

PERUSAHAAN UMUM LISTRIK NEGARA
JAKARTA INDONESIA

WEST JAVA
ELECTRIC TRANSMISSION PROJECTS

QUARTERLY REPORT
JANUARY - MARCH 1980

WEST JAVA I AND II PROJECTS
CONTRACTS
Pj. 013/PST/74 and Pj. 023/PST/75
AID 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, KBT KEBAYORAN TIMUR. TEL. 776925 JL. WIJAYA 1/61
SEMARANG - P.O. BOX 28, TEL. 311702 JL. SLAMET 1

28 April 1980

Letter No. B - 2164

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
Quarterly Report

Dear Ir. Semiawan :

In accordance with article 7.1 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 three (3) copies of Engineer's
Quarterly Report for the period 1 January 1980 through 31 March 1980.

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

R.W. Malchow

R.W. Malchow
Project Manager

RWM/ns.-

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

WEST JAVA ELECTRIC TRANSMISSION PROJECTS
QUARTERLY PROGRESS REPORT
FOR THE QUARTER 1 JANUARY 1980 - 31 MARCH 1980

SECTION I

GENERAL INFORMATION

A. Objectives of the Projects

The West Java Electric Transmission Projects were established to provide a reliable and economical electric power system from Tegal to Bandung (West Java I Project) and from Bandung to Jakarta (West Java II Project). The objectives of the Projects include establishing the basic engineering criteria, standards and specifications by which future extensions of the system can be readily coordinated with the newly constructed system. Also included is the training of Perusahaan Umum Listrik Negara (PLN) personnel so that they may continue performance in engineering design and construction management for future extensions of the system. The Projects are closely associated with other electric power projects currently being implemented in West Java.

B. Description of the Projects

The Projects cover the engineering design, material and equipment procurement, construction and construction supervision, technical and managerial assistance and training required in connection with :

1. New 150 KV double circuit transmission lines.
 - a. West Java I Project - 187 Km connecting Tegal, Cirebon and Bandung.
 - b. West Java II Project - 170 Km connecting Bandung, Bogor and Jakarta.

2. New 150/70/20 KV Substations.
 - a. West Java I Project - Ujungberung (Bandung) and switching facilities at Tegal.
 - b. West Java II Project - Bandung North (Bandung) and Bogor.
3. Installation of adequate system protection for all transmission lines and substations.
4. Provision of vehicles, tools and service equipment for system operation and maintenance.
5. Furnish PLN with a library of technical books and periodicals related to the electric power industry.

C. Funding of the Projects

To finance the reasonable foreign exchange cost of imported capital equipment, related engineering, construction and training services, the United States Agency for International Development (USAID) entered into the following Loan Agreements with the Government of Indonesia for relending to PLN.

1. West Java I Project - USAID Loan No. 497-H-028 US \$ 17,200,000.
2. West Java II Project - USAID Loan No. 497-W-032 US \$ 19,700,000.

To meet local currency expenditures, the Government of Indonesia agreed to provide Rupiah in the estimated equivalent of US \$ 5,800,000 for the West Java I Project and US \$ 3,900,000 for the West Java II Project. This total of US \$ 9,700,000 has since been increased to some US \$ 20,700,000 equivalent.

D. Consulting Services

In accordance with the above Loan Agreements and with USAID concurrence, PLN and Chas. T. Main International, Inc. (MAIN), Boston, Massachusetts, USA, entered into the following Contracts:

1. West Java I Project - Contract No. Pj.013/PST/74, dated 16 February 1974. Duration of Contract, as amended, 1 July 1974 to 31 December 1980.

2. West Java II Project - Contract No. Pj.023/PST/75, dated 27 January 1975. Duration of Contract, as amended, 29 September 1975 to 31 December 1980.

E. Scope of Services

The Scope of Services to be provided by MAIN under the Contracts included but are not limited to the following items:

1. General Services
2. Engineering and Design Services
3. Procurement Services
4. Construction Planning and Pre-contracting Services
5. Engineering Supervision and Inspection Services
6. Construction Project Management and Supervision Services
7. Initial Operation and Testing
8. Training.

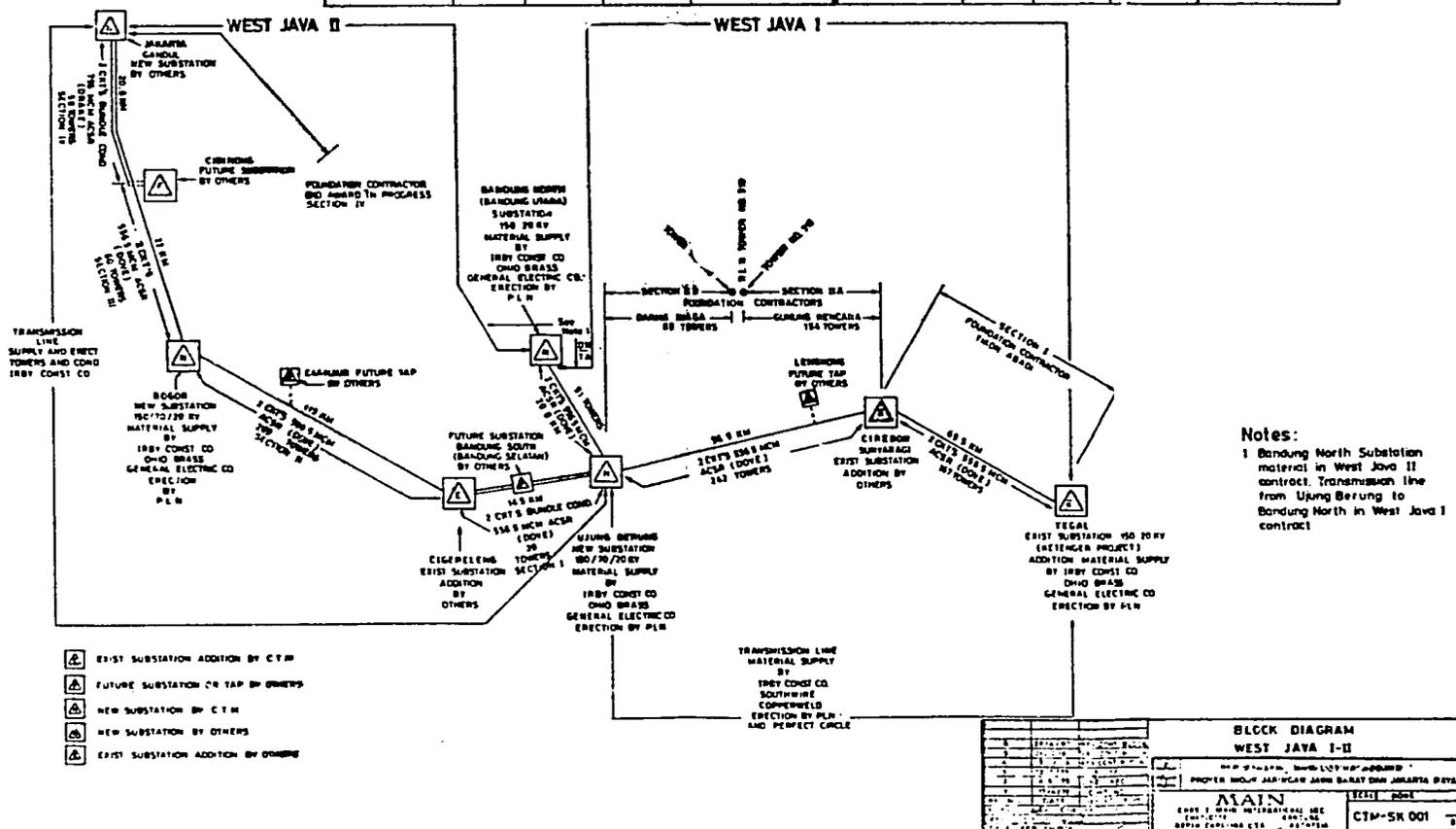
Project Block Diagram

The following page is the Block Diagram for the West Java I and II Projects. The Diagram shows the major parts of the system being installed and the pertinent parameters. Also included are the supply and construction contractors.

