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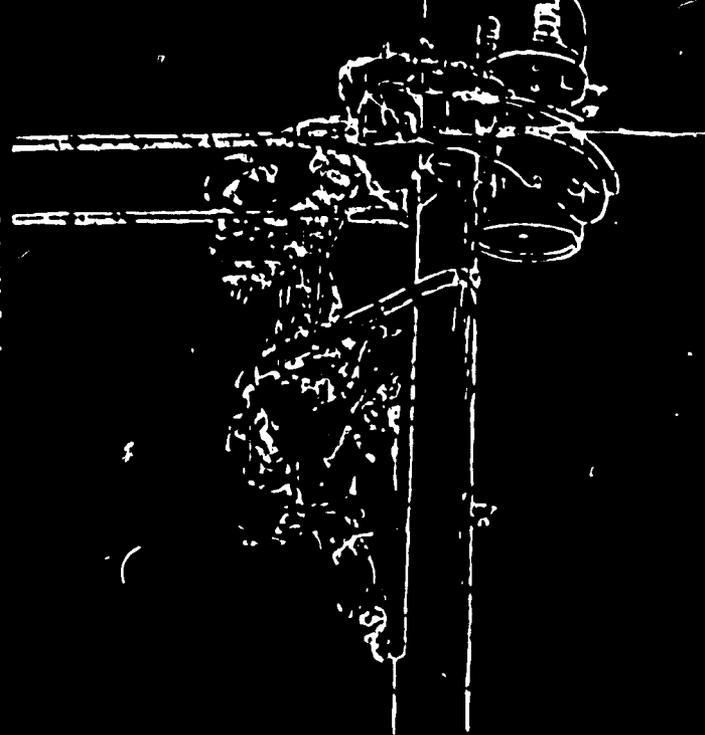
PERUSAHAAN

UMUM

LISTRIK

NEGARA

JAKARTA-INDONESIA



**MAIN**  
*Engineers*

**CHAS. T. MAIN INTERNATIONAL INC.**

BOSTON • BANDUNG • JAKARTA • SURABAYA

KETENGER PROJECT  
QUARTERLY REPORT  
FOR PERIOD

1 JANUARY - 31 MARCH, 1976.

AID LOAN 497-H-025

**MAIN**  
Engineers

**PERUSAHAAN UMUM LISTRIK NAGARA CONSULTANS**  
**CHAS. T. MAIN INTERNATIONAL, INC.**

	BANDUNG	JAKARTA	SEMARANG
ADDRESS	JL. CILIWUNG 5	JL. WIJAYA 1/61	JL. SLAMET 1
P.O. BOX	TROMOLPOS 69	BOX 100 - KBYT	BOX - 26
TELEPHONE	7 8 0 0 9	74041 - 2	27105 & CDI 701, 340
TWX	2 8 2 7 0	4 6 1 8 6	2 2 2 3 0

June 30, 1976.

Letter No. S-8332

Job No. 2861-5

Proyek Induk Jaringan Jawa Tengah  
Jalan Slamet No. 1  
Semarang.

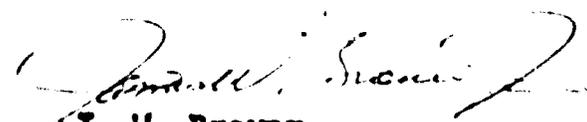
Subject: Ketenger System  
Quarterly Report.

Gentlemen:

This report is submitted pursuant to article 72 (1) of contract Pdj.046/PST/72. It summarizes the activities of Chas. T. Main International, Inc. for the quarter ending 31 March, 1976.

Very Truly Yours,

Chas. T. Main International, Inc.

  
J. W. Drower  
Project Manager.

Encl. : Ketenger System  
Quarterly Report.

cc. : PLN, Pusat - Attention:  
Director of Construction (4)  
AID, Jakarta (4)  
MAIN, Charlotte (1)

bcc. : S - 20 (1)  
S - KA.3 (1)  
MAIN, Jakarta (1)  
MAIN, Bandung (1)  
Circulate (1)  
A.J. Curran (1)

AJC/im

# QUARTERLY REPORT

## KETENGER SYSTEM

SP - 2861 - 11 - A

AID LOAN No. 497-H-025

PERUSAHAAN UMUM LISTRIK NEGARA  
JAKARTA, INDONESIA  
OWNER

MAIN  
CHAS.T. MAIN INTERNATIONAL, INC.  
Engineers

Boston, Massachusetts  
U. S. A.

