



MINISTRY OF PUBLIC WORKS AND ELECTRIC POWER
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT
DIRECTORATE OF IRRIGATION

JRAGUNG DAM
MULTI - PURPOSE IRRIGATION FLOOD CONTROL
HYDRO ELECTRIC AND MUNICIPAL
AND INDUSTRIAL WATER SUPPLY PROJECT

MONTHLY PROGRESS REPORT
No. 12

FEBRUARY 1978

SUBMITTED BY
ENGINEERING CONSULTANTS, INC.
Denver, Co., USA - Semarang, Indonesia



MINISTRY OF PUBLIC WORKS AND ELECTRIC POWER
DIRECTORATE GENERAL OF WATER RESOURCES DEVELOPMENT
DIRECTORATE OF IRRIGATION

JRAGUNG DAM
MULTI PURPOSE IRRIGATION FLOOD CONTROL
HYDRO ELECTRIC AND MUNICIPAL
AND INDUSTRIAL WATER SUPPLY PROJECT

MONTHLY PROGRESS REPORT
No 12

FEBRUARY 1978

SUBMITTED BY
ENGINEERING CONSULTANTS, INC.
Denver, Co., USA Semarang, Indonesia

ECI ENGINEERING CONSULTANTS, INC.

CABLE ADDRESS :
ECISEMARANG
SEMARANG
INDONESIA
Tel. : 315061
Telex : ECISEMARANG

JRAGUNG DAM PROJECT
P.O. BOX 220
SEMARANG
CENTRAL JAVA
INDONESIA

Director General of
Water Resources Development
Ministry of Public Works and
Electric Power
Jl. Pattimura 20/7
Kebayoran Baru
Jakarta Selatan

March 13, 1978

Our file : 1196/MR/12
107/78

Attention : Ir. Oesman Djojoadinoto
Director Irrigation.

Subject : Monthly Progress
Report No. 12.

Dear Sir :

We submit herewith twenty (20) copies of the Monthly Progress Report No. 12 for the month of February, 1978. The report is prepared in pursuance of Section 10.15 of Contract No. KAB. 9/3/12 between the Directorate General of Water Resources Development and the Engineering Consultants, Inc., for providing engineering services for the design of Jragung Dam Project. The draft of the report was shown to the Jragung Dam Project Management at Semarang before its printing.

Your comments, if any, on the contents of the report are respectfully requested.

cc. U.S. AID Jakarta
(Attention : Mr. Grayson)
with eight (8) copies of
the report.
ECI Denver (SD 72)
Project Manager
Jratunseluna Basin Project
ECI Semarang
General Manager PROSIDA (5 copies)

Very truly yours,
Engineering Consultants, Inc.

Saeed A. Rana

Saeed A. Rana
Resident Manager.

JRAGUNG DAM PROJECT

MONTHLY
PROGRESS REPORT
NO. 12

PERIOD

FEBRUARY 1978

CONTRACT NO. KAB. 9/3/12

U.S. AID LOAN NO. 497 - T - 040

ENGINEERING CONSULTANTS, INC.

DENVER, COLORADO

U.S.A.

SEMARANG

INDONESIA

TABLE OF CONTENTS

			Page No.
SECTION	I	GENERAL	1
SECTION	II	PERSONNEL	6
		A. EXPATRIATE	6
		B. COUNTERPART	7
		C. TECHNICAL	8
		D. ADMINISTRATIVE	8
SECTION	III	MEETING CONFERENCES AND MAJOR EVENTS	9
SECTION	IV	PROGRESS REPORT BY ACTIVITIES	11
		A. Geology	11
		B. Structural Design	14
		C. Dam Design	15
		D. Specifications	17
SECTION	V	PREPARATION OF REPORTS	18
SECTION	VI	PROBLEM AREAS	19
SECTION	VII	FINANCIAL	20
ANNEXURES			
	I	Assignment of Resident and TDY Staff	21
	II	Assignment of Counterparts and Technical Personnel	24
	III	Direct-hire Indonesian Personnel	27
	IV	Summary of U.S. Dollar Expenditures	28
	V	Summary of Rupiah Expenditures	30
	VI	Master Work Schedule and Up-to-date Progress	32

SECTION I

GENERAL

During the month under report, design stage investigations continued on schedule, more design work was accomplished and the designs completed earlier were reviewed at Semarang by the Consultant's own and associated specialists. The actions which were initiated or completed and the progress achieved on the Project design work are described in the following.

1. The Project was visited by Mr. M.K. Kuehl, Chief Engineer and Vice President, Dr. Burke, Consultant Geologist, Mr. S. Hillis, Chief Materials Engineer and Mr. P. Strauss, Chief Engineering Geologist. A thorough review of the geology, foundation conditions, exploration, data, test results and the designs accomplished so far, was done by this team of experts. Based on their field visits and data review they proposed various alternatives for the alignments of the dam axis, tunnels and locations of structures currently being designed. Final decisions on the alignment of the Irrigation and Power Tunnel and the location of the Spillway and the Power House have already been made. The next interim review of design is scheduled for May/June 1978.

2. Work is progressing on the remaining part of the survey and mapping work stated in the previous month's report. To this work has been added some additional topographic mapping upstream of the left abutment ridge. This is required for studying one of the dam axis alignment alternatives and is expected to be completed by the middle of April.

3. The geological investigations work progressed satisfactorily. The main activity was concentrated at the Power and Irrigation Tunnel location, the Power House and the Dam foundation area. The investigations at the former location have been completed while work is still continuing at the damsite.

The quantity of additional geological investigation work is now known and to get it done under expert supervision, it appears that the TDY Geologist will have to stay on the job till about the end of the month of April. The additional manmonth involved is proposed to be used out of provision for the "Specialists as Required".

