

ブータン王国
国内通信網整備計画
基本設計調査報告書
(別冊付属資料)

平成3年9月

国際協力事業団

無調二
C R (3)
91 - 110

LIBRARY

ブータン王国
国内通信網整備計画
基本設計調査報告書
(別冊付属資料)

JICA LIBRARY



1095483(2)

23217

平成3年9月

国際協力事業団

International
Cooperation
Agency
for
Technical
Assistance
to
Developing
Countries
Tokyo, Japan



International
Cooperation
Agency
for
Technical
Assistance
to
Developing
Countries
Tokyo, Japan

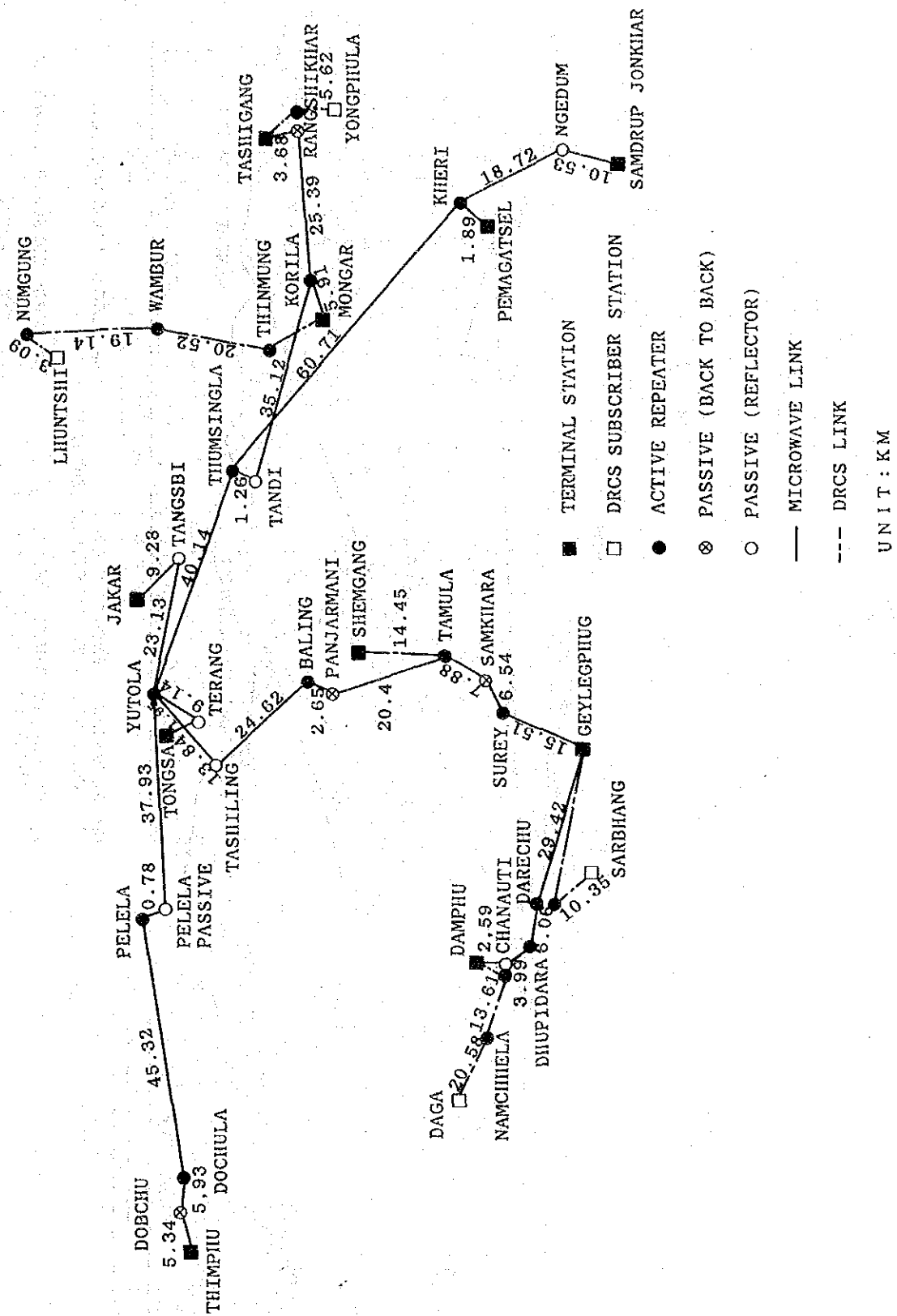
CONTENTS

	Page
1. Microwave Transmission Network Plan (無線伝送路網計画)	1
2. Telephone Switching Network Plan (電話交換網計画)	2
3. EQUIPMENT BLOCK SCHEMATIC (無線伝送路装置構成)	
TERMINAL, THROUGH REPEATER	3
REPEATER WITH BRANCHES	
YUTOLA, THUMUSINGLA, KORILA, TAMULA, KHERI	4
GEYLEGPHUG	5
4. MULTIPLEX ARRANGEMENT PLAN (多重化装置設備計画)	
THIMPHU-TONGSA-TASHIGANG	6
GEYLEGPHUG, SAMDRUP JONKHAR	7
5. NON-VOICE CIRCUIT ARRANGEMENT PLAN (非音声回線設備計画)	8
6. SYSTEM CONFIGURATION SUPERVISORY AND CONTROL SYSTEM (監視制御システム構成)	
ROUTE-1	9
ROUTE-2	10
ROUTE-3	11
7. SYSTEM CONFIGURATION OF ORDERWIRE SYSTEM (オーダワイヤシステム構成)	12
8. DRCS EQUIPMENT BLOCK SCHEMATIC (デジタル無線集線システム装置構成)	
LHUNTSHI	13
YONGPHULA	14
DAGA	15
SARBHANG	16
9. SWITCHING EQUIPMENT BLOCK SCHEMATIC (交換機構成)	
THIMPHU	17
TONGSA	18
TASHIGANG	19
JAKAR & MONGAR	20
GEYLEGPHUG	21
SHEMGANG & DAMPHU	22
SAMDRUP JONKHAR	23
PEMAGATSEL	24
10. EQUIPMENT BLOCK SCHEMATIC (電源装置構成)	
JAKAR, TONGSA, MONGAR, SHEMGANG, DAMPHU	25
TASHIGANG, GEYLEGPHUG, SAMDRUP, JONKHAR	26
PEMAGATSEL	27
YUTOLA, THUMSINGLA, KORILA, TAMULA, DARECHU, KHERI	28

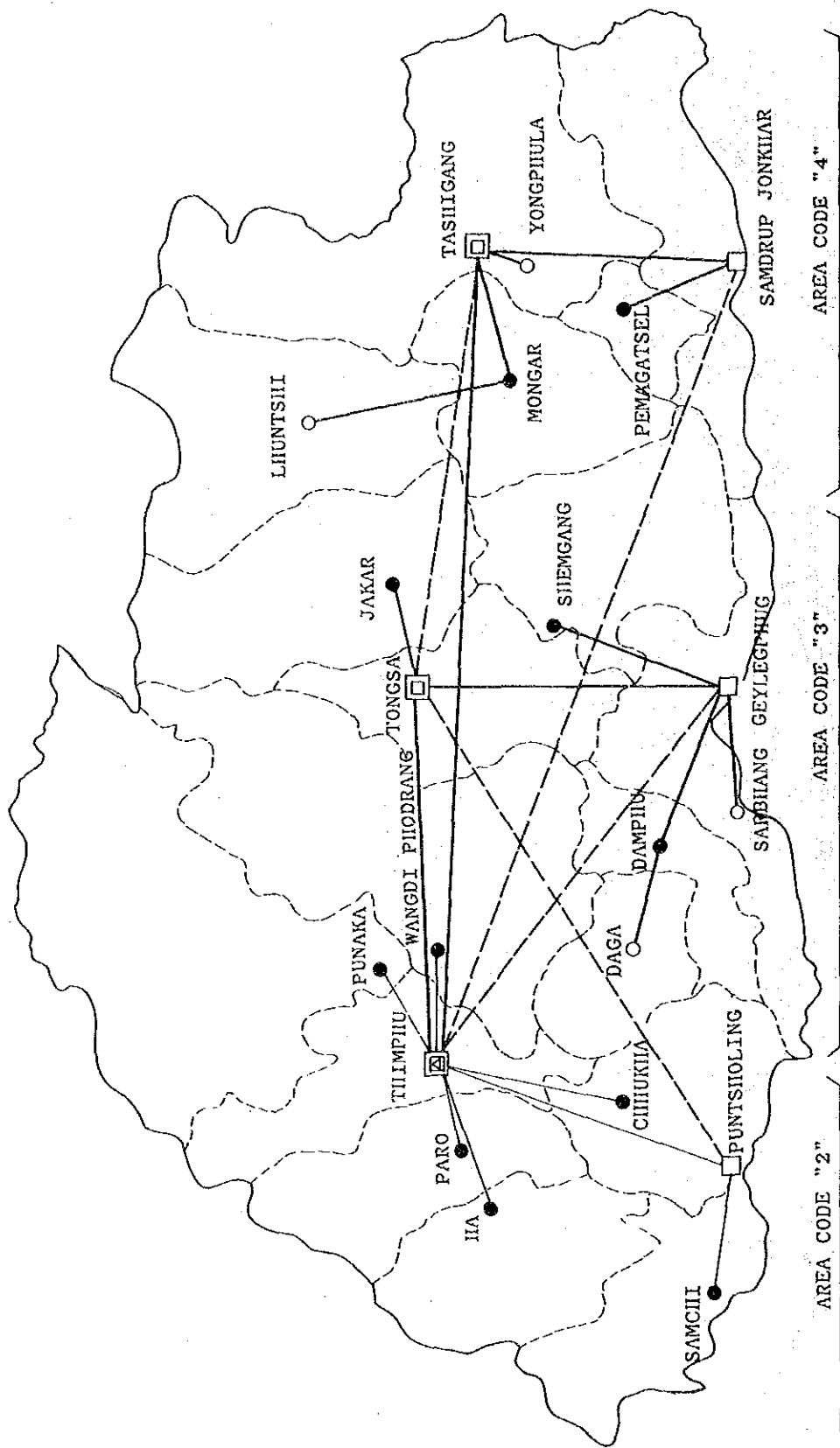
OTHER REPEATER STATIONS & DRCS TERMINAL STATIONS	29
11. LAYOUT PLAN (配置計画)	
EQUIPMENT SITE LAYOUT PLAN (THIMPHU)	30
EQUIPMENT FLOOR LAYOUT PLAN (THIMPHU)	31, 32
EQUIPMENT SITE LAYOUT PLAN (TONGSA)	33
EQUIPMENT FLOOR LAYOUT PLAN (TONGSA)	34, 35
EQUIPMENT SITE LAYOUT PLAN (JAKAR)	36
EQUIPMENT FLOOR LAYOUT PLAN (JAKAR)	37
EQUIPMENT SITE LAYOUT PLAN (TASHIGANG)	38
EQUIPMENT FLOOR LAYOUT PLAN (TASHIGANG)	39, 40
EQUIPMENT SITE LAYOUT PLAN (GEYLEGPHUG)	41
EQUIPMENT FLOOR LAYOUT PLAN (GEYLEGPHUG)	42, 43
EQUIPMENT SITE LAYOUT PLAN (SHEMGANG)	44
EQUIPMENT FLOOR LAYOUT PLAN (SHEMGANG)	45
EQUIPMENT SITE LAYOUT PLAN (SAMDRUP JONGKHAR)	46
EQUIPMENT FLOOR LAYOUT PLAN (SAMDRUP JONGKHAR)	47, 48
EQUIPMENT SITE LAYOUT PLAN (PEMAGATSEL)	49
EQUIPMENT FLOOR LAYOUT PLAN (PEMAGATSEL)	50
EQUIPMENT SITE LAYOUT PLAN (DAMPHU, MONGAR)	51
EQUIPMENT FLOOR LAYOUT PLAN (DAMPHU)	52
EQUIPMENT FLOOR LAYOUT PLAN (MONGAR)	53
EQUIPMENT SITE LAYOUT PLAN	
TYPICAL THROUGH REPEATER STATION	54
TYPICAL BRANCH REPEATER STATION(A)	55
TYPICAL BRANCH REPEATER STATION(B)	56
TYPICAL DRCS SUBSCRIBER STATION	57, 58
12. COORDINATE OF SITE (局舎位置)	
ROUTE-1	59
ROUTE-2, 3	60
DRCS	61
13. ANTENNA (アンテナ)	
ANTENNAS FOR ROUTE 1	62
ANTENNAS FOR ROUTE 2	63
ANTENNAS FOR ROUTE 3	64
ANTENNAS FOR DRCS	65
14. TRANSMISSION ENGINEERING (伝送解析)	66~72
15. PATH PROFILE (パスプロファイル)	

