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PERUSAHAAN UMUM LISTRIK NEGARA  
JAKARTA , INDONESIA

WEST JAVA  
ELECTRIC TRANSMISSION PROJECT

# MONTHLY REPORT

JANUARY 1981

WEST JAVA I AND II PROJECTS  
CONTRACTS

Pj. 013/PST/74 and Pj. 023/PST/75

USAID LOANS 497-H-028 & 497-W-032



CHAS. T. MAIN INTERNATIONAL, INC.

BOSTON MASSACHUSETTS U.S.A.

BANDUNG , INDONESIA

**MAIN**  
*Engineers*

**PERUSAHAAN UMUM LISTRIK NEGARA CONSULTANT**  
**CHAS. T. MAIN INTERNATIONAL, INC.**  
BANDUNG - TROMOLPOS 69. TEL. 56869 JL. PROGO 32  
JAKARTA - P.O. BOX 100, KET. KEBAYORAN TIMUR, TEL. 778925 JL. WIJAYA 1/61  
SEMARANG - P.O. BOX 26, TEL. 311702 JL. BLAMET 1

7 February 1981

Letter No. B - 4030

Ir. R. Semiawan  
Perusahaan Umum Listrik Negara  
Proyek Induk Jaringan Jawa Barat & Jakarta Raya  
Jl. Cililitan Besar 1  
Jakarta.

Subject : West Java I and II Projects  
Monthly Report

Dear Ir. Semiawan :

In accordance with Article 7.2 of the West Java I Contract  
No. Pj.013/PST/74 and Appendix V of the West Java II Contract  
No. Pj.023/PST/75, enclosed are six (6) copies of our Report  
for the month of January 1981.

Very truly yours,  
CHAS. T. MAIN INTERNATIONAL INC.

*R.W. Malchow*

R.W. Malchow  
Project Manager

RWM/ns.-

cc. : DIRBANG - PLN Pusat (Encl.1)  
USAID - JKT (Encl.4) ✓  
MAIN - BSN (Encl.1)  
MAIN - CHA (Encl.1)

WEST JAVA I AND II PROJECTS

MONTHLY REPORT

JANUARY 1981

A. PERSONNEL

1. ENGINEER

- a. Mr. J.E. Freeman, Civil/Structural Engineer on Temporary Assignment in Indonesia, spent one day during the month on the foundations for the West Java Projects. The remaining days were spent on the Rural Electrification Project in Central Java. Mr. Freeman left Indonesia on January 22nd.
- b. Mr. R.W. Malchow, Project Manager, returned to Indonesia from Home Leave on January 3rd.
- c. End of the month strength was as follows:

<u>NAME</u>	<u>TITLE</u>	<u>ARRIVAL DATE</u>
<u>West Java I and II</u>		
R.W. Malchow	Project Manager	24 Oct. 1978
C.J. Whitby	Manager of Administration	10 Sep. 1974
J.C. Harkey	Substation Engineer	15 Oct. 1977
C.L. Crume	Substation Constr. Eng.	3 Jun. 1979
H. Gunawan	Administrative Assistant	13 Aug. 1979
P.V. Wilson	Stores Specialist	15 Dec. 1978
Zainal Saur	Surveyor	16 Mar. 1978

West Java II

D.L. Hawks	Substation Inspector	29 Feb. 1980
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2. PLN

a. End of the month strength was as follows :

<u>JOB TITLE</u>	<u>NUMBER</u>
Logistics Coordinator	1
Secretaries	3
Draftsmen	6
Accounting Clerks	2
Reproduction Personnel	2
Drivers	14

b. In addition to the above Staff, approximately 100 PLN Counterpart and field personnel were assigned to the Projects as of 31 January.

B. ADMINISTRATION AND GENERAL

1. ADMINISTRATION

a. West Java I Contract Data

(1) No. Pj. 013/PST/74	16 February '74	US \$ 1,366,452.00
		Rp. 81.308.525,-
Amendment No. 1	2 Sept. '75	US \$ -
		Rp. 14.575.975,-
Amendment No. 2	12 March '77	US \$ 1,589,996.00
		Rp. 49.916.408,-
Amendment No. 3	10 Jan. '79	US \$ 867,561.00
		Rp. 92.358.466,-
Amendment No. 4	29 Aug. '80	US \$ -
		Rp. 316.936.745,-