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WEST JAVA CONTRACTORS									
CONTRACTOR	CONTRACT NO	LOCATION	FUNCTION	DESCRIPTION	CONTRACTOR	CONTRACT NO	LOCATION	FUNCTION	DESCRIPTION
COPPERWELD	PJ 702/P51/77	WEST JAVA I	SUPPLY	SHIELD WIRE	TIKOH ABADI	PJ 821/P51/77	WEST JAVA I	CONSTRUCT	FOUNDATIONS SEC I
IRBY CONST CO	PJ 143/P51/77	WEST JAVA I	SUPPLY	STEEL HARDWARE	GLUNGG BENCANA	PJ 143/P51/77	WEST JAVA I	CONSTRUCT	FOUNDATIONS SEC IIA
IRBY CONST CO	PJ 053/P51/77	WEST JAVA I II	SUPPLY	SUBSTATION EQUIPMENT	BANNA HACA	PJ 053/P51/77	WEST JAVA I	CONSTRUCT	FOUNDATIONS SEC IIB & III
IRBY CONST CO	PJ 052/P51/77	WEST JAVA I	SUPPLY	TOOLS EQUIPMENT	CITAC LTD	PJ 052/P51/77	WEST JAVA II	CONSTRUCT	FOUNDATIONS SEC II & III
IRBY CONST CO	PJ 042/P51/77	WEST JAVA II	SUPPLY ERECT	TOWERS HARDWARE COMD	CITAC LTD	PJ 042/P51/77	WEST JAVA II	CONSTRUCT	FOUNDATIONS SEC I
GENERAL ELECTRIC CO	PJ 055/P51/77	WEST JAVA I II	SUPPLY	CR BAR SW GEAR	PERFECT CIRCLE	PJ 055/P51/77	WEST JAVA I	ERECT	TOWERS
MOTOPIA	PJ 083/P51/77	WEST JAVA I II	SUPPLY	MOBILE RADIO SYSTEM	SANTACCO BARR	PJ 083/P51/77	WEST JAVA I	CIVIL WORK	TEGAL SUBSTATION
OHIO BRASS	PJ 251/P51/77	WEST JAVA I II	SUPPLY	LIGHTNING ARRESTERS	SAGANA YARTA	PJ 251/P51/77	WEST JAVA I	ERECT	TEGAL SUBSTATION
SOUTHWIRE	PJ 125/P51/77	WEST JAVA I	SUPPLY	ALUM. CO-J	CITAC LTD	PJ 125/P51/77	WEST JAVA II	CONSTRUCTION	FOUNDATIONS IVC
TENSION STRINGING INC	PJ 080/P51/77	WEST JAVA I II	SUPPLY	TENSION STRINGING EQUIP	CITAC LTD	PJ 080/P51/77	WEST JAVA II	CONSTRUCTION	FOUNDATIONS IVA
SUMBER JAW	PJ 117/P51/77	WEST JAVA I II	SUPPLY	GROUNDING MATERIAL	CITAC LTD	PJ 117/P51/77	WEST JAVA I	STRINGING	CONDUCTOR SEC. II
PT ARCON	PJ 117/P51/77	WEST JAVA I II	SUPPLY	STUB ANGLES	SALAM NATIONAL	PJ 117/P51/77	WEST JAVA I	STRINGING	CONDUCTOR SEC. I
BARABAT ACUNG	PJ 117/P51/77	WEST JAVA II	SUPPLY	STUB ANGLES	PT ERSES	PJ 117/P51/77	WEST JAVA I	CIVIL WORK	ULANG BEBERG SUBSTATION
JAMARTA BARYA	PJ 117/P51/77	WEST JAVA II	CONSTRUCT.	FOUNDATIONS SEC. IV B	PT ERSES	PJ 117/P51/77	WEST JAVA I	CONTROL HOUSE	ULANG BEBERG SUBSTATION



SECTION II
FINANCE AND ADMINISTRATION

A. FINANCE INFORMATION

1. US Dollar Costs

Invoices in the amount of US \$ 3,476,760.98 (WJ I) and US \$ 2,443,875.91 (WJ II) have been submitted to PLN Pusat. Appended as Exhibit IA and IIA are Financial Plans and Cash Flow by Project Quarters. Categories by Work Item and Cash Flow by Project Quarters are based on the revised Scope of Work embodied in the latest Amendments to the Contracts. These data will be updated as necessary. Statistical data in chart form for the Progress Schedules are appended as Exhibits IB and IIB.

2. Indonesian Rupiah Costs

Invoices in the amount of Rp. 222.330.249,- (WJ I) and Rp. 188.582.852,- (WJ II) for local costs incurred have been submitted to PLN. Exhibits IC and IIC, Financial Plans and Cash Flow, and Exhibits ID and IID, Progress Schedules, are appended. These data are also based on the latest Amendments to the Contracts and will be updated as necessary.

3. Invoices Submitted and Payments Received

These data are appended as Exhibit G.

ADMINISTRATIVE INFORMATION

1. Amendment No. 1 to the General Electric Substation Contract was signed by PLN on 7 January. This amendment essentially provides for different wave traps and additional spare parts.
2. Extensions of Terminal Disbursements Date Authorization (TDDA) and Terminal Disbursements Date (TDD) for USAID Loans.

- a. USAID Audit Report recommendations have been satisfied.
 - b. Substation Construction
 - a. Ujungberung - Letter of Intent issued.
 - b. Bandung North - Ministry has approved Contracts.
 - c. Bogor - Ministry presently reviewing Contracts.
 - c. USAID/JKT has approved the requested extensions and has so requested USAID/Washington by cable.
3. Amendments to PLN/MAIN Engineering Services contracts.
- a. Drafts of Amendments to PLN/MAIN Engineering Services Contracts will be discussed with PLN/Project next period.

C. WEST JAVA I CONTRACT DATA

1.	No. Pj. 013/PST/74			
	16 February 1974		US \$	1,366,452.00
			Rp.	81.308.525,-
	Amendment No. 1			
	2 September 1975		US \$	-
			Rp.	14.575.975,-
	Amendment No. 2			
	12 March 1977		US \$	1,589,996.00
			Rp.	49.916.408,-
	Amendment No. 3			
	10 January 1979		US \$	867,561.00
	C.T. Main - Engineering Services		Rp.	92.358.466,-
2.	No. Pj. 153/PST/77	5 September '77	US \$	2,531,335.58
	Amendment No. 1	10 July '78		-
	Amendment No. 2	17 September '79	US \$	202,682.67
	Irby Construction Company			
	Tower Steel, Insulators and Accessories			
3.	No. Pj. 202/PST/77	28 November '77	US \$	284,289.50
	Amendment No. 1	30 November '78	US \$	10,449.56
	Copperweld Industries			
	Shield Wire			

4.	No. Pj. 203/PST/77	28 November '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 \$	368,473.98
	Amendment No. 1	13 December '78	US \$	35,669.44
	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 September '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 January '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 December '79		-
	Motorola Radio Equipment			
10.	No. Spj.022/PLN/PI RING/77	27 Oct.'77	Rp.	199.278.000,-
	Tikon Abadi Foundations - Section I			
11.	No. Spj.023/PLN/PI RING/77	27 Oct.'77	Rp.	153.445.000,-
	Gunung Kencana Foundations - Section IIA			
12.	No. Spj.024/PLN/PI RING/77	27 Oct.'77	Rp.	164.789.000,-
	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,-
	Santraco Raya	21 April '79	
	Tegal Substation Civil Work		
15.	No. Spj.072/SPP/PI RING JATENG/78-79		Rp. 25.966.000,-
	Sigma Tirta	17 Oct. '79	
	Tegal Substation Structure Erection		
16.	No. Spj.017/PLN/PI RING/79-80		Rp. 127.790.850,-
	Silkar National	22 January '80	
	Conductor Stringing - Section I		
17.	No. Spj.019/PLN/PI RING/79-80		Rp. 164.364.000,-
	Citac Ltd.	2 February '80	
	Conductor Stringing - Section III		
18.	No. Spj. (Letter of Intent)		Rp. 464.500.000,-
	P.T. Erses	22 March '80	
	Ujungberung Substation Civil Work		
19.	No. Spj. (Letter of Intent)		Rp. 199.989.000,-
	P.T. Erses	22 March '80	
	Ujungberung Control House		

D. WEST JAVA II CONTRACT DATA

1.	No. Pj.023/PST/75	25 January '75	US \$ 1,541,729.00
			Rp. 90.598.149,-
	Amendment No. 1	12 May '75	US \$ -
			Rp. -
	Amendment No. 1	12 March '77	US \$ 856,064.00
			Rp. 15.239.504,-
	Amendment No. 3	10 January '79	US \$ 112,000.00
	C.T. Main - Engineering Services		Rp. 97.708.072,-
2.	No. Pj.152/PST/77	5 September '77	Rp. 452.526.908,-
			US \$ 7,744,165.78

