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ISN-31415

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PERUSAHAAN UMUM LISTRIK NEGARA
JAKARTA , INDONESIA

WEST JAVA
ELECTRIC TRANSMISSION PROJECTS

QUARTERLY REPORT

JANUARY – MARCH 1979

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 LISTRIK NEGARA CONSULTANT
CHAS. T. MAIN INTERNATIONAL, INC.
BANDUNG - TROMOLPOS CD, TEL: 56869, JL. PROGO 32
JAKARTA - P.O. BOX 100, KBT KEDAYORAN TIMUR, TEL: 778928 JL. WIJAYA 1/61
SEMARANG - P.O. BOX 28, TEL: 311702 JL. SLAMET 1

1 June 1979

Letter No. B - 10024

Ir. Semiawan
PERUSAHAAN UMUM LISTRIK NEGARA
Proyek Induk Jaringan Jawa Barat & Jakarta Raya
Jl. Cililitan Besar No. 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, enclcd are three (3) copies of ENGINEER'S Quarterly Report for the period 1 January 1979 through 31 March 1979.

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

R.W. Malchow
R.W. Malchow
Project Manager

CJW/sa.-

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

WEST JAVA ELECTRIC TRANSMISSION PROJECTS
QUARTERLY PROGRESS REPORT
FOR THE QUARTER 1 JANUARY 1979 - 31 MARCH 1979

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 the engineering design and construction management for the 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.

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 include 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.

SECTION II

FINANCE AND ADMINISTRATION

A. FINANCE INFORMATION

1. US Dollar Costs

Invoices in the amount of US \$ 2,834,964.82 (WJ I) and US \$ 1,916,693.78 (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 amounts of Rp. 183.021.696,65 (WJ I) and Rp. 145.053.942,50 (WJ II) for local costs incurred have been submitted to PLN. Exhibits IC and IIC, Financial Plan 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.

B. ADMINISTRATIVE INFORMATION

1. West Java I Contract Data

(a) No. Pj.017/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,-
(b)	No. Pj.153/PST/77	5 September 1977	US \$ 2,531,335.58
	Amendment No. 1	10 July 1978	
	Amendment No. 2	In Process	
	Irby Construction Company		
	Tower Steel, Insulators and Accessories		
(c)	No. Pj.202/PST/77	28 November 1977	US \$ 284,289.50
	Amendment No.	30 November 1978	US \$ 10,449.56
	Copperweld Industries		
	Shield Wire		
(d)	No. Pj. 203/PST/77	28 November 1977	US \$ 1,906,391.70
	Amendment No. 1	10 July 1978	US \$ 54,615.55
	Amendment No. 2	30 March 1979	US \$ 30,914.45
	South Wire Company		
	Conductor		
(e)	No. Pj.050/PST/78	10 March 1978	US \$ 369,473.98
	Amendment No. 1	13 December 1978	US \$ 35,669.44
	Tension Stringing Equipment Co.		
	Wire Stringing Equipment		
(f)	No. Pj.051/PST/78	10 March 1978	US \$ 87,852.00
	Ohio Brass Company		
	Lightning Arresters		
(g)	No. Pj.052/PST/78	11 March 1978	US \$ 4,499,800.74
	Amendment No. 1	In Process	
	Irby Construction Company		
	Substation Equipment		
	Maintenance Tools and Equipment		

(h)	No. Pj.053/PST/78 Amendment No. 1 General Electric Company Substation Equipment	11 March 1978	US \$ 2,452,391.40 In Process
(i)	No. Pj.087/PST/78 Amendment No. 1 Motorola Radio Equipment	11 May 1978	US \$ 395,819.20 In Process
(j)	No. Spj.022/PLN/PI RING/77 Tikon Abadi Foundations - Section I	27 October 1977	Rp. 199.278.000,-
(k)	No. Spj.023/PLN/PI RING/77 Gunung Kencana Foundations - Section IIA	27 October 1977	Rp. 153.445.000,-
(l)	No. Spj.024/PLN/PI RING/77 Dharma Niaga Foundations - Section IIB	27 October 1977	Rp. 164.789.000,-
(m)	No. Spj.010/PLN/PI RING/78-79 P.T. Perfect Circle Tower Erection	8 December 1978	Rp. 132.894.300,-

2. West Java II Contract Data

(a)	No. Pj.023/PST/75	25 January 1975	US \$ 1,541,729.00 Rp. 90.598.149,-
	Amendment No. 1	12 May 1975	US \$ - Rp. -
	Amendment No. 2	12 March 1977	US \$ 856,064.00 Rp. 15.129.504,-
	Amendment No. 3 C.T. Main - Engineering Services	10 January 1979	US \$ 112,000.00 Rp. 97.708.072,-

(b)	No. Pj.152/PST/77	5 September 1977	Rp. 452.526.908,- US \$ 7,744.165.78
	Amendment No. 1 & 2	10 July 1978	Rp. 13.137.605,- US \$ 311,400.72
	Amendment No. 3	In Process	
	Irby Construction Company		
	Transmission Line Construction		
(c)	No. Pj.051/PST/78	10 March 1978	US \$ 87,852.00
	Ohio Brass Company		
	Lightning Arrestors		
(d)	No. Pj.052/PST/78	11 March 1978	US \$ 4,981,321.52
	Amendment No. 1	In Process	
	Irby Construction Comapny		
	Substation Equipment		
(e)	No. Pj.053/PST/78	11 March 1978	US \$ 3,974,100.16
	Amendment No. 1	In Process	
	General Electric Company		
	Substation Equipment		
(f)	No. Spj.001/PLN/PI RING/77	25 April 1977	Rp. 329.553.000,-
	Citac Ltd.		
	Foundations - Sections II and III		

3. West Java I and II Contract Data

(a)	No. Spj.016/PLN/PI RING/77	4 July 1977	Rp. 54.245.000,- For Both Projects
	Sumber Jaya		
	Gounding Material		
(b)	No. Spj.017/PLN/PI RING/77	13 August 1977	Rp. 40.100.000,- For Both Projects
	P.T. Arcon		
	Stub Angles		

SECTION III
GENERAL INFORMATION

A. CONFERENCES AND EVENTS

1. Project Meeting No. 17 was held on 25 January in PLN's Cawang office. Construction progress and Projects status reports were presented and discussed.
2. Project Meeting No. 18 was held on 24 February in PLN's Bandung office. Construction progress, Projects status reports and Personnel matters were discussed.
3. Project Meeting No. 19 was held on 24 March in Cirebon. Construction Progress and Projects status reports were presented and discussed. Current Shipping Schedules and Personnel status were also included in the Meeting.
4. Mr. J. Lyman Davis, Vice - President of Irby Construction Company, was in Indonesia for approximately one month discussing proposed Amendments to the Transmission and Substations Contracts.
5. Mr. H. G. Stockwin, Group Vice - President from MAIN Boston, visited Indonesia between 7 and 15 March to discuss Project business. We were saddened to hear that Mr. Stockwin passed away on 19 March shortly after his return to Boston.

B. PROBLEM AREAS

1. West Java I
 - a. Some of the insulators that were submerged in sea water were shipped to the United States by Irby for testing in Lapp Laboratories. No word as to the results of the test. It was decided between PLN, MAIN and Irby to switch the submerged insulators for West Java I with non-submerged insulators for West Java II. This would keep all the submerged insulators in one location.

b. Tower steel - During the period representatives from Teststeels Ltd. came to Indonesia to see and discuss the damage and galvanizing problems with the steel supplied. The discoloration of some of the steel was explained by Teststeels as being " White Rust " caused by heavy exposure to sea air while being transhipped from Singapore to Cirebon. They also presented statements with passages from a book entitled Atmospheric Corrosion Resistance Zinc published in 1965 by the Zinc Development Association, describing " White Rust ". The phenomenon referred to as " White Rust " is the oxidizing of the outer layer of zinc of the galvanized coating. This outer layer of zinc will deteriorate in time even in a good environment. However, over exposing the galvanized steel to sea air and sea water accelerated the deterioration of the outer layer of zinc, which in turn shortens the life expectancy of the galvanizing. C.T. Main instructed Irby where " White Rust " exists to cover the outer zinc with Galvanox.

2. West Java II

a. Property acquisition is critical on the Bundle Conductor Line Sections, Ujungberung - Cigereleng and Cibinong - Gandul.

SECTION IV

PERSONNEL

A. ENGINEER

1. Mr. W.A. Arnold, former Construction Supervisor, completed his work on the West Java I Project on 8 March. He is now assigned to the Rural Electrification Project.
2. On 14 February, MAIN submitted the resume and bio-data of Mr. C.L. Crume for PLN's approval for the position of Substation Construction Engineer for both Projects. On 8 March PLN approved Mr. Crume and Immigration documents are now being processed.
3. As of 31 March, ENGINEER Staff 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 Admin.	10 Sep. 1974
J.C. Harkey	Substation Engineer	15 Oct. 1977
D.L. Frye	Transmission Engineer	3 Jan. 1978
W.A. Villegas	Supervisor of Stores	25 Jul. 1977
J.P. Radda	Administration Assistant	19 Jun. 1978
J.R. Knowles	Supervisor of Equip. Maint.	2 Aug. 1978
<u>West Java I</u>		
R.C. Van Nest	Superintendent of Constr.	17 Feb. 1977
Zainal Saur	Construction Supervisor	16 Mar. 1978
C.V. Silman	Construction Supervisor	1 Jun. 1978
P.V. Wilson	Construction Supervisor	15 Dec. 1978
<u>West Java II</u>		
J.P. Christensen	Construction Inspector	6 Sep. 1977
D.L. Hawks	Construction Inspector	10 Apr. 1978

B. PLN

1. As of 31 March, the Project Staff was as follows

<u>JOB TITLE</u>	<u>NUMBER</u>
Transmission Liaison Engineer	1
Logistics Coordinator	1
Secretaries	5
Draftsmen	6
Accounting Clerks	2
Drivers	16

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 II.

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 DESIGN

1. Span Length check on Line Section Ujungberung - Bandung Utara was completed during the period. To date, property has not been acquired.
2. The review of Foundation As-builts and concrete cylinder breaks for acceptance of foundations continued during the period.
3. Foundation repair work where inadequate concrete and As-builts exist continued during the period.