The progress on the Project geology achieved as of the end of the month is described in Section IV-A of the report.

4. The final design of the River Diversion Works has been completed and submitted to the Ministry and U.S. AID for review and comments. After the final design of the dam has been finalized, there may be certain adjustments required to be made in the alignment of the diversion tunnel and a cut and cover section may have to be added upstream of the Inlet portal. These will be incorporated in the final design now presented through a revision. However, the basic scheme of work is not expected to change.

The construction drawings for the relocated access roads and the bridge are being prepared. These are expected to be completed during the next month. The design drawings and technical specifications for these works will be presented to the Ministry and U.S. AID early in the month of March.

The review by the Consultant of the standard building designs of the camps prepared by the Proyek engineers continued. The construction drawings for this work are expected to be completed by the end of April.

The design of the Spillway structure at the new location is in progress and concrete outlines for the same have been finalized. The scheme of work as being designed has been sent to the DPMA laboratories at Bandung for resuming model testing. Any change in the shape of the structure necessitated on the basis of model testing will be incorporated after the results

are known. However, the design work on the structure will continue on the scheme so far conceived.

5. Different alternatives of design of the maximum dam section as well as the locations of the axis suggested by the Consultant's review team are currently being studied. The alternative finally selected will be progressively refined to arrive at the most suitable design for the main dam. The final design section is scheduled to be completed by the middle of September.

Further investigations, both in field and by material testing in the laboratory, continued for determining the potential of the Penawangan Borrow Area. If found suitable, this area could yield a good quantity of agglomerate which could be used as fill material for the dam.

6. The design of the power plant and the power distribution system are continuing. After their scheduled assignments at Semarang, Messrs. Ismert and Goodrich, the Consultant's Mechanical and Electrical Engineers, respectively, have taken back necessary field data to work on design at the Denver office.

A scheme of power distribution system has been prepared by the Consultant and submitted to the Ministry to obtain views and comments of the PLN. The Consultant requests an early response.

Detailed reports on progress achieved in design work and material investigation are given in Sections IV-B and IV-C.

7. The sediment measurement program continued according to schedule. During the month, 71 sediment samples were obtained for testing. As of the end of the month, 268 sediment samples have been collected and sent to the laboratory for testing. Review of the analysis results will be started in March and will be completed in April, 1978.

To investigate and suggest remedial measures for controlling erosion in the Jragung watershed, Mr. H. Fletcher, the Consultant's watershed management specialist is scheduled to arrive at Semarang by the end of the next month.

8. A meeting was held with the local Cipta Karya authorities to find out their scheme of works for using Jragung water for the municipal and industrial demands of the city of Semarang. They are still examining different alternatives of the work involved. The Consultant requests an early decision on this matter.

9. The drafts of the Specifications and Contract Documents for the River Diversion Works have been submitted to the Ministry and U.S. AID for review and comments. As was suggested in the monthly progress report for the last month, it is strongly recommended that the documents and the designs submitted by the Consultant should be reviewed and approved early so that these could be finalized on schedule.

Detailed progress in the preparation of specification and contract documents is given in Section IV-D.

10. The proposal for Part II of the Ministry Personnel Training Program was submitted to the Ministry in January last. Since this program has to be implemented with effect from May, 1970, the Consultant requests that it may be approved early so that travel and visits arrangements for the participants can be made in time.

The four Indonesian Engineers, namely Mr. Maryono Bony, Mr. Wisnu Suharto, Mr. Sudarno and Mr. Harris left for the Consultant's home office at Denver on February 6 to start Part I of the training program. This will last for a period of four months.

11. The Rupiah expenditure in the Consultant's Semarang office during and up to the end of the month under report amounted to Rp. 2,292,771.- and Rp. 15,949,225.- respectively. Details of these and the Dollar expenditures are given in Annexures V and VI.

SECTION II
PERSONNEL

A. EXPATRIATE

1. At Semarang on February 1, 1978

Saeed A. Rana	Resident Manager
Carlos A. Borinelli	Materials and Dam Engineer
Robert G. McLaughlin	Structural Engineer
Ralph Goodrich	Electrical Engineer
John Ismert	Mechanical Engineer
James E. Pyne	Geologist
Jeffery P. Frey	Specification Engineer

2. Arrived in Semarang during February, 1978

Glen Trowbridge	Design Engineer
Max K. Kuehl	Chief Engineer and Vice President
Sidney F. Hillis	Chief Materials Engineer
Dr. H. Burke	Consultant Geologist (Specialist)
Peter L. Strauss	Chief Engineering Geologist

3. Departed from Semarang during February, 1978

Max K. Kuehl	Chief Engineer and Vice President
Sidney F. Hillis	Chief Materials Engineer
Dr. H. Burke	Consultant Geologist (Specialist)
Peter L. Strauss	Chief Engineering Geologist
Ralph Goodrich	Electrical Engineer
John Ismert	Mechanical Engineer

4. Scheduled to Arrive in Semarang during March, 1978

Dr. Michael A. Stevens	River Regime Sediment Specialist
Dr. H. Fletcher	Watershed Management Specialist
William Hoge	Structural Design Specialist
Paul Otter	Project Engineer

5. Scheduled to Depart from Semarang in March, 1978

Paul Otter	Project Engineer
------------	------------------

B. COUNTERPART

1. Assigned Full Time as of February 1, 1978

Mr. Maryono Bony M.E.	
Ir. Wisnu Suharto	
Ir. Sudaryanto Hs.	
Drs. Redjiono	
Triyono B.E.	(Assistant Counterpart)
Sutardjo B.E.	(Assistant Counterpart)
Ir. Haryono Wardi	
Ir. Sudarno	
Ir. Supriyo	
Ir. Rustiyanti	(Assistant Counterpart)
Edy Arifin	(Assistant Counterpart)
Buang Soekardjono	(Assistant Counterpart)
Ir. Muhammad Ali	
Ir. Tri Hardono	

2. Assigned Full Time During February, 1978

Ir. Yusuf Gayo Chief Counterpart
Djasriansjah Aht.
Harris BME

3. To be Assigned in February, 1978

None.