C.T. Main-Engineering Services

(2)	No. Pj. 153/PST/77	5 Sept.	'77	US \$	2,531,335.58
	Amendment No. 1	10 July	'78		-
	Amendment No. 2	17 Sept.	'79	US \$	202,682.67
	Amendment No. 3	8 Oct.	'80	US \$	168,927.78
	Irby Construction Company				
	Tower Steel, Insulators and Accessories				
(3)	No. Pj. 202/PST/77	28 Nov.	'77	US \$	284,289.50
	Amendment No. 1	30 Nov.	'78	US \$	10,449.56
	Copperweld Industries				
	Shieldwire				
(4)	No. Pj. 203/PST/77	28 Nov.	'77	US \$	1,906,391.70
	Amendment No. 1	10 July	'78	US \$	54,615.55
	Amendment No. 2	30 March	'79	US \$	30,914.45
	Southwire Company				
	Conductor				
(5)	No. Pj. 050/PST/78	10 March	'78	US \$	369,473.98
	Amendment No. 1	13 Dec.	'78	US \$	33,446.88
	Tension Stringing Equipment Co.				
	Wire Stringing Equipment				
(6)	No. Pj. 051/PST/78	10 March	'78	US \$	87,852.00
	Ohio Brass Company				
	Lightning Arresters				
(7)	No. Pj. 052/PST/78	11 March	'78	US \$	4,499,800.74
	Amendment No. 1	17 Sept.	'79	US \$	47,613.72
	Irby Construction Company				
	Substation Equipment				
	Maintenance Tools and Equipment				
(8)	No. Pj. 053/PST/78	11 March	'78	US \$	2,452,391.40
	Amendment No. 1	7 Jan.	'80	US \$	80,409.19
	General Electric Company				
	Substation Equipment				

(9)	No. Pj. 087/PST/78	11 May	'78	US \$	395,819.20
	Amendment No. 1	22 Dec.	'79		-
	Amendment No. 2	21 Nov.	'80		
	Motorola				
	Radio Equipment				
(10)	No. Spj.022/PLN/PI RING/77	27 Oct.	'77	Rp.	199.278.000,-
	P.T. Tikon Abadi				
	Foundations - Section I				
(11)	No. Spj.023/PLN/PI RING/77	27 Oct.	'77	Rp.	153.445.000,-
	P.T. Gunung Kencana				
	Foundations - Section IIA				
(12)	No. Spj.024/PLN/PI RING/77	27 Oct.	'77	Rp.	164.789.000,-
	P.T. Dharma Niaga				
	Foundations - Section IIB				
(13)	No. Spj.010/PLN/PI RING/78-79	8 Dec.	'78	Rp.	132.894.300,-
	P.T. Perfect Circle				
	Tower Erection				
(14)	No. Spj.065A/SPP/PI RING JATENG/78-79			Rp.	50.278.000,-
	P.T. Santraco Raya	21 April	'79		
	Tegal Substation Civil Work				
(15)	No. Spj.072/SPP/PI RING JATENG/78-79			Rp.	25.966.000,-
	P.T. Sigma Tirta	17 Oct.	'79		
	Tegal Substation Structure Erection				
(16)	No. Spj.017/PLN/PI RING/79-80			Rp.	127.790.850,-
	P.T. Silkar National	22 Jan.	'80		
	Conductor Stringing - Section I				
(17)	No. Spj.019/PLN/PI RING/79-80			Rp.	164.364.000,-
	P.T. Citac Ltd.	2 Feb.	'80		
	Conductor Stringing - Section III				

(18)	No. Spj.001/PLN/PI RING/80-81			Rp.	464.500.000,-
	P.T. Erses	3 Apr.	'80		
	Ujungberung Substation Civil Work				
(19)	No. Spj.002/PLN/PI RING/80-81			Rp.	199.989.000,-
	P.T. Erses	3 Apr.	'80		
	Ujungberung Substation Control House				
(20)	No. Spj.013/PLN/PI RING/80-81			Rp.	18.860.000,-
	P.T. Dharma Niaga	6 July	'80		
	Ujungberung Substation Temporary 150 KV Transmission Line By Pass				

b. West Java II Contract Data

(1)	No. Pj. 023/PST/7	25 Jan.	'75	US \$	1,541,729.00
				Rp.	90.589.149,-
	Amendment No. 1	12 May	'75	US \$	-
				Rp.	-
	Amendment No. 2	12 March	'77	US \$	856,064.00
				Rp.	15.239.504,-
	Amendment No. 3	10 Jan.	'79	US \$	112,000.00
				Rp.	97.708.072,-
	Amendment No. 4	29 Aug.	'80	US \$	-
				Rp.	515.307.310,-

C.T. Main Engineering Services

(2)	No. Pj. 152/PST/77	5 Sept.	'77	Rp.	452.526.908,-
				US \$	7,744,165.78
	Amendments No. 1 & 2	10 July	'78	Rp.	13.137.605,-
				US \$	311,400.72
	Amendment No. 3	17 Sept.	'79	Rp.	3.560.229,-
				US \$	140,881.33
	Amendment No. 4	23 Oct.	'80	Rp.	176.242.175,-
				US \$	2,659.54

