

Table 1 Comparison of Three Small Hydros of MEPE

No.	Items	Unit	Hopin	Nam Khan Kha	Zi Chaung
1.	Location		Hopin, Kachin	Moe Gaung, Kachin	Kalaymyo, Sagaing
2.	Installed capacity	kW	1,260	1,250 x 4	1,260
3.	Specifications	-	Horizontal axis Pelton turbine with 1 nozzle, H = 190.5 m, Q = 0.4 m ³ /s per turbine	Horizontal axis Francis turbine, H = 128 m, Q = 1.35 m ³ /s per turbine	Horizontal axis Francis turbine, H = 41.0 m, Q = 2.12 m ³ /s per turbine
4.	Commissioned in	year	September 1991	September 1996	July 1996
5.	Diesel generators if any	kVA	None	None	320, 860 & 608 kVA, 1 unit each These are operated only for evening 3 hours, separately to each other also independently from Zi Chaung hydro.
6.	Peak supply capacity	kW	1,260 kW	2,500 kW at max. since Unit 3 requires spare parts for thirster and Unit 4 have been out of order for more than 1 year.	900 kW at Zi Chaung hydro only. 1,300 kW including 3 diesel generators
7.	Nos. of consumers	h.h.	3,147	3,100	3,000
8.	Peak load	kW	1,300	1,400 kW at 18:15 on 26.11.2002	900 kW on 7 August 2002 1,800 kW in potential load
9.	Present conditions		<ul style="list-style-type: none"> Unit 1 in automatic operation while Unit 2 in manual operation. 	<ul style="list-style-type: none"> Units 1 & 2 are in manual operation. Units 3 & 4 are out of order. 	<ul style="list-style-type: none"> Unit 1 turbine has water leakage from casing.
10.	Remarks		<ul style="list-style-type: none"> Inspected on 26.11.2002 6 hour driving from Mitkyina 	<ul style="list-style-type: none"> Inspected on 10.3.2001 and 26.11.2002 3 hour driving from Mitkyina 	<ul style="list-style-type: none"> Inspected on 28-29.11.2002 1 hour driving from Kalaymyo
11.	Judgement		<ul style="list-style-type: none"> Civil works are in good conditions. Governors need some modifications. 	<ul style="list-style-type: none"> Intake and desander need design review to prevent sediment inflow. Rehabilitation of turbine-generators by manufacturer is needed. 	<ul style="list-style-type: none"> Intake and desander need design review in relation to sedimentation around intake. Turbines need rehabilitation.

4. Monitoring Schedule

- (1) First Monitoring in December 2002
- (2) Second Monitoring in February 2003
- (3) Third Monitoring in May 2003 (subject to minor change)

5. Reporting Schedule

- (1) Progress Report 2 in March 2003 (sent to MEPE in April)
- (2) Draft Final Report in August 2003 (presented and discussed on workshop)
- (3) Final Report in September 2003 (sent to MEPE by JICA)

Hopin Existing Hydropower Station

Inspection date	26-Nov-2002
Location	13 km northeast of Hopin Township, Kachin State
Commissioning	Sep. 1991
Catchment area	23.3 km ²
Intake Weir	9.1 m (L) x 2.1 m (H)
Siphon	167.6 m (L) x ϕ 0.6 m
Headrace channel	0.91 m(B) x 0.76 m(H) x 701 m(L)
Head Tank	739 m(L) x 15.2m(B) x 2.0m(D) 3,058 m ³
Penstock	ϕ 0.61 m x 579 m
Installed capacity	630 kW x 2 units = 1,260 kW
Head	H = 190.5 m
Discharge	Q = 0.425 x 2 units = 0.85 m ³ /sec
Turbine	Pelton type
Distribution line	11kV line, 14km between Station and Hopin + 32km in Hopin, Nammar, and Moe Nyin = 46km in total
Project cost	28,400,000 Kyats



