issue certificates of completion for civil works and taking-over certificates including partial taking-over certificates for metal works, generating equipment, transmission line materials, and equipment which will be subject to PLN's prior approval.

(4) Assistance to PLN for Insurance and Claims

The ENGINEER will assist PLN in insurance matter and settling disputes or differences which may arise between PLN and the Contractors, in accordance with the stipulations of the contract documents between PLN and the Contractors.

(5) Liaison with Assigned PLN Project Management Personnel

The ENGINEER will establish a relationship for close liaison with PLN through the Project Manager and his staff, through formal regular meeting (at least weekly) and additional meetings as required to report and discuss progress, problems and programs of the work.

1.7 Assistance to PLN in Operation and Maintenance
(Lot II through Lot VI excluding Lot IV is SERVICES II)

(1) Operation and Maintenance Manuals

The ENGINEER will coordinate the preparation by the Contractors of operation and maintenance manuals for the operating and maintenance procedures of the plant and structures; assist PLN in developing a system for permanent recording of all essential data; and assist PLN in the preparation of a workable system for determining plant and equipment efficiencies and observing and reporting regular plant performance including Dam Surveilance and Monitoring.

The SERVICES covered in this section will include the followings :

(a) Approving the preparation of operation and maintenance manuals by the manufacturers/Contractors and compiling these into Station Operation and Maintenance Manuals.

(b) Assisting PLN in establishing operation and maintenance staff, organization charts, including job description and responsibilities.

(c) Assisting PLN to establish and to implement detailed maintenance procedures and schedules.

(d) Preparing and delivering to PLN, as early as possible after completion of acceptance tests, records for maintenance and operation as follows :

(i) a nameplate inventory

(ii) a summary of all equipment and facilities incorporated into the PROJECT

(iii) "as-built" drawings to show the components of the PROJECT as actually constructed in the form of manufacturers, and/or construction drawings prepared or marked up by the Contractors, including the ENGINEER's drawings.

(iv) a breakdown of the final Project costs, including works contracted by PLN with the Rupiah budget for each stage, from feasibility study stage, engineering design and construction stages, and preparatory works up to project commissioning.

(e) The ENGINEER will furnish advisory services in all respects of plant operation and maintenance by providing one (1) qualified person having substantial experience in the operation and maintenance of a comparable plant for continuous period of six (6) months for the operation.

It should be acknowledged that in spite of ENGINEER's advisory services, responsibility for proper operation and maintenance of the plant shall be passed to PLN.

(2) Training of Indonesian Personnel for Supervision of Construction, Operation and Maintenance

The ENGINEER will provide the following training services to Indonesian personnel :

(a) Development of a training program for PLN personnel assigned to the operation and maintenance of the plant.

(b) Arranging for training of PLN operating personnel (in respect to the operation and maintenance of the plant) at manufacturer's factories sponsored by the Contractors in accordance with the provisions of the contracts between PLN and the Contractors.

(c) Arranging for training of six (6) PLN operating personnel (in respect to the operation and maintenance of the plant) at hydoelectric power stations in Japan for a period of three (3) months.

(d) Training of Indonesian personnel on dam behavior monitoring and reservoir operation on the site.

(e) Training of Indonesian personnel for construction supervision on the site.

1.8 Services during the Period of Guarantee
(Lot II through Lot VI excluding Lot IV is SERVICES II)

The ENGINEER will maintain an office at the Project Site, with all construction record, until all the maintenance certificates and final certificates are issued and claims are settled and contractors' staff are off the PROJECT Site.

During the period of guarantee, the ENGINEER will provide the following services :

(a) identify defective parts of the plant and also approve countermeasure preparing by the Contractor after acceptance by periodic visits to completed plant or by visits to the plant when some defects take place in the plant.

(b) issue maintenance certificates and final certificates, subject to PLN's prior approval.

1.9 Review and Advice to PLN in Environmental Works

The ENGINEER will assist PLN in environmental works of the PROJECT, which are carried out by PLN.

The services will include the followings :

- review and advise on the environmental works carried out by PLN.

- monitoring and advising progress in the environmental works by an expert.

- preparing semiannual report for submission by PLN to FUND (OECF) on environmental monitoring of the PROJECT.

1.10 Project Completion Report
(Lot II through Lot VI excluding Lot IV is SERVICES II)

(1) Contents of Completion Report are :

A. Executive Summary

B. Main Report

1. Introduction
2. Project Planning
3. Design of main structures
4. Construction
5. Materials control
6. Instrumentation and monitoring
7. Project construction cost
8. Contract administration
9. Training and transfer of knowledge
10. Environmental aspects

(2) On completion of the PROJECT, the ENGINEER will prepare a Project Completion Report Which comprises, in summary form :

(a) Completion dates of all major stages of the PROJECT, against original planned dates.

(b) Final construction costs against original budgeted costs.

(c) Final consultant costs against original budgeted costs.

(d) Major deviations in design compared with the original costs.

(e) Final operating performance achievement against the original specification.

(f) Final statement of the Project's financial viability.

(3) Appended to the Completion Report are :

(a) a list of documents handed over

(b) a list of training courses given and of PLN personnel attending

(c) a list of things not yet done and needing still left to be done, at the date of issue of the Project Completion Report

(d) a summary description of the design concept and criteria from technical and economic viewpoints

(e) a report on claims pending, if any

(f) surveillance report of the dam

(g) operation and maintenance manual

1.11 Transfer of Knowledge and Training of Indonesian Personnel
(Lot II through Lot VI excluding Lot IV is SERVICES II)

(1) For smooth execution of an implementation of the PROJECT the ENGINEER will assign the following engineers for effective transfer of knowledge.

- Co-project coordinator
- Senior managing staff experts (cost control and progress monitoring)

- Civil Engineer for dam
- Civil Engineer for powerhouse
- Design Engineer
- Architect for powerhouse
- Survey Engineer
- Geologist
- Material Engineer
- Road Engineer
- Bridge Engineer
- Electro-Mechanical Engineer
- Transmission Line, Switchyard Engineer
- Grout Engineer
- Environmental Engineer

(2) Working as members of the integrated project team they are trained on the job to obtain practical knowledge of how to deal properly with the respective works of field design work, construction supervision and field inspection.

The Indonesian engineers assigned for the field design work and construction supervision will not be given any lectures before they are assigned to the respective tasks. The ENGINEER will provide on-the-job training in the daily work on the site, but every three (3) months the ENGINEER will provide a classroom lesson for the systematical review of what they have done on daily work in the preceeding 3 months.

1.12 Progress Report

(Lot II through Lot VI excluding Lot IV is SERVICES II)

The ENGINEER will submit monthly and quarterly progress reports to PLN, in PLN standard format as developed during the pre-construction contract period. In monthly reports, which will be produced within 2 (two) weeks after the preceeding month, the following will be taken into consideration:

- progress/delays will be compared with the Project Plan, and accompanied by concise, clear explanations. The effects of delays on the project

master programme will be assessed and advise preferred measures needed to maintain the schedule.

- project costs and disbursement will be shown, related to the original budget and disbursement schedule.

- all variation orders and claims raised by contractors will be listed, together with actual or estimated total costs and any effect these variation orders and claims may have on the program.

If the ENGINEER detects that contractors appear to be developing as yet unannounced claims, the ENGINEER will report his anticipations to PLN's Project Manager, separately from other reports and advise any action which may be possible to avert the claims.

The ENGINEER will also prepare :

- a quarterly report on project costs and disbursements, to the level of detail required by PLN.

2. Design of Transmission Line between Payakumbuh S/S and Kotapanjang S/Y including Bangkinang S/S and Modification due to Relocation of Pekanbaru S/S (SERVICES I)

2.1 Review and Study for Previous Study Reports, Data and Information

The ENGINEER will review and study for the previous study and design reports, design parameters, design conditions, information and implementation programs of the associated transmission line and substation facilities of the Ombilin Thermal Power Plant Project and other related projects as well as the Kotapanjang Hydroelectric Power Project so as to establish an optimum techno-economic power transmission network system in these region taking into account the power demand, power flow, system stability, system reliability, easy operation and maintenance, easy construction and environmental aspects.

2.2 Basic Design and Selection of Transmission Line Route and Site of Substation

The ENGINEER will set up the basic design parameters, design conditions, design criteria and other necessary requirements through review and study for the previous study and design reports, data and information.

The ENGINEER will select the basic route of transmission line between Payakumbuh S/S and Kotapanjang S/Y based on topographical maps with scale of 1/50,000.

The ENGINEER will also select a location site of Bangkinang Substation between Kotapanjang S/Y and Pekanbaru S/S through reconnaissance survey.

The ENGINEER will carry out the basic design of structural components, electrical facilities and other ancillary facilities of the transmission line and substation, and will select basic specifications and ratings of the equipment and materials of the above facilities.

2.3 Supervision Investigation and Survey Works

The ENGINEER will prepare the tender documents for survey works of transmission line route and site of substation based on the basic design to select an experienced and qualified contractor.

The ENGINEER will supervise the detailed investigation and survey works conducted by other Contractor to finalize the route of transmission line and site of substation.

The items of investigation and survey works to be supervised by the ENGINEER are as follows :

(a) For transmission line route survey (between Payakumbuh S/S and Kotapanjang S/Y)

- route reconnaissance survey and alignment
- center line survey

- profile survey
- plan survey
- tower site survey
- geological investigation (drilling and in-situ tests, auger boring , cone penetration tests and laboratory tests)

(b) For substation site survey (Bangkinang Substation)

- control points survey
- topographical survey
- geological investigation (drilling and in-situ tests and laboratory tests)

The ENGINEER will assist contractor of survey works in preparation of survey reports and drawings.

During investigation and survey works, the ENGINEER will make closed consultation in respective items of works of the Contractor to ensure smooth progress of the works.

During detailed survey works, the ENGINEER will also study and investigate for the environmental aspects and impacts which will be originated by the construction of transmission line and substation, and necessary countermeasure to be taken will be studied to proceed the detailed design of transmission line and substation facilities.

2.4 Detailed Design and Optimization Study

Based on the basic design, detailed investigation and survey works, the ENGINEER will carry out detailed design for transmission line and substation facilities taking into account the following aspects :

(a) Provisions for sufficient safety of all facilities
(b) Easy construction, operation and maintenance
(c) Techno-economical design
(d) System reliability
(e) Environmental aspects

(f) Anticipated availability of local materials

(g) Standardization of the system

(h) Flexibility against changes in conditions

The results of detailed design together with that of basic design will be compiled in a detailed design report to be presented to PLN for approval soon after the completion of the design works.

The detailed design items will be as follows :

i) For transmission line

- Application for tower types and tower foundation types
- Determination for the design conditions, criteria and design parameter
- Selection for conductor, groundwire and those accessories
- Design for insulation and selection for insulator, insulator strings and hardwares
- Design for lightning protection
- Study for optimum span
- Design for standard types of steel towers
- Design for standard types of tower foundations
- Study for construction method

ii) For substations (Bangkinang S/S and Payakumbuh S/S Extension)

- Study for bus-configuration
- Determination for type and layout of substations
- Selection and design for ratings of equipment and auxiliaries
- Determination for the technical specification of equipment and auxiliaries
- Design control, protection and communication systems
- Design for steel structure and supports
- Design for grounding system
- Design for civil structures (foundations of equipment, drain pits, control pits, access road, fence, gate, etc.)
- Design for control building and ancillary facilities

The detailed design report will contain all the layouts and structural design drawings, specifications, calculation sheets, construction schedule indicating the key dates/mile-stone and particularly the critical paths, etc.

2.5 Implementation Program

An implementation program in sufficient details for construction of transmission line and substation will be prepared based on the results of detailed design.

The implementation program will include the followings :

(a) Summary of the scope of works.
(b) Total project construction schedule, in which key dates of works and/or related works of other contractors will be specified.
(c) Construction schedule for individual work of the project.
(d) Construction methods of all the structural components (civil, electrical, mechanical and architectural works) of the facilities.
(e) Major drawings and maps.

2.6 Cost Estimation

i) Calculation of Work Quantity

The bills of quantities for all scope of works will be prepared based on the detailed design and implementation program of the Project.

ii) Cost Estimation

The cost estimation will be made mainly with emphasis on unit costs according to the bills of quantities.

The unit construction cost will be assessed on the basis of the construction method and the cost of equipment, material and labor. Reference will be made to the current construction costs of similar projects in Indonesia as well as recent international tendering experiences.

In assessment of the unit cost, effects caused by recent inflation will be duly taken into account for both the foreign currency and local currency portions.

The detail cost estimation will include the cost for construction, land acquisition, environmental countermeasures and transmigration compensation, if any, and other required costs.

Customs, duties and taxes levied will be shown separately, and all costs will be broken down into foreign and local currency portions.

Provisional sums will be made to cover the interest during construction, and physical and price contingencies.

The construction cost will be broken down into annual fund requirement both in foreign and local currency portions on the basis of the implementation program and construction schedule. The results of the cost estimation will be complied in the project cost estimation report and submitted to PLN for approval.

2.7 Tender Documents

The ENGINEER will prepare and modify the tender documents for international and local tenderings for each tender lot.

The following items will be included in the documents :

(a) Description of the Project
(b) Instruction to Tenderers
(c) Tender forms and appendices
(d) General conditions of contract
(e) General specifications
(f) Technical specifications
(g) Bill of quantity
(h) Schedules of prices
(i) Tenderer's data sheets
(j) Tender drawings and maps

(k) Overall schedule of the project

(l) Other relevant documents

The construction works of the transmission line between Payakumbuh S/S and Kotapanjang S/Y and substations will be divided into the following temporary tender lots. However, the lot division will be studied again at the detailed design stage for possible amendment so as to enable more effective implementation of the construction works.

1) International Tendering

Lot VII : Transmission Line Materials (Additional)

Lot IIIC-2 : Substation Equipment (Existing tender documents of Lot IIIC-2 will be modified)

2) Local Tendering

Lot 6 : Erection, Civil and Architectural Works for Substations (Existing tender documents of Lot 6 will be modified)

Lot 7 : Erection of Transmission Line (Additional)

All international tender documents will be prepared in conformity with the standards recommended by 'Federation Internationale Des Ingeniurs Conseils (FIDIC)' and existing tender documents of Lot I through VI of the Project prepared by the ENGINEER.

While local tender documents will be made in accordance with the regulation of Government of Indonesia.

The draft tender documents will be prepared by the end of the ninth (9th) month from the commencement of the SERVICES I, and will be finalized within one (1) month after receipt of the comments on the said draft tender documents from PLN.

2.8 Engineering Report

At the time of completion of the Services, the ENGINEER will present the engineering report summarizing the whole services undertaken, state their

conclusion and recommendations including all other relevant information related the SERVICES.

2.9 Monthly Progress Report

The monthly progress of the SERVICES will be reported to PLN within two (2) weeks after the proceeding month.

The report will contain the detailed progress of the SERVICES, both in the home office and at job site including bar charts indicating work accomplished versus work schedule, reasons for the delay, if any, and proposed measures to be taken, cost expenditures and balances, detailed work schedule of next month, etc.

The contents of the report will be compiled in the monthly progress report for the SERVICES for construction supervision of Kotapanjang H.P.P.

2.10 Transfer of Knowledge

The ENGINEER recognizes that transfer of knowledge is very important. Therefore, the ENGINEER will seek at all times the most effective way to realize this.

The ENGINEER will transfer the knowledge effectively to the Indonesian personnel related the Project throughout the SERVICE period in all the activities at the ENGINEER's field office and at the job sites.

The ENGINEER will provide lectures on the basic knowledge necessary for studies, investigation, survey works and design works of the transmission line and substation facilities during actual execution of the SERVICES.

The ENGINEER will prepare a training/lecture program soon after commencement of the Services, and select the training items with consultation of PLN.

3. Supervision of Transmission Line Construction between Payakumbuh S/S and Pekanbaru S/S

3.1 Duties of the ENGINEER under Design, Manufacturing, Supply, Erection, Construction, Testing and Commissioning for Contracts of International and Local Lots (SERVICES II)

The scope of construction works and contract lots of the PROJECT to be supervised by the ENGINEER covered in this section will be as follows :

A) International Contract Lots

1) Lot IIIC-2: SUBSTATION EQUIPMENT
(Designing, manufacturing, shop testing, finishing, painting, packing for export, insuring, shipping, customs clearing, inland transporting, supervision for erection and commissioning for equipment of 150 kV Pekanbaru S/S, Bangkinang S/S and Payakumbuh S/S).

2) Lot IV : TRANSMISSION LINE MATERIALS
(Designing, manufacturing, shop testing, finishing, painting, packing for export, insuring, shipping, customs clearing and inland transporting for materials of 150 kV double circuits transmission line between Kotapanjang S/Y and Pekanbaru S/S)

3) Lot VII : TRANSMISSION LINE MATERIALS (ADDITIONAL)
(Designing, manufacturing, shop testing, finishing, painting, packing for export, insuring, shipping, customs clearing and inland transporting for materials of 150 kV double circuits transmission line between Payakumbuh S/S and Kotapanjang S/S)

B) Local Contract Lots

1) Lot 5 : ERECTION OF TRANSMISSION LINE
(Preparation work, clearing, check surveying, designing

of foundations, construction of foundations, erection of towers and stringings, inspections, testings and commissioning for 150 kV double circuits transmission line between Kotapanjang S/Y and Pekanbaru S/S)

2) Lot 6 : ERECTION, CIVIL AND ARCHITECTURAL WORKS FOR SUBSTATION (Preparation work, clearing, check surveying, designing of foundations and building, erection of equipment, civil and architectural works, inspections, testings, and commissioning for Pekanbaru S/S, Bangkinang S/S and Payakumbuh S/S)

3) Lot 7 : ERECTION OF TRANSMISSION LINE (ADDITIONAL) (Preparation work, clearing, check surveying, designing of foundations, construction of foundations, erection of towers and stringings, inspections, testings and commissioning for 150 kV double circuits transmission line between Payakumbuh S/S and Kotapanjang S/S)

3.2 Project Management

The ENGINEER will carry out the works of the project management for construction of 150 kV transmission line between payakumbuh S/S and pekanbaru S/S (route length: approx. 153 km) and associated substations namely Bangkinang S/S, Payakumbuh S/S and Pekanbaru S/S. According to the Project Management Information System which will be established by the ENGINEER soon after concluded the contract between PLN and the ENGINEER.

The ENGINEER will also establish an overall project implementation schedule, a budget and cash disbursement schedule including local costs based on the PLN Code of Accounts, procedures to monitor the progress of works, organization chart for construction supervision including job description and responsibilities of the component engineers and staffs to ensure smooth execution of the PROJECT.

The details of the engineering works will be as follows :

3.3 Assist and Advise to PLN in Tendering and Contracting

a) Review and modification for tender documents

The ENGINEER will review and modify the related tender documents which have been prepared by the ENGINEER during Detailed Design Stage of the SERVICES, and will prepare the Amendment Sheets of the following tender documents of each LOT :

i) LOT III (Generating Equipment)

- Volume I : Instructions to Tenderers, Conditions of Contract
- Volume II : General Specifications
- Volume V : Technical Specifications (Switchyard/Substations)
- Volume VIII: Form of Tender (Switchyard/Substations)

ii) LOT IV (Transmission Line Materials)

- Volume I : Instructions to Tenderers, Conditions of Contract
- Volume II : Technical Specifications, Drawings
- Volume III : Form of Tender

iii) LOT 5 (Erection of Transmission Line)

- Volume 1 : Instructions to Tenderers, Conditions of Contract
- Volume 2 : Specifications, Drawings
- Volume 3 : Form of Tender

iv) LOT 6 (Erection, Civil and Architectural Works for Substation)

- Volume 1 : Instructions to Tenderers, Conditions of Contract
- Volume 2 : General Specifications
- Volume 3 : Technical Specifications
- Volume 4 : Form of Tender
- Volume 5 : Drawings

b) Assist and advise to PLN an analyzing and evaluating for tenderers' proposals

The ENGINEER will assist and advise to PLN in analyzing, comparing and evaluating for all tenderers' proposals of the related international tender lots.

The proposal will be evaluated by the following aspects :

1) Completeness of proposal documents
2) Eligibility of tenderers, supplyers and manufacturers
3) Completeness of form of tender
4) Form and amount of tender security
5) Qualification of tenderers
6) Completeness of required tenderer's information and documents
7) Tenderer's and manufacture's experience and capability
8) Tenderer's technical data sheets
9) Proposed deviations, if any
10) Technical approach and methodology
11) Tenderer's understanding of the Project
12) Tenderer's proposed project implementation schedule
13) Schedules of prices

c) Preparation of draft evaluation reports and assist PLN in preparation of final evaluation reports

The ENGINEER will prepare the draft evaluation reports for all related tendering lots based on the above evaluation aspects of each tenderer's proposals and submit to PLN.

The ENGINEER will also assist to PLN in preparation of final evaluation report so as to proceed the contract negotiation smoothly between PLN and successful tenderers.

d) Assist to PLN in negotiating the contracts

The ENGINEER will assist to PLN in negotiating the contracts with successful tenderer of each tendering lot and advise to PLN on all

matters pertaining to negotiations of the contracts between PLN and successful tenderers.

3.4 Review and Approval for Drawings and Documents

The ENGINEER will manage all drawings and documents such as design drawings, fabrication and assembling drawings, construction drawings, calculation sheets, construction methods, various kind of report and documents, samples, etc. to be submitted by the Contractors.

For approval drawings and documents, the ENGINEER will check, review and prepare the commenta for PLN approval according to approval procedures of PLN.

All drawings and documents during approval procedures, approved drawings and documents will be catagorized, filed and storaged at the ENGINEER's field office and home office.

3.5 Design Modifications

The ENGINEER will study and advise the design modification, if any, to PLN in case that the design modification would be advantage for technical and economic points of view and/or unforeseen matters would occurred.

In case the design modification required, the ENGINEER will make a precise study so as not to disadvantage of design quality and delay the construction schedule of the PROJECT.

3.6 Supervision of Construction, Testing, Commissioning and acceptance Tests

i) Inspection during Manufacturing and Delivery Control of Equipment and Materials

The ENGINEER will coordinate Contractors in establishing a quality assurance program and delivery expediting program of the required equipment and materials of the PROJECT to monitor and control all manufacturing and delivery aspects such as the material's quality, manufacturing schedule, shop test schedule and procedure, delivery schedule, etc.

The ENGINEER will review periodically the above programs to maintain the overall construction schedule of the PROJECT.

The ENGINEER will review and advise the specifications, shop testing methods and procedures proposed by the Contractors before starting of shop tests.

The ENGINEER as an authorized inspector will witness the shop tests of major equipment, materials and steel structures as required by the Contract Documents of Engineering Services, subject to PLN's approval and will prepare shop test certificates of those equipment, materials and steel structures.

The Shop test witness reports giving the finding and results of each shop test will be prepared and submitted to PLN.

ii) Construction Supervision

The ENGINEER will coordinate, supervise and inspect the construction activities of related contract lots which will be carried out by the several Contractors to ensure compliance with the stipulations of the contract documents of each contracting lot.

The ENGINEER will conduct the following services for construction supervision of the related works :

a) Issuing of orders and decisions as specified in the contract documents between PLN and the Contractors.

b) Inspection of workmanship, materials, construction equipment, construction methods, and determination of their quantities to

ensure compliance with the stipulations of the contract documents.

c) Giving original points, lines and levels of reference and subsequent approval thereof for setting-up of the construction works.

d) Review and approval to determine competence of any person employed by the Contractors including foreign personnel and authorized representatives.

e) Review and advise to PLN of major change which might be required for the proper execution of the construction works of the PROJECT.

f) Propose of alterations, issuing orders of alterations, additions and omission to the construction works of the Contractors.

g) Coordination in establishing the procedures for site tests, engineering supervision, site inspections, field survey works and laboratory tests which shall be conducted by the contractors according to the specifications of the contract documents of each lot.

h) Arrangement and supervision of field tests as specified in the contract documents of each lot.

i) Taking necessary measurement in accordance with the methods of measurements as specified in the contract documents, to evaluate and approve the progress of the works as required for the processing of progress payments and for additional works.

j) Identifying the difficulties during construction works and looking for the most favorable countermeasure.

k) Monitoring, recordings and determination of actual work progress.

l) Processing of issuing certificates for payments due to the Contractors according to the conditions of Contracts of each lot.

m) Maintenance of records and accounts of all commitments incurred, any payment made in foreign and local currencies to any Contractor employed by PLN for the execution of any part of the PROJECT.

n) Keeping proper record of the work progress, comments of testings and inspections, etc. related to the engineering services and implementation of the PROJECT.

o) Assist and advise to PLN in obtaining the Contractors insurances as well as guarantees and warantees, and any proceeding in connection with performance bonds, defaults and insurance claims.

p) Approval for removal of construction equipment from the sites.

iii) Supervision for Acceptance Tests and Commissioning Tests

The ENGINEER will coordinate, supervise, inspect and witness the acceptance and commissioning testing activities of the Contractors under close consultation with PLN.

The following services will be conducted by the ENGINEER :

a) Provide an ENGINEER's operational supervisor to assist PLN's operation staff and Contractors' operational advisors during the individual and integrated tests period and initial operation of the transmission line and substation facilities.

b) Coordinate and advise to PLN and the Contractors in conducting all the required performance and acceptance tests.

c) Planning and scheduling for performance and acceptance tests with PLN's consultation to achieve the earliest practicable commissioning of the entire facilities of the transmission line and substation.

d) Assist to the Contractors in preparing procedures of performance and acceptance tests and individual equipment tests so as to perform the tests according to the design criteria, overall system performance and efficiency under actual operating conditions.

e) Issuing certificates of all completion and taking-over certificates for entire works of the contracts of the Contractors subject to PLN's prior approval.

iv) Assistance to PLN for Insurance and Claims

The ENGINEER will assist PLN in proceeding insurance matters and settling disputes or differences which may be arisen between PLN and the Contractors according to the stipulations of the contract documents between PLN and the Contractors.

3.7 Assistance to PLN in Operation and Maintenance

The ENGINEER will coordinate and supervise to the Contractors in establishing the operation and maintenance manuals of facilities, systems as well as individual equipment of transmission line and substations.

The SERVICES will include the followings :

1) Review and approval for the operation and maintenance manuals of individual equipment, facility and system of the transmission line and substations prepared by the Contractors.

2) Assist to PLN in establishing the organization charts, job items and its responsibilities of operation and maintenance staffs.

3) Assist to PLN in establishing detailed maintenance implementation program.

3.8 Monthly Progress Report

The monthly progress of the construction works as well as the engineering services will be reported to PLN within two (2) weeks after the proceeding month.

The report will contain, detailed progress of the construction works and services of each Contractor and ENGINEER, both in the home office, manufacturer's factory and job site including bar charts indicating work accomplished versus work schedule, reasons for the delay, if any, and proposed measures to be taken, cost expenditures and balances, due payments, organization charts and name of main staffs of Contractors and ENGINEER, detailed work schedule of next month, etc.

The contents of the report will be compiled in the monthly progress report for the SERVICES for Construction Supervision of Kotapanjang H.P.P.

3.9 Project Completion Report

The ENGINEER will prepare a project completion report of the Engineering Services for Construction Supervision of Transmission Line and Substations.

i) The report will comprise the followings :

a) Completion dates of all major stages of the works compared with original scheduled dates.

b) Final Construction costs compared with original budgeted costs.

c) Final engineering services costs compared with original budgeted costs.

d) Major deviations in design compared with original budgeted costs.

e) Final operating performance achievements compared with original specifications.

f) Final statement of the Project's financial viability.

ii) Contents of Project Completion Report

The contents of report will be the followings :

A. Executive Summary

B. Main Report

a) Introduction
b) Project Planning
c) Design features of main facilities
d) Construction activities
e) Construction costs
f) Planned and actual construction schedules
g) Contract administration
h) Transfer of knowledge and training
i) Environmental aspects and its countermeasures, if any
j) Other particular matters

C. Appendices

a) Major as-built drawings
b) List of documents handed over to PLN
c) Photographs
d) Report on claims pending, if any

3.10 Transfer of Knowledge

The ENGINEER recognizes that transfer of knowledge to the Indonesian personnel through all activities of engineering services is very important. Therefore, the ENGINEER will seek at all times the most effective way to realize the transfer of knowledge.

The ENGINEER will transfer the knowledge effectively to the Indonesian personnel participated the Project throughout the SERVICES period in all the activities at the ENGINEER's field office and at the job sites.

The ENGINEER will provide lectures on the basic knowledge necessary for survey works, design works, construction works, inspections, tests as well as supervision of construction works, etc., according to the ability and

degree of the participants and work progress during actual execution of the SERVICES.

Though the ENGINEER will prepare a lecture program with consultation of PLN, a lecture per three (3) months will basically be held at ENGINEER's field office or job sites based on the actual steps of work progress of the Project.