Irby Construction Company  
Transmission Line Supply and Construction

- |      |  |                              |  |
|------|--|------------------------------|--|
| (3)  | No. Pj. 051/PST/78<br>Ohio Brass Company<br>Lightning Arresters                                | 10 March '78                 | US \$ 87,852.00  |
| (4)  | No. Pj. 052/PST/78<br>Amendment No. 1<br><br>Irby Construction Company<br>Substation Equipment | 11 March '78<br>17 Sept. '79 | US \$ 4,981,321.52<br>Funded under Loan<br>497-H-028 West Java I |
| (5)  | No. Pj. 053/PST/78<br>Amendment No. 1<br><br>General Electric Company<br>Substation Equipment  | 11 March '78<br>7 Jan. '80   | US \$ 3,974,100.16<br>Funded under Loan<br>497-H-028 West Java I |
| (6)  | No. Spj. 001/PLN/ PI RING/77-78<br>P.T. Citac Ltd.<br>Foundations - Sections II and III        | 5 June '78                   | Rp. 329.553.000,-  |
| (7)  | No. Spj. 002/PLN/PI RING/78-79<br>P.T. Citac Ltd.<br>Foundations - Ujungberung - Cigereleung   | 9 Aug. '79                   | Rp. 175.128.000,-  |
| (8)  | No. Spj. 022/PLN/PI RING/79-80<br>P.T. Sahabat Agung<br>Cibinong - Gandul Stub Angles          | 4 Dec. '79                   | Rp. 10.618.000,-   |
| (9)  | No. Spj. 009/PLN/PI RING/79-80<br>P.T. Citac Ltd.<br>Foundations - Section IV A                | 30 Nov. '79                  | Rp. 62.441.000,-   |
| (10) | No. Spj. 010/PLN/PI RING/79-80<br>P.T. Citac Ltd.<br>Foundations - Section IV C                | 30 Nov. '79                  | Rp. 36.029.000,-   |

- |      |   |                      |
|------|---|----------------------|
| (11) | No. Spj. 018/PLN/PI RING/79-80<br>P.T. Amarta Karya                      24 Jan.       '80<br>Foundations - Section IV B                                    | Rp.    64.630.000,-  |
| (12) | No. Spj. 008/PLN/PI RING/80-81<br>P.T. Pembangunan Perumahan    5 June       '80<br>Bandung Utara Substation Civil Work                                     | Rp.    334.619.000,- |
| (13) | No. Spj. 006/PLN/PI RING/80-81<br>P.T. Perfect Circle                      31 May       '80<br>Bandung Utara Substation Control House                       | Rp.    230.501.000,- |
| (14) | No. Spj. 009/PLN/PI RING/80-81<br>P.T. Perfect Circle                      31 May       '80<br>Bogor Substation Civil Work                                  | Rp.    475.428.000,- |
| (15) | No. Spj. 007/PLN/PI RING/80-81<br>P.T. Perfect Circle                      31 May       '80<br>Bogor Substation Control House                               | Rp.    212.915.000,- |
| (16) | No. Spj. 020/PLN/PI RING/79-80<br>P.T. Hutama Karya                      16 Feb.       '80<br>Bandung Utara Substation Access Road                          | Rp.    31.967.000,-  |
| (17) | No. Spj.        /PLN/PI RING/<br>Contract not yet signed<br>Bogor Substation Access Road  | Rp.    64.700.000,-  |
| (18) | No. Spj. 013/PLN/PI RING/80-81<br>P.T. Dharma Niaga                      6 July       '80<br>Bogor Substation Temporary 150 KV<br>Transmission Line By-Pass | Rp.    10.608.000,-  |

c. West Java I and II Contract Data

(1)	No. Spj. 016/PLN/PI RING/77	Rp.	54.245.000,-
	P.T. Sumber Jaya	4 July	'77
	Grounding Material		
(2)	No. Spj. 017/PLN/PI RING/77	Rp.	40.100.000,-
	P.T. Arcon	13 Aug.	'77
	Stub Angles		

2. GENERAL

- a. A second draft of Amendment Number 2 to the PLN/Irby Substation Equipment Contract was prepared and is being reviewed by PLN/Projects. This Amendment provides for the purchase of additional control cable, watt-hour meters, tools and spare parts.
- b. A Certificate of Performance to permit payment of retainage money to Southwire Company was completed by PLN/Pusat.
- c. Where appropriate, retainage funds are being held to ensure full Contract completion by the suppliers.
- d. A second draft of Amendment Number 2 to the PLN/Tension Stringing Equipment Contract was prepared and is being reviewed by PLN/Projects. This Amendment provides for certain changes, additions and deletions to the Schedule of Tools and Equipment to be furnished. Some items could not be obtained in time to meet the required delivery dates and their deletion will not affect Project completion. Other items are specified as replacement for tools and equipment originally ordered.
- e. Amendment Number 3 to the PLN/Southwire Conductor Contract was approved by PLN/Projects and is being reviewed by PLN/Pusat. This Amendment adjusts the Contract amount to reflect the actual costs of Marine Freight and Insurance.

- f. Expiration date extensions for two (2) Letters of Commitment and increases in amounts for two (2) other Letters of Commitment were completed by USAID. PLN is following through with Bank Indonesia.
- g. From January 12th through January 14th, representatives from International Harvester (I.H.) and their Indonesia Agent, P.T. Orion, gave a short course on the carburetion and ignition systems for the I.H. trucks purchased for the Project. The course was attended by ten (10) PLN personnel. The course generated a good deal of interest and helped to clarify the carburetion and the trouble shooting procedures for the electronic ignition system.

### C. CONFERENCES AND EVENTS

#### 1. Construction Meetings

- a. Ujungberung Substation Civil Work and Control House.  
Contractor - P.T. Erses  
13 January 1981  
27 January 1981 (Civil Work only)
- b. Ujungberung Substation Control House.  
Sub Contractor - P.T. Citac Ltd.  
27 January 1981
- c. Bandung Utara Substation Civil Work.  
Contractor - P.T. Pembangunan Perumahan  
14 January 1981  
28 January 1981
- d. Bandung Utara Substation Control House.  
Contractor - P.T. Perfect Circle  
14 January 1981  
28 January 1981

e. Bogor Substation Civil Work and Control House.