B. WEST JAVA I TRANSMISSION CONSTRUCTION

1. Section I Foundations - Contractors : Tikon Abadi / Dharma Niaga
 - a. Foundation construction and repair work were completed during the period. There are 167 towers in this Section.
2. Section II A Foundations - Contractors : Gunung Kencana / Citac
 - a. Foundation construction was completed during the period. There are 154 towers in this Section. Four tower foundations require repair.
3. Section II B Foundations - Contractors : Dharma Niaga / Tikon Abadi
 - a. A total of 88 tower foundations have been poured to date. This completes the foundations to the Ujungberung Substation. Remaining are 51 tower locations from Ujungberung to Bandung Utara. The Contractors began the survey check on this section during the period.
4. Tower Erection
 - a. To date, PLN crews have erected 115 towers and Contractor

(P.T. Perfect Circle) crews have erected 76 towers.
Shake - down crews are now working on the erected towers.

C. WEST JAVA II TRANSMISSION DESIGN

1. Stub angle fabrication for bundle conductor tower type S1 was completed during the period. Fabrication of stub angles for bundle conductor tower types S2, D1 and D2 is progressing slowly.
2. Survey line check of Line Section Cibinong - Gandul was completed during the period. Final tower quantities were determined.
3. Right-of-way staking, property inventory and clearing began during the period but progress is slow.
4. Plan and Profile drawings are complete for all sections of the line.
5. Property acquisition for Line Sections Ujungberung - Cigereleng and Cibinong - Gandul not completed as yet.
6. The IFB for Bundled Conductor Tower Foundations for Line Section Ujungberung - Cigereleng was completed during the period and will be issued to prospective bidders in early April.

D. WEST JAVA II TRANSMISSION CONSTRUCTION

1. Section II Foundations (Cigereleng - Bogor) - Contractor : Citac
 - a. Foundation construction and acceptance were completed during the period. There are 269 towers in this Section.
2. Section III Foundations (Bogor - Cibinong) - Contractor : Citac
 - a. Foundation construction and acceptance were completed during the period. There are 60 towers in this Section.
3. Sections II and III Tower Erection - Contractor : Irby
 - a. During the period, 13 complete towers were erected and 5 were accepted. Shake down work is underway on the other 8 towers.

- b. Some 37 towers are partly erected. They consist of legs, body extensions and lower sections of tower bodies.
- c. Tower erection is proceeding slowly due to lack of tower steel.

E. SUBSTATIONS

1. During the period, meetings were held with PLN to discuss the IFB's for Substation Construction. The IFB's were revised accordingly.
2. The IFB for the Tegal addition was submitted to PLN.
3. The structural and architectural drawings for the Ujungberung Substation were completed by ITB. Work continues on the electrical drawings. Control house drawings were completed.
4. Various changes for the Ujungberung Substation were completed by MAIN Charlotte. The revised drawings should be received in early April.
5. Cogelex responded concerning the Frequencies of the wave traps and Fabrication is underway.
6. The completion of drawings for the grounding resistor foundations has been delayed due to lack of information from the supplier.
7. Some substation equipment was damaged while transporting from the port to the storage areas. This equipment must be replaced. Steps have been taken to ensure that future transporting will be done safely.

F. MOBILE RADIO

1. Permits to import and operate Mobile Radio equipment were approved by Telekomunikasi.
2. The first shipment of radio equipment arrived in Jakarta and is in

the process of being cleared through Customs.

3. Space for a radio repair shop was made available at the Cigereleng warehouse.
4. Land for the repeater sites has not been obtained as yet.
If the locations at Puncak and Sumedang are changed due to the problem of land acquisition, the Motorola Performance Guarantee may be voided. This matter is being investigated.
5. Two 40 meter guyed towers will be ordered. It is also possible to use a fully extended T1A tower, if there is a spare one.
This is being checked.

G. MATERIAL SHIPMENTS

1. The status of Material Shipments through 31 March 1979 is shown on the following page.

Status of Material Shipments

<u>Contract Number</u>	<u>Contractor/ Supplier</u>	<u>US \$ Value of Material</u>		<u>Percent of total</u>
		<u>Total Contract</u>	<u>Received through 31 March 1979</u>	
Pj.152/PST/77	Irby	6,585,447.00	4,943,114.78	75%
Pj.153/PST/77	Irby	2,531,335.58	2,395,384.69	95%
Pj.202/PST/77	Copperweld	294,739.06	281,969.08	96%
Pj.203/PST/77	Southwire	1,991,921.70	505,783.47	25%
Pj.050/PST/78	Tension Stringing	405,143.42	317,388.60	78%
Pj.051/PST/78	Ohio Brass	175,704.00	-	-
Pj.052/PST/78	Irby	8,549,461.34	4,748,488.87	56%
Pj.053/PST/78	General Electric	6,426,491.56	2,891,301.33	45%
Pj.087/PST/78	Motorola	359,169.20	277,554.35	77%

SECTION VI
TRAINING ACTIVITIES

A. On-the-job Training in connection with tower erection is going well.

B. Wire Stringing School was conducted from 5 March thru 23 March. Thirty-five PLN personnel attended the class sessions. The lectures consisted of the fundamentals of safety, setup, stringing and pulling of wire. Movies and visual aids were utilized.

Three days of the last week were spent in Jakarta observing wire stringing in the field.

WEST JAVA I
FINANCIAL PLAN
U.S. DOLLAR

NO.	WORK ITEM	(A) ALLOCATION OF FUNDS	1974		1975				
			3	4	1	2	3	4	1
	TOTAL	16,869	63	106	156	115	104	145	117
1	150 KV TRANSMISSION SUPPLY	-							
1A	CONDUCTOR	2,004							
1B	SHIELD WIRE	297							
1C	TOWERS AND ACCESSORIES	2,859							
2	150 KV SUBSTATION SUPPLY	-							
2A	TRANSFORMERS AND DESIGN	3,079							
2B	CIRCUIT BREAKERS AND SWITCHGEAR	2,460							
2C	LIGHTNING ARRESTERS	88							
3	TOOLS AND EQUIPMENT SUPPLY	-							
3A	VEHICLES AND TOOLS	1,434							
3B	TENSIONING EQUIPMENT	406							
4	MOBILE RADIO SUPPLY	397							
5	CONST. MANAGEMENT SERVICES	3,845	63	106	156	115	104	145	117

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

\$ 16.
\$ 17.2

WEST JAVA I PROJECT

FINANCIAL PLAN AND CASH FLOW

U.S. DOLLARS (000)

	(A) ALLOCATION OF FUNDS	FUNDS REQUIRED TO COMPLETE																	
		1974		1975				1976				1977				1978			
		3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	
	16,869	63	106	156	115	104	145	117	89	115	79	127	130	128	214	202	271	21	
APPLY	-																		
	2,004																		
	297																		
S	2,859																		
.Y	-																		
IGN	3,079																		
	2,460																		
	88																		
IPPLY	-																		
	1,434																		
	406																		
	397																		
VICES	2,845	63	106	156	115	104	145	117	89	115	79	127	130	128	214	202	271		

PROCESS OF BEING COMMITTED and BANK CHARGES UNCOMMITTED TOTAL LOAN	\$ 16,869 331 <hr style="width: 50%; margin: 0;"/> \$ 17,200	SPENT TO DATE NEED TO COMPLETE UNCOMMITTED TOTAL LOAN	\$ 11,792 5,077 <hr style="width: 50%; margin: 0;"/> 331 \$ 17,200
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PROJECT AND CASH FLOW S (000)

EXHIBIT 1A

FUNDS REQUIRED TO COMPLETE PROJECT

1976			1977				1978				1979				1980			
2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
89	115	79	127	130	128	214	202	271	265	8550	816	3248	747	592	170	163	102	55
										406	50	1344	118	86				
										234	20	32	11					
										1907	200	275	165	312				
										2919	107	53						
										1502	202	600	156					
												80	8					
										1360	50	24						
												333	70	3				
												327	49	21				
89	115	79	127	130	128	214	202	271	265	222	187	180	170	170	170	163	102	55

SPENT TO DATE \$ 11,792
 NEED TO COMPLETE 5,077
 UNCOMMITTED 381

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

NO.	WORK ITEM	(A) ALLOCATION OF FUNDS								
			1975		1976				10	
			3	4	1	2	3	4		
	TOTAL	19,697	-	27	36	34	105	116	10	
1	150 KV TRANSMISSION CONSTRUCTION									
1A	UJUNG - BERUNG TO CIGERELENG	1,300								
1B	CIGERELENG TO BOGOR	4,434								
1C	BOGOR TO CIBINONG	863								
1D	CIBINONG TO GANDUL	1,508								
2	150 KV SUBSTATION SUPPLY									
2A	TRANSFORMERS AND DESIGN	4,996								
2B	CIRCUIT BREAKERS AND SWITCHGEAR	3,986								
2C	LIGHTNING ARRESTERS	88								
3	ENGINEERING SERVICES	2,522		27	36	34	105	116	10	

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

\$ 19,
\$ 19,

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

	(A) ALLOCATION OF FUNDS	FUNDS REQUIRED TO COMPLETE PROJECT															
		1975		1976				1977				1978					
		3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2
	19,697	-	27	36	34	105	116	106	116	129	279	178	358	1550	3420	1210	62
GERELENG	1,300												15	219	395	11	26
DR	4,434												51	745	1625	558	58
	863												10	145	332	94	11
L.	1,508												18	254	458	13	30
IPPLY																	
DESIGN	4,996																22
ND	3,986														400	404	252
IS	88																8
ES	2,522		27	36	34	105	116	106	116	129	279	178	264	187	210	130	10

EXCESS OF BEING COMMITTED and BANK CHARGES	\$	19,697		SPENT TO DATE	\$	7.664
UNCOMMITTED		3		NEED TO COMPLETE		12.033
TOTAL LOAN	\$	19,700		UNCOMMITTED		3
				TOTAL LOAN	\$	19,700

31 MARCH 1979

WEST JAVA
PROGRESS
US DO

No.	WORK ITEM	WEIGHTED PERCENT OF PROJECT	ITEM PERCENT COMPLETED	PROJECT PERCENT COMPLETED	1974		1975				
					3	4	1	2	3	4	
	TOTAL	100.0	—	69.9							
1A	CONDUCTOR	11.9	22.8	2.7							
1B	SHIELD WIRE	1.8	85.5	1.5							
1C	TOWERS AND ACCESSORIES	16.9	73.7	12.5							
2A	TRANSFORMERS & DESIGN	18.2	98.3	17.9							
2B	CIRCUIT BREAKERS SWITCHGEAR	14.6	69.3	10.1							
2C	LIGHTNING ARRESTERS	0.5	—	—							
3A	VEHICLES AND TOOLS	8.5	98.3	8.4							
3B	TENSIONING EQUIPMENT	2.4	—	—							
4	MOBILE RADIO	2.4	—	—							
5	CONST. MANAGEMENT	22.8	73.7	16.8							

----- SCHEDULED
 _____ ACTUAL

----- SCHEDULED -----
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 <- ACTUAL ->