C. TECHNICAL

During the period under report, the following technical personnel provided by the Proyek worked with the Consultant :

1. Mr. Mukiyat	Draftsman
2. Mr. Barleyanto	Draftsman
3. Mr. Bambang Prayitno	Draftsman
4. Mr. Aris Mudjiyanto	Draftsman
5. Mr. Baryono	Geology Field Supervision

D. ADMINISTRATIVE

On-Hand as of February 28, 1978

Mrs. Tan Ik Goen	Interpreter I
Miss Dra. Djoa Sioe Lan	Interpreter II
Mrs. Sri Moenasih Soetikno	Secretary
Miss Dra. L. Murtianingsih	Secretary
Miss Sri Anon	Clerk/Typist
Mr. Suhandi	Messenger

Dates of arrival and departure of the Consultant's resident staff, TDY Staff, the Ministry personnel and the direct hire administrative personnel are given in Annexures I, II and III, respectively.

SECTION III
MEETING CONFERENCES AND MAJOR EVENTS

<u>Date</u>	<u>Place</u>	<u>Event</u>	<u>Participation</u>	<u>Organization</u>
February 1, 1978	Semarang	Discussion Jragung Power House and Transmission Lines Designs	Engineers Mowo Prabowo, Djoko Sri Winarno, Rambang Sirait, Slameto, Hartopo and Djasriansjah Mr. Maryono	PLN Proyek
February 5, 1978	Semarang	Briefing Session for the Design Review Team	Rana, Goodrich and Ismert Resident Staff, Mr. Kuehl, Dr. Burke, Mr. Hillis, Mr. Staruss	ECI ECI
February 6-7, 1978	Damsite and Project Area	Field visits	Rana, Borinelli, Pyne, Kuehl, Burke, Hillis, and Strauss	ECI
February 8, 1978	Semarang	Discussion Project Matters	Ir. Gatot Rana	DGWRD ECI
February 9, 1978	Semarang	Discussion Project Designs	Ir. Suwandi Sanoesi and his staff Ir. Bambang Rana, Ismert and Goodrich	Cipta Karya Proyek ECI
February 14, 1978	Jakarta	Discussion Project Matters	Ir. Soewarsono Langford, Rana Ir. Bambang	PROSIDA ECI Project
February 15, 1978	Bandung	Discussion Spillway Model Testing	Rana Ir. Haryono	ECI DPMA

<u>Date</u>	<u>Place</u>	<u>Event</u>	<u>Participation</u>	<u>Organization</u>
February 16, 1978	Jakarta	Discussion Project Matters	Messrs. Grayson and Thorn Rana	U.S. AID ECI
February 18, 1978	Semarang	Discussion Project Matters	Ir. Bambang Ir. Gayo Mr. Toto Rana	Proyek ECI
February 22, 1978	Jakarta	Discussion Project Matters	Drs. Attamimi Rana	DGWRD ECI
February 27, 1978	Jakarta	Discussion Jragung Cons- truction Work and Schedule	Ir. Soewarsono Ir. Habibudin Ir. David Suleiman Ir. Gayo Rana	PROSIDA Proyek ECI

In addition to the above reported events, regular field visits were made by the Consultant's resident and TDY staff to the damsite and Project area.

SECTION IV
PROGRESS REPORT BY ACTIVITIES

A brief description of work being done in the major fields of design activity was given in Section I. A detailed description of the work involved and progress achieved in each field are given in the following.

A. Geology

A major event during this report period was the arrival of Messrs. Kuehl, Strauss, Burke, and Hillis and their subsequent review of the site geology from February 5 through 11.

Dr. Burke, a consultant to ECI, was primarily responsible for the review of the site geology and several days of intensive site investigation were conducted in the field. The right and left abutment ridges were thoroughly inspected, including the adits and all of the proposed dam structures such as dam axis alignment, right abutment saddle dike, diversion tunnel, power and irrigation tunnel, and spillways. The geology, along the proposed Tuntang diversion tunnel was also reviewed.

Dr. Burke's site review was summarized in his report dated February 13, 1978. A photo-geologic map that defines the major faults across the site area was also provided. In many cases, there is good agreement between the faulting as interpreted from the aerial photographs and faulting that can be observed in the field. Some additional site exploration was recommended by Dr. Burke. Slight modifications of the diversion and power and irrigation tunnel alignments were also suggested, if possible. These recommendations are presently being considered. Much of the additional recommended site investigation is presently underway and will continue through the next report period.

Power and Irrigation Tunnel

During the last report period, a preliminary geologic map and cross section along the proposed power and irrigation tunnel alignment was transmitted to Denver. Since that time, the photo-geologic site interpretation by Dr. Burke, as well as continued field investigations have indicated faulting closely parallel to about half of the proposed tunnel alignment. Because of the potential for difficult construction problems, related to fracturing and ground water along the fault zone, a shift in the proposed tunnel location has been suggested. Constructions of three alternate alignments based only on preliminary data were presented to Denver during this period with a request for economic comparisons. It is anticipated that early in the next report period, the final tunnel alignment will be selected. Drilling at the intake structure is planned. If the power house is relocated, an additional boring will also be requested.

Tuntang Diversion Tunnel

Geologic mapping along the proposed tunnel alignment from the crest of the topographic ridge to the Tuntang River has been completed. Mapping of the remainder of the alignment has been delayed due to the inability of the bulldozer to clean out the existing trench. During the next report period, a new trench is planned along the tunnel alignment from the crest of the ridge to the Jragung River.