Semarang, Java  
INDONESIA

KETENGER PROJECT  
QUARTERLY REPORT  
PERIOD ENDING MARCH 31, 1976.

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KETENGER PROJECT  
QUARTERLY REPORT

PERIOD ENDING MARCH 31, 1976.

Chas. T. Main International, Inc., referred to as the Engineer throughout this report, has established criteria, standards, and specifications upon which the numerous activities comprising this project are founded. This report and the attached Exhibits reflect the current status and scope of these activities.

SECTION I - DESCRIPTION OF PROJECT

The project is subdivided into the following three parts:

A. Distribution

This project consists of overhead distribution systems in the major load centers of Pekalongan, Pemalang, Tegal, Purwokerto and Cilacap, including certain selected areas adjacent to these load centers in Central Java; Provide training for Perusahaan Umum Listrik Negara (PLN) personnel in Indonesia and United States; Furnish and deliver, for PLN's use, new construction and maintenance tools and equipment. The new overhead system will replace underground primary and overhead secondary systems.

B. Transmission Line

This project consists of approximately 190 kilometers of double circuit, 150 KV steel tower transmission line from Pekalongan through Tegal and Purwokerto to Cilacap. The project includes towers, insulators, hardware, conductor, grounding and all necessary material for a complete transmission line.

KETENGER PROJECT

QUARTERLY REPORT

PERIOD ENDING MARCH 31, 1976.

C. Substations

This project consists of three (3) new substations; one each at Tegal, Purwokerto and Cilacap. at 150 KV and 20 KV, 50 Hz.

SECTION II - ADMINISTRATIVE AND GENERAL

A. Personnel

1. Engineer

a). A summary of the Engineers personnel on this project is as follows :

<u>Job Title</u>	<u>Number Present</u>
* Project Director (Jakarta)	1
* Project Manager (Semarang)	1
* Engineering Manager	1
* Construction Manager	1
* Administration	2
Transmission and Distribution Construction Engineers	3
* These personnel fill the same or similar job title for the Tuntang Project.	

b). Mr. H. Johnson departed the project on February 17, 1976.

2. E.L.N.

a). There were no changes during this quarter.

B. Official Visitors

None this quarter.

KETENGER PROJECT

QUARTERLY REPORT

PERIOD ENDING MARCH 31, 1976.

SECTION III - ENGINEERING

A. DISTRIBUTION

Design Engineering on this project is substantially complete, with only minor modifications being made as required by field conditions.

B. TRANSMISSION

1. Engineer/Indonesia

a). Revisions, updating Plan and Profile drawings and Tower data sheets, were forwarded to Irby/Purwokerto.

2. Engineer/U.S.A.

a). Prepared and furnished stringing data for shield-wire.

b). Reviewed contractors request on TA2 Tower Arm Application.

C. SUBSTATION

1. Engineer/Indonesia

No reported activity this quarter.

2. Engineer/U.S.A.

a). Compiled data on negotiation with contractor/Irby on contract requirements for relay equipment.

KETENGER PROJECT

QUARTERLY REPORT

PERIOD ENDING MARCH 31, 1976.

- b). Reviewed contractors conduit and trench drawings on all substations.
- c). Developed equipment numbering scheme for all substations.
- d). Single line and panel front views were reviewed and forwarded to contractor for final quantities.

SECTION IV CONSTRUCTION

Throughout the quarter, the contractor has continued construction of the Distribution, Transmission and Substation facilities.

A. Distribution Project

1. Tegal and Area

Framing in Tegal, Brebes and Slawi is approximately 73% complete, most of the remaining frame work consists of Secondary, some 1 Ø primary and also some rework.

Anchors are approximately 99% finished at this time; the remaining work consists of changes and additions. The contractor started hanging transformers this quarter. Wire stringing operations have picked up pace, but the contractor has experienced some difficulties with the existing 6 KV system.