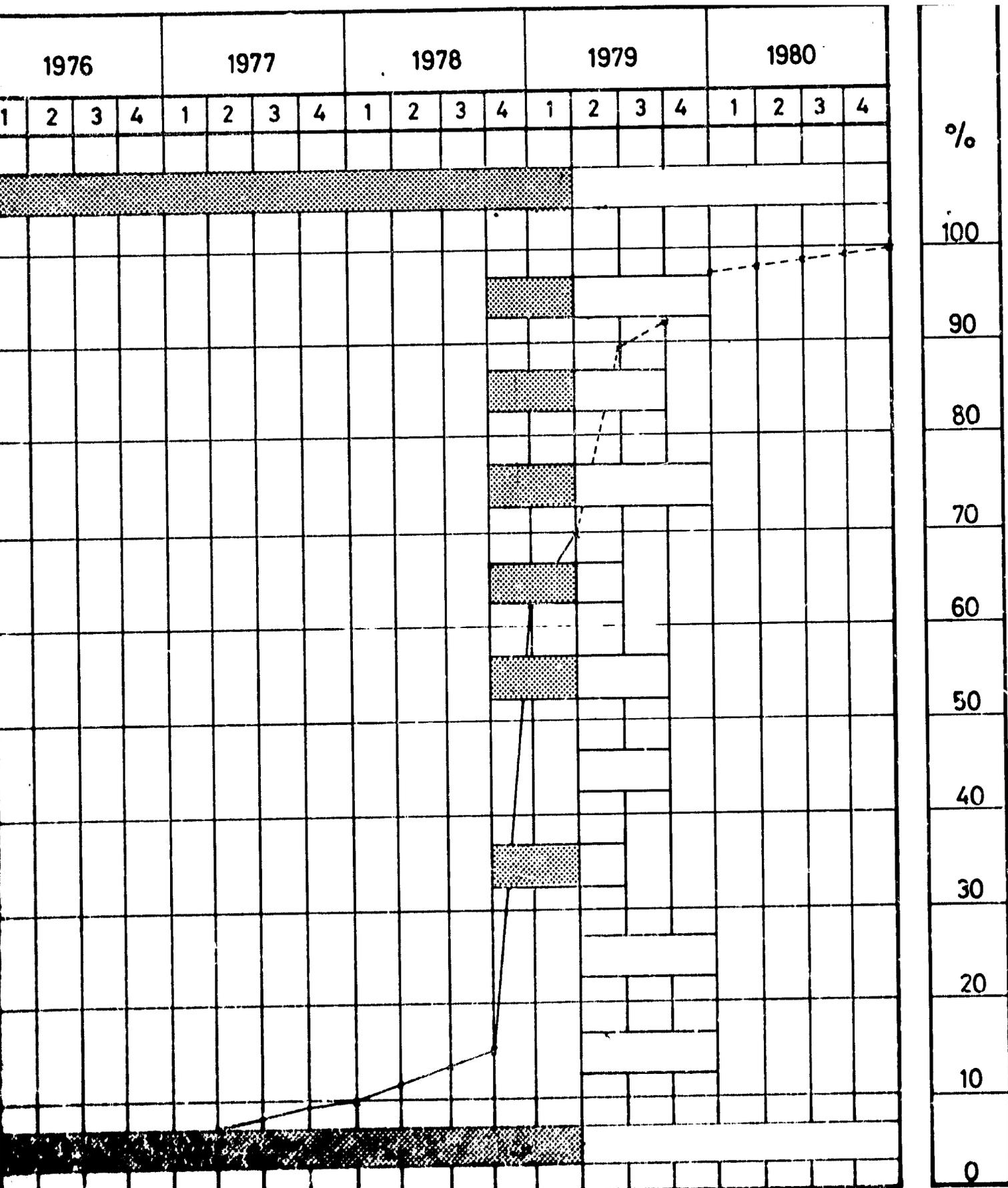
WEST JAVA I PROJECT PROGRESS SCHEDULE US DOLLARS

D I T E M	ITEM PERCENT COMPLETED	PROJECT PERCENT COMPLETED	1974		1975				1976				1977				1978				
			3	4	1	2	3	4	1	2	3	4	1	2	3	4	1				
-	69.9																				
22.8	2.7																				
85.5	1.5																				
73.7	12.5																				
98.3	17.9																				
69.3	10.1																				
-	-																				
98.3	8.4																				
-	-																				
-	-																				
73.7	16.8																				

SCHEDULED

I PROJECT SCHEDULE LARS

EXHIBIT 1B



WEST JAVA
PROGRESS
US DC

NO.	WORK ITEM	WEIGHTED PERCENT OF PROJECT	ITEM PERCENT COMPLETED	PROJECT PERCENT COMPLETED	1975		1976					
					3	4	1	2	3	4	1	
	TOTAL	100.0	-	38.9								
1	150KV. TRANSMISSION CONSTRUCTION											
1A	UJUNGBERUNG TO CIGERELENG	6.6	49.2	3.2								
1B	CIGERELENG TO BOGOR	22.5	67.2	15.1								
1C	BOGOR TO CIBINONG	4.4	67.3	3.1								
1D	CIBINONG TO GANDUL	7.6	49.3	3.7								
2	150KV. SUBSTATION SUPPLY											
2A	TRANSFORMERS AND DESIGN	25.4	-	-								
2B	CIRCUIT BREAKERS AND SWITCHGEAR	20.2	20.2	4.1								
2C	LIGHTNING ARRESTERS	0.5	-	-								
3	ENGINEERING SERVICES	12.8	76.0	9.7								

----- SCHEDULED
----- ACTUAL

← SCHEDULED →
[Hatched Box] [Empty Box]
← ACTUAL →

**PROJECT
AND CASH FLOW
PIAH (000.000)**

FUNDS REQUIRED TO COMPLETE PROJECT

1976			1977				1978				1979				1980				
2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
2	1	2	7	8	9	11	206	237	207	16	171	208	313	326	7	7	7	6	
							127	121	101		103	118							
											53	80							
													150	150					
													100	100					
													50	66					
														3	2				
							62	100	100										
5	2	1	2	7	8	9	11	17	16	6	16	15	10	10	8	7	7	7	6

202

**II PROJECT
AND CASH FLOW
RUPIAH (000,000)**

FUNDS REQUIRED TO COMPLETE PROJECT

6		1977				1978				1979				1980			
3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
6	5	9	7	10	14	13	13	140	182	47	25	308	440	419	8	8	9
												100	79				
								72	169	12	16						
								33		27							
													150	150			
												100	100	143			
												100	100	116			
														3	2		
6	5	9	7	10	14	13	13	35	13	8	9	8	8	8	8	8	9

23

No.	WORK ITEM	WEIGHTED PERCENT OF PROJECT	ITEM PERCENT COMPLETED	PROJECT PERCENT COMPLETED	1974		1975				
					3	4	1	2	3	4	
	TOTAL	100.0	-	52.1							
1A	FOUNDATIONS	31.2	79.3	24.7							
1B	TOWER ERECTION	7.3	39.8	3.0							
1C	WIRE STRINGING	16.4	-	-							
2A	CIVIL WORK	11.0	-	-							
2B	CONTROL BUILDINGS	6.4	-	-							
2C	EQUIPMENT INSTALLATION	-	-	-							
3	MOBILE RADIO	0.3	-	-							
4	WAREHOUSE & STOREYARD	14.4	100.0	14.4							
5	MAINTENANCE GARAGE	-	-	-							
6	CONST. MANAGEMENT	13.0	76.9	10.0							

