

APPENDIX 5

COST ESTIMATION BORNE BY THE RECIPIENT COUNTRY

1996

THE UNIVERSITY OF CHICAGO

Construction Cost to be Borne by Maldivian Side

Main items of the construction cost to be borne by Maldivian side are as follows:

1. Hulhudhoo/Meedhoo Island

1-1	Site Preparation Work for Power Station	
	(1) Site levelling and plantation	4,500Rf
	(2) Boundary fence and access road	219,000Rf
	(3) Water supply and drainage for construction	20,000Rf
	(Sub-Total)	(243,500Rf)
1-2	Construction of Office Building	
	(1) Building work	1,700,000Rf
	(2) Rain water collection system	50,000Rf
	(3) Water supply system	12,500Rf
	(4) Furniture and curtain	60,000Rf
	(Sub-Total)	(1,822,500Rf)
1-3	Installation work for Distribution System	
	(1) 11kV cables (about 4,100m)	410,000Rf
	(2) 600V cables (about 14km)	1,400,000Rf
	(3) Substations (6 sites)	18,000Rf
	(4) Distribution panels	135,000Rf
	(5) Installation of branch distribution cable, etc.	1,800,000Rf
	(Sub-total)	(3,763,000Rf)
	Total (Hulhudhoo/Meedhoo Island)	5,829,000Rf

2. Hithadhoo Island

2-1	Construction of Power House	
	(1) Building work	2,000,000Rf
	including site preparation works	
	(2) Re-installation of Generator sets	140,000Rf
	including materials procurement	
	(Sub-total)	(1,840,000Rf)
2-2	Installation Work for Distribution System	
	(1) 11kV cables (about 4,300m)	430,000Rf
	(2) 600V cables (about 22km)	2,200,000Rf
	(3) Substations (6 sites)	18,000Rf
	(4) Distribution panels	135,000Rf
	(5) Installation of branch distribution cable, etc.	3,037,500Rf
	(Sub-total)	(5,820,500Rf)
	Total (Hithadhoo Island)	7,660,500Rf
	Grand Total	13,489,500Rf

APPENDIX 6

FIELD REPORT

2010/11/17

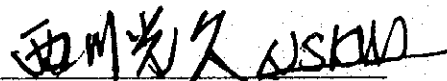
2010/11/17

**BASIC DESIGN STUDY
FOR
ATOLL ISLAND ELECTRIFICATION PROJECT (Phase II)
IN
THE REPUBLIC OF MALDIVES**

FIELD REPORT

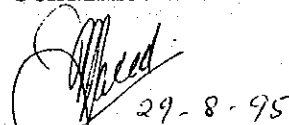
AUGUST 1995

Prepared by ;



Mr. Mitsuhiisa NISHIKAWA
Leader, Consultant Team
JICA Basic Design Study Team

Confirmed and Accepted by ;



Mr. Mohamed SAEED
Managing Director
Maldives Electricity Board (MEB)

**JICA BASIC DESIGN STUDY TEAM
(YACHIYO ENGINEERING CO., LTD.)**

**BASIC DESIGN STUDY FOR ATOLL ISLAND ELECTRIFICATION PROJECT (Phase II)
IN THE REPUBLIC OF MALDIVES**

CONTENTS OF FIELD REPORT

	page
1. Introduction -----	1
2. Design Conditions -----	1
2.1 Climatic and Site Conditions-----	1
2.2 Power Supply Conditions -----	1
2.3 Design Standards to be applied -----	2
3. Generating Facilities for Hulhudhoo/Meedhoo Is. -----	2
3.1 Outline drawings for Major Facilities-----	2
3.2 Diesel Engine Generator (DEG) -----	2
3.3 Fuel System -----	3
3.4 DC Supply System -----	3
3.5 Workshop Equipment, Tools, Spare Parts, etc.-----	3
4. Distribution facilities for Hulhudhoo/Meedhoo and Hithadhoo Is.-----	4
4.1 Step-up transformer -----	4
4.2 Distribution substation -----	4
4.3 Local Distribution Boards -----	5
4.4 Household panels -----	5
4.5 Power Distribution Cables -----	5
4.6 Street Lightings -----	6
5. Power house building -----	6
5.1 Rooms -----	6
5.2 Specifications -----	6
6. Office Building -----	7
7. On-the-Job Training (OJT) -----	7
8. Tentative Implementation Schedule -----	7
9. Work Share between Japanese side and Maldivian side -----	7

Attachment-1	Site Layout Plan Hulhudhoo/Meedhoo P/S
Attachment-2	One Line Diagram of DEG
Attachment-3	Fuel Flow Diagram
Attachment-4	Power House Layout Plan
Attachment-5	One line diagram of distribution networks in Hulhudhoo/Meedhoo Island
Attachment-6	One line diagram of distribution networks in Hithadhoo Island
Attachment-7	Tentative Implementation Schedule
Attachment-8	Work Share

Handwritten signature

1. Introduction

In order to build mutual understanding by the JICA Basic Design Study Team (hereinafter referred to as "the Team") for Atoll Island Electrification Project (Phase II) (hereinafter referred to as "the Project") and Maldives Electricity Board (hereinafter referred to as "MEB") on the technical and engineering aspects, implementation schedule and work share for the Project, this Field Report was prepared by the Team based on the results of field surveys and discussions with officials concerned of MEB as well as MEB's requests.

However, all the items and components described in this report will be decided after further studies in Japan. And the draft final report will be submitted to Maldivian side around the end of October, 1995 as stated on the Minutes of Discussion signed on 10th of August, 1995.

2. Design Conditions

The following conditions shall be considered for the basic design of the Project.

2.1 Climatic and Site Conditions

The following data source from some meteorological data 1966-1991, Department of Meteorology Male' shall be adopted to the Project.

(1) Altitude of the sites	Approximately 1 m from sea level.		
(2) Ambient temperature	Maximum	34.1 °C (for AC.design:32.0°C)	
	Minimum	17.2 °C	
	Average	28.0 °C	
(3) Wind : Velocity	Maximum	31.9 m/sec	
	Average	4.9 m/sec	
: Direction	Spring	W to E	Wet monsoon
	Summer	W to E	Wet monsoon
	Autumn	W to E	Wet monsoon
	Winter	NE to SW	Dry season
(4) Relative humidity	Annual mean	95 %	
(5) Rainfall	Annual mean	1,943.0 mm	
	Month mean	162.0 mm	
	Day maximum	175.9 mm	
	One hour Max.	10.0 mm	
(6) Seismic acceleration	Nil		
(7) Thunder days	34 times/year		
(8) Soil bearing capacity	10 tons/m ² (assumed)		
(9) Under ground water level	50 cm below ground level		

2.2 Power Supply Conditions

(1) Power Demand Forecast

Power demand forecast of subject islands up to year 2000 is given in the following table. (As of Aug. 1995) (kW)

Island	No. of Household as of Jul '95	Demand/per Household (W/house)	1995	1996	1997	1998	1999	2000
Hulhudhoo/Meedhoo	789	230	181	200	220	242	266	292
Hithadhoo	1,345	250	336	370	407	448	492	542

(Note-1) Demand of one household includes public facility's demand.