Contractor - P.T. Perfect Circle

2 January 1981

15 January 1981

29 January 1981

D. PROBLEMS AREAS AND TENTATIVE SOLUTIONS

1. It is intended to move Towers No. 317 and No. 319 on the Cirebon - Ujungberung Transmission Line Section. These towers are moving down hill. A final decision is awaiting review by the Charlotte Office. Scheduled completion of the Project will not be affected.
2. The Ujungberung Switchyard and Control House remain several months behind schedule. Control House Construction has been turned over to a subcontractor, thereby permitting P.T. Erses to concentrate fully on completion of the Switchyard Civil Works. It is expected that with this new arrangement, the Switchyard and Control House will be completed in sufficient time so as not to affect the scheduled completion of the Project but, rate of construction must be increased.
3. The Bogor Substation Switchyard and Control House Construction is slightly behind schedule. The contractor will increase personnel to catch-up. Scheduled Project completion is not expected to be affected.
4. The Bandung Utara Switchyard Contractor is behind schedule. The Contractor has added personnel. None of the items of the Switchyard Construction are presently critical but rate of construction must be increased in order not to delay scheduled completion of the Project past December 31, 1981.

5. The Bandung Utara Control House Contractor is behind schedule but has added some personnel to correct this behind schedule problem. The rate of construction must be increased to prevent delay in scheduled Project completion date.
6. One piece of property needed for the permanent access road to Bandung Utara Substation has not been acquired. PLN intends to take legal action to acquire this property when the Contractor is ready to build on it.
7. The land for the permanent access road to Bogor Substation has been purchased and PLN is making the required drawings for the Construction to be let for bids. Temporary heavy duty Access Road will be constructed to permit transport of Transformers and other heavy equipment. The scheduled completion of the Project should not be affected.

E. TRANSMISSION - WEST JAVA I

1. Construction

- a. Tower - Site Procurement. All tower sites have been procured.
- b. Foundations. All foundations have been installed.
- c. Tower Erection. All towers are erected and accepted.
- d. ROW Procurement and Clearing. PLN has received permission from the Forestry Department to clear between Towers 38 and 39 on the Ujungberung - Bandung Utara Line Section. This work started on January 31.
- e. Conductor and Shieldwire. Some 2 Km of Line remain to be strung on the Ujungberung - Bandung Utara Line Section. This section will be strung as soon as the ROW is cleared and should be completed during the month of February.

The 70 KV Line which presently crosses the Ujungberung - Bandung Utara will be de-energized on February 1. This will permit installation of new Towers and gantries allowing the 70 KV line to be lowered and the conductor strung between Towers No. 1 and No. 2. This work should be completed during February.

The slack span between Tower No. 1 of the Ujungberung - Bandung Utara Line and the Substation Terminal structure was installed during January.

## F. TRANSMISSION - WEST JAVA II

### 1. Construction

- a. Tower - Site Procurement. All tower sites have been procured.
- b. Foundation. All foundations have been installed.
- c. Tower Erection. All towers have been installed and accepted.
- d. ROW Procurement and Clearing. All ROW procurement and clearing is completed.
- e. Conductor and Shieldwire. Phase conductor and shieldwire has been installed.
- f. By-Pass. The By-Pass Tower at Bogor Substation was erected and the Gandul - Cigereleng 150 KV Transmission Line energized.

### 2. Material Supply

- a. A few items of line hardware to be used as spares are in transit.

## G. SUBSTATIONS

### 1. Construction

#### a. Tegal Substation.

All work is completed and the station has been energized.

#### b. Ujungberung Substation.

##### (1) Switchyard Civil Work.

The Contractor did not complete the required work by the guarantee date of 29 November 1980. The Contractor submitted another schedule showing a completion time of March 20, 1981, but this new schedule has not been accepted by PLN yet. The Contractor continued work on the foundations, fence, culverts, cable trench and catch basins. Installation of the yard drainage pipe and 150 KV Foundations (except transformer and OCB's) were completed during January. The Contractor was relieved of his responsibilities of construction of the Control House. This has permitted him to increase his rate of construction on the switchyard.

##### (2) Control House.

The Contractor is substantially behind schedule and as a result was required to retain a sub-contractor. The tentative schedule presented shows a completion date of May 31, 1981. Work will be concentrated on the Switchgear and Control rooms. It is hoped that installation of equipment in these rooms can start during the month of April.

(3) Erection.

PLN crews completed installation of structures and busses in the 150 KV Switchyard during January. Erection work in the 70 KV Switchyard should start during February.

c. Bandung Utara Substation.

(1) Switchyard.

The 150 KV Switchyard foundations, except for the OCB and Transformer Foundations are complete. The Contractor is continuing work on the remaining foundations, cable trench, fence, yard drainage and road culverts. Work continued on the Oil Circuit Breaker and Transformer foundations. The Contractor does not have sufficient personnel and is falling further behind schedule each day. The Contractor added additional personnel near the end of January but it does not seem possible for him to complete the required work by the guarantee date of February 28, 1981.

