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PD-ADD-700-D1

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PROJECT APPRAISAL REPORT (PAR)

1. PROJECT NO. 497-H-025	2. PAR FOR PERIOD Nov. 1971 TO Apr. 1977	3. COUNTRY Indonesia	4. PAR SERIAL NO. 77-15
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Ketenger Transmission and Distribution

10p

6. PROJECT DURATION: Begin FY 71 Ends FY 78	7. DATE LATEST PROP N.A.	8. DATE LATEST PIP N.A.	9. DATE PRIOR PAR N.A.
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10. U.S. FUNDING	a. Cumulative Obligation Thru Prior FY: \$ 21,000,000	b. Current FY Estimated Budget: \$	c. Estimated Budget to completion After Current FY: \$
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11. KEY ACTION AGENTS (Contractor, Participating Agency or Voluntary Agency)

a. NAME	b. CONTRACT, PASA OR VOL. AG. NO.
Government of Indonesia (GOI) acting thru the State Electricity Agency (PLN)	Loan Agreement 497-H-025
Chas. T. Main - Consultant to PLN	Contract PdJ/046/PST/72
General Construction Contractor - IRBY Const. Co.	Contract PdJ/177/PST/74

I. NEW ACTIONS PROPOSED AND REQUESTED AS A RESULT OF THIS EVALUATION

A. ACTION (X)			B. LIST OF ACTIONS	C. PROPOSED ACTION COMPLETION DATE
USAID	AID W	HOST		
			<p>See Critical Performance Indicator (CPI) form attached hereto for description of project and related key events.</p>	

D. RE-PLANNING REQUIRES	E. DATE OF MISSION REVIEW
REVISED OR NEW: <input type="checkbox"/> PROP <input type="checkbox"/> PIP <input type="checkbox"/> PRO AG <input type="checkbox"/> PIO/T <input type="checkbox"/> PIO/C <input type="checkbox"/> PIO/P	19 February 1977

PROJECT MANAGER: TYPED NAME, SIGNED INITIALS AND DATE Walter D. Lawrence <i>WDL</i> 22 April 1977	MISSION DIRECTOR: TYPED NAME, SIGNED INITIALS AND DATE Thomas C. Niblock <i>TN</i>
Robert F. Zimmerman, Evaluation Officer	<i>[Signature]</i> 1/29/77

II. PERFORMANCE OF KEY INPUTS AND ACTION AGENTS

A. INPUT OR ACTION AGENT CONTRACTOR, PARTICIPATING AGENCY OR VOLUNTARY AGENCY	B. PERFORMANCE AGAINST PLAN							C. IMPORTANCE FOR ACHIEVING PROJECT PURPOSE (X)					
	UNSATISFACTORY		SATISFACTORY			OUTSTANDING		LOW		MEDIUM		HIGH	
	1	2	3	4	5	6	7	1	2	3	4	5	
1. PLN - GOI Electric Power Agency				X									X
2. Chas. T. Main - Consultant					X								X
3. IRBY Construction Co. - Contractor					X								X

Comment on key factors determining rating

#2 - Consultant: The Chas. T. Main scope of work includes conceptual design of the transmission, substation and distribution systems; layout, detailed design and equipment characteristics for substations; layout, detailed designs and working drawings for distribution lines plus construction supervision of the construction contractor. Continuation of training from the Tuntang project is also done by Chas. T. Main. The consultant provided a field staff of well trained and dedicated people who get along very well with their client personnel.

#3 - IRBY Construction Company: IRBY secured the construction contracts for transmission lines, substations and distribution rehabilitation on a competitive bid (Cont'd)

4. PARTICIPANT TRAINING					X									X
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Chas. T. Main performed design, construction supervision and training for both the Ketenger and Tuntang projects out of their Semarang Office. Distribution system layout, preparation of structure data sheets, estimation of quantities, staking sheets and such were prepared by PLN personnel under the direction of the consultant for both projects and consequently, this effort was a continuous one, starting with (Cont'd)

5. COMMODITIES					X									X
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All equipment and material was furnished as part of supply/installation contracts. IRBY was prompt in placing their equipment orders after execution of their contracts and equipment moved to Semarang and Cilacap ports with little difficulty. After an initial trial period, IRBY and Indonesia customs operated on a "no nonsense" basis and imports were processed smoothly.