THIMPHU~DOBCHU	73
DOBCHU~DOCHULA	74
DOCHULA~PELELA	75
PELELA~PELELA PASS	76
PELELA PASS~YUTOLA	77
YUTOLA~TERANG	78
TERANG~TONGSA	79
YUTOLA~TANGSBI	80
TANGSBI~JAKAR	81
YUTOLA~THUMSINGLA	82
THUMSINGLA~TANDI	83
TANDI~KORILA	84
KORILA~MONGAR	85
KORILA~RANGSHIKHAR	86
RANGSHIKHAR~TASHIGANG	87
YUTOLA~TASHILING	88
TASHILING~BALING	89
BALING~PANJARMANI	90
TAMULA~SHEMGANG	91
PANJARMANI~TAMULA	92
TAMURA~SAMKHARA	93
SAMKHARA~SUREY	94
SUREY~GEYLEGPHUG	95
GEYLEGPHUG~DARECHU	96
DARECHU~DHUPIDARA	97
DHUPIDARA~CHANAUTI	98
CHANAUTI~DAMPHU	99
THUMSINGLA~KHERI	100
KHERI~PEMAGATSEL	101
KHERI~NGEDUM	102
NGEDUM~SAMDRUP JONKHAL	103
MONGAR~THINMUNG	104
THINMUNG~WAMBUR	105
WAMBUR~NUMGUNG	106
NUMGUNG~LHUNTSHI	107
RANGSHIKHAR~YONGPHULA	108
DARECHU~SARBHANG	109

CHANAUTI~NAMCHHELA	110
NAMCHHELA~DAGA	111
16. GUIDE MAP (サイト位置)	
THIMPHU, DOBCHU	112
DOCHULA	113
PELELA, PELELA-P	114
YUTOLA	115
THUMSINGLA, TANDI	116
KORILA	117
TASHIGANG, RANGSHIKHAR, YONGPHULA	118
TONGSA, TERANG	119
TERANG	120
TANGSBI	121
JAKAR	122
MONGAR	123
TASHILING	124
BALING, PANJARMANI	125
TAMURA, SAMKHARA	126
SUREY	127
GEYLEGPHUG	128
DARECHU	129
CHANAUTI, DHUPIDARA	130
DAMPHU	131
SHEMGANG	132
KHERI, PEMAGATSEL	133
NGEDUM	134
SANDRUP JONKHAR	135
THINMUNG, MONGAR	136
WAMBUR	137
NUMGUNG, LHUNTSHI	138
TASHIGANG, RANGSHIKHAR, YONGPHULA	139
SARBHANG	140
NAMCHHELA	141
DAGA	142



Microwave Transmission Network Plan

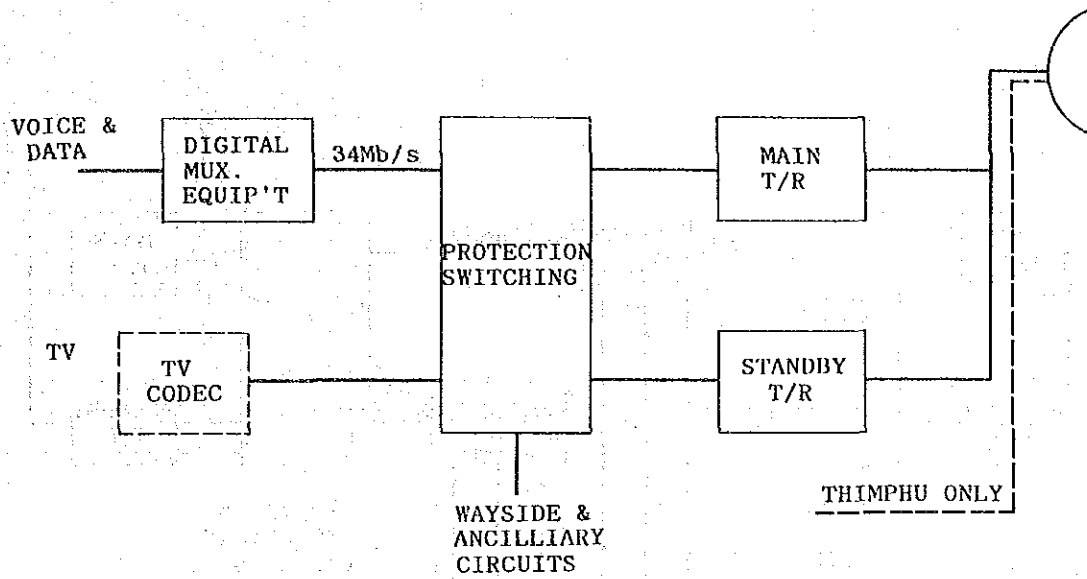


- SECONDARY CENTER (S.C) COMBINED WITH INTS., P.C AND L.E
- SECONDARY CENTER (S.C) COMBINED WITH P.C AND L.E
- PRIMARY CENTER (P.C) COMBINED WITH L.E
- LOCAL EXCHANGE (L.E)
- DRCS SUBSCRIBER STATION
- FINAL ROUTE
- HIGH USAGE ROUTE

Telephone Switching Network Plan

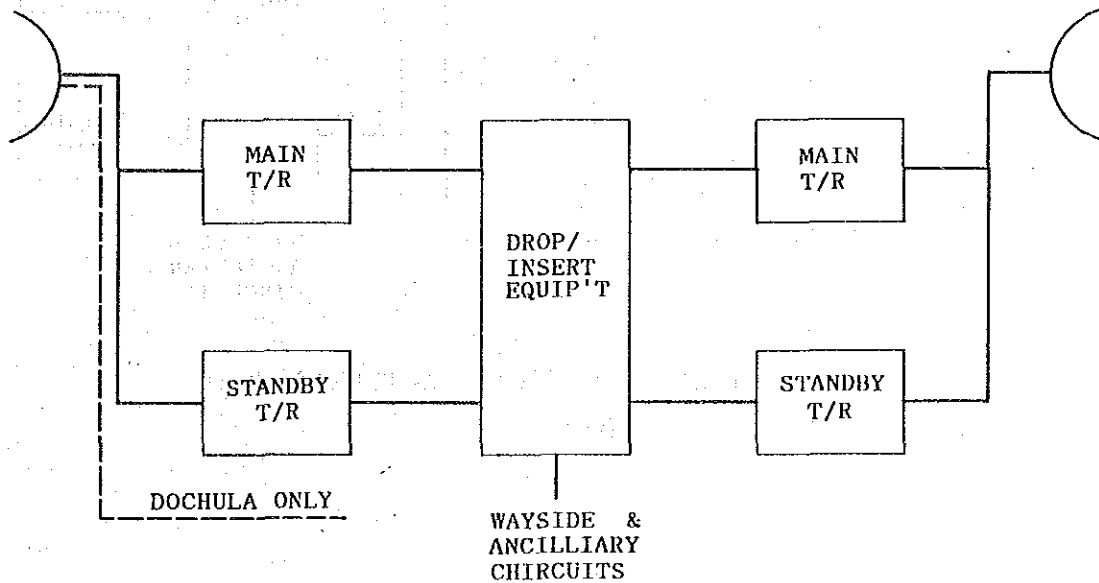
TERMINAL

(THIMPHU, TONGSA, JAKAR, MONGAR, TASHIGANG, SHEMGANG, DAMPHU, PEMAGATSEL AND SAMDRUP JONKHAR)



THROUGH REPEATER

(DOCHULA, PELELA, BALING, SUREY, DARECHU, DHUPIDARA, AND OTHERS)

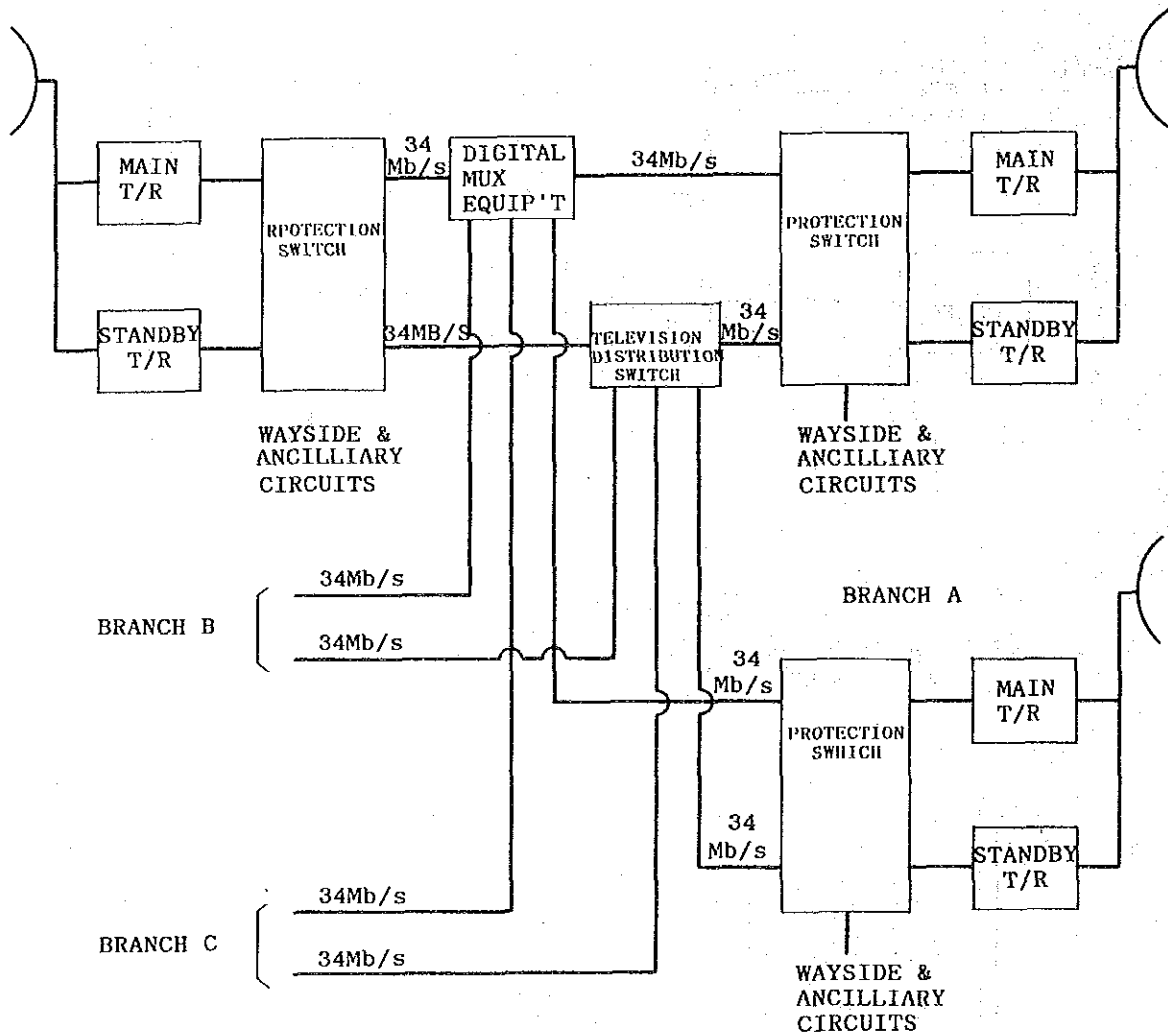


EQUIPMENT BLOCK SCHEMATIC

FIG. NO.
TR-1

REPEATER WITH BRANCHES

(YATOLA, THUMSINGLA, KORILA, TAMULA AND KHERI)