(2) Control House.

The Contractor has started pouring the roof beams. The Contractor is continuing to fall further behind schedule. The Contractor now is approximately 2 months behind schedule.

(3) Access Road.

The Contractor continues to work on the Access Road but all of the right-of-way has not been obtained.

(4) Erection.

PLN crews expect to start erection in Februar.

d. Bogor Substation.

(1) Switchyard Civil Work.

The Contractor drove all piles for the Oil Circuit Breakers and Transformer foundations during January. Installation of pads for 150 and 70 KV structures was completed. All 150 and 70 KV OCB Foundations were poured during January, along with the Grounding Transformer foundations. Work continued on the drainage system, cable trench, yard grading and remaining foundations. The Contractor is approximately three weeks behind schedule but did not lose any additional time during the month.

(2) Control House.

The Contractor poured one half of the ground floor roof and roof beams. He expects to pour the second half of the roof during the first half of February. The Contractor continued his work on land fill and compaction. The Contractor is approximately three weeks behind schedule.

(3) Access Road.

Payment to property owners for the permanent access road has been made. PLN is now making construction drawings to be let for bids. A heavy duty temporary Access Road will be built from the Toll Road to the Substation. This will permit transport of the transformers and the other heavy pieces of equipment.

(4) Erection.

PLN crews have not started the erection. The erection is scheduled to start in February. Transportation of the substation materials is scheduled to start mid-February

2. Material Supply

Most material is presently in Indonesia. There should be no delays due to material shortage.

H. MOBILE RADIO

1. The duplexer at the Puncak Repeater Station needs tuning. The local Motorola agent has still not made adjustments.
2. The fixed station at Bandung Utara will be installed when electric power is installed.

WEST JAVA I AND II  
 TRANSMISSION AND SUBSTATION PROJECTS  
CURRENT SHIPPING SCHEDULE

<u>Item</u>	<u>Shipping Date</u>	<u>ETA in PLN Warehouse</u>	<u>Comments</u>
A. Contract Pj.152/PST/77, Socket Clevis	Irby Construction Company, Transmission Line Materials - WJ II 23 December 1980	23 February 1981	
B. Contract Pj.153/PST/77, Shipment complete	Irby Construction Company, Transmission Line Materials - WJ I		
C. Contract Pj.203/PST/77, Shipment complete	Southwire Company, Conductor - WJ I		
D. Contract Pj.202/PST/77, Shipment complete	Copperweld Industries, Alumoweld Shieldwire - WJ I		
E. Contract Pj.050/PST/78, Shipment complete	Tension Stringing Equipment, Inc. Wire Stringing Equipment - WJ I		
F. Contract Pj.051/PST/78, Shipment complete	Ohio Brass Company, Surge Arrestors, WJ I & II		

<u>Item</u>	<u>Shipping Date</u>	<u>ETA in PLN Warehouse</u>	<u>Comments</u>
G. Contract Pj.052/PST/78,	Irby Construction Company, Substation Equipment and Maintenance Tools and Equipment - WJ I & II		
1. Panels for Bandung Utara (3), and Bogor (1), Batteries, Test Equipment, Control Cables, and Miscellaneous items.	23 December 1980 ,	23 February 1981	
2. Panels for Bogor (2), Bandung Utara (2) & Bandung Selatan (1), and miscellaneous items.	13 February 1981	13 April 1981	
H. Contract Pj.053/PST/78,	General Electric Company, Substation Equipment - WJ I & II		
1. Spare Parts	22 August 1980	22 February 1981	
2. Replacement Parts	26 December 1980	26 February 1981	
I. Contract Pj.087/PDT/78,	Motorola Company, Mobile Radio Equipment - WJ I.		
Communication System Analyzer, Channel Elements & Base Station Module Servicing Adaptor.	30 April 1981	30 June 1981	

West Java I Project  
 Project Completion  
 (Includes Engineering and Design)  
 as of 31 January 1981

<u>Work Item</u>					
Transmission Line					
Foundations	28.9	100.0	100.0	28.9	28.9
Tower Erection	13.5	100.0	100.0	13.5	13.5
Conductor Stringing	11.7	100.0	98.9	11.7	11.6
Tegal Substation					
Switchyard	2.0	100.0	100.0	2.0	2.0
Erection and Wiring	1.2	100.0	100.0	1.2	1.2
Ujungberung Substation					
Switchyard Civil Work	15.2	80.9	71.7	12.3	10.9
Control House	11.5	65.2	55.3	7.5	6.4
Equipment Erection	8.2	43.9	55.3	3.6	4.5
Wiring and Testing	2.1	23.0	23.0	0.5	0.5
Radio System	<u>5.7</u>	100.0	100.0	<u>5.7</u>	<u>5.7</u>
Total	100.0			86.9	85.2
	====			====	====

West Java II Project  
 Project Completion  
 (Includes Engineering and Design)  
 as of 31 January 1981