II WORK PLAN

1. Introduction

The SERVICES are divided into two (2) main SERVICES :

SERVICES I

The engineering services for Phase I for the construction supervision of the Civil Works and the Design of the Transmission Line between Payakumbuh Substation and Kotapanjang Switchyard for the PROJECT.

SERVICES II

The engineering services for Phase II for the construction supervision of the Metal, Generating Equipment, Equipment, Relocation Road and Bridge Works, and the Transmission Line between Payakumbuh Substation and Pekanbaru Substation through Kotapanjang Switchyard for the PROJECT.

The work plan is divided into eight (8) sections as follows :

(1) General Work Flow
(2) Mobilization
(3) Work Initiation
(4) Work Location
(5) Administration
(6) Operation of the Services
(7) Engineering Procedures
(8) Meetings

The detailed work plan that will be applied by the ENGINEER in providing the SERVICES for implementation of the PROJECT are described below.

2. Supervision of the Construction of Kotapanjang HPP and Associated Transmission Line between Payakumbuh S/S and Pekanbaru S/S

2.1 General Work Flow

These sections cover the general work flow of the SERVICES (SERVICES I & II) of the PROJECT except the SERVICES of the Design of Transmission Line between Payakumbuh S/S and Kotapanjang S/Y.

(1) Assistance and Advice to PLN in Procurement

1) The pre-bid conference will be held under initiative of PLN at the PROJECT site about one and half (1.5) month after the announcement. The ENGINEER will prepare the draft answers to tender inquiries, data required for the pre-bid conference, and have meetings with PLN before the conference. For this purpose, the ENGINEER will dispatch their engineers to attend the conference and meeting.

The pre-bid conference will be held separately with respect to the following lots of Tender Documents:

Power Plant

Lot I	Civil Works
Lot II	Metal Works
Lot III	Generating Equipment
Lot IIIA	Turbine
IIIB	Generator
IIIC-1	Switchyard
Lot V	Equipment
Lot VD	Telecommunication System and Radio Communication
Lot VI	Relocation Road and Bridge
Lot VIA	National Road
Lot VIB	National Road

Lot VIC Provincial Road

Lot VID Bridge and National Road

Associated Transmission Line

Lot IIIC-2 Substation Equipment
(Pekanbaru S/S, Bangkinag S/S and Payakumbuh S/S)

Lot IV Material of T/L
(Kotapanjang - Pekanbaru)

Lot VII Material of T/L (Payakumbuh - Kotapanjang)

Lot 5 Erection of T/L
(Kotapanjang - Pekanbaru)

Lot 6 Erection and Civil Works of S/S
(Pekanbaru S/S, Bangkinang S/S and Payakumbuh S/S)

Lot 7 Erection of T/L
(Payakumbuh - Kotapanjang)

2) During bid period, the ENGINEER will prepare minutes of pre-bid conference and make amendments to the tender documents, if any, on the basis of evaluation and modifications.

3) The ENGINEER will work in close liasion with PLN in the development of proper formats, appropriate work schedules and methodology which will be used subsequently in the evaluation of bid documents.

4) Tender opening will be carried out by PLN in Jakarta. After opening, the results of tender open will be publicly announced by PLN.

PLN Evaluation Team and the ENGINEER will analyse and evaluate of all bids for Lot I through Lot VII inclusive, compliance with the specifications, reasonableness of prices, and proposed time for completion of the work. The ENGINEER will prepare draft evaluation report to PLN explaining the results of the evaluation with regard to selection of the Contractor/Manufacturer for each lot.

(2) Preparation of Construction Drawings, and Review and Approval of Drawings and Documents

1) The final Contract documents will form the basis for subsequent implementation of the PROJECT. After the Contract have been formally signed by and between PLN and Contractor/Manufacturer for each lot, the first conference will be held with each Contractor/Manufacturer in PLN Head Office in Jakarta in order to discuss and confirm the general matters, schedule, and technical guide lines with regard to design, construction, manufacture and erection. During the Contractor's/Manufacturer's design stage, the ENGINEER will coordinate and monitor the design work and check the conformity of the Contractor's/Manufacturer's design with the corresponding Contract documents. This will be done in a manner that best serves the interest of PLN. The second conference will also be held with each Contractor/Manufacturer in Jakarta in PLN Head Office to discuss the matters mainly relating to erection works, after approval pertaining to design drawings, calculation sheets etc. of the respective Contractors/Manufacturers has nearly been completed. The ENGINEER will carry out services relating to approval of drawings, calculation sheets, list, schedules etc. to be submitted by each Contractor/Manufacturer. In giving approval to the Contractor's/Manufacturer's drawings, the ENGINEER will summarize the comments of PLN and those of the ENGINEER in a "comment letter", attach the same with the connected drawings and return to the Contractor/Manufacturer for incorporation of the comments.

2) The ENGINEER will keep sufficiently close internal coordination with the regard to management of design coordination among all the Contractors/Manufacturers, namely, for Lot I through Lot VII and Lot 5 through Lot 7. Should any discrepancy in design or schedule arise between inter-related lots, such discrepancy will be settled by the ENGINEER through coordination among relateed Contractors/ Manufacturers. The ENGINEER will exert utmost efforts for regular distribution of the relative up-to-date information and data to Contractors/Manufacturers concerned as far as practicable to avoid occurance of any such discrepancy in design.

3) The geological investigation to be conducted by the ENGINEER's Local Sub-Contractor in this services will supplement the previous investigation and make clear some questions and problems revealed in the course of the previous Design.

The work items and quantities are tentatively estimated as follows,

i) Drilling

o Dam Site (Left Bank)	4 holes	200 m
o Coffer Dam	2 holes	70 m
o Diversion Tunnel	4 holes	290 m
o Bridges (including SPT)	4 holes	80 m
Total	14 holes	640 m

ii) Permiability Test

o Dam Site	4 holes	36 times
o Coffer Dam	2 holes	12 times
o Division Tunnel	4 holes	54 times
Total	10 holes	102 times

iii) Grouting Test

o Dam Site		
Grouting Hole	9 holes	450 m
Check Hole	2 holes	100 m
Total	11 holes	550 m

4) In accordance with the detailed design approved by PLN on the design stage of engineering services, the ENGINEER will carry out design modification for Lot I (Civil Works) on the basis of Investigation Works by paying special attention to the following points.

i) Provisions for sufficient safety of all structures
ii) Ease of construction and maintenance
iii) Total economy of structures, including construction and maintenance
iv) Preparation of construction drawings

From the above viewpoints, all elements of the structures will be optimized.

5) For approval drawings and documents, the ENGINEER will check, review and prepare the comments for PLN approval all drawings and documents for civil and architectural/structural works, structural equipment, turbo- generating unit and associated equipment and transmission line and substation equipment as well as the procedures for construction and erection works, etc. to be prepared by the respective Contractors/Manufacturers according to approval procedure of PLN.

6) The ENGINEER will check various reports and similar documents to be prepared and submitted by the respective Contractors/Manufacturers during execution of the construction works at PROJECT site, and be fully informed of the actual conditions of the works. The ENGINEER will make its utmost efforts to identify and nonconformance or deviation as early as possible in order to ensure smooth execution of the works.

(3) Supervision of Construction, Testing, Commissioning and Acceptance Tests

1) In order to ensure and promote the execution of quality control of the Contractor/Manufacturers, the ENGINEER will carry out factory inspection and witness, subject to prior approval of PLN in accordance with the factory test schedule to be submitted by the Contractor/Manufacturer maintaining at the same time close liaison with PLN. The times of factory inspection and witness to factory test to be attended will be mutually agreed between PLN and the ENGINEER.

2) The ENGINEER will keep close communication with the Contractors/ Manufacturers to find out whether design, manufacture, shop test, shipping, etc. of the equipment of the Contractors/Manufacturers are in progress as initially schedule or not, and give advice to the Contractors/Manufacturers so that the materials and equipment will be delivered to the PROJECT site on schedule.

3) In the construction stage, the ENGINEER will provide SERVICES in supervising the construction and erection of the PROJECT as per Tender Lot I through Lot VII and Lot 5 through Lot 7. The SERVICES to be provided shall include organizing, planning, supervising and directing the construction/erection program through adequate, experienced and throughly qualified engineers of the Engineer. The most important point in the control of construction schedule at the site is to have respectively Contractors/ Manufacturers comply with the respectively scheduled key dates under their own responsibility. The ENGINEER will obtain from each Contractor/Manufacturer the weekly and monthly schedule and hold the construction schedule meeting every week and constantly supervise coordination of schedule between the respective Contractors/Manufacturers. Should the arrangement of such labor force and material to be insufficient, the ENGINEER will have appropriate instruction well in advance to the concerned Contractor in order to avoid delay of schedule. In the event where there arise any delay in the schedule, the ENGINEER will suggest the related Contractor/Manufacturer to take appropriate measures to catch up with the schedule in order to meet the overall completion schedule.

4) The ENGINEER will attend to any special meeting with Contractors/ Manufacturers including the trial operation meeting in addition to the regular construction schedule meeting, to resolve any bottlenecks and to maintain scheduled progress. The ENGINEER will also arrange coordination meetings between PLN and Contractors/ Manufacturers for promoting better understanding between PLN and Contractor/Manufacturer. Although the supervisors of the ENGINEER will check the site by themselves, they may also carry out supervision of the construction site side-by-side with the personnel of PLN in order to ensure smooth execution of the construction works.

5) The ENGINEER will keep close contact with the safety engineers of the respective Contractors/Manufacturers and supervise training on safety, etc. to be given by the respective Contractors/ Manufacturers to their workers with respect to health control, use

of appropriate clothing, safety belt, helmet and safety net, safety marks and indications, traffic safety and any other required matters for safe and smooth execution of the works.

6) The ENGINEER will obtain information from the respective Contractors of the shipping schedule by the them. The ENGINEER will also ask the respective Contractors to furnish confirmation of the quantity and conditions of the respective shipments at the time of arrival, and disposal of claims, etc.

7) To ensure smooth execution of the Works, the ENGINEER will assist PLN in relocating the storage yards and warehouses at PROJECT site for storage of project materials and equipment for construction. The ENGINEER will also supervise the storage of such materials and equipment and give advice to the respective Contractors/ Manufacturers in this regard.

8) The ENGINEER will carry out inspection of the installed conditions of the respective equipment, the placing conditions of concrete and others and cause the concerned Contractor to re-construct an unsatisfactory work.

9) For the purpose of handling smooth progress of the construction schedule, Project Management plan was prepared by PLN and the ENGINEER.

The ENGINEER will carry out Project Management of the Project, based on this management Plan.

10) The ENGINEER will check and approve the schedules and procedures for test and commissioning of individual auxiliary equipment and facilities to be submitted by the respective Contractors/ Manufacturer after considering PLN's comments, if any. The ENGINEER will assist PLN in deciding the period of executing tests on each plant and equipment. During each such test, the ENGINEER will witness the test, observe the behavior of the equipment or plant being tested with particular reference to temperature raise, vibration, noise level, etc. and recommend to PLN if the equipment

or plant may be accepted. In this connection, brief meetings will be held before and after each such test to discuss and agree on points mutually amongst PLN, the ENGINEER and Contractor/ Manufacturer. As part of overall integrated test, the reliability test and performance test will be carried out with the ENGINEER's supervisors in accordance with PLN's guide lines. The performance test shall not be commenced until the test results of the individual and related auxiliary equipment have been accepted by PLN. In case of individual test, the ENGINEER will ask the Contractor/Manufacturer to furnish a prompt digest report for each equipment after the test is conducted for information of PLN. In case of start-up and trial operation of generating unit as a whole, however, the ENGINEER will advise PLN about the test results and overall conformity with the specifications and conditions of contract.

(4) Assistance to PLN in Operation and Maintenance

1) The each Lot of Contractors/Manufacturer will furnish the operation and maintenance manuals for the individual equipment and plant furnished for the PROJECT.

The ENGINEER will integrate these individual instructions, operation and maintenance manual and compile the same to prepare an operation and maintenance manual for the entire plant for general guidance of the trainees.

2) The ENGINEER will furnish advisory services in all respects of hydro power plant operation and maintenance including dam surveillance and monitoring by providing two (2) qualified engineers for a continuous period of six (6) months for the operation and maintenance.

3) Training of Indonesian Personnel under the Terms of Reference will be divided into two categories, namely, i) training in Japan, and ii) training in Indonesia.

i) Training in Japan

PLN's six (6) operating personnels will be provided 3-month-training course in Japan. Such training will be conducted in TEPCO Training Center as well as in manufacturer's plants. The training program will cover such fields as i) design approach, ii) plant operation and maintenance and iii) load dispatching. The trainees will be provided general familiarization with computer as used to control power plant operation and load dispatching.

ii) Training in Indonesia

This training will be an on-the-job training as the construction of Project progresses. The ENGINEER will provide, through the individual Contractors/Manufacturers, training to PLN's engineers in operation and maintenance of equipment and plant under the PROJECT. Such training will include guidance to PLN's engineers in operating the individual equipment and plant during tests and trial operation on a daily work basis. Such guidance will continue untill performance test on the generating units has been carried out. The ENGINEER will also provide necessary training to PLN's engineers, through the individual Contractors/Manufacturers, in trouble shooting and maintenance. In this way, the maintenance of the power plant on completion of performance test. Their participation on equipment test and trial operation, side-by-side with the Contractors/Manufacturers, will build up necessary confidence in plant operation and maintenance.

(5) Services during the Period of Guarantee

The ENGINEER will maintain an office at the PROJECT Site until the end of November 1997.

During the period of guarantee, the ENGINEER will identify defective parts of the Plant and also approve countermeasure preparing by the

Contractors after acceptance by periodic visits to completed plant or by visits to the Plant when some defects take place in the Plant. The ENGINEER will issue maintenance certificates and final certificates in accordance with the Conditions of Contract, subject to PLN's prior approval.

(6) Project Completion Report

The ENGINEER will furnish project completion report to PLN after successful Performance Test carried out on the PROJECT. The Completion Report will cover such information as the main features of the PROJECT with key drawings and diagrams, construction and installation records and data, final construction cost, major deviations in design compared with the original costs, actual time schedule, claims pending used on the PROJECT.

(7) Other Services during Construction Supervision

1) Assist to PLN in Environmental Works

Environmental Management and Monitoring of the PROJECT should be implemented by PLN as an Executing Agency in cooperation with related institutions with assistance of the ENGINEER, in accordance with RKL and RPL.
The ENGINEER will prepare the report semiannually.

2) Progress Report

The ENGINEER will prepare and submit to PLN monthly and quarterly progress reports which includes project activity and the ENGINEER's activity.

3) Transfer of Knowledge and Training of Indonesian Personnels

Working as members of the integrated project team they are trained on the job to obtain practical knowledge of how to deal properly with the respective works of field design work, construction supervision and field inspection.

The Indonesian engineers assigned for the field design work and construction supervision will not be given any lectures before they are assigned to the respective tasks. The ENGINEER will provide on-the-job training in the daily work on the site, but every three (3) months, the ENGINEER will provide a classroom lesson for systematical review of what they have done on daily work in the preceding three (3) months.

The training program will be presented to PLN at an early stage of the SERVICES.

2.2 Mobilization

Mobilization concerns the preparatory work in the Head Office of the ENGINEER to ensure a smooth start-up and efficient operation at an early stage of the SERVICES.

Based on the engineering service schedule, the ENGINEER will carry out four main mobilization and demobilization for the SERVICES as follows :

(1) Mobilization for the Procurement
(2) Mobilization for the Construction Supervision
(3) Demobilization for the Construction Supervision
(4) Demobilization after the Period of Guarantee

(1) Mobilization for the Procurement

The SERVICES during the procurement should be taken into the followings :

1) Tender Documents and Pre-Bid Conference
2) Bid Evaluations
3) Preparation of Evaluation Report
4) Contract Negotiations

Before the arrival of first members in Jakarta, the ENGINEER will perform preparatory work for opening the Project Liaison Office in

Jakarta. Tasks which will be done include hiring an administrator, setting up a temporary office and operation center in TEPSCO Jakarta Office available for short-term use.

(2) Mobilization for the Construction Supervision

Two (2) months before the arrival of the members for construction supervision at the PROJECT site, the ENGINEER will carry out preparatory work for the PROJECT Site office and the Accommodation of the members.

The ENGINEER request PLN to construct the ENGINEER's accommodation at Rantau Berangin Main Base Camp, and complete accommodation for the first members for construction supervision by the end of September 1992. (Detailed House Schedule is shown in the cost proposal)

(3) Demobilization for the Construction Supervision

After commencement of the Plant, the ENGINEER will carry out demobilization of the main members for construction supervision between October 1996 and January 1997.

At the time of demobilization of the construction supervision, the ENGINEER will return some part of accommodation and office to PLN for use of PLN Operational Personnel.

(4) Demobilization after the Period of Guarantee

During the Period of Guarantee, the ENGINEER will maintain an office at the PROJECT Site, with all construction record, until all the maintenance certificates and final certificates are issued, claims are settled and contractor's staff are off the PROJECT Site. The ENGINEER will operate in the Project Site Office during this period with Indonesian staff through the TEPSCO Jakarta Office.

At time of final demobilization of the Services, the ENGINEER will return the all accommodation and office to PLN in reasonably good condition.

2.3 Work Initiation

The primary objective at the initiation stage will be to review all facts of the PROJECT thoroughly to ensure that the Project plan fulfills the real project needs, technical as well as operational goals after service.

The updated work plan, resulting from the initiation phase, including the revised work program must ensure a smooth and quick start up of the PROJECT.

The ENGINEER is familiar with the Project details and has steadily followed the Project developments since the completion of the Reconnaissance Study.

One of the early and crucial managerial tasks of the initiation phase is to hold a briefing with PLN, to enable the Implementing Agency to present the latest project status and to introduce any modification that may have resulted from a recent reformulation of the planning objectives and strategies and to make sure that there is agreement between PLN and the ENGINEER with regard to the PROJECT requirements.

2.4 Work Location

The ENGINEER's work for the Kotapanjang Hydroelectric Power Plant and Associated Transmission Line between Payakumbuh S/S and Pekanbaru S/S will be performed at several locations.

The ENGINEER's site office located in the PROJECT Site will take charge of the duties of site works for construction supervision of Kotapanjang HPP including supervision of the field investigations and construction supervision of the Associated T/L work.

In the ENGINEER's Home Office, review and approval of manufacturer's drawings and documents of the associated T/L works, Metal works, Generating equipment, and major design modifications, which may arise, and the regular reviews of production schedules and delivery schedules will be carried out.

Inspection works during manufacturing, and delivery control of equipment and materials will be carried out at the vary places of the manufacturer's country, subject to prior approval of PLN.

For the some parts of inspection works, the ENGINEER will carry out the works in association with inspection company.

2.5 Administrations

Office coordination works of the ENGINEER's Site Staff will be carried out by administrator(s) who shall be stationed in the ENGINEER's Site Office.

The works shall include opening of bank account, welfare and benefits of the ENGINEER's staff, maintenance of the Office, contract of local employees and facilities, preparation for necessary permits and authorizations, accounting and payment, preparation and submission to PLN for acceptance of ENGINEER's invoice of international and local currencies, and clerical works for duty trips and out-of-country travel, which are required for the ENGINEER's Site Staff including local staff to carry out the SERVICES.

The ENGINEER's Liaison Office in Jakarta shall be designated as to assist the ENGINEER's Site Office and Home Office in the above coordination works.

Part of the above works will be performed by the supporting administrators at the ENGINEER's Home Office.

2.6 Operation and the Services

The ENGINEER's Resident Manager is responsible for taking suitable actions to ensure the efficiency of productivity of the ENGINEER's work in Site

Office by demonstrating his strong leadership in the combined team of foreign and local engineering staff. A number of local employees in the position of administration, secretary, typist/operator, inspector, survey team, office boy, janitor, and draftsman will be hired in the Site Office, to assist ENGINEER's Site staff for the purpose mentioned above.

2.7 Engineering Procedures

For the purpose of ensuring smooth progress of the construction schedule, the ENGINEER will place emphasis on engineering procedures in efficient handling of vast bulk of management documents/information.

In establishing procedures, the ENGINEER will follow PLN standard format as developed in Project Management Plan prepared by PLN during the pre-construction stage of the PROJECT. In particular, Flow of Command for contractural and technical matters, Flow of Documents within the ENGINEER's organization and external interfaces with the PLN and the contractors described in the Project Management Report will be adopted, and meticulous document handling procedure will be established and put in use.

2.8 Meetings

(1) Meetings

In the construction supervision activities the ENGINEER will assume a position for close liaison with the PLN through the Project Manager and his staff, by formal regular meetings (at least weekly) and additional meetings as required to report and discuss progress, problems and programs of the work (T.O.R. of Engineering Services for Construction Supervision, Section II.1. (6).5 Liaison with Assigned PLN Project Management Personnel).

It is foreseeable that the PLN Project Manager requires the ENGINEER to inform frequently of the progress of construction activities. This is particularly true during the initial stage of the construction works when the day-to-day performance needs special attention, because

its possibilities of leading to a modification of the design and the cost.

In this case, the ENGINEER's Representative has to be ready for weekly meeting with the PLN Project Manager on next day of his discussion with the Contractor and/or Manufacturer for review and planning of weekly construction program. If there arise matter(s) requiring further clarification by the Contractor and/or Manufacturer, the ENGINEER will meet with the Contractor and/or Manufacturer again to settle the matter(s) on the following day to the meeting with the PLN Project Manager.

Meeting between the ENGINEER and the Contractor and/or Manufacturer shall be held between Chief Lot Engineer(s) and the Contractor and/or Manufacturer attended by Contract Engineer and Quantity Surveyor and other Contractors and/or Manufacturers which have an interfacing work. Depending upon the matters of discussion, the meeting may also be attended by PLN Chief in charge of the Lot.

(2) Minutes

Minutes of Meeting shall be prepared promptly by ENGINEER's Chief Lot Engineer(s) and to be checked and signed by ENGINEER's Representative.

A typical pro-forma for minutes of meeting is as follows:

(1) Subject, Date, Location
(2) Attendants
(3) Acceptance of Previous Minutes
(4) Record of Progress
(5) Problems Encountered/Solutions
(6) Program
(7) Technical Matters Arising
(8) Others
(9) Date of Next Meeting/Close Meeting

3. Design of Transmission Line between Payakumbuh S/S and Kotapanjang S/Y including Bangkinang S/S and Modification due to Relocation of Pekanbaru S/S

3.1 General Work Flow

These sections cover the general work flow of the SERVICES for the Design of Transmission Line between Payakumbuh S/S and Kotapanjang S/Y including Bangkinang S/S and Modofication due to Relocation of Pekanbaru S/S.

1) Grouping of the Services

For the purpose of planning the methodology of the services, it is proposed that such items be combined and grouped into the following five (5) main divisions :

- Division I Inception Report
- Division II Investigation Works and Studies
- Division III Design and Cost Estimate
- Division IV Tender Documents
- Division V Transfer of Knowledge and Others

Division I will be scheduled to start immediately after the Contract Signing of the SERVICES I.

Division II will be scheduled to be executed continuously after and on the basis of Division I.

Division III will be scheduled to be undertaken in parallel with Division II. The detailed design services in Division III will be scheduled to be completed within two (2) months after the completion of Division II.

Division IV will be scheduled to be carried out in parallel with the detailed design services in Division III.

Division V will be performed throughout the period of the SERVICES in Indonesia.

2) Time Schedule of the Services

The ENGINEER understands that urgent execution and timely completion of the SERVICES is of a primary importance of the Kotapanjang Hydroelectric Power Project as well as the Ombilin Thermal Power Project for the power development of central regions of Sumatra, namely Riau Province and West Sumatra Province.

To complete the SERVICES within the specified time schedule, each main aspect of the SERVICES will be strictly maintained by the ENGINEER according to the proposed time schedule as shown in APPENDIX C, particularly for those in the following :

a) The contractor who will carry out the route and sites survey, and geological investigation works of the transmission line and sites of substations shall commence the works before one (1) month from the date of Contract Signing of the SERVICES I,

b) PLN is kindly requested to grant the ENGINEER unobstructed access to all PROJECT sites and unconditional right for alteration of the ENGINEER's Personnel with regard to carrying out the SERVICES,

c) For obtaining all official permissions from Government authorities concerned, which are necessary for performance of the SERVICES including work permits for Resident Engineers, permission for site investigation and survey works, etc., PLN may kindly assist the ENGINEER,

d) Facilities and services to be provided by PLN should be prepared punctually or in advance, and should be in good condition and at due locations,

e) Timely discussions, decisions, determinations or approvals should be given by PLN on all documents and other presentations prepared by the ENGINEER,

f) PLN is kindly requested to furnish the necessary data, existing reports and documents, information, etc. required by the ENGINEER.

3.2 Detailed Work Flow

3.2.1 Division I : Inception Report

Review of the previous Design Reports and Study Reports of the PROJECT and related other projects, namely Ombilin Thermal Power Plant Project, and study for all relevant data newly obtained will be carried out, and the Inception Report will be prepared based on the results of study/review.

- The ENGINEER will review the previous design and study reports related to the Project to confirm the basic features, aspects, conditions, etc. of the PROJECT so as to execute the comprehensive Services.

- The ENGINEER will arrange a tentative project schedule on the basis of review and study of previous design and study reports so as to justify the efficiency execution of the PROJECT.

- The ENGINEER will prepare a detailed schedule for the SERVICES and detailed work assignments for the personnel of the ENGINEER by incorporating all PROJECT requirements.

1) Preparation of Inception Report

The Inception Report, prepared based on the study/ review results, will be submitted to PLN for finalizing by the end of the second (2nd) month from the commencement of the SERVICES I. The Inception Report will contain findings and recommendations, technical justification for optimization of the PROJECT, environmental aspects, project cost estimate, tentative project schedule, scope and location of the route survey works and soil investigation works to be conducted by the local contractor.

2) Review of Specification and Program for Investigation Works

The ENGINEER will review and modify the specifications and work program of investigation works of transmission line route and site of substation which has been prepared by the ENGINEER.

3) Preparation of Training Program for Indonesian Personnel

The Engineer will provide the Training Program for Indonesian Personnel for entire period of the Service in Indonesia as an on-the-job training.

3.2.2 Division II: Investigation Works and Studies

Investigation Works will be conducted for the purposes of selection of transmission line route and site of substations as to proceed the detailed design of the the transmission line and substation facilities as well as the civil works of the above facilities.

The Investigation Works shall be conducted by the local contractor of PLN, the Engineer will carry out the supervision services for the Investigation Works.

The Investigation Works to be undertaken in Division II are as follows:

1) Supervision for Transmission Line Route and Substation Site Survey

- Reconnaissance and Alignment Survey
- Center Line Survey
- Plan Survey
- Tower Site Survey
- Topographic Survey for Site of Substations
- Geological Survey of Tower Sites and Substation Sites

2) Right and Conditions of the Engineer

The ENGINEER will accompany the personnel of local contractor during entire period of investigation works to provide guidance and check the works. The ENGINEER will also check the survey result drawings and data.

The ENGINEER will advise local contractor in all matters relating to investigation works specified in the Contract Documents of the Investigation Works between PLN and the local contractor.

The ENGINEER will monitor the progress of the investigation works, and necessary countermeasures to be taken to maintain a work schedule will be advised to the local contractor after consultation with PLN.

3) Preparation of Investigation Work Report

The ENGINEER will assist the local contractor to prepare an Investigation Work Report.

The results of Investigation Works will be compiled in respective investigation work reports when each work is completed. However, all results of Investigation Works will be compiled in the Investigation Work Report scheduled for submittal at the final stage of the SERVICES.

3.2.3 Division III : Design and Cost Estimate

Division III consists of the SERVICES for design criteria, detailed design, project cost estimate and implementation program.

Detailed design will be performed at the ENGINEER's Home Office, design criteria and cost estimate will be executed both at the ENGINEER's Field and Home Offices.

The SERVICES in Division III will be carried out in parallel with the Investigation Works in Division II. The ENGINEER will exert every effort to hold close exchange of information between its Home Office and Field Office, so as to obtain the latest results of Investigation Works.

The Services of Division III are described below :

1) Design Criteria

Prior to the design works, design criteria, design conditions and design parameters of the PROJECT will be studied through Investigation Works in Division II, existing and available data and current technical information and discussion with PLN.

The design criteria will be compiled in the Design Report.

2) Detailed Design

In accordance with the previous design report of the PROJECT and the Ombilin Thermal Power Plant Project and with the results of the Investigation Works in Division II, the ENGINEER will carry out detailed design services taking into account special attention to the following points :

- Provisions for sufficient safety of all structures and facilities
- Ease of construction and maintenance
- System reliability
- Total economy of structures including constructions, operation and maintenance
- Availability of local materials and technology
- Standardization of structures and facilities
- Elexibility against changes in conditions
- Environmental aspects

From the above view points, all elements of the structures will be optimized.