KETENGER PROJECT

QUARTERLY REPORT

PERIOD ENDING MARCH 31, 1976.

2. Pemalang

The setting of Poles is 100% complete in this city. Anchors are approximately 61% completed and framing is about 60% finished. Wire stringing has not begun as of this quarter.

3. Pekalongan and area

The setting of poles in Pekalongan is approximately 98% completed and framing is about 50% completed. Anchor and wire work has not started at this time.

Maps have been issued for the city of Kedungwuni and pole setting and framing activities have begun.

In Batang the pole setting is approximately 75% completed and framing is about 50% finished. Wire stringing has not begun as yet.

Pole setting is approximately 98% completed and framing about 50% completed at Wiradesa. Anchor and wire work has not yet begun.

4. Purwokerto and area

Purwokerto was restaked and finished this quarter.

Ajibarang and Cilongok have also been finished for the second time and maps have been Forwarded to the Drafting section in Semarang.

KETENGER PROJECT

QUARTERLY REPORT

PERIOD ENDING MARCH 31, 1976.

Staking crews are now working in Sukaraja and are re-staking for the second time.

B. Transmission Lines Project

As of the end of this quarter construction of the 150 KV Transmission Line was progressing steadily. At this time approximately thirty six percent (36%) of the tower erection work has been completed.

Due to the delay of steel shipments for the completion of Tower Types T2, T3, TA1 and TA2 along the Tegal - Pekalongan section, the contractor has decided to continue erecting all of the type T1 towers in this area. The shipment delay has had some effect on the contractor's erection progress, since he is now hauling tower steel from the Cilacap storage yard in order to compensate for shortages.

C. Substations Project

Throughout the quarter construction of substation facilities in Tegal, Purwokerto and Cilacap continued.

1. Tegal

Construction of the control house continued. Pouring of concrete for the upper level floor was completed and the pouring of concrete for upper level columns and tie beams was started. Remaining foundations for circuit breakers and reactors were also completed this quarter.

KETENGER PROJECT

QUARTERLY REPORT

PERIOD ENDING MARCH 31, 1929.

The contractor received cable trench layout drawings and has started work on the cable concrete trench. Placing of the steel conduits for road crossings and also extensions to the equipment have been started. Some additional material was placed for substation perimeter roads during the quarter. The contractor has experienced some problems with drainage but this is now being remedied.

2. Purwokerto

The setting of work forms and rebars for the first level floor is in progress. The pouring of concrete for columns and tie beams on the ground floor has continued. All steel members for the whole substation including 30 KV parts have been delivered to the site and the assembly of equipment steel structures has begun.

Construction of the substation perimeter road has continued and work on the approach road has begun.

Received on site several crates of substation equipment during the latter part of the quarter. This included line traps, CCFD's, disconnect switches, lightning Arresters, etc.

KETENGER PROJECT

QUARTERLY REPORT

PERIOD ENDING MARCH 31, 1976.

3. Cilacap

The pouring of concrete for the columns of the ground floor is now in progress. Also fabrication of concrete slabs for cable trench has continued. Construction of interior and approach roads has progressed considerably. Additional ground connections for the remaining part of the substation grounding grid were completed. Substation Equipment (similar to equipment for Purwokerto) arrived on site.

The contractor has been requested to provide the preliminary electrical design drawings for control and relay protection. This would enable the engineer to check the conduit requirements to each piece of substation equipment prior to actual installation.

The status of construction for the various Ketenger system substations is shown on the attached Table 1 following this report.

KETENGER PROJECT

QUARTERLY REPORT

PERIOD ENDING MARCH 31, 1976.