<u>Work Item</u>	<u>Weighted Percent of Project</u>	<u>Percent of Item Completed to Date</u>		<u>Percent of Project Completed to Date</u>	
		<u>Scheduled</u>	<u>Actual</u>	<u>Scheduled</u>	<u>Actual</u>
<b>Transmission Line</b>					
Foundations	28.1	100.0	100.0	28.1	28.1
Tower Erection	13.1	100.0	100.0	13.1	13.1
Conductor Stringing	11.1	100.0	100.0	11.1	11.1
<b>Bandung Utara Substation</b>					
Switchyard Civil Work	7.3	78.0	47.7	5.7	3.5
Control House	6.1	57.4	41.6	3.5	2.5
Equipment Erection	3.9	25.6	12.8	1.0	0.5
Wiring and Testing	1.0	12.8	12.8	0.1	0.1
<b>Bogor Substation</b>					
Switchyard Civil Work	10.6	76.4	58.6	8.1	6.2
Control House	5.8	56.9	38.5	3.3	2.2
Equipment Erection	5.6	21.4	12.8	1.2	0.7
Wiring and Testing	1.4	12.8	12.8	0.2	0.2
Radio System	6.0	100.0	99.9	6.0	6.0
<b>Total</b>	<b>100.0</b>			<b>81.4</b>	<b>74.2</b>
	====			====	====

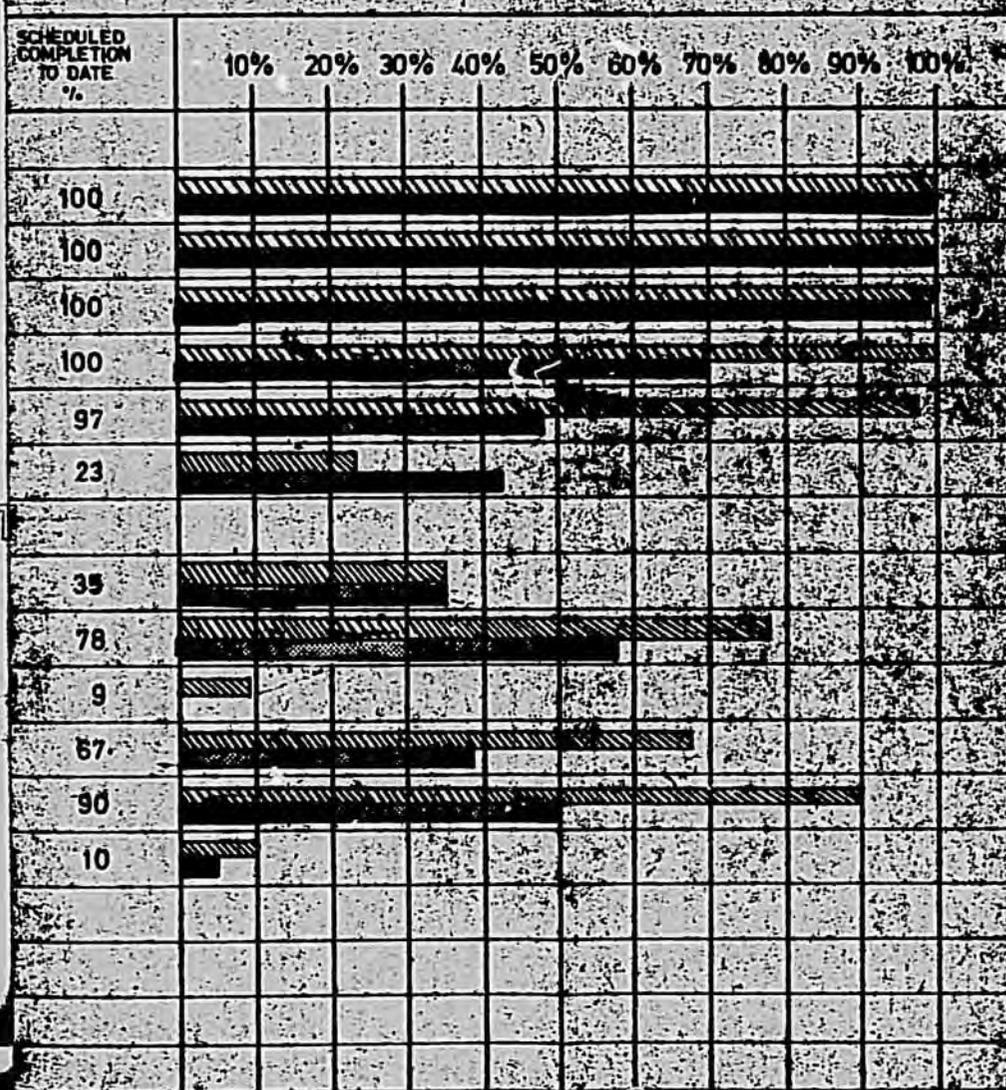
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WEST JAVA I & II  
CONSTRUCTION PROGRESS  
AS OF 31 JANUARY 1981