No serious geologic problems are anticipated in the Tuntang area. The proposed diversion tunnel will run approximately parallel to the strike of bedding and will be almost totally in claystone of reasonable quality. Some faulting is present as revealed by local changes in bedding attitude and occasional zones of granulated clay gouge. Slumping appears to be confined to the near surface weathered zone. There is no evidence of deep sliding.

Drilling

A total of three drill rigs are now working at the damsite area. On February 23, a drill rig was transferred from the borrow area. It began drilling on boring EC-32D, located in the river valley upstream from the proposed dam axis, on February 27.

Boring EC-29D, which began drilling last period, was completed at a depth of 25.0 meters during this period. The same drill rig was then moved to the right abutment saddle dam area where boring EC-35D was drilled to a depth of 25.5 meters. This drill rig is currently working on EC-33D, located in the river valley upstream from the proposed dam axis.

On January 23, a drill rig was moved to the location of boring EC-31D, in the upper spillway stilling basin area. Due to equipment problems, drilling did not begin until February 4. From February 12 through 22, no drilling was accomplished due to lack of Shelby tubes for the Pitcher sampler. At the close of this report period, boring EC-31D is almost completed at the planned depth of 30 meters. Early in the next period the drill rig will be moved to the upper spillway ogee proposed location.

Trenching

A new trench in the area of the extreme right abutment saddle dike was initiated last period. During this report period, the trench has been completed at a total length of 250 meters and preliminary mapping has been prepared. Some additional new trenching is required along the upstream slope of the left abutment ridge between the existing trenches 1 and 3 to determine the depth of surficial slump debris.

Access to the left abutment trenches has been difficult. The spillway access road, which is usually utilized by the dozer, was washed out on January 8, repaired on January 30, and washed out again on February 2.

A new access route to the left abutment was constructed on February 13, and some trenches were cleaned out but fuel shortages and mechanical problems continue.

From January 30 through February 11, the bulldozers were able to work only one day due to fuel shortages. One bulldozer has been down for repairs from February 22 through this report period.

Mapping

The geologic mapping on the new 1 : 1,000 scale topographic maps is progressing. Accurate trench location coordinates have been provided by the surveyors. The major faults are now believed to be well located. Additional trench clean out work is required to trace sandstone beds and verify the thickness of surficial creep and slump debris material in specific areas.

B. Structural Design

Design work accomplished during this period is described in the following paragraphs.

The "relocated access road" construction drawings are now complete including the culvert drawings. These provide for the route from the village of Candirejo to the "proposed main access road". The construction drawings that provide for the construction of that portion of the "proposed main access road" from the "relocated access road" to the "presently used access road" (approximately 2.8 kilometers) have also been completed.

The design drawings for the alternative II bridge have been completed; the construction drawings for the alternative II bridge are presently being completed. This will complete the design work to be done on the bridge and also, along with the above mentioned road drawings, provide the last

link for an all-weather access road around the reservoir for both the villagers and normal highway traffic.

The design drawings for the Diversion Tunnel have been finished and have been received in this office. Construction drawings are yet to be completed, by the Denver office.

Work continues on the spillway in this office. Studies and reviews have been done in both this and the Denver office, and have resulted in the selection of a two-stage spillway; the first stage is located just westward of the left abutment ridge and has a crest (elevation 125) which discharges through a stilling basin to the gorge area (location of the feasibility spillway saddle dam); this is the location of the second stage spillway crest which has an elevation of 96.0 and discharges through a stilling basin to the river. The hydraulic design work has been completed and model testing has begun. The structural design will be mostly concerned with the stability of the walls and crest.

The power house work is being done in Denver, however, more preliminary work will be required for the structural design. Most of the surveying and geological work has been done, but more is to be obtained at a later date.

C. Dam Design

During the first half of the month, the dams site was visited again by ECI Consultant Geologist, Mr. Harold W. Burke, PhD. Quoting from Mr. Burke's report, "Considerable geologic exploration has been done since my last visit and larger scale aerial photos have been made available. An upstream buttress and ridge dewatering are almost certainly required to stabilize the upstream slope of the ridge during reservoir operation". In addition Mr. Burke states, "Though portions of the ridge are relatively narrow

I believe its stability against downstream sliding will be adequate , especially if properly blanketed and drained.

In consideration of all of Mr. Burke's recommendations, the dam layout is being adjusted and modified in some areas.

Geotechnical Damsite Subsurface Exploration

Two 45 degree angle borings are being drilled in the upstream area of the dam, under the proposed embankment, to determine if there is any soft and or sheared material.

Sampling of a considerable amount of foundation and abutment ridges materials will be done during the month of March. Basic testing will be performed in the Proyek laboratory and in Bandung if required. Special shear strength testing will be done overseas.

Borrow Area Material Study

Samples of shell material will be taken from Sambiroto and Larangan Borrow Pits. Only one representative sample from each area will be taken.

One representative sample of core material will be taken from Larangan Borrow Pit.

A considerable amount of testing has been done of all the Penawangan material already sampled. This preliminary testing indicates that the material is suitable to be used in the dam embankment. Penawangan Borrow Pit has an estimated potential of about 8,000,000 cubic meters, minimum.

One trench is going to be excavated in Penawangan Borrow Pit. One representative sample of that material will be taken.

Basic testing will be done of all the representative samples to be taken. Triaxial and permeability testing will be performed overseas. A testing program will be prepared as soon as basic testing results become available.

D. Specifications

The draft form of contract documents for Construction of River Diversion Works, Contract No. JDP-C-1, was completed during the period under report. The documents are in two volumes : "Volume I, Invitation for Bids, Instructions to Bidders, Proposal-Bill of Quantities, Contract, Conditions and Technical Specifications", and "Volume II, Drawings". Copies of the draft of contract documents for River Diversion Works have been submitted for review and comment to the Ministry and U.S. AID.