Amendment No. 1 & 2	10 July	'78	Rp.	13.137.605,-
			US \$	311,400.72
Amendment No. 3	17 September	'79	Rp.	3.560.229,-
			US \$	140,881.33
Irby Construction Company Transmission Line Construction				
3.	No. Pj.051/PST/78	10 March	'78	US \$ 87,852.00
	Ohio Brass Company Lightning Arresters.			
4.	No. Pj.052/PST/78	11 March	'78	US \$ 4,981,321.52
	Amendment No. 1	17 September	'79	Funded under Loan 497-H-028 West Java I
Irby Construction Company Substation Equipment				
5.	No. Pj.053/PST/78	11 March	'78	US \$ 3,974,100.16
	Amendment No. 1	7 January	'80	Funded under Loan 497-H-028 West Java I
6.	No. Spj.001/PLN/PI RING/77-78	5 June	'78	Rp. 329.553.000,-
	Citac Ltd. Foundations - Section II and III			
7.	No. Spj.002/PLN/PI RING/78-79	8 Aug.	'79	Rp. 175.128.000,-
	Citac Ltd. Foundations - Ujungberung - Cigereleng			
8.	No. Spj.022/PLN/PI RING/79-80			Rp. 10.618.000,-
	P.T. Sahabat Agung	4 December	'79	
	Cibinong - Gandul Stub Angles			
9.	No. Spj.009/PLN/PI RING/79-80			Rp. 62.441.000,-
	Citac Ltd.	30 November	'79	
	Foundations - Section IV A			
10.	No. Spj.010/PLN/PI RING/79-80			Rp. 36.029.000,-
	Citac Ltd.	30 November	'79	
	Foundations - Section IV C			

11. No.Spj.018/PLN/PI RING/79-80 Rp. 64.630.000,-
Amarta Karya 24 January '80
Foundations - Section IV B

E. WEST JAVA I AND II CONTRACT DATA

1. No. Spj.016/PLN/PI RING/77 4 July '77 Rp. 54.245.000,-
Sumber Jaya For Both Projects
Grounding Material

2. No.Spj.017/PLN/PI RING/77 13 Aug. '77 Rp. 40.100.000,-
P.T. Arcon For Both Projects
Stub Angles

SECTION III
GENERAL INFORMATION

A. CONFERENCES AND EVENTS

1. During the period, the following Project Meetings were held :

- a. Number 28 - 5 January - PLN, Cawang, Jakarta
- b. Number 29 - 2 February - PLN, Bandung
- c. Number 30 - 1 March - PLN, Cawang, Jakarta

Transmission and Substation construction status and progress were discussed. Current Material Delivery Schedules, Work Progress Schedules and Financial Schedules were distributed.

2. Forty - one (41) Construction Meetings were held during the period.

3. In February, the following ENGINEER Home Office personnel visited the Projects :

A.W. Huseby - Assistant Director of International Projects and Officer-in-Charge of Indonesian Projects.

A.J. Curran - former Rural Electrification Lead Engineer in Semarang and presently Indonesian Projects Coordinator in MAIN's Home Office.

4. During the period, Mr. J.W. Brower, ENGINEER's Projects Director in Indonesia attended Executive Management Meetings in Boston.

5. Representatives of PLN and MAIN visited the Tower Steel sub-contractors for Irby in India. Some steel was fabricated early based on preliminary estimates of quantities. Even though these estimates were later decreased, the steel was sold to others and PLN is not obligated to purchase.

During the course of fabrication, the Indian government decreed a price increase of 40%. This was later decreased to 10% for contracts already in effect. The trip was well worthwhile and a formal report is now being prepared. Amendments to the Irby contracts are being drafted.

B. PROBLEM AREAS

1. All tower sites on West Java II have not been purchased.
2. All right-of-way has not been procured.
3. Tower steel shortages are holding up tower erection.
4. Some conductor accessory shortages are appearing.
5. Access roads to Bogor and Bandung Utara Substations have not been constructed.
6. There is insufficient indoor storage space available.

SECTION IV
PERSONNEL

A. ENGINEER

1. On 30 November, MAIN requested from PLN the approval of Mr. H.M. Lecroy, Substation Design Engineer, for temporary assignment on the Projects. On 28 December, PLN approved Mr. Lecroy and he arrived in Jakarta on 30 January.
2. On 12 January, MAIN requested from PJN the approval of Mr. D.L. Hawks as Transmission Line Inspector for the West Java II Project to replace Mr. J.F. Christensen who departed Indonesia on 17 January. On 28 January, PLN approved Mr. Hawks and he joined the Project on 29 February.
3. End of the period 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 October	1978
C.J. Whitby	Manager of Administration	10 September	1974
J.C. Harkey	Substation Engineer	15 October	1977
C.L. Crume	Substation Constr. Eng.	3 June	1979
H.C. Radford	Supervisor of Equip. Maint.	8 July	1979
H. Gunawan	Administrative Assistant	13 August	1979
H.M. Lecroy	Substation Designer	30 January	1980
<u>West Java I</u>			
C.V. Silman	Construction Supervisor	1 June	1978
P.V. Wilson	Construction Supervisor	15 December	1978
<u>West Java II</u>			
Zainal Saur	Transmission Inspector	16 March	1978
D.L. Hawks	Trans. Insp./Surveyor	29 February	1980

B. PLN

1. End of the period strength was as follows :

<u>JOB TITLE</u>	<u>NUMBER</u>
Transmission Liaison Engineer	1
Logistics Coordinator	1
Secretaries	3
Draftsmen	6
Accounting Clerks	2
Drivers	11

2. In addition to the above Staff, PLN has assigned numerous Counterpart and field personnel to the Projects.

C. PERSONNEL MANMONTHS

1. ENGINEER and PLN Personnel Manmonths expended on the Projects to date are shown on the appended Exhibit H.

D. BUDGET

1. Comparison of Budget vs. Actual Manmonths and Salaries expended on the Projects to date are appended as Exhibits IE, IF, IIE and IIF.

SECTION V

DESIGN AND FIELD PROGRESS

A. WEST JAVA I TRANSMISSION

1. Tower Site Procurement - Ujungberung to Bandung Utara

a. All sites have been procured.

2. Foundation Construction - Ujungberung to Bandung Utara

a. The last foundation is under construction and should be finished shortly. The foundation of Tower 278 was moved 15 meters because of rapid erosion of the river bank. A cassion has been designed and will be constructed to protect against further erosion.

3. Tower Erection

a. Tegal to Ujungberung - All 409 towers have been erected and accepted.

b. Ujungberung to Bandung Utara - Thirty-eight towers have been erected and eleven accepted. There are 51 towers in this Section. The needed replacement steel is in port and being cleared. It should be available early next period.

4. ROW Procurement and Clearing

a. Tegal to Sunyaragi - Funds have been made available and purchasing is underway.

b. Ujungberung to Bandung Utara - Clearing is underway between Tower 1 and 21.

5. Conductor and Shieldwire

Section I. Tegal to Sunyaragi - Silkar National.

Progress is slow but steady. Some 8 Km (10%) is complete. Around mid-April, PLN forces will move in to assist the Contractor.

Section IA - Sunyaragi to Tower 229. Completed by PLN forces.

Section II and IIA - Tower 229 to 21 (on Bandung Utara Section).

Citac Ltd. Some 50 Km (62%) is complete. Progress is good.

6. Material Supply

- a. Tower steel arrived in port in Jakarta and is being cleared.
- b. Line Hardware is being cleared in Cirebon.
- c. Some steel is being fabricated locally.
- d. Additional conductor splices have been ordered to be shipped by Air Freight. More have been used than anticipated.
- e. PLN is still awaiting the approval of the Department of Trade for permanent licensing of the trucks. Presently temporary licenses are being renewed monthly and the vehicles are being used to good advantage.

B. WEST JAVA II TRANSMISSION

1. Tower Site Procurement - Cibinong to Gandul
 - a. Nine sites remain to be acquired.
2. Foundation Construction - Cibinong to Gandul
 - a. Nine foundations remain to be constructed.
3. Tower Erection
 - a. Ujungberung to Cigereleng. Total 39. Erected and accepted.
 - b. Cigereleng to Cibinong. Total 327. Erected 319 and 312 accepted.
 - c. Cibinong to Gandul. Total 58. Erected 46 and 34 accepted.

4. ROW Procurement and Clearing
 - a. Ujungberung to Bogor - complete.
 - b. Bogor to Cibinong - All procured; cutting underway.
 - c. Cibinong to Gandul - Cutting underway.
5. Conductor and Shieldwire
 - a. Ujungberung to Cigereleng. Total Km 14.5 - Strung and accepted.
 - b. Cigereleng to Cibinong. Total Km. 148 - Strung 123 and 118 accepted. Contractor will stop operations in this Section and move to Cibinong to Gandul Section. Missing tower steel requires this move.
6. Material Supply
 - a. PLN decided not to accept the DOVE conductor which was submerged in Sea water in Singapore. Service life cannot be guaranteed. Irby Construction Company will replace this conductor.
 - b. Missing tower components are en route and should be available in May.