SECTION V - FINANCIAL AND CONTRACTIAL

A. FINANCIAL

	<u>Contract/ Budgeted</u>	<u>Invoiced Amounts</u>	
		<u>This Quarter</u>	<u>To Date</u>
1. CHAS. T. MAIN			
U.S. Dollars	1,922,183.--	108,645.51	1,403,050.20
Rupiah	97,292,110.--	3,212,173.--	35,748,008,02
2. IRBY Construction Co.			
a) Distribution **			
U.S. Dollars	11,820,017.97	313,135.53	748,843.63*
Rupiah	1,041,386,738.--	92,473,720.--	269,751,750.--
b) Transmission			
U.S. Dollars	12,346,355.50	1,125,174.44	1,921,957.55*
Rupiah	1,692,707,826.--	297,923,667.--	418,731,915.--
c) Substation			
U.S. Dollars	7,629,600.--	299,785.00	943,364.34
Rupiah	242,360,000.--	122,651,906.--	226,943,069.--

\* Does not include the cost of ocean shipments of material.

\*\* An advance of Rp. 250,000,000.-- was given the contractor, of which Rp. 150,000,000.-- is to be repaid by March 31, 1976. To date the Rp. 150,000,000.-- has been returned through deduction from monthly progress payments.

KETENGER PROJECT

QUARTERLY REPORT

PERIOD ENDING MARCH 31, 1976.

B. Contractual

No official changes occurred during this period.

SECTION VI - TRAINING

A. IN U.S.A.

The four (4) PLN personnel selected for training under the Ketenger contract arrived in Boston on December 11, 1975 to begin a four-month training program.

The gentlemen's names and positions are as follows:

Ir. R.B. Soedibyo, Civil Engineering Planning Department  
(Civil).

Soekarno B.E., Technical Secretary Department (Civil)

Drs. J.H.S. Nainggolan, General Secretary Department  
(Economist).

Drs. Soeparma, Internal Control Department (Economist)

A complete schedule including all additional training activities required to complete the program has been forwarded to the client.

B. IN INDONESIA

The major portion of PLN's surveying and inspecting personnel on these projects have received specialized training from training programs conducted by the Engineer on the Ketenger Project.

KETENGER PROJECT

QUARTERLY REPORT

PERIOD ENDING MARCH 31, 1976

Additional training is being provided by the contractor in accordance with guidelines set forth in the Ketenzer project contract. The facilities for this training are located at Krapyak and are planned to be a permanent installation for PLN's continuing use. The IRBY instructors are primarily using a "Learning by doing" technique, which encourages the active participation of each trainee in the various aspects of construction and maintenance of transmission, distribution and Substation facilities. A total of sixty-eight PLN personnel are enrolled in these training programs.

1. Training in Distribution, Transmission and substation has continued through the quarter. Irby has been requested to submit a plan which will incorporate more complete operations training in the substation program. To date, Schematic drawings, instruments and relays have not been available for the substation program.

**PROGRESS REPORT FOR  
KETENGER DISTRIBUTION SYSTEM**

DATE \_\_\_\_\_

CITY	POLE LOCATIONS		TRANSFORMER LOCATIONS		DRAFTING OF CONSTRUCTIONS PRINT		DRAFTING OF ONE LINE DIAGRAM	FUSE AND O.C.R. RECOMMENDATIONS	STRUCTURE DATA SHEETS		SUMMARY OF S.D.S.	
	ORIGINAL STARTING	FINAL STARTING	ORIGINAL	FINAL	ORIGINAL	FINAL			ORIGINAL	FINAL	ORIGINAL	FINAL
	PEKALONGAN	100%	100%	100%	100%	100%			100%	40%	20%	100%
PEMALANG	100%	100%	100%	100%	100%	100%	40%	30%	100%	100%	100%	100%
TEGAL	100%	100%	100%	100%	100%	100%	40%	100%	100%	100%	100%	100%
PURWOKERTO	100%	50%	100%	100%	100%	100%	95%	0%	100%	100%	100%	50%
CILACAP	100%	100%	100%	100%	100%	100%	95%	0%	100%	100%	100%	100%