----- SCHEDULED
 _____ ACTUAL

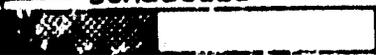
← SCHEDULED →

 ← ACTUAL →

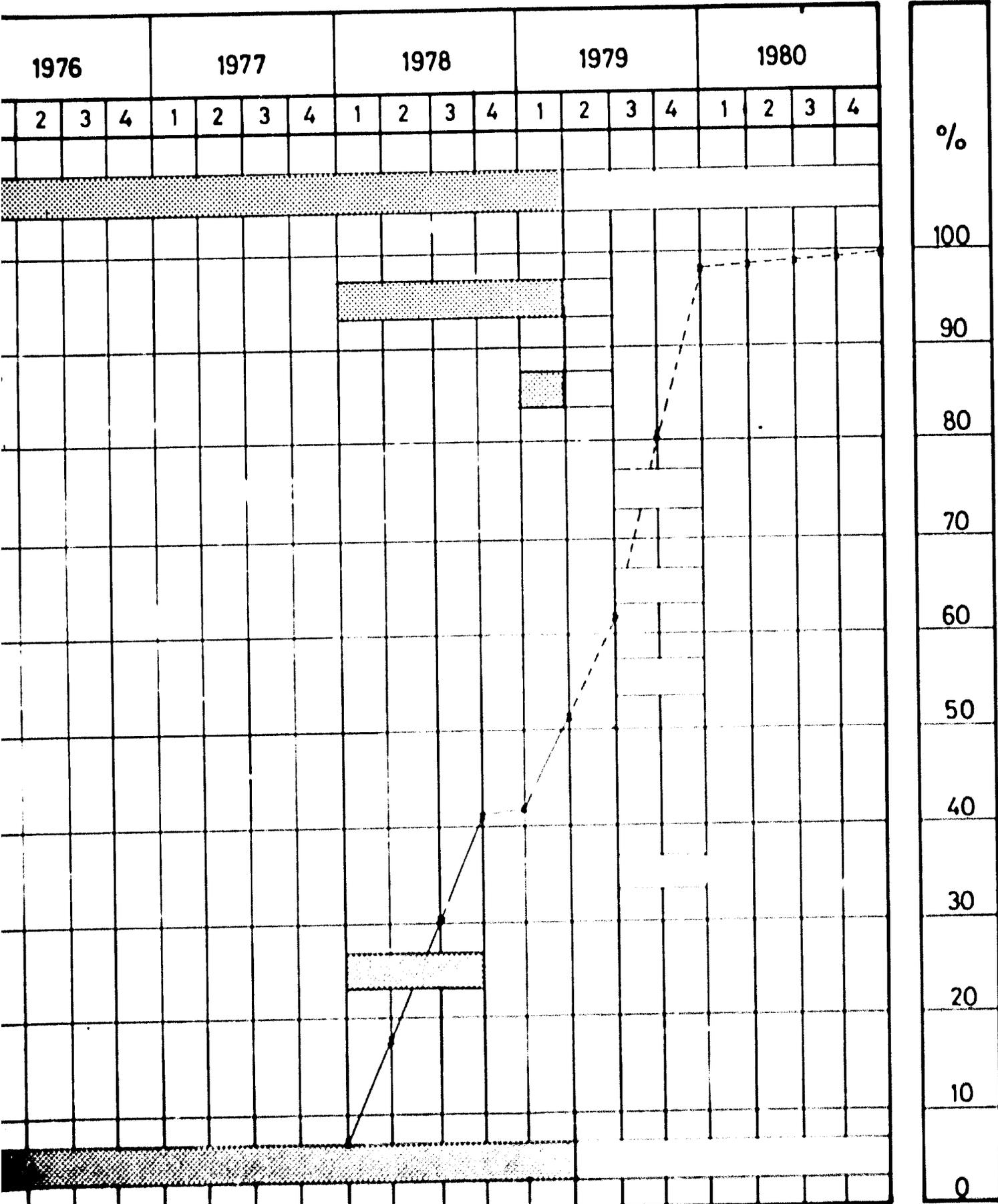
WEST JAVA I PROJECT PROGRESS SCHEDULE INDONESIAN RUPIAH

WEIGHTED PERCENT PROJECT	ITEM PERCENT COMPLETED	PROJECT PERCENT COMPLETED	1974		1975				1976				1977				1978			
			3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
00.0	-	52.1	[SCHEDULED]																	
31.2	79.3	24.7	[SCHEDULED]																	
7.3	39.8	3.0	[SCHEDULED]																	
16.4	-	-	[SCHEDULED]																	
11.0	-	-	[SCHEDULED]																	
6.4	-	-	[SCHEDULED]																	
-	-	-	[SCHEDULED]																	
0.3	-	-	[SCHEDULED]																	
14.4	100.0	14.4	[SCHEDULED]																	
-	-	-	[SCHEDULED]																	
13.0	76.9	10.0	[SCHEDULED]																	

 SCHEDULED



I PROJECT SCHEDULE N RUPIAH



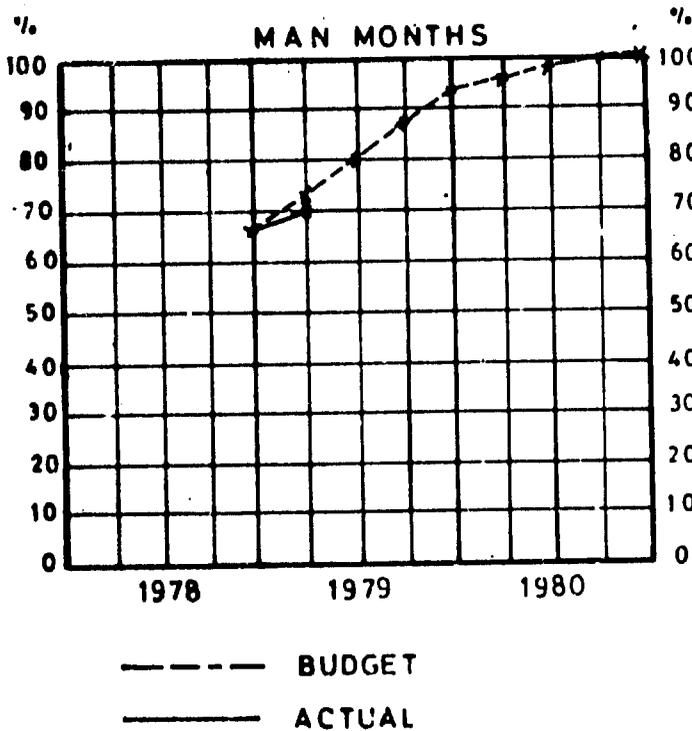
NO.	WORK ITEM	WEIGHTED PERCENT OF PROJECT	ITEM PERCENT COMPLETED	PROJECT PERCENT COMPLETED	1975		1976			
					3	4	1	2	3	4
	TOTAL	100.0	-	27.3						
1	150 KV. TRANSMISSION FOUNDATIONS	-	-	-						
1A	UJUNGBERUNG TO CIGERELENG	10.7	-	-						
1B	CIGERELENG TO BOGOR	16.1	94.0	15.1						
1C	BOGOR TO CIBINONG	3.6	100.0	3.6						
1D	CIBINONG TO GANDUL	17.8	-	-						
2A	SUBSTATION CIVIL WORK	20.5	-	-						
2B	SUBSTATION CONTROL BUILDINGS	18.9	-	-						
2C	SUBSTATION EQUIPMENT INSTALLATION	-	-	-						
3	MOBILE RADIO	0.3	-	-						
4	ENGINEERING SERVICES	12.1	71.4	8.6						



WEST FIELD STAFF M BUDGET

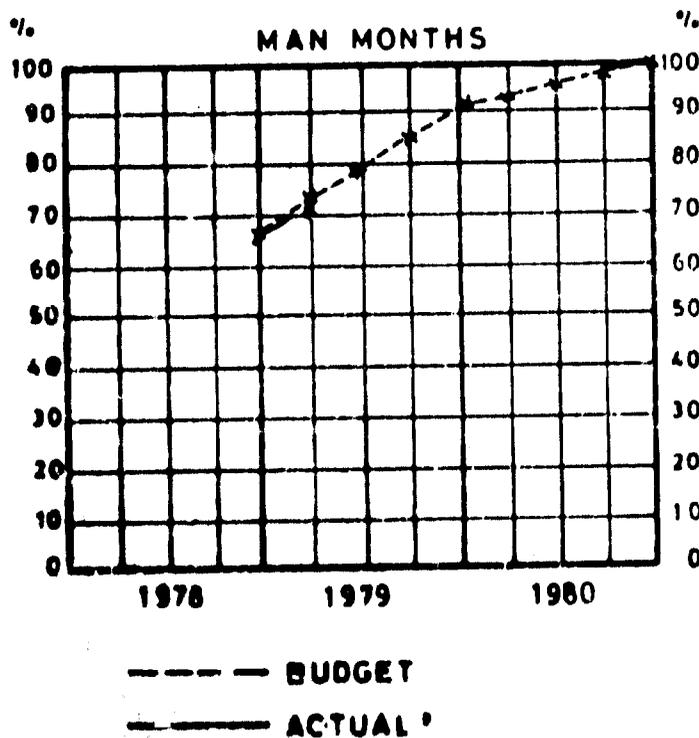
AS OF

TOTAL FIELD STAFF



	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	304	304	100	525	525	100
THIS PERIOD	33	22	67	56	36	64
TOTAL TO DATE	337	326	97	581	561	96
TOTAL CONTRACT	461	326	71	798	561	70

ENGINEERING ONLY



	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	82	82	100	140	140	100
THIS PERIOD	7	3	43	12	6	50
TOTAL TO DATE	89	85	96	152	146	96
TOTAL CONTRACT	120	85	71	206	146	71

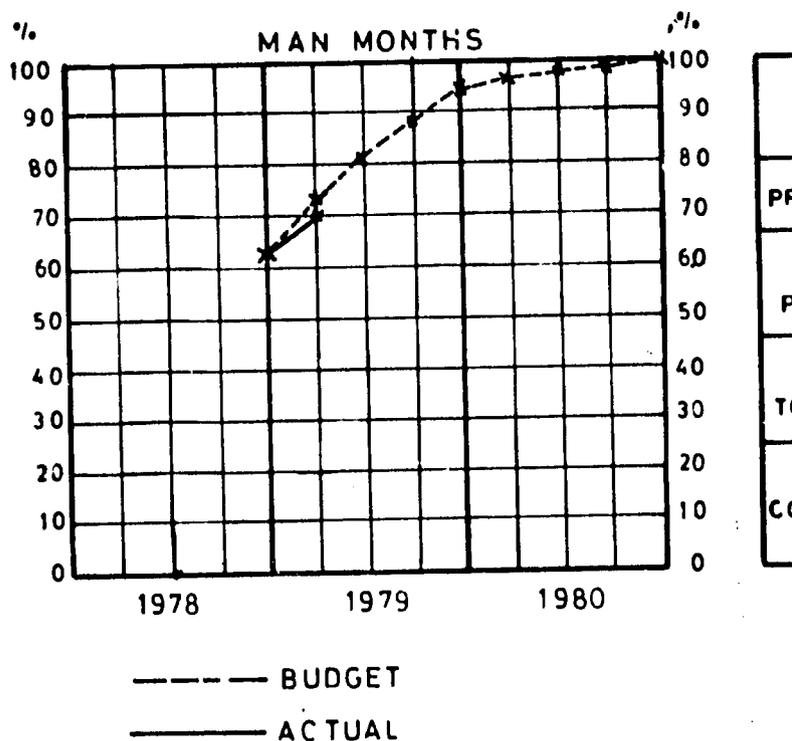
WEST JAVA I FIELD STAFF MAN MONTHS & SALARIES BUDGET VS ACTUAL

AS OF 22 MARCH 1979

FIELD STAFF

	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	304	304	100	525	525	100
THIS PERIOD	33	22	67	56	36	64
TOTAL TO DATE	337	326	97	581	561	96
TOTAL CONTRACT	461	326	71	798	561	70

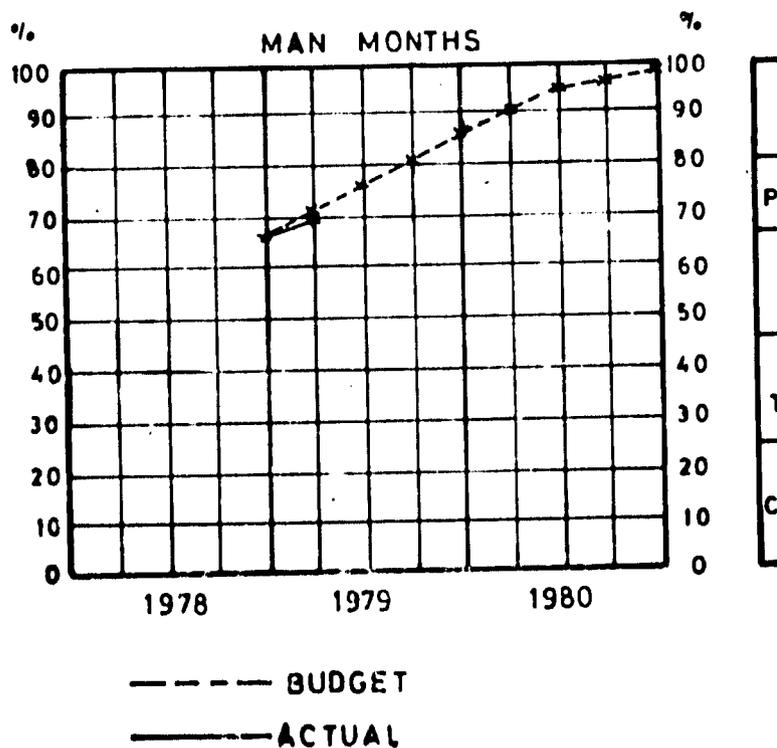
CONSTRUCTI



VEERING ONLY

	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	82	82	100	140	140	100
THIS PERIOD	7	3	43	12	6	50
TOTAL TO DATE	89	85	96	152	146	96
TOTAL CONTRACT	120	85	71	206	146	71