The results of detailed design will be compiled in a design report to be presented soon after the completion of the design services.

i) Transmission Line

For Transmission Line between Payakumbuh S/S and Kotapanjang S/Y (route length: approx. 83 km), steel towers and tower foundations will be designed in accordance with the results of the route survey works in Division II.

The following main features will be studied and designed :

a) Steel towers
b) Conductor and hardwares
c) Groundwire and hardwares
d) Insulator strings
e) Tower foundations
f) Accessories

ii) Substations

For construction of new Bangkinang Substation and extension of Payakumbuh Substation, switchgears and associated facilities, foundation structures and control building will be designed.

The following main features will be studied and designed :

a) Switchgears
b) Transformers
c) Busbar system and steel structure
d) Control and protection system
e) Telecommunication system
f) Grounding system
g) Lighting system
h) Civil works
i) Architectural works

3) Project Cost Estimate

i) Calculation of Work Quantity

During the Services period, temporary "bills of quantities" will be prepared and reviewed according to the progress of design works.

These bills of quantities will be applicable for studies of construction costs, construction schedule, etc.

The bill of quantities will be completed on the basis that detailed design and construction schedule of the PROJECT are finalized. Completed bills of quantities will be classified into tender lots due.

ii) Project Construction Schedule

The Project construction schedule will be prepared by the ENGINEER based on the detailed design and bills of quantities.

The Project construction schedule will be made in consideration to co-relationships among the Project works, capacities of each construction facility, site conditions, experiences of similar projects, etc.

Shipping, unloading and inland transportation periods for imported goods will also be considered.

Key dates and critical paths will also be indicated in the schedule so that no work progress delays occur.

iii) Cost Estimate

The cost estimate will be made mainly with emphasis on unit costs. The unit costs of equipment, material and construction will be

assessed on the basis of the previous design reports of the PROJECT and ongoing similar projects, construction methods, costs of construction materials, labor costs, etc.

Reference will be made to the current construction costs of similar projects in Indonesia as well as a recent international tendering experiences.

In assessment of the unit cost, effects caused by recent inflation will be duly taking into account for both the foreign and local currency portions.
Customs, duties and value added taxes will be shown separately, and costs will be broken down into foreign and local currency portions. Provisional sums will be made to cover the interest during construction, and physical and price contingencies.

The construction cost will be broken down into annual fund requirement both in foreign and local currency portions on the basis of the construction schedule. The results of cost estimate will be compiled in the project cost estimate report and submitted to PLN.

4) Preparation of implementation Program

An implementation program in sufficient details so as to obtain approval by financial sources of the PROJECT will be prepared at the final stage of the SERVICES.

3.2.4 Division IV : Tender Documents

1) Preparation of Tender Documents

The Engineer will prepare and modify tender documents for international and local tenderings for the following proposed tender lots.

The tender documents will be prepared and modified in parallel with the detailed design services in Division III.

a) International Tendering

i) Lot VII : Transmission Line Materials (Payakumbuh S/S - Kotapanjang S/Y)

ii) Lot IIIC-2 (Modified):
Substation Equipment (Payakumbuh S/S and Bangkinang S/S and Pekanbaru S/S)

b) Local Tendering

i) Lot 7 : Erection of Transmission Line (Payakumbuh S/S - Kotapanjang S/Y)

ii) Lot 6 (modified) :
Erection, Civil and Architectural Works for Substations (Payakumbuh S/S and Bangkinang S/S and Pekanbaru S/S)

3.2.5 Division V : Transfer of Knowledge and Others

1) Transfer of Knowledge

The ENGINEER will transfer the technical and engineering knowledge related to the Services effectively to the Indonesian personnel at ENGINEER's field office and at the job site throughout the SERVICES period in Indonesia.

Although there is a time limitation of the SERVICES of each division, the ENGINEER will make the best effort to transfer the knowledges to any Indonesian personnel participated in the SERVICES through on-the-job training.

The ENGINEER will prepare a training program soon after commencement of the SERVICES, and select the training items with consultation with PLN to ensure an efficient transfer of knowledge of the SERVICES to the Indonesian personnel.

4 Work Schedule

The ENGINEER understands that urgent mobilization and timely completion of the SERVICES is of primary importance for the implementation of the PROJECT.

To complete the SERVICES within the instructed time schedule, each critical path in the SCHEDULE OF SERVICES in APPENDIX C should be strictly maintained by the ENGINEER and PLN, particularly for those in the following.

(1) The contractors who will carry out the survey and geological investigation works for design of transmission line should be selected by PLN before contract sign of the SERVICES I. PLN is kindly requested to take the necessary action for this, such as immediate approval of budget, approval of bid procedures for contractor selection and implementation of the investigation.

In the ENGINEER proposed schedule, if the route survey and investigation works would be completed in May 1991, the transmission line between Payakumbuh S/S and Pekanbaru S/S will be commenced the operation from the end of December 1994.

(2) To keep the commencement schedule of the operation of this PROJECT at the end of 1996, the ENGINEER propose PLN to keep following tender schedule.

Lot No. ICB	Work Item	Tender Announcement
I	Civil Works	Feb. 1 1991 (Issuance of bid documents)
II	Metal Works	Jan. 1 1992
III A & B	Generating Equipment (Turbine and Generator)	Aug. 1 1991
III C	Switchyard and Substation Equipment	Dec. 1 1991

Lot No. ICB	Work Item	Tender Announcement
IV	Transmission Line Materials between Kotapanjang S/S and Pekanbaru S/S	Dec. 1 1991
V D	Radio Communication Equipment	July 1 1991
VI B,C,D	Relocation Road and Bridge	July 1 1991
VI A	Relocation Road	July 1 1994
VII	Transmission Line Materials between Payakumbuh S/S and Kotapanjang S/Y	Dec. 1 1991
5	Erection of Transmission Line between Kotapanjang S/Y and Pekanbaru S/S)	Feb. 1, 1992
6	Erection, Civil and Architectural Works for Pekanbaru S/S, Bangkinag S/S and Payakumbuh S/S	Feb. 1, 1992
7	Erection of Transmission Line between Payakumbuh S/S and Kotapanjang S/Y	Feb. 1, 1992

The tender announcement will be carried out based on the above mentioned schedule. But before announcement of each lot, PLN is requested to obtain concurrence from OECF.

(3) PLN is kindly requested to grant the ENGINEER unobstructed access to all PROJECT sites and unconditional right for alteration of the ENGINEER's personnel with regard to carrying out the SERVICES.

(4) For obtaining all official permissions from Government authorities concerned, which are necessary for performance of the SERVICES, such as permission for site investigation works, etc., PLN may kindly assist the ENGINEER.

(5) Facilities and services provided by PLN should be prepared punctually or in advance, and should be in good condition and at due locations.

(6) Timely discussions, decisions, determinations or approvals should be given by PLN on all documents and other presentations prepared by the ENGINEER.

5. Reports and Delivery

The reports/documents to be delivered during the SERVICES period is described in the APPENDIX-G. The reports/documents to be finally submitted in accordance with the Terms of Reference. All draft reports/documents, except training programs and progress reports, will be submitted to PLN for the comments and approval before delivery of the final report, and these will be finalized after discussion with PLN.

The task reports for each main task will be submitted for early review and approval when a particular task is completed.

(1) Progress Report

The ENGINEER will submit monthly and quarterly progress reports to PLN in PLN standard format as developed during the pre-construction contract period. In monthly reports, the following will be taken into consideration :

- Progress/delays will be compared with the Project plan, and accompanied by concise, clear explanations. The effects of delays on the project master program will be assessed and preferred advice on measures is needed to maintain the schedule.

- Project costs and disbursements will be shown, related to the original budget and disbursement schedule.

- All variation orders and claims raised by contractors will be listed, together with actual or estimated total costs and any effect these variation orders and claims may have on the program.

The ENGINEER will prepare :

- a quarterly report on project costs and disbursements to the level of detail required by PLN

Quarterly progress report will consist of the following :

- Activities progress
- Cost

With respect to the content of the Cost, it is explained generally in Project Management Plan and with respect to the Activities progress, general content of them are shown hereinafter.

Summary : Brief explanation of activities progress for all over the Project Activities.

Progress : Brief explanation of activities progress for each lot including Engineering.

Technical Aspect : The changes on design, quality and any of technical matters in connection with Variation Orders.

Summary of Claim : Brief explanation of claims, showing present status of settlement.

(2) Project Completion Report

On completion of the PROJECT, the ENGINEER will prepare a Project Completion Report. This Completion Report will include construction supervision of Kotapanjang HPP and Transmission Line construction between Payakumbuh S/S and Pekanbaru S/S.

In this reports, the following will be taken into consideration :

1) completion dates of all major stage of the PROJECT, against original planned dates.
2) final construction costs against original budgeted costs.
3) final consultant costs against original budgeted costs.
4) major deviations in design compared with the original costs.
5) final operating performance achievement against the original specification.
6) final statement of the PROJECT's financial viability.

Contents of Completion Report

A. Executive Summary

B. Main Report

1. Introduction
2. Project planning
3. Design of main structures
4. Construction
5. Materials control
6. Instrumentation and monitoring
7. Project construction cost
8. Contract administration
9. Training and transfer of knowledge
10. Environmental aspects

C. Appendix

1. a list of documents handed over
2. a list of training courses given and of PLN personnel attending
3. a list of things not yet done and needing still left to be done, at the date of issue of the Project Completion Report
4. a summary description of the design concept and criteria from technical and economic viewpoints
5. a report on claims pending, if any
6. a report on Dam Surveilance and Monitoring.

Relevant studies and preparation of other reports and documents will be conducted taking into account the relationship with works and construction timing.

COMMENTS ON THE TECHNICAL PROPOSAL

PLN COMMENTS	RESULTS OF DISCUSSION
1. Topographical survey and field investigation for T/L between Payakumbuh and Kotapanjang is scheduled to carry out by PLN with assistance of Local Consultant, and the topographical survey is scheduled to complete in February 1991, while the Field investigation is in May 1991.	1. The Engineer is informed, and the Agreement will be arranged on this basis.
2. The consultant is necessary to explain the relation of Bangkinang S/S to this Project.	2. The Engineer explained the relationship of Bangkinang S/S to the Project with the location map.
3. The consultant is necessary to explain the said lots of project with ICB or LCB.	3. It will be discussed in the next meeting.
4. In the "Supervision of the Construction of Kotapanjang HPP" it should be mentioned "excluding LOT IV".	4. The Engineer agreed.
5. Consultant is requested to do the modification of design due to the change of location of Pekanbaru S/S.	5. The Engineer agreed, and the man-months required for this activity will be discussed in the next meeting.
6. Construction Supervision of T/L of Payakumbuh-Kotapanjang-Pekanbaru and Associated S/S should be done by one Team at the same time.	6. The Engineer agreed, and revision of the team formation will be discussed in the next meeting.

PLN COMMENTS	RESULTS OF DISCUSSION
7. It is necessary to ask Consultant whether possible or not to delete the term of "option" from the consultant work in this project.	7. It is impossible to delete the term of "option", since the OECF Loan for the Project is divided into 2 Loan Agreements (1990/1991 and 1991/1992). The Engineer recommended to divide the Scope of Works for the Engineering Services into 2 Agreements, as follows : Agreement I : 1) Construction Supervision of the Civil Works 2) Design of T/L between Payakumbuh S/S and Kotapanjang S/Y, including Bangkinang S/S and modification of Pekanbaru S/S. Agreement II: 1) Construction Supervision of Other Works (Lot II trough Lot VI, excluding Lot IV). 2) Construction Supervision of T/L between Payakumbuh S/S and Pekanbaru S/S and Associated S/S.
8. "Documentary Film & Model" should be included in scope of work of Consultant.	8. The Engineer agreed in the meeting. However, it may be difficult to set in the Agreement, for the reason OECF Loan does not include this work. The TOR and costs will be discussed in the next meeting.
9. PLN proposed to provide the sub- contract in the Consultant contract for the cost of additional Environmental Study.	9. The Engineer agreed. The TOR for all additional works will be provided by PLN and the costs will be discussed during cost negotiation.
10. Page 2-2, 1st paragraph : It should be informed to the consultant that the topographical survey for T/L of Payakumbuh-Kotapanjang will complete in February 1991.	10. Page 2-1, Item 2.1., 2nd paragraph It is confirmed.
11. Item 2.1.2 : All of this item must be rechecked by the Engineer.	11. Item 2.1.2. The Engineer agreed to check and revise sentences and words of this item.

PLN COMMENTS	RESULTS OF DISCUSSION
12. Page 2-13, item 1.(1) : It should be added with "excluding Lot IV"	12. Page 2-13, Item 1.(1) The Engineer agreed.
13. Page 2-26, Item 2 : It should be added with "including Bangkinang S/S and modification due to relocation of Pekanbaru S/S".	13. Page 2-26, Item 2 : The Engineer agreed.
14. Page 2-32, Item (4) : It shall be done with the understanding that "PLN issued approval".	14. Page 2-32, Item (4) Review and approval mean check, review, and preparing comments for PLN approval. Approval shall be issued by PLN.
15. Page 2-33, 2nd paragraph, 3rd line : ".....as needed ..."means" subject to PLN's Approval.	15. Page 2-33, 2nd paragraph, 3rd line The Engineer agreed.
16. Page 2-33, 4th paragraph : This paragraph should be deleted.	16. Page 2-33, 4th paragraph The Engineer agreed the paragraph shall be deleted.
17. Page 2-38, Item III : This schedule must be revised proposingly by the consultant.	17. Page 2-38, Item III The Engineer agreed, and the revision will be prepared and discussed in the next meeting.
18. Page 2-38, Item IV : Type and number of document which will be provided by Consultant should be studied by each member of team.	18. Page 2-38, Item IV It will be discussed in the next meeting

PLN COMMENTS	RESULTS OF DISCUSSION
19. Page 2-43 - Item 2.2.3 : Is it possible to delete the "option" especially at the procurement stage from the item of this work ? - Item 2.2.3.(4) : To be deleted.	19. Page 2-43, Item 2.2.3. It is impossible. Please see Item II, f above. Page 2-43, Item 2.2.3. (4) The Engineer agreed the paragraph shall be deleted.
20. Page 2-4, item (1).(a) : To be as follows : "Preparation and issuing of contraction ... including Diversion works, and any temporary works for design and ENGINEER is responsible" A part of item of this work has been done during the Pre- Construction of Kotapanjang HPP.	20. Page 2-44, Item (1).(a) This item shall be changed to "Preparation and issuing the construction drawings of the Permanent Work including Diversion Works and any Temporary Works for whose design the Engineer is responsible.
21. Page 2-44, item (3).(a), 2nd line : To be deleted.	21. Page 2-33, Item (3).(a), 2nd line The Engineer agreed the line shall be deleted.
22. Page 2-45, item 2.2.5, 2nd paragraph, 1st line : To be "Where major changes are required, subject to PLN's Approval the Engineer's site design team will ...."	22. Page 2-45, Item 2.2.5, 2nd paragraph, 1st line The sentence "subject to PLN's approval" shall be added to the paragraph after Where major changes are required....
23. Page 2-46, item (g), 3rd line : To be "subject to prior approval of PLN"	23. Page 2-46, Item (b) The Engineer agreed.

PLN COMMENTS	RESULTS OF DISCUSSION
24. Page 2-47 : - Item (f), 3rd line : To be "Subject to prior approval of PLN" - Item (g), 2nd line : To be "... the contractors, subject to prior approval of PLN"	24. Page 2-47, Item (f), 3rd line The words "construction with" shall be changed with "approval of". Page 2-47, Item (g), 2nd and 3rd lines The words "consultation with" shall be changed with "approval of".
25. Page 2-48, item (n) : It should be explained by the Consultant.	25. Page 2-48, Item (n) The Engineer should maintain the records and accounts of all commitments/payments incurred from the Project by the following reasons : 1) PLN has to report to OECF quarterly the disbursement of the Loan. 2) The Engineer has to report all commitments/payments through Quarterly Reports and Final Report to PLN.
26. Page 2-50, item 2.2.7.(1), 1st paragraph, 4th line : To be "and structures, assist PLN ... for permanent". Consultant is necessary to explain where the "Dam Surveillance and Monitoring".	26. Page 2-50, Item 2.2.7.(1), 1st paragraph, 4th line a) The words "and structure;" of the 1st paragraph shall be changed with "and structures,". b) The 1st paragraph shall be added with "including Dam Surveillance and Monitoring".
27. Page 2-51, item (d).(iii) : In this item is also included as-built drawing provided by the Consultant.	27. Page 2-51, Item (d).(iii) The sentence "including as-built drawings" shall be added to the item.
28. Page 2-52, item 2.2.8.(a), 1st line : To be "identify defective parts of the plant and also approve countermeasure preparing by the Contractor after acceptance by ..."	28. Page 2-53, Item 2.2.8. (a) The sentence "and also approve countermeasure preparing by the Contractor" shall be added to the wording after "identify defective parts of the plant...."

PLN COMMENTS	RESULTS OF DISCUSSION
29. Page 2-53, Item 2.2.9, 1st line : To be ".... monitoring and advising progress ... an expert of environmental"	29. Page 2-53, Item 2.2.9, 5th line The sentence will be changed to be " monitoring and advising progress in the environmental works by an environmental expert".
30. Page 2-53, Item 2.2.9, 8th line : To be "preparing semiannual report for submission by ..."	30. Page 2-53, Item 2.2.9, 8th line The sentence "to assist PLN in" shall be deleted.
31. Page 2-53, Item 2.2.10 : Item (1) to be (2) and Item (2) to be (1).	31. Page 2-53, Item 2.2.10 The Engineer confirmed.
32. Page 2-54, Item 2.2.10.(3) : It should be added with item : (f). Surveillance (g). Operation and Maintenance Manual	32. Page 2-54, Item 2.2.10.(3) The item shall be added with : (f) surveillance report of the dam (g) operation and maintenance manual
33. Page 2-56, Item 2.3 : It should be added with "including Bangkinang S/S and Modification due to relocation of Pekanbaru S/S"	33. The sentence "including Bangkinang S/S and modification due to relocation of Pekanbaru S/S" shall be added to the item.
34. Page 2-63, 1st paragraph : It should be adjusted with the commissioning of T/L in March 1994.	34. Page 2-63, 1st paragraph The Engineer agreed.
35. Page 2-64, Item 2.4.1 : It should be combined with the similar Lots, that is : - Lot VIII with Lot IIIC-2 - Lot VII with Lot IV - Lot 7 with Lot 5 - Lot 8 with Lot 6	35. Page 2-64, item 2.4.1 It will be discussed in the next meeting.

PLN COMMENTS	RESULTS OF DISCUSSION
36. Page 2-66, Item 2.4.3.a) : It should be adjusted with the change of Lots.	36. Page 2-66, Item 2.4.3.a) It will discussed in the next meeting.
37. Page 2-67, Item b), 4th line : To be "and evaluating ... international tender lots"	37. Page 2-67, Item b), 4th line The words "and local" shall be deleted.
38. Page 2-68, Item d : To be deleted.	38. Page 2-68, item d) The paragraph shall be deleted.
39. Page 2-69, Item 2.4.4 : It should be adjusted with the previous comments.	39. Page 2-69, Item 2.4.4 Review and approval mean check, review and preparing comments for PLN approval. Aprrovals shall be issued by PLN.
40. Page 2-69, Item 2.4.5, 2nd line : To be "the Engineer ...the design modification, if any, to PLN in case of the design"	40. Page 2-69, Item 2.4.5, 2nd line The Engineer agreed.
41. Page 2-70 : - 4th paragraph is "subject to PLN's approval" - 6th paragraph is deleted.	41. Page 2-70, 4th paragraph The Engineer agreed.

PLN COMMENTS	RESULTS OF DISCUSSION
42. Page 2-71 : Item b) : It should be adjusted with TOR Item e) : To be "Review and advise to PLN of major change .... of the construction works of the Project" Item f) : To be "Propose of Alterations, ... construction works of the Contractors" Item i) : It should be adjusted with TOR	42. Page 2-71, Item b) It shall be adjusted with TOR item 6.2.b. Page 2-71, Item e) a. The word "approval" shall be change to "advise to PLN" b. The sentence "subject to prior consultation with PLN' shall be deleted. Page 2-71, Item f) The sentence shall be changed to "Propose of alterations, issuing orders on alterations, additions and omission to the construction works of the Contractors". Page 2-71, Item i) It shall be adjusted with TOR, Item 6.2.j.
43. Page 2-73 : - Item e : To be deleted - Item 2.4.7, 2nd line : To be "The Engineer will coordinate and supervise to the ..."	43. Page 2-73, Item e) The Engineer agreed. Page 2-73, Item 2.4.7, and line The word "advise" shall be changed to "supervise".
44. Section 3 "Work Plan", should be adjusted with the comments on Section 2 "Technical Approach"	44. Section 3 "Work Plan" should be adjusted with the previous comments on Section 2 "Technical Approach".
45. The understanding of "assist" in Section 2 and Section 3 is "Review, prepare draft, discuss with PLN and finalize."	45. The Engineer agreed.

PLN COMMENTS	RESULTS OF DISCUSSION
46. Design of Transmission Line between Payakumbuh S/S and Kotapanjang S/Y should be done in Indonesia.	46. Principally, the Engineer agreed, but due to the technical reasons, computer software and instrument, etc., a part of the design works must be done in the Engineer's Home Office.
47. Page 3-1, Item, 3.1.2 : It should be added with "including Bangkinang S/S and modification due to relocation of Pekanbaru S/S"	47. Page 3-1, Item 3.1.2 The sentence "including Bangkinang S/S and Modification due to relocation of Pekanbaru S/S" shall be added to the item.
48. Page 3-1, Item 3.2 : It should be put "Establish system and procedure (Project Management Plan)"	48. Page 3-1, Item 3.2, last line The Engineer agreed to include "Establish system and procedure (project management Plant)".
49. Page 3-2, Item, 3.2.1.(1).1) : It is necessary the explanation from Consultant	49. Page 3-2, Item 3.2.1 91) 1) The paragraph shall be deleted with understanding that activities themselves shall be carried out by the Engineer.
50. Page 3-2, Item 3.2.1.(1).2) : It should be adjusted with the change of lot in Section 2.	50. Pages 3-2 and 3-5, Item 3.2.1. (1) 2) It will be discussed in the next meeting.

PLN COMMENTS	RESULTS OF DISCUSSION
51. Page 3-3, fig. 3-1 "Engineering Services Flow Diagram": - Draft Letters of Intent, should be deleted. - It should be put "Establish system and procedure (Project Management Plan)" and "Dam Surveillance Monitoring" - It should be adjusted with the change of lot in Section 2. - It should be adjusted with the Scope of Services for transmission line (approval drawing) in accordance with Section 2	51. Page 3-3, Fig. 3-1 "Engineering Services Flow Diagram" - The Engineer agreed to delete. - The sentence "Establish system and procedure (Project Management Plan)" and "Dam Surveillance and Monitoring" shall be added to the Figure. - The Engineer agreed. - The Engineer agreed.
52. Page 3-5, item 3, 1st line : To be "Drawing bid prior, the Engineer will prepare minutes of prebid conference and make amendments to the ....."	52. Page 3-5, Item 3, 1st line The sentence "prepare minutes of pre-bid conference and" shall be added after ....the Engineer will ....
53. Page 3-6 : - 2nd paragraph : To be deleted - Item (2) : # Consultant should add the explanation about the scope of Civil Works # Consultant should arrange the work order in accordance with the lots order # Consultant should adjust the Scope of Services of transmission line (approval drawing) in accordance with Section 2 # Consultants hold give the detail amount of drawing which have been done and will be done	53. Page 3-6, 2nd paragraph The Engineer agreed. Page 3-6, Item (2) a. The Engineer will revise the item (2) and submit to PLN trough the preparation of draft Agreement. b. The number of construction drawings have been done : 85 sheets. The number of construction drawings will be done : 1,000 sheets. (approx.)

PLN COMMENTS	RESULTS OF DISCUSSION
54. Page 3-7 : - Item 2), 2nd sentence : It should be explained by the Consultant what is the meaning of this sentence ? - Item 3) : # It should be explained by the Consultant who will do this work # Consultant should give the detail and explain the geological investigation which was undertaken during the Feasibility Study and Engineering Design	54. Page 3-7, Item 2), 2nd sentence The Engineer will keep sufficiently close internal coordination with the regard to management of design coordination among all the Contractors/Manufactures, namely, for Lot I through Lot VIII and Lot 5 through Lot 8. Should any discrepancy in design or schedule arise between inter-related lots, such discrepancy will be settled by the Engineer trough coordination among related Contractors/ Manufacturers. Page 3-7, Item 3) The geological investigation will be carried out by the Engineer's Local Sub-Contractor. For the detail of the works, please see the attachment 2.
55. Page 3-8 - Item 3) : It should be adjusted with comments in Section 2 - Item 4) : It should be explained that this work is for which lot. - Item 5) : It should be adjusted with the Scope of Services of transmission line (approval drawing) in accordance with Section 2.	55. Page 3-8, Item (3) It will be adjusted through the preparation of the draft Agreement. Page 3-8, Item 4) The design modification will be carried out for Lot I Civil Works. All the explanation in this Section shall be revised in the way of tender-lot grouping. Page 3-8, Item 5) It will be adjusted through the preparation of the draft Agreement.
56. Page 3-11, item (4) : It should be explained about the Civil Works and Electro-Mechanical (including transmission line).	56. Page 3-11, Item (4) All the explanation in this Section shall be revised in the way of tender-lot grouping.

PLN COMMENTS	RESULTS OF DISCUSSION
57. Page 3-12 : - Item 2) : It should be put about the Civil Works (Dam Surveillance and Monitoring)	57. Page 3-12, Item 2) The sentence "including dam surveillance and monitoring" shall be added to the item after...plant operation and maintenance....
58. Page 3-13 : - Item (5) : It should be put about the Civil Works - Item 6), 2nd line : To be "The Engineer will furnish project completion report to PLN after successful" - Item (7), 1st line : To be "Assist PLN in Environmental Works", it should be put about the "Semiannually Report"	58. Page 3-13, Item (5) The word "Plant" means all the project works covering civil, mechanical and electrical works. Page 3-13, Item (6), 2nd line The sentence "successful" shall be added before "Performance Test". Page 3-13, Item (7), 1st line The words "Review and Advice" shall be changed to "Assist". The Engineer agreed to prepare the Semiannually Reports.
59. Page 3-14 : - Item 2) : It should be included the project activity and consultant activity.	59. Page 3-14, Item 2) The Engineer agreed.

PLN COMMENTS	RESULTS OF DISCUSSION
60. Page 3-15, item (1) : - 2nd line : It should be deleted "February 1991 - January 1992" - Item 1) : To be "Tender Documents and Pre-bid Conference" - Item 4) : To be "contract Negotiations" - 2nd paragraph It is necessary to be explained by the Consultant. - 3rd paragraph It should be deleted.	60. Page 3-15, Item (1) - 2nd line : The Engineer agreed. - Item 1) : The Engineer agreed. - Item 4) : The Engineer agreed. - 2nd paragraph : The paragraph shall be deleted. But the matter will be discussed in the next meeting. - 3rd paragraph : The paragraph shall be deleted.
61. Page 3-16, item 3.2.3, 7th line : - Item 4, last sentence : to be added ".... in the good condition" - Item 3.2.3, 7th line : "in the beginning of 1990" is deleted.	61. Page 3-16, Item (4), 2nd paragraph The sentence "in reasonably good condition" shall be added after ....all accommodation and office. Page 3-16, Item 3.2.3, 7th line The Engineer agreed.

PLN COMMENTS	RESULTS OF DISCUSSION
62. Page 3-17 : - 3rd paragraph : It is needed the explanation of Consultant about the number of expatriate staff. - Item 3.2.4, 3rd paragraph : The design of transmission line should be done in Indonesia and the result of review and comment of manufacture's drawing us sent to PLN	62. Page 3-17 - 3rd paragraph The paragraph shall be deleted. - Item 3.2.4, 3 rd paragraph Principally, the Engineer agreed, but due to the technical reasons, computer software and instrument, etc., a part of the design works must be done in the Engineer's Home Office. The result of review and comment of manufacturer's drawing have to be sent to PLN.
63. Page 3-21, item 3.3 : It should be adjusted with the comments on Section 2.	63. Page 3-21, Item 3.3 The sentence "including Bangkinang S/S and Modification due to relocation of Pekanbaru S/S" shall be added to the item.
64. Page 3-22, Fig. 3-2 : It should be adjusted with the change of lot and design modification due to the relocation of Pekanbaru S/S.	64. Page 3-22, Fig. 3-2 It will be discussed in next meeting.
65. Page 3-30, item 3.3.2.4 : Tender Documents should be up-dated.	65. Page 3-30, item 3.3.2.4 It will be discussed in the next meeting.
66. Page 3-33, all items 3-4 : Work scheduled should be adjusted with the changes and comments on Section 2.	66. Page 3-33, Item 3.3.2.5 It will be discussed in the next meeting. Draft of schedule is as per attachment 1.