6. COOPERATING COUNTRY (PLN)	a. PERSONNEL					X								X
	b. OTHER				X								X	

Comment on key factors determining rating

PLN, the State Power Agency, performed reasonably well and cooperated willingly. The PLN electric power development program taxes its technical, administrative and financial resources severely. Experience gained on the Tuntang project with respect to Customs procedures were helpful on Ketenger and problems were relatively minor.

7. OTHER DONORS	West Germany					X								X
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(See Next Page for Comments on Other Donors)

II. 7. Continued: Comment on key factors determining rating of Other Donors

Under this project, IRBY has constructed 150 KV transmission lines from Pekalongan to Tegal, Tegal to Purwokerto and Purwokerto to Cilacap. The West Germans have financed and constructed 150 KV transmission in the Tuntang project area and now are working on the Semarang to Pekalongan line. Due to financing problems, this line was late in getting started and as a result, it will be completed about six months late, mid 1978. Semarang Steam Powerplant will be on line with one unit under test by January 1978 which would have been the optimum time to get the Semarang - Pekalongan line in operation.

III. KEY OUTPUT INDICATORS AND TARGETS

A. QUANTITATIVE INDICATORS FOR MAJOR OUTPUTS		TARGETS (Percentage/Rate/Amount)					END OF PROJECT
		CUMU- LATIVE PRIOR FY	CURRENT FY		FY ____	FY ____	
			TO DATE	TO END			
Electric distribution system rehabilitation in Pemalang, Pekalongan, Purwokerto and Tegal and adjacent areas.	PLANNED	90	90	100			
	ACTUAL PERFORM- ANCE	75	95				
	REPLANNED			100			
	PLANNED	90	100				
	ACTUAL PERFORM- ANCE	95	100				
	REPLANNED						
New 150/20 KV substations at Tegal, Purwokerto and Cilacap.	PLANNED	80	95	100			
	ACTUAL PERFORM- ANCE	70	90				
	REPLANNED			100			
	PLANNED						
	ACTUAL PERFORM- ANCE						
	REPLANNED						
B. QUALITATIVE INDICATORS FOR MAJOR OUTPUTS	COMMENT:						
1.	N.A.						
2.	COMMENT:						
3.	COMMENT:						

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IV. PROJECT PURPOSE

A. 1. Statement of purpose as currently envisaged.

2. Same as in PROP? YES NO

To provide transmission, substation and distribution facilities in the Ketenger area of Central Java for the benefit of the cities of Pemalang, Pekalongan, Tegal, Purwokerto and Cilacap and surrounding areas. All three elements - transmission, substations and new distribution are needed to move the electric power to be generated in the new AID-financed Semarang Steam Powerplant which undergoes initial tests in January 1978. The ultimate result will be adequate power delivered efficiently to some 60,000 consumers in the Ketenger system area of Central Java.

B. 1. Conditions which will exist when above purpose is achieved.

2. Evidence to date of progress toward these conditions.

1. Delivery of power to the city and adjacent load areas from new 20 KV delivery points into the 20 KV primary distribution.

2. Transfer of power from the new substations to the consumers via the new primary and secondary distribution lines and the service connections.

1. The 150 KV project transmission lines are complete and the 150/20 KV new substations are complete except for some control panels which are expected to be installed and tested by July 1977. Testing and interim operation will be done from that time until the Semarang -Pekalongan 150 KV line is completed by the Germans, at which time full system operation will start.

2. The distribution construction is complete in Tegal and well along in the other cities and is to be complete by October 1977. This will make power available on the new 220/380 volt distribution secondary lines. The service connection is the final link to the consumer and that is to be installed by PLN. No "conversion" work has been started on this project as yet. PLN will start on conversion only after such work is well underway in Tuntang and crews now working there can be enlarged to begin on Ketenger. (More on the subject of conversion on continuation sheet, Page 8.)

V. PROGRAMMING GOAL

A. Statement of Programming Goal

The electric power sector goal is to provide electric service to every existing and potential consumer who desires such service. This is a monumental task in Indonesia with one of the lowest per capita electrical consumption rates in the world. A basic goal of this project is to demonstrate the economy, efficiency and flexibility of the new system for general application in Indonesia.

B. Will the achievement of the project purpose make a significant contribution to the programming goal, given the magnitude of the national problem? Cite evidence.