**MAIN**  
CHAS T MAIN INTERNATIONAL, INC.  
DOSTON  
MASSACHUSETTS, U.S.A.  
SEMARANG  
INDONESIA

**EXHIBIT A**

**TRANSMISSION LINE SURVEY REPORT  
KETENGER PROJECT**

DATE \_\_\_\_\_

OPERATION	THIS QUARTER (KM)	TOTAL TO DATE (KM)		% COMPLETE		REMARKS
		ORIGINAL	FINAL	ORIGINAL	FINAL	
LINE CUT		182	85	100%	100%	
LINE STAKED		182	182	100%	100%	Completed staking with many offsets
BENCH LEVELS		-	-	100%	100%	
PROFILE		132	182	100%	100%	
TOPOGRAPHY		182	182	100%	100%	
TOWER SITE STUDY		182	182	100%	100%	
TOWER STAKE		182	182	100%	100%	
SOIL BORING				100%		

*Total line length 182 KM*

<p align="center"><b>MAIN</b> CHAS T MAIN INTERNATIONAL, INC BOSTON MASSACHUSETTS, U.S.A</p>	<p align="center">SEMARANG INDONESIA</p>
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**EXHIBIT B**

TABLE 1

STATUS OF CONSTRUCTION  
KEBENGER SYSTEM SUBSTATIONS

CONTRACT NO. PJ.177/PST/74

PERCENT COMPLETION  
MONTH OF MARCH 1976

	<u>T E G A L</u>	<u>PURWOKERTO</u>	<u>CILACAP</u>
1. SITE - CIVIL	91.285	69.71	91.050
2. STATION GROUNDING	70.00	68.13	68.24
3. STEEL STRUCTURES	-	-	-
4. B U S	-	-	-
5. CONTROL HOUSE	36.92	23.421	20.352
6. APPARATUS	-	-	-
7. STATION LIGHTING & SERVICE TRANSFORMER	-	-	-
8. COMMUNICATIONS, CARRIER & RELAY	-	-	-
9. STATION BATTERY	-	-	-
10. CONTROL WIRING	-	-	-
11. 30 KV UNDERGROUND	N/A	-	N/A
12. CALIBRATION, ADJUSTMENT & TEST	-	-	-

BORROWERS SHIPPING STATEMENT			2 Borrower		FOR A.I.D. USE	
(AIRMAIL) To: Resources Transportation Division USAID A.I.D. Department of State American Embassy Washington, D.C. 20523 Jakarta  Our progress in meeting our obligation under the Loan Agreement to ship on U.S. flag vessels at least fifty percent of the gross tonnage of loan financed goods transported on ocean vessels is as shown in the following tabulation.			PERUM.LISTRIK NEGARA		Attachment	
			3 Loan Number 497-E-025		Implementation Letter	
			4 Date Submitted 10 June 1976		Date Received	
			5 For Quarterly Period Ended (Date) 31 March 1976		Date Copy to Trans	
			Signature _____ Title _____		Freight Cost	
1 Shipments from UNITED STATES			Gross Tonnage (U.S. Dollar Equiv)		Paid With Loan Funds	
PART I - SUMMARY STATEMENT			Total Long Tons	U.S. Long Tons	Vessels Percent of Total	Total
Cumulative Totals Shipments in Previous Quarters			6309.2	6309.2	100	1,170,718.85
Total Shipments This Quarter			1210.96	1210.96	100	265,089.53
Cumulative Totals Through This Quarter			7520.18	7520.18	100	1,435,808.38
PART II SHIPMENTS THIS QUARTER			(d)	(e)	(f)	(g) (h) (i)
Vessel	Ports	Bill of Lading				
1 Name	1. Port	1 Date				
2 Registry	2. Destination	2. Description of Cargo				
(a)	(b)	(c)				
1. Green Valley	1. New Orleans	1. / 2, barge 648, 14 Nov. 1975				
2. USA	2. Cilacap, Java	2. Pole Line Hardware	188.3	188.3	100	3438.43
						1. 4/038D 24 November 1975 2. 15,070.83
						***** continuation sheet