PLN COMMENTS	RESULTS OF DISCUSSION
67. Page 3-36 and page 3-42 : It should be adjusted with the comments on Section 2 and Section 3.	67. Page 3-36 and Page 3-42 It will be discussed in the next meeting.
68. Page 3-44, item 3.5.(1).2) : Item 11 and item 12 should be deleted.	68. Page 3-44, Item 3.5.(1).2) Item No. 11 and item No. 12 shall be deleted.
69. Page 3-47, item C : It should added with "Surveillance Report"	69. Page 3-47, Item C The item "6. a report on dam surveillance and monitoring" shall be added.
70. Page 4-1, 4th paragraph : It should be deleted.	70. Page 4-1, 4th paragraph The Engineer agreed.
71. Page 4-2, Fig. 4-1 (1) : It must be adjusted with the basic organization of Singkarak E/S (Attachment 1)	71. Page 4-2, Fig. 4-2 (1) The Engineer agreed.
72. Page 4-3, Fig. 4-2 (2) : - What is the difference between Co-Resident Manager and Deputy Resident Manager. - Why there are two Deputy Resident Managers. - Transmission Line Supervision group is combined to be one group only.	72. Page 4-3, Fig. 4-2 (2) It will be discussed in the next meeting.
73. Page 4-5 up to page 4-6 : What is the relation between this description and Manning Schedule, considering that there are some names who is not mentioned in this page is mentioned in the Manning Schedule.	73. Page 4-5 up to Page 4-6 There is no direct relation between the description and Manning Schedule of the Project. The team will be formed in Japan to provide back-up support in engineering, management and financial aspects to the Project team through the Senior Project Coordinator.

PLN COMMENTS	RESULTS OF DISCUSSION
74. Page 4-9 : This page is the overlap page, so that this should be taken out.	74. Page 4-9 The Engineer confirmed.
75. Page 4-12 : Sub-total = 116.5 M/M in Japan should be deleted (nothing).	75. Page 4-12 Sub-total of 116.5 M/M in Japan shall be deleted (typing errors).
76. Consultant should prepare the Tentative Time Schedule and Tentative Manning Schedule with the same scale and combining the Tentative Manning Schedule of Foreign Consultant and Local Consultant.	76. The required schedules have been submitted by the Engineer on December 3, 1990, and it will be discussed in the next meeting.
77. Consultant should prepare the Job Description for each engineer by describing "Who is doing what" and to be connected with the Scope of Services in the Terms of Reference (TOR).	77. The job description for each engineer has been submitted by the Engineer on December 3, 1990, and it will be discussed in the next meeting.
78. Consultant should explain the scope of work from the same position of each group of engineer.	78. It will be explained in the next meeting.
79. The names who are "to be decided later" should be filled up at the time of the negotiation.	79. It will be submitted in the next meeting.
80. Page 4-13 : - Group 3 "Field Design/Expert" : # Geologist is not necessary M/M in Home Office. # It should be added with "Geotechnical Engineer" - Group 4 "Construction Supervision HPP" : For Architect is enough 2 Engineers	80. Page 4-13. - Group 3 "Field Design/Expert" There is no Home office M/M for Geologist in the Schedule and the Geotechnical works will be carried out by Geologist. - Group 4 "Construction Supervision HPP" It will be discussed in the next meeting.

PLN COMMENTS	RESULTS OF DISCUSSION
81. Page 4-14 : - Group 4.4 : Why is the number of M/M for this work very big ? - Group 5 "Design T/L Payakumbuh-Kotapanjang" : # T/L Surveyor, is enough one engineer # Position 5, 6 and 7 is done by one engineer with the name of position of "S/S and Control Engineer" # Architect, is enough one engineer	81. Page 4-14 - Group 4.4. "Relocation Road and Bridge" It will be discussed in the next meeting. - Group 5 "Design of T/L Payakumbuh S/S-Kotapanjang S/Y" It will be discussed in the next meeting.
82. Page 4-15 : The work who is undertaken by Group 7 "Construction of T/L (Payakumbuh-Kotapanjang)" is enough to be undertaken by Group 6 "Construction of T/L (Kotapanjang-Pekanbaru)" with the understanding that the S/S engineer is added with one engineer and Architect is enough one engineer.	82. Page 4-15 It will be discussed in the next meeting.
83. Page 4-16 : - Group 1 "Management/Contractual", position 7 is deleted. - To be pointed out that there are some engineers of PT. Yodya Karya at Tanggari HPP I project whose the names mentioned in the Manning Schedule but they never go to the Site (including Purwoko J.) - Group 3 "Field Design/Expert" : # Rachmansyah is replaced by Rusman Panggabean # Geotechnical Engineer, is deleted.	83. Page 4-15 - Group 1 "Management/Contractual" It will be discussed in the next meeting. - The Engineer (Local Consultant) It will be discussed in the next meeting. - Group 3 "Field Design/Expert" It will be discussed in the next meeting.

PLN COMMENTS	RESULTS OF DISCUSSION
84. Page 4-17 : - Group 4.3. "Electrical & Mechanical" : F.X. Hutajulu should be replaced by other engineer. - Group 4.4. "Relocation Road & Bridge" : A. Sudihardjo D. should be replaced by other engineer. - Group 5. "Design of T/L Payakumbuh-Kotapanjang" : Position 4 is "Route Survey Engineer"	84. Page 4-17 - Group 4.3 "Electrical and Mechanical" It will be discussed in the next meeting. - Group 4.4 "Relocation Road and Bridge" It will be discussed in the next meeting. - Group 5 "Design of T/L payakumbuh S/S - Kotapanjang S/Y It will be discussed in the next meeting.
85. Page 4-18, Group 6 "Construction Supervision of T/L (Kotapanjang-Payakumbuh)" : To be deleted, with the understanding that the work is enough to be done by Group 7 "Construction Supervision of T/L (Payakumbuh-Kotapanjang)"	85. Page 4-18 It will be discussed in the next meeting.
86. Page 4-19 up to page 4-32 : This description should be completed with job description for each engineer for the whole Scope of Services in TOR.	86. Page 4-19 up to Page 4-32 The Job Description for each engineer has been submitted by the Engineer on December 3, 1990, and it will be discussed in the next meeting.
87. Page 4-33 and 4-34 : If this engineer cannot be provided by PLN, what is the effect on the consultant work in this project.	87. Page 4-33 and Page 4-34 It will be discussed in the next meeting.

APPENDIX I

MINUTES OF MEETINGS

1. Feasibility Study

Work Item	Location	Quantity	Total
Drilling	Dam Site Quarry Sites River Deposits	1,200 m (27 holes) 525 m (14 holes) 20 m (2 holes)	1,745 m (43 holes)

2. Engineering Services of Design Stage

Work Item	Location	Quantity	Total
Drilling	Dam Site	860 m (19 holes)	2250.5 m (104 holes)
	Quarry Sites	290.5 m (7 holes)	
	Pulau Gadang Gravel Pit	40 m (6 holes)	
	Kuok Gravel Pit	90 m (9 holes)	
	Switchyard	30 m (3 holes)	
	Transmission Line	537 m (41 holes)	
	Substation	120 m (4 holes)	
	Gulamo Bridge Site	125 m (7 holes)	
	Kampar Bridge Site	123 m (2 holes)	
	Muara Takus Bridge Site	35 m (2 holes)	

3. Proposed for the Engineering Services of Construction Supervision

Work Item	Location	Quantity	Total
Drilling	Dam Site	200 m (4 holes)	640 m (14 holes)
	Cofferdam	70 m (2 holes)	
	River Deposits	290 m (4 holes)	
	Bridge	80 m (4 holes)	

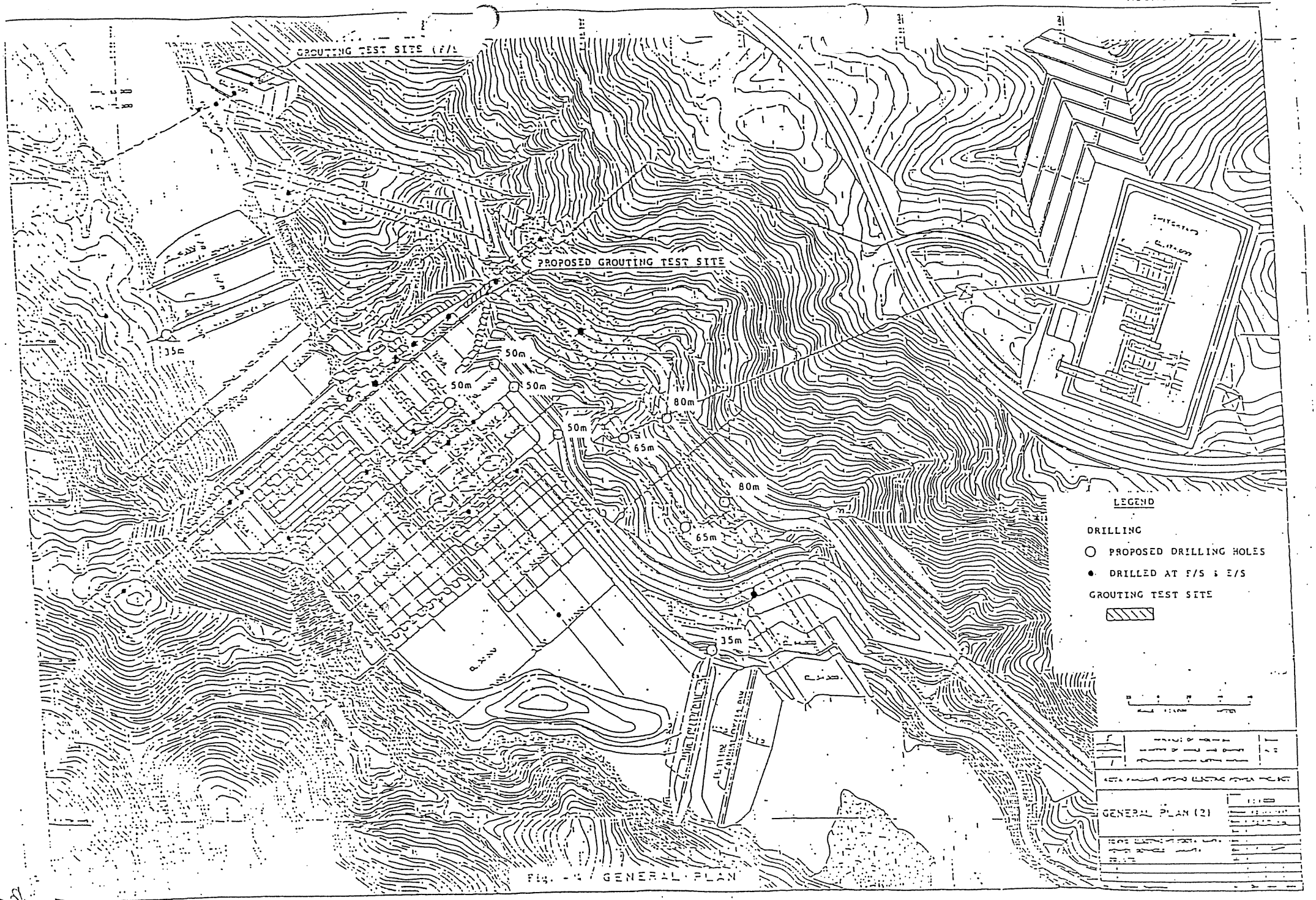
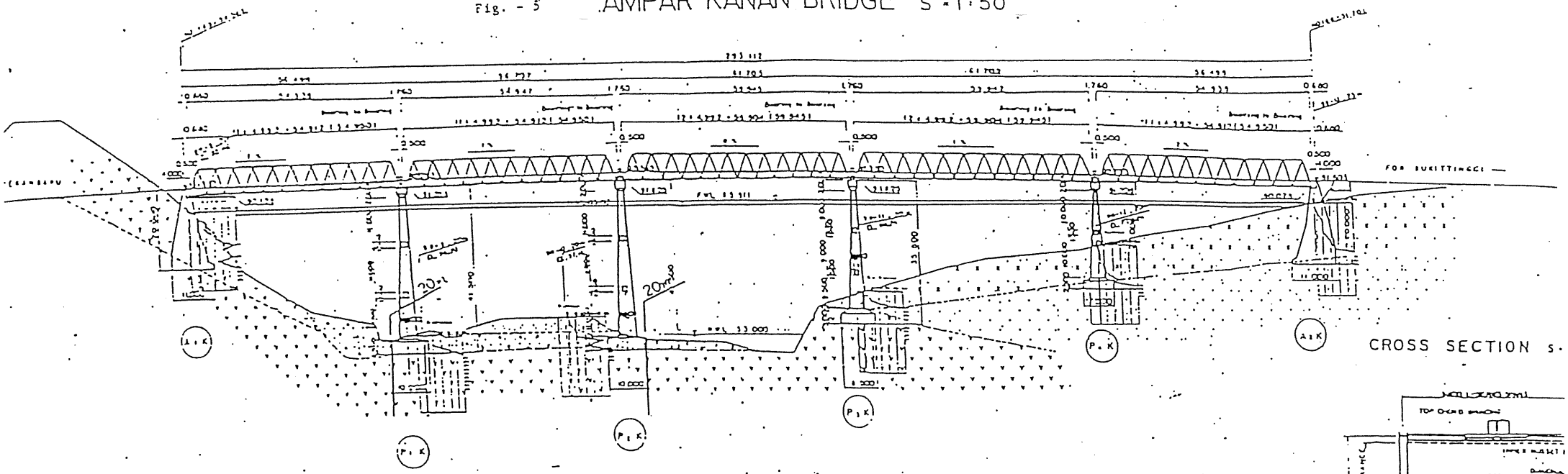
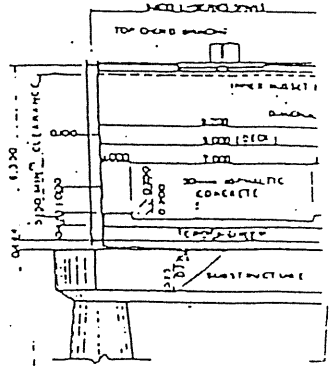


Fig. -4 / GENERAL PLAN

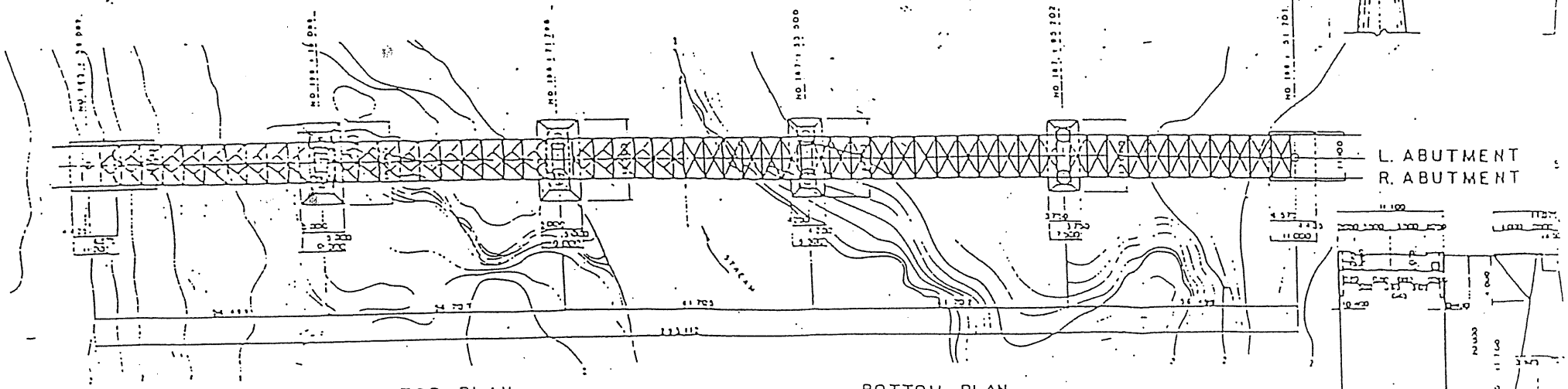
Fig. - 5 AMPAR KANAN BRIDGE S = 1 : 50



GENERAL VIEW



CROSS SECTION S.



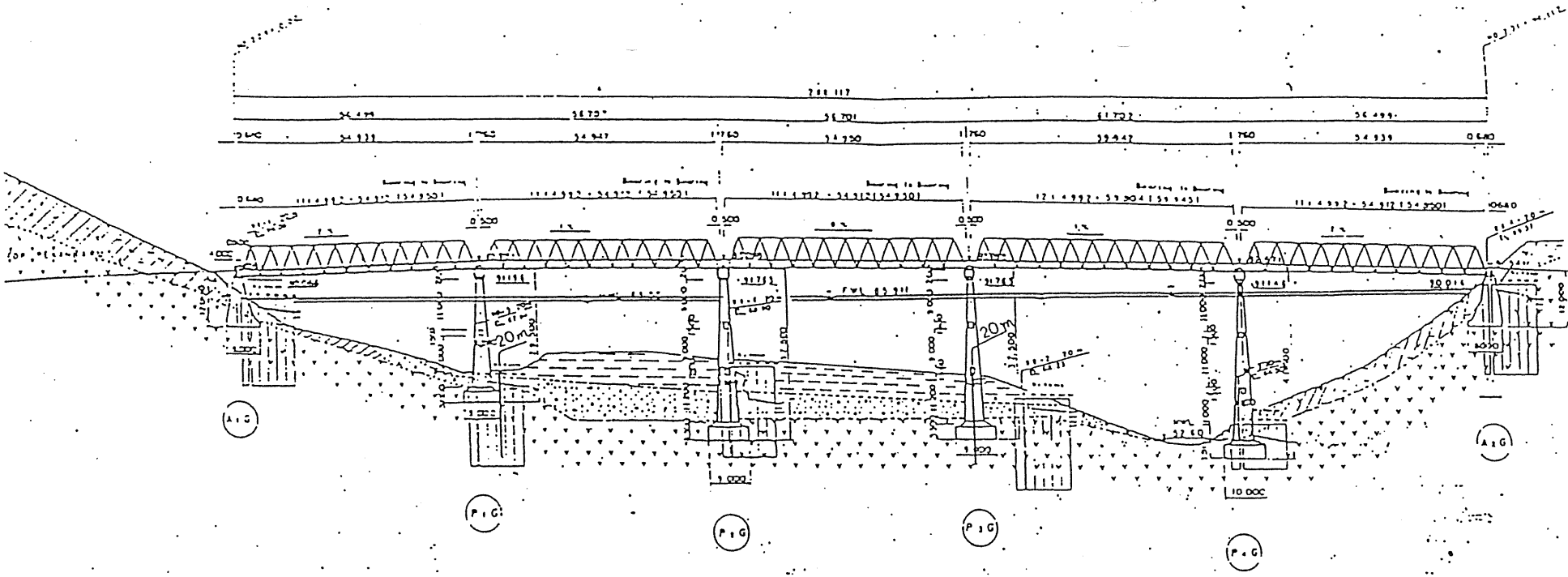
L. ABUTMENT
R. ABUTMENT

TOP PLAN

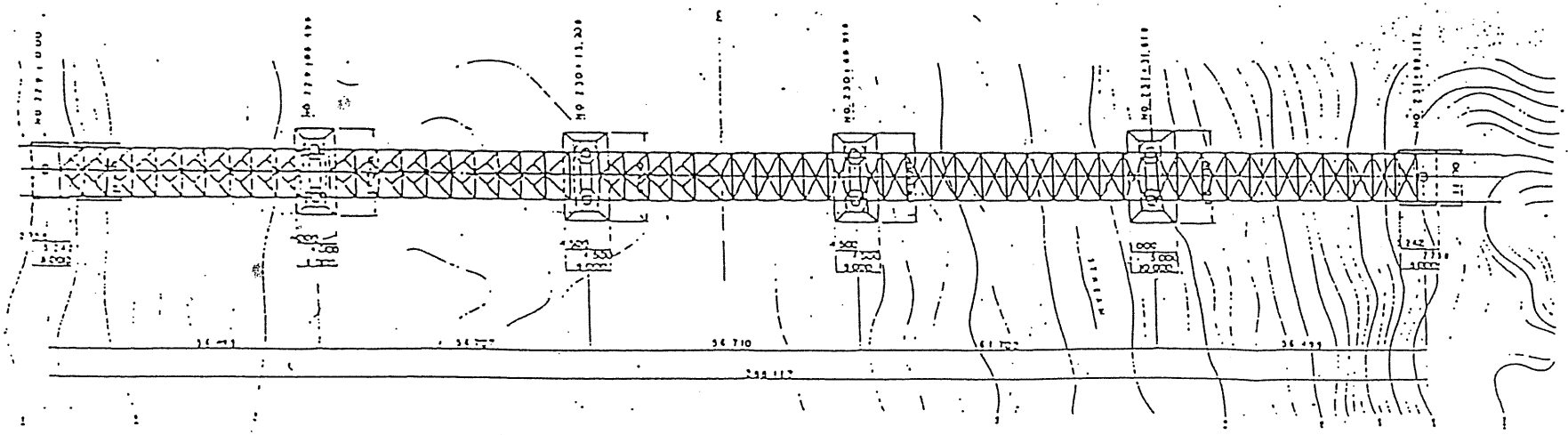
BOTTOM PLAN

GENERAL PLAN

Fig. --- GULAMO BRIDGE S=1:500

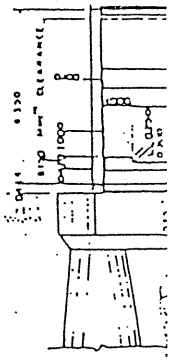


GENERAL VIEW



TOP PLAN BOTTOM PLAN.

GENERAL PLAN



CROSS

R. ABUTM
L. ABUTM

PERUSAHAAN UMUM LISTRIK NEGARA

P U S A T

DAFTAR HADIR

Acara Rapat : PLTA KOTAPANJANG

Tanggal : 6 Desember 1990

Tempat : Ruang Sidang Lt. VII PLN Pusat

NO.	N A M A	JABATAN	KESATUAN	TANDATANGAN
1.	S. Anwar Aritonang	KDJP	PLN - Pusat	
2.	Barkah S.	KBAK	PLN - Pusat	
3.	Divi Atmo Priyanto	DJP	PLN - Pusat	
4.	HADI. S	DKH	PLN - PST	
5.	HARTOPO. MH	DAH	PLN PST	
6.	HARRIS SOENARSO	DJH/II	"	
7.	HENKY	DDH	—,—	
8.	PRADONO	KESTR.	PLN PROYEK	
9.	DJODI SUPRAPTO	DDJ I	PLN PST	
10.	JUARA. P.	D.D.J I	PLN PJT	
11.	DJOKO PUTRANTO	STAF	TRIMITRA	
12.	SEIICHIRO HIRANO		TEPSCO	
13.	TAKASHI IZUMI		TEPSCO	
14.	Eishi. Goto		"	
15.	YUZO. YANO	G.M. of JKT OFFICE	"	
16.	HISANORI MORITA		"	
17.	INDRIARTONO	KDJP	PLN PUSAT	
18.	Satria Ernata	DIV - HUBRO	Trimitra	
19.	Andhika Prastawa	Staff.	Trimitra	
20.	Irzal Sulaim	Project Repr.	YODYA KARYA	
21.	YOSHIDA		TEPSCO	

MINUTES OF MEETING
(The 2nd)

Subject : Contract Negotiation for Engineering Services of Kotapanjang Hydroelectric Power Project
Date : December 7, 1990
Time : 9.00 a.m - 11.30 a.m
Attendants : See the attached attendant list.

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1. Following 1st meeting held on December 6, 1990, PLN and the Engineer discussed on Technical Proposal as per attached Annex-1.

2. Draft of Minutes of 1st Meeting with information and data requested by PLN was submitted, and checked by PLN and the Engineer to finalize.

3. The curriculum vita for the Engineers not nominated in Technical Proposal were submitted for PLN approval.

For and on behalf of
THE ENGINEER

Hisanori Morita

For and on behalf of
PERUSAHAAN UMUM LISTRIK NEGARA

Ir. S. Anwar Aritonang

1. The Engineer explained the summary of total Man-Months proposed in the Technical Proposal as the following table. The Engineering Services shall be devided into 2 (two) Agreements as confirmed in the Minutes of Discussion (April 12, 1990) between OECF and PLN.

	Total Man-Months	
(1). L/A 1990/1991 (1st Agreement)	TEPSCO	YK/TNE
(1) Civil Works	459.5	519.5
(2) Design of T/L (Paya.S/S-Kota.S/Y)	72.0	64.5
Sub Total	531.5	584.0
(2). L/A 1991/1992 (2nd Agreement)		
(3) Metal, Generating Equipment and Relocation Road and Bridge	234.5	199.5
(4) Construction Supervision of T/L (Kota.S/Y-Peka.S/S)	89.5	67.5
(5) Construction Supervision of T/L (Paya.S/S-Kota.S/Y)	76.5	69.0
Sub Total 2	390.5	336.5
Total	922.0	920.0

Note : The design of T/L between Kotapanjang S/Y and Pekanbaru S/S was made during the design stage of the project (1987-1988), but modification will be made due to the relocation of Pekanbaru S/S.

2. Discussion on Construction Supervision of T/L Works

(1). PLN requested The Engineer to carry-out the construction supervision of T/L Works No. 2.(4) and 2.(5) above mentioned by one (1) team.

The Engineer promised to present a revised construction and Man-Month schedules of T/L Works to meet the request of PLN.

(2). PLN comments on T/L

a. The number of TEPSCO's experts proposed by the Engineer shall be reduced according to the PLN's requirement.

Number of TEPSCO's Experts (proposed by the Engineer)	Number of Experts (required by PLN)
1 Chief Engineer (T/L)	Same
1 Chief Engineer (S/S)	Same
3 T/L Engineers	1 T/L Engineer
3 S/S Engineers	1 S/S Engineer
2 Civil Engineers (T/L)	1 Civil Engineer (T/L)
1 Civil Engineer (S/S)	1 Civil Engineer (S/S)
2 Architects	No need

b. The duration period of design of T/L shall be reduced from 15 months to 9 months due to the schedule of topographical and soil investigation conducted by PLN.

c. The Engineer is requested to provide answers and explanations regarding the proposed experts of both TEPSCO and YK/TNE, including Manning Schedule and Man-Months required.

These matters will be discussed in the next meeting.

PERUSAHAAN UMUM LISTRIK NEGARA

P U S A T

DAFTAR HADIR

Acara Rapat : KOTAPANJANG HEPP

Tanggal : 7 ~~November~~ December 1990

Tempat : R. Sidang Lantai VII, PLN PUSAT

No.	N A M A	JABATAN	KESATUAN	TANDATANGA
1	S. Anwar Aritonang	KDJP	PLN PST	
2.	Barkah S.	KBAK	PLN PST	
3.	Pelly Butarbutar	DJP	PLN PST	
4.	Dwi Atmo Priyanto	DJP	PLN PST	
5.	SARWONO HM	DPH	PLN-PST	
6.	HARTOPO, MH	DAH	PLN-PST	
7.	INDRIARTONO	DVP	PLN PST	
8.	Amin Surlens	DVP	PLN PST	
9.	Gustian Hakim	T/L - Engineer	Yodya Karya	
	Irzal Sulaini	Project Repr.	Yodya Karya	
11.	YOSHIDA		TEPSCO	
12.	T. IZUMI		TEPSCO	
13.	H. MORITA		"	
14.	Y. YANO	G.M. TEPSCO JKT	"	
15.	S. HIRANO		"	
16.	Andhika Prastawa	Trimitra staf.	TNE	
17.	Wahyu Basuno	Kasie	Yodya karya	
18.	SATRIA ERNATA	DIV-HIDRO	TNE	
19.	M. MUNIR	Divjen	PLN-PPE.	
20.	DJODI SUPRAPTO	DDII	PLN PST	
21.	HARRIS WIDIANTO	DIV II	— " —	
22	PRADONO	KSTT	PLN PROJEK	

PERUSAHAAN UMUM LISTRIK NEGARA

P U S A T

DAFTAR HADIR

Acara Rapat : KOTAPANJANG HEPP

Tanggal : ~~November~~ December 1990

Tempat : R. Sidang Lantai VII PLN - PUSAT

No.	N A M A	JABATAN	KESATUAN	TANDATANGAN
1.	M. Zuhdi H	DTG	PLN Pusat	
2.				
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MINUTES OF MEETING
(The 3rd)

Subject : Contract Negotiation foe Engineering Services of Kotapanjang Hydroelectric Power Project
Date : December 12, 1990
Time : 09.00 - 13.00
Attendants : See the attached attendant list.