A similar set of contract documents is being prepared for the Construction of Access Roads, Contract No. JDP-C-2. This contract will include construction of the relocated access road and bridge and the 2.8 kilometer length of main access road which connects the relocated road to the existing access route. The contract documents will be in three volumes. A draft form of Volumes II and III "Technical Specifications" and "Drawings", respectively will be submitted for review and comment to the Ministry and U.S. AID early in March. Volume I, "Invitation for Bids, Instructions to Bidders, Proposal-Bill of Quantities, Contract, and Conditions", will be essentially the same as that proposed for the River Diversion Works Contract.

SECTION V
PREPARATION OF REPORTS

The schedule of submittals and the current status of all the reports required to be prepared by the Consultant is stated in the following :

<u>Name of Report</u>	<u>Date due</u>	<u>Status</u>	<u>Date Submitted</u>
1. Inception Report (draft)	May 15, 1977	Completed	May 12, 1977
2. Final Design Report (draft)	November 15, 1978		
3. Final Completion and Engineering Report on Construct- ion Contracts.	March 15, 1979		
4. Monthly Progress Report	10th Day of the following month	Schedule being met	
5. Quarterly Progress Report	20th Day of the following month	Schedule being met	
6. General Design Criteria Civil Works			July 8, 1977
7. Appendix I to (6), above Dam and Dikes Design Criteria			August 1, 1977
8. Advance Notice of Intent to Invite Bids and Prequalification Instructions		Draft	January 25, 1978
9. Contract Documents River Diversion Works		Draft	February 23, 1978

SECTION VI
PROBLEM AREAS

The survey and mapping work which passed through certain critical stages has now substantially been completed. At present, there is no problem in this area.

With the arrival of two drilling rigs, the situation of geological and material investigation has considerably improved. It is important that the Proyek should ensure proper maintenance of these and other machines presently engaged at the damsite and borrow area investigation so that maximum efficiency can be achieved.

SECTION VII
FINANCIAL

Dollar Accounts

Due to the reasons explained in monthly progress report no. 2, the Dollar accounts are being reported for the period up to the end of the month of January, 1978. The expenditure to that date as well as the budget amounts are shown in Annexure IV included in the report.

Rupiah Accounts

Up to the end of the month under report, a total amount of Rp. 15,949,225.- was spent. This represents 22.53 percent of the total Rupiah reimbursable costs provided in the Contract. The corresponding percentage of the contract elapsed is 47.90.

The summary of the Rupiah budget and costs is given in Annexure No. V.

JRAGUNG DAM PROJECT

Engineering Consultants, Inc.

Monthly Progress Report No. 12
Period : February, 1978Assignment of Resident and TDY Staff

NAME	NATIONALITY	JOB TITLE	PROJECT ASSIGNMENT		MANMONTHS IN INDONESIA	
			ARRIVAL	DEPARTURE	SCHEDULED	ACTUAL
1. Saeed A. Rana	Permanent Resident U.S.A.	Resident Manager	March 16, 1977		24	11.5
2. James Rollins	U.S.A.	Geologist	March 16, 1977	June 30, 1977	3.5	3.5
3. Robert McLaughlin	U.S.A.	Structural Design Engineer	April 5, 1977		23	10.9
4. Carlos Borinelli	Permanent Resident U.S.A.	Materials Dam Engineer	June 4, 1977		18	8.9
5. James E. Pyne	U.S.A.	Resident Geologist	September 1, 1977		6	6.0
6. Jeffery P. Frey	U.S.A.	Specifications Engineer	December 18, 1978		12	2.45
7. Glen Trowbridge	U.S.A.	Design Engineer	February 7, 1978		18	0.75
8. Cecil M. Langford	U.S.A.	Project Director	August 6, 1977 January 23, 1978	August 12, 1977 January 31, 1978	1.5	0.52
9. M.K. Kuehl	U.S.A.	Chief Engineer	June 27, 1977 February 4, 1978	July 2, 1977 February 12, 1978	1.5	0.50

JRAGUNG DAM PROJECT

Engineering Consultants, Inc.

Monthly Progress Report No. 12

Period : February, 1978

Assignment of Resident and TDY Staff

<u>NAME</u>	<u>NATIONALITY</u>	<u>JOB TITLE</u>	<u>PROJECT ASSIGNMENT</u>		<u>MANMONTHS IN INDONESIA</u>	
			<u>ARRIVAL</u>	<u>DEPARTURE</u>	<u>SCHEDULED</u>	<u>ACTUAL</u>
10. Paul Otter	U.S.A.	Project Engineer	March 16, 1977	March 18, 1977	1.5	0.1
11. Peter Strauss	U.S.A.	Chief Geologist	March 16, 1977 June 13, 1977 February 4, 1978	March 18, 1977 July 1, 1977 February 7, 1978	4	0.93
12. William Wenger	U.S.A.	Electrical Engineer	March 16, 1977	March 21, 1977	4	0.50
13. Ralph Goodrich	U.S.A.	Electrical Engineer	January 20, 1978	February 15, 1978	4	0.90
14. M.A. Stevens	Canada	River Regime Sediment Specialist	March 20, 1977 October 21, 1977	March 23, 1977 December 15, 1977	3	2.0
15. W. Stevens	U.S.A.	Surveyor	April 4, 1977 August 1, 1977	May 31, 1977 January 15, 1978	7.5	7.25
16. E.B. Bartel	U.S.A.	Design Engineer	November 12, 1977	December 20, 1977		1.30
17. S.F. Hillis	Canada	Chief Materials	June 26, 1977 February 2, 1978	July 18, 1977 February 12, 1978	3	1.15

JRAGUNG DAM PROJECT

Engineering Consultants, Inc.