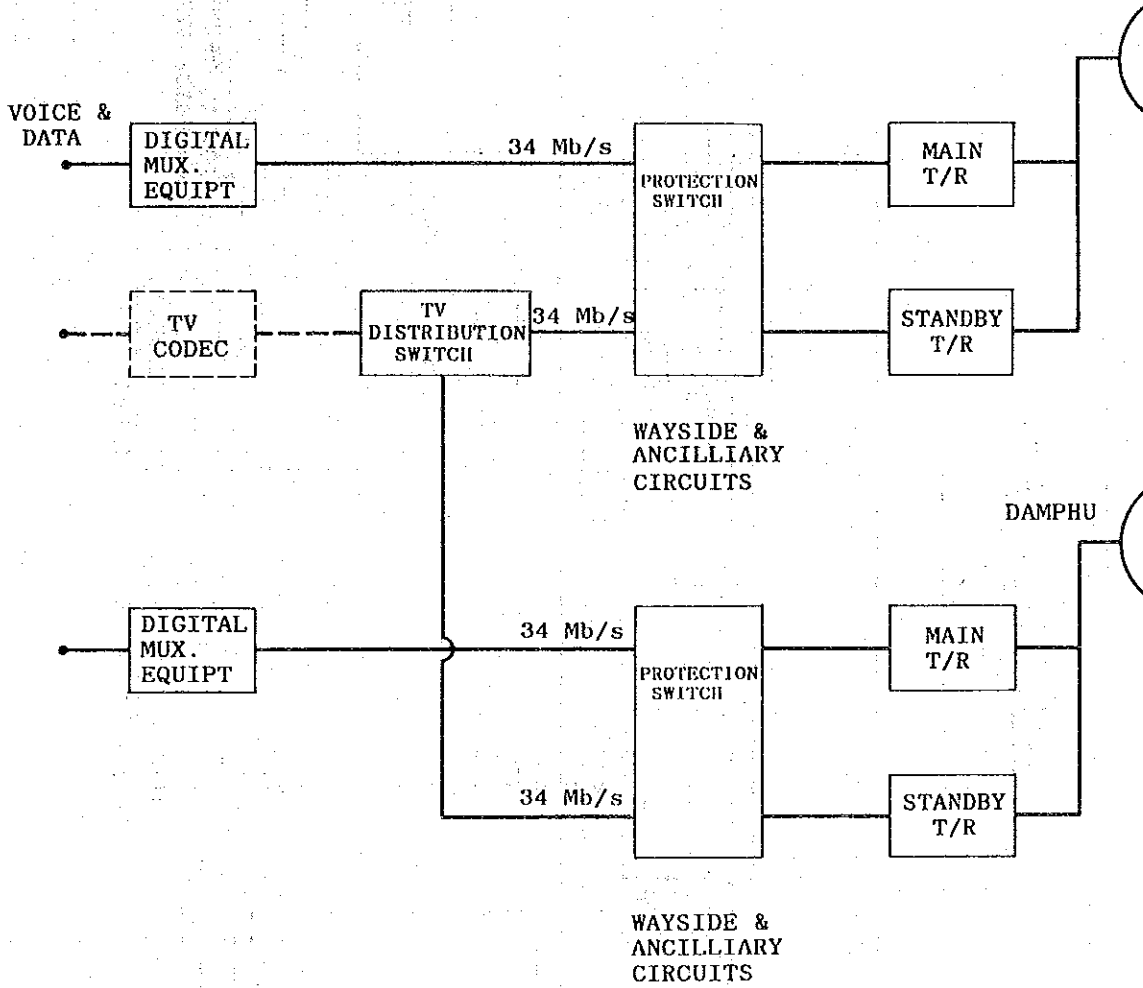


ONE-BRANCH : THUMSINGLA, KORILA, TAMULA AND KHERI

THREE-BRANCH : YUTOLA ONLY

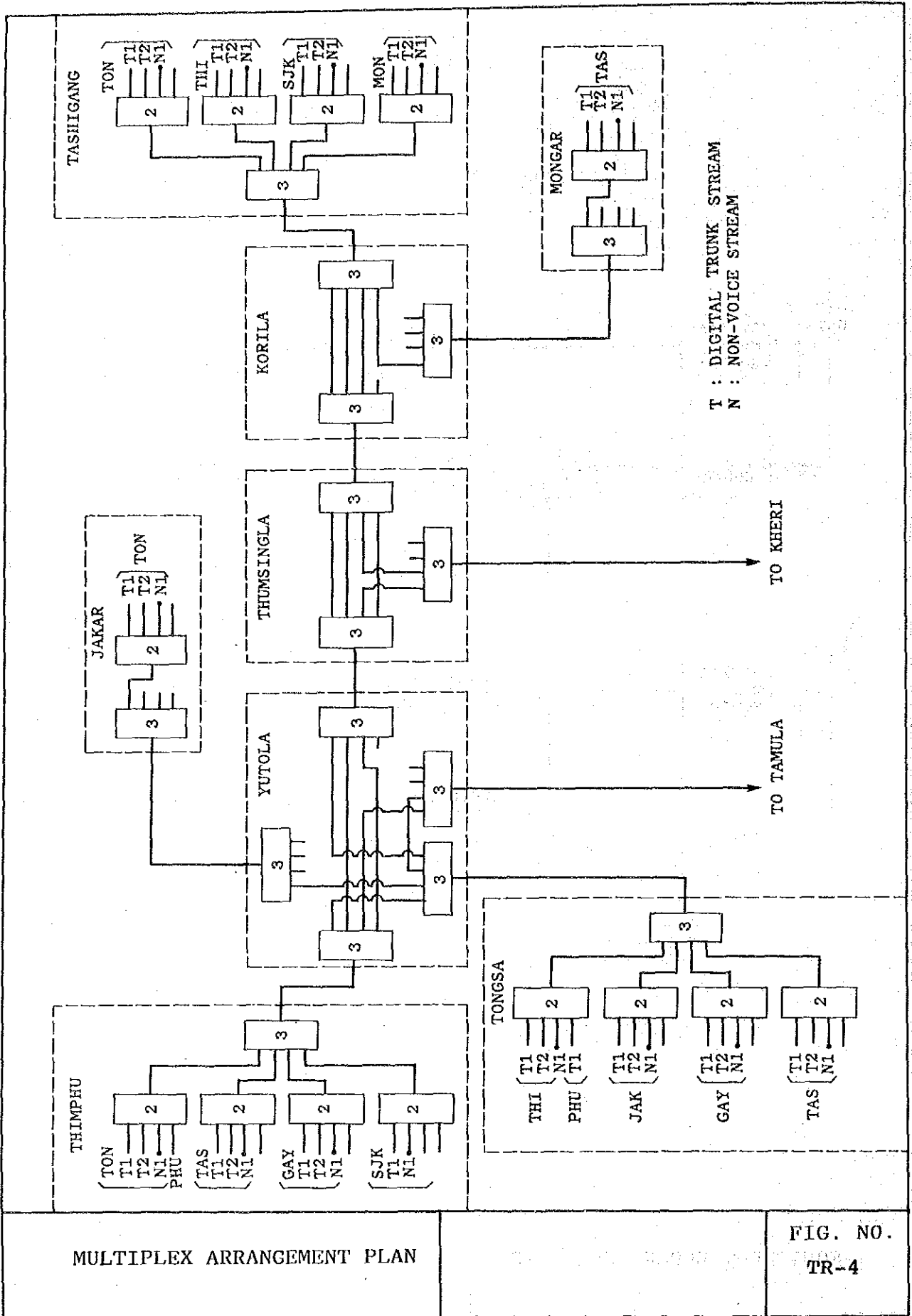
EQUIPMENT BLOCK SCHEMATIC		FIG. NO. TR-2
---------------------------	--	------------------