NO.	WORK ITEM	ACTUAL COMPLETED TO DATE %	ACTUAL COMPLETED THIS MONTH %	SCHEDULED COMPLETION TO DATE %	Progress Scale				
					10%	20%	30%	40%	50%
<b>WEST JAVA I</b>									
1	TOWER ERECTION W. BERUNG - BANDUNG UTARA	100	0	100	[Full bar]				
1A	TOWER ACCEPTANCE W. BERUNG - BANDUNG UTARA	100	0	100	[Full bar]				
	CONDUCTOR STRINGING W. BERUNG - BANDUNG UTARA	99	0	100	[Full bar]				
3	W. BERUNG SUBSTATION CIVIL CONSTRUCTION	65.8	5.8	100	[65.8% bar]				
4	W. BERUNG SUBSTATION BUILDING CONSTRUCTION	42.0	3.5	97	[42.0% bar]				
5	W. BERUNG SUBSTATION ELECTRO / MECHANICAL CONSTRUCTION	42.0	2.0	23	[42.0% bar]				
<b>WEST JAVA II</b>									
1	BOGOR SUBSTATION BUILDING CONSTRUCTION	29.0	4.3	35	[29.0% bar]				
2	BOGOR SUBSTATION CIVIL CONSTRUCTION	54.6	20.5	78	[54.6% bar]				
3	BOGOR SUBSTATION ELECTRO / MECHANICAL CONSTRUCTION			9	[9% bar]				
4	BANDUNG UTARA SUBSTATION BUILDING CONSTRUCTION	33.0	5.4	67	[33.0% bar]				
5	BANDUNG UTARA SUBSTATION CIVIL CONSTRUCTION	43.3	9.9	90	[43.3% bar]				
6	BANDUNG UTARA SUBSTATION ELECTRO / MECHANICAL CONSTRUCTION			10	[10% bar]				

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JAVA I & II  
ACTION PROGRESS  
JANUARY 1981



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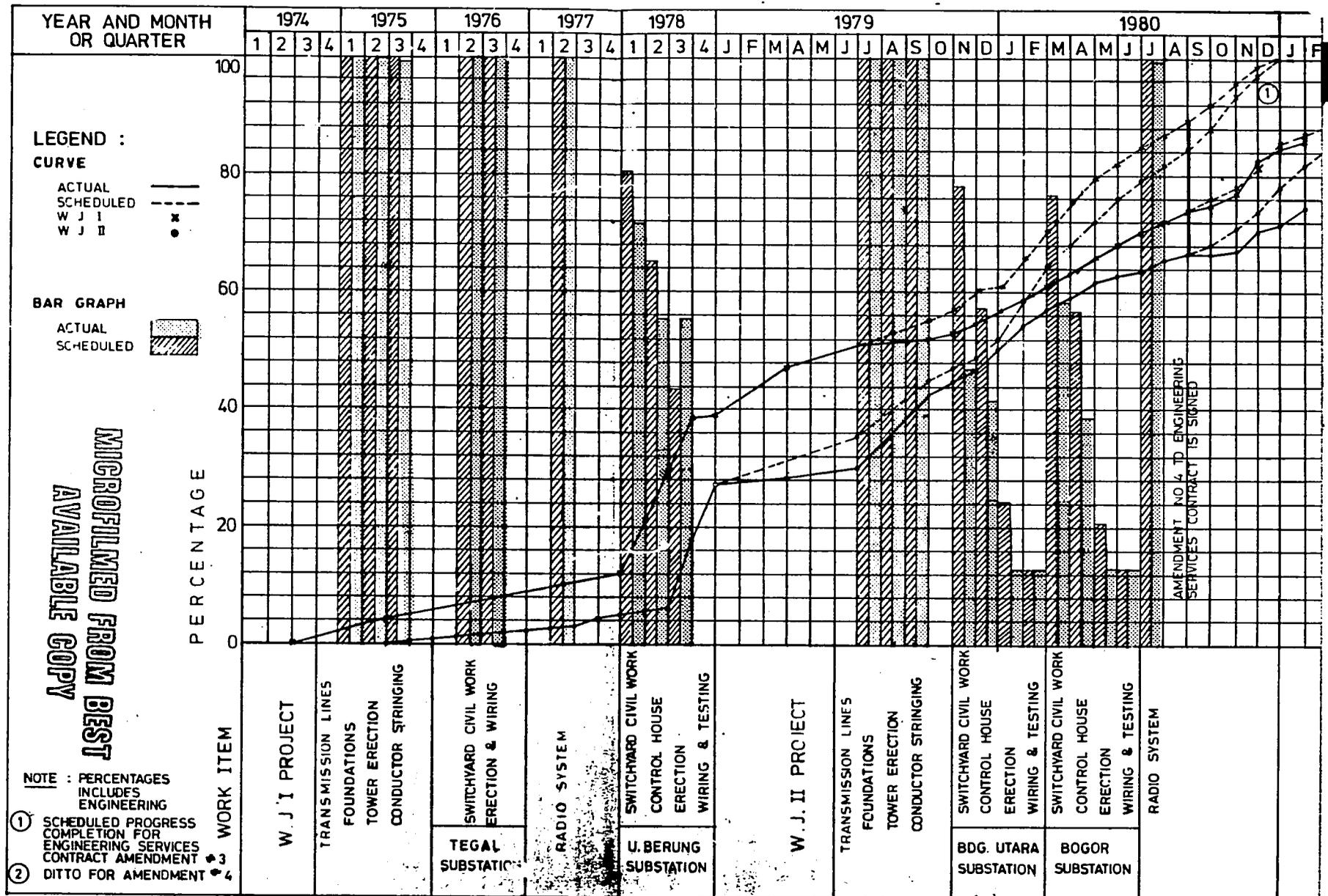
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WORK IN PROGRESS [Solid black box] SCHEDULED COMPLETION TO DATE [Hatched box]  
 ACTUAL COMPLETION TO DATE [Solid black box]

NTL INC.