(Note-2) Demand increase ratio per one year is assumed as 10% up to year 2000.

(Note-3) It can be judged that the total capacity of existing generators (4 x 160kW) in Hithadhoo is enough for demand in year 2000.

- | | |
|--|---|
| (2) Type of Generators | Diesel Engine Generator (continuous type) |
| (3) Number of DEG set | 2 sets for normal operation and 1 set for stand-by |
| (4) Fuel system | |
| 1) Fuel | Diesel oil (Same as Phase I Project) |
| 2) Main oil storage tank capacity | Enough for one month operation(30 days) |
| 3) Day tank capacity | One tank for 3 DEG enough for 10 hours operation |
| (5) Electrical system | |
| 1) Generating system | 3 phase, 4 wire, 415/240 V, 50 Hz |
| 2) Distribution system | 3 phase, 4 wire, 400/230 V, 50 Hz
(Supply voltage to the consumers) |
| 3) Control system | AC 200/100 V and DC 24 V |
| (6) Neutral earthing system | Direct earth for 400 V lines and fuel storage tank.
(Lightning protection will be earthed separately.) |
| (7) Allowable voltage drop for distribution lines. | Maximum 7.5 % according to standard in UK |

2.3 Design standards to be applied

The following standards shall in principle be applied to the Project.

- | | |
|------------------------------|---------------------------------|
| (1) Noise level | JEAC or equivalent |
| (2) Exhaust gas | Relevant Japanese standards |
| (3) Civil and building works | AIJ or equivalent |
| (4) Generating facilities | JIS, JEM, JEC, or equivalent |
| (5) Electrical panels | JIS, JEM, JEC, or equivalent |
| (6) Distribution facilities | British Standards or equivalent |

3. Generating Facilities for Hulhudhoo/Meedhoo Island

3.1 Outline drawings for Major Facilities

Outline drawings for major generating facilities are attached as follow;

- | | |
|------------------------|-------------------------|
| (1) Site layout plan | See <u>Attachment-1</u> |
| (2) One line diagram | See <u>Attachment-2</u> |
| (3) Fuel flow diagram | See <u>Attachment-3</u> |
| (4) Power House Layout | See <u>Attachment-4</u> |

3.2 Diesel Engine Generator(DEG)

- | | |
|----------------------|---|
| (1) Diesel Engine | |
| 1) Operating duty | Continuous |
| 2) Capacity | 150 kW (203.94 PS) |
| 3) Revolution | 1,500 rpm |
| 4) Type | Indoor |
| 5) Fuel | Diesel oil |
| 6) Starting method | DC starting motor |
| (2) Generator rating | |
| 1) Operating duty | Continuous |
| 2) Capacity | 187.5 kVA |
| 3) Type | Synchronous |
| 4) Frequency | 50 Hz |
| 5) Revolving speed | Same as diesel engine |
| 6) Rated voltage | 415/240 V |
| 7) Power factor | 0.8 (lagging) |
| 8) Connection | Wye(Y), neutral shall be directly earthed |

Handwritten mark

- 9) Excitation Brush-less type
- 10) Synchronizing Auto and Manual

3.3 Fuel system

- (1) Fuel flow diagram See Attachment-3
- (2) Main oil storage tank Approximately 75 m³ (for one month operation)
- (3) Day tank capacity Approximately 1.0 m³ (for 10 hours operation)
- (4) Oil transfer pump 2 sets (1 set for stand-by) of 40 l/min.
(Pump capacity shall be capable of transferring fuel into a day tank within five minutes per a 200 liter drum can.)
- (5) Transfer system from a main tank to a day tank Automatic control system by level switch installed in a day tank.
- (6) Handy pump One set with 5 m hose
- (7) Piping To be installed on the ground (Aerial or in trench)
- (8) Oil/Water separator To be provided on the common delivery line of fuel transfer pump
- (9) Composition of Fuel Same as Phase I Project

Item	Unit	Value
Specific Gravity (60 F°C)	-	0.82 - 0.89
Kinematic Viscosity (40°C)	Stokes(CST)	1.80 - 5.00
Pour Point	°C	9
Flash Point	°C	60
Sulfur Content	wt %	1.0
Water Content	Vol.g	0.05
Ash Content	wt.g	0.01
Calorific Value	kJ/kg	42,700

3.4 DC Power Supply System

Common DC 24 V system shall be supplied for the following equipment and systems

- (1) Starter of DEG
- (2) Control source for a generator control panel
- (3) Power source for the communication facility

3.5 Workshop Equipment, Tool, Spare Part, etc.

- (1) High frequency radio equipment 1 set of base station and 6 sets of handy talkies shall be provided for each site as same as Phase I Project.
Base station; 3 channels shall be programmed:
Ch.1 146.375 MHz
Ch.2 146.400 MHz
Ch.3 146.425 MHz
- (2) Workshop equipment and Maintenance tool
 - 1 lot of workshop equipment same as phase I Project shall be provided for Hulhudhoo/ Meedhoo site.
 - 1 lot of diesel engine maintenance tool same as phase I Project shall be provided for Hulhudhoo/ Meedhoo site including tacho-meter.
 - 1 lot of maintenance tool for electrical equipment same as phase I Project shall be provided.
 - 1 set of megger tester, DC dielectric insulation tester for 11kV and transformer insulation oil tester shall be provided.

(3) Spare Parts

- Spare parts for diesel engines, generators and Panels same as phase I Project shall be provided.
- Air filters of DEG shall be provided for 2 years.

4. Distribution facilities for Hulhudhoo/Meedhoo and Hithadhoo Islands

Major equipment and materials to be provided for the power stations and power distribution networks for Hulhudhoo /Medhoo and Hithadhoo islands shall be as follows:

4.1 Step-up transformer

In order to minimize the voltage drop of distribution networks, a step-up transformer and its auxiliaries shall be provided to the power stations.