ADMINISTI

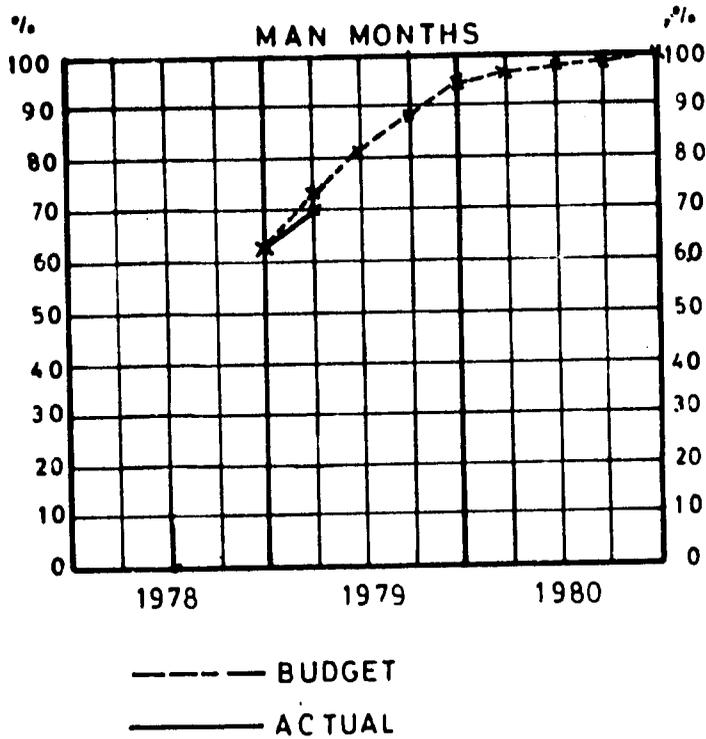


JAVA I N MONTHS & SALARIES S ACTUAL

EXHIBIT IE

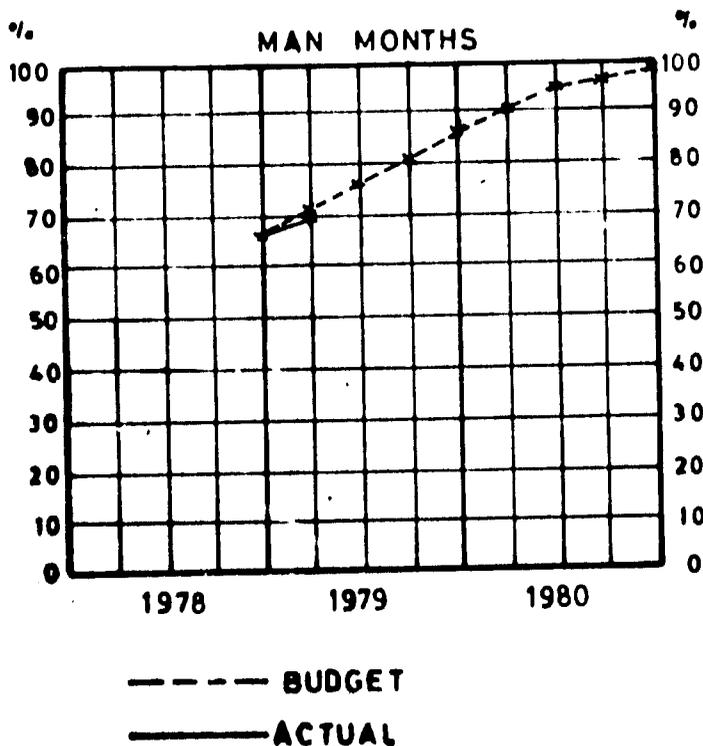
22 MARCH 1979

CONSTRUCTION ONLY



	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	163	163	100	256	256	100
THIS PERIOD	21	16	76	33	24	73
TOTAL TO DATE	184	179	97	289	280	97
TOTAL CONTRACT	253	179	71	398	280	70

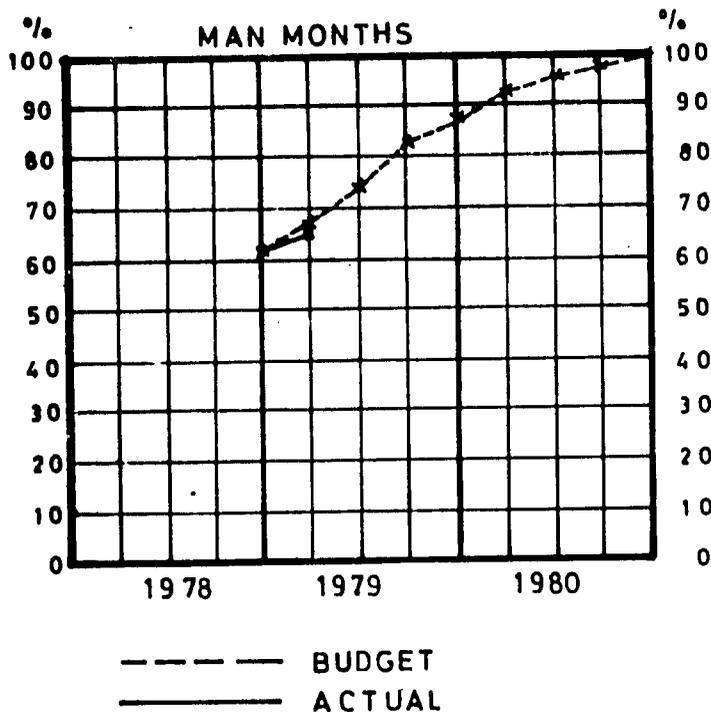
ADMINISTRATION ONLY



	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	59	59	100	129	129	100
THIS PERIOD	5	3	60	11	6	55
TOTAL TO DATE	64	62	97	140	135	96
TOTAL CONTRACT	88	62	70	194	135	70

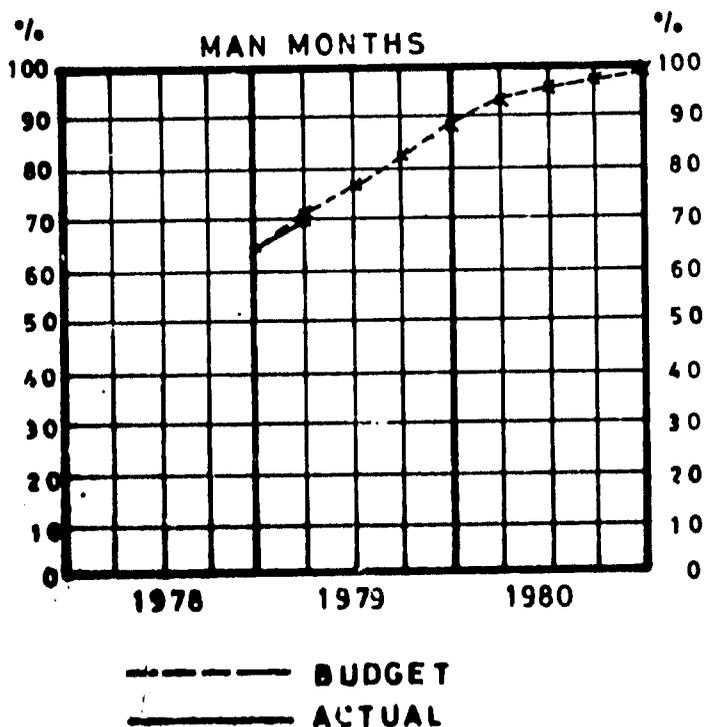
WEST FIELD STAFF MA BUDGET AS OF

TOTAL FIELD STAFF



	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	172	172	100	320	320	100
THIS PERIOD	19	16	84	34	27	79
TOTAL TO DATE	191	188	98	354	347	98
TOTAL CONTRACT	279	188	67	521	347	67

ENGINEERING ONLY



	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	40	40	100	74	74	100
THIS PERIOD	4	3	75	7	6	86
TOTAL TO DATE	44	43	98	81	80	99
TOTAL CONTRACT	62	43	69	116	80	69

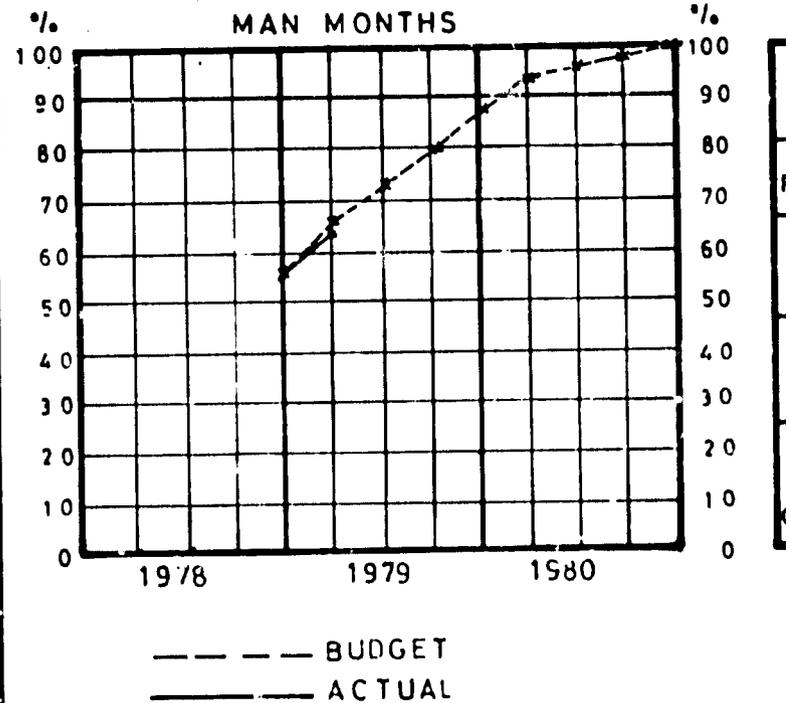
WEST JAVA II FIELD STAFF MAN MONTHS & SALARIES BUDGET VS ACTUAL

AS OF 22 MARCH 1979

AL FIELD STAFF

	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	172	172	100	320	320	100
THIS PERIOD	19	16	84	34	27	79
TOTAL TO DATE	191	188	98	354	347	98
TOTAL CONTRACT	279	188	67	521	347	67