## BORROWERS SHIPPING STATEMENT (Continuation sheet)

PART II SHIPMENTS THIS QUARTER			(d)	(e)	(f)	(g)	(h)	(i)
Vessel	Ports	Bill of Lading						
1 Name 2 Registry	1 Port 2 Destination	1 Date 2 Description of cargo						
(a)	(b)	(c)						
1.Green Valley 2.USA	1. New Orleans 2. Cilacap, Java	1. 4/3, barge 648 14 Nov 1975 2. Pole Line Hardware	12.9	12.9	100	4173.66	4173.66	1. 013S 21 November 1975 2. 82,167.61
1. Ruth Lykes 2. USA	1. New Orleans 2. Cilacap, Java	1. 4/8, 30 Nov 1975 2. Rebers 1. 23, 4 Dec 1975 2. Transformers	74.7	74.7	100	10302.98	10,302.98	1. 014S 9 December 1975 2. 39,352.39
		1. 25, 4 Dec 1975 2. Trailers, Hhwe., Tools, Parts	3.22	3.22	100	767.80	767.80	1. 039D 12 December 1975 2. 10,899.64
		1. 26, 4 Dec 1975 2. Pole Line Hardware	15.8	15.8	100	8971.37	8971.37	1. 040D 15 December 1975 2. 48,097.76
		1. 26, 4 Dec 1975 2. Pole Line Hardware	3.54	3.54	100	488.22	488.22	1. 015S 12 December 1975 2. 10,800
1.Green Island 2. USA	1. New Orleans 2. Tegul, Java	1. 1, barge 884, 18 Dec 1975 2. Copper Wire, Transformers 1. 3, barge 884, 18 Dec 1975 2. Steel Towers, Transfrmr, Hhwe	114.3	114.3	100	18327.23	18327.21	1. 041D 30 December 1975 2. 296,474.16
		1. 77, 10 Jan 1976 2. Pole Line Hhwe, Expend. Tools	140.1	140.1	100	31628.95	31628.95	1. 016S 7 Jan 1976 2. 618,647.76
1. Stella Lykes 2. USA	1. New Orleans 2. Cilacap, Java	1. 98, 10 Jan 1976 2. Transformers, Pole Line Hhwe	36.4	36.4	100	8611.62	7889.37	1. 042D 20 Jan 1976 2. 160,893.00
		1. 2, barge 800, 14 Jan 1976 2. Pole Line Hardware	63.3	63.3	100	22205.88	22205.83	1. 017S 21 Jan 1976 2. 451,673.48
1. Acadia Forest 2. USA	1. New Orleans 2. Tegul, Java	1. 2, barge 800, 14 Jan 1976 2. Pole Line Hardware	3.5	3.5	100	1600.97	1600.97	1. 019S 28 Jan 1976 2. 8,657.88
1. Letitia Lykes 2. USA	1. New Orleans 2. Cilacap, Java	1. 69, 3 Feb 1976 2. Transformer, P.E. Hardware	40	40	100	28964.32	28964.32	1. 044D 10 Feb 1976 2. 196,080.61

**BORROWERS SHIPPING STATEMENT**  
(Continuation sheet)

PART II SHIPMENTS THIS QUARTER			(d)	(e)	(f)	(g)	(h)	(i)
Vessel	Ports	Bill of Lading						
1. Name 2. Registry	1. Port 2. Destination	1. Date 2. Description of cargo						
(a)	(b)	(c)						
1. Letitia (continued)		1. # 73, 1 Feb 1976 2. Steel Towers	103.2	103.2	100	14279.39	14279.39	1. 0218 11 Feb 1976 2. 333,978.56
1. Green Valley 2. USA	1. New Orleans 2. Cilacap, Java	1. #, Barges 383,743, 9 Feb 1976 2. Substation Insulators	32.7	32.7	100	9362.64	9362.64	1. 0225 24 Feb 1976 2. 58,075.36
	1. Baltimore, Md 2. Cilacap, Java	1. #1, barges 570,930, 3 Feb 1976 2. Power Transformers & S.C.B's	338.2	338.2	100	93860.85	93860.85	1. 0205 5 Feb 1976 2. 1,523,020.36
1. John Lykes 2. USA	1. New Orleans 2. Cilacap, Java	1. # 100, 10 Mar 1976 2. Rope, Pole Line Hardware	24.9	34.9	100	6864.05	4833.57	1. 045D 19 Mar 1976 2. 41,688.73
		1. #112, 10 Mar 1976 2. Wire, Hdw., Substation Parts	5.9	5.9	100	1241.24	1241.24	1. 0215 24 Mar 1976 2. 28,639.27