C. SUBSTATIONS

1. Tegal Substation. Relays were tested and the station was energized up to the breakers. Additional cable arrived in Jakarta and, when installed, final testing of the CCVT's and relays will be done. PLN and Contractor personnel have done an outstanding job.
2. Ujungberung Substation. Effective date of starting work by P.T. Erses was 22 March. Grading is some 75% complete but compaction machinery is not available as yet. The present rate of progress is such that foundation work could be delayed. PLN/MAIN will meet with Erses to resolve the problem. Steel pilings of the required wall thickness of 1 cm. are difficult to locate. Eight mm. is available but more piles per foundation may be needed. Station service by PLN Distribusi will be quite expensive. There may be a possibility of tapping off the existing 6 Kv Line.

3. Bandung Utara Substation. Contracts are underway. A wider, stronger access road is required.
4. Bogor Substation. Contracts under review. Land acquisition for the access road is in process.
5. Material Supply
 - a. All Lightning Arresters from Ohio Brass have been received
 - b. Shipment of remaining material from General Electric and Irby are underway or scheduled.
 - c. A large indoor storage area is needed.
 - d. Power supply of 220/380 volts is needed at Cigereleng to test the equipment prior to installation.
 - e. A larger vehicle is required to transport the test equipment to and from the Substation sites. This now requires three jeeps to do so.
 - f. Waterproof covers are needed to protect equipment stored outside at Cigereleng.
6. Oth
 - a. Work on the required Substation drawings continues with good progress. Current status is as follows:
 - 1) Interconnection drawings

Bandung Utara	Total	45	Completed	42
Bogor	Total	75	Completed	75
Ujungberung	Total	48	Completed	48
 - 2) Elementary drawings

Bandung Utara	Total	30	Completed	0
Bogor	Total	75	Completed	30
Ujungberung	Total	84	Completed	84
 - b. All drawings except the Bandung Utara relay panel drawings should be completed this period. The ASEA drawings for these relays are not scheduled until August but PLN will request earlier submission.

D. MOBILE RADIO

1. The Motorola Service Engineer tested and tuned the system.
2. Selection of participants for Motorola US Training is underway.
3. The Puncak repeater station was completed and is in operation.
4. The Sumedang repeater station was completed except for the installation of electric power.
5. Base and/or Fixed Stations were completed at PLN/Cawang, MAIN/Jakarta and MAIN/Bandung.
6. Several pieces of equipment need repair. A complete list of such requirements is being prepared.

E. MATERIAL SHIPMENTS

1. The status of Material Shipments through 31 March 1980 is shown on the following page.

Status of Material Shipments

<u>Contract Number</u>	<u>Contractor/ Supplier</u>	<u>Total Material</u>	<u>US \$ Value of Material</u>		<u>Percent of Total</u>
				<u>Received through 31 Mar.1980</u>	
Pj.152/PST/77	Irby	6,483,668.50		6,401,102.28	99 %
Pj.153/PST/77	Irby	2,734,018.25		2,718,959.15	99 %
Pj.202/PST/77	Copperweld	294,739.06		294,732.90	100 %
Pj.203/PST/77	Southwire	1,991,921.70		1,980,619.70	99 %
Pj.050/PST/78	Tension Stringing	402,920.86		396,581.99	98 %
Pj.051/PST/78	Ohio Brass	175,704.00		175,704.00	100 %
Pj.052/PST/78	Irby	8,597,075.06		8,029,758.28	93 %
Pj.053/PST/78	General Electric	6,426,491.56		6,408,211.16	99 %
Pj.087/PST/78	Motorola	359,169.20		341,451.94	95 %

SECTION VI

TRAINING ACTIVITIES

1. PLN Substation personnel are being trained in the installation and adjustment of substation electrical equipment.

WEST JAVA I PROJECT
FINANCIAL PLAN AND CASH FLOW
U.S. DOLLARS (000)

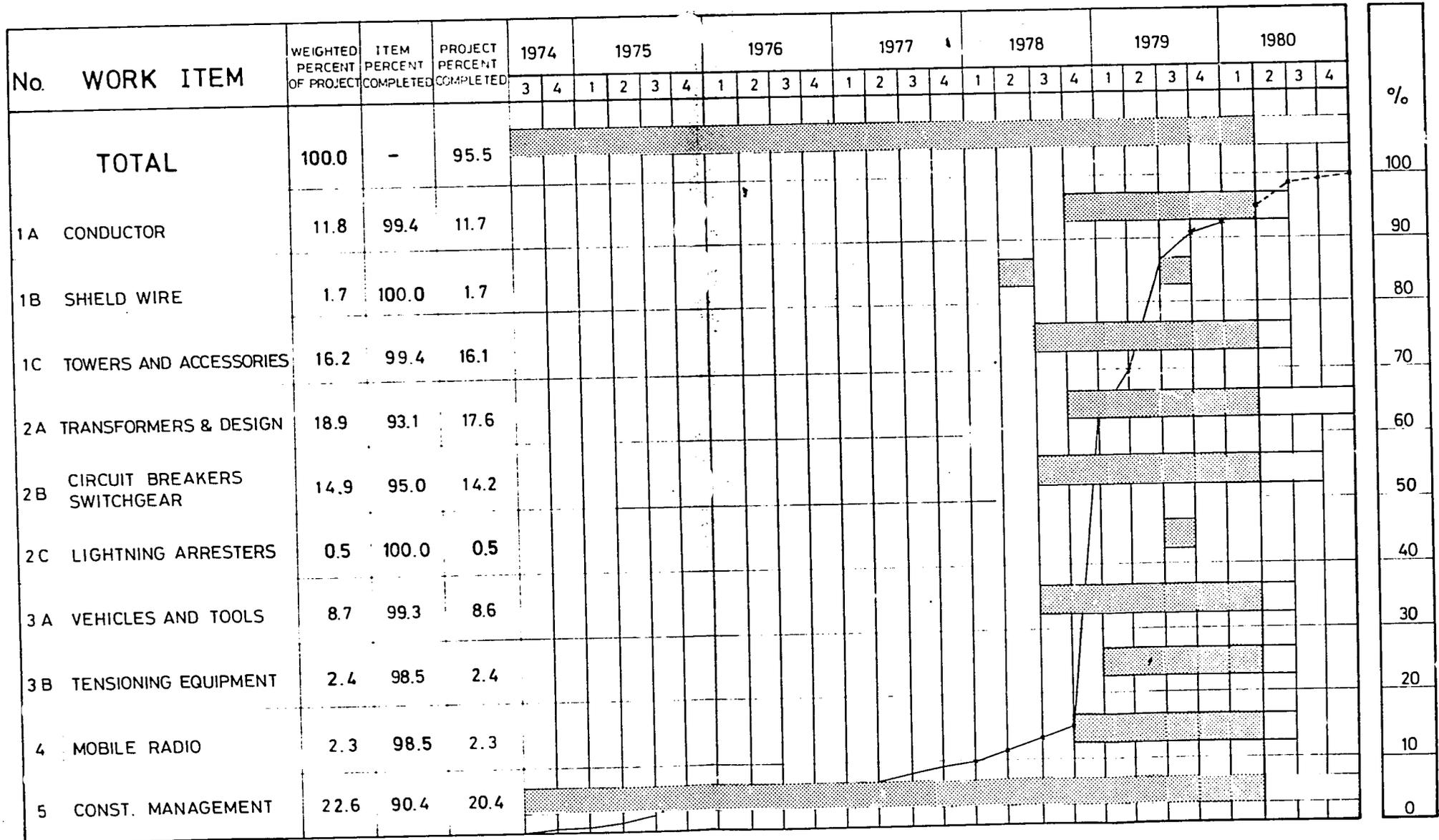
NO.	WORK ITEM	(A) ALLOCATION OF FUNDS	FUNDS REQUIRED TO COMPLETE PROJECT																									
			1974		1975				1976				1977				1978				1979				1980			
			3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	TOTAL	17,030	63	106	156	115	104	145	117	89	115	79	127	130	128	214	202	553	1661	3165	5466	1708	1019	437	361	394	278	98
1	150 KV TRANSMISSION SUPPLY	-																										
1A	CONDUCTOR	2,004																		506	1005	394			87	12		
1B	SHIELD WIRE	297																282	-	-	-	-	15					
1C	TOWERS AND ACCESSORIES	2,751																	1081	417	992	57	172		15	17		
2	150 KV SUBSTATION SUPPLY	-																										
2A	TRANSFORMERS AND DESIGN	3,228																		588	1390	828	200			100	100	22
2B	CIRCUIT BREAKERS AND SWITCHGEAR	2,541																	72	1144	1197	-	-			80	48	
2C	LIGHTNING ARRESTERS	88																					88					
3	TOOLS AND EQUIPMENT SUPPLY	-																										
3A	VEHICLES AND TOOLS	1,474																	243	-	299	244	350	235	93	10		
3B	TENSIONING EQUIPMENT	404																			317	-	-	53	28	6		
4	MOBILE RADIO SUPPLY	397																		288	79	-	24			6		
5	CONST. MANAGEMENT SERVICES	3,846	63	106	156	115	104	145	117	89	115	79	127	130	128	214	202	271	265	222	187	185	170	149	138	163	130	76