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1. Following discussion in the 2nd meeting on December 7, 1990, the man-month schedules for respective grouping Services were discussed as per attached Annex-1.

2. The Engineer submitted following data for discussion and PLN approval.

   (1) Revised assignment and man-month schedules for respective grouping Services, including revised T/L construction supervision schedules.

   (2) The revised draft Minutes of the 1st Meeting held on December 6, 1990.

   (3) Curriculum vita of YK's engineers proposed to replace for PLN approval.

For and on behalf of
THE ENGINEER

Hisanori Morita

For and on behalf of
PERUSAHAAN UMUM LISTRIK NEGARA

Ir. S. Anwar Aritonang

1. Following PLN instruction in the 2nd Meeting on December 7, 1990, the Engineer submitted his revised assignment and man-month schedules for T/L construction supervision as follows :

Position	Nos.of Engineer M/M in Original			Revised Scheme	
	Kota-Peka	Paya-Kota	Total M/M		
Chief Engr.(T/L)	1	-	1 (3.0)	1	(33.0)
Chief Engr.(S/S)	-	1	1 (2.5)		
T/L Engineer	2	2	4 (81.5)	1	(27.5)
S/S Engineer	1	1	2 (28.0)	1	(32.0)
Civil Engr.(T/L)	1	1	2 (34.0)	1	(23.0)
Civil Engr.(S/S)	1	-	1	-	
Architect	2	-	3 (5.0)	-	
Test Contr.Engr.	1	1	2 (12.0)	1	(8.0)
Total	9	7	16 (166.0)	5	(123.5)
Difference			11 (-42.5)		

2. PLN asked the Engineer to explain the necessity and job descriptions of respective engineers. The job descriptions of the respective engineers will be prepared by the Engineer.

3. It was confirmed that the deputy Resident Manager is only the role name to execute the duty of the Resident Manager when the latter cannot take his role for the reasons of home leaves and others.

4. Six (6) members of Architect in the original proposal were replaced by three (3) Architect whoes job description are generally as follows :

(1) Structur Engineer	Structur of P/S
(2) Architect Bldg.Engineer	Overall P/S House & S/S Buildings
(3) Utility Engineer	Utilities of P/S

However, Man-Months for them were not changed.

5. The M/M of Environmental Monitoring/Civil Engineer (1) shall be at least 50 M/M and the M/M of Environmental Expert shall be at least 12 M/M.

The Engineer explained that the Socio-Environmental aspects of the Project is more significant than the Nature-Environmental aspects, and based on this condition the Engineer proposed to increase M/M of Environmental Monitoring/Civil Engineer (2) from 45 M/M to 67 M/M and the position of Enviromental Expert (2) will be deleted.

The Engineer agreed to put the Environmental Engineers in separate position from other engineers in the organization chart.

6. PLN cannot allow the Engineer to plot once-a-half breaks in his assignment bar charts.

The Engineer shall revise such assignment schedules for Resident Engineers, without M/M increase as proposed in this Meeting.

7. The Engineer agreed to undertake the new scope of work, Dam Surveillance and Monitoring, because of this matter the proposed M/M of Chief Design Engineer and Geologist will be increased.

The proposed position of Geologist shall be named as Engineering Geologist, while the proposed position of Geotechnical Engineer shall be named as Materials Engineer.

8. It was confirmed that the laboratory for civil works is planned to be established and operated by Contractor for Lot-I Civil Works, under the control and supervise of the Engineer. (Field Design/Expert group).

9. Not only foreign engineers but also local engineers shall be made clear in their role and M/M necessity.

Sufficient work experience of local engineers is required to take their duties.

10. Assignment and Man-Month schedules shall be resettled to keep the Time Schedule of the Project.

11. PLN requested the Engineer to submit clear reason for proposed member and M/M of T/L design group engineers and explained PLN idea on targer of member and MM.

12. Quality control and quantity survey of the relocation road works is planned to implement by its team.

The duty of Quantity Surveyor in the management group is to support their duties and quantity control for overall project work progress.

13. The Engineer was requested to prepare the time schedules of construction drawings for sections of Lot-I Civil Works and recommended to prepare construction drawings in Tokyo before the starting of site works.

PERUSAHAAN UMUM LISTRIK NEGARA

P U S A T

DAFTAR HADIR

Acara Rapat : PLTA KOTAPANJANG

Tanggal : 12 Desember 1990

Tempat : Ruang Sidang Lt. IX, PLN Pusat

No.	N A M A	JABATAN	KESATUAN	TANDATANGAN
1.	I. Anwar Aritonang	KDOT	PLN Pusat	
2.	Barkah S.	KBAK	PLN Pusat	
3.	Pelly Pantarbantar	Staf DOT	PLN Pusat	
4.	Dwiatmo Priyanto	Staf DOP	PLN Pusat	
5.	Muchjudin	Depep PEC	PPE	
6.	Yossi Yosobroto	DEPSIP	PPE	
7.	M. MUNIR	DEALIS	PLN-PPE	
8.	AMIN SUGENG	DOP	PLN PST	
9.	Triyono	DRH	PLN-Pusat	
10.	SATRIA ERNATA S	DIV-HIDRO	TRIMITRA	
11.	John Pantouw	Div-Hidro	Trimitra	
12.	SOEBARNO TIRTO	DIR	YODYA KARYA	
13.	IRZAL SULAIMI	PROJECT MGR	YODYA KARYA	
14.	Gustian Halim	T/L-Engineer	Yodya Karya	
15.	Djoko Prastowo	Staf TELNS	TNE	
16.	Trihono Kadri	Div. Hidro	Trimitra	
17.	YOSHIDA		TEPSCO	
18.	HISANORI MORITA		"	
19.	Y. YANO	G.M. JKT OFFICE	"	
20.	E. GOTO		"	
21.	S. HIRANO		"	

PERUSAHAAN UMUM LISTRIK NEGARA

P U S A T

DAFTAR HADIR

Acara Rapat : . . . . . .

Tanggal : . . . . . .

Tempat : . . . . . .

No.	N A M A	JABATAN	KESATUAN	TANDATANGAN
2.2	T. Izumi		TEPSCO	
2.3	HARTOPO. MH	DAH	PLN PST	
2.4	SARWONO HM.	DPH	PLN-PST	
2.5	HARRIS	DDH II	"	
2.6	DJODI SUPRAPTO	DDJ I	PLN PST	
2.7	PIETER ML	DD) I		
2.8	SOEHARTONO	D.H IC	— —	
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MINUTES OF MEETING
(The 4th)

Subject : Contract Negotiation for Engineering Services of Kotapanjang Hydroelectric Power Project
Date : December 14, 1990
Time : 8:30 a.m - 11:30
Attendants : See the attached attendant list

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1. Following discussion in the 3rd meeting held on December 12, 1990, the man-month and assignment schedules for respective grouping Services were discussed as per attached Annex-1.

2. The Engineer submitted following data for the meeting.

   (1) Job descriptions of proposed Engineer's experts

   (2) Schedule of construction drawings for Lot-I Civil Works

   (3) Detailed job descriptions and implementation schedules of Transmission Line and Substation design and construction supervision group Services.

   (4) Revised bar chart of assignment schedule.

   (5) Draft Minutes of 2nd and 3rd Meetings.

3. Next meeting is scheduled to be held on December 18, 1990.

For and on behalf of
THE ENGINEER

Hisanori Morita

For and on behalf of
PERUSAHAAN UMUM LISTRIK NEGARA

Ir. S. Anwar Aritonang

1. The Contract Engineer shall be assigned throughout the construction period.

2. An Architect of two (2) year experience of TEPSCO shall be replaced by one with enough experience for the Services.

3. The time schedule of construction drawings for sections of Lot-I Civil Works was proposingly submitted for discussion.

   It was agreed to revise in the manner that preparation of such drawings are to be made in Tokyo before starting of site works and adjusted at site as occasion demands so as to proceed effectively and smoothly.

4. For the reason the T/L tower sites shall be determined in parallel with survey works, T/L Surveyor (1) and (2) were allowed to be assigned, however man-month and assignment schedules of other engineers in T/L-S/S design & construction supervision teams shall be clearly explained on their assignment necessity in the next meeting.

   The target of man-month shown by PLN in the 3rd meeting shall be studied sincerely.

P U S A T

Annex - 3

DAFTAR HADIR

Acara Rapat : PLTA KOTAPANJANG

Tanggal : 14 Desember 1990

Tempat : Ruang Sidang Lantai VII PLN Pusat

No.	N A M A	JABATAN	KESATUAN	TANDATANGAN
1.	S. Anwar Aritonang	KDDP	PLN Pusat	
	Bartek S.	KBSK	PLN Pusat	
3.	Rely Kontarbuter	Staf DJP	PLN Pusat	
4.	Dwiatmo Prijanto	Staf DJP	PLN Pusat	
5.	MUCH JIDIN	Staf PETSIP	PPE	
6.	Yossi Yosobroto	-11-	PPE	
7.	SOEPRONO	PAT I	PLN	
8.	Gustian Halim	E/L - Engineer	Yodya Karya	
9.	Irzal Sulaini	Project Repr.	Yodya Karya	
10	YOSHIDA		TEPSCO	
11.	TAKASHI IZUMI		TEPSCO	
12.	PRADONO	KSTK	PROJEK	
13.	SATRIA E S	DIV - HIDRO	TRIMITRA	
14.	Djoko Prastowo	Staf Teknik	TNE	
15.	PETER M.	DDJ	PLN PST	
16.	DJODI SUPRAPTO	DDJ I	PLN PST	
17.	Eishi Goto		TEPSCO	
18.	S. HIRANO		"	
19.	Y. YANO	G. H. JKT OFFICE	"	
20.	H. MORITA		"	
21.	HARTOPO. MH.	DAH	PLN PST	
22	HADI			

MINUTES OF MEETING
(The 5th)

Subject : Contract Negotiation for Engineering Services of Kotapanjang Hydroelectric Power Project
Date : December 18, 1990
Time : 9:30 a.m - 12:00
Attendants : See the attached attendant list.

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1. Following discussion in the 4th meeting held on December 14, 1990, the man-month and assignment schedules were discussed and agreed on total man-months 1,700 (TEPSCO 885.5 and Yodya Karya/Trimitra Nusa Engineering 814.5), detail of which are as per Annex-1.

2. The Engineer submitted following data for meeting on December 17, 1990.

   (1) Revised man-month and assignment schedules

   (2) Revised schedule of construction drawings for Lot-I Civil Works

   (3) Draft minutes of 4th meeting

3. Next meeting for finalizing minutes of meetings is scheduled to be held on December 19, 1990, and the schedule of next contract negotiation will be fixed in the meeting aforesaid.

For and on behalf of
THE ENGINEER

Hisanori Morita

For and on behalf of
PERUSAHAAN UMUM LISTRIK NEGARA

Ir. S. Anwar Aritonang

1. Man-Months for Civil Works

(1) The Engineer of explainned the Home Office assignments of Project Director and Senior Project Coordinator are necessary for control of Home Office Services and coordination with Field Office Services as described in the job description.

(2) PLN requested the Home Office assignments of Resident Manager shall be scheduled in the latter half of the construction period of the Project when technical difficulties and other matters to be solved in Home Office may occur.

(3) It was agreed to set in the assignment schedule Field Office 6 man-months and 8 trips of TEPSCO On-Call Experts.

They shall be used getting prior approval of PLN.

(4) PLN instructed that the Services and assignment schedules of YK and TNE shall be completed within 1996.

(5) PLN questioned the reason of long assignment of YK and TNE scheduled for some Field Engineers.

The Engineer answered they were planned for sufficient technology transfer from the beginning to the end of the Project construction period.

2. After discussions on man-month schedule, the both parties agreed on numbers of man-months as follows :

Total	Original	922.0	920.0	1,842.0
	Final	885.5	814.5	1,700.0

PERUSAHAAN UMUM LISTRIK NEGARA

P U S A T

DAFTAR HADIR

Acara Rapat : PLTA KOTAPANJANG HEPP

Tanggal : 18 Desember 1990

Tempat : Ruang Sidang Lantai VII, PLN Pusat

No.	N A M A	JABATAN	KESATUAN	TANDATANGAN
1.	S. Anwar Aritonang	KOA	PLN - PUSAT	
2.	Pilly Pintar Bintar	DJP	— " —	
3.	Dwi Atmo Priyanto	DJP	— " —	
4.	SARWONO HM.	DPH	— " —	
5.	Amin Sugeng	DJP	— " —	
6.	HARTOPO. MH	DAH	— " —	
7.	HARRIS	DDH II	— " —	
8.	Djoko Prastowo	Staf Teknis	Trimitra	
9.	SATRIA . ERNATA	DIV - HIDRO	TRIMITRA	
10.	YOSHIDA		TEPSCO	
11.	T. IZUMI		TEPSCO.	
12.	H. MORITA		"	
13.	Y. YANO	G.M. JKT OFFICE	"	
14.	S HIRANO		"	
15.	Eishi Goto		"	
16.	Izal Sulaini	Project - Repr.	YODYA KARYA	
17.	Yossi Yosobroto.	PLN.	PPF	
18.				
19.				
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21.				

MINUTES OF MEETING
(The 6th)

Subject	: Contract Negotiation for Engineering Services of Kotapanjang Hydroelectric Power Project
Date	: December 19, 1990
Time	: 14:00 - 15:00
Attendants	: See the attached attendant list.

1. Following discussion in the 5th meeting held on December 18, 1990, the Minutes of Meetings (1st-5th) have been finalized and signed by both parties.

2. Next meeting for cost negotiation is scheduled to be held in the first week of January 1991.

   PLN requested the Engineer to prepare revised cost proposal based on the agreed total man-month and submit them in advance of next meeting.

For and on behalf of
THE ENGINEER

H. Morita

Hisanori Morita

For and on behalf of
PERUSAHAAN UMUM LISTRIK NEGARA

Ir. S. Anwar Aritonang

PERUSAHAAN UMUM LISTRIK NEGARA

PUSAT

DAFTAR HADIR

Acara Rapat : PLTA KOTAPANJANG

Tanggal : 19 Desember 1990

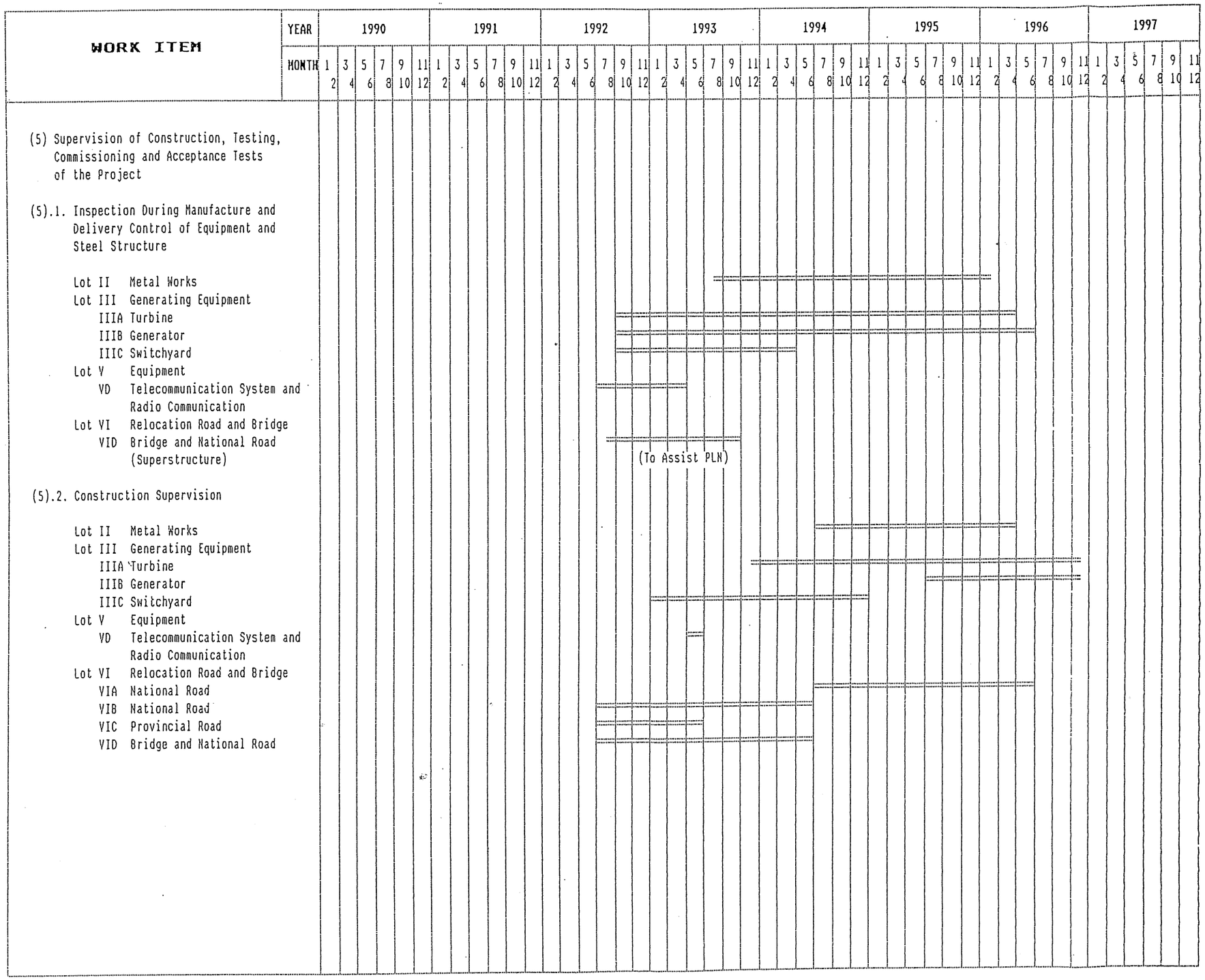
Tempat : Ruang Sidang Lt. VII, PLN Pusat

No.	NAMA	JABATAN	KESATUAN	TANDATANGAN
1.	S. Anwar Aritonang	KDJP	PLN Pusat	
2.	Pelly Butarbutar	Staf DJP	PLN Pusat	
3.	Dwi Atmo Priyanto	Staf DJP	PLN Pusat	
4.	Yossi Yosobroto		OOE	
5.	Amin Sugeng	TDVP	PLN S&P	
6.	SATRIA ERNATA	DIV - HIDRO	TRIMITRA	
7.	Djoko Prasetowo	Staf Teknis	TNE	
8.	Irzal Sulaini	Project - Rep.	YODYA KARYA	
9.	TAKASHI IZUMI		TEPSCO	
10.	HISANORI MORITA		"	
11.	YUZO YANO	G. M. JKT OFFICE	"	
12.	YOSHIDA		"	
13.	[illegible]		"	
14.	S. HIRANO		"	
15.	SARWONO HM	DJH	PLN - PST	
16.	TAKRIL	[illegible]		
17.				
18.				
19.				
20.				
21.				

APPENDIX C(1) SCHEDULE OF SERVICES FOR SERVICES II ON THE KOTAPANJANG HYDROELECTRIC POWER AND ASSOCIATED TRANSMISSION LINE PROJECT

WORK ITEM	YEAR	1990						1991						1992						1993						1994						1995						1996						1997					
	MONTH	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12
1. SUPERVISION OF THE CONSTRUCTION ON THE KOTAPANJANG HPP																										77 Months																						
(1) Project Management																																															
(2) Assistance and Advice to PLN in Tendering and Contracting																																															
Lot II Metal Works																																															
Lot III Generating Equipment																																															
IIIA Turbine																																															
IIIB Generator																																															
IIIC Switchyard																																															
Lot V Equipment																																															
VD Telecommunication System and Radio Communication																																															
Lot VI Relocation Road and Bridge																																															
VIA National Road																																															
VIB National Road																																															
VIC Provincial Road																																															
VID Bridge and National Road																																															
(3) Preparation of Construction Drawings, and Review and Approval of Drawings and Documents																																															
Lot II Metal Works																																															
Lot III Generating Equipment																																															
IIIA Turbine																																															
IIIB Generator																																															
IIIC Switchyard																																															
Lot V Equipment																																															
VD Telecommunication System and Radio Communication																																															
Lot VI Relocation Road and Bridge																																															
VIA National Road																																															
VIB National Road																																															
VIC Provincial Road																																															
VID Bridge and National Road																																															
(4) Design Modifications																																															

APPENDIX C(2) SCHEDULE OF SERVICES FOR SERVICES II ON THE KOTAPANJANG HYDROELECTRIC POWER AND ASSOCIATED TRANSMISSION LINE PROJECT



APPENDIX C(3) SCHEDULE OF SERVICES
FOR SERVICES II
ON THE KOTAPANJANG HYDROELECTRIC POWER
AND ASSOCIATED TRANSMISSION LINE PROJECT

WORK ITEM	YEAR	1990						1991						1992						1993						1994						1995						1996						1997					
	MONTH	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12
(5).3. Engineering Supervision of Acceptance Tests and Commissioning																																															
Lot II Metal Works																																															
Lot III Generating Equipment																																															
IIIA Turbine																																															
IIIB Generator																																															
IIIC Switchyard																																															
LOT V Equipment																																															
VD Telecommunication System and Radio Communication																																															
Lot VI Relocation Road and Bridge																																															
VIA National Road																																															
VIB National Road																																															
VIC Provincial Road																																															
VID Bridge and National Road																																															
(6) Assistance to PLN in Operation and Maintenance																																															
(6).1. Operation and Maintenance																																															
Lot II Metal Works																																															
Lot III Generating Equipment																																															
IIIA Turbine																																															
IIIB Generator																																															
IIIC Switchyard																																															
Lot V Equipment																																															
VD Telecommunication System and Radio Communication																																															
(6).2. Training of Indonesian Personnel for Supervision of Construction, Operation and Maintenance																																															

APPENDIX C(4) SCHEDULE OF SERVICES
FOR SERVICES II
ON THE KOTAPANJANG HYDROELECTRIC POWER AND ASSOCIATED TRANSMISSION LINE PROJECT

WORK ITEM	YEAR	1990						1991						1992						1993						1994						1995						1996						1997					
	MONTH	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12
(7) Services During the Period of Guarantee																																																
Lot II Metal Works																																																
Lot III Generating Equipment																																															
IIIA Turbine																																															
IIIB Generator																																															
IIIC Switchyard																																															
Lot V Equipment																																															
VD Telecommunication System and Radio Communication																																															
Lot VI Relocation Road and Bridge																																															
VIA National Road																																															
VIB National Road																																															
VIC Provincial Road																																															
VID Bridge and National Road																																															
(8) Project Completion Report																																															
(9) Transfer of Knowledge and Training of Indonesian Personnels																																															

APPENDIX C(5) SCHEDULE OF SERVICES
FOR SERVICES II
ON THE KOTAPANJANG HYDROELECTRIC POWER AND ASSOCIATED TRANSMISSION LINE PROJECT

WORK ITEM	YEAR	1990						1991						1992						1993						1994						1995						1996						1997					
	MONTH	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12	1 2	3 4	5 6	7 8	9 10	11 12
2. SUPERVISION OF TRANSMISSION LINE CONSTRUCTION BETWEEN PAYAKUMBUH S/S AND PEKANBARU S/S																				38 Months																													
(1) Project Management																																															
(2) Assistance and Advice to PLN in Tendering and Contracting																																															
Lot IIIC Substation Equipment																																															
Lot IV Material of T/L (Kotapanjang - Pekanbaru)																																															
Lot VII Material of T/L (Payakumbuh - Kotapanjang)																																															
Lot 5 Erection of T/L (Kotapanjang - Pekanbaru)																																															
Lot 6 Civil Works of S/S																																															
Lot 7 Erection of T/L (Payakumbuh - Kotapanjang)																																															
(3) Review and Approval for Drawings and Documents																																															
Lot IIIC Substation Equipment																																															
Lot IV Material of T/L (Kotapanjang - Pekanbaru)																																															
Lot VII Material of T/L (Payakumbuh - Kotapanjang)																																															
Lot 5 Erection of T/L (Kotapanjang - Pekanbaru)																																															
Lot 6 Civil Works of S/S																																															
Lot 7 Erection of T/L (Payakumbuh - Kotapanjang)																																															
(4) Design Modifications																																															

APPENDIX C(6) SCHEDULE OF SERVICES
FOR SERVICES II
ON THE KOTAPANJANG HYDROELECTRIC POWER AND ASSOCIATED TRANSMISSION LINE PROJECT

WORK ITEM	YEAR	1990	1991	1992	1993	1994	1995	1996	1997
	MONTH	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7 8 9 10 11 12
(5) Supervision of Construction, Testing, Commissioning and Acceptance Tests									
(5).1. Inspection during Manufacturing and Delivery Control of Equipment, Materials and Steel Structure									
Lot IIIC Substation Equipment									
Lot IV Material of T/L (Kotapanjang - Pekanbaru)									
Lot VII Material of T/L (Payakumbuh - Kotapanjang)									
(5).2. Construction Supervision									
Lot 5 Erection of T/L (Kotapanjang - Pekanbaru)									
Lot 6 Civil Works of S/S									
Lot 7 Erection of T/L (Payakumbuh - Kotapanjang)									
(5).3. Engineering Supervising for Acceptance Tests and Commissioning									
Lot 5 Erection of T/L (Kotapanjang - Pekanbaru)									
Lot 6 Civil Works of S/S									
Lot 7 Erection of T/L (Payakumbuh - Kotapanjang)									
(6) Assistance to PLN in Operation and Maintenance									
(7) Project Completion Report									
(8) Transfer of Knowledge									

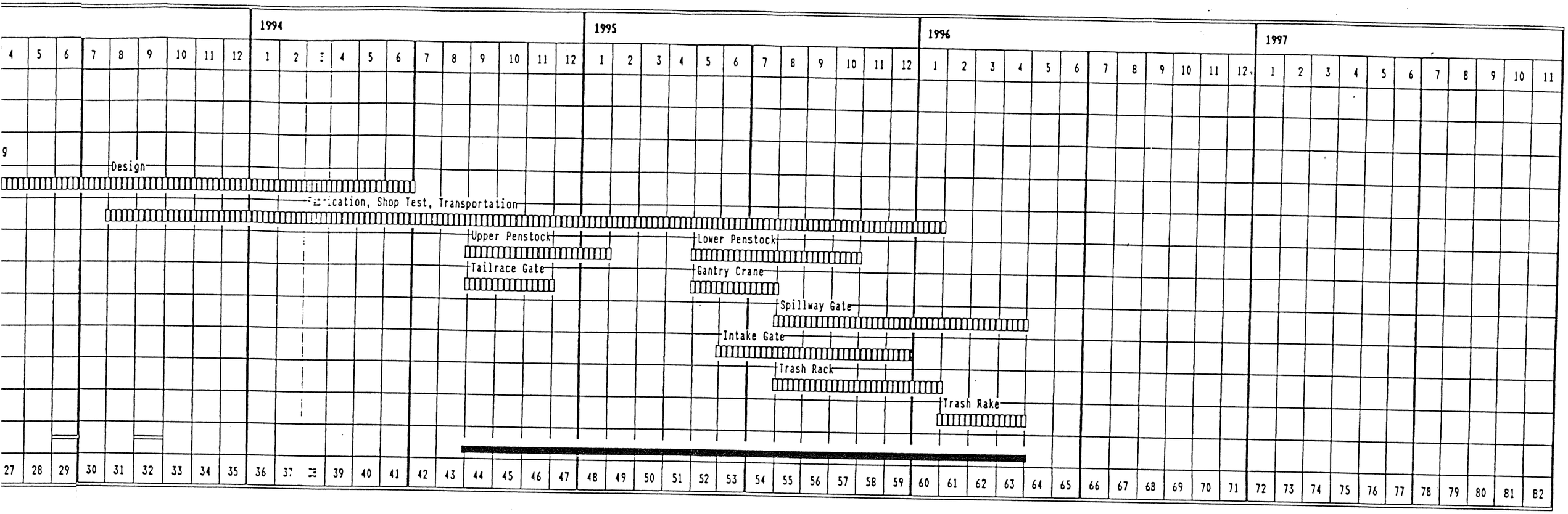
APPENDIX D 1 (1-1) MANNING SCHEDULE OF TEPSCO