Intake Weir



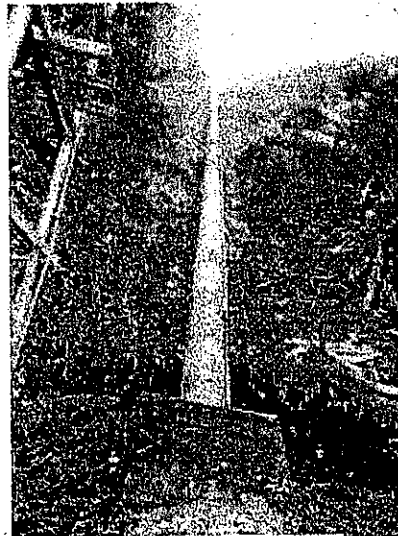
Intake Weir and Siphon



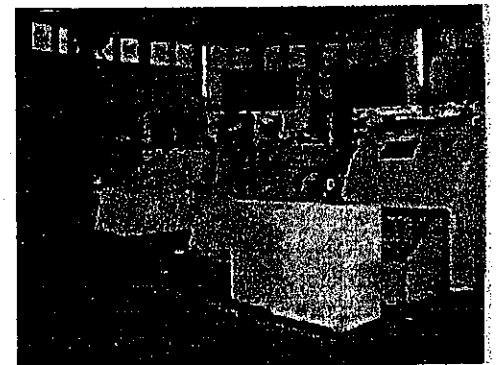
Headrace Channel



Head Tank



Penstock



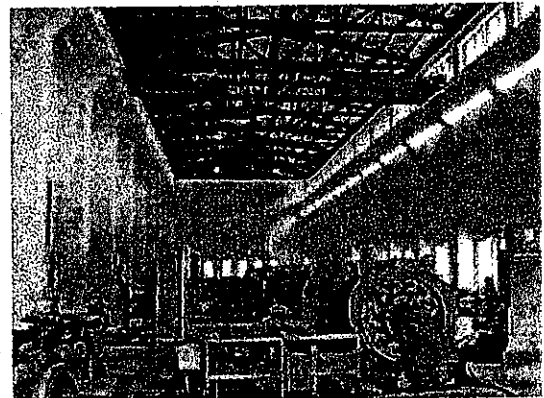
Generating Equipment

Nam Hkam Hka Existing Hydropower Station

Inspection date	10 March 2001
Location	22 km from Mogaung, 30 km west of Myitkyina, Kachin State
Commissioning	Sep. 1996
Installed capacity	1,250 kW x 4 units = 5,000 kW
Head	H = 128 m
Discharge	Q = 5.3 m ³ /sec
Penstock	φ1.52m x 335m, φ1.30m x 31m
Turbine	Francis type with horizontal shaft, made in China
Transmission line	33 kV line to Mogaung via Nam Ti for power supply to 3,000 h.h.
Present conditions	(1) Governor No.3 only is available, others are operated manually. (2) Turbine No.4 is under repairing, others are available. (3) No load operation on Mar.10, 2001. (4) Penstock pipe was stuffed with sand in Dec. 2000 due to no sand flushing at Intake and Pond



Powerhouse



Turbine & Generator



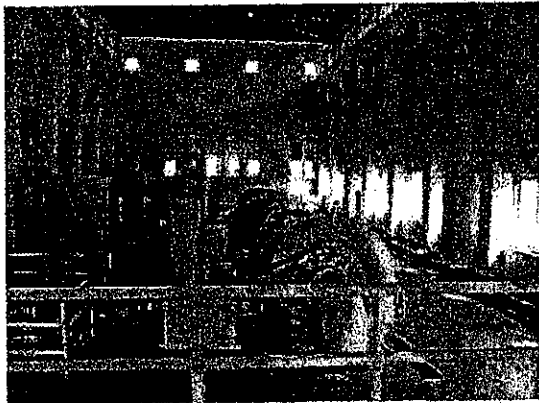
Turbine



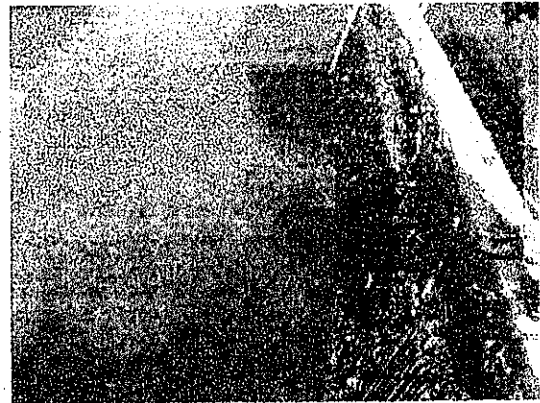
Pond

Kyaume (Nam Saung Gaung) Existing Hydropower Station

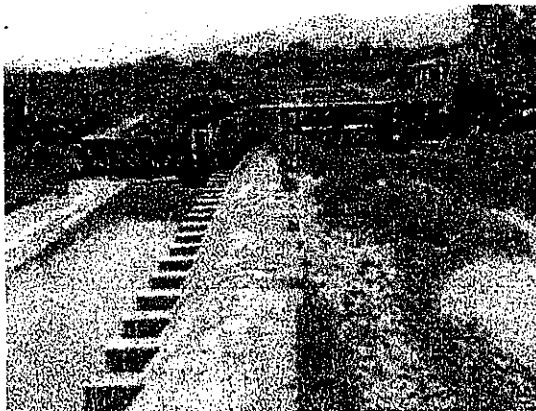
Inspection date	9 February 2001
Location	10 km east of Kyaume, Northern Shan State
Commissioning	Sep. 1996
Installed capacity	2,000 kW x 2 units = 4,000 kW
Head	$H_{\max} = 149.5\text{m}$, $H_j = 149.0\text{m}$
Discharge	$Q_{\text{rated}} = 1.75\text{m}^3/\text{sec}$
Penstock	LPPL $\phi 1.52\text{ m}$, Penstock $\phi 1.22\text{ m} \times 480\text{m}$
Turbine	Francis type with horizontal shaft, made in China
Main transformer	2,500 kVA, 33kV, made in China
Present conditions	<ol style="list-style-type: none"> (1) One unit of turbines is in trouble (2) Electric governors are out of order (3) Being operated at 200kW with one turbine in Feb. 2001 (4) It appears that sand flushing operations at Intake and Pond are not being operated properly, seeing from the sediments at Intake and Pond. Penstock pipe was once clogged by sand. (5) Pond is not being operated for daily regulation of river water, with full of water plant inside.