Monthly Progress Report No. 12.

Period : February, 1978

Assignment of Resident and TDY Staff

<u>NAME</u>	<u>NATIONALITY</u>	<u>JOB TITLE</u>	<u>PROJECT ASSIGNMENT</u>		<u>MANMONTHS IN INDONESIA</u>	
			<u>ARRIVAL</u>	<u>DEPARTURE</u>	<u>SCHEDULED</u>	<u>ACTUAL</u>
18. Robert Campbell	U.S.A.	Assistant Chief	November 7, 1977	November 10, 1977		
			November 28, 1977	December 12, 1977		0.63
19. John Issert	U.S.A.	Chief Mechanical Engineer	January 27, 1978	February 12, 1978	4	0.77
20. Dr. W. Burke	U.S.A.	Geologist Consultant	February 4, 1978	February 12, 1978		0.30

JRAGUNG DAM PROJECT

Engineering Consultants, Inc.

Monthly Progress Report No. 12.

Period : February, 1978

Assignment of Counterparts and Technical Personnel

<u>NAME</u>	<u>EXPERTISE</u>	<u>WORK ASSIGNMENT</u>	<u>PROJECT ASSIGNMENT DATES</u>		<u>MAN MONTHS WORKED</u>
			<u>STARTING</u>	<u>ENDING</u>	
<u>Counterparts</u>					
1. Ir. Martopo	1. Project Management 2. Project Planning	November 1, 1975	March 16, 1977		11.5
2. Ir. Bambang Soedjono	1. Project Management 2. Project Planning	November 1, 1975	March 16, 1977		11.5
3. Maryono Bony M.E.	1. Project Planning 2. Dam Design Engineer	November 1, 1975	March 16, 1977		11.5
4. Ir. Wisnu Suharto	Hydraulic Structures	November 1, 1975	March 16, 1977		11.5
5. Ir. Soedaryanto Hs.	Geologist	January 1, 1977	March 16, 1977		11.5
6. Drs. Redjiono	Hydrologist	January 1, 1977	March 16, 1977		11.5
7. Susanto B.Sc	Geologist	November 1, 1975	March 16, 1977	March 31, 1977	0.5
8. Ir. Sudarno	Civil Structures Engineer	March 16, 1977	March 16, 1977		11.5
9. Ir. Muhammad Ali	1. Dam Design Engineer 2. Soil Mechanics/Material	January 1, 1976	March 16, 1977		11.5

Engineering Consultants, Inc.

JRAGUNG DAM PROJECT

Monthly Progress Report No. 12

Period : February, 1978

Assignment of Counterparts and Technical Personnel

<u>NAME</u>	<u>EXPERTISE</u>	<u>WORK ASSIGNMENT</u>	<u>PROJECT ASSIGNMENT DATES</u>		<u>MAN MONTHS WORKED</u>
			<u>STARTING</u>	<u>ENDING</u>	
10. I. Soedjono BEE	Electrical Engineer	March 16, 1977	March 16, 1977		11.5
11. Djasriansyah Aht	Electrical Engineer	March 16, 1977	March 16, 1977		11.5
12. Ir. Hartopo	Hydro Power Engineer	March 16, 1977	March 16, 1977		11.5
13. Harris BME	Mechanical Engineer	March 16, 1977	March 16, 1977		11.5
14. Ir. Supriyo	Specification Engineer	September 16, 1977	September 16, 1977		5.5
<u>Assistant Counterpart</u>					
1. Triyono BE	Geologist	June 1, 1976	March 16, 1977		11.5
2. Sutardjo BE	Geologist	December 1, 1976	March 16, 1977		11.5
3. Bambang Gunadi B.Sc	Hydrologist	January 1, 1976	March 16, 1977	November 1, 1977	7.5

JRAGUNG DAM PROJECT

Engineering Consultants, Inc.

Monthly Progress Report No. 12.
Period : February, 1978

Assignment of Counterparts and Technical Personnel

<u>NAME</u>	<u>EXPERTISE</u>	<u>WORK ASSIGNMENT</u>	<u>PROJECT ASSIGNMENT DATES</u>		<u>MAN MONTHS WORKED</u>
			<u>STARTING</u>	<u>ENDING</u>	
4. Ir. Tri Hardono	Dam Design Engineer	March 16, 1977	March 16, 1977		11.5
5. Ir. Pustiyanti	Hydraulics Structures	March 16, 1977	March 16, 1977		11.5
6. Suang Sukardjono	Hydrologist	January 1, 1977	March 16, 1977		11.5
7. Edy Arifin Aht	Civil Structures	April 1, 1976	March 16, 1977		11.5
8. Ir. Diah Kusumawati	Hydro Power Engineer	December 1, 1976			
<u>Draftsmen</u>					
1. Mukiyat	Draftsman	March 1, 1976	March 16, 1977		11.5
2. S.V. Barleyanto	Draftsman	November 1, 1975	March 16, 1977		11.5
3. Bambang Prayitno	Draftsman	February 1, 1976	March 16, 1977		11.5
4. Aris Mudjianto	Draftsman	December 16, 1977	December 16, 1977		2.5

Annexure III

Engineering Consultants, Inc.