Specifications for main equipment are as follows:

(1) Step up transformer

1) For Hulhudhoo/Meedhoo	Capacity	400kVA
	Voltage	415V/11kV
	Connection	△-△
	Type	Outdoor type
	Cooling	Oil and natural cooling
2) For Hithadhoo (to be supplied and installed by MEB)	Capacity	750kVA
	Voltage	415V/11kV
	Connection	△-△
	Type	Outdoor type
	Cooling	Oil and natural cooling

(2) LV panel for step-up transformer

1) For Hulhudhoo/Meedhoo	1 pc	ACB for 400kVA transformer with all protection system
	1 pc	V-meter with selector switch
	1 pc	A-meter with selector switch
	3 pcs	Indication lamps with fuses for incoming
	3 pcs	Indication lamps with fuses for outgoing busbar
2) For Hithadhoo (to be supplied and installed by MEB)	1 pc	ACB for 750kVA transformer c/w all protection and CT's
	1 pc	V-meter with selector switch
	1 pc	A-meter with selector switch
	3 pcs	Indication lamps with fuses for incoming
	3 pcs	Indication lamps with fuses for outgoing busbar
	1 lot	


(3) HV and LV outgoing panels

1) For Hulhudhoo/Meedhoo	1 lot	Details are shown in Attachment-5
2) For Hithadhoo (to be supplied and installed by MEB)	1 lot	Details are shown in Attachment-6

4.2 Distribution Substation

In order to step-down the voltage from 11kV to 415/240V, equipment and materials for distribution substations (DS) will be provided by Japanese side. Installation of such equipment and materials including civil works and construction of shed will be carried out by MEB. Each DS will consist of the following equipment :

(1) HV fuse box	1 set	1 x 11kV power fuse. Self-standing weather proof type
-----------------	-------	--

(2) Transformer	1 set	Voltage ; 11kV/415/240V Connection ; Δ -Y
(3) LV distribution board	1 set	Refer to Attachment-5 and 6

4.3 Local distribution panel

In order to distribute 1- phase 230V and /or 3 phase - 400 V power to consumers, Local distribution panels will be provided by the Japanese side. Installation of local distribution panels including civil works shall be carried out by MEB. Each local distribution panel will consist of the following equipment :

(1) Type and structure of case	Outdoor wall flush mounted type made by fiberglass reinforced polyester(FRP).
(2) Rated voltage	400/230 V (Supply voltage to consumers)
(3) Components	
1) Incoming circuit breaker with ELR (setting 0.03-10A, timer 0-0.5sec.)	1 set
2) Outgoing circuit breaker (1 pole 20 A)	15 set
3) Outgoing circuit breaker (3 poles 30 A)	1 set
4) Space for future outgoing circuit breakers (3 poles 30 A)	space for 2 sets
5) Jumper terminal to next local distribution board	1 set
6) Internal wiring	1 lot
7) Space heater and it's auxiliaries	1 set
8) Earthing rod	1 set

4.4 Household Panels

(1) Scope of supply Maldivian side will provide all the household panels for the Project prior to the completion of the construction by the Japanese Side.

(2) Component

The household panel consist of following equipment and materials. Household panels for public facilities, commercial facilities, factories, etc. will be designed and supplied by MEB.

1) Disconnecting switch with fuse	1 set
2) Watt-hour meter	1 set
3) ELCB (30 mA)	1 set
4) Socket Outlet (3 phase. BS type)	3 set
5) Wooden panel board	1 set
6) Wiring	1 lot

4.5 Power distribution cable

(1) 11kV distribution cable

In order to feed 11kV power to the distribution substations (DS), 11kV distribution cable shall be buried under the ground (approx. 75 cm deep) from the power station to the DS. Main specifications of 11kV distribution cable shall be as follows;

1) Insulation voltage	AC 11kV
2) Specifications	XLPE insulated, metal armored and PVC sheathed copper conductor cable (to be conformed to IEC or BS)
3) Color identified	According to BS (3 cores)

(2) Main distribution cable

Main distribution cable shall be buried under the ground (approx. 75 cm deep) from the main distribution board installed in the power station and DS to the local

distribution panels.

Main specification of the cables as follows;

- | | |
|-----------------------|---|
| 1) Insulation voltage | AC 600/1000 V |
| 2) Specification | PVC insulated, metal armored and PVC sheathed copper conductor cable (to be conformed to IEC or BS 6346.) |
| 3) Color identified | Red, yellow, blue and black (4 cores) |

(3) Branch distribution cable

Branch distribution cable shall be provided and buried under the ground (approx. 75 cm deep) from the local distribution panels to the household panels by MEB prior to the completion of the construction by the Japanese Side.

Main specification of the cables shall be as follows :

- | | |
|--------------------------|---|
| 1) Insulation voltage | AC 600/1000 V |
| 2) Specification | PVC insulated, and PVC sheathed copper conductor cable (shall be conformed to IEC or BS.) |
| 3) Color identified | Black and White (2 cores) |
| 4) Minimum size of cable | 6 mm ² as MEB standard |

(4) Accessories

- | | |
|-----------------------------|--|
| 1) Underground warning tape | 100 micron polyethylene and 15 cm wide for main distribution lines. |
| 2) Cable fault locator | 1 set for each site. |
| 3) PVC conduit pipe | 1 inch size for protection of cables between ground level to household panels will be provided and installed by MEB. |

4.6 Street Lighting

Street lighting fixtures including photo-cell switches, anchor bolts, foundations, branch cables for them from local distribution panels, etc. shall be designed and supplied by MEB.

5. Power House Building

Descriptions of the Power house building to be constructed by the Japanese side at Hulhudhoo/Meedhoo island shall be as follow. Layout drawing is attached in Attachment-4

5.1 Rooms (Total floor area shall be approximately 200 m²)

- (1) Diesel Engine Generators room (DEG)
- (2) Control room
- (3) Engineers room
- (4) Battery room
- (5) Spare parts store
- (6) Workshop
- (7) Entrance
- (8) Toilet
- (9) Kettle

5.2 Specifications

- | | |
|---|--|
| (1) Structure | |
| 1) Foundation, Ground floor slab, Column, | Reinforced concrete |
| 2) Roof | Steel truss + Steel corrugated sheet with insulation |



Handwritten initials/signature

3) Wall	Local coral brick (200mm, 100mm)
(2) Finishing	
1) Wall	Cement mortar + EP
2) Floor (Control R. Engineers R.)	PVC tile
3) Floor (Other rooms)	Cement mortar steel trowel
4) Windows and doors	Aluminum, steel (outside) or wood
(3) Building services	
1) Air-conditioning	Control room and Engineers room
2) Ventilation	All other rooms
3) Rain water collection and supply system	1 lot
4) Well water supply system	1 lot
5) Drainage system with a septic tank	1 lot

6. Office building

An office building to be constructed at Hulhudhoo/Meedhoo island will be designed and constructed by MEB.

7. On-the-Job Training (OJT)

OJT for operation and maintenance (O & M) shall practically be carried out by the Japanese Contractor during the implementation period of the Project. MEB shall assign engineers and technicians to OJT in order to transfer the operation and maintenance technique of DEG sets. OJT program will contain the following items.

- (1) O & M plan of DEG set including maintenance schedule, data log and document control.
- (2) O & M procedure of DEG set.
- (3) O & M execution and practical training for know-how of DEG set.