GEYLEGPHUG



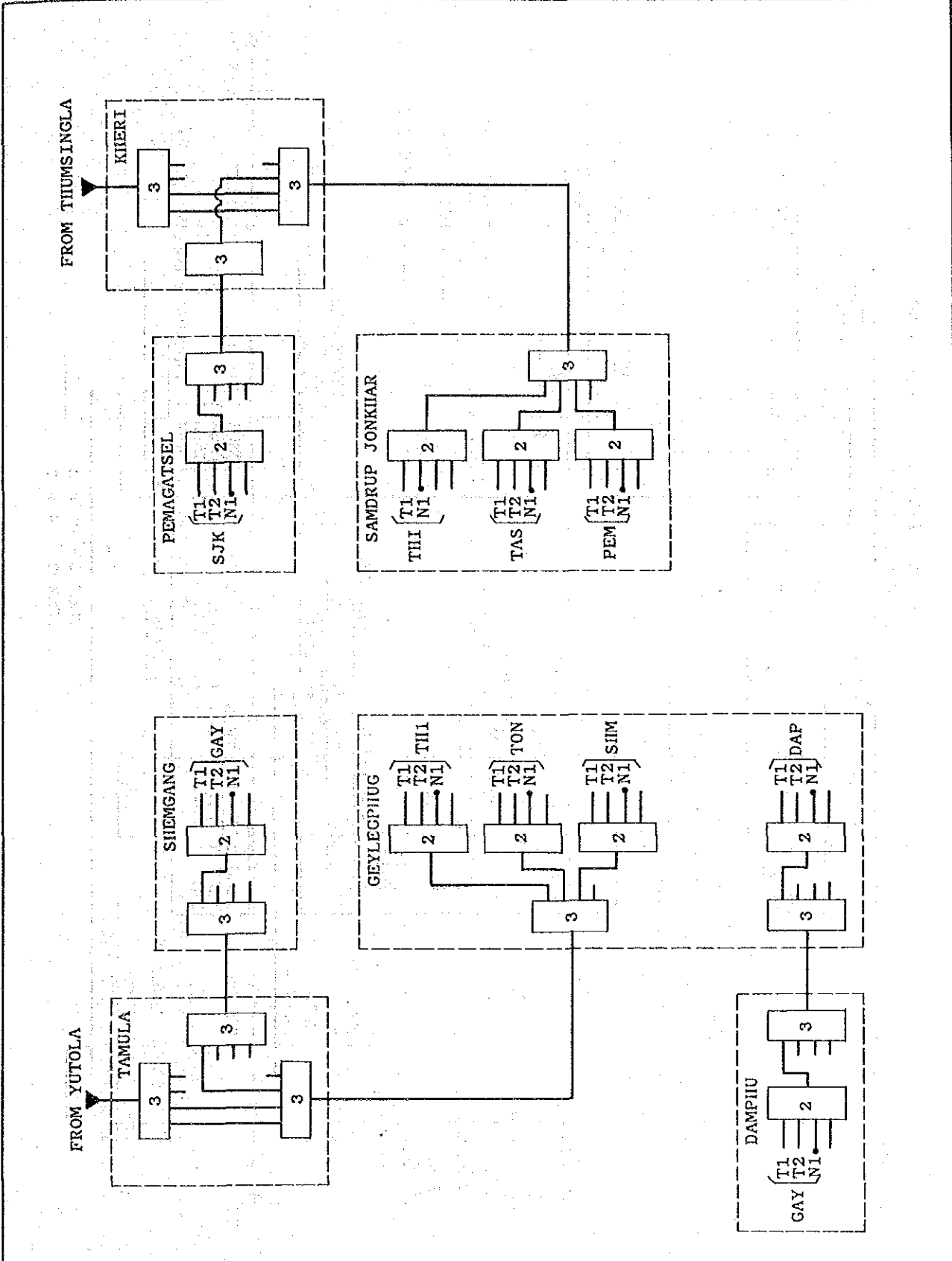
EQUIPMENT BLOCK SCHEMATIC

FIG. NO.
TR-3



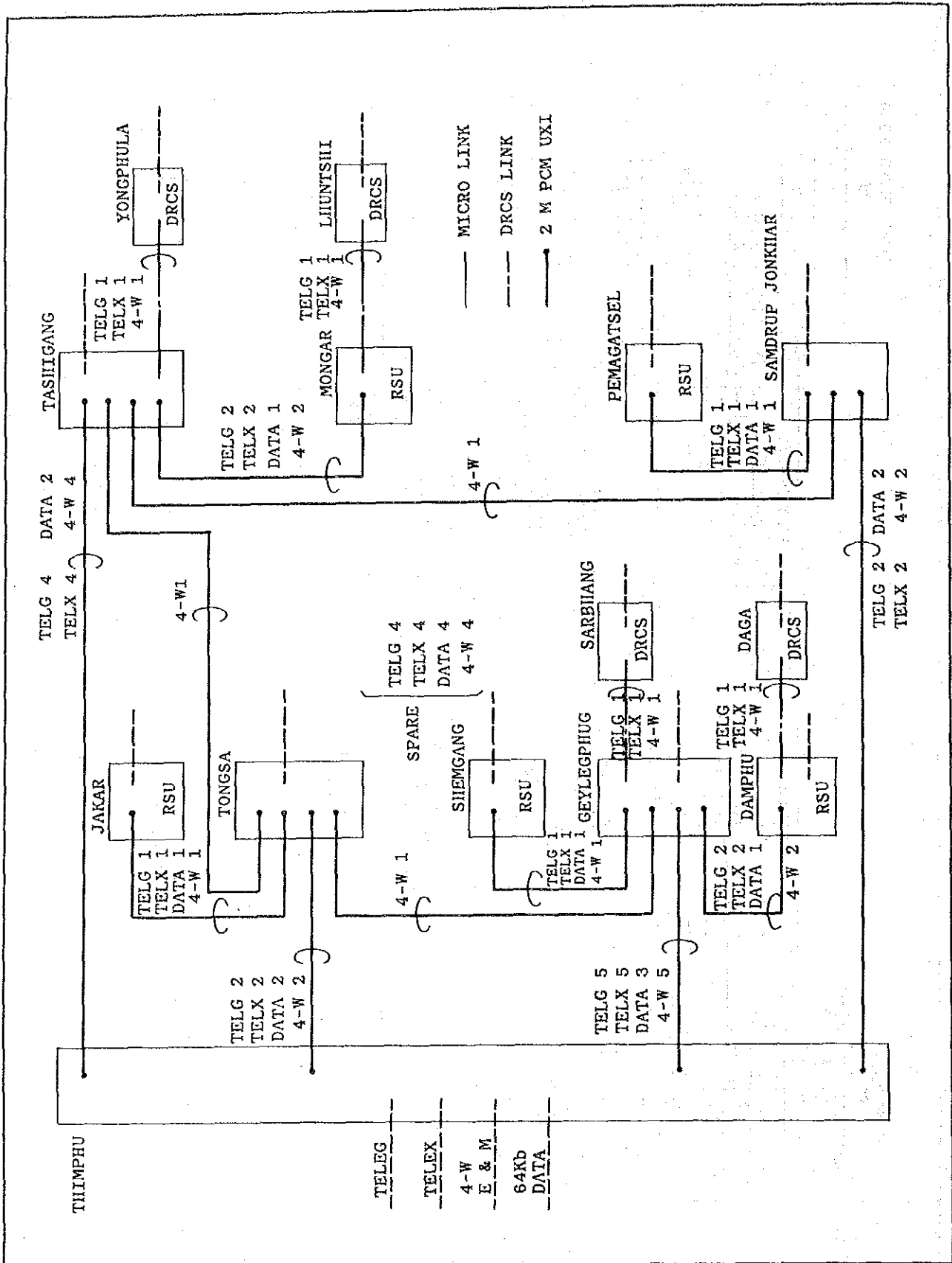
MULTIPLEX ARRANGEMENT PLAN

FIG. NO.
TR-4



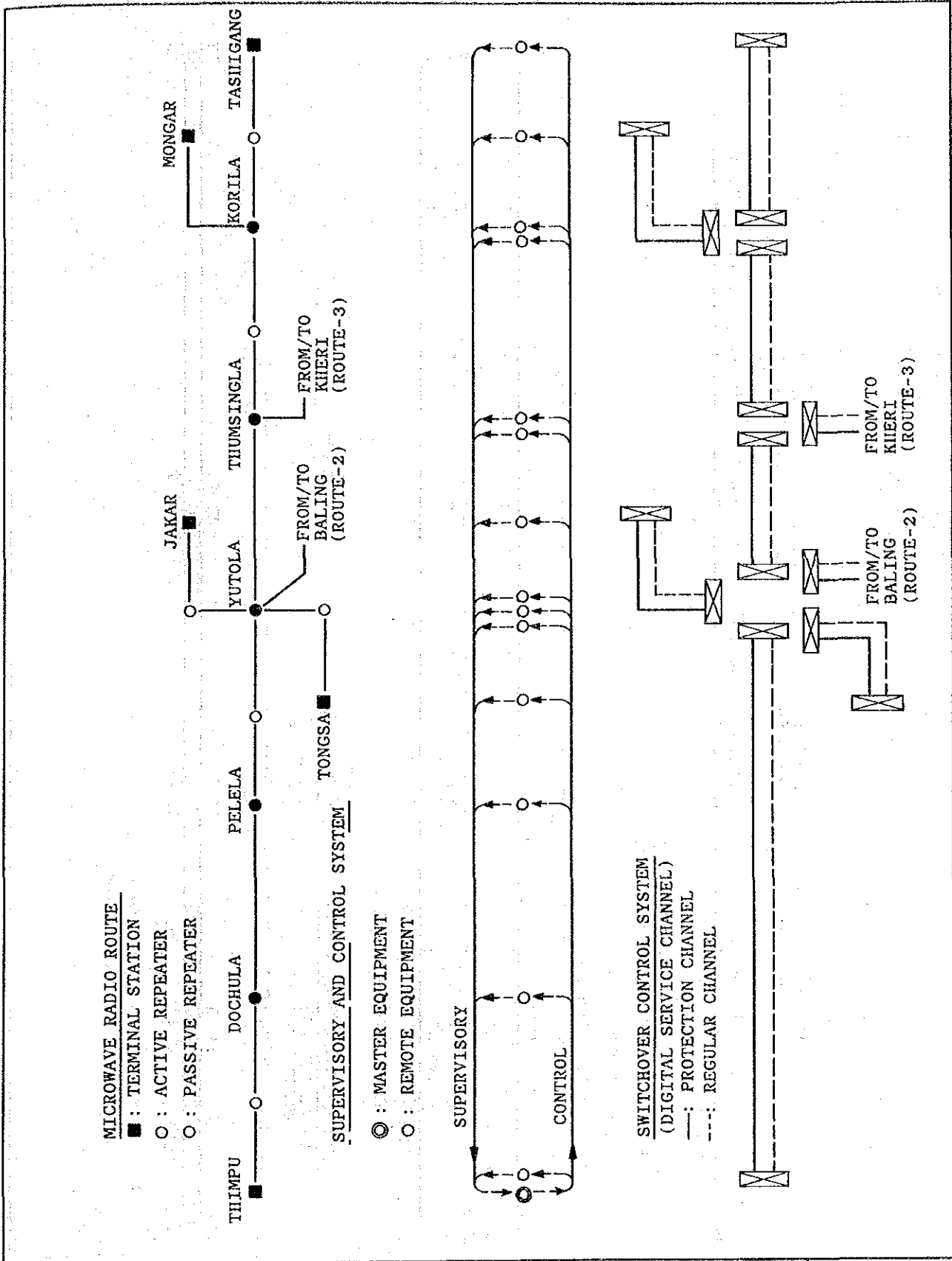
MULTIPLEX ARRANGEMENT PLAN

FIG. NO. TR-5



NON-VOICE CIRCUIT
ARRANGEMENT PLAN

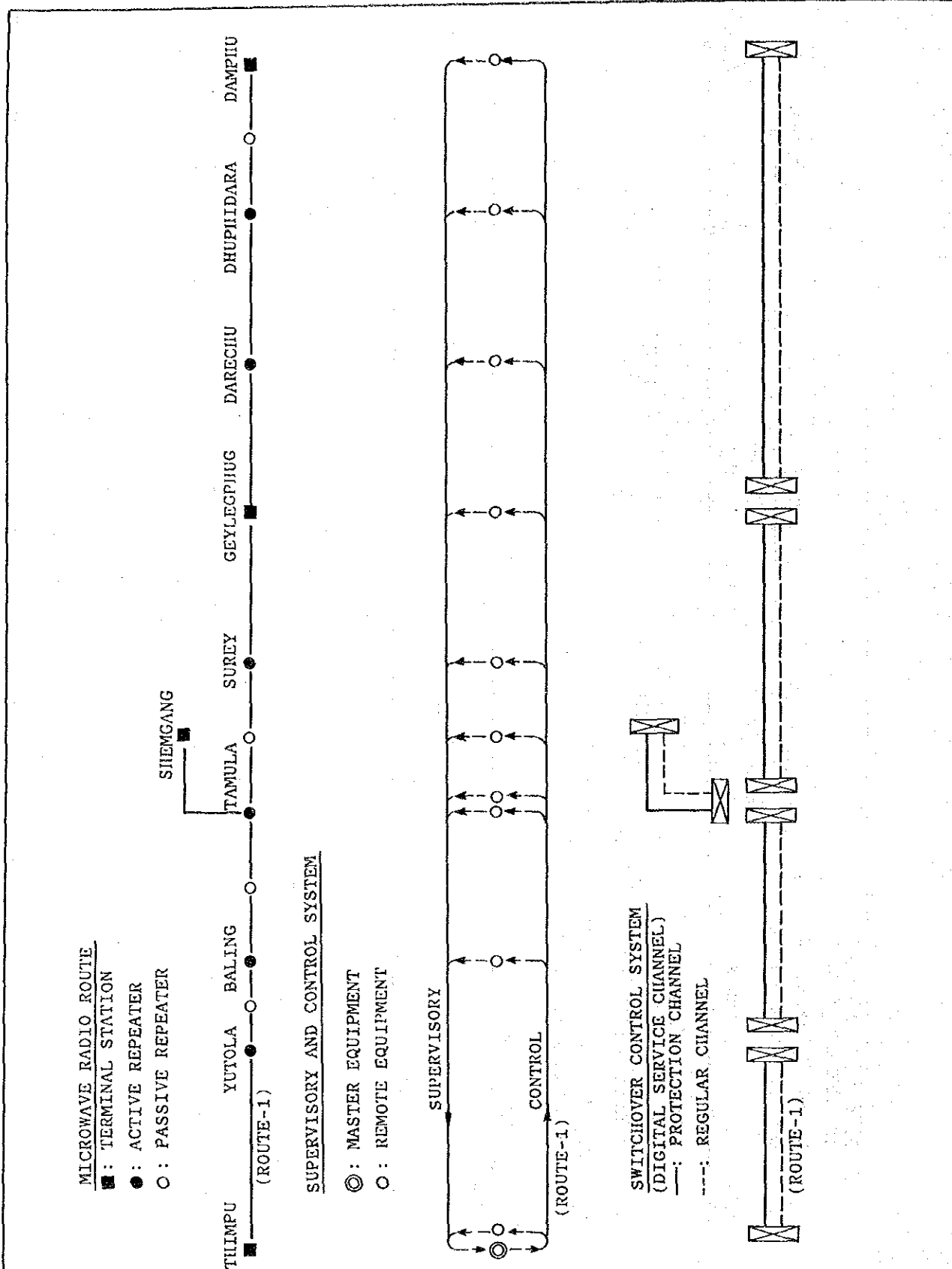
FIG. NO.
TR-6



SYSTEM CONFIGURATION OF SUPERVISORY AND CONTROL SYSTEM

ROUTE-1

FIG. NO. TR-7

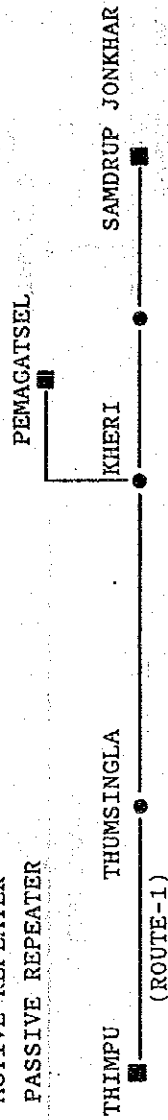