JRAGUNG DAM PROJECT

Monthly Progress Report No. 12
 Period : February, 1978

Direct-hire Indonesian Personnel

<u>NAME</u>	<u>POSITION</u>	<u>PERIOD OF SERVICE</u>		<u>MAN/WOMAN MONTHS</u>	
		<u>DATE STARTED</u>	<u>DATE ENDED</u>	<u>PROVIDED</u>	<u>SPENT</u>
1. Mrs. Tan Ik Goen	Interpreter/Translator I	March 16, 1977		24	11.5
2. Miss Dra. Djoa Sioe Lan	Interpreter/Translator II	May 16, 1977		24	9.5
3. Mrs. Ariati Haryono	Secretary I	March 16, 1977	July 31, 1977	24	4.5
4. Miss Dra. L. Murtianingsih	Clerk/Typist	March 16, 1977	April 30, 1977	24	1.5
	Secretary	May 1, 1977			10.0
5. Mrs. Sri Moenasih Soetikno	Clerk/Typist	March 16, 1977	July 31, 1977	24	4.5
	Secretary	August 1,		19.5	7.5
6. Miss Sri Anon	Clerk/Typist	March 16, 1977		24	11.5
7. Mr. Suhandi	Messenger	March 16,		24	11.5

Annexure IV

JRAGUNG DAM PROJECT

Monthly Progress Report No. 12
 Period : January , 1978

Summary of U.S. Dollar Expenditures

<u>COST ITEMS</u>	<u>AMOUNT AVAILABLE</u> US \$	<u>EXPENDITURE</u>			<u>PERCENTAGE</u>	
		<u>PRIOR</u>	<u>DURING PERIOD</u> <u>REPORTED</u>	<u>UP TO DATE</u>	<u>EXPENDITURE</u>	<u>TIME</u> <u>ELAPSED</u>
1. Resident Staff Base Salaries	181,360.00	62,033.98	8,940.-	70,973.98	39.13	43.75
2. Overseas Differential	53,890.00	15,476.83	2,235.-	17,711.83	32.86	
3. Overhead Resident Staff (75% base salaries)	136,020.00	46,525.49	6,705.-	53,230.49	39.13	
4. TDY & Denver Staff Salaries	206,700.00	74,716.37	20,763.32	95,479.69	46.19	
5. Overhead TDY & Denver (95% base salaries)	196,365.00	70,980.53	19,725.15	90,705.68	46.19	
6. Fixed Fee	138,000.00	51,750.00	5,750.00	57,500.-	41.67	
7. Travel and Per Diem	73,120.00	22,934.56	1,826.36	24,760.92	33.86	
8. Transportation (Relocation)	12,000.00	11,150.00	-	11,150.00	92.92	
9. Other Direct Costs & Miscellaneous Expenses	53,800.00	20,569.78	2,759.60	23,329.38	43.36	

Annexure IV
Continued

JRAGUNG DAM PROJECT
Monthly Progress Report No. 12
Period : January, 1978

<u>COST ITEMS</u>	<u>AMOUNT AVAILABLE</u> US \$	<u>EXPENDITURE</u>			<u>PERCENTAGE</u>	
		<u>PRIOR</u>	<u>DURING PERIOD</u> <u>REPORTED</u>	<u>UP TO DATE</u>	<u>EXPENDITURE</u>	<u>TIME</u> <u>ELAPSED</u>
10. Ministry Personnel	60,000.00					
11. Special Purchases	190,000.00	41,084.75	4,316.50	45,401.25	23.9	
12. Contingencies	70,000.00					
Total Dollar Costs	1,371,255.00	417,222.29	73,020.93	490,243.22	35.75	43.75

JRAGUNG DAM PROJECT

Monthly Progress Report No. 12

Period : February, 1978

Summary of Rupiah Expenses

<u>COST ITEMS</u>	<u>BUDGET ALLOCATION</u> (Rp.)	<u>EXPENDITURE</u>			<u>PERCENTAGE</u>	
		<u>PRIOR</u>	<u>PERIOD REPORTED</u>	<u>TO DATE</u>	<u>EXPENDITURE</u>	<u>TIME ELAPSED</u>
<u>I. PER DIEM</u>						
Jakarta	3,300,000.-	1,064,500	156,750	1,221,250	37.01	
Bandung & Semarang	18,000,000.-	1,905,000	680,000	2,585,000	14.36	
Other	1,800,000.-	579,650	12,000	591,650	32.87	
Family	200,000.-	80,000	-	80,000	34.78	
Sub Total	23,330,000.-	3,629,150	848,750	4,477,900	19.19	47.9
<u>II. OTHER DIRECT COSTS</u>						
Cable & Telephone	2,000,000.-	551,939	101,630	653,569	32.68	
Postage	2,000,000.-	259,495	13,300	272,795	13.64	
Reproduction & Printing	15,000,000.-	2,296,142	446,545	2,742,687	18.28	
In Country Transportation	2,000,000.-	902,701	190,100	1,092,801	54.64	
Supplies & Materials	6,000,000.-	706,905	126,370	833,275	13.89	
Miscellaneous	7,000,000.-	1,201,898	199,876	1,401,774	20.03	
Sub Total	34,000,000.-	5,919,080	1,077,821	6,996,901	20.58	47.9

JRAGUNG DAM PROJECT

Monthly Progress Report No. 12

Period : February, 1978

Summary of Rupiah Expenses

<u>COST ITEMS</u>	<u>BUDGET ALLOCATION</u> (Rp.)	<u>EXPENDITURE</u>			<u>PERCENTAGE</u>	
		<u>PRIOR</u>	<u>PERIOD REPORTED</u>	<u>TO DATE</u>	<u>EXPENDITURE</u>	<u>TIME ELAPSED</u>
<u>III. ADMINISTRATIVE PERSONNEL</u>						
Secretaries	3,610,500.-	1,302,091.	122,000	1,424,091	39.44	
Interpreters	6,017,500.-	1,722,582	173,800	1,896,382	31.51	
Clerks/Typists	2,402,000.-	978,251	60,500	1,038,751	43.25	
Messenger	373,500.-	105,300	9,900	115,200	30.84	
Severance Pay	1,037,500.-	-	-	-	-	
Sub Total	<u>13,446,000.-</u>	<u>4,108,224</u>	<u>366,200</u>	<u>4,474,424</u>	<u>33.28</u>	
Grand Total	<u>70,776,000.-</u>	<u>13,656,454</u>	<u>2,292,771</u>	<u>15,949,225</u>	<u>22.53</u>	