8. Tentative Implementation Schedule

The Project may be executed in two(2) stages. Attachment-7 shows a tentative idea of implementation schedule for the Project on condition that Japan's Grant Aid is extended to the Project.

9. Work Share between Japanese side and Maldivian side

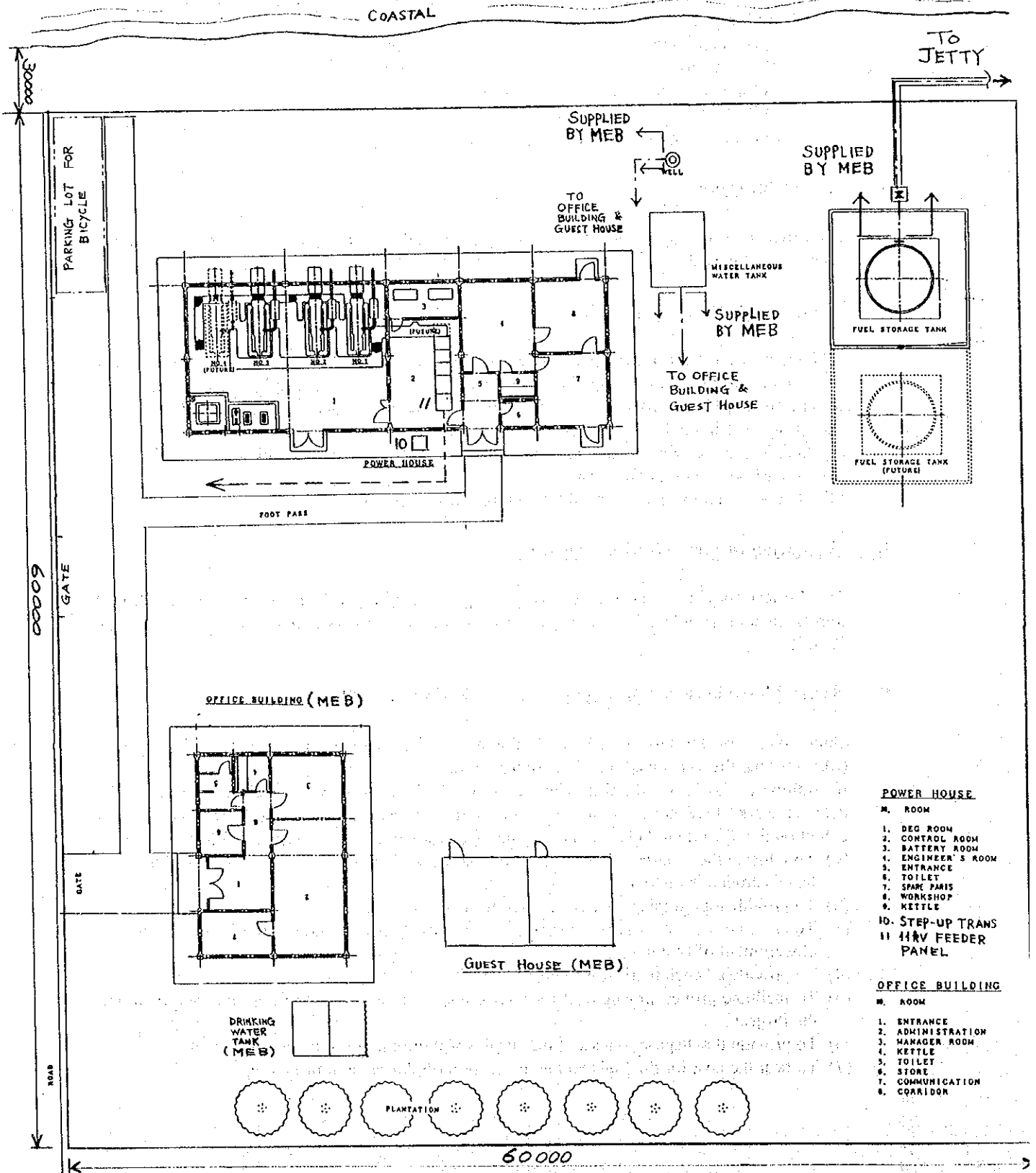
Undertakings by the Government of Maldives are described in the Minutes of Discussions (M/D) for the Project signed on 10 th August 1995.

In addition to the above, the following measures shall be taken by the Maldivian side and the detailed work share between Japanese side and Maldivian side is shown Attachment-8 on condition that the Grant Aid assistance by the Government of Japan is extended to the Project.

- (1) To relocate the existing DEG sets in Hithadhoo island to the new power house which will be constructed by MEB.
- (2) To provide topographical survey maps for the Project site.
- (3) To take necessary measures to expedite the approval for execution of the Project by the Government of Maldives.
- (4) To provide a bench mark at the sites.
- (5) To facilitate proper arrangement for inter transportation of the facilities and equipment for the Project.
- (6) To provide the disposal places of the surplus soil during the construction period.
- (7) To bear the cost for the fuel and the lubrication oil during commissioning.