SYSTEM CONFIGURATION OF SUPERVISORY AND CONTROL SYSTEM

ROUTE-2

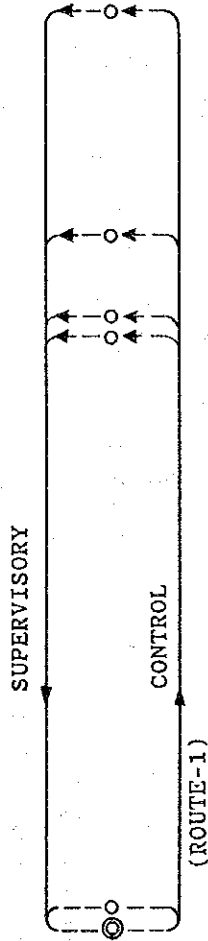
FIG. NO. TR-8

MICROWAVE RADIO ROUTE
 ■ : TERMINAL STATION
 ● : ACTIVE REPEATER
 ○ : PASSIVE REPEATER

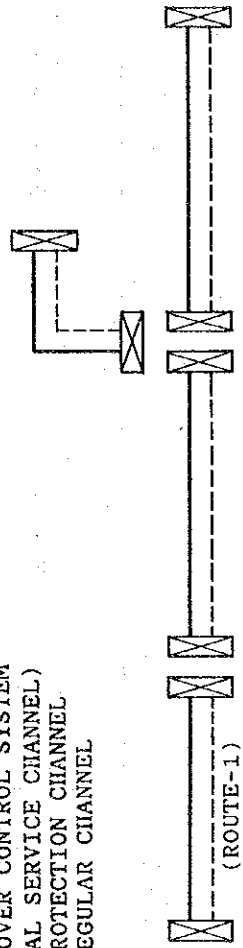


SUPERVISORY AND CONTROL SYSTEM

⊙ : MASTER EQUIPMENT
 ○ : REMOTE EQUIPMENT



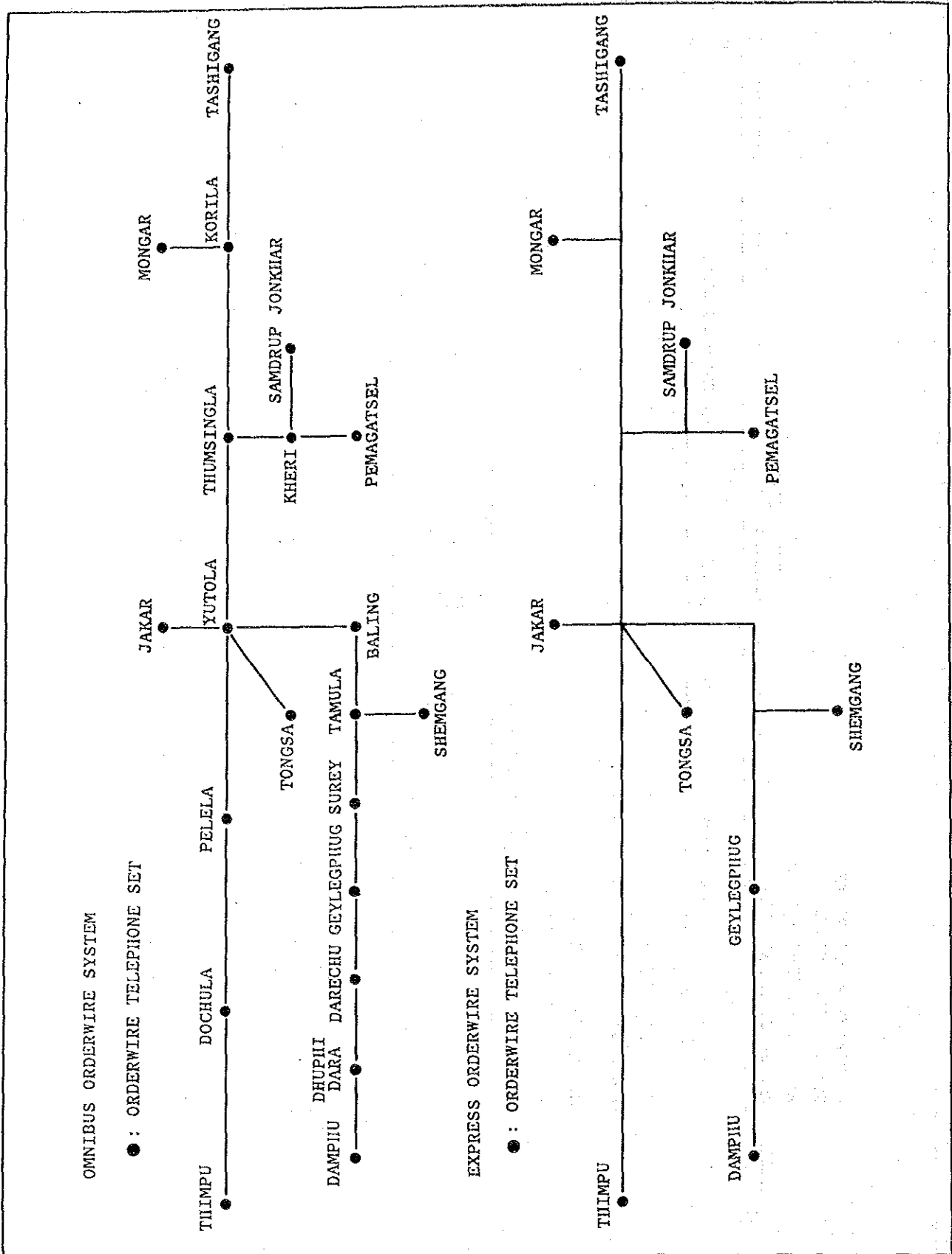
SWITCHOVER CONTROL SYSTEM
 (DIGITAL SERVICE CHANNEL)
 : PROTECTION CHANNEL
 : REGULAR CHANNEL