(A) INCLUDES FUNDS COMMITTED, IN PROCESS OF BEING COMMITTED and BANK CHARGES
UNCOMMITTED
TOTAL LOAN

\$ 17,030
170
\$ 17,200

SPENT TO DATE \$ 16,260
NEED TO COMPLETE - 770
UNCOMMITTED 170
TOTAL LOAN \$ 17,200

WEST JAVA I PROJECT PROGRESS SCHEDULE US DOLLARS



SCHEDULED SCHEDULED
 ACTUAL ACTUAL

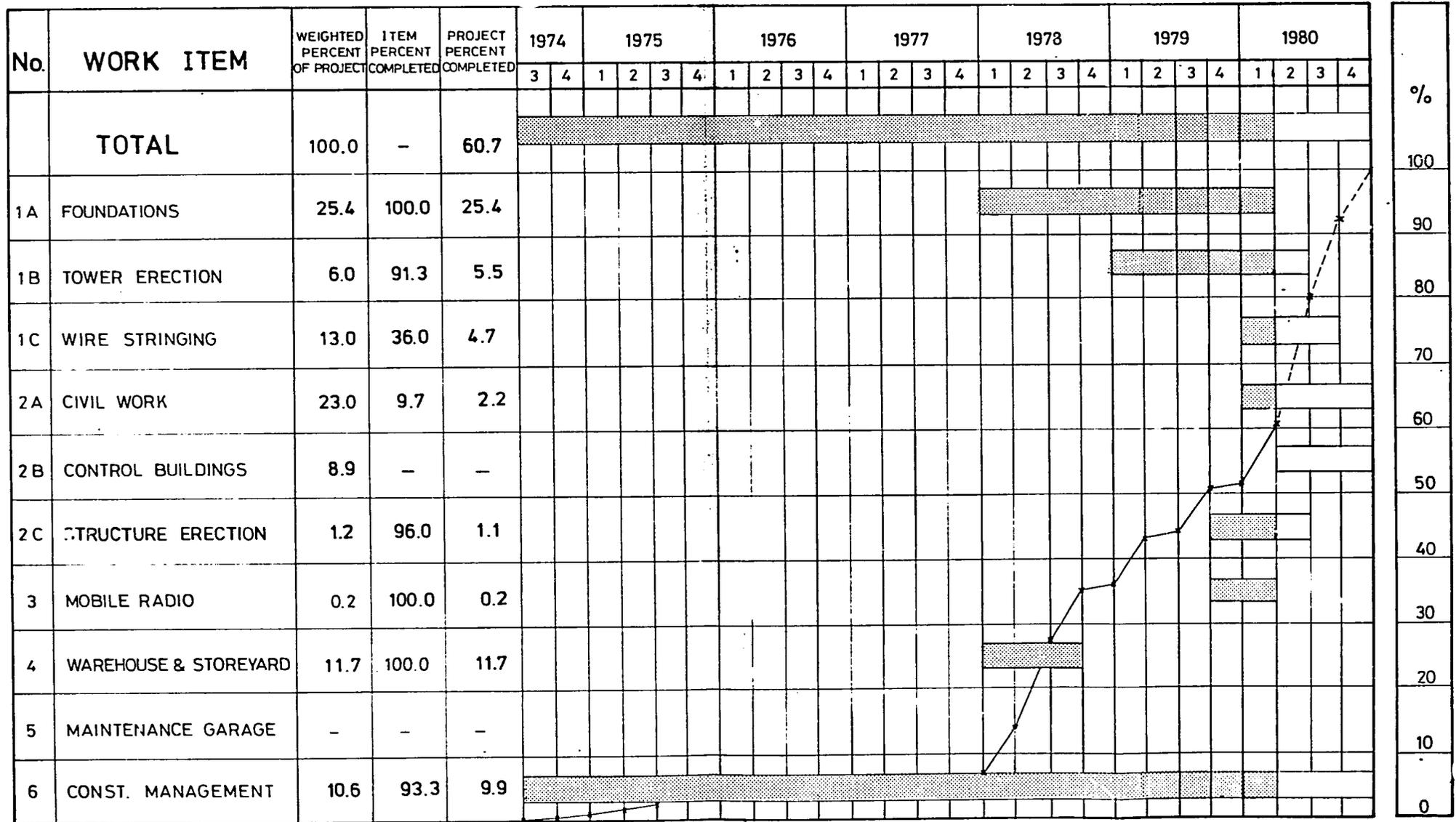
31 MARCH 1980

WEST JAVA I PROJECT FINANCIAL PLAN AND CASH FLOW INDONESIAN RUPIAH (000.000)

EXHIBIT 1C

NO.	WORK ITEM	ALLOCATION OF FUNDS	FUNDS REQUIRED TO COMPLETE PROJECT																											
			1974				1975				1976				1977				1978				1979				1980			
			3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
	TOTAL	2.241	14	12	12	11	9	10	5	2	1	2	7	8	9	11	206	237	207	16	171	8	129	39	234	439	272	170		
1	150 KV TRANSMISSION	-																												
1A	FOUNDATIONS	570															127	121	101		103		65	12	41					
1B	TOWER ERECTION	133																			53		50	3	15	12				
1C	WIRE STRINGING	292																							105	145	42			
2	150 KV SUBSTATIONS	-																												
2A	CIVIL WORK	515																								50	200	150	115	
2B	CONTROL BUILDINGS	200																									75	75	50	
2C	STRUCTURE ERECTION	26																									13	12	1	
3	MOBILE RADIO	5																									2	3		
4	WAREHOUSE AND STOREYARD	262															62	100	100											
5	MAINTENANCE GARAGE	-																												
6	CONSTRUCTION MGT. SERVICES	238	14	12	12	11	9	10	5	2	1	2	7	8	9	11	17	16	6	16	15	8	14	9	8	6	5	5		

WEST JAVA I PROJECT PROGRESS SCHEDULE INDONESIAN RUPIAH



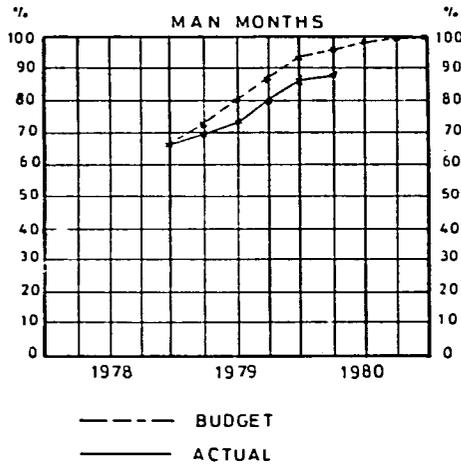
- - - - - SCHEDULED
 _____ ACTUAL

WEST JAVA I FIELD STAFF MAN MONTHS & SALARIES BUDGET VS ACTUAL

EXHIBIT I E

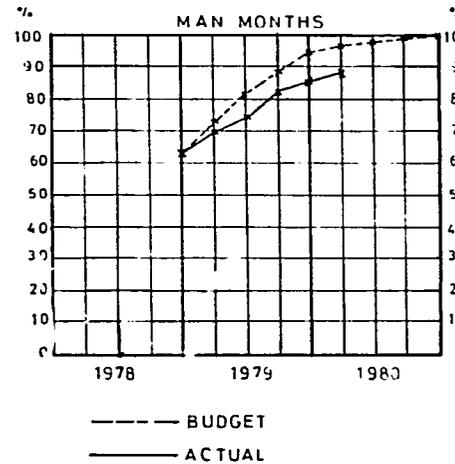
AS OF 27 MARCH 1980

TOTAL FIELD STAFF



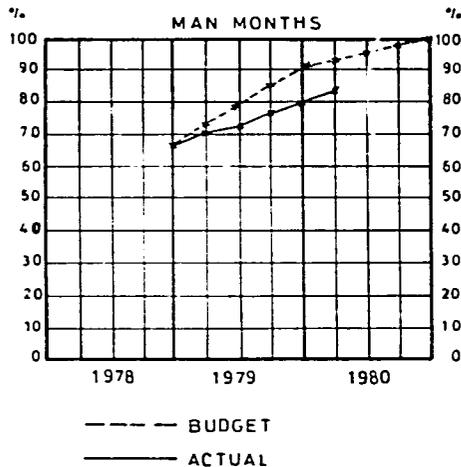
	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	424	386	91	729	665	91
THIS PERIOD	15	14	93	27	27	100
TOTAL TO DATE	439	400	91	756	692	92
TOTAL CONTRACT	461	400	87	798	692	87