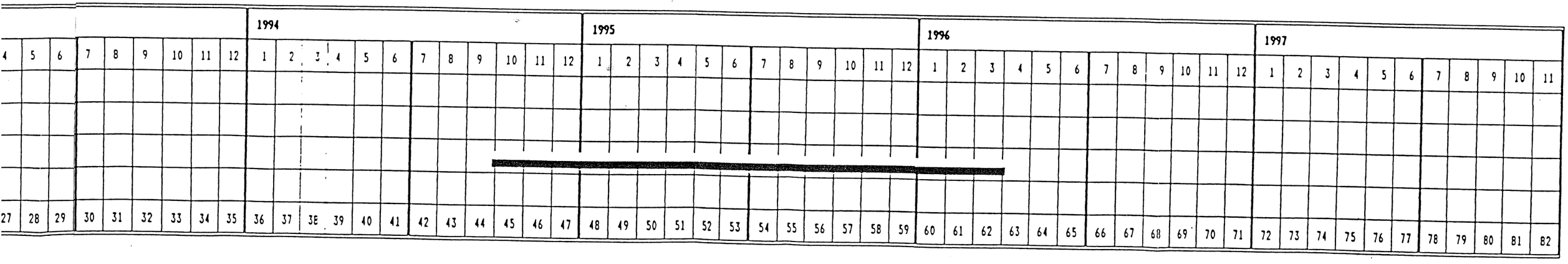
No.	Position	Name	Grade(Experience Years after Education)	Trip	Man-Month Fld.	Home	Tot.	1991 2	3	4	5	6	7	8	9	10	11	12	1992 1	2	3	4	5	6	7	8	9	10	11	12	1993 1	2	3	4	5	6	7	8	9
4	CONSTRUCTION SUPERVISION MPP (contin.)																																						
4.2	Metal Work																																						
	SCHEDULE OF METAL WORK																		Tender Document Issu	Prebid Conference	Evaluation Method			Tender Evaluation				Contract Negotiation		Contract Signing							Design		
																											Preparation for Negotiaton												
1	Metal Engineer (1)	N. Kubota	U(28)	4	26.0	2.0	28.0																																
			Sub-Total	4	26.0	2.0	28.0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

APPENDIX D 1 (2-1) MANNING SCHEDULE OF YK AND TNE

No.	Position	Name	Grade(Experience Years after Education)	Affil.	Trip	Man-Month Fld.	Home	Tot.	1991 2	3	4	5	6	7	8	9	10	11	12	1992 1	2	3	4	5	6	7	8	9	10	11	12	1993 1	2	3	4	5	6	7	8	9
4	CONSTRUCTION SUPERVISION MPP (contin.)			Affil.																																				
4.2	Metal Work																																						
1	Metal Engineer (2)	A. Ludjeng Riyanto	U(8)	YK	1	21.0	-	21.0																																
			Sub-Total		1	21.0	-	21.0																																	
			T O T A L		5	47.0	2.0	49.0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

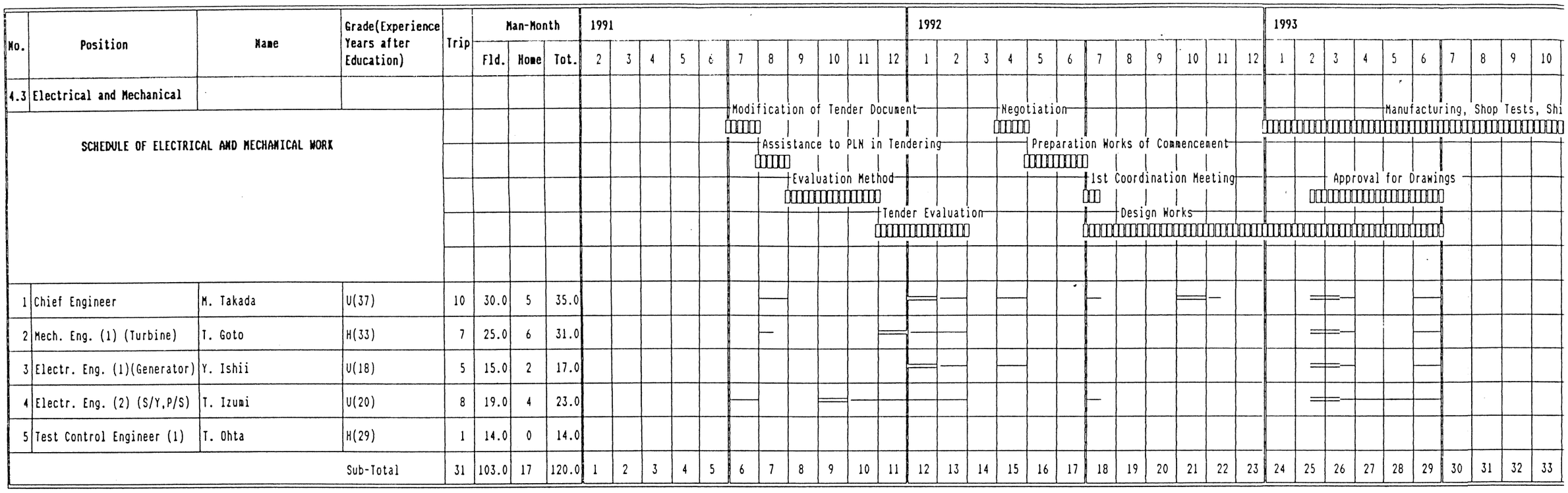
——— Services in Jakarta
═══ Services at Home
▬▬▬ Services in Project Site
..... Other Services


1994
1995
1996
1997
Design
Fabrication, Shop Test, Transportation
Upper Penstock
Lower Penstock
Tailrace Gate
Gantry Crane
Spillway Gate
Intake Gate
Trash Rack
Trash Rake


1994
1995
1996
1997

APPENDIX D 1 (1-2) MANNING SCHEDULE OF TEPSCO

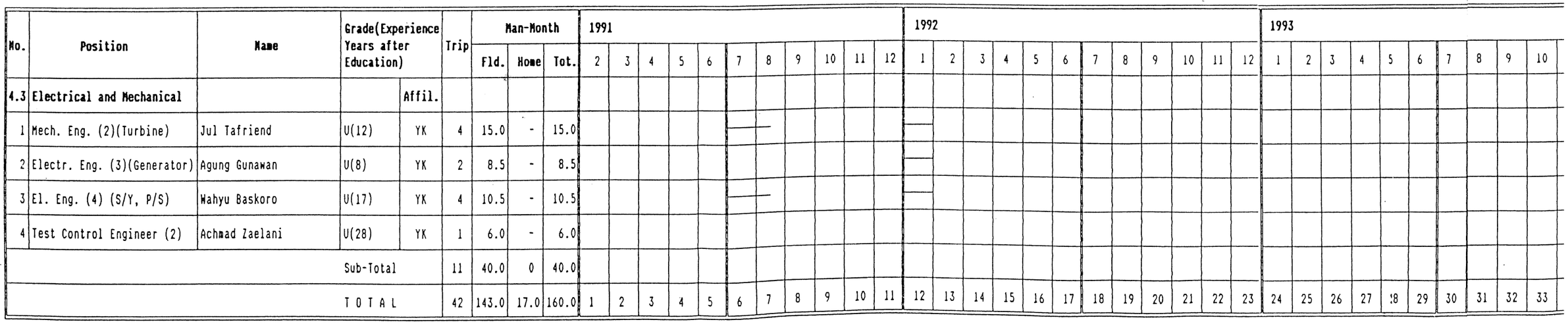
No.	Position	Name	Grade(Experience Years after Education)	Trip	Man-Month Fld.	Home	Tot.
4.3	Electrical and Mechanical						
	SCHEDULE OF ELECTRICAL AND MECHANICAL WORK						
1	Chief Engineer	M. Takada	U(37)	10	30.0	5	35.0
2	Mech. Eng. (1) (Turbine)	T. Goto	H(33)	7	25.0	6	31.0
3	Electr. Eng. (1)(Generator)	Y. Ishii	U(18)	5	15.0	2	17.0
4	Electr. Eng. (2) (S/Y,P/S)	T. Izumi	U(20)	8	19.0	4	23.0
5	Test Control Engineer (1)	T. Ohta	H(29)	1	14.0	0	14.0
			Sub-Total	31	103.0	17	120.0



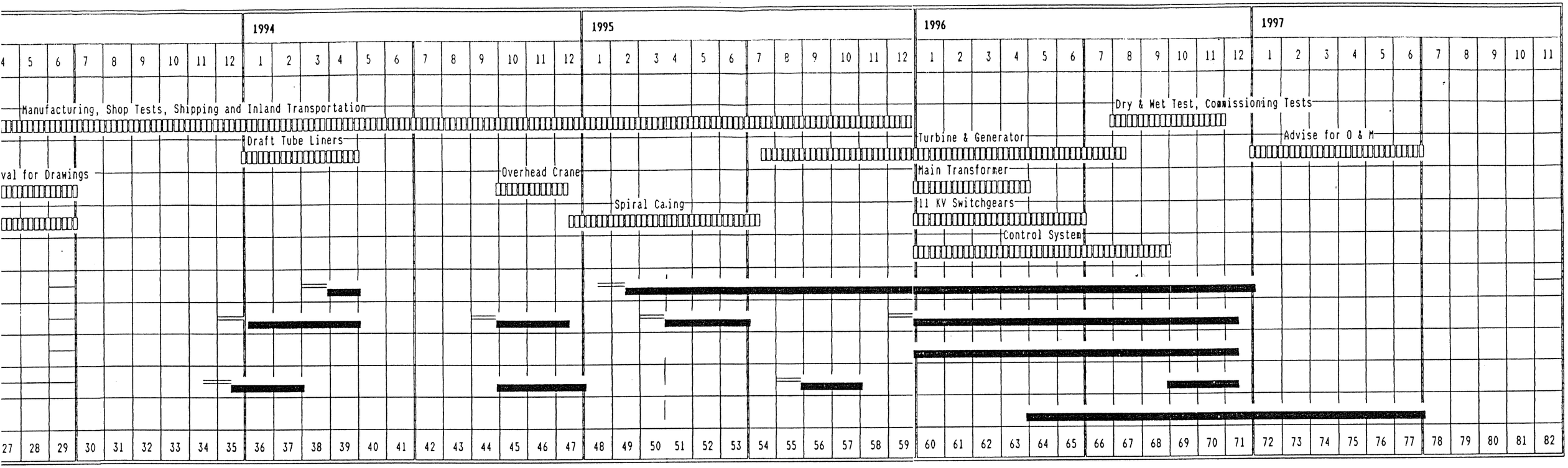
Services in Jakarta
Services at Home
Services at Project Site
Other Services

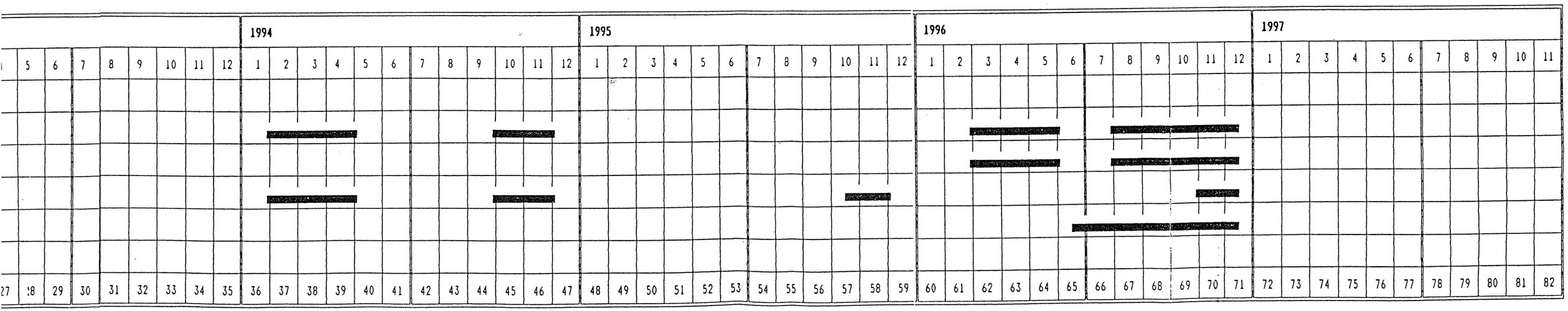
APPENDIX D 1 (2-2) MANNING SCHEDULE OF YK AND TME

No.	Position	Name	Grade(Experience Years after Education)	Affil.	Trip	Man-Month Fld.	Home	Tot.
4.3	Electrical and Mechanical							
1	Mech. Eng. (2)(Turbine)	Jul Tafriend	U(12)	YK	4	15.0	-	15.0
2	Electr. Eng. (3)(Generator)	Agung Gunawan	U(8)	YK	2	8.5	-	8.5
3	El. Eng. (4) (S/Y, P/S)	Wahyu Baskoro	U(17)	YK	4	10.5	-	10.5
4	Test Control Engineer (2)	Achmad Zaelani	U(28)	YK	1	6.0	-	6.0
			Sub-Total		11	40.0	0	40.0
			T O T A L		42	143.0	17.0	160.0



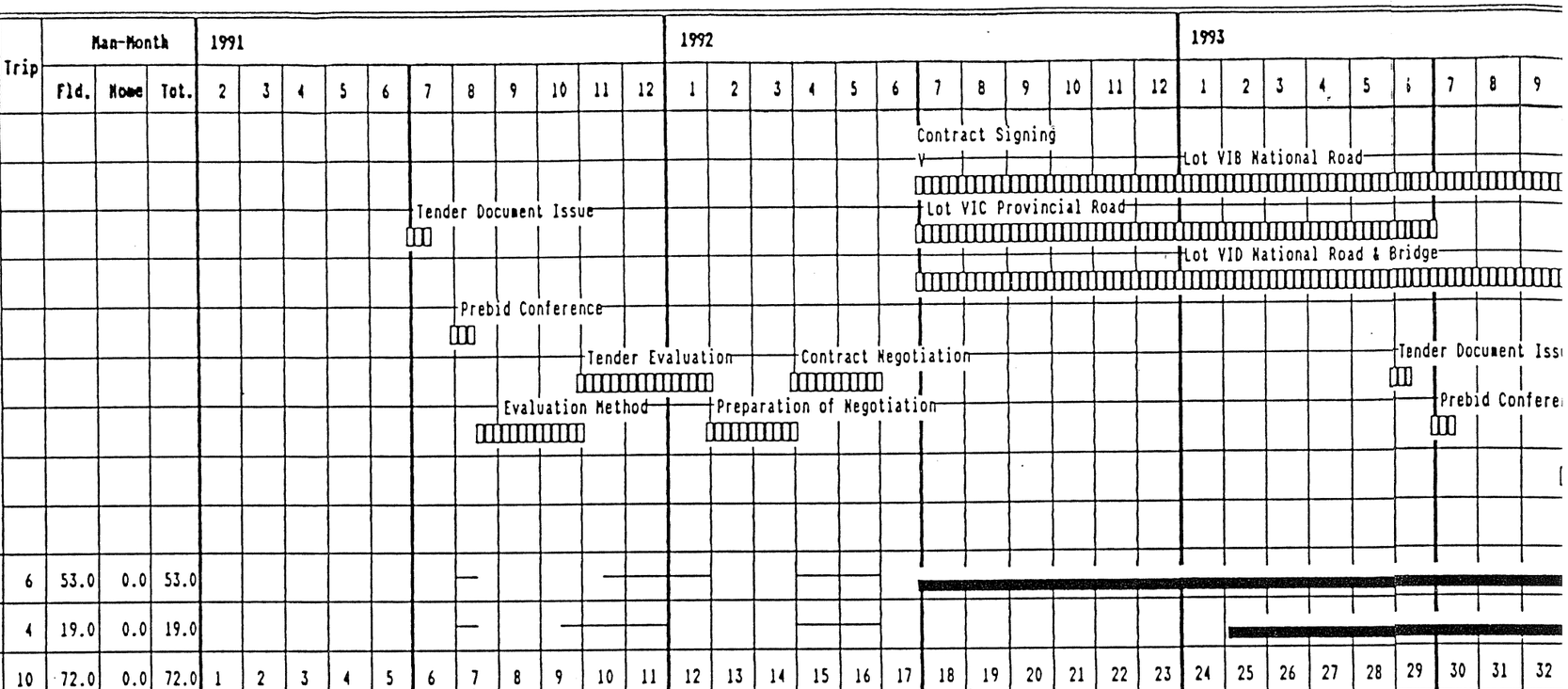
Services in Jakarta
Services at Project Site


1994
1995
1996
1997
4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11
27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82
Manufacturing, Shop Tests, Shipping and Inland Transportation
Draft Tube Liners
val for Drawings
Overhead Crane
Spiral Caing
Turbine & Generator
Dry & Wet Test, Commissioning Tests
Advise for O & M
Main Transformer
11 KV Switchgears
Control System


1994
1995
1996
1997
5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11
27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82

APPENDIX D 1 (1-3) MANNING SCHEDULE OF TEPSCO

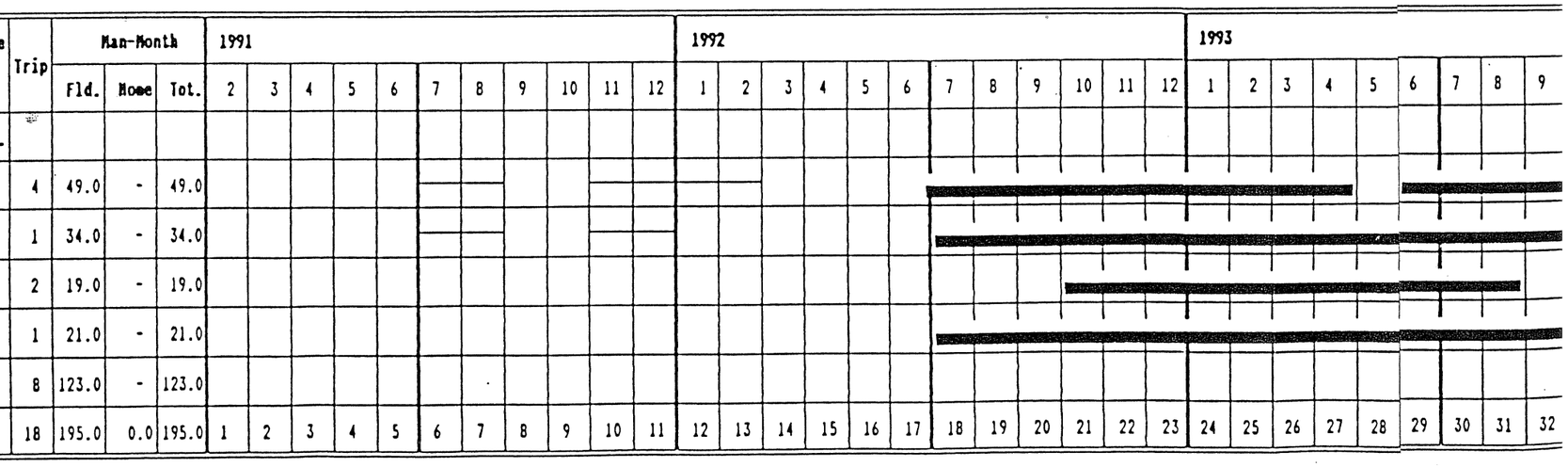
No.	Position	Name	Grade(Experience Years after Education)	Trip	Man-Month Fld.	Home	Tot.
4.4	Relocation Road and Bridge						
	SCHEDULE OF RELOCATION ROAD AND BRIDGE						
1	Chief Engineer	E. Ikeda	U(18)	6	53.0	0.0	53.0
2	Bridge Engineer (1)	R. Innami	U(7)	4	19.0	0.0	19.0
			Sub-Total	10	72.0	0.0	72.0



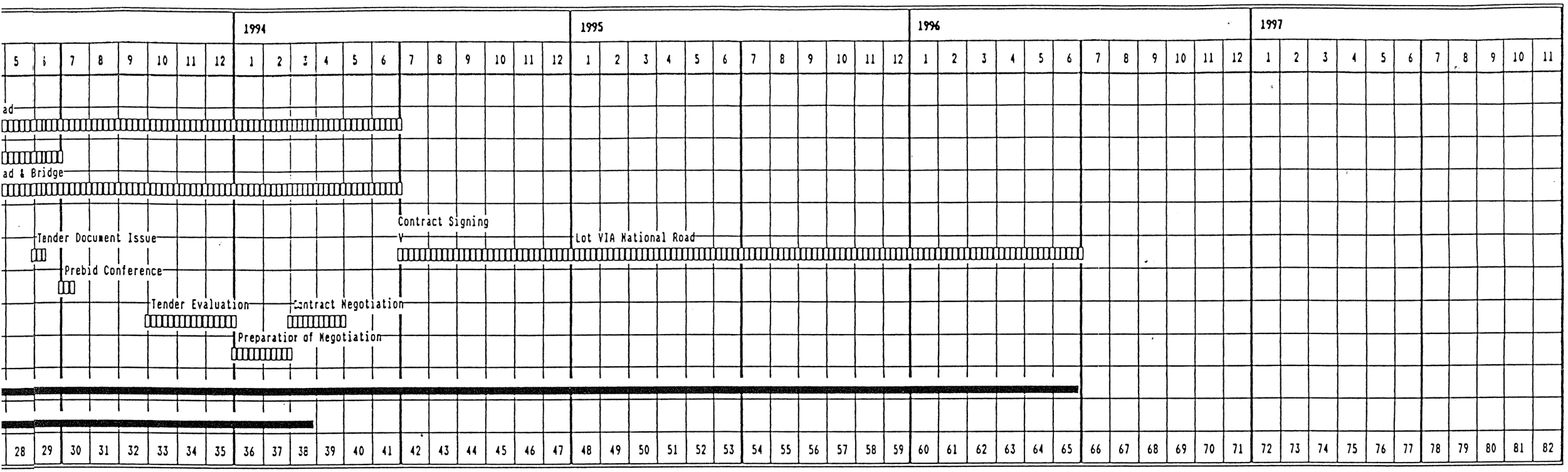
——— Services in Jakarta
▬▬ Services in Project Site

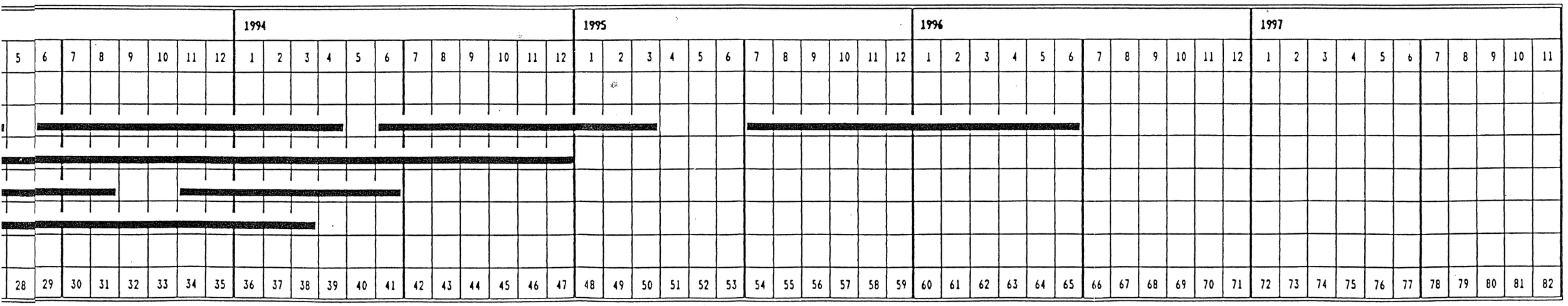
APPENDIX D 1 (2-3) MANNING SCHEDULE OF YK AND TKE

No.	Position	Name	Grade(Experience Years after Education)	Affil.	Trip	Man-Month Fld.	Home	Tot.
4.4	Relocation Road and Bridge							
1	Road Engineer (1)	Safrizal Sofian	U(9)	YK	4	49.0	-	49.0
2	Road Engineer (2)	Faray M.	U(9)	TKE	1	34.0	-	34.0
3	Road Engineer (3)	Achmad Chusnun	U(4)	YK	2	19.0	-	19.0
4	Bridge Engineer (2)	Asikin	U(21)	YK	1	21.0	-	21.0
			Sub-Total		8	123.0	-	123.0
			T O T A L		18	195.0	0.0	195.0



——— Services in Jakarta
▬▬ Services in Project Site


1994
1995
1996
1997
5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11
ad
ad & Bridge
Tender Document Issue
Prebid Conference
Tender Evaluation
Contract Negotiation
Preparation of Negotiation
Contract Signing
Lot VIA National Road
28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82


1994
1995
1996
1997
5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11
28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82

APPENDIX D 1 (1-4) MANNING SCHEDULE OF TEPSCO

No.	Position	Name	Grade(Experience Years after Education)	Trip	Man-Month			1991											1992												1993										
					Fld.	Home	Tot.	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
	CONSTRUCTION SUPERVISICH T/L (PAYA. - PEKA.)																																								
	CONSTRUCTION SUPERVISION T/L (PAYA. - PEKA.)																																								
	II. CONSTRUCTION SUPERVISION STAGE (PAYA. - PEKA.)																																								
	(TEPSCO)																																								
1	Chief Engineer (T/L,S/S)	S. Hirano	U(21)	4	24.5	5.5	30.0																																		
2	T/L Engineer (1)	S. Takahashi	U(12)	3	19.0	4.0	23.0																																		
3	S/S Engineer (1)	M. Tada	U(11)	4	16.0	7.0	23.0																																		
4	Civil Engineer (1)(T/L,S/S)	W. Naganuma	U(8)	1	16.0	3.0	19.0																																		
5	Test Control Engineer	T. Rokkaku	H(29)	1	3.0	2.0	5.0																																		
			Sub-Total	13	78.5	21.5	100.0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34

CONSTRUCTION SUPERVISION STAGE
Assistance to PLN in Tendering
Design of Tower & Foundation
Evaluation of Proposals
Civil Works of T/L
Contract Negotiation
Check/Route Survey of T/L
Architectural Work
Civil Work of Substation
Design Approval of T/L Material
Review and Approval of Design DWG and Documents (S/S
Shipping and Inland Transportati
Shipping and Inland Transportation of T/L Mater
1st Stub Arrival at Site

APPENDIX D 1 (2-4) MANNING SCHEDULE OF YK AND TNE

II. CONSTRUCTION SUPERVISION STAGE			Grade(Experience Years after Education)		Trip	Man-Month			1991											1992												1993										
No.	Position	Name		Affil.		Fld.	Home	Tot.	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
1	T/L Engineer (2)																																									

APPENDIX D 1 (1-4) MANNING SCHEDULE OF TEPSCO

No.	Position	Name	Grade(Experience Years after Education)	Trip	Man-Month Fld.	Home	Tot.
	CONSTRUCTION SUPERVISION T/L (PAYA. - PEKA.)						
	CONSTRUCTION SUPERVISION T/L (PAYA. - PEKA.) II. CONSTRUCTION SUPERVISION STAGE (PAYA. - PEKA.) (TEPSCO)						
1	Chief Engineer (T/L,S/S)	S. Hirano	U(21)	4	24.5	5.5	30.0
2	T/L Engineer (1)	S. Takahashi	U(12)	3	19.0	4.0	23.0
3	S/S Engineer (1)	M. Tada	U(11)	4	16.0	7.0	23.0
4	Civil Engineer (1)(T/L,S/S)	W. Naganuma	U(8)	1	16.0	3.0	19.0
5	Test Control Engineer	T. Rokkaku	H(29)	1	3.0	2.0	5.0
			Sub-Total	13	78.5	21.5	100.0