Attachment-1

Site Layout Plan for Hulhudhoo/Medhoo Power Station



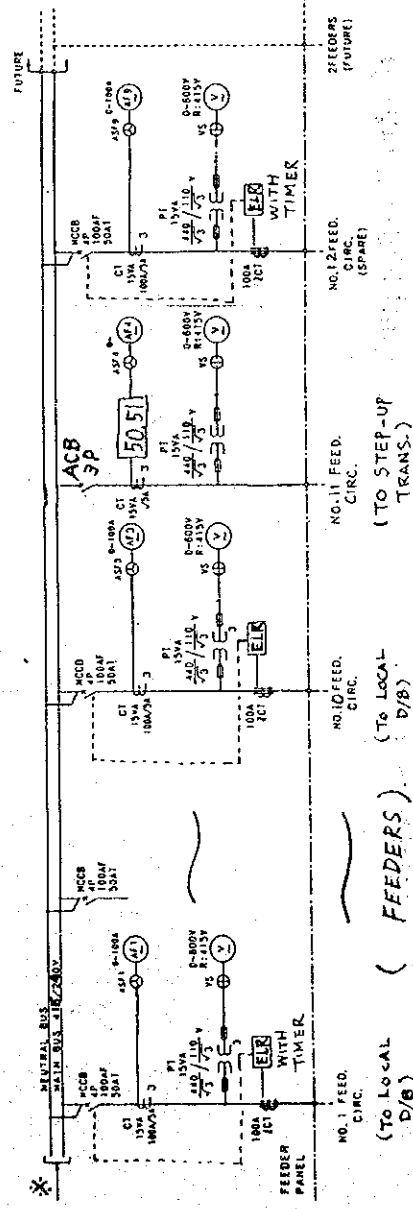
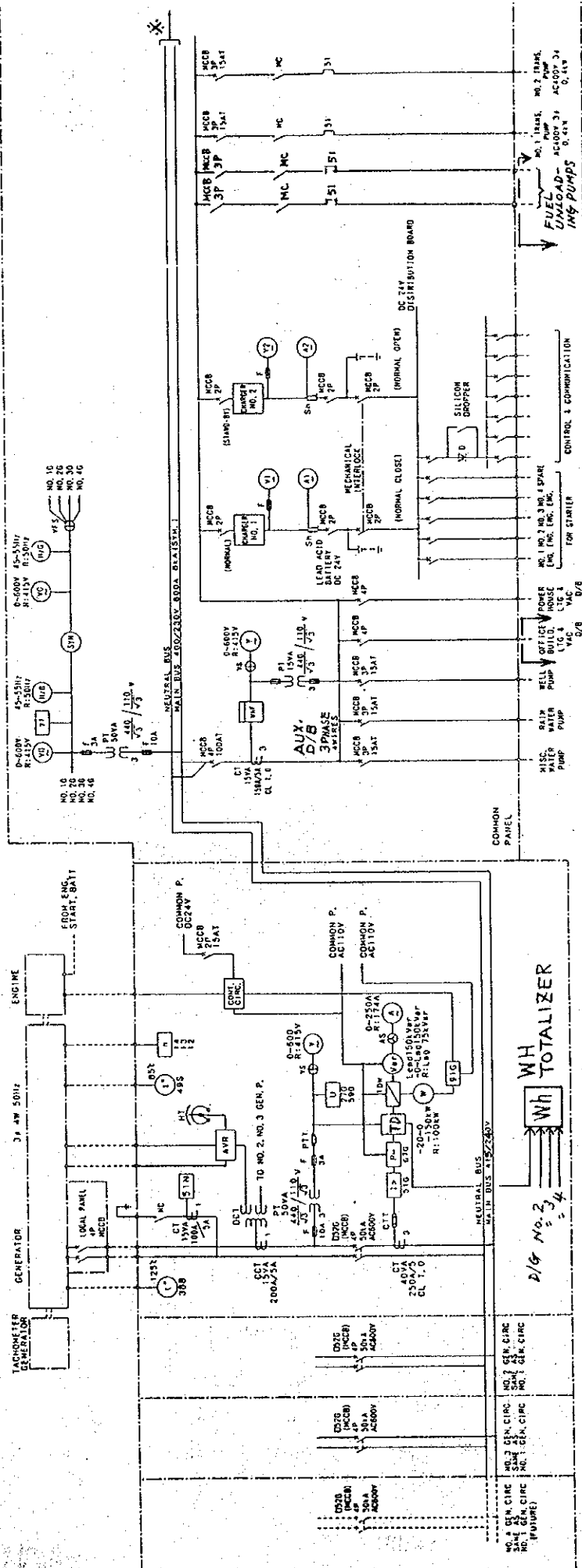
- POWER HOUSE**
- M. ROOM
 - 1. DEG ROOM
 - 2. CONTROL ROOM
 - 3. BATTERY ROOM
 - 4. ENGINEER'S ROOM
 - 5. ENTRANCE
 - 6. TOILET
 - 7. SPARK PARIS
 - 8. WORKSHOP
 - 9. KETTLE
 - 10. STEP-UP TRANS
 - 11. HVV FEEDER PANEL

- OFFICE BUILDING**
- M. ROOM
 - 1. ENTRANCE
 - 2. ADMINISTRATION
 - 3. MANAGER ROOM
 - 4. KETTLE
 - 5. TOILET
 - 6. STORE
 - 7. COMMUNICATION
 - 8. CORRIDOR