CONSTRUCTION ONLY



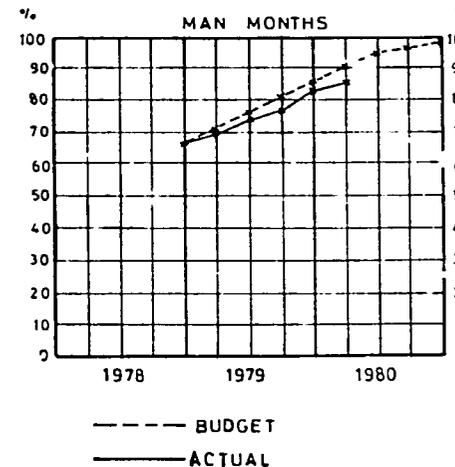
	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	239	217	91	376	344	91
THIS PERIOD	7	8	114	11	15	136
TOTAL TO DATE	246	225	91	387	359	93
TOTAL CONTRACT	253	225	89	398	359	90

ENGINEERING ONLY



	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	109	96	83	186	166	89
THIS PERIOD	4	3	75	7	5	71
TOTAL TO DATE	113	99	88	193	171	87
TOTAL CONTRACT	120	99	83	206	171	83

ADMINISTRATION ONLY



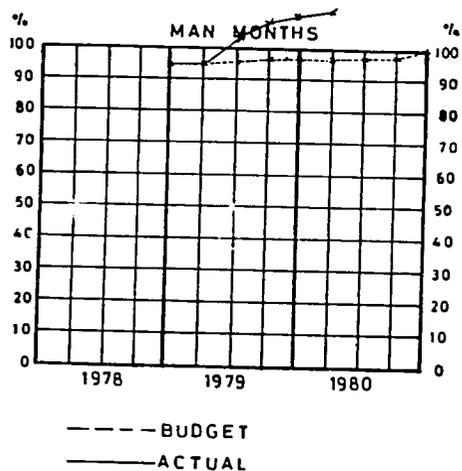
	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	76	73	96	167	155	93
THIS PERIOD	4	3	75	9	6	67
TOTAL TO DATE	80	76	95	176	161	91
TOTAL CONTRACT	88	76	86	194	161	83

WEST JAVA I HOME OFFICE MAN MONTHS & SALARIES BUDGET VS ACTUAL

EXHIBIT I F

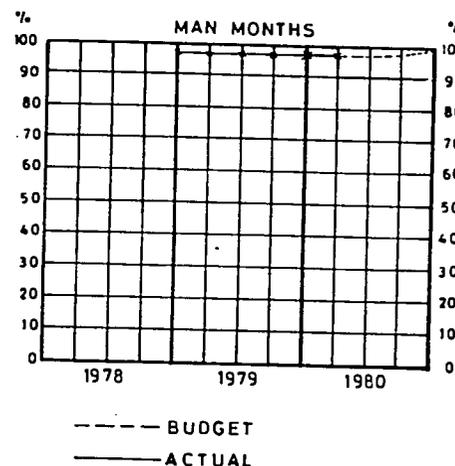
AS OF 27 MARCH 1980

TOTAL HOME OFFICE



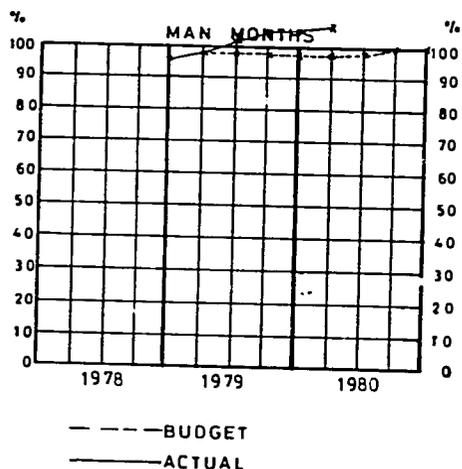
	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	239	264	110	404	435	108
THIS PERIOD	1	5	500	6	10	167
TOTAL TO DATE	240	269	112	410	445	109
TOTAL CONTRACT	244	269	110	431	445	103

SUPERVISION ONLY



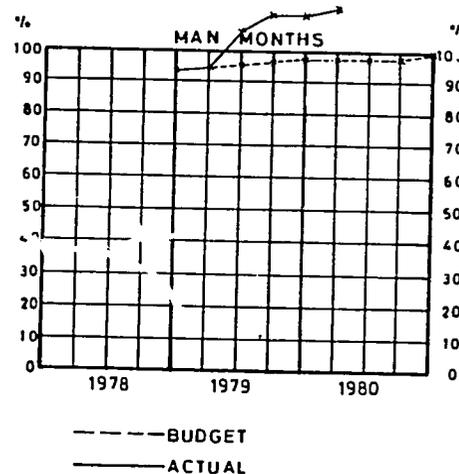
	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	31	31	100	66	66	100
THIS PERIOD	-	-	-	-	-	-
TOTAL TO DATE	31	31	100	66	66	100
TOTAL CONTRACT	32	31	97	70	66	94

ENGINEERING ONLY



	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	122	132	108	225	237	105
THIS PERIOD	1	3	300	6	7	117
TOTAL TO DATE	123	135	110	231	244	106
TOTAL CONTRACT	124	135	109	238	244	103

ADMINISTRATION ONLY



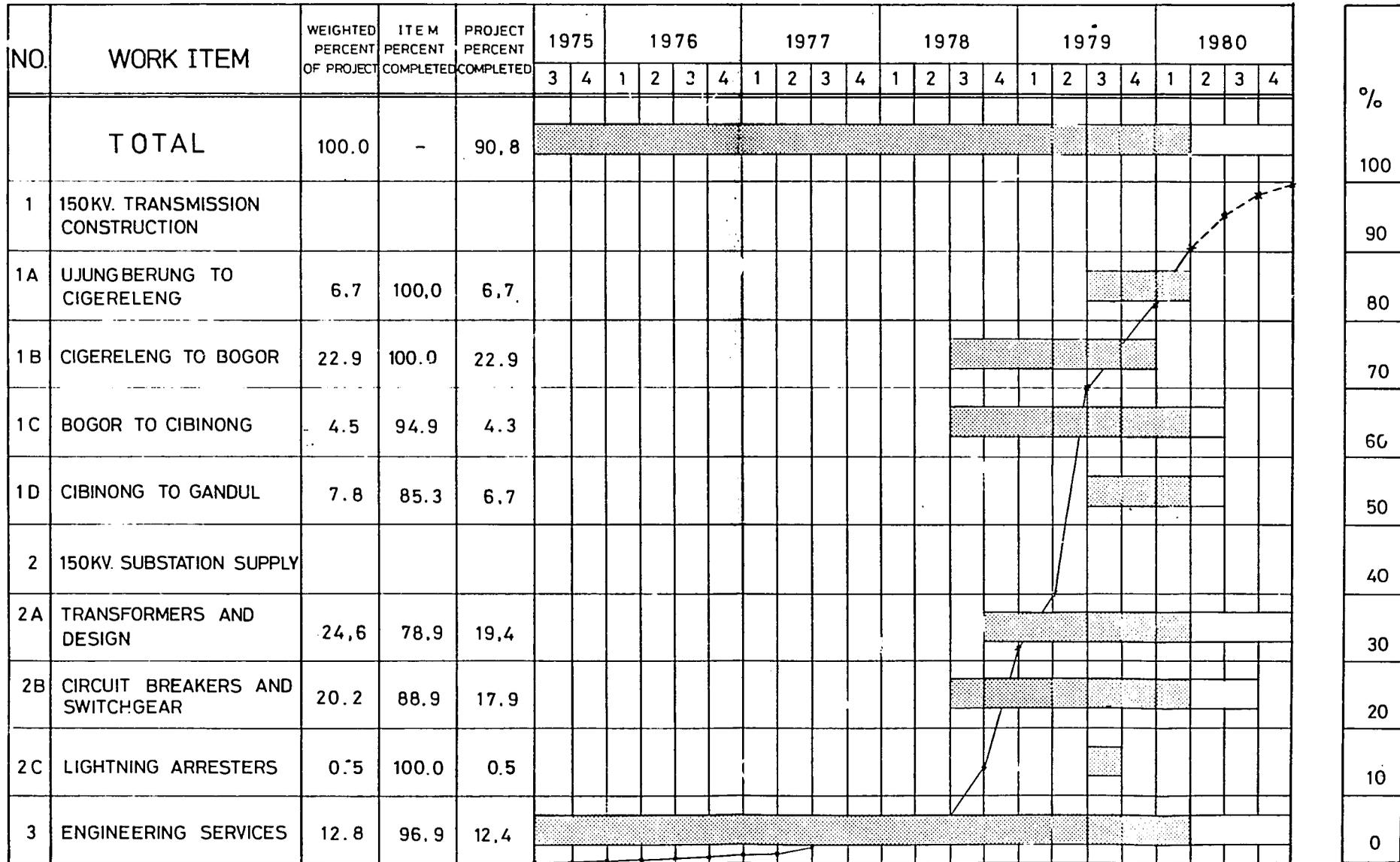
	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	86	101	117	113	132	117
THIS PERIOD	-	2	-	-	3	-
TOTAL TO DATE	86	103	120	113	135	120
TOTAL CONTRACT	88	103	117	123	135	110