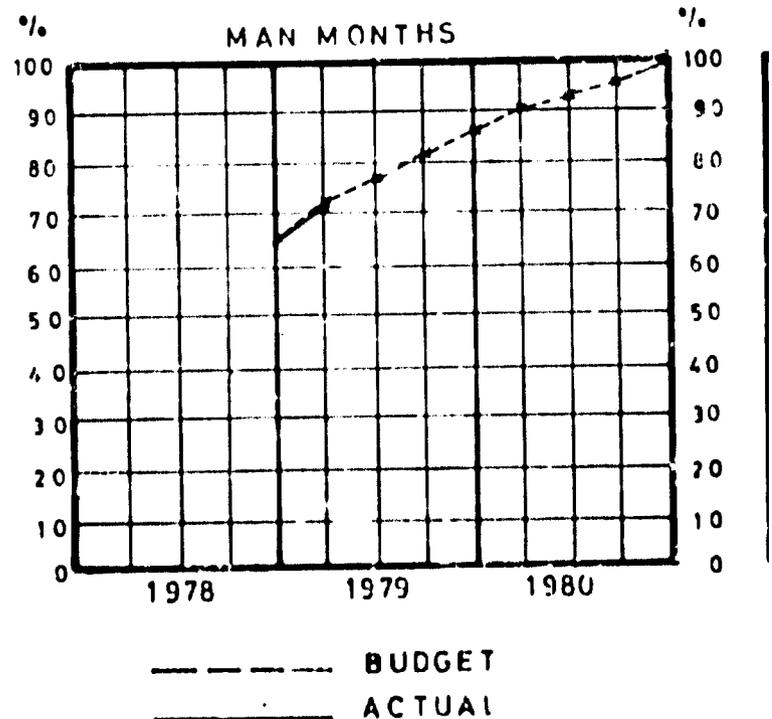
CONSTRUCT



NEERING ONLY

	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	40	40	100	74	74	100
THIS PERIOD	4	3	75	7	6	86
TOTAL TO DATE	44	43	98	81	80	99
TOTAL CONTRACT	62	43	69	116	80	69

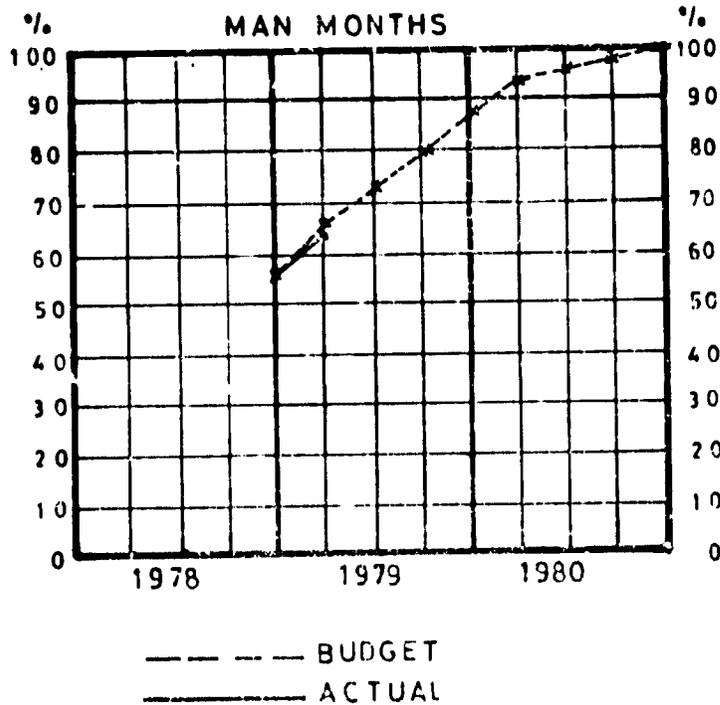
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MAN MONTHS & SALARIES
VS ACTUAL

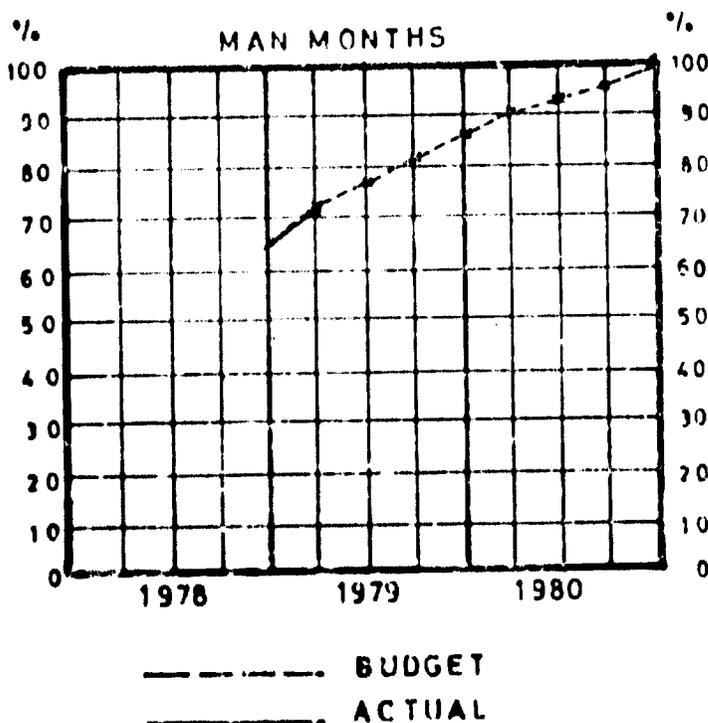
22 MARCH 1979

CONSTRUCTION ONLY



	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	77	77	100	132	132	100
THIS PERIOD	11	10	91	19	16	84
TOTAL TO DATE	88	87	99	151	148	98
TOTAL CONTRACT	136	87	64	235	148	63

ADMINISTRATION ONLY

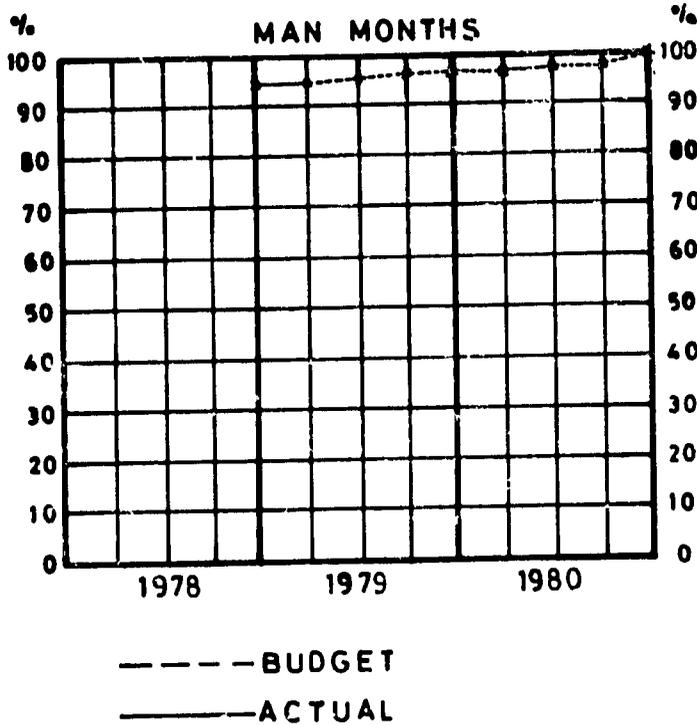


	MAN MONTHS			SALARIES (000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	55	55	100	114	114	100
THIS PERIOD	4	3	75	0	5	63
TOTAL TO DATE	59	58	98	122	119	98
TOTAL CONTRACT	81	58	72	170	119	70

WES HOME OFFICE M BUDGET

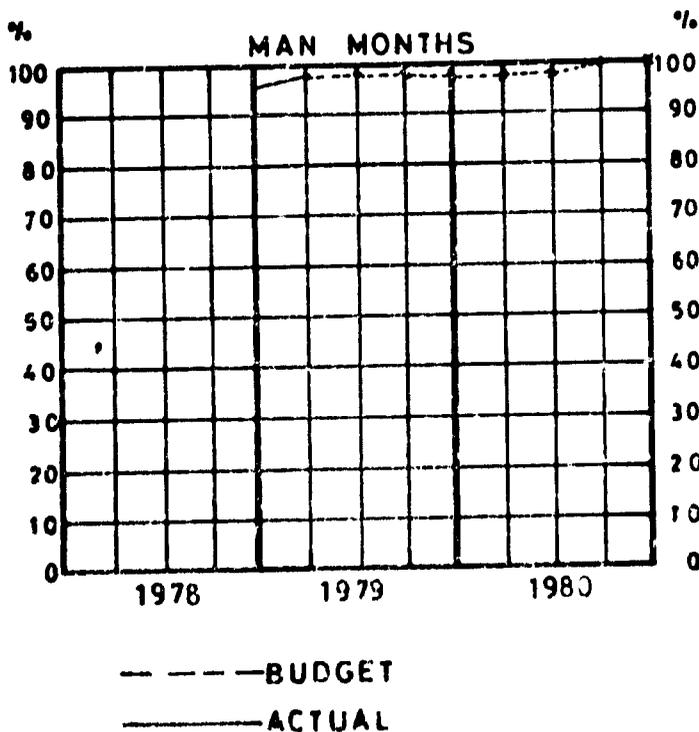
AS OF.