In order for Indonesia to provide electric service to continually increasing numbers of its people, an immense investment is required and it is essential to employ the most economical electric distribution system for the electric plant expansion. In AID's opinion, the system used on this project combines the best of American and European practices and can substantially reduce the investment and maximize the performance of the future electric systems in Indonesia.

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Continued Relevance of Current Project Purpose

1. Are there alternative approaches to achieving this Project's Purpose or the Sector Goal? Would any other approach be more effective or appropriate for USAID?

The only alternatives would be technical alternatives and it is felt that the features of this project - 150 KV transmission, load center substations, 20 KV primary and 220/380 volt secondary distribution is the most modern, efficient and flexible plan for the project requirements.

2. What is current priority of Project with the GOI? Evidence for or against?

Altho this project had a rather low priority in its early stages which held up bidding for construction contracts, PLN now has supported the project with adequate financing and PLN staff work. One evidence is PLN's financing of the transmission contract foreign exchange when the AID loan could not cover it. (See the CPI attached). Also, PLN is rupiah financing the time extension of the consultant contract in order to keep them on the job until the distribution construction is complete, now scheduled for October 1977.

3. How does GOI view USAID role? Do USAID and GOI share common perception of Project Purpose?

The GOI was disappointed when informed that no supplemental loan funds would be available for the FX cost overruns when the total project FX cost escalation exceeded the estimated amount. This was due in large part to the time it took to get the project to the bidding stage - from the signing of the consultant contract in May 1972, consultant at site June 1973 to signed contracts by October 1974.

Once underway, the GOI support was good; transmission lines were completed ahead of schedule, substations are complete except for late supply of relays by Westinghouse. These are expected at site shortly and installation and testing should be complete by July/August 1977.

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4. Are there Adverse Side Effects to this Project?

- a. **Economic?**
Economic benefits are positive in providing a more reliable electric power supply. Many hundreds of local workers were employed.
- b. **Ecological?**
For this project itself, such factors are very minor, such as rights-of-way clearing. Properly done, clearing is not ecologically damaging.
- c. **Social/Political?**
An assured and reliable electric power supply will stimulate investment in various appliances such as refrigerators, cookers, irons, sewing machines and such for a better standard of living for both existing and new customers. Roughly 20 percent of the total new primary and secondary distribution lines cover areas in and around the city load centers where there was no electric supply prior to the Katenger Project. In these places, community life will be changed by lighting of street and public gathering places such as schools. Commercial activity, stores, small business establishments and the like will flourish as will recreational activities - outdoor sports and cinemas. All these benefits afforded by electric service will assist in maintaining political stability.
- d. **Health?**
Electric power is a necessity for pipe borne potable water supply and sewerage systems which are needed by most small communities. Both commercially and domestically, electric power for refrigeration will reduce food spoilage and contamination and improve public health.

5. Do the Benefits justify the costs?

The benefits of this project will be the ability to reach many new customers, to provide additional service to many existing customers now under load restrictions. In terms of direct cost-benefits, PLN's system losses will be reduced, the service reliability improved, both of which will increase PLN's net revenue. It is not likely to reduce the cost of energy to the typical domestic consumer because everything considered, he is getting energy at a comparatively low rate. However, by supporting PLN's revenues, PLN can provide better service and should generate more financial assets to put into capital plant expansions.

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6. Are there any unexpected benefits?

The social benefits of project construction and operation payroll, of better home and street lighting, more electricity for basic domestic appliances are readily observed - even tho they may not be considered unexpected benefits.

- 7. Does this project have any impact on the five development criteria outlined in Section 102(d) of the FAA (i.e.: a. increasing agricultural productivity through small farm labor intensive agriculture; b. reduce infant mortality; c. control population growth; d. promote greater equality in income distribution; and e. reduce rates of unemployment and underemployment). Explain.**

Altho this project was not designed with these benefits specifically in mind, the possibilities of electric powered pump irrigation are considerable in Java providing both supplemental and prime source of irrigation water for multiple cropping. Electric power for domestic and commercial refrigeration will help reduce illness and mortality of all ages. The other effects exist, but are only peripheral.

- 8. Who are the direct and indirect beneficiaries of this project? (Identify, describe nature of benefits and number of those benefiting).**

The beneficiaries of this project itself are the some 60,000 consumers who will receive more reliable and rated voltage electric service. They will be able to increase their usage of electricity and with the new system, it will be possible to connect all potential consumers wanting service rather than restrict applications as is done at present.