WEST JAVA II PROJECT FINANCIAL PLAN AND CASH FLOW U.S. DOLLARS (000)

NO.	WORK ITEM	(A) ALLOCATION OF FUNDS	FUNDS REQUIRED TO COMPLETE PROJECT																							
			1975		1976				1977				1978				1979				1980					
			3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
	TOTAL	19,697	-	27	36	34	105	116	106	116	129	279	178	264	4108	1822	4462	1783	1712	1158	1444	1147	553	118		
1	150 KV TRANSMISSION CONSTRUCTION																									
1A	UJUNG-BERUNG TO CIGERELENG	1,323																	512	358	453					
1B	CIGERELENG TO BOGOR	4,511													3202	344	770	28	90	77						
1C	BOGOR TO CIBINONG	877													622	67	50	-	23	40	30	45				
1D	CIBINONG TO GANDUL	1,534																	593	416	299	226				
2	150 KV SUBSTATION SUPPLY																									
2A	TRANSFORMERS AND DESIGN	4,855														153	2643	530	254	129	122	487	437	100		
2B	CIRCUIT BREAKERS AND SWITCHGEAR	3,986													97	1048	869	1077		14	437	356	88			
2C	LIGHTNING ARRESTERS	88																	88							
3	ENGINEERING SERVICES	2,523		27	36	34	105	116	106	116	129	279	178	264	187	210	130	148	152	124	103	33	28	18		

(A) INCLUDES FUNDS COMMITTED, IN PROCESS OF BEING COMMITTED and	BANK CHARGES	\$ 19,697	SPENT TO DATE	\$ 17,879
	UNCOMMITTED	3	NEED TO COMPLETE	1,818
	TOTAL LOAN	\$ 19,700	UNCOMMITTED	3
			TOTAL LOAN	\$ 19,700

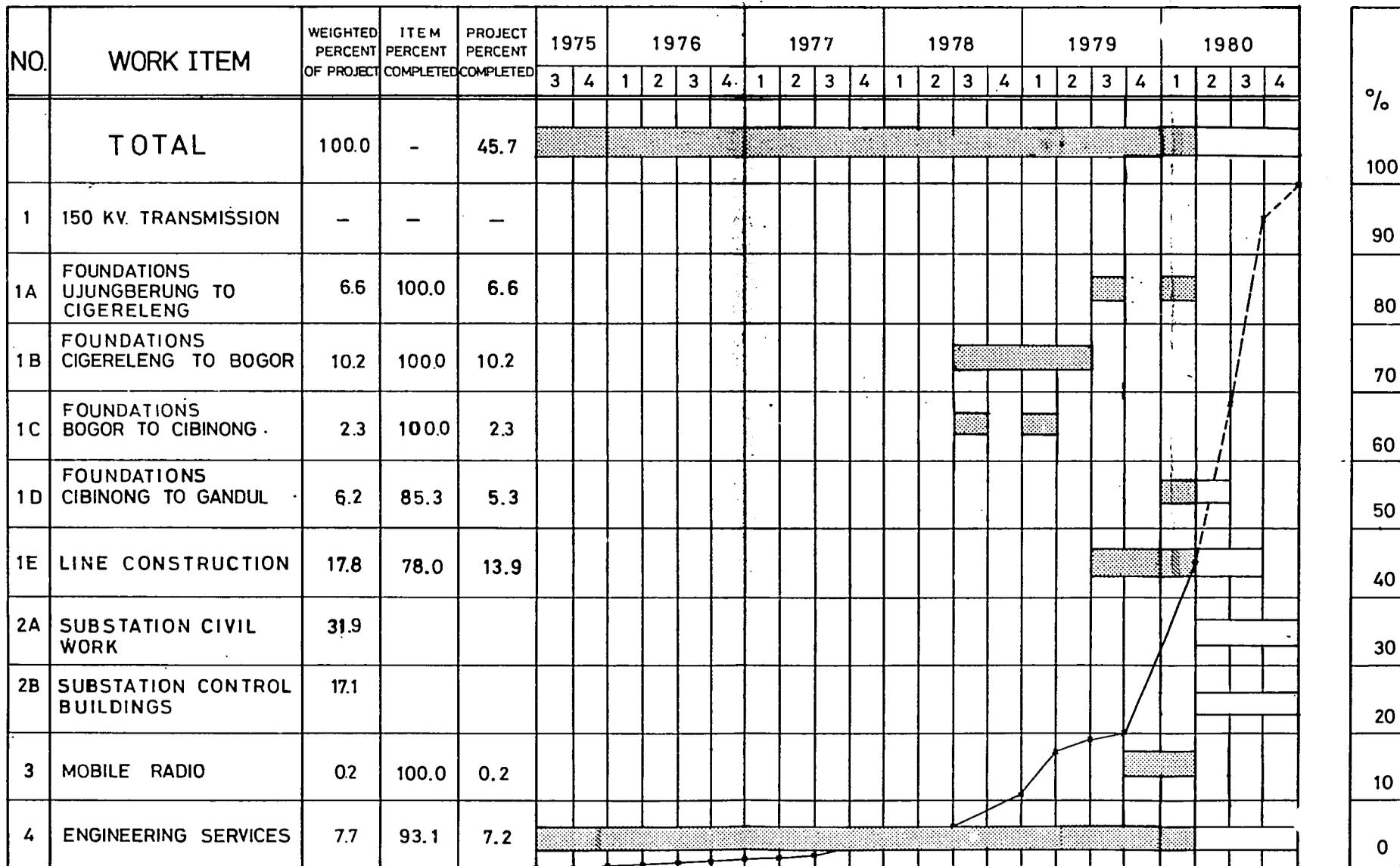
WEST JAVA II PROJECT PROGRESS SCHEDULE US DOLLARS



**WEST JAVA II PROJECT
FINANCIAL PLAN AND CASH FLOW
INDONESIAN RUPIAH (000,000)**

NO.	WORK ITEM	ALLOCATION OF FUNDS	FUNDS REQUIRED TO COMPLETE PROJECT																							
			1975		1976				1977				1978				1979				1980					
			3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
	TOTAL	2,633		3	5	4	6	5	9	7	10	14	13	13	133	178	48	24	348	64	319	602	697	131		
1	150 KV TRANSMISSION																									
1A	FOUNDATIONS UJUNG BERUNG TO CIGERELENG	175																	166		9					
1B	FOUNDATIONS CIGERELENG TO BOGOR	269														72	169	12	16							
1C	FOUNDATIONS BOGOR TO CIBINONG	60														33		27								
1D	FOUNDATIONS CIBINONG TO GANDUL	163																			139	24				
1E	LINE CONSTRUCTION	469																	164	49	153	69	34			
2	150 KV SUBSTATIONS	-																								
2A	CIVIL WORK	839																					325	435	79	
2B	CONTROL BUILDINGS	450																					175	225	50	
3	MOBILE RADIO	5																			2	3				
4	ENGINEERING SERVICES	203	-	3	5	4	6	5	9	7	10	14	13	13	28	9	9	8	18	13	15	9	3	2		