TOTAL HOME OFFICE



	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	231	231	100	377	377	100
THIS PERIOD	3	13	433	8	22	275
TOTAL TO DATE	234	244	104	385	399	104
TOTAL CONTRACT	244	244	100	431	399	93

ENGINEERING ONLY



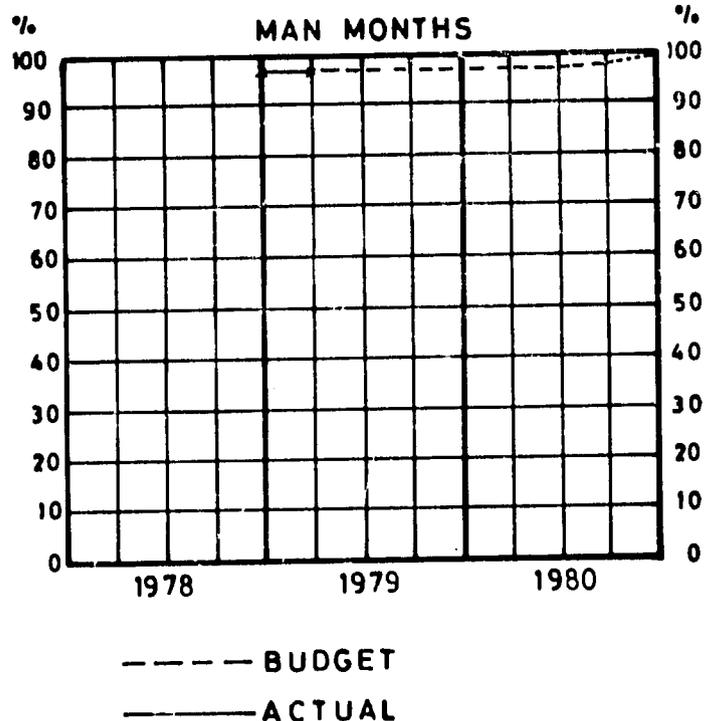
	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	119	119	100	210	210	100
THIS PERIOD	1	4	400	5	10	200
TOTAL TO DATE	120	123	103	215	220	102
TOTAL CONTRACT	124	123	99	238	220	92

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

AS OF 22 MARCH 1979

HOME OFFICE

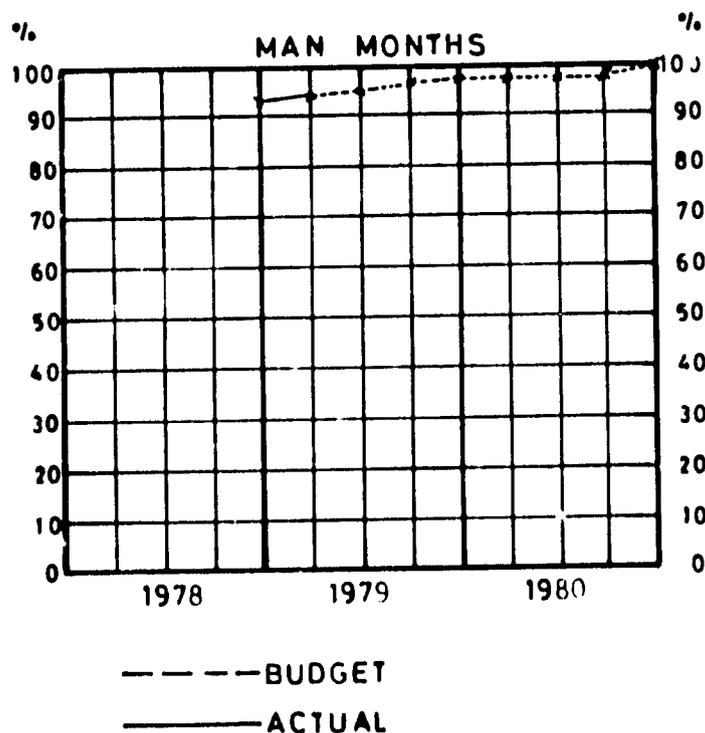
	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	231	231	100	377	377	100
THIS PERIOD	3	13	433	8	22	275
TOTAL TO DATE	234	244	104	385	399	104
TOTAL CONTRACT	244	244	100	431	399	93



SUPERVISOR

ENGINEERING ONLY

	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	119	119	100	210	210	100
THIS PERIOD	1	4	400	5	10	200
TOTAL TO DATE	120	123	103	215	220	102
TOTAL CONTRACT	124	123	99	238	220	92

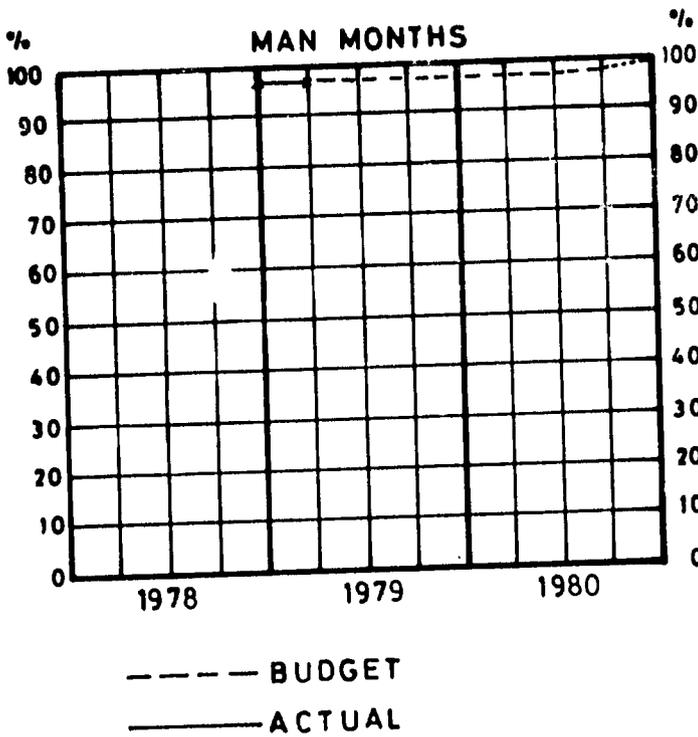


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T JAVA I AN MONTHS & SALARIES VS ACTUAL

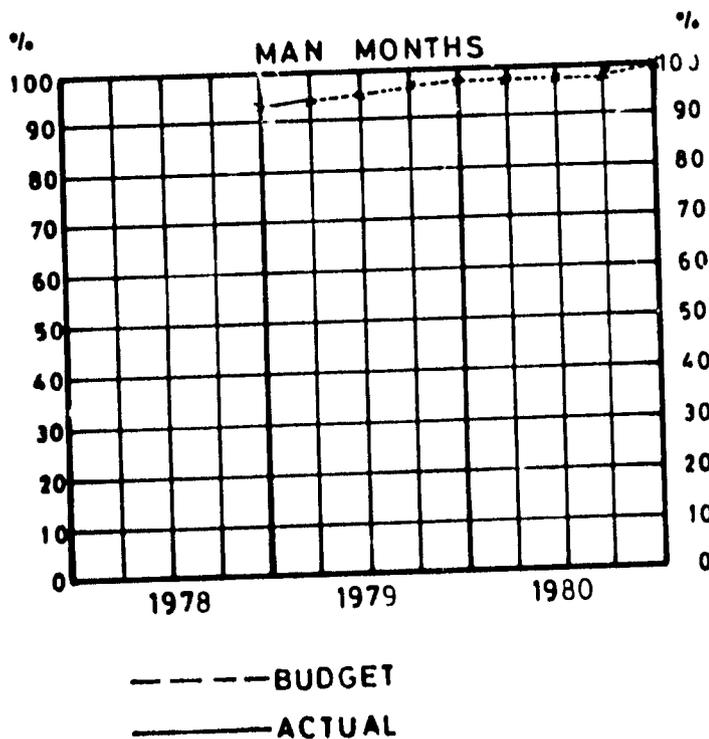
22 MARCH 1979

SUPERVISION ONLY



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

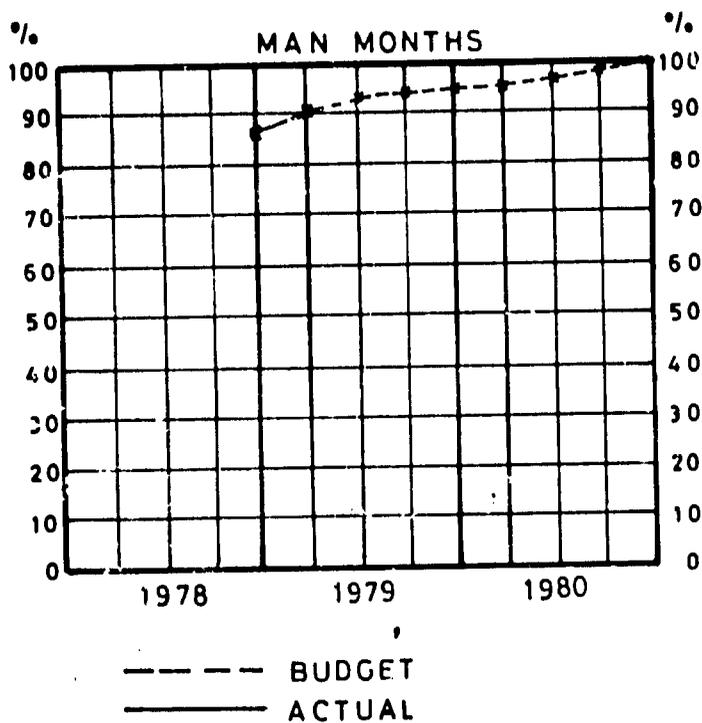
ADMINISTRATION ONLY



	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	81	81	100	101	101	100
THIS PERIOD	2	9	450	3	12	400
TOTAL TO DATE	83	90	108	104	113	109
TOTAL CONTRACT	88	90	102	123	113	92

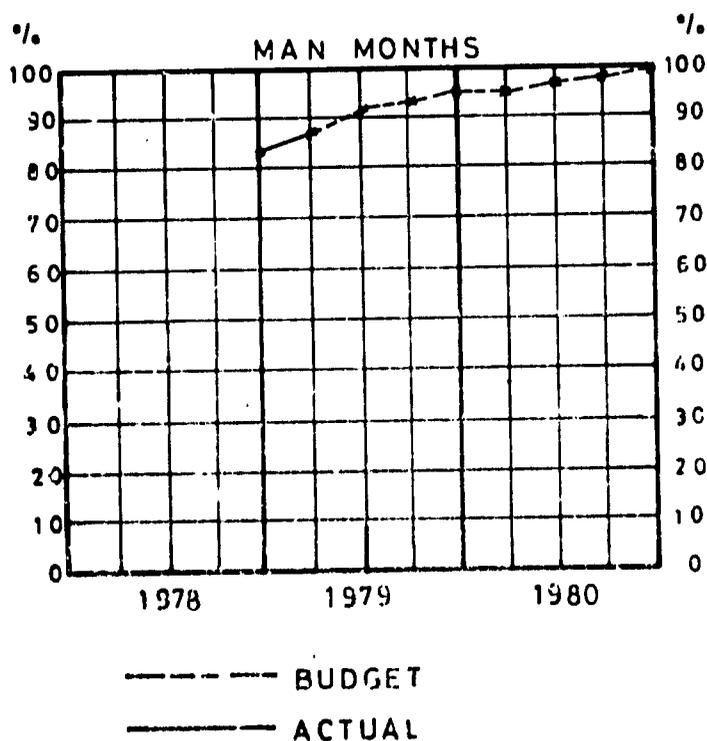
WES
HOME OFFICE M
BUDGET
AS OF

TOTAL HOME OFFICE



	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	127	127	100	227	227	100
THIS PERIOD	4	5	125	8	9	113
TOTAL TO DATE	131	132	101	235	236	100
TOTAL CONTRACT	147	132	90	274	236	86