SUMMARY OF REIMBURSEMENTRupiah Payments Received by Consultant from
Ministry up to the end of Report Period

= 31,685,381

Rupiah Expenditure by Consultant Approved
for Reimbursement= 15,949,225

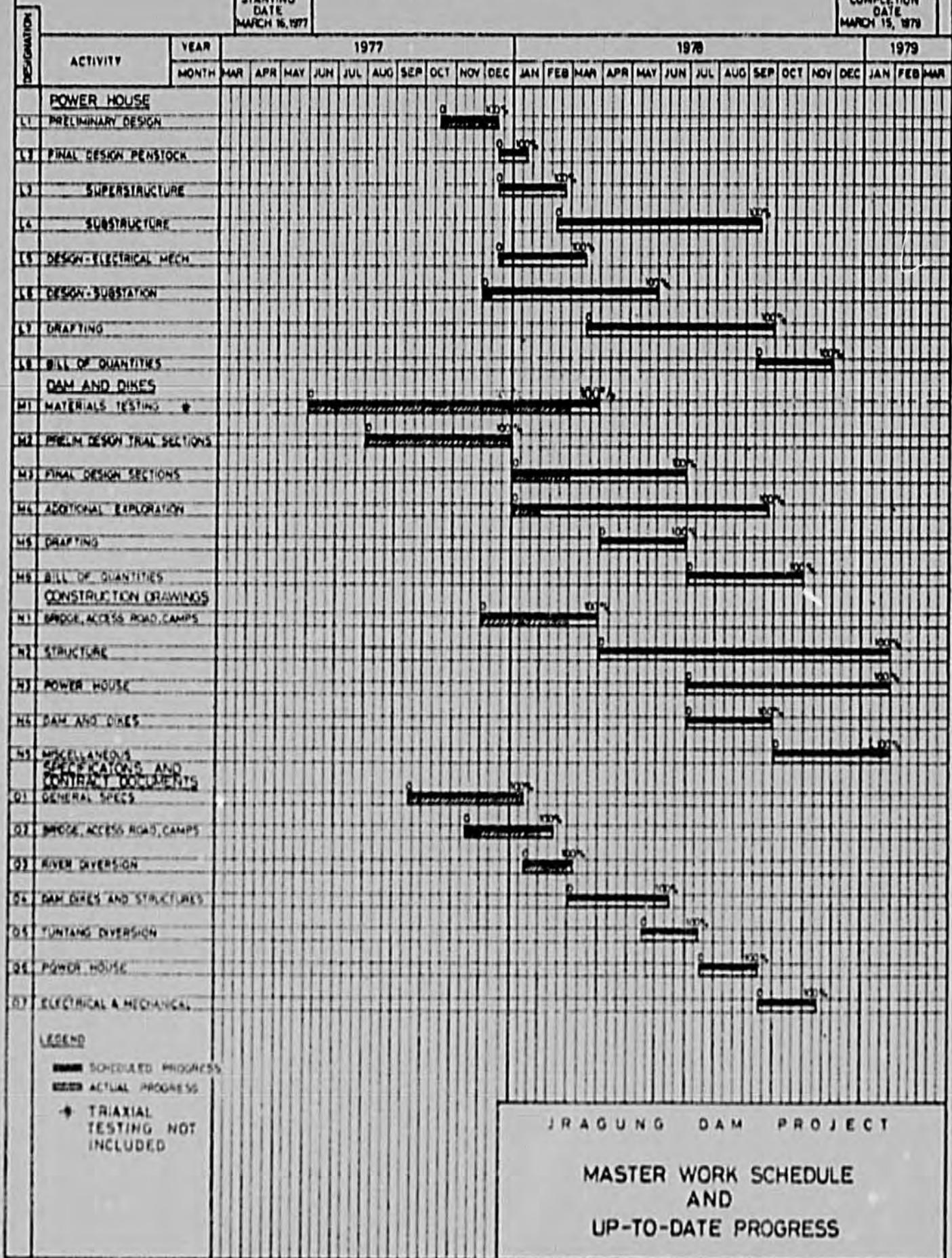
Balance

= 15,736,156

JRAGUNG DAM PROJECT PROGRESS REPORT

STARTING DATE
MARCH 16, 1977

COMPLETION DATE
MARCH 15, 1979



LEGEND
 SCHEDULED PROGRESS
 ACTUAL PROGRESS
 TRIAXIAL TESTING NOT INCLUDED

JRAGUNG DAM PROJECT
 MASTER WORK SCHEDULE
 AND
 UP-TO-DATE PROGRESS

DESG. NUMBER	ACTIVITY	YEAR	1977												1978												1979		
			STARTING DATE MARCH 15, 1977												COMPLETION DATE MARCH 15, 1979														
			NORTH	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	
	DESIGN REPORT																												
P 1	STRUCTURES																												
P 2	POWER HOUSE MECH & ELEC.																												
P 3	POWER HOUSE STRUCTURAL																												
P 4	DAM AND DRIES																												
	PROJECT DESIGN REPORT																												
B 1	SUBMIT DRAFT																												
B 2	DISCUSSIONS																												
B 3	FINAL REPORT																												
	DESIGN REVIEW																												
B 1	GENERAL																												
B 2	DAM																												
B 3	STRUCTURES																												
B	PROJECT COMPLETION REPORT																												

LEGEND
 SCHEDULED PROGRESS
 ACTUAL PROGRESS

IRAGUNG DAM PROJECT
 MASTER WORK SCHEDULE
 AND
 UP-TO-DATE PROGRESS

55