Handwritten signature/initials

Attachment-2

One line Diagram of DEG

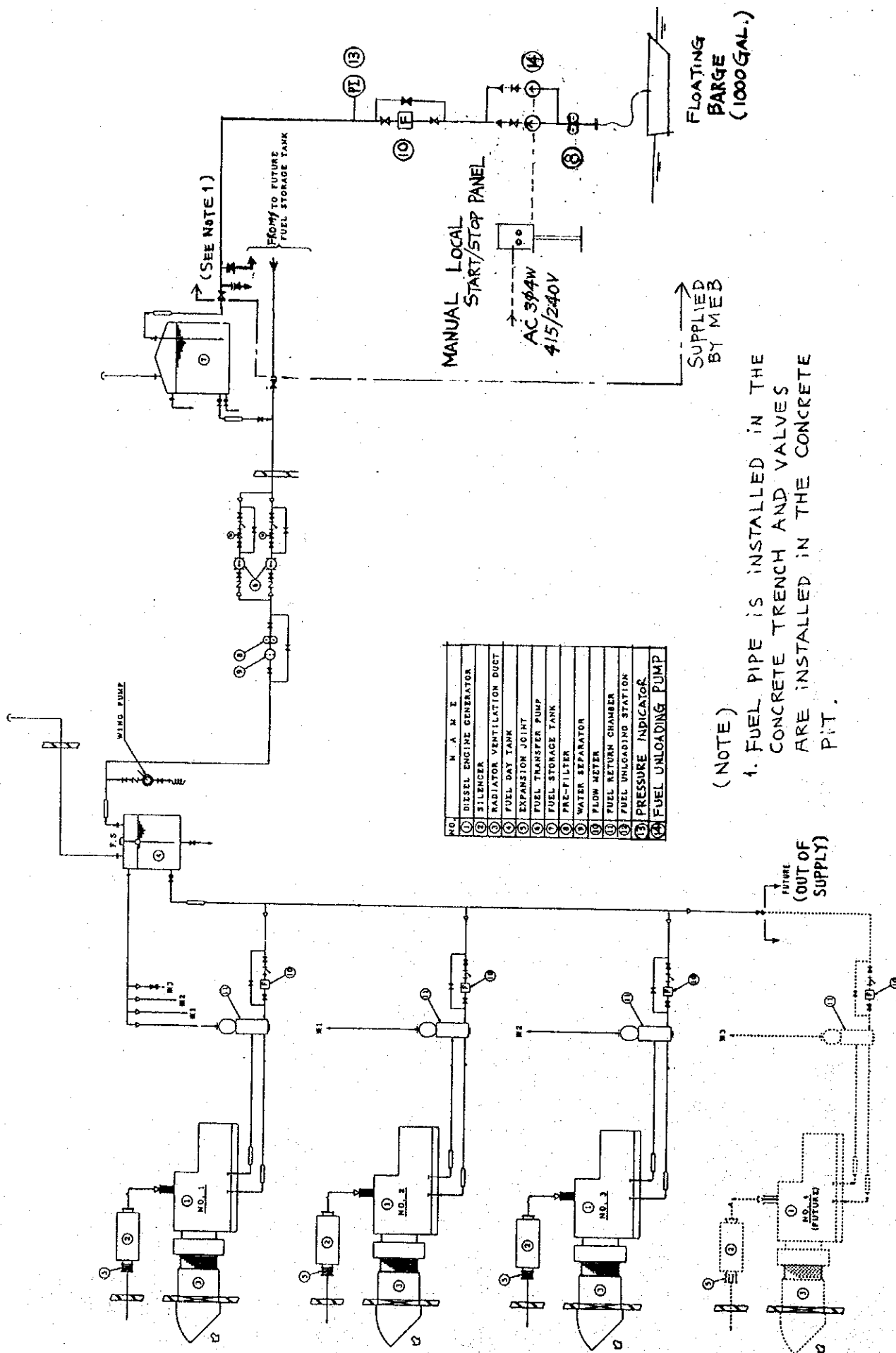


(NOTE) → SHOWS MEB SUPPLY

JSCM

Fuel Flow Diagram

Attachment-3



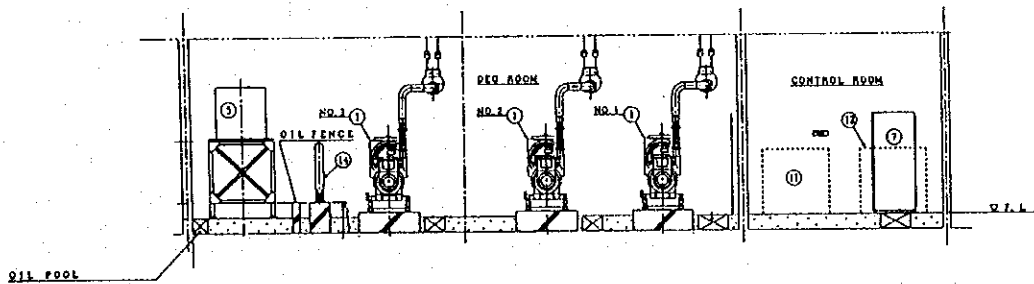
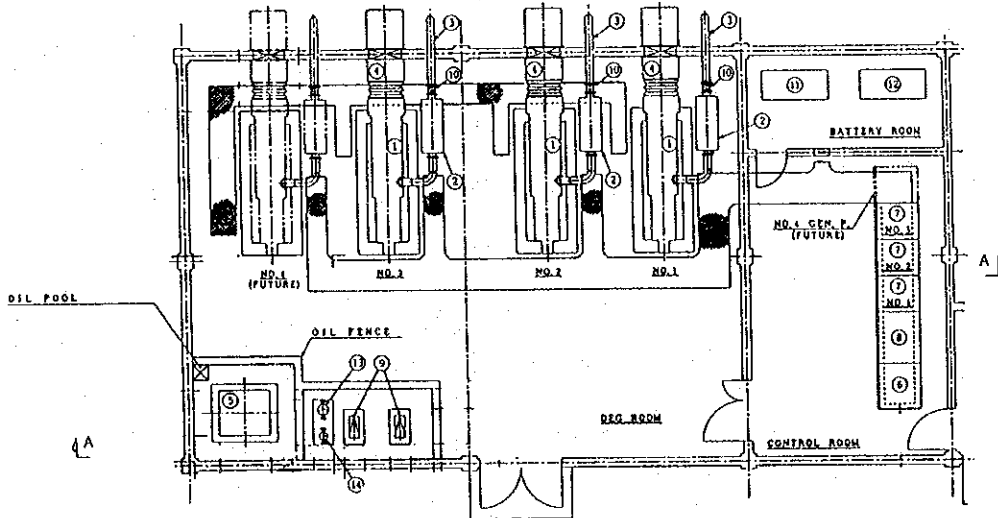
NO	M A M E
1	DIESEL ENGINE GENERATOR
2	SILENCER
3	RADIATOR VENTILATION DUCT
4	FUEL DAY TANK
5	EXPANSION JOINT
6	FUEL TRANSFER PUMP
7	FUEL STORAGE TANK
8	PRE-FILTER
9	WATER SEPARATOR
10	FLOW METER
11	FUEL RETURN CHAMBER
12	FUEL UNLOADING STATION
13	PRESSURE INDICATOR
14	FUEL UNLOADING PUMP

(NOTE)
 1. FUEL PIPE IS INSTALLED IN THE CONCRETE TRENCH AND VALVES ARE INSTALLED IN THE CONCRETE PIT.

ALSO

Attachment-4

Power House Layout Plan



SECTION A-A 5-1/50

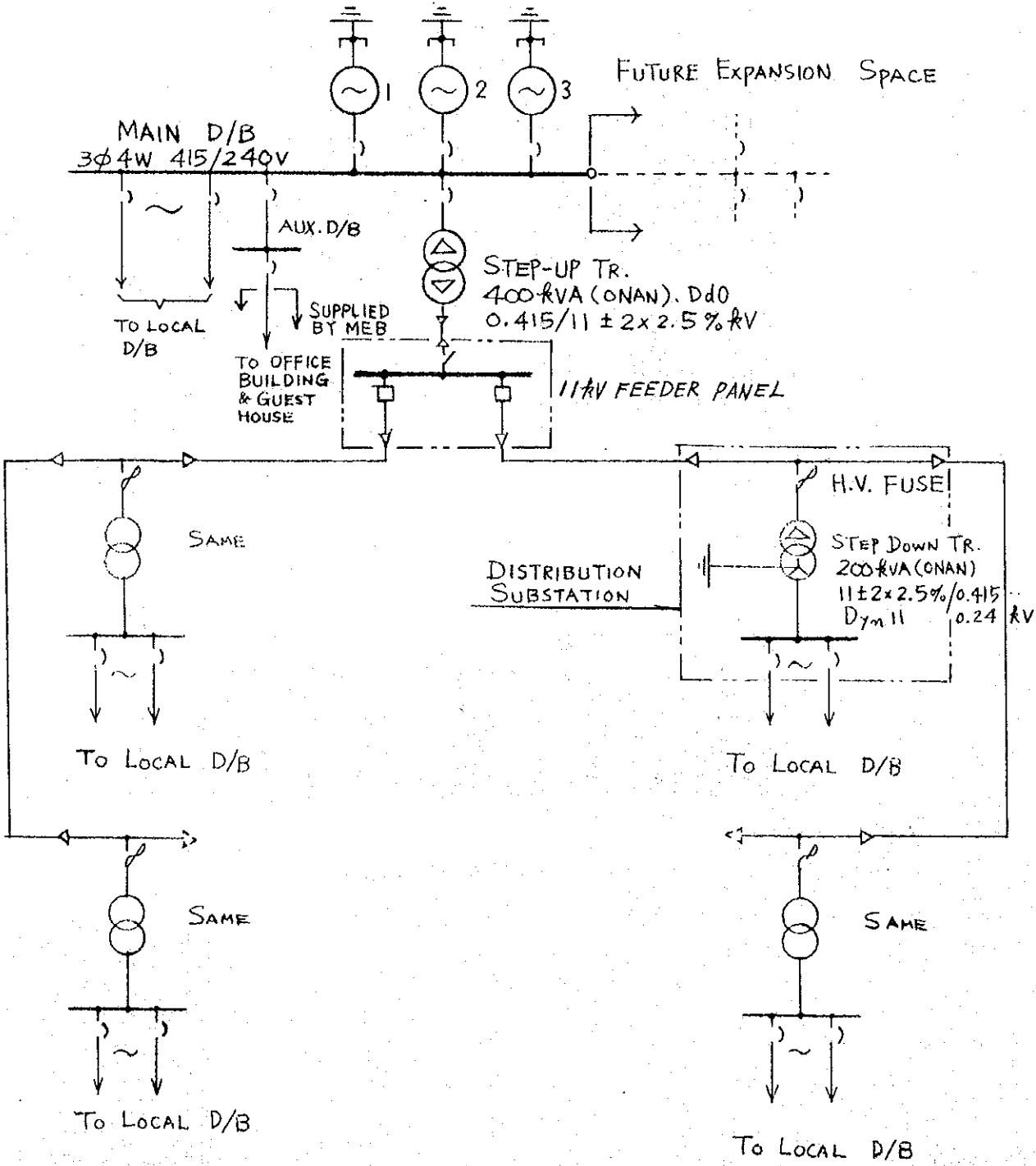
NO.	N A M E
①	DIESEL ENGINE GENERATOR
②	SILENCER
③	EXHAUST GAS PIPE
④	RADIATOR VENTILATION DUCT
⑬	FUEL DAY TANK
⑥	FEEDER PANEL
⑦	GENERATOR PANEL
⑧	COMMON PANEL
⑩	FUEL TRANSFER PUMP
⑪	EXPANSION JOINT
⑫	BATTERY
⑬	BATTERY (STAND-BY)
⑭	PRE-FILTER
⑮	WATER SEPARATOR