ENGINEERING ONLY



	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	57	57	100	116	116	100
THIS PERIOD	3	2	67	6	4	67
TOTAL TO DATE	60	59	98	122	120	98
TOTAL CONTRACT	67	59	88	140	120	86

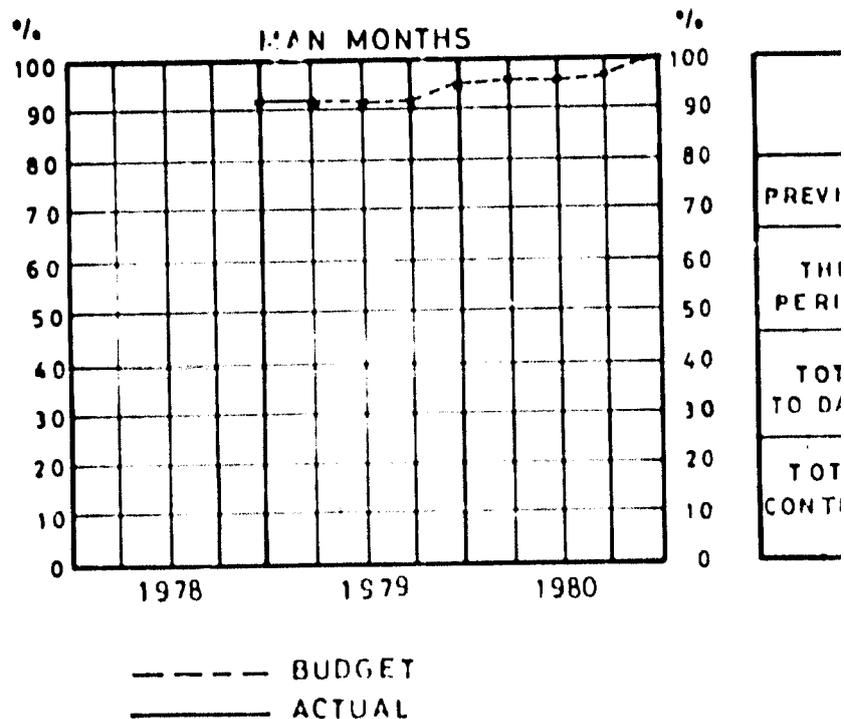
WEST JAVA II HOME OFFICE MAN MONTHS & SALARIES BUDGET VS ACTUAL

AS OF 22 MARCH 1979

HOME OFFICE

	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	127	127	100	227	227	100
THIS PERIOD	4	5	125	8	9	113
TOTAL TO DATE	131	132	101	235	236	100
TOTAL CONTRACT	147	132	90	274	236	86

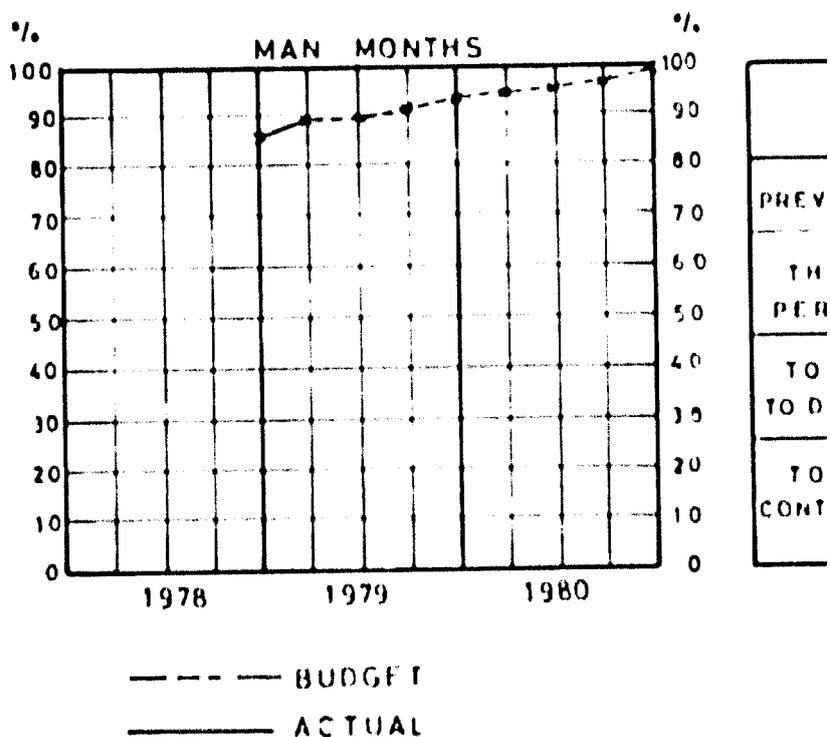
SUPERVISION



ERING ONLY

	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	57	57	100	116	116	100
THIS PERIOD	3	2	67	6	4	67
TOTAL TO DATE	60	59	98	122	120	98
TOTAL CONTRACT	67	59	88	140	120	86

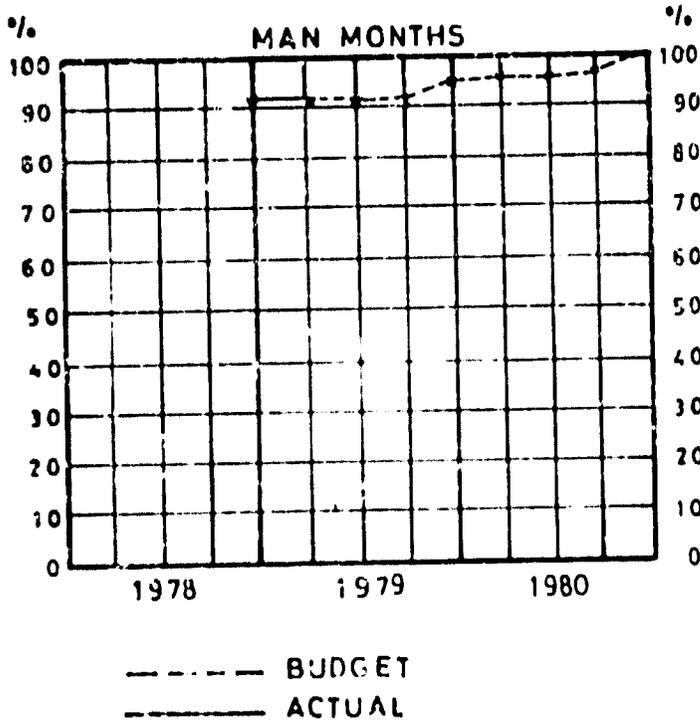
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II JAVA II MAN MONTHS & SALARIES VS ACTUAL

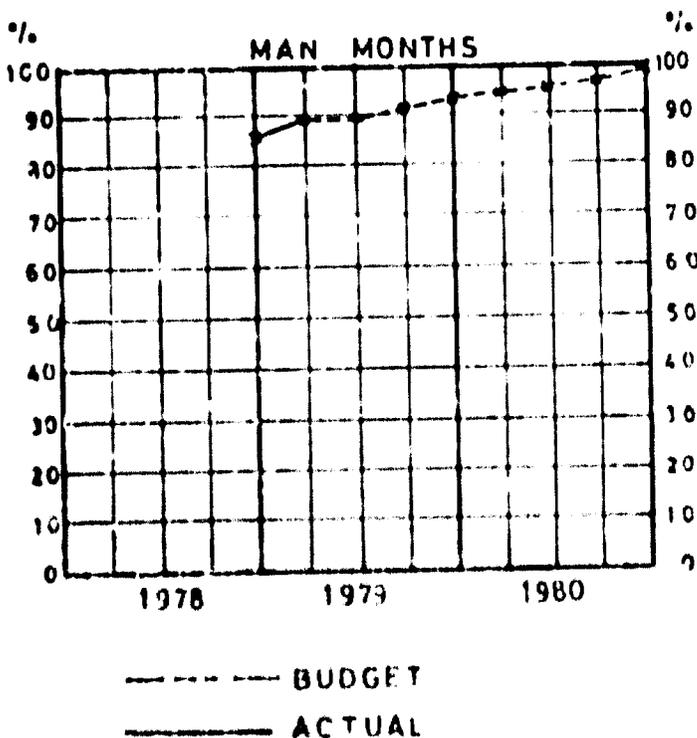
22 MARCH 1979

SUPERVISION ONLY



	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	20	20	100	52	52	100
THIS PERIOD	-	1	-	-	2	-
TOTAL TO DATE	20	21	105	52	54	104
TOTAL CONTRACT	22	21	95	60	54	90

ADMINISTRATION ONLY



	MAN MONTHS			SALARIES(000)		
	BUD	ACT	%	BUD	ACT	%
PREVIOUS	50	50	100	59	59	100
THIS PERIOD	1	2	200	2	3	150
TOTAL TO DATE	51	52	102	61	62	102
TOTAL CONTRACT	50	52	104	74	62	84

29

**INVOICES SUBMITTED AND
PAYMENTS RECEIVED**

QUARTER ENDED : 31 MARCH 1979

WEST JAVA I PROJECT

	U. S. DOLLARS		INDONESIAN RUPIAH	
	INVOICES SUBMITTED	PAYMENTS RECEIVED	INVOICES SUBMITTED	PAYMENTS RECEIVED
PREVIOUS	\$2,648,409.51	\$2,399,762.51	Rp. 167,981,878	Rp. 159,274,571
REPORT PERIOD	\$ 186,555.31	\$ 219,319.97	Rp. 15,040,092	Rp. 12,699,960
TOTAL	\$2,834,964.82	\$2,619,082.48	Rp. 183,021,970	Rp. 171,974,531

WEST JAVA II PROJECT

	U. S. DOLLARS		INDONESIAN RUPIAH	
	INVOICES SUBMITTED	PAYMENTS RECEIVED	INVOICES SUBMITTED	PAYMENTS RECEIVED
PREVIOUS	\$1,786,780.10	\$1,556,409.71	Rp. 136,900,739	Rp. 130,952,273
REPORT PERIOD	\$ 129,913.68	\$ 208,208.30	Rp. 8,153,203	Rp. 11,278,705
TOTAL	\$1,916,693.78	\$1,764,618.01	Rp. 145,053,942	Rp. 142,240,978

PERSONNEL MAN MONTHS
AS OF 31 MARCH 1979

WEST JAVA I PROJECT

COMPANY	U S	INDONESIAN	THIRD COUNTRY
CHAS.T.MAIN	546.7	10	12.3
P L N	—	3,472.0	—
OTHER	—		—
TOTAL	546.7	3,482.7	12.3

WEST JAVA II PROJECT

CHAS.T.MAIN	317.6	2.9	—
P L N	—	1,357.0	—
OTHER	—	—	—
TOTAL	317.6	1,359.9	—

CHAS.T.MAIN INTERNATIONAL, INC.