WEST JAVA II PROJECT PROGRESS SCHEDULE INDONESIAN RUPIAH

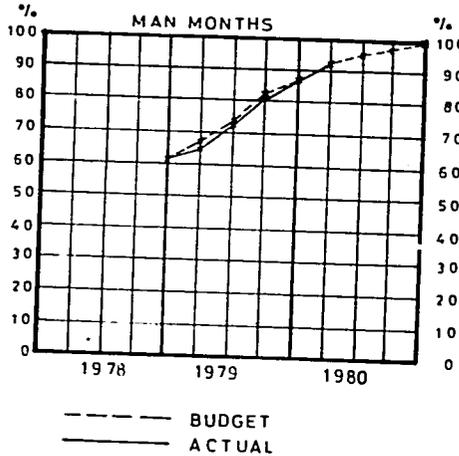


WEST JAVA II FIELD STAFF MAN MONTHS & SALARIES BUDGET VS ACTUAL

EXHIBIT II E

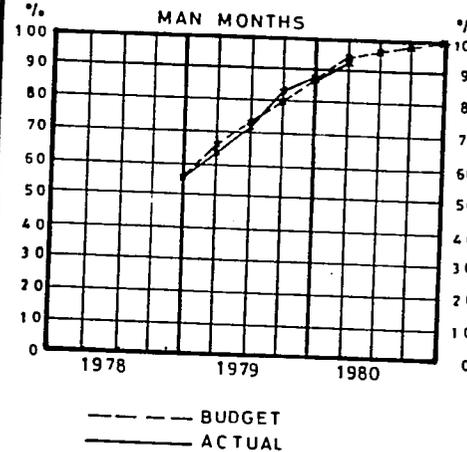
AS OF 27 MARCH 1980

TOTAL FIELD STAFF



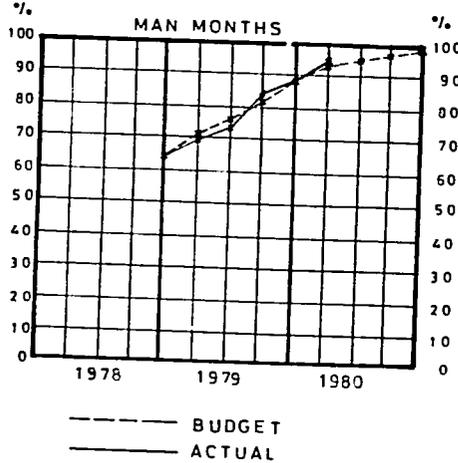
	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	246	244	99	452	438	97
THIS PERIOD	12	13	108	23	22	96
TOTAL TO DATE	258	257	100	475	460	97
TOTAL CONTRACT	279	257	92	521	460	88

CONSTRUCTION ONLY



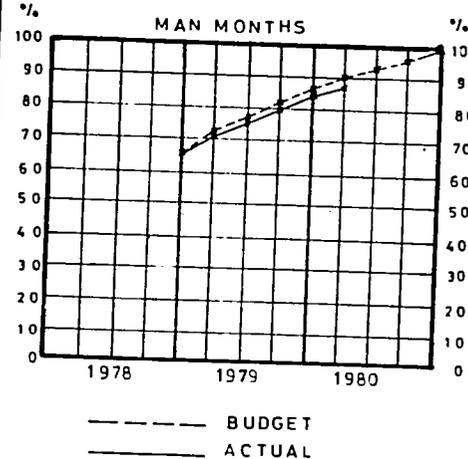
	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	119	120	101	204	200	98
THIS PERIOD	7	7	100	12	11	92
TOTAL TO DATE	126	127	101	216	211	98
TOTAL CONTRACT	136	127	93	235	211	90

ENGINEERING ONLY



	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	56	56	100	102	102	100
THIS PERIOD	2	3	150	4	5	125
TOTAL TO DATE	58	59	102	106	107	101
TOTAL CONTRACT	62	59	95	116	107	92

ADMINISTRATION ONLY



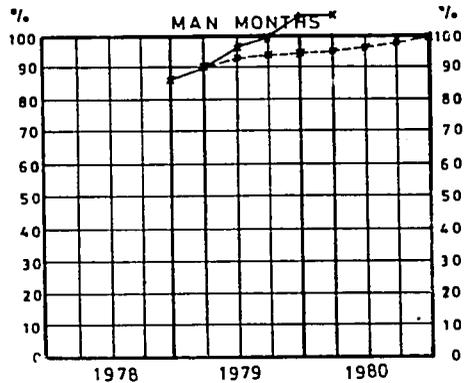
	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	71	68	96	146	136	93
THIS PERIOD	3	3	100	7	6	86
TOTAL TO DATE	74	71	96	153	142	93
TOTAL CONTRACT	81	71	88	170	142	84

WEST JAVA II HOME OFFICE MAN MONTHS & SALARIES BUDGET VS ACTUAL

EXHIBIT II F

AS OF 27. MARCH 1980.

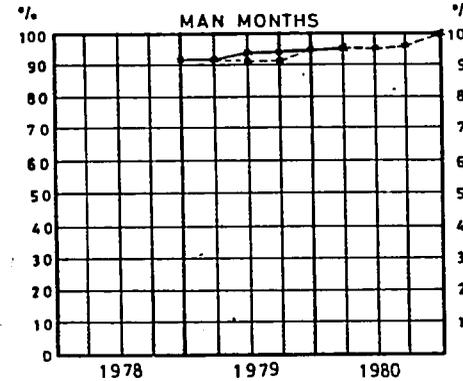
TOTAL HOME OFFICE



	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	139	157	113	254	285	112
THIS PERIOD	1	1	100	3	2	67
TOTAL TO DATE	140	158	113	257	287	112
TOTAL CONTRACT	147	158	107	274	287	105

----- BUDGET
————— ACTUAL

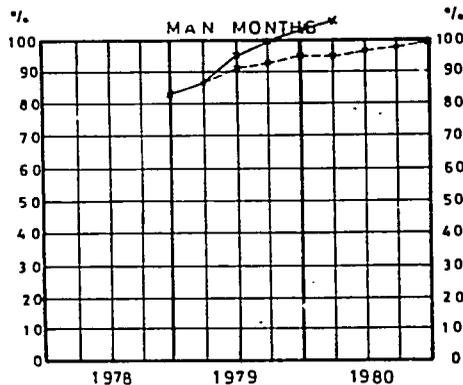
SUPERVISION ONLY



	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	21	21	100	56	54	96
THIS PERIOD	-	-	-	-	-	-
TOTAL TO DATE	21	21	100	56	54	96
TOTAL CONTRACT	22	21	95	60	54	90

----- BUDGET
————— ACTUAL

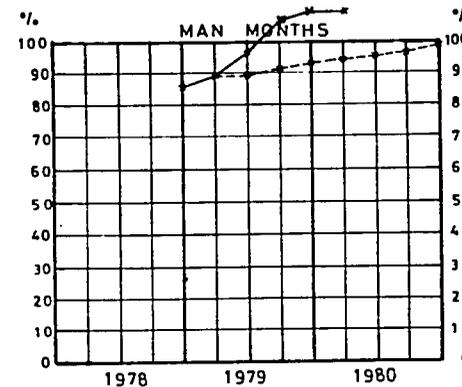
ENGINEERING ONLY



	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	64	72	113	131	153	117
THIS PERIOD	-	1	-	-	1	-
TOTAL TO DATE	64	73	114	131	154	118
TOTAL CONTRACT	67	73	109	140	154	110

----- BUDGET
————— ACTUAL

ADMINISTRATION ONLY



	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	54	64	119	67	78	116
THIS PERIOD	1	-	-	3	1	33
TOTAL TO DATE	55	64	116	70	79	113
TOTAL CONTRACT	58	64	110	74	79	107

----- BUDGET
————— ACTUAL

**INVOICES SUBMITTED AND
PAYMENTS RECEIVED**

QUARTER ENDED : 31 MARCH 1980

WEST JAVA I PROJECT

	U . S . DOLLARS		INDONESIAN RUPIAH *	
	INVOICES SUBMITTED	PAYMENTS RECEIVED	INVOICES SUBMITTED	PAYMENTS RECEIVED
PREVIOUS	\$3,339,489.84	\$ 3,150,634.61	Rp.213,861,853	Rp.211,482,949
REPORT PERIOD	\$ 137,271,14	\$ 146,797,20	Rp. 8,468,396	Rp. 7,300,852
TOTAL	\$ 3,476,760,98	\$ 3,297,431,81	Rp.222,330,249	Rp.218,783,801

* Revised to exclude Non-
Budget items previously
reported.

WEST JAVA II PROJECT

	U . S . DOLLARS		INDONESIAN RUPIAH *	
	INVOICES SUBMITTED	PAYMENTS RECEIVED	INVOICES SUBMITTED	PAYMENTS RECEIVED
PREVIOUS	\$2,341,286,26	\$ 2,190,748.40	Rp.173,926,257	Rp.168.712,500
REPORT PERIOD	\$ 102,589,65	\$ 122,590,75	Rp. 14,656,595	Rp. 13,105,596
TOTAL	\$ 2,443,875,91	\$ 2,313,339,15	Rp.188,582,852	Rp.181,818,096

* Revised to exclude Non -
Budget items previously
reported.

PERSONNEL MAN MONTHS
AS OF 31 MARCH 1980

WEST JAVA I PROJECT

COMPANY	U S	INDONESIAN	THIRD COUNTRY
CHAS.T.MAIN	624.2	18.1	27.2
P L N	—	5,772.0	—
OTHER	—	—	—
TOTAL	624.2	5,790.1	27.2

WEST JAVA II PROJECT.

CHAS.T.MAIN	385.5	16.3	12.5
P L N	—	3,457.0	—
OTHER	—	—	—
TOTAL	385.5	3,473.3	12.5

CHAS.T.MAIN INTERNATIONAL, INC.