[Handwritten signature]

[Handwritten signature]

Attachment-5

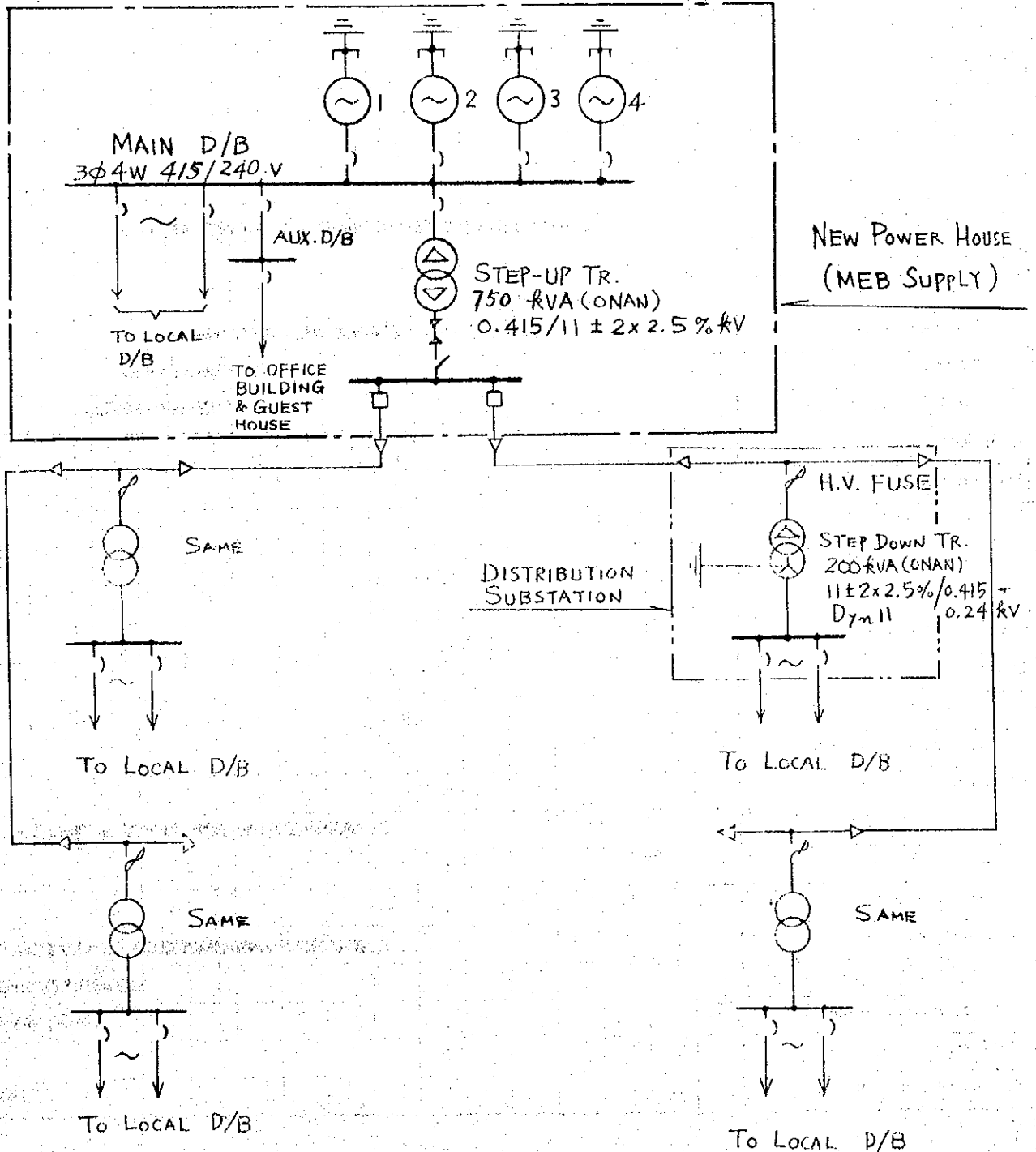
**One line diagram of distribution networks
in Hulhudhoo/Meedhoo island**