- 9. Overall Assessment of Project Performance.**

Unsatisfactory		Satisfactory			Outstanding	
1	2	3	4	5	6	7
			X			

Narrative statement explaining ranking: (Cont'd)

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Continuation

Page 2-Item 2: basis and of course, it was desirable to have the same contractor on all three jobs. Their work has shown good organization, efficient construction practices and generally good adherence to construction schedules.

Page 2 - Item 3: Tuntang and finishing with Ketenger. A very capable staff of 25 or so layout and drafting personnel including several women was trained on the job. Similarly, lineman training was started on the Tuntang job and continued into the Ketenger job. In addition, the construction contractor (IRBY) provided a year of lineman training which complemented that by the consultant. Both the consultant and IRBY have done very good work on training.

Page 4 - Item B-2: Both the AID-assisted distribution rehabilitation projects in Central Java (Tuntang and Ketenger) involve conversion work by PLN. This work includes connection and stringing of duplex or triplex service wire from the new secondary wires to the customer premises, changing out or adapting the existing panel and limiter (or meter for larger customers) and making any required changes to the customer's wiring system. With some 240,000 customers in these two system areas, the task of conversion will require about four years of well planned and intensive work by PLN. PLN's consultant and construction contractors have provided basic lineman training and some specialized conversion training. Additional training in the scheduling and planning of conversion work will be provided for about one more year by the consultant by which time PLN should have 300 to 400 trained men in the field working on both the Tuntang and Ketenger project areas. This training work is being financed under AID loan 497-T-040, consultant services.

Page 7 - Item 9: The construction phase of this project has been very well done by IRBY and the engineering by C.T. Main has gained the confidence of PLN as indicated by PLN negotiations with C.T. Main for design and supervision work on additional 150 KV transmission lines and substations in Central and East Java to be financed by PLN and other foreign donors. The only negative aspect of the evaluation is the time delays by PLN in starting this project. This apparently was a question of priorities between Semarang and Jakarta Steam Powerplants, Interim Generation gas turbine plants and many others going at about the same time.

COUNTRY Indonesia	PROJECT NO. A97-0213	PROJECT TITLE Ketenger Transmission and Distribution	DATE 15 Feb. 77	<input type="checkbox"/> ORIGINAL <input checked="" type="checkbox"/> REVISION # 1	APPROVED
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PROJECT PURPOSE (FROM PRP FACESHET):

By means of additional 150 kv transmission lines, new 150/20 kv substations and distribution system rehabilitation in the Ketenger area of Central Java, this project will enhance the supply and reliability of electric service to existing customers and make it feasible for PLN to connect new customers.