1991: 2 3 4 5 6 7 8 9 10 11 12 — 1992: 1 2 3 4 5

Assistance to PLN in Tendering

Evaluation of Proposa

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

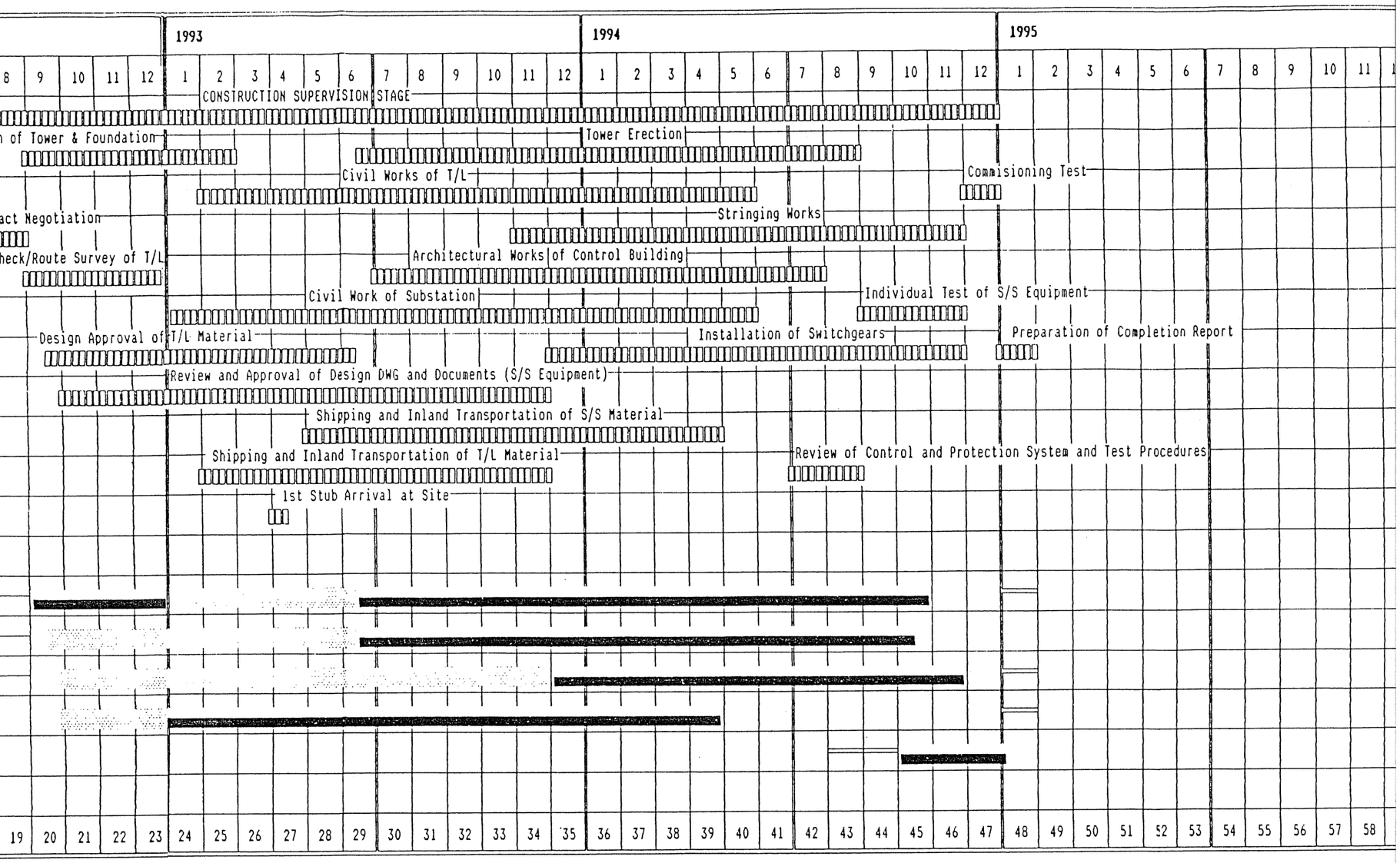
APPENDIX D 1 (2-4) MANNING SCHEDULE OF YK AND TNE

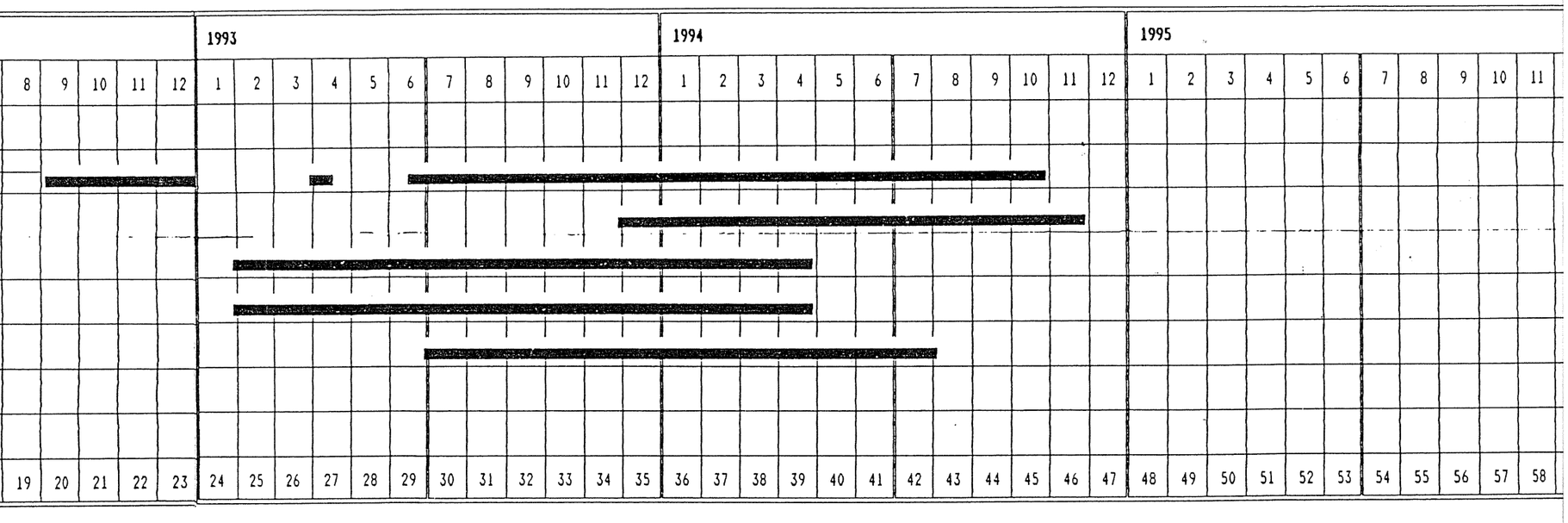
No.	Position	Name	Grade(Experience Years after Education)	Affil.	Trip	Man-Month Fld.	Home	Tot.
	II. CONSTRUCTION SUPERVISION STAGE							
1	T/L Engineer (2)	Gustian Halim	U(27)	YK	5	26.0	-	26.0
2	S/S Engineer (2)	Baharuddin Nur	U(10)	YK	1	12.0	-	12.0
3	Civil Engineer (2) (T/L)	Bb. Kurniadi	U(10)	YK	1	15.0	-	15.0
4	Civil Engineer (3) (S/S)	Djoko Prastowo	U(11)	TNE	1	15.0	-	15.0
5	Architect	Daryanto	U(8)	TNE	2	14.0	-	14.0
			Sub-Total		10	82.0	-	82.0
			Total		23	160.5	21.5	182.0

1991: 2 3 4 5 6 7 8 9 10 11 12 — 1992: 1 2 3 4 5

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Services in Jakarta
Services in Project Site
Services at Home
Partial Services at Home


1993
1994
1995
8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12
19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58
CONSTRUCTION SUPERVISION STAGE
n of Tower & Foundation
Tower Erection
Civil Works of T/L
Commisioning Test
act Negotiation
Stringing Works
heck/Route Survey of T/L
Architectural Works of Control Building
Civil Work of Substation
Individual Test of S/S Equipment
Design Approval of T/L Material
Installation of Switchgears
Preparation of Completion Report
Review and Approval of Design DWG and Documents (S/S Equipment)
Shipping and Inland Transportation of S/S Material
Shipping and Inland Transportation of T/L Material
Review of Control and Protection System and Test Procedures
1st Stub Arrival at Site


1993
1994
1995
8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11
19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58

1-1 Supervision of the Other Works Construction of Kotapanjang HPP

M.M : Man-Month
(Unit : Y 1,000)

NO.	POSITION	NAME		Feb. 91 - Dec. 91			Jan. 92 - Dec. 92			Jan. 93 - Dec. 93			Jan. 94 - Dec. 94			Jan. 95 - Dec. 95			Jan. 96 - Dec. 96			Jan. 97 - Dec. 97			Total M.M	Total Amount
				M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount		
4.2	Metal Work																									
1	Metal Engineer (1)	N. Kubota	F.O.	0.0	2,284	0.00	6.0	2,284	13,704.00	0.0	2,335	0.00	4.0	2,392	9,568.00	12.0	2,443	29,316.00	4.0	2,500	10,000.00	0.0	2,500	0.00	26.0	62,588.00
			H.O.	0.0	2,056	0.00	0.0	2,056	0.00	2.0	2,102	4,203.00	0.0	2,153	0.00	0.0	2,199	0.00	0.0	2,250	0.00	0.0	2,250	0.00	2.0	4,203.00
4.3	Electr. & Mechanical																									
1	Chief Engineer	M. Takada	F.O.	1.0	2,500	2,500.00	3.0	2,500	7,500.00	1.5	2,500	3,750.00	1.0	2,500	2,500.00	10.5	2,500	26,250.00	12.0	2,500	30,000.00	1.0	2,500	2,500.00	30.0	75,000.00
			H.O.	0.0	2,250	0.00	2.0	2,250	4,500.00	1.0	2,250	2,250.00	1.0	2,250	2,250.00	1.0	2,250	2,250.00	0.0	2,250	0.00	0.0	2,250	0.00	5.0	11,250.00
2	Mech.Eng.(1)(Turbine)	T. Goto	F.O.	0.0	2,500	0.00	2.0	2,500	5,000.00	2.0	2,500	5,000.00	6.5	2,500	16,250.00	3.0	2,500	7,500.00	11.5	2,500	28,750.00	0.0	2,500	0.00	25.0	62,500.00
			H.O.	1.0	2,250	2,250.00	0.0	2,250	0.00	2.0	2,250	4,500.00	1.0	2,250	2,250.00	2.0	2,250	4,500.00	0.0	2,250	0.00	0.0	2,250	0.00	6.0	13,500.00
3	Electrical Eng. (1) (Generator)	Y. Ishii	F.O.	0.0	2,011	0.00	2.0	2,011	4,022.00	1.5	2,080	3,120.00	0.0	2,153	0.00	0.0	2,200	0.00	11.5	2,284	26,266.00	0.0	2,335	0.00	15.0	33,408.00
			H.O.	0.0	1,810	0.00	1.0	1,810	1,809.90	1.0	1,872	1,872.00	0.0	1,938	0.00	0.0	1,980	0.00	0.0	2,056	0.00	0.0	2,102	0.00	2.0	3,681.90
4	Electrical Eng. (2) (S/Y,P/S)	T. Izumi	F.O.	3.0	2,284	6,852.00	2.5	2,284	5,710.00	4.0	2,335	9,340.00	5.0	2,392	11,960.00	2.0	2,443	4,886.00	2.5	2,500	6,250.00	0.0	2,500	0.00	19.0	44,998.00
			H.O.	1.0	2,056	2,055.60	0.0	2,056	0.00	2.0	2,102	4,203.00	0.0	2,153	0.00	1.0	2,199	2,198.70	0.0	2,250	0.00	0.0	2,250	0.00	4.0	8,457.30
5	Test Control Eng. (1)	T. Ohta	F.O.	0.0	2,500	0.00	0.0	2,500	0.00	0.0	2,500	0.00	0.0	2,500	0.00	0.0	2,500	0.00	8.0	2,500	20,000.00	6.0	2,500	15,000.00	14.0	35,000.00
			H.O.	0.0	2,250	0.00	0.0	2,250	0.00	0.0	2,250	0.00	0.0	2,250	0.00	0.0	2,250	0.00	0.0	2,250	0.00	0.0	2,250	0.00	0.0	0.00
4.4	Reloc.Road & Bridge																									
1	Chief Engineer	E. Ikeda	F.O.	2.0	2,200	4,400.00	9.0	2,200	19,800.00	12.0	2,284	27,408.00	12.0	2,335	28,020.00	12.0	2,392	28,704.00	6.0	2,443	14,658.00	0.0	2,500	0.00	53.0	122,990.00
			H.O.	0.0	1,980	0.00	0.0	1,980	0.00	0.0	2,056	0.00	0.0	2,102	0.00	0.0	2,153	0.00	0.0	2,199	0.00	0.0	2,250	0.00	0.0	0.00
2	Bridge Engineer (1)	R. Innami	F.O.	3.0	1,301	3,903.00	2.0	1,301	2,602.00	11.0	1,409	15,499.00	3.0	1,517	4,551.00	0.0	1,625	0.00	0.0	1,739	0.00	0.0	1,847	0.00	19.0	26,555.00
			H.O.	0.0	1,171	0.00	0.0	1,171	0.00	0.0	1,268	0.00	0.0	1,365	0.00	0.0	1,463	0.00	0.0	1,565	0.00	0.0	1,662	0.00	0.0	0.00
	T O T A L		F.O.	9.0		17,655.00	26.5		58,338.00	32.0		64,117.00	31.5		72,849.00	39.5		96,656.00	55.5		135,924.00	7.0		17,500.00	201.0	463,039.00
			H.O.	2.0		4,305.60	3.0		6,309.90	8.0		17,028.00	2.0		4,500.00	4.0		8,948.70	0.0		0.00	0.0		0.00	19.0	41,092.20
																									220.0	504,131.20

BREAKDOWN OF MAN-MONTH COST FOR TEPSCO

1-2 Supervision of Transmission Line Construction between Payakumbuh S/S and Pekanbaru S/S

APPENDIX E-1 ATTACHMENT 1-2-1

M.M : Man-Month
(Unit : Y 1,000)

NO.	POSITION	NAME		Feb. 91 - Dec. 91			Jan. 92 - Dec. 92			Jan. 93 - Dec. 93			Jan. 94 - Dec. 94			Jan. 95 - Dec. 95			Jan. 96 - Dec. 96			Jan. 97 - Dec. 97			Total	Total
				M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Amount
6	CONSTR. SUPERVISION T/L (PAYA - PEKA)																									
1	Chief Engineer	S. Hirano	F.O.	1.0	2,443	2,443.00	7.0	2,443	17,101.00	6.5	2,500	16,250.00	10.0	2,500	25,000.00	0.0	2,500	0.00	0.0	2,500	0.00	0.0	2,500	0.00	24.5	60,794.00
			H.O.	0.0	2,199	0.00	2.0	2,199	4,397.40	2.5	2,250	5,625.00	0.0	2,250	0.00	1.0	2,250	2,250.00	0.0	2,250	0.00	0.0	2,250	0.00	5.5	12,272.40
2	T/L Engineer (1)	S. Takahashi	F.O.	0.0	1,847	0.00	3.0	1,847	5,541.00	6.5	1,864	12,116.00	9.5	1,938	18,411.00	0.0	2,011	0.00	0.0	2,080	0.00	0.0	2,153	0.00	19.0	36,068.00
			H.O.	0.0	1,662	0.00	1.5	1,662	2,493.45	2.5	1,678	4,194.00	0.0	1,744	0.00	0.0	1,810	0.00	0.0	1,872	0.00	0.0	1,938	0.00	4.0	6,687.45
3	S/S Engineer (1)	M. Tada	F.O.	1.0	1,625	1,625.00	3.0	1,625	4,875.00	1.0	1,739	1,739.00	11.0	1,847	20,317.00	0.0	1,864	0.00	0.0	1,938	0.00	0.0	2,011	0.00	16.0	28,556.00
			H.O.	0.0	1,463	0.00	3.0	1,463	4,387.50	3.0	1,565	4,695.30	0.0	1,662	0.00	1.0	1,678	1,677.60	0.0	1,744	0.00	0.0	1,810	0.00	7.0	10,760.40
4	Civil Engineer(1)	W. Naganuma	F.O.	0.0	1,517	0.00	0.0	1,517	0.00	12.0	1,625	19,500.00	4.0	1,739	6,956.00	0.0	1,847	0.00	0.0	1,864	0.00	0.0	1,938	0.00	16.0	26,456.00
			H.O.	0.0	1,365	0.00	2.0	1,365	2,730.60	0.0	1,463	0.00	0.0	1,565	0.00	1.0	1,662	1,662.30	0.0	1,678	0.00	0.0	1,744	0.00	3.0	4,392.90
5	Test Control Engineer	T. Rokkaku	F.O.	0.0	2,500	0.00	0.0	2,500	0.00	0.0	2,500	0.00	3.0	2,500	7,500.00	0.0	2,500	0.00	0.0	2,500	0.00	0.0	2,500	0.00	3.0	7,500.00
			H.O.	0.0	2,250	0.00	0.0	2,250	0.00	0.0	2,250	0.00	2.0	2,250	4,500.00	0.0	2,250	0.00	0.0	2,250	0.00	0.0	2,250	0.00	2.0	4,500.00
	T O T A L		F.O.	2.0		4,068.00	13.0		27,517.00	26.0		49,605.00	37.5		78,184.00	0.0		0.00	0.0		0.00	0.0		0.00	78.5	159,374.00
			H.O.	0.0		0.00	8.5		14,008.95	8.0		14,514.30	2.0		4,500.00	3.0		5,589.90	0.0		0.00	0.0		0.00	21.5	38,613.15
																									100.0	197,987.15

BREAKDOWN OF MAN-MONTH COST FOR YK AND TNE

M.M : Man-Month

E-2-1 Supervision of the Other Works of Kotapanjang HPP

(Unit : Rp. 1,000)

NO.	POSITION	NAME		Feb. 91 - Dec. 91			Jan. 92 - Dec. 92			Jan. 93 - Dec. 93			Jan. 94 - Dec. 94			Jan. 95 - Dec. 95			Jan. 96 - Dec. 96			Jan. 97 - Dec. 97			Total M.M	Total Amount
				M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount		
4.2	Metal Work																									
1	Metal Engineer (2)	A. Ludjeng R.	F.O.	0.0	2,060	0.00	3.0	2,135	6,405.00	0.0	2,215	0.00	3.0	2,295	6,885.00	12.0	2,330	27,960.00	3.0	2,365	7,095.00	0.0	2,400	0.00	21.0	48,345.00
4.3	Electr. & Mechanical																									
1	Mech. Eng.(2)(Turbine)	Jul Tafriend	F.O.	1.5	2,330	3,495.00	1.0	2,365	2,365.00	0.0	2,400	0.00	5.0	2,430	12,150.00	0.0	2,465	0.00	7.5	2,500	18,750.00	0.0	2,535	0.00	15.0	36,760.00
2	Elc.Eng.(3)(Generator)	Agung Gunawan	F.O.	0.0	2,060	0.00	1.0	2,135	2,135.00	0.0	2,215	0.00	0.0	2,295	0.00	0.0	2,330	0.00	7.5	2,365	17,737.50	0.0	2,400	0.00	8.5	19,872.50
3	Elec. Eng.(4)(S/Y,P/S)	Wahyu Baskoro	F.O.	1.5	2,500	3,750.00	1.0	2,535	2,535.00	0.0	2,570	0.00	5.0	2,730	13,650.00	1.5	2,730	4,095.00	1.5	2,730	4,095.00	0.0	2,730	0.00	10.5	28,125.00
4	Test Control Eng.(2)	Achmad Zaelani	F.O.	0.0	2,730	0.00	0.0	2,730	0.00	0.0	2,730	0.00	0.0	2,730	0.00	0.0	2,730	0.00	6.0	2,730	16,380.00	0.0	2,730	0.00	6.0	16,380.00
4.4	Reloc.Road & Bridge																									
1	Road Engineer (1)	Safrizal Sofian	F.O.	4.0	2,175	8,700.00	8.0	2,215	17,720.00	11.0	2,295	25,245.00	11.0	2,330	25,630.00	9.0	2,365	21,285.00	6.0	2,400	14,400.00	0.0	2,430	0.00	49.0	112,980.00
2	Road Engineer (2)	Faray M.	F.O.	4.0	2,175	8,700.00	6.0	2,215	13,290.00	12.0	2,295	27,540.00	12.0	2,330	27,960.00	0.0	2,365	0.00	0.0	2,400	0.00	0.0	2,430	0.00	34.0	77,490.00
3	Road Engineer (3)	A. Chusnun	F.O.	0.0	1,490	0.00	3.0	1,650	4,950.00	10.0	1,815	18,150.00	6.0	1,980	11,880.00	0.0	2,060	0.00	0.0	2,135	0.00	0.0	2,215	0.00	19.0	34,980.00
4	Bridge Engineer (2)	A s i k i n	F.O.	0.0	2,730	0.00	6.0	2,730	16,380.00	12.0	2,730	32,760.00	3.0	2,730	8,190.00	0.0	2,730	0.00	0.0	2,730	0.00	0.0	2,730	0.00	21.0	57,330.00
	TOTAL			11.0		24,645.00	29.0		65,780.00	45.0		103,695.00	45.0		106,345.00	22.5		53,340.00	31.5		78,457.50	0.0		0.00	184.0	432,262.50

BREAKDOWN OF MAN-MONTH COST FOR YK AND TNE

E-2-2 Supervision of Transmission Line Construction between Payakumbuh S/S and Pekanbaru S/S

M.M : Man-Month
(Unit : Rp. 1,000)

NO.	POSITION	NAME		Feb. 91 - Dec. 91			Jan. 92 - Dec. 92			Jan. 93 - Dec. 93			Jan. 94 - Dec. 94			Jan. 95 - Dec. 95			Jan. 96 - Dec. 96			Jan. 97 - Dec. 97			Total M.M	Total Amount
				M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount	M.M	Unit Rate	Amount		
6	CONSTR. SUPERVISION T/L (PAYA-PEKA)																								
1	T/L Engineer (3)	Gustian Halim	F.O.	1.0	2,730	2,730.00	8.0	2,730	21,840.00	7.0	2,730	19,110.00	10.0	2,730	27,300.00	0.0	2,730	0.00	0.0	2,730	0.00	0.0	2,730	0.00	26.0	70,980.00
2	S/S Engineer (2)	Baharuddin N.	F.O.	0.0	2,215	0.00	0.0	2,295	0.00	1.0	2,330	2,330.00	11.0	2,365	26,015.00	0.0	2,400	0.00	0.0	2,430	0.00	0.0	2,465	0.00	12.0	28,345.00
3	Civil Engineer(2)(T/L)	B. Kurniadi	F.O.	0.0	2,215	0.00	0.0	2,295	0.00	11.0	2,330	25,630.00	4.0	2,365	9,460.00	0.0	2,400	0.00	0.0	2,430	0.00	0.0	2,465	0.00	15.0	35,090.00
4	Civil Engineer(3)(S/S)	Djoko Prastowo	F.O.	0.0	2,295	0.00	0.0	2,330	0.00	11.0	2,365	26,015.00	4.0	2,400	9,600.00	0.0	2,430	0.00	0.0	2,465	0.00	0.0	2,500	0.00	15.0	35,615.00
5	Architect	Daryanto	F.O.	1.0	2,060	2,060.00	0.0	2,135	0.00	6.0	2,215	13,290.00	7.0	2,295	16,065.00	0.0	2,330	0.00	0.0	2,365	0.00	0.0	2,400	0.00	14.0	31,415.00
	TOTAL			2.0		4,790.00	8.0		21,840.00	36.0		86,375.00	36.0		88,440.00	0.0		0.00	0.0		0.00	0.0		0.00	82.0	201,445.00

NO.	ITEM	TOTAL	Advance	1	2	3	4	5	6	7	8	9	10	11	
1	MAN-MONTH Cost	504,131,200		2,284,000	4,250,500	7,391,100	19,078,900	11,579,000	13,797,000	9,160,000	4,400,000	10,184,000	6,768,000	20,567,000	1
(1)	MAN-MONTH Cost for TEPSCO	504,131,200		2,284,000	4,250,500	7,391,100	19,078,900	11,579,000	13,797,000	9,160,000	4,400,000	10,184,000	6,768,000	20,567,000	1
2	Direct Cost	169,348,900		764,200	12,433,600	8,815,750	25,893,350	2,305,300	2,484,450	2,155,400	778,000	3,621,050	970,550	2,533,800	
(1)	Inland Travel Cost in the Home Country	603,000		13,400	40,200	20,100	20,100	53,600	60,300	40,200	0	20,100	6,700	53,600	
(2)	Travel Documents and Miscellaneous Costs	408,700		20,100	60,300	20,100	20,100	46,900	33,500	20,100	0	13,400	0	33,500	
(3)	International Round Air Trip	17,167,500		371,700	1,115,100	557,550	557,550	1,486,800	1,672,650	1,146,600	0	557,550	185,850	1,518,300	
(4)	Relocation/Storage Allowance	802,100		0	0	0	0	0	0	200,500	0	0	0	150,400	
(5)	Communication and Mail	13,013,000		169,000	338,000	338,000	338,000	368,000	338,000	338,000	338,000	338,000	338,000	338,000	
(6)	Printing, Book Binding and Reproduction	5,390,000		70,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	
(7)	Reference	1,620,000		0	0	0	0	0	0	60,000	60,000	60,000	60,000	60,000	
(8)	Office Supply	5,390,000		70,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	
(9)	Tracing	3,850,000		50,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	
(10)	Expenses for Factory Tests	29,515,000		0	0	0	0	0	0	0	0	2,252,000	0	0	
(11)	Various Analysis	50,000,000		0	10,500,000	7,500,000	3,250,000	0	0	0	0	0	0	0	
(12)	Special Equipment used in the Services	21,327,600		0	0	0	21,327,600	0	0	0	0	0	0	0	
(13)	Operation and Maintenance Training of PLN Personnel in Japan	20,262,000		0	0	0	0	0	0	0	0	0	0	0	
	Total (1 + 2)	673,480,100		3,048,200	16,684,100	16,206,850	44,972,250	13,884,300	16,281,450	11,315,400	5,178,000	13,805,050	7,738,550	23,100,800	12
	Advance Payment	134,700,000	134,700,000	0	0	0	0	0	0	0	0	0	0	0	
	(Repayment of Advance Payment)	(134,700,000)		(609,640)	(3,336,820)	(3,241,370)	(8,994,450)	(2,776,860)	(3,256,290)	(2,263,080)	(1,035,600)	(2,761,010)	(1,547,710)	(4,620,160)	(2
	Schedule of Payment	673,480,100	134,700,000	2,438,560	13,347,280	12,965,480	35,977,800	11,107,440	13,025,160	9,052,320	4,142,400	11,044,040	6,190,840	18,480,640	10

Note : The contingency amount is not included in the schedule.