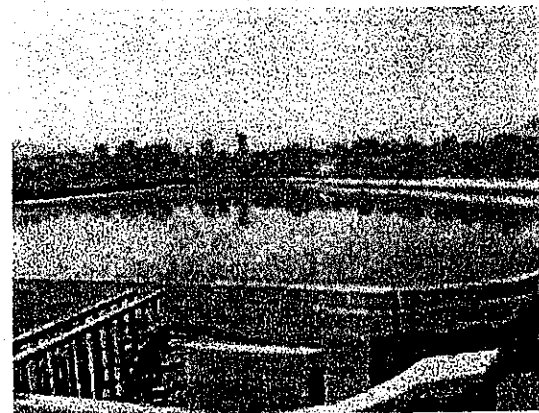
Powerhouse



Trashrack at Pond



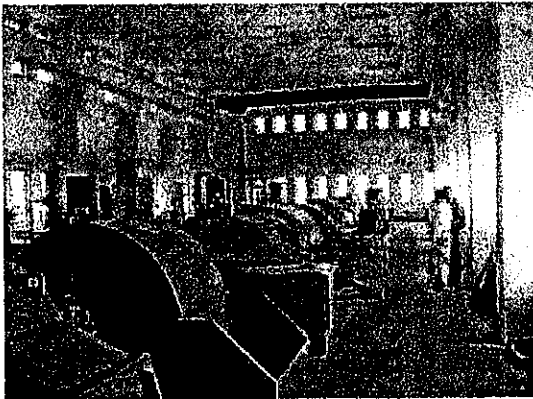
Sediment at Intake



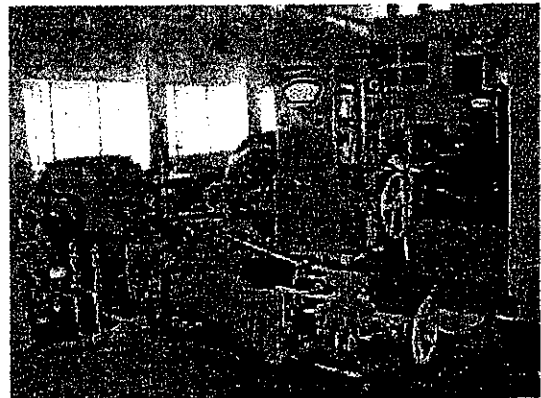
Sediment and Water Plant in Pond

Kyang Hkrang Hka Existing Hydropower Station

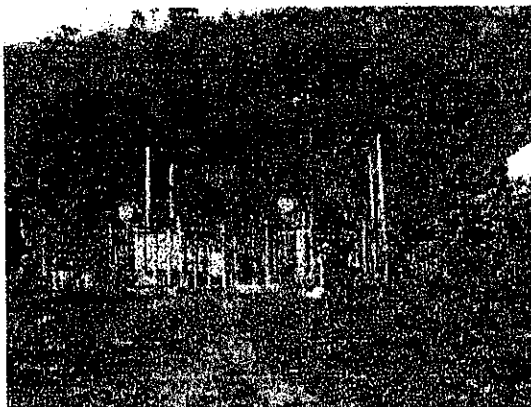
Inspection date	9 March 2001
Location	34 km north of Myitkyina, Kachin State
Commissioning	Apr. 1993
Installed capacity	630 kW x 4 units = 2,520 kW
Head	H = 164 m
Discharge	Q = 0.53 m ³ /sec
Penstock	Penstock ϕ 0.91 m(3') x 420 m
Turbine	Pelton type, made in China
Transmission line	33 kV line, 34 km to Myitkyina and 6 villages
Present conditions	(1) Unit No.3 only was being operated with about 300 kW. (2) Tabak Hydropower Station(8 MW x 3 units = 24 MW, 72km southwest of Myitkyina) and Mali Hydropower Station(3.5 MW x 3 units = 10.5MW, 75km from Myitkyina) are under construction for power supply to Myitkyina.



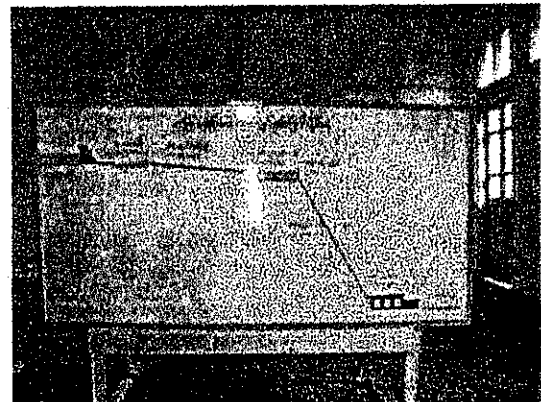
Powerhouse



Turbine & Governor



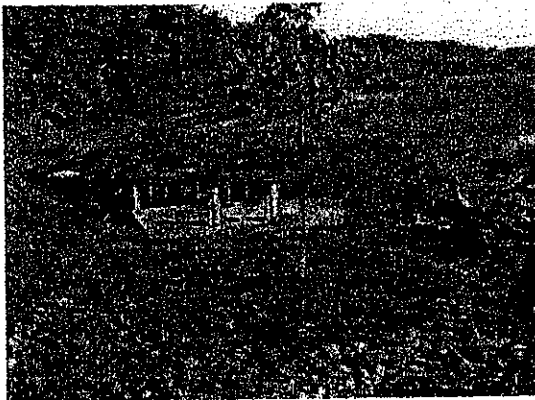
Switchyard



Waterway Profile

Nam Htun (Putao) Existing Hydropower Station

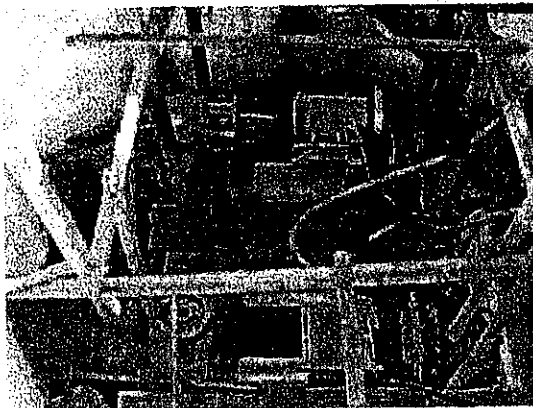
Inspection date	12 March 2001
Location	11 km from Putao, Kachin State
Commissioning	Mar. 1987
Installed capacity	100kW + 60kW
Head	H = 6.1 m (100kW), 4.3m (60kW)
Discharge	?
Penstock	?
Turbine	Kaplan-split type, Voest Alpine (Austria)
Transmission line	11 kV
Present conditions	(1) Being operated at 25kW with one turbine on 12 March. (2) One unit of turbine is under repairing. (3) Synchronized problem between 100kW and 60kW. (4) Generating equipment may be transferred from somewhere. (installed somewhere at first in 1983, and commissioned at Putao in 1987)



Intake



Powerhouse



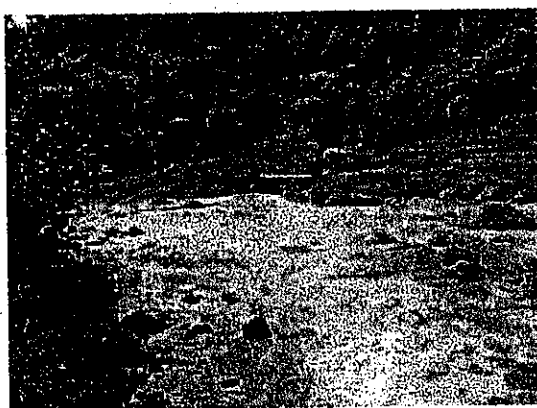
Turbine



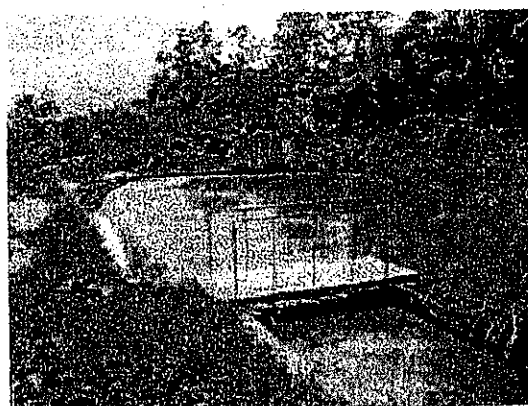
Tailrace

Nam Lat Existing Hydropower Station

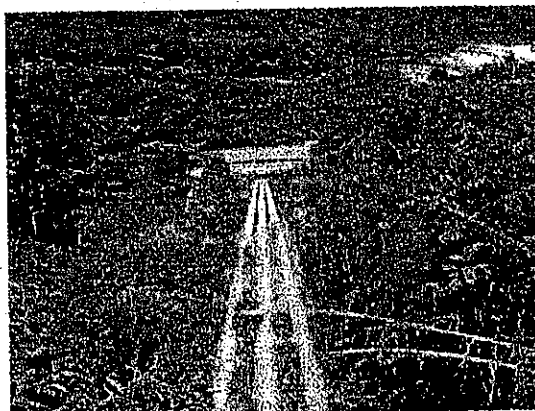
Inspection date	28 May 2001
Location	13 km east of Kyaing Ton, Eastern Shan State
Commissioning	Nov. 1991
Waterway	1.17 m(B) x 1.52 m(H) x 689 m(L)
Head Tak	357 m ³
Penstock	φ0.6 m x 415 m x 3 lines
Installed capacity	160 kW x 3 units = 480 kW
Head	H = 38 m
Discharge	Q = 2.55 m ³ /sec
Turbine	Francis type with horizontal shaft, made in China
Transmission line	11 kV – 13 km
Project cost	15,551,000 Kyats
Present conditions	(1) Two units of turbines are in trouble (2) Electric governors are out of order (3) Being operated at 200kW with one turbine in Feb. 2001 (4) It appears that sand flushing operations at Intake and Head Tank are not being operated properly, seeing from the sediments at Intake. Muddy water is entering the turbine.



Intake



Head Tank



Penstock and Powerhouse



Turbines and Generators

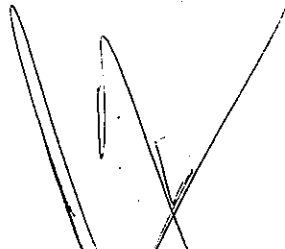
Introduction of Renewable Energies in Rural Areas in Myanmar

Minutes of Meeting

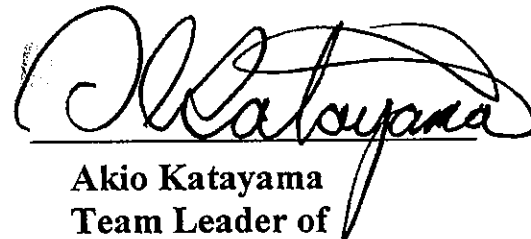
on

26 February 2003

Yangon



**U Tun Aye
Leader of Counterpart,
Deputy Chief Engineer of
Planning Department
Myanma Electric Power Enterprise**



**Akio Katayama
Team Leader of
JICA Study Team**

Minutes of Meeting
in
7th Assignment in Myanmar

Date : 26 February 2003
Time : 10:00 – 12:00
Place : Meeting Room, LDC, MEPE

1. Findings on Second Monitoring of Zi Chaung Power Station

The JICA Study Team and the MEPE Counterpart Team discussed on the outputs of the Second Monitoring of the Zi Chaung Power Station, Kalaymyo, Sagaing Division, made on 16-22 February 2003. Both parties recognized and appreciated the roles and performance of Air-Activated Water Level Gauge and Saxophone for Sand-Flushing in the Operation and Maintenance of a Small Hydro. Both Parties agreed that the main issues to be monitored and studied in the forthcoming Third Monitoring would be:

- (1) Methods of maintenance of civil structures around Intake;
- (2) Detailed inspection and hydraulic design of the waterway system, including discharge measurements on the waterway;
- (3) Practical application method of Saxophone and Flute to sand flushing of Regulating Pond;
- (4) Sustainability of Air-Activated Water Level Gauge by looking for a high powered pump but with a small air-discharge;

2. List of Tools for Monitoring

JICA Team again explained that Attachment-1 showed a List of Tools for Monitoring. The prices, and specifications were tentative and subject to modification. These would be purchased and provided to MEPE in the next fiscal year, subject to final decision by JICA Tokyo.

The Counterpart Team expressed his concurrence to the List. The agreement of MEPE was also conveyed to the JICA Study Team vide its Letter No. 1525/Sa Ma Ya (3)2002 dated 31 December, 2002.

3. Number of Copies of Visual Guides

The JICA Study Team and the MEPE Counterpart Team discussed on the distribution of Visual Guides. The Visual Guide will be translated into Myanmar language. The Visual Guide will include not only Guidelines but also Manual for Rural Electrification with Micro/Pico hydros.

Both parties discussed and agreed on Draft Distribution Plan as follows:

- Staff of DOEP, MEPE and new RE Section
- Staff of 14 Divisional Engineer Offices
- Trainees of DOEP School (newly assigned Township Engineers, etc.)
- Staff of Township Offices of MEPE
- VECs, NGOs, others who wish to have copy. to be distributed mainly through RE Section and Township Offices

Total about 1,000 copies

Then the MEPE Counterpart Team expressed its desire that the Visual Guides be printed and submitted in 1,000 copies.

4. Others

- The MEPE Counterpart Team expressed its desire to receive also computer set that JICA Study Team were using, at the time when the Database would be handed over to them. JICA Study Team took note.

Attachments:

1. List of Tools for Monitoring
2. List of Participants

LIST OF PROPOSED ELECTRICAL TOOLS AND INSTRUMENTS FOR MONITORING

1 US\$=120Yen

No.	Description	Quantity (set)	Unit Price (1,000 Yen)	Amount (1,000 Yen)	Remarks
Testing and Measuring Devices					
1	Digital AC power meter for V, A, and W	1	266	266	
2	Megger (1000V, 2000Mohm)	3	20	60	
3	Megger (500V, 1000Mohm)	5	20	100	
4	Universal circuit tester	5	30	150	
5	Clip tester	5	70	350	
6	Vibration meter	1	200	200	振動計
7	Thickness meter	1	150	150	厚み計
8	Dye check	5	30	150	
9	Defect sounder with magnetic powder	1	200	200	磁粉探傷器
10	Stopwatch	10	3	30	
11	Pressure calibrator	1	320	320	圧力校正器
12	Photo-voltaic revolution meter	3	100	300	光電回転計
13	One set of tools	10	75	750	
14	Digital frequency meter	2	25	50	
Sub-total for Testing and Measuring Devices				3,076	
Maintenance Tools and Equipment					
1	Engine electric welder (240 A, 20 h)	1	360	360	3,000\$ in Yangon
2	Gas welder	1	13	13	
3	Portable electric drill, 20 mm	1	41	41	
4	Portable electric grinder	1	35	35	
5	Micrometer caliper	1	46	46	
6	Extensible inside micro-meter	1	70	70	
7	Tool for drilling screw hole (tap & dice) and primary-hole drill)	3	80	240	ねじ立て工具、(タップ、ダイス)と下ドリル
8	Box spanner set	3	60	180	組ボックススパナ
9	Spanner set	5	36	180	組スパナ
10	Dial indicator with magnetic stand	5	36	180	
11	Engine generator, 5 kW	-			included in item 1
Sub-total for Turbine				1,345	
Total				4,421	
Tax in Japan (5%)				221	
Grand Total				4,642	

ATTENDANCE LIST

Date : 26 Feb 2003

Place : Meeting Room, LDC

Subject : Joint Meeting on Second Monitoring

If you would like to have handouts of today's material, please check.

No.	Name	Title	Signature	Handout
1	U SAW LWIN	Adviser MOEP		
2	U NAING WIN	S.E (mech)		✓
3	U TUN NAING	Assit. Director		(DEP) ✓
4	U MYO AUNG	E.E		
5	U Thein Faw	S.A.E		
6	Daw Stella Kyne	E.E		✓
7	Saw Nay Paing	S.A.E		✓
8	U Htay Win	SAE		
9	Daw Shwe War Win	S.A.E		
10	U BA Ngwe	SE		
11	Kaoru Yamaguchi	JICA Mission (Finance)		
12	Roger Harris	JICA Study Team		
13	Cloro MAIUE	Nippon Koei JICA Study Team		
14	Ryozaku Sudo	- " -		
15	Hnin Hin Aye	EE		
16	May Phyu Win	Secretary, JICA Study Team		
17	Kyaw Non Kheing	I.D.		
18	Akio Katayama	JICA Study Team Coordinator		
19	Yuka Nakagawa	JICA Study Team		
20				+4 (Planning Dept.)

THE GOVERNMENT OF THE UNION OF MYANMAR
MYANMA ELECTRIC POWER ENTERPRISE

Letter No. 1468 /Sa Ma Ya (3) /2002
 Dated. the 11th December, 2002

OUR FAX : 095-1-221006

Attention : Mr. Akio Katayama
 Team Leader
 JICA Study Team

Subject : Concurrence on the site selection of Zi Chaung for
 Monitoring
 (Study on Introduction of Renewable Energies in Rural
 Arcas in Myanmar)

Reference : Your Letter No. LLE-02-11 dated 4 December 2002

Dear Sir,

With reference to the captioned subject, we would like to inform you of our concurrence for the monitoring of Zi Chaung Hydropower Station to prepare Operation and Maintenance Manual.

Best Regards,



for Managing Director

(Soe Myint Lwin-Deputy Chief Engineer.)

Received by
 Akio Katayama
 11 Dec. 2002

Copy to: Managing Director's Office

Address:
 197 - 199, Lower Kemmendine Road,
 Ahlone P. O.
 Yangon - Myanmar.

Cable / Telegram:
 E S B U B
 Yangon

Telex:
 21306
 MEPEUM BM

Telephone:
 222866

THE GOVERNMENT OF THE UNION OF MYANMAR
 MYANMA ELECTRIC POWER ENTERPRISE

Letter No. 1525 /Sa Ma Ya (3)/2002
 Dated. the 31st December, 2002

OUR FAX : 095-1-221006

Attention : Mr. Akio Katayama
 Team Leader
 JICA Study Team

Subject : Study on Introduction of Renewable Energies in Rural Areas in Myanmar
 List of Meters and Tools for Monitoring

Reference : Your Letter No. LLE-02-12 dt: Dec-6,2002

Dear Sir,

We would like to inform you that your proposed attached list of electrical tools and Instruments for monitoring by your above reference letter is agreeable to us.

Best Regards,



for Managing Director

(Soe Myint Lwin- Deputy Chief Engineer)

Address:
 197 - 199, Lower Kemmendine Road,
 Ahlone P. O.
 Yangon - Myanmar.

Cable / Telegram:
 E S B U B
 Yangon

Telex:
 21306
 MEPEUM BM

Telephone:
 222866

MINUTES OF MEETING
FOR THE STUDY ON INTRODUCTION OF RENEWABLE ENERGIES IN RURAL
AREAS IN MYANMAR

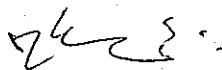
On June 24, 2003, the JICA Study Team headed by Akio Katayama for the technical cooperation on "Introduction of Renewable Energies in Rural Areas in Myanmar" held a joint meeting to present the Study results conducted so far, especially the contents of Manual.

The MEPE counterpart team headed by Dr. Sann Oo, Managing Director of MEPE, who opened the meeting, appreciated the monitoring and technology transfer made at Zi Chaung power station and Study results.

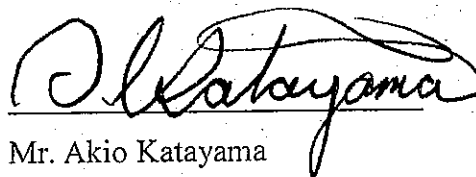
The Study team announced the final workshop is scheduled on the 5th of August. MEPE counterpart team acknowledged it.

MEPE counterpart team and the JICA Study team present this Minutes of Meeting in good faith.

YANGON, June 26, 2003



U Ye Win
Superintendent Engineer, MEPE



Mr. Akio Katayama
Team Leader, JICA Study Team

MINUTES OF MEETING
FOR THE STUDY ON INTRODUCTION OF RENEWABLE ENERGIES IN RURAL
AREAS IN MYANMAR

On August 5, 2003, the JICA Study Team headed by Akio Katayama for the technical cooperation on "Introduction of Renewable Energies in Rural Areas in Myanmar" held a final seminar to present the Study results in line with the Draft Final Report as per the Agenda attached to invite questions and comments.

The Myanmar counterpart team headed by Dr. Thein Tun, Director General of the Ministry of Electric Power and Dr. Sann Oo, Managing Director of MEPE, who opened the meeting, appreciated the Study including the Guideline and the Manual.

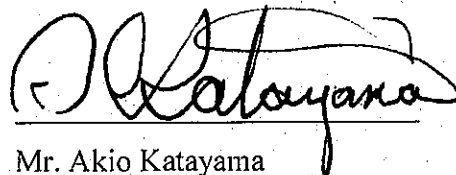
In light of the Guideline and the Manual, new organizational section to take initiative for Rural Electrification will be established within the organizational structure of MEPE after 2004 when the Grid generation capacity will be significantly reinforced. Comments to the Draft Final Report by Myanmar counterpart will be provided to the Study team through JICA Yangon office by August 20th.

MEPE counterpart team and the JICA Study team present this Minutes of Meeting in good faith.

YANGON, August 6, 2003



Dr. Sann Oo
Managing Director, MEPE



Mr. Akio Katayama
Team Leader, JICA Study Team

Final Workshop

For The Study on Introduction of Renewable Energies in Rural Areas in Myanmar

Date 5th, August 2003

Place: Mindon Room, 2F, Sedona Hotel, Yangon

TIME: 9:30-16:00

9:30

Registration and Delivery of Materials

10:00

Opening Address

Dr. Thein Tun, Director General, DEP

Dr. Sann Oo, Managing Director, MEPE

Mr. Yasushi Iwata, Embassy of Japan, Yangon

Mr. Takahiro Sasaki, Resident Representative, JICA Technical Cooperation Section, EOJ

10:20

Introduction of Experts for Rural Electrification

Study Outline by Katayama incl. Q&A 10:20-11:20

11:20

Guidelines

Institutional Aspects by Harris incl. Q&A 11:20-11:40

Social and Financial Aspects by Yamaguchi incl. Q&A 11:40-12:00

12:00-13:30 Lunch Break at SEC, 11F, Sedona Hotel

13:30

Manuals

Outline of Manuals by Katayama incl. Q&A 13:30-13:45

Monitoring and Manual of Waterway by Hane incl. Q&A 13:45-14:00

Visual Guide by Katayama incl. experience of Myanmar expert and Q&A 14:00-14:45

Coffee Break 14:45-15:00

Development Projects by Katayama & Nakagawa incl. Q&A 15:00-15:40

Database by Nakagawa incl. Q&A 15:40-15:55

15:55

Closing Address by Katayama

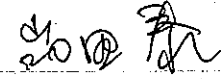
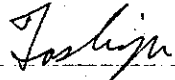
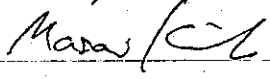
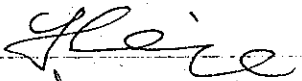
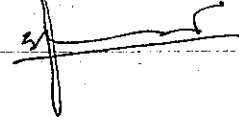
Study on Introduction of
Renewable Energies
in Rural Areas in
MYANMAR


✿ WORKSHOP ATTENDANCE LIST ✿

Date 05 Augst 2003

Place : Mindon Room, Sedona Hotel, Yangon

Subject : Final Workshop for the Study on Introduction of Renewable Energies in Rural Areas in Myanmar

No.	Name	Title	Signature
1	Mr. Yasushi Iwata	First Secretary, EOJ	
2	Mr. Takahiro Sasaki	Resident Rep. JICA	
3	Mr. Sato	Assistant Resident Rep. JICA	
4	Mr. Kido	JICA, Tokyo	
5	Mr. Kamiya	MD, Nippon Koei	
6	U Khun Kyaw		
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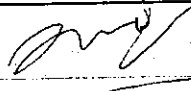
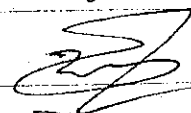

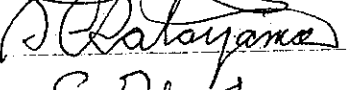
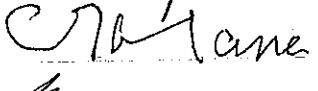
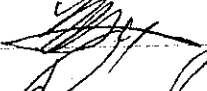
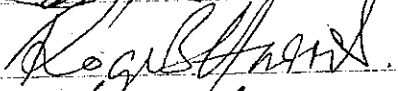
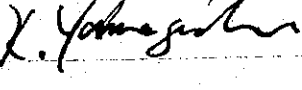

**Study on Introduction of
Renewable Energies
in Rural Areas in
MYANMAR**


WORKSHOP ATTENDANCE LIST


Date 05 Augst 2003

Place : Mindon Room, Sedona Hotel, Yangon

Subject : Final Workshop for the Study on Introduction of Renewable Energies in Rural Areas in Myanmar

No.	Name	Title	Signature
1	U Saw Win	Dy DG	
2	U Soe Myint Lwin	Dy CE	
3	U Maung Maung Than	Program Officer	
4	Mr. A Katayama	Team leader, JICA Study Team	
5	Mr. G Hane	Nippon Koei	
6	Mr. R. Sudo	"	
7	Mr. R Harris	"	
8	Mr. Yamaguchi		
9	Ms. Yukari Nakagawa		
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Study on Introduction of
Renewable Energies
in Rural Areas in
MYANMAR



WORKSHOP ATTENDANCE LIST

Date 05 Augst 2003Place : Mindon Room, Sedona Hotel, YangonSubject : Final Workshop for the Study on Introduction of Renewable Energies in Rural Areas in Myanmar

No.	Name	Title	Signature
1	DR. THEIN TUN	Director General, D.E.P	
2	DR. SANN Oo	Managing Director	
3	U TIN Aung	Chief Engineer	
4	U Tin Co	C.I.C	
5	Daw San Keywe	staff officer, DHP	
6	Daw Thida Sunn	Staff Officer, DHP	
7	Daw Saw Ohnmar Han	" , DHP.	
8	Daw Saw Ohnmar Han		
9	May Phyu Win	Secretary, JICA Study Team	
10	Moe Shwe Sym Nang	Secretary, NK, Yon	
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Study on Introduction of
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MYANMAR

WORKSHOP ATTENDANCE LIST

Date : 05 Augst 2003

Place : Mindon Room, Sedona Hotel, Yangon

Subject : Final Workshop for the Study on Introduction of Renewable Energies in Rural Areas in Myanmar

No.	Name	Title	Signature
1	Daw Wai Wai Myint	S.A.E	
2	Daw THIDA HTUN	S.A.E	
3	U SOE WIN	EXECUTIVE ENGINEER	
4	H Kyaw Tin	Director	
5	U Myo Aung	E.E	
6	U Cho Aye	Asst. CE	
7	U Kyaw Zay Ya	Glougaard	
8	U Thein Naing Tun	FALAM	
9	U. Myint Swe	HAKHA	
10	U MAW SI THA	NAM MOP	
11	U Soe Tin	A.E.E - M.E.P.E	
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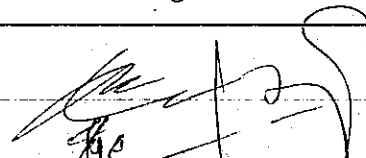
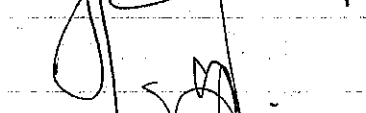
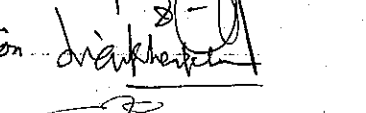
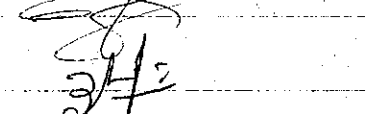
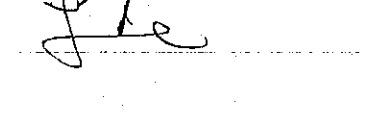
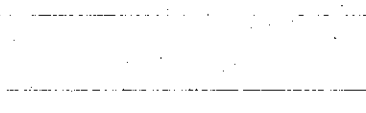

**Study on Introduction of
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MYANMAR**

WORKSHOP ATTENDANCE LIST

Date 05 Augst 2003

Place : Mindon Room, Sedona Hotel, Yangon

Subject : Final Workshop for the Study on Introduction of Renewable Energies in Rural Areas in Myanmar

No.	Name	Title	Signature
1	U Tin Hla	E.E. (A) Planning	
2	U Kyaw Khin Tin	DEF Zawgyi I HPS	
3	U Tin Myo Thant	Nam Han. HRA H.P.S.	
4	U LIAN KHAN KHAM	ZALU Hydro power station	
5	U Romas	CHINKHRA KHA H.P.S	
6	U Khin Thio	HA KHA	
7	U KANUYA	Nippon Koei	
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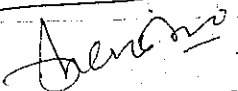

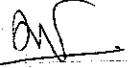
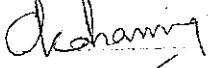
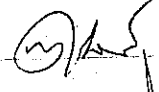
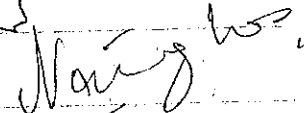
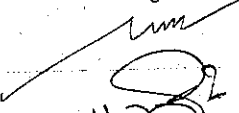


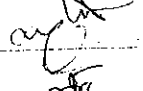

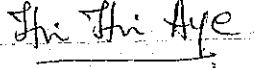
Study on Introduction of
Renewable Energies
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WORKSHOP ATTENDANCE LIST

Date 05 Augst 2003

Place : Mindon Room, Sedona Hotel, Yangon

Subject : Final Workshop for the Study on Introduction of Renewable Energies in Rural Areas in Myanmar

No.	Name	Title	Signature
1	U Aung Thit	Ka Laysmyo	
2	U Thein Tun.	Work Shop. AE	
3	U TAR TAR	ZEE CHANG. AE	
4	U TUN CHIT	Sedawgyi P.S	
5	U KO KO NAING	NAM SAUNG GAUNG KYAUK ME (AG)	
6	U Kyi Lin	Chi Chang	
7	U Naing Wz.	S.E	
8	U Tun Naing	Deputy Director	
9	U MYINT OO	A. D	
10	U BA Ngwe	SE	
11	U Aung Tun	A.E	
12	U Khine Min Wai	AE	
13	Daw Hnin Hnin Aye	EE. Planning Dept.	
14			
15			

Additional Discussion for the Workshop on Introduction of Renewable Energies in Rural Areas in Myanmar, 5th August 2003.

- Date: 6~7th August 2003
Place: LDC Room, MEPE
Contents: Principals and operation and maintenance of equipments for
- Generator
 - Governor
 - Excitor

Seminar on electric equipments was held in response to the request in the Workshop on 5th August 2003. It was to provide basic knowledge of principal of electric equipment and know-how of its operation and maintenance to the engineers from hydro power stations in various places in Myanmar.

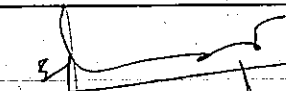
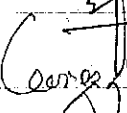

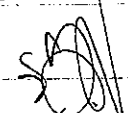


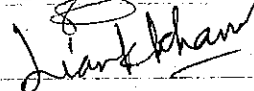

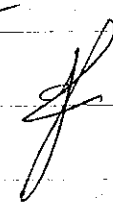
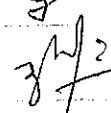

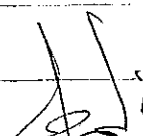
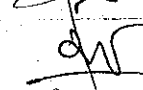

Study on Introduction of
Renewable Energies
in Rural Areas in
MYANMAR

WORKSHOP ATTENDANCE LIST

Date 06-07 Augst 2003

Place : LDC Room, MEPE

Subject : Additional Discussion and Q&A for the Workshop in 5th August 2003

No.	Name	Title	Signature
1	U KHUN KYAW	Shan. Hydro Eng.	
2	U MAW SI TUN	NAM WOP Hydro Stal	
3	U Aung Thit	Zi Chaung P.S	
4	U Tin Myo Thant	Nam Kbar. Kba H.P.S	
5	U Kyaw Zay Ya	Glaing Chaung	
6	U RO MAS	Chyan Hkang HKA	
7	U LIAN KHEN KHAM	Zakui Hydro power station	
8	U Tin Oo	Twei Sacum Power Station	
9	U Myint Swe	Dauing VA Station	
10	U Khua Thio	Lai Va station	
11	U KO KO NAING	Nam Saung Naung Power	
12		Station, Kyaukse, North-	
13		ern Shan State.	
14	U SOE TIN	Nam Myaw, Hydro. L.S.O	
15	U TUN CHIT	Bedawgyi-P.S.	

Study on Introduction of
Renewable Energies
in Rural Areas in
MYANMAR



WORKSHOP ATTENDANCE LIST

Date 06-07 Augst 2003Place : LDC Room, MEPESubject : Additional Discussion and Q&A for the Workshop in 5th August 2003

No.	Name	Title	Signature
16	X U Kyaw Khaing Tun	Zaw Gyi I HPS. South ⁿ Shan St.	
17	Z U Thet Naing Tun	Falam - CHIN state	
18	X U NAING WIN	S. E	
19	X U BANgaw	SE	
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THE GOVERNMENT OF THE UNION OF MYANMAR
MYANMA ELECTRIC POWER ENTERPRISE

Letter No. /
Dated.

To Mr. Akio KATAYAMA
Team Leader, JICA Study Team, Tokyo
Fax: ++81-3-5276-3082


via Mr. Takahiro SASAKI
Resident Representative of JICA, Yangon
Fax: 255477

Subject: Draft Final Report
The Study on Introduction of Renewable Energies in Rural Areas in Myanmar

Dear Sir,

Please be informed that MEPE has no comment on the Draft Final Report. You are requested to proceed with finalization of the Report and submit to us in the near future.

Very truly yours,


Dr. Sam Oo
Managing Director
Myanma Electric Power Enterprise

Address:
197 - 199, Lower Kemmendine Road,
Ablone P. O.
Yangon - Myanmar.

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