## WEST JAVA I AND II PROJECTS PROJECT COMPLETION AS OF JANUARY 31, 1981

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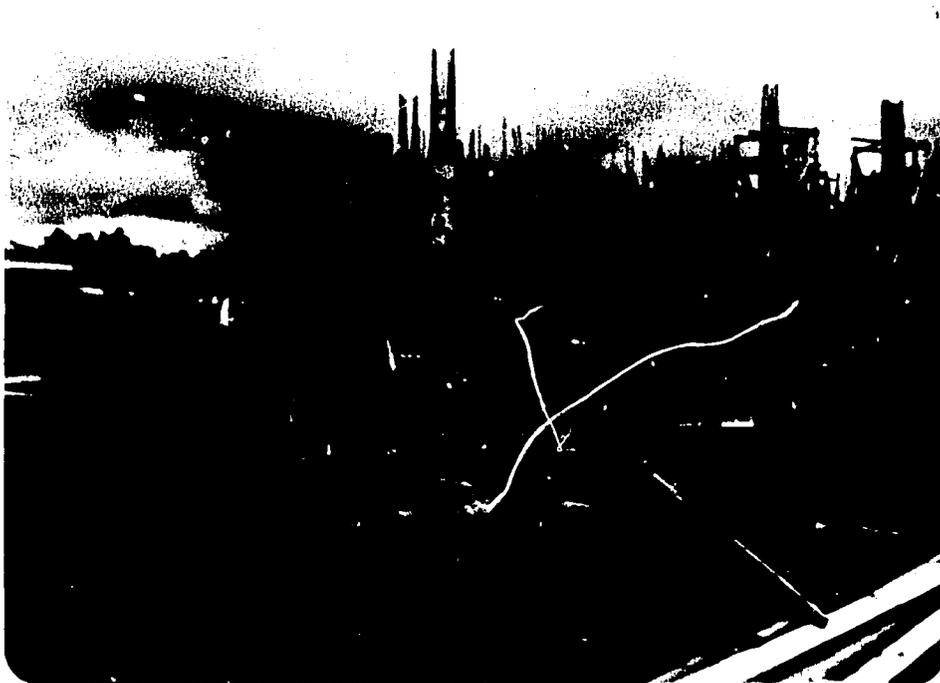
AMENDMENT NO 4 TO ENGINEERING SERVICES CONTRACT IS SIGNED





Bandung North Substation

Control House Brickwork



Bandung North Substation

Control House Stairway

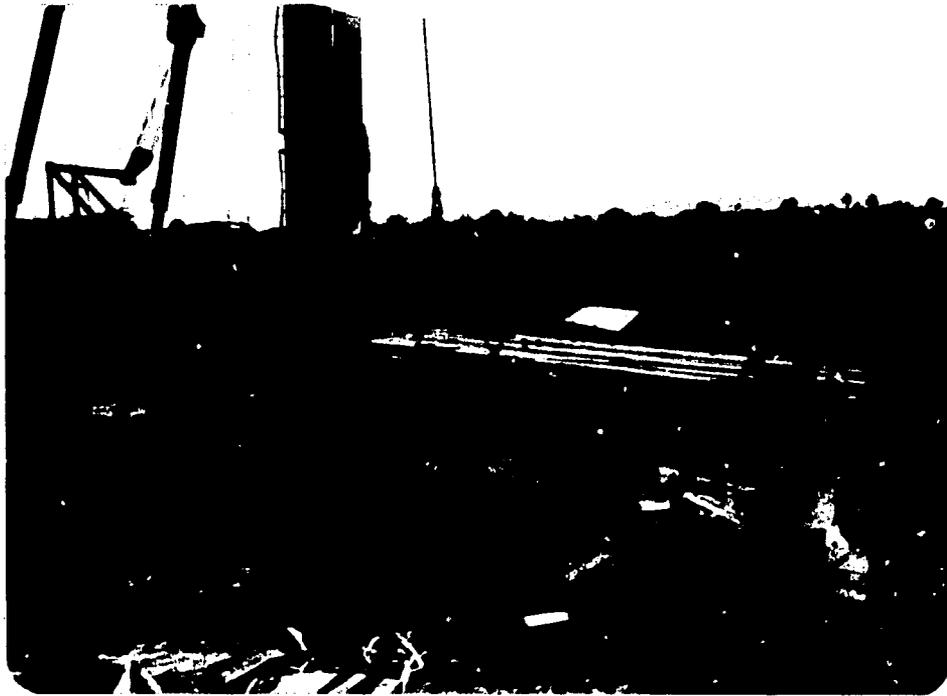


Bandung North Substation  
Access Road Construction

Junction with Jalan Setiabudi

Bandung North Substation  
Access Road Construction





**Bogor Substation  
Lifting Pile for Transformer Foundation**



**Bogor Substation  
Driving Pile for  
Transformer Foundation**