TENTATIVE SCHEDULE OF FOREIGN CURRENCY PAYMENT (SERVICES II)

E-3-1 Supervision of the Other Works Construction of Kotapanjang HPP

Period of Payment																		
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
20,567,000	12,056,000	18,902,500	9,437,500	9,561,750	17,030,250	17,346,000	9,670,000	4,670,000	9,312,000	19,233,000	14,329,000	16,795,000	19,670,000	17,170,000	19,311,700	17,113,000	21,812,000	24,454,000
20,567,000	12,056,000	18,902,500	9,437,500	9,561,750	17,030,250	17,346,000	9,670,000	4,670,000	9,312,000	19,238,000	14,329,000	16,795,000	19,670,000	17,170,000	19,311,700	17,113,000	21,812,000	24,454,000
2,533,800	778,000	9,645,950	10,030,000	778,000	1,626,500	1,194,600	1,812,350	13,921,800	3,861,150	1,626,500	3,865,100	7,161,150	3,679,250	24,326,350	4,372,250	3,672,550	3,491,500	778,000
53,600	0	46,900	0	0	13,400	13,400	20,100	13,400	6,700	13,400	13,400	6,700	6,700	20,100	6,700	6,700	13,400	0
33,500	0	20,100	0	0	13,400	0	6,700	6,700	6,700	13,400	0	6,700	6,700	6,700	6,700	0	13,400	0
1,518,300	0	1,300,950	0	0	371,700	403,200	557,550	371,700	217,350	371,700	371,700	217,350	185,850	557,550	185,850	185,350	434,700	0
150,400	0	0	0	0	0	0	0	0	150,400	0	0	150,400	0	0	0	0	0	0
338,000	338,000	338,000	338,000	333,000	338,000	338,000	338,000	333,000	338,000	338,000	338,000	333,000	338,000	333,000	338,000	333,000	338,000	338,000
140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000
60,000	60,000	60,000	60,000	60,300	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
140,000	140,000	140,000	140,000	140,300	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000
100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
0	0	0	2,252,000	0	450,000	0	450,000	2,252,000	2,702,000	450,000	2,702,000	2,252,000	2,702,000	2,702,000	3,395,000	2,702,000	2,252,000	0
0	0	7,500,000	7,030,000	0	0	0	0	10,500,000	0	0	0	3,750,000	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	20,262,000	0	0	0	0
23,100,800	12,834,000	28,548,450	19,517,500	10,389,750	18,656,750	18,540,600	11,482,350	18,591,800	13,173,150	20,864,500	18,194,100	23,956,150	23,349,250	41,495,350	23,638,950	20,785,550	25,303,500	25,232,000
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(4,620,160)	(2,566,800)	(5,709,690)	(3,903,500)	(2,067,950)	(3,731,350)	(3,708,120)	(2,296,470)	(3,718,360)	(2,634,630)	(4,172,900)	(3,638,820)	(4,791,230)	(4,669,850)	(8,299,270)	(4,736,790)	(4,157,110)	(5,060,700)	(5,046,400)
18,480,640	10,267,200	22,838,760	15,614,000	8,271,800	14,925,400	14,832,480	9,185,830	14,873,440	10,538,520	16,691,600	14,555,280	19,164,920	18,679,400	33,197,080	18,947,160	16,628,440	20,242,800	20,185,600

(Unit : Yen)

	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
000	19,670,000	17,170,000	19,311,700	17,113,000	21,812,000	24,454,000	24,454,000	22,011,000	19,568,000	24,568,000	11,142,000	5,000,000	5,000,000	2,500,000	0	2,500,000
000	19,670,000	17,170,000	19,311,700	17,113,000	21,812,000	24,454,000	24,454,000	22,011,000	19,568,000	24,568,000	11,142,000	5,000,000	5,000,000	2,500,000	0	2,500,000
150	3,679,250	24,326,350	4,372,250	3,672,550	3,491,500	778,000	1,296,600	1,002,050	778,000	977,250	1,612,700	718,000	718,000	942,050	718,000	1,109,800
700	6,700	20,100	6,700	6,700	13,400	0	13,400	6,700	0	6,700	26,800	0	0	6,700	0	13,400
700	6,700	6,700	6,700	0	13,400	0	20,100	0	0	6,700	0	0	0	0	0	6,700
350	185,850	557,550	185,850	185,850	434,700	0	434,700	217,350	0	185,850	637,900	0	0	217,350	0	371,700
400	0	0	0	0	0	0	150,400	0	0	0	0	0	0	0	0	0
000	338,000	338,000	338,000	338,000	338,000	338,000	338,000	338,000	338,000	338,000	338,000	338,000	338,000	338,000	338,000	338,000
000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000
000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	30,000	0	0	0	0	0
000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000
000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
000	2,702,000	2,702,000	3,395,000	2,702,000	2,252,000	0	0	0	0	0	0	0	0	0	0	0
000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	20,262,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	28,349,250	41,496,350	28,688,950	28,785,550	25,808,500	25,232,000	25,850,600	23,013,050	20,346,000	25,545,250	12,754,700	5,718,000	5,718,000	3,442,050	718,000	3,609,300
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
250)	(4,669,850)	(8,299,270)	(4,736,790)	(4,157,110)	(5,060,700)	(5,046,400)	(5,170,120)	(4,602,610)	(4,069,200)	(5,109,050)	(2,550,940)	(1,143,600)	(1,143,600)	(683,410)	(143,600)	(725,940)
820	18,679,400	33,197,080	18,947,160	16,623,440	20,242,800	20,185,600	20,680,480	18,410,440	16,276,800	20,436,200	10,203,760	4,574,400	4,574,400	2,758,640	574,400	2,883,860

TENTATIVE SCHEDULE OF FOREIGN CURR

E-3-2 Supervision of Transmission
Payakumbuh S/S and Pekanbaru

NO.	ITEM	TOTAL	Advance	1	2	3	4	5	6	7	8	9
1	MAN-MONTH Cost	197.987.150		0	0	0	4.068.000	9.576.200	5.915.000	3.661.200	8.358.000	9.327
(1)	MAN-MONTH Cost for TEPSCO	197.987.150		0	0	0	4.068.000	9.576.200	5.915.000	3.661.200	8.358.000	9.327
2	Direct Cost	41.089.000		0	0	0	1.720.400	1.521.150	1.487.650	910.000	1.892.850	910
(1)	Inland Travel Cost in the Home Country	174.200		0	0	0	26.800	20.100	20.100	0	33.500	
(2)	Travel Documents and Miscellaneous Costs	154.100		0	0	0	40.200	33.500	0	0	20.100	
(3)	International Round Air Trip	5.084.100		0	0	0	743.400	557.550	557.550	0	929.250	
(4)	Relocation/Storage Allowance	601.600		0	0	0	0	0	0	0	0	
(5)	Communication and Mail	9.538.000		0	0	0	502.000	502.000	502.000	502.000	502.000	502
(6)	Printing, Book Binding and Reproduction	2.660.000		0	0	0	140.000	140.000	140.000	140.000	140.000	140
(7)	Reference	1.140.000		0	0	0	60.000	60.000	60.000	60.000	60.000	60
(8)	Office Supply	2.660.000		0	0	0	140.000	140.000	140.000	140.000	140.000	140
(9)	Tracing	1.292.000		0	0	0	68.000	68.000	68.000	68.000	68.000	68
(10)	Expenses for factory tests	17.785.000		0	0	0	0	0	0	0	0	
	Total (1 + 2)	239.076.150		0	0	0	5.788.400	11.097.350	7.402.650	4.571.200	10.250.850	10.237
	Advance Payment	47.810.000	47.810.000	0	0	0	0	0	0	0	0	
	(Repayment of Advance Payment)	(47.810.000)		0	0	0	(1.157.680)	(2.219.470)	(1.480.530)	(914.240)	(2.050.170)	(2.047
	Schedule of Payment	239.076.150	47.810.000	0	0	0	4.630.720	8.877.880	5.922.120	3.656.960	8.200.680	8.190

Note : The contingency amount is not included in the schedule.

IVE SCHEDULE OF FOREIGN CURRENCY PAYMENT (SERVICES II)

Supervision of Transmission Line Construction between
Payakumbuh S/S and Pekanbaru S/S

(Unit : Yen)

Period of Payment																
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
61.200	8.358.000	9.327.500	9.059.400	7.960.150	7.960.150	10.578.550	12.760.550	12.760.550	15.752.000	16.048.000	14.309.000	12.570.000	17.070.000	12.163.000	8.089.900	
61.200	8.358.000	9.327.500	9.059.400	7.960.150	7.960.150	10.578.550	12.760.550	12.760.550	15.752.000	16.048.000	14.309.000	12.570.000	17.070.000	12.163.000	8.089.900	
10.000	1.892.850	910.000	5.867.100	5.280.000	4.075.000	3.632.300	2.870.000	2.870.000	1.291.150	910.000	1.134.050	910.000	910.000	1.794.800	1.102.550	
0	33.500	0	13.400	0	0	13.400	0	0	6.700	0	6.700	0	0	26.800	6.700	
0	20.100	0	20.100	0	0	13.400	0	0	6.700	0	0	0	0	20.100	0	
0	929.250	0	403.200	0	0	434.700	0	0	217.350	0	217.350	0	0	837.900	185.850	
0	0	0	150.400	0	0	300.800	0	0	150.400	0	0	0	0	0	0	
02.000	502.000	502.000	502.000	502.000	502.000	502.000	502.000	502.000	502.000	502.000	502.000	502.000	502.000	502.000	502.000	
40.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	
60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	60.000	
40.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	140.000	
68.000	68.000	68.000	68.000	68.000	68.000	68.000	68.000	68.000	68.000	68.000	68.000	68.000	68.000	68.000	68.000	
0	0	0	4.370.000	4.370.000	3.165.000	1.960.000	1.960.000	1.960.000	0	0	0	0	0	0	0	
71.200	10.250.850	10.237.500	14.926.500	13.240.150	12.035.150	14.210.850	15.630.550	15.630.550	17.043.150	16.958.000	15.443.050	13.480.000	17.980.000	13.957.800	9.192.450	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14.240)	(2.050.170)	(2.047.500)	(2.985.300)	(2.648.030)	(2.407.030)	(2.842.170)	(3.126.110)	(3.126.110)	(3.408.630)	(3.391.600)	(3.088.610)	(2.696.000)	(3.596.000)	(2.791.560)	(1.833.260)	
56.960	8.200.680	8.190.000	11.941.200	10.592.120	9.628.120	11.368.680	12.504.440	12.504.440	13.634.520	13.566.400	12.354.440	10.784.000	14.384.000	11.166.240	7.359.190	

NO.	ITEM	TOTAL	Advance	1	2	3	4	5	6	7	
11	MAN-MONTH Cost for YK and TNE	432.262.500		9.180.000	6.765.000	4.350.000	13.600.000	4.350.000	0	7.160.000	14
12	Direct Cost	2.386.274.651	2.386.274.651	11.267.049	21.420.276	25.743.978	342.377.198	36.229.752	46.813.704	232.110.909	55
(1)	Establishment Allowance	8.400.000		150.000	450.000	450.000	150.000	450.000	750.000	500.000	
(2)	Mobilization and Demobilization Cost	24.709.200		180.000	540.000	270.000	270.000	720.000	810.000	2.771.400	
(3)	Duty Trip Expenses	76.540.800		0	0	0	0	0	0	2.284.800	2
(4)	Per Diem Allowance for FIELD PERSONNEL out of duty station travel	54.746.000		0	0	0	0	0	0	1.334.000	1
(5)	Per Diem Allowance for YK and TNE FIELD PERSONNEL without Residence	71.400.000		0	1.632.000	0	0	408.000	0	0	
(6)	Per Diem Allowance for Short-term PERSONNEL	287.161.875		4.826.250	9.652.500	14.478.750	28.957.500	24.131.250	33.783.750	14.478.750	
(7)	Housing Allowance	268.350.000		0	0	0	50.000.000	0	0	51.600.000	3
(8)	Transport Facilities	294.534.109		0	1.424.178	2.373.630	4.747.260	1.898.904	2.848.356	132.920.361	5
(9)	Office Cost	443.763.667		1.263.799	2.527.598	2.527.598	252.383.438	2.527.598	2.527.598	2.527.598	2
(10)	Communication and Mail	50.820.000		660.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1
(11)	Printing, Book Binding and Reproduction	114.499.000		1.487.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2
(12)	Salary for Local Employees	691.350.000		2.700.000	900.000	1.350.000	1.575.000	1.800.000	1.800.000	19.400.000	37
	Total (1 + 2)	2.818.537.151		20.447.049	28.185.276	30.093.978	355.977.198	40.579.752	46.813.704	239.270.909	70
	Advance Payment	563.710.000	563.710.000	0	0	0	0	0	0	0	
	(Repayment of Advance Payment)	(563.710.000)		(4.089.410)	(5.637.055)	(6.018.796)	(71.195.440)	(8.115.950)	(9.362.741)	(47.854.182)	(14
	Schedule of Payment	2.818.537.151	563.710.000	16.357.639	22.548.221	24.075.182	284.781.758	32.463.802	37.450.963	191.416.727	56

Note : The contingency amount is not included in the schedule.

TENTATIVE SCHEDULE OF INDONESIAN RUPIAH CURRENCY PAYMENT (SERVICES II)

E-4-1 Supervision of the Other Works Construction of Kotapanjang HPP

	Period of Payment															
	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
00	14.320.000	19.755.000	20.080.000	18.270.000	15.975.000	18.270.000	16.455.000	16.455.000	18.505.000	29.060.000	16.110.000	11.300.000	9.320.000	24.230.000	11.650.000	
09	55.979.478	65.168.179	59.581.728	77.213.104	66.921.682	78.589.382	55.109.278	55.680.478	69.817.428	88.965.228	66.882.778	44.676.408	44.894.843	76.626.678	58.945.753	
00	0	300.000	0	800.000	0	650.000	0	0	300.000	200.000	150.000	200.000	200.000	300.000	0	
00	0	574.600	90.000	720.000	319.600	949.600	304.600	304.600	180.000	1.293.800	1.148.800	1.054.200	90.000	1.603.000	1.143.400	
00	2.284.800	2.284.800	2.284.800	3.427.200	2.856.000	3.427.200	2.856.000	3.427.200	2.856.000	2.856.000	2.284.800	2.284.800	2.284.800	2.856.000	2.856.000	
00	1.334.000	1.334.000	1.470.000	1.878.000	2.234.000	2.098.000	1.988.000	1.988.000	1.742.000	1.716.000	1.606.000	1.470.000	1.606.000	1.742.000	1.742.000	
0	0	0	0	0	0	0	0	0	0	8.160.000	4.080.000	0	0	8.160.000	0	
50	0	7.239.375	4.826.250	9.652.500	9.652.500	19.305.000	0	0	14.478.750	14.478.750	9.652.500	0	0	19.305.000	7.239.375	
00	3.200.000	3.800.000	3.800.000	15.200.000	4.900.000	5.200.000	4.900.000	4.900.000	5.200.000	15.200.000	2.900.000	2.900.000	3.300.000	4.600.000	4.300.000	
61	5.339.080	5.813.806	5.339.080	5.813.806	7.237.984	7.237.984	5.339.080	5.339.080	5.339.080	5.339.080	5.339.080	4.045.810	4.692.445	5.339.080	5.339.080	
98	2.527.598	2.527.598	2.527.598	2.527.598	2.527.598	2.527.598	2.527.598	2.527.598	2.527.598	2.527.598	2.527.598	2.527.598	2.527.598	2.527.598	5.431.898	
00	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	
00	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	
00	37.000.000	37.000.000	34.950.000	32.900.000	32.900.000	32.900.000	32.900.000	32.900.000	32.900.000	32.900.000	32.900.000	25.900.000	25.900.000	25.900.000	26.600.000	
09	70.299.478	84.923.179	79.661.728	95.483.104	82.896.682	96.859.382	71.564.278	72.135.478	88.322.428	118.025.228	82.992.778	55.976.408	54.214.843	100.856.678	70.595.753	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
82)	(14.059.896)	(16.984.636)	(15.932.346)	(19.096.621)	(16.579.336)	(19.371.876)	(14.312.856)	(14.427.096)	(17.664.486)	(23.605.046)	(16.598.556)	(11.195.282)	(10.842.969)	(20.171.336)	(14.119.151)	
27	56.239.582	67.938.543	63.729.382	76.386.483	66.317.346	77.487.506	57.251.422	57.708.382	70.657.942	94.420.182	66.394.222	44.781.126	43.371.874	80.685.342	56.476.602	

22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
650.000	9.390.000	4.660.000	7.025.000	9.390.000	13.485.000	9.460.000	14.395.000	14.530.000	6.495.000	15.190.000	17.920.000	5.162.500	0	0	
945.753	58.709.478	57.098.578	54.751.763	54.365.598	58.477.998	52.430.748	58.687.548	62.318.948	44.306.278	41.279.938	52.089.638	30.122.028	18.903.868	17.988.668	15.666.8
0	200.000	150.000	200.000	350.000	0	400.000	200.000	200.000	200.000	0	150.000	0	0	200.000	
143.400	1.053.400	90.000	839.600	90.000	649.200	180.000	863.800	989.200	939.200	559.200	369.600	2.228.400	0	0	340.0
856.000	2.284.800	2.284.800	2.856.000	2.284.800	2.856.000	3.427.200	3.427.200	3.427.200	2.284.800	2.856.000	2.284.800	1.142.400	1.142.400	571.200	
742.000	1.852.000	1.852.000	2.014.000	1.852.000	2.124.000	2.286.000	2.804.000	2.830.000	2.286.000	2.558.000	2.286.000	1.088.000	1.088.000	544.000	
0	0	0	0	0	3.060.000	0	4.080.000	8.160.000	3.060.000	12.240.000	14.280.000	4.080.000	0	0	
239.375	0	9.652.500	4.826.250	4.826.250	4.826.250	0	0	0	0	0	9.652.500	2.413.125	0	0	
800.000	15.050.000	4.800.000	5.100.000	5.400.000	5.400.000	6.800.000	8.200.000	7.600.000	6.600.000	5.600.000	5.600.000	2.800.000	1.400.000	1.400.000	700.0
839.080	5.339.080	5.339.080	5.985.715	6.632.350	6.632.350	6.632.350	6.632.350	6.632.350	5.256.080	2.586.540	2.586.540	1.939.905	1.293.270	1.293.270	646.6
431.898	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.1
320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.0
974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.0
500.000	20.300.000	20.300.000	20.300.000	20.300.000	20.300.000	20.075.000	19.850.000	19.850.000	11.050.000	2.250.000	2.250.000	1.800.000	1.350.000	1.350.000	1.350.0
695.753	68.099.478	61.758.578	61.776.763	63.755.598	71.962.998	61.890.748	73.082.548	76.848.948	50.801.278	56.469.938	70.009.638	35.284.528	18.903.868	17.988.668	15.666.8
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
(19.151)	(13.619.896)	(12.351.716)	(12.355.353)	(12.751.120)	(14.392.600)	(12.378.150)	(14.616.510)	(15.369.790)	(10.160.256)	(11.293.988)	(14.001.928)	(7.056.906)	(3.780.774)	(3.597.734)	(3.133.3
476.602	54.479.582	49.406.862	49.421.410	51.004.478	57.570.398	49.512.598	58.466.038	61.479.158	40.641.022	45.175.950	56.007.710	28.227.622	15.123.094	14.390.934	12.533.4

(Unit : Rp.)

.26	27	28	29	30	31	32	33	34	35	36	37	38	39
.390.000	13.485.000	9.460.000	14.395.000	14.530.000	6.495.000	15.190.000	17.920.000	5.162.500	0	0	0	0	0
.365.598	58.477.998	52.430.748	58.687.548	62.318.948	44.306.278	41.279.938	52.089.638	30.122.028	18.903.868	17.988.668	15.666.833	11.452.600	16.608.850
350.000	0	400.000	200.000	200.000	200.000	0	150.000	0	0	200.000	0	0	150.000
90.000	649.200	180.000	863.800	989.200	939.200	559.200	369.600	2.228.400	0	0	340.000	0	180.000
.284.800	2.856.000	3.427.200	3.427.200	3.427.200	2.284.800	2.856.000	2.284.800	1.142.400	1.142.400	571.200	0	0	0
.852.000	2.124.000	2.286.000	2.804.000	2.830.000	2.286.000	2.558.000	2.286.000	1.088.000	1.088.000	544.000	0	0	0
0	3.060.000	0	4.080.000	8.160.000	3.060.000	12.240.000	14.280.000	4.080.000	0	0	0	0	0
.826.250	4.826.250	0	0	0	0	0	9.652.500	2.413.125	0	0	0	0	4.826.250
.400.000	5.400.000	6.800.000	8.200.000	7.600.000	6.600.000	5.600.000	5.600.000	2.800.000	1.400.000	1.400.000	700.000	0	0
.632.350	6.632.350	6.632.350	6.632.350	6.632.350	5.256.080	2.586.540	2.586.540	1.939.905	1.293.270	1.293.270	646.635	0	0
.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	8.336.198	5.808.600	5.808.600
.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000
.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000	2.974.000
.300.000	20.300.000	20.075.000	19.850.000	19.850.000	11.050.000	2.250.000	2.250.000	1.800.000	1.350.000	1.350.000	1.350.000	1.350.000	1.350.000
.755.598	71.962.998	61.890.748	73.082.548	76.848.948	50.801.278	56.469.938	70.009.638	35.284.528	18.903.868	17.988.668	15.666.833	11.452.600	16.608.850
0	0	0	0	0	0	0	0	0	0	0	0	0	0
.751.120)	(14.392.600)	(12.378.150)	(14.616.510)	(15.369.790)	(10.160.256)	(11.293.988)	(14.001.928)	(7.056.906)	(3.780.774)	(3.597.734)	(3.133.367)	(2.290.520)	(3.324.340)
.004.478	57.570.398	49.512.598	58.466.038	61.479.158	40.641.022	45.175.950	56.007.710	28.227.622	15.123.094	14.390.934	12.533.466	9.162.080	13.284.510

NO.	ITEM	TOTAL	Advance	1	2	3	4	5	6	7	8	
1	MAN-MONTH Cost for YK and TNE	201.445.000		0	0	0	4.790.000	2.730.000	2.730.000	2.730.000	5.460.000	5.
2	Direct Cost	854.841.574		0	0	0	16.723.804	22.944.706	21.545.254	4.897.600	176.749.520	47.
(1)	Establishment Allowance	2.750.000		0	0	0	300.000	450.000	0	0	450.000	
(2)	Mobilization and Demobilization Cost	9.182.000		0	0	0	1.478.400	549.600	549.600	279.600	450.000	
(3)	Duty Trip Expenses	35.985.600		0	0	0	0	0	0	0	0	
(4)	Per Diem Allowance for FIELD PERSONNEL out of duty station travel	48.530.000		0	0	0	0	0	0	0	0	
(5)	Per Diem Allowance for YK and TNE FIELD PERSONNEL without Residence	9.528.000		0	0	0	738.000	1.962.000	1.962.000	1.962.000	1.962.000	
(6)	Per Diem Allowance for Short-term PERSONNEL	86.872.500		0	0	0	9.652.500	14.478.750	14.478.750	0	19.305.000	9.
(7)	Housing Allowance	65.000.000		0	0	0	0	0	0	0	300.000	
(8)	Transport Facilities	217.233.474		0	0	0	1.898.904	2.848.356	1.898.904	0	66.494.520	23.
(9)	Office Cost	231.796.000		0	0	0	0	0	0	0	85.132.000	10.
(10)	Communication and Mail	25.080.000		0	0	0	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.
(11)	Salary for Local Employees	97.500.000		0	0	0	0	0	0	0	0	
(12)	Printing, Book Binding and Reproduction	25.384.000		0	0	0	1.336.000	1.336.000	1.336.000	1.336.000	1.336.000	1.
	Total (1 + 2)	1.056.286.574		0	0	0	21.513.804	25.674.706	24.275.254	7.627.600	182.209.520	52.
	Advance Payment	211.250.000	211.250.000	0	0	0	0	0	0	0	0	
	(Repayment of Advance Payment)	(211.250.000)		0	0	0	(4.302.761)	(5.134.941)	(4.855.051)	(1.525.520)	(36.441.904)	(10.
	Schedule of Payment	1.056.286.574	211.250.000	0	0	0	17.211.043	20.539.765	19.420.203	6.102.080	145.767.616	42.

Note : The contingency amount is not included in the schedule.

IVE SCHEDULE OF INDONESIAN RUPIAH CURRENCY PAYMENT (SERVICES II)

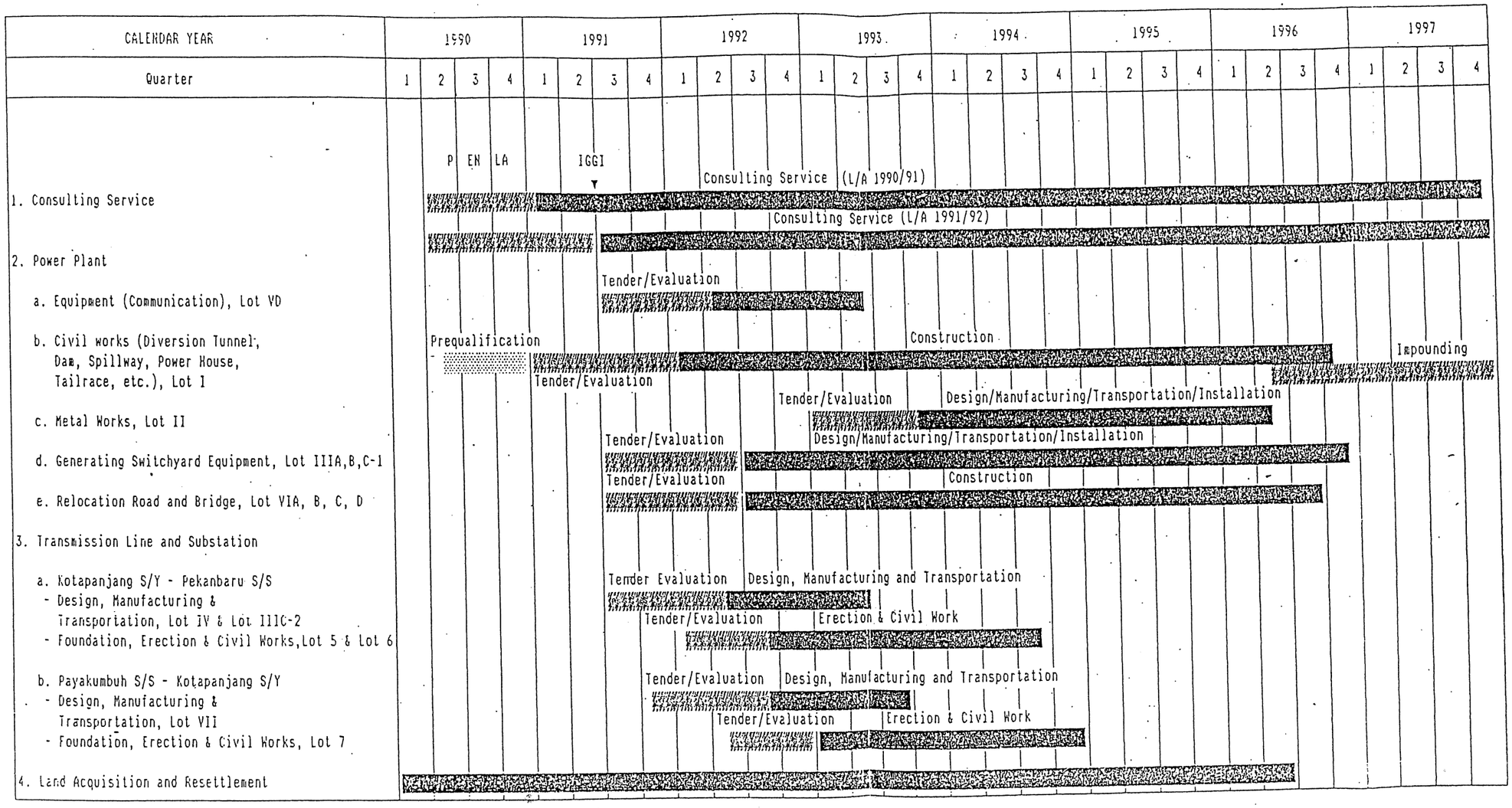
Supervision of Transmission Line Construction between
Payakumbuh S/S and Pekanbaru S/S

(Unit : Rp.)

Period of Payment																
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
30.000	5.460.000	5.460.000	2.730.000	9.390.000	10.755.000	15.700.000	19.280.000	19.280.000	24.125.000	24.310.000	19.545.000	14.780.000	10.190.000	7.460.000	0	
97.600	176.749.520	47.231.300	49.754.555	53.236.375	36.445.150	40.239.150	43.274.750	43.164.750	48.141.350	48.243.150	47.782.350	44.143.350	40.906.350	48.384.050	21.034.060	
0	450.000	0	200.000	0	0	400.000	0	0	400.000	0	0	400.000	0	150.000	0	
79.600	450.000	0	459.600	609.200	559.200	789.200	0	0	394.600	0	949.200	304.600	0	1.719.200	90.000	
0	0	0	0	571.200	1.713.600	1.713.600	3.998.400	3.998.400	3.998.400	5.140.800	5.140.800	3.998.400	2.856.000	2.856.000	0	
0	0	0	900.000	2.344.000	2.344.000	3.600.000	4.390.000	4.280.000	6.462.000	6.216.000	6.106.000	5.154.000	4.364.000	2.370.000	0	
62.000	1.962.000	0	0	0	942.000	0	0	0	0	0	0	0	0	0	0	
0	19.305.000	9.652.500	4.826.250	0	0	0	0	0	0	0	0	0	0	9.652.500	4.826.250	
0	300.000	600.000	1.000.000	2.600.000	2.600.000	5.450.000	6.600.000	6.600.000	8.600.000	8.600.000	7.300.000	6.000.000	5.400.000	3.350.000	0	
0	66.494.520	23.458.800	25.398.705	26.691.975	6.466.350	6.466.350	6.466.350	6.466.350	6.466.350	6.466.350	6.466.350	6.466.350	6.466.350	6.466.350	3.879.810	
0	85.132.000	10.864.000	10.864.000	10.864.000	10.864.000	10.864.000	10.864.000	10.864.000	10.864.000	10.864.000	10.864.000	10.864.000	10.864.000	10.864.000	5.432.000	
20.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	1.320.000	
0	0	0	3.450.000	6.900.000	8.300.000	8.300.000	8.300.000	8.300.000	8.300.000	8.300.000	8.300.000	8.300.000	8.300.000	8.300.000	4.150.000	
36.000	1.336.000	1.336.000	1.336.000	1.336.000	1.336.000	1.336.000	1.336.000	1.336.000	1.336.000	1.336.000	1.336.000	1.336.000	1.336.000	1.336.000	1.336.000	
27.600	182.209.520	52.691.300	52.484.555	62.626.375	47.200.150	55.939.150	62.554.750	62.444.750	72.266.350	72.553.150	67.327.350	58.923.350	51.096.350	55.844.050	21.034.060	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25.520)	(36.441.904)	(10.538.260)	(10.496.911)	(12.525.275)	(9.440.030)	(11.187.830)	(12.510.950)	(12.488.950)	(14.453.270)	(14.510.630)	(13.465.470)	(11.784.670)	(10.219.270)	(11.168.810)	(4.199.497)	
02.080	145.767.616	42.153.040	41.987.644	50.101.100	37.760.120	44.751.320	50.043.800	49.955.800	57.813.080	58.042.520	53.861.880	47.138.680	40.877.080	44.675.240	16.834.563	

Attachment 1

IMPLEMENTATION SCHEDULE
KOTAPANJANG HPP & TRANSMISSION LINE



Remarks: P = Pledge
EN = Exchange of Notes
LA = Loan Agreement