SYSTEM CONFIGURATION OF
 SUPERVISORY AND CONTROL SYSTEM

ROUTE-3

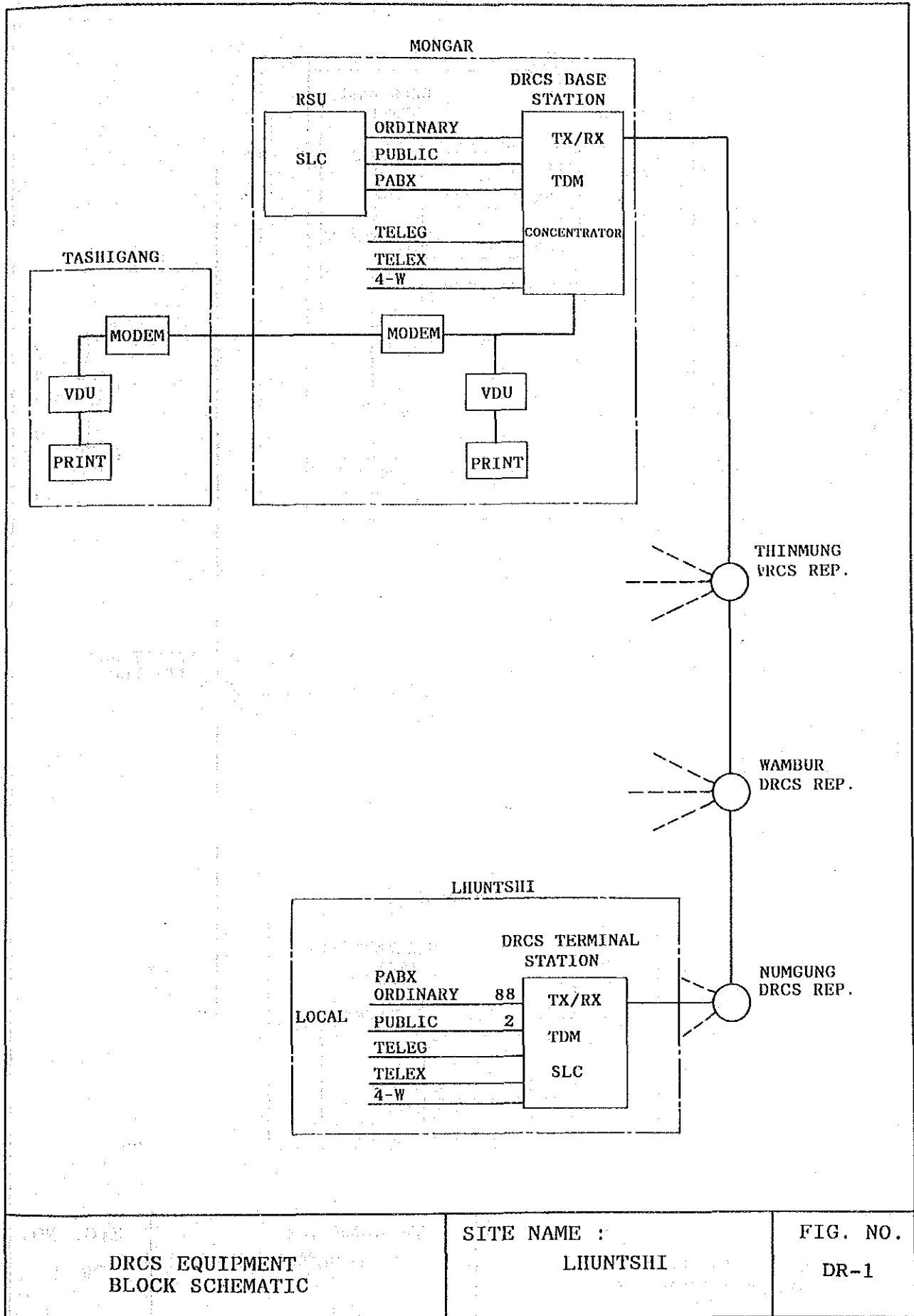
FIG. NO.
 TR-9

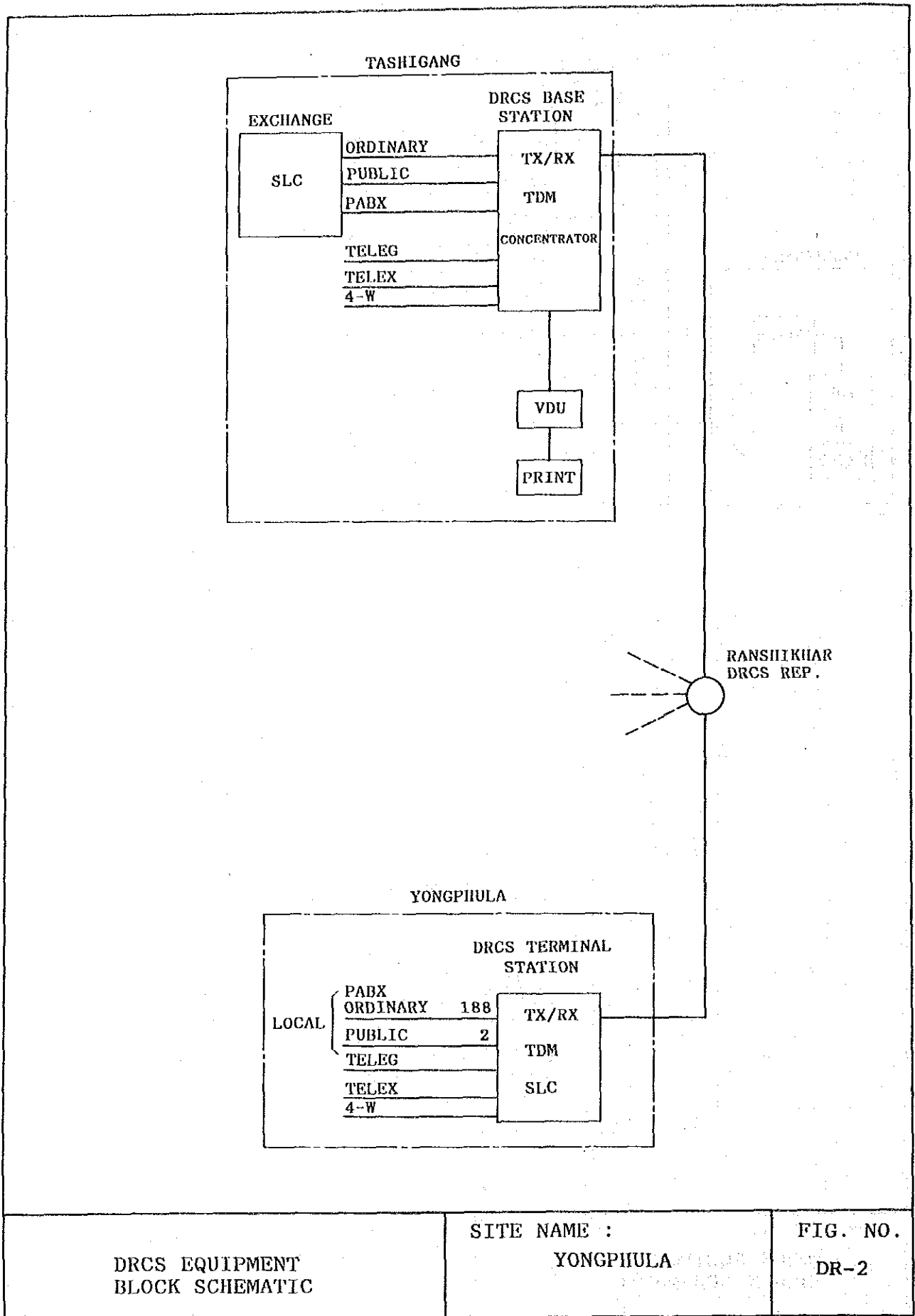


SYSTEM CONFIGURATION OF ORDERWIRE SYSTEM

WHOLE ROUTES

FIG. NO. TR-10

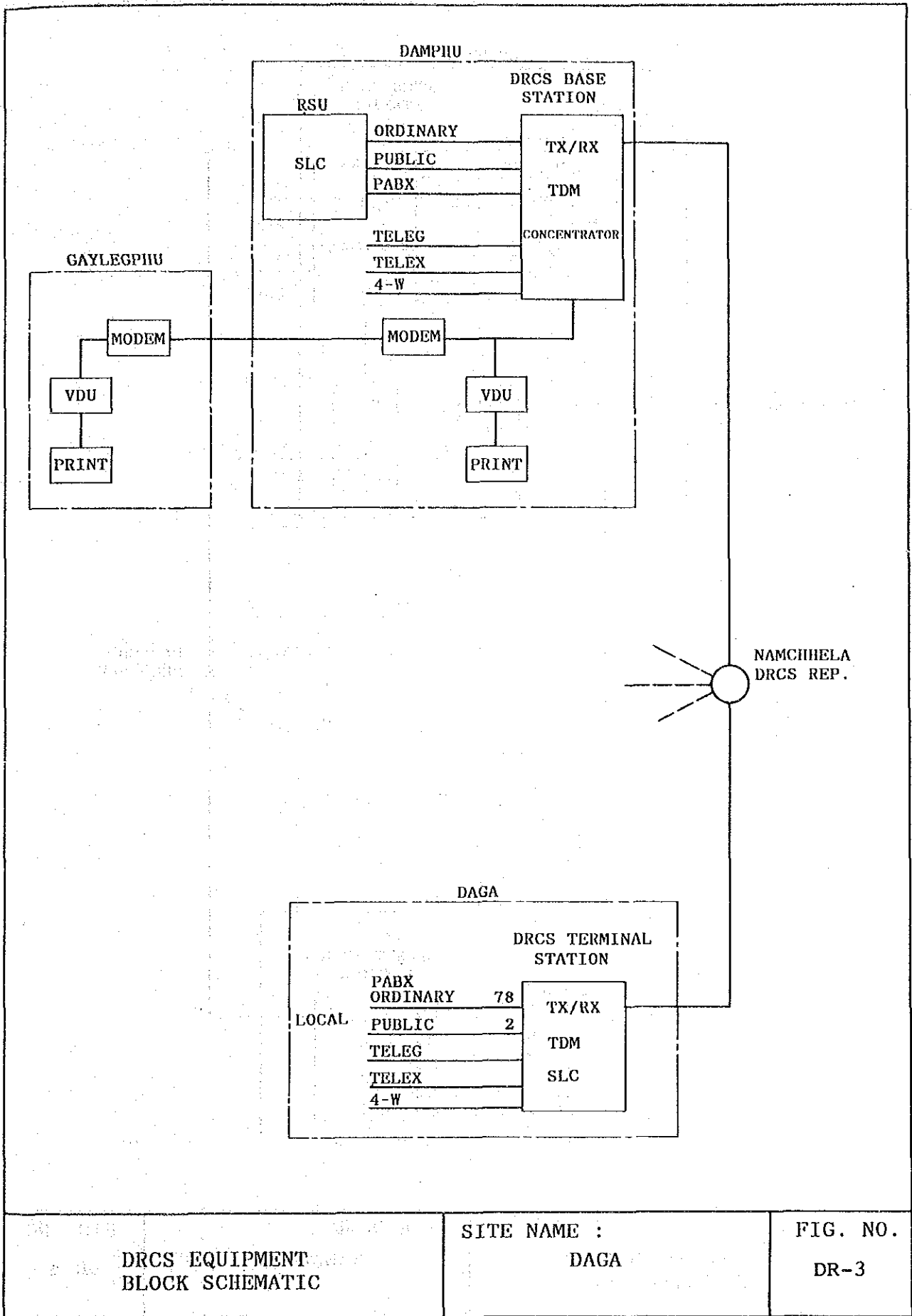




DRCS EQUIPMENT
BLOCK SCHEMATIC

SITE NAME :
YONGPIHULA

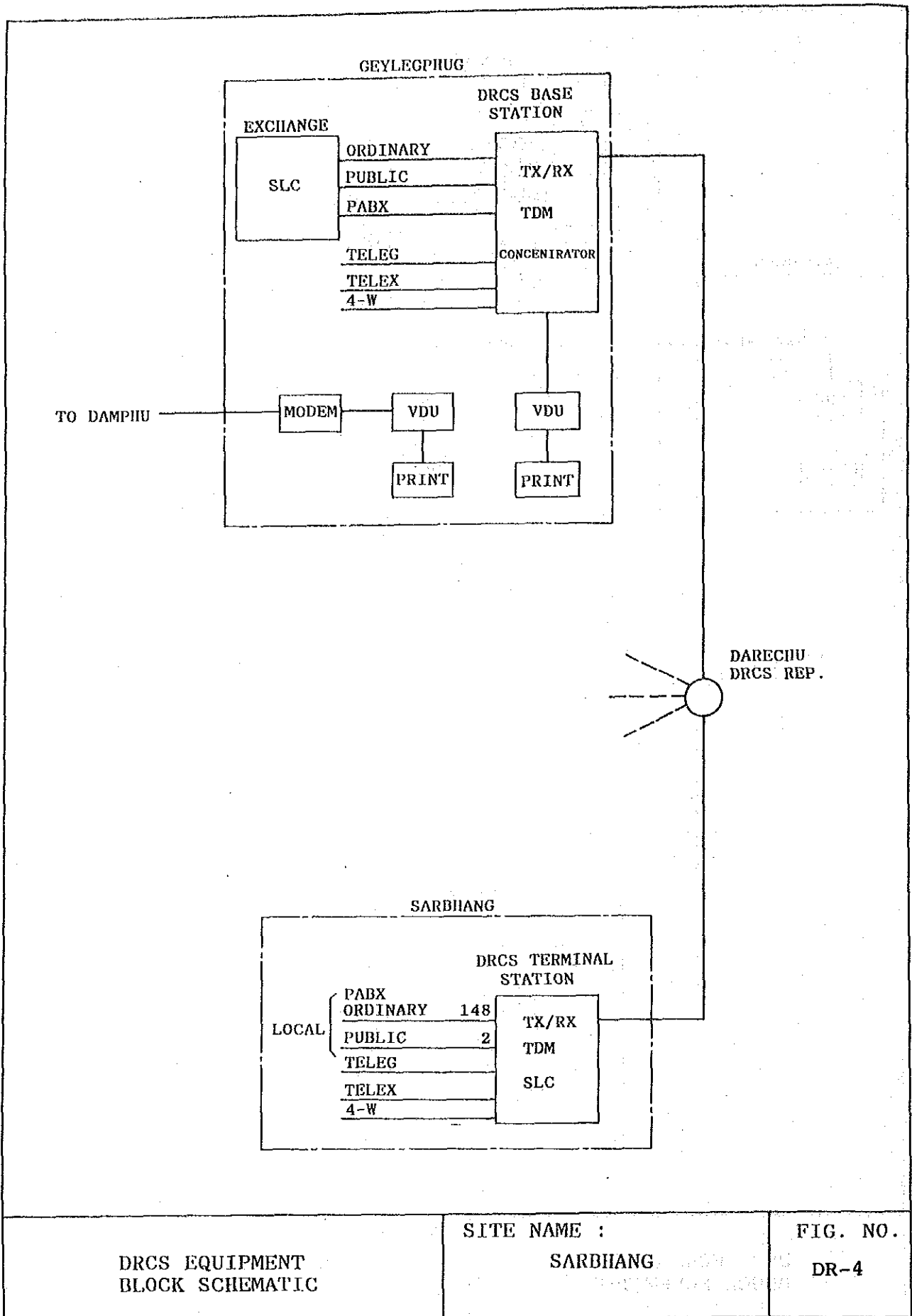
FIG. NO.
DR-2



DRCS EQUIPMENT
BLOCK SCHEMATIC

SITE NAME :
DAGA

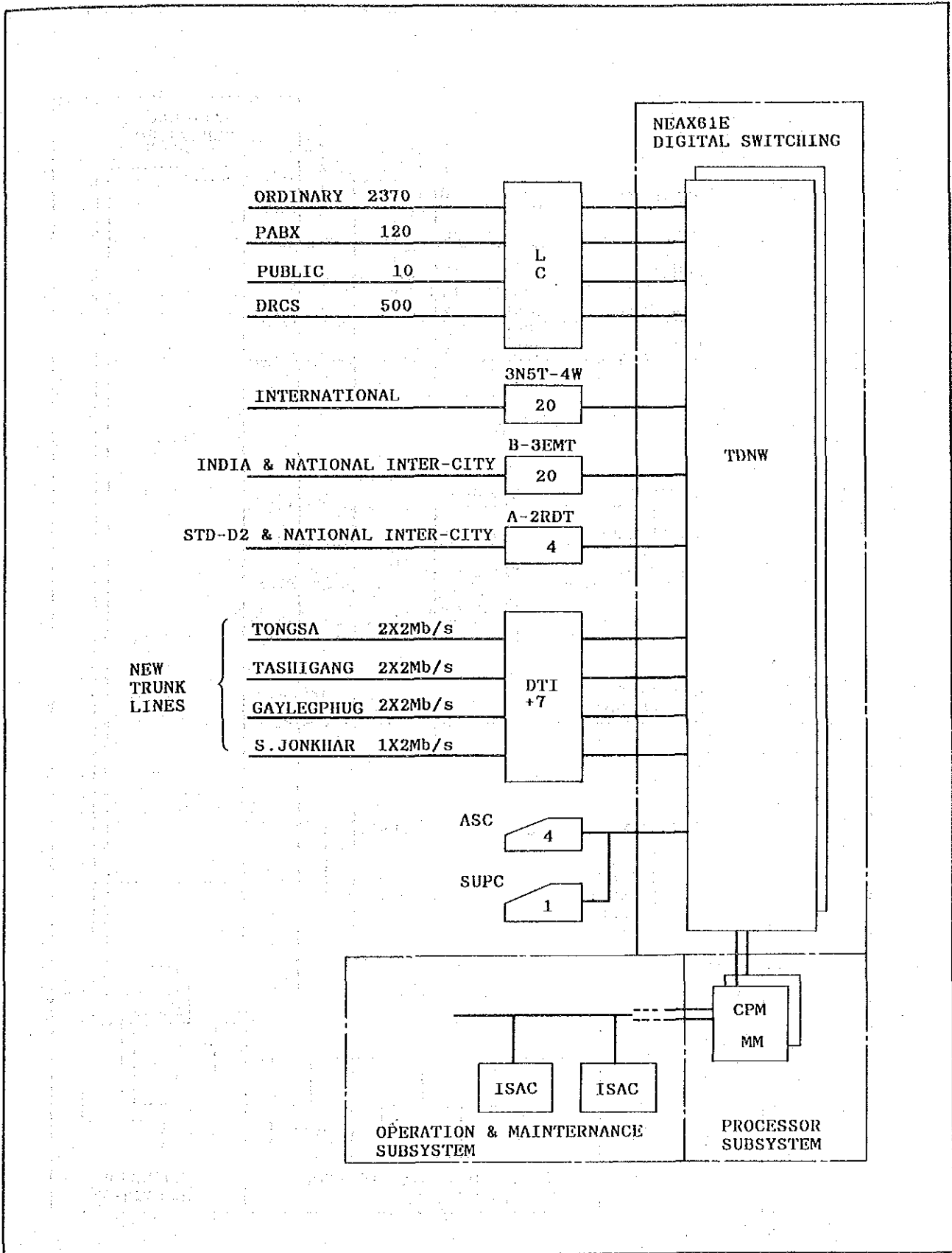
FIG. NO.
DR-3



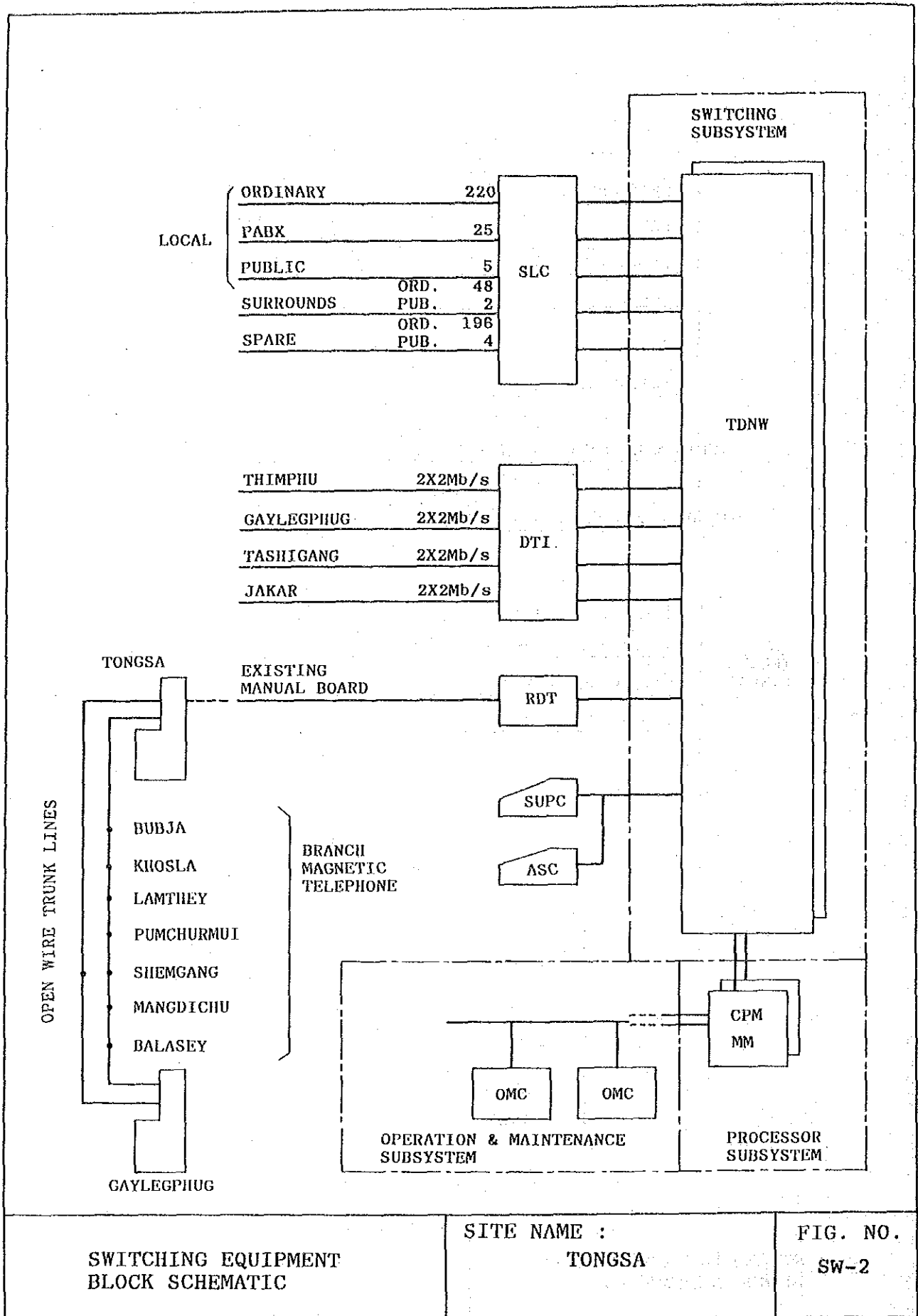
**DRCS EQUIPMENT
BLOCK SCHEMATIC**

SITE NAME :
SARBHANG

FIG. NO.
DR-4



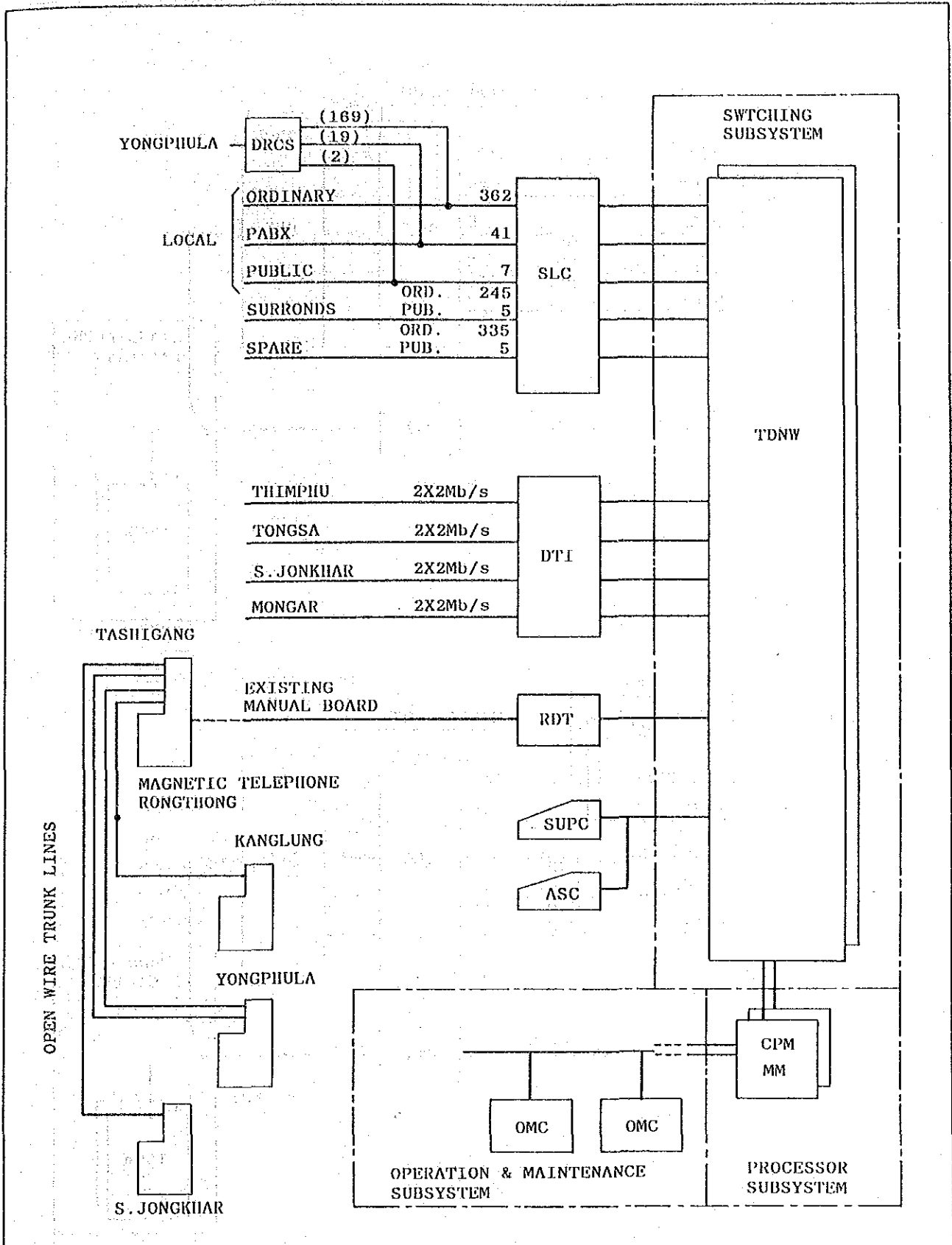
SWITCHING EQUIPMENT BLOCK SCHEMATIC	SITE NAME : THIMPHU	FIG. NO. SW-1
--	------------------------	------------------



SWITCHING EQUIPMENT
BLOCK SCHEMATIC

SITE NAME :
TONGSA

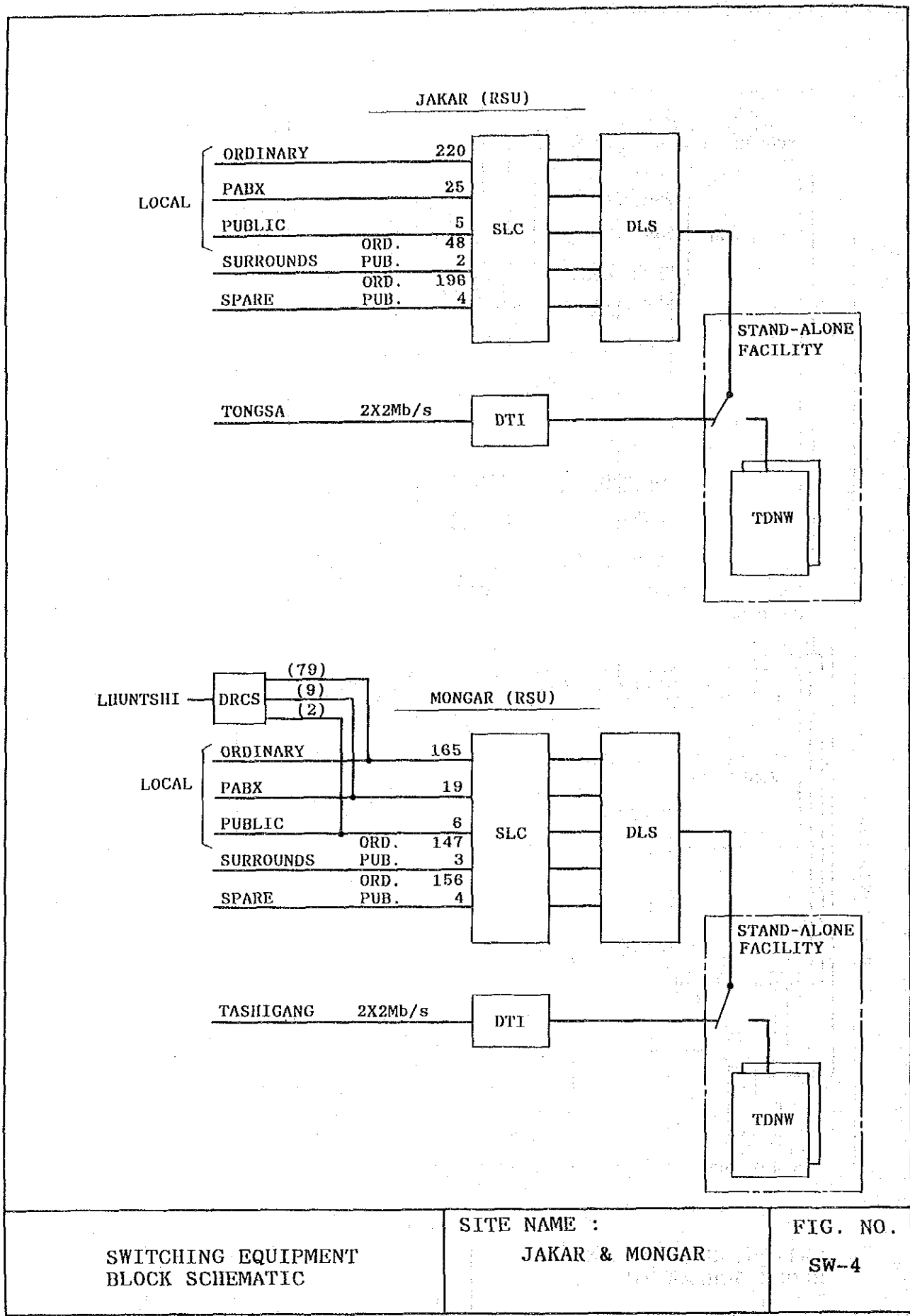
FIG. NO.
SW-2



SWITCHING EQUIPMENT
BLOCK SCHEMATIC

SITE NAME :
TASHIGANG

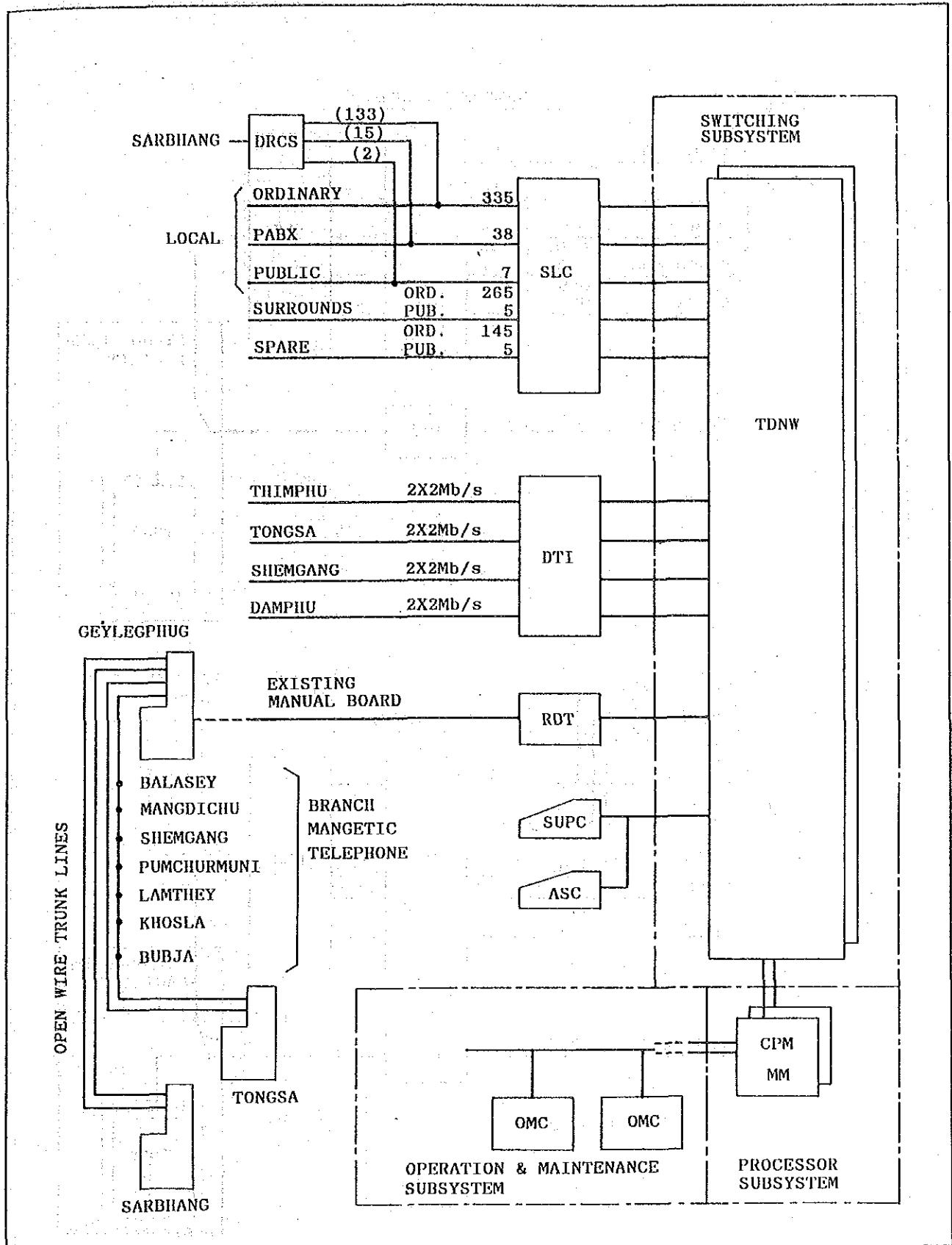
FIG. NO.
SW-3



SWITCHING EQUIPMENT
BLOCK SCHEMATIC

SITE NAME :
JAKAR & MONGAR

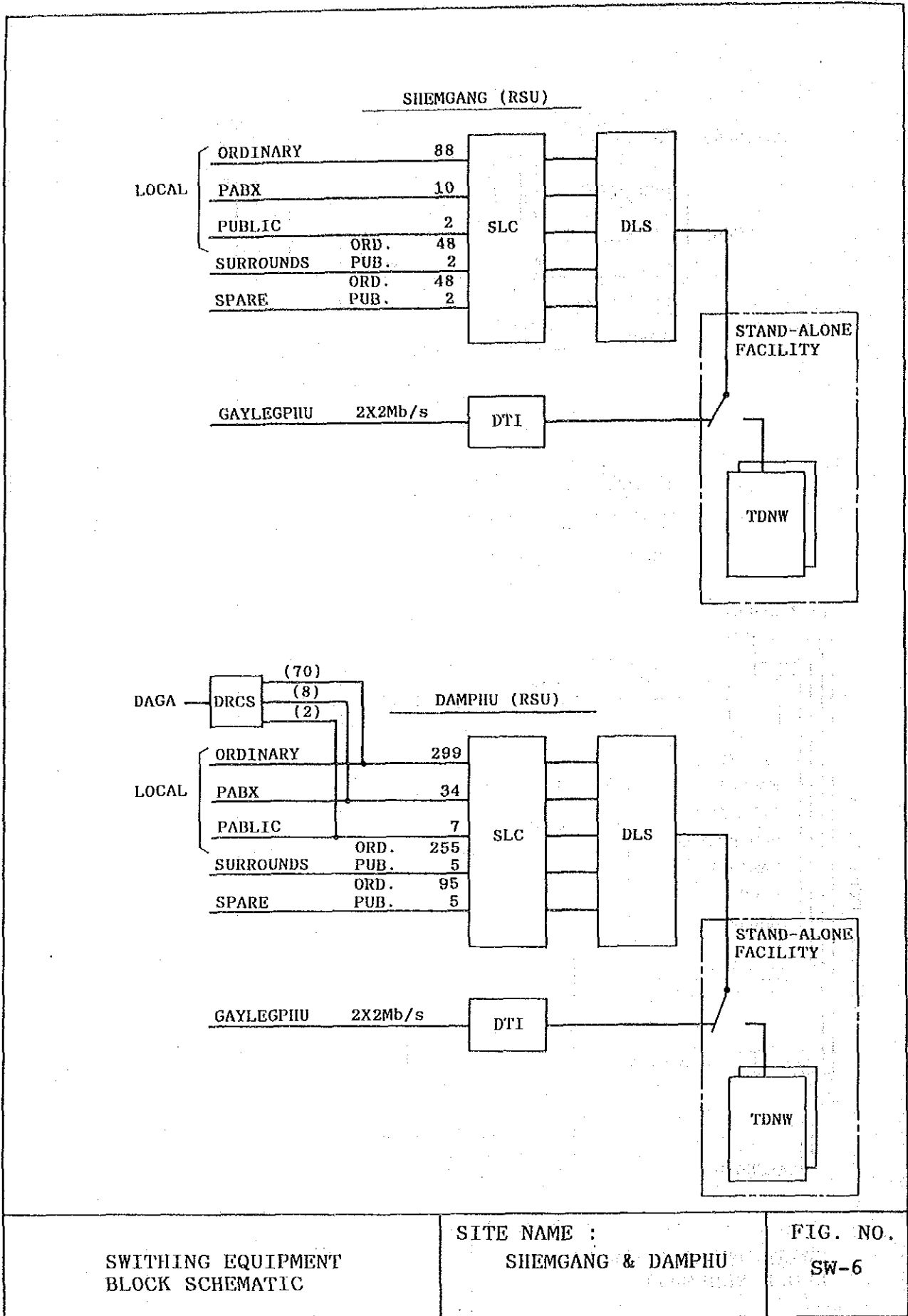
FIG. NO.
SW-4

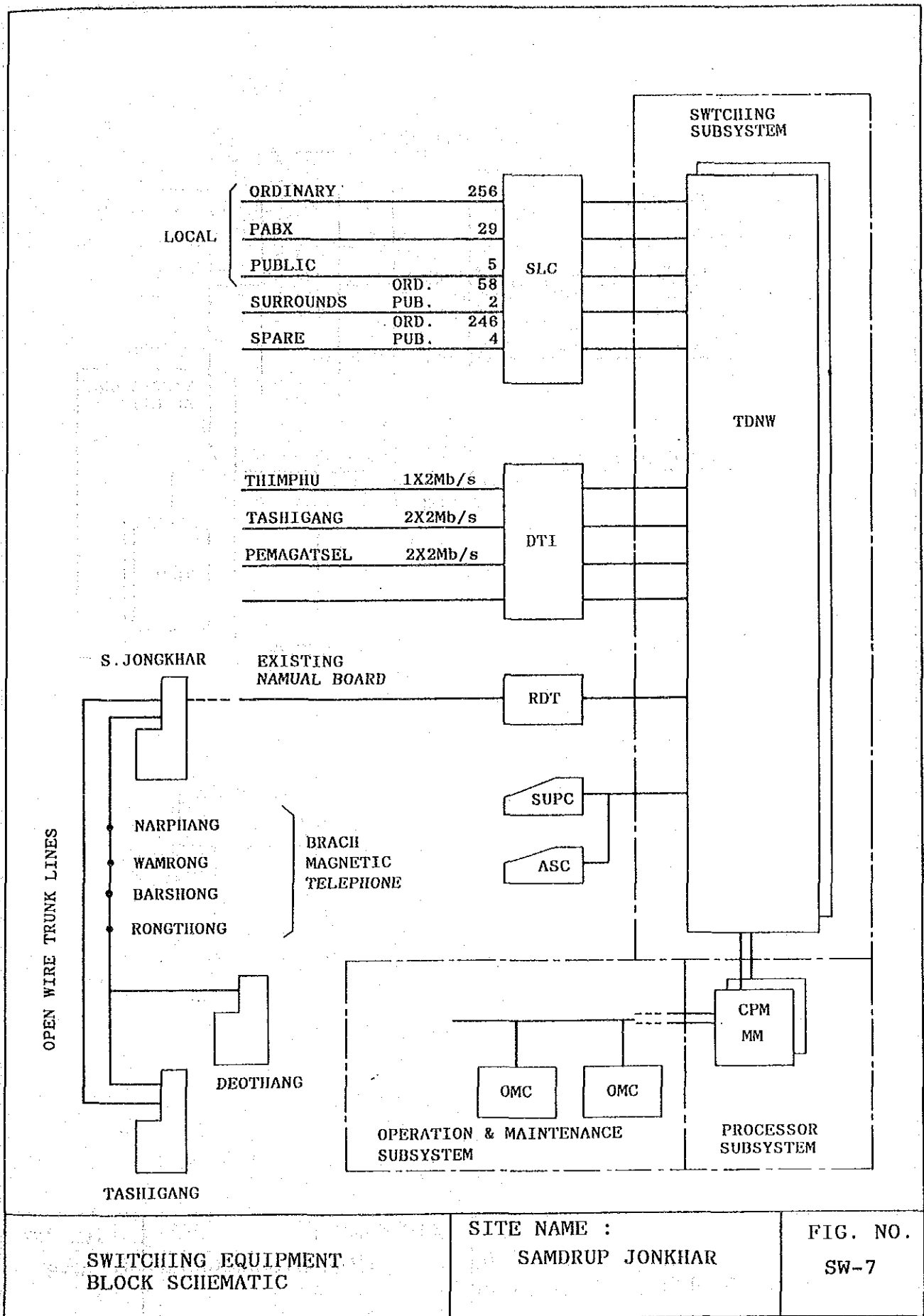


SWITCHING EQUIPMENT
BLOCK SCHEMATIC

SITE NAME :
GEYLEGPHUG

FIG. NO.
SW-5



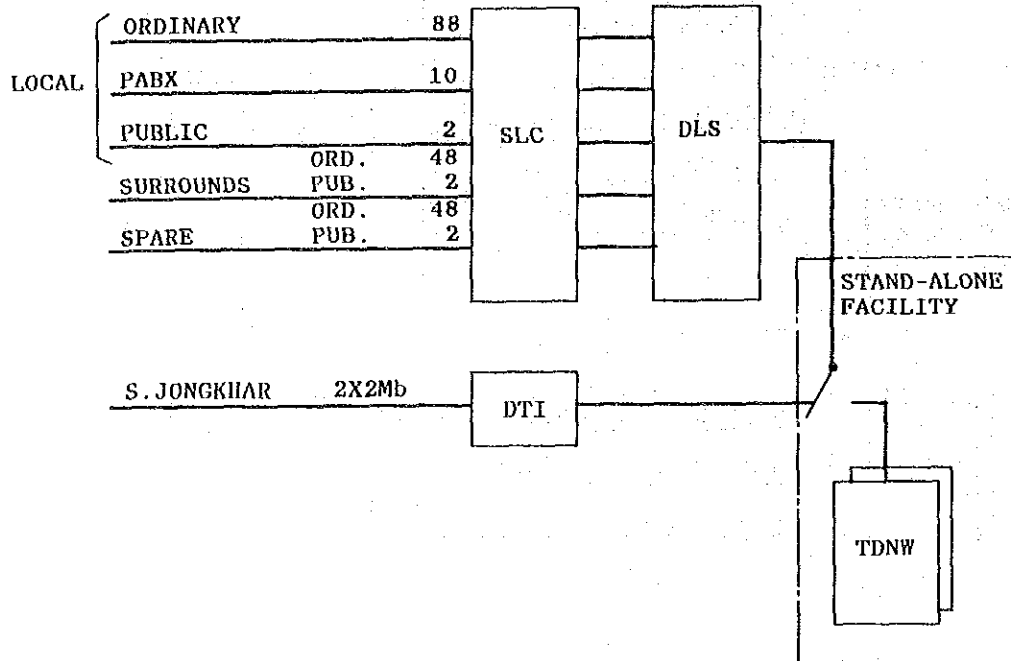


SWITCHING EQUIPMENT
BLOCK SCHEMATIC

SITE NAME :
SAMDRUP JONKHAR

FIG. NO.
SW-7

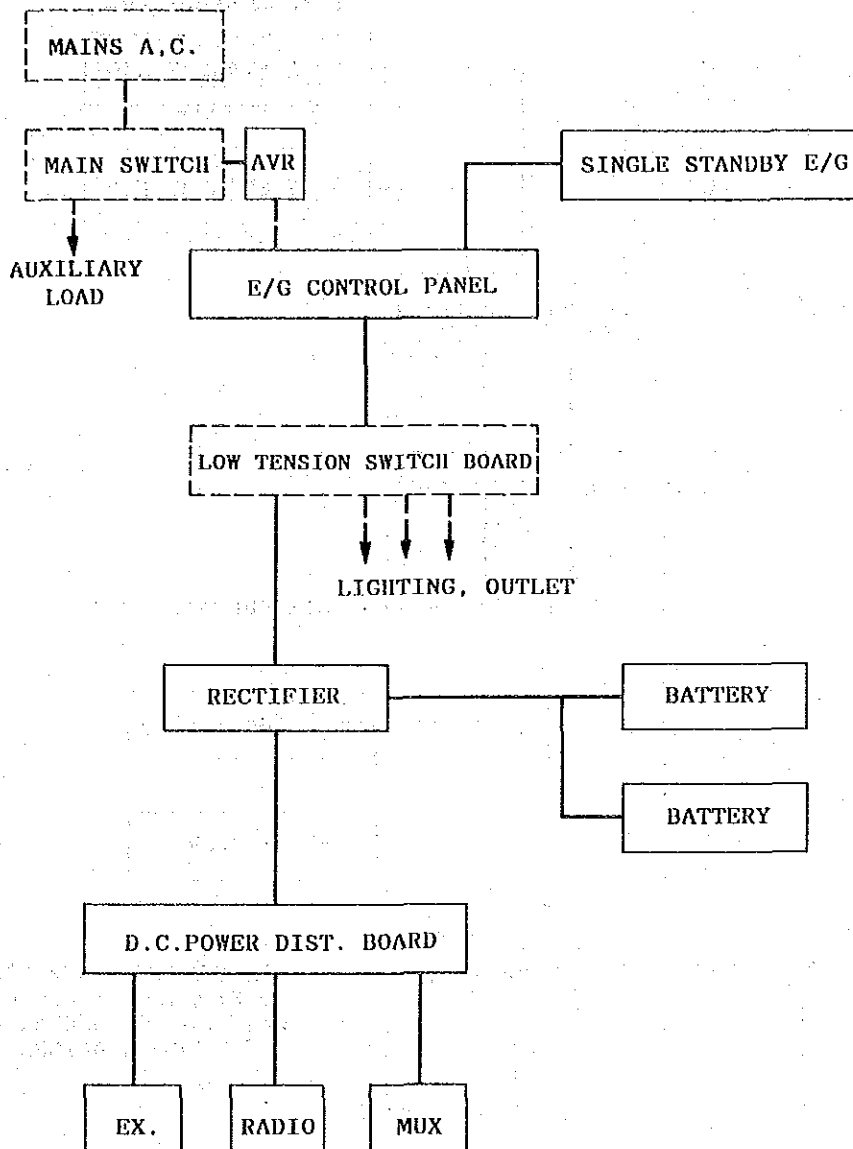
PEMAGATSEL (RSU)



SWITCHING EQUIPMENT
BLOCK SCHEMATIC

SITE NAME :
PEMAGATSEL