CPI DESCRIPTION

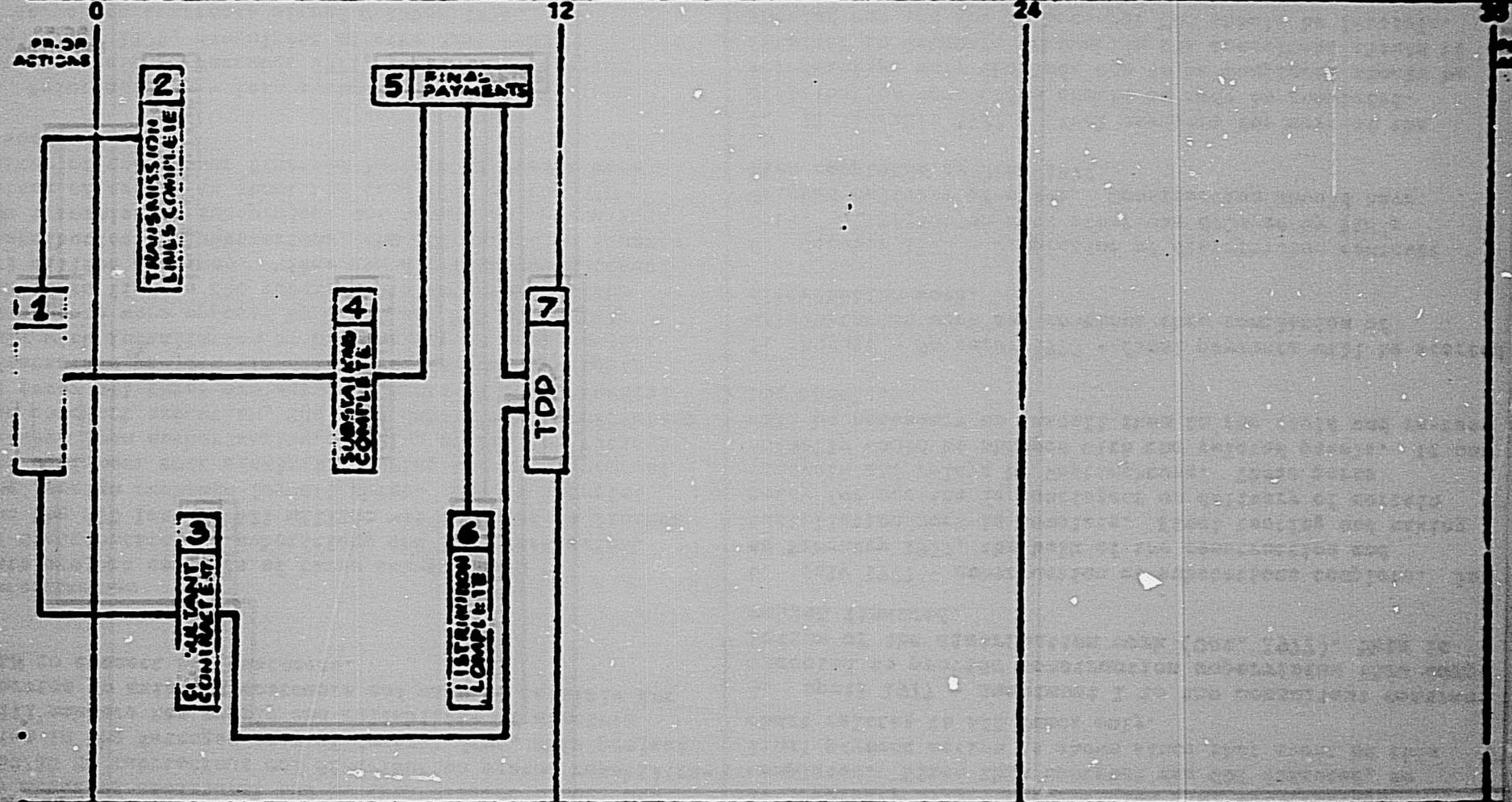
This project consists of three sub-projects -

1) distribution; 2) substations and 3) transmission, and the AID loan of \$21 million was intended to finance the foreign exchange for all three. Due to material and equipment cost escalation during the time interval between loan authorization, issuing of bid invitations and contract execution, the loan amount was insufficient to cover all three project components FX requirements. Alternative project financing schemes such as supply only with installation by PLN for one or more project components were opposed by USAID, and PLN ultimately agreed to finance the requirements in excess of the \$21 million AID loan. Since the AID loan would cover distribution and substations, the GOI agreed to finance the transmission sub-project and issued an appropriate letter of credit at about the same time as the AID letter of commitment financed letters of credit were issued.

1. Prior actions - loan authorized June 1971, loan agreement signed November 1971, consultant contract signed May 1972, consultant at site June 1973, construction contracts signed October 1974. Transmission construction started April 1975, substations construction started May 1975, distribution construction started July 1975.

2. February 1977 - transmission line construction completed. Since this contract was GOI financed, no final payment action is shown since that event on this chart relates to AID funds only.
3. April 1977 - Amendment 1 to the consultant contract executed to provide construction supervision thru completion of the distribution work (Oct. 1977). This is rupiah financed.
4. July 1977 - construction of substations complete. As of February 1977, the bulk of the construction and installation work is complete. Final testing and making ready for service is contingent on delivery of certain controls and relays by Westinghouse. These parts normally would be shipped with the related panels. It now will be necessary to install them in the field and re-test the panels.
5. August - November 1977 - final payments will be started on substation work and continue thru completion of distribution work.
6. October 1977 - completion of distribution contract work. Distribution work start was delayed by PLN's delayed delivery of poles. Construction should have been completed by June 1977.
7. 31 December 1977 - final payments for most of the distribution work units should be made as completed. Accordingly, only the last one to be completed should be invoiced in October. Meanwhile, the consultant should be phasing out and the 31 December TDD should be feasible.

OR CV	1977	1978	1979
MO	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D



1975-3
1980-4
1981-1

X