Handwritten signature

Attachment-6

One line diagram of distribution networks
in Hithadhoo island



Attachment-7

**Atoll Islands Electrification Project(Phase II) in the Republic of Maldives
Tentative Implementation Schedule**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
[First Stage]																			
1. Exchange of Notes(E/N)	☆																		
2. Consultant Services Contract	◆																		
3. Approval of Detailed Design	■																		
4. Prequalification of Tender		■																	
5. Tendering			■																
6. Tender Evaluation				■															
7. Contracts(Facilities & Equipment)				▼															
8. Construction																			
(1) Civil & Building Works				■															
(2) Equipment Works																			
- Shop Drawings				■															
- Fabrication at Factory					■														
- Transportation											■								
- Installation and Testing												■							
(3) Hand Over																		★	
[Second Stage]																			
1. Exchange of Notes(E/N)						☆													
2. Consultant Services Contract						◆													
3. Approval of Detailed Design																			
4. Prequalification of Tender							■												
5. Tendering								■											
6. Tender Evaluation									■										
7. Contracts(Facilities & Equipment)										▼									
8. Construction																			
(1) Civil & Building Works										■									
(2) Equipment Works																			
- Shop Drawings																			
- Fabrication at Factory										■									
- Transportation														■					
- Installation and Testing																■			
(3) Hand Over																		★	
9. On-the-Job Training(OJT)																		■	

Attachment-8

WORK SHARE

Maldivian side has requested and the Team has confirmed that work items and working shares between Japanese side and Maldivian side described in the following table for smooth and effective implementation of the Project on condition that the Grant Aid assistance by the Government of Japan is extended to the Project. Maldivian side has confirmed that works of Maldivian side shall be executed in accordance with proper schedules to meet the requirements of the Japan's Grant Aid.

Work Items	Japanese Side	Maldivian Side
1. Diesel Engine Generating Facilities for Hulhudhoo/Meedhoo		
1.01 Diesel Engine Generator(DEG)	Supply and Installation	
1.02 Auxiliary equipment for DEG	Supply and Installation	
1.03 Electrical equipment for DEG	Supply and Installation	
1.04 Main and daily fuel oil tank(s) and fuel supply line(s) (1-month stock)	Supply and Installation	
1.05 Main fuel oil tank for future(3 months-stock)		Supply and installation
1.06 Grounding system within the Power Station(P/S)	Supply and Installation	
1.07 Workshop equipment installed in P/S	Supply only	Installation
1.08 Communication equipment installed in P/S	Supply only	Installation
1.09 Maintenance tools for DEG and auxiliaries	Supply only	Stock
1.10 Spare Parts for DEG and auxiliaries	Supply only	Stock
1.11 Operation & Maintenance Manuals for DEG	Supply and Explanation	Keep and Study
1.12 On-the-Job Training (OJT) for O & M techniques for DEG	Execution	Attend
2. Power distribution networks for Hulhudhoo/Meedhoo and Hithadhoo		
2.01 Step-up transformer with LV panel for Hulhudhoo/Meedhoo	Supply and installation	
2.02 Step-up transformer with LV panel for Hithadhoo	Basic design	Supply and installation
2.03 11kV outgoing feeder panel for Hulhudhoo/Meedhoo	Supply and installation	
2.04 11kV outgoing feeder panel for Hithadhoo	Basic design	Supply and installation
2.05 Distribution substations (DS)	Supply only	Installation
2.06 Main distribution panels to be installed in P/S at Hithadhoo		Supply and Installation
2.07 Main Power distribution cables	Supply only	Installation
2.08 Branch Power distribution cables		Supply and Installation
2.09 Outdoor distribution boards	Supply only	Installation
2.10 Grounding materials	Supply only	Installation
2.11 Household panels		Supply and Installation
2.12 Street lightings		Supply and Installation
3. Construction of Civil and building works for Hulhudhoo/Meedhoo		
3.01 Power house building	Construction	
3.02 Oil tanks and Equipment foundations	Construction	
3.03 Office building and the site plantation		Design and Construction
3.04 Rain water collection & supply system for the Power house building	Construction	
3.05 Rain water collection & supply system for the Office building		Design and Construction
3.06 Well and well water supply system	Construction	Construct. inside Office
3.07 All furniture and curtain		Supply
3.08 Site Leveling, Boundary fence, Entrance gate and Access road		Design and Construction
3.09 Electricity for construction	Construction	
3.10 Water supply & drainage for construction	Construction inside the site	Construction to the site
3.11 Electricity and telephone for construction	Construction inside the site	Construction to the site

2.2.2. The Phillips Curve

The Phillips Curve is a relationship between the rate of change of the price level (inflation) and the unemployment rate. It is named after A. W. Phillips, who first proposed it in 1954.

The Phillips Curve is a downward-sloping curve. It shows that when the unemployment rate is high, the rate of inflation is low, and vice versa. The Phillips Curve is a short-run relationship, and it does not hold in the long run.

The Phillips Curve is a key component of the IS-PC model. It is used to explain the relationship between inflation and unemployment in the short run. The Phillips Curve is a downward-sloping curve, and it is used to explain the relationship between inflation and unemployment in the short run.

The Phillips Curve is a key component of the IS-PC model. It is used to explain the relationship between inflation and unemployment in the short run. The Phillips Curve is a downward-sloping curve, and it is used to explain the relationship between inflation and unemployment in the short run.

The Phillips Curve is a key component of the IS-PC model. It is used to explain the relationship between inflation and unemployment in the short run. The Phillips Curve is a downward-sloping curve, and it is used to explain the relationship between inflation and unemployment in the short run.

The Phillips Curve is a key component of the IS-PC model. It is used to explain the relationship between inflation and unemployment in the short run. The Phillips Curve is a downward-sloping curve, and it is used to explain the relationship between inflation and unemployment in the short run.

The Phillips Curve is a key component of the IS-PC model. It is used to explain the relationship between inflation and unemployment in the short run. The Phillips Curve is a downward-sloping curve, and it is used to explain the relationship between inflation and unemployment in the short run.

The Phillips Curve is a key component of the IS-PC model. It is used to explain the relationship between inflation and unemployment in the short run. The Phillips Curve is a downward-sloping curve, and it is used to explain the relationship between inflation and unemployment in the short run.

The Phillips Curve is a key component of the IS-PC model. It is used to explain the relationship between inflation and unemployment in the short run. The Phillips Curve is a downward-sloping curve, and it is used to explain the relationship between inflation and unemployment in the short run.

The Phillips Curve is a key component of the IS-PC model. It is used to explain the relationship between inflation and unemployment in the short run. The Phillips Curve is a downward-sloping curve, and it is used to explain the relationship between inflation and unemployment in the short run.

The Phillips Curve is a key component of the IS-PC model. It is used to explain the relationship between inflation and unemployment in the short run. The Phillips Curve is a downward-sloping curve, and it is used to explain the relationship between inflation and unemployment in the short run.

The Phillips Curve is a key component of the IS-PC model. It is used to explain the relationship between inflation and unemployment in the short run. The Phillips Curve is a downward-sloping curve, and it is used to explain the relationship between inflation and unemployment in the short run.

The Phillips Curve is a key component of the IS-PC model. It is used to explain the relationship between inflation and unemployment in the short run. The Phillips Curve is a downward-sloping curve, and it is used to explain the relationship between inflation and unemployment in the short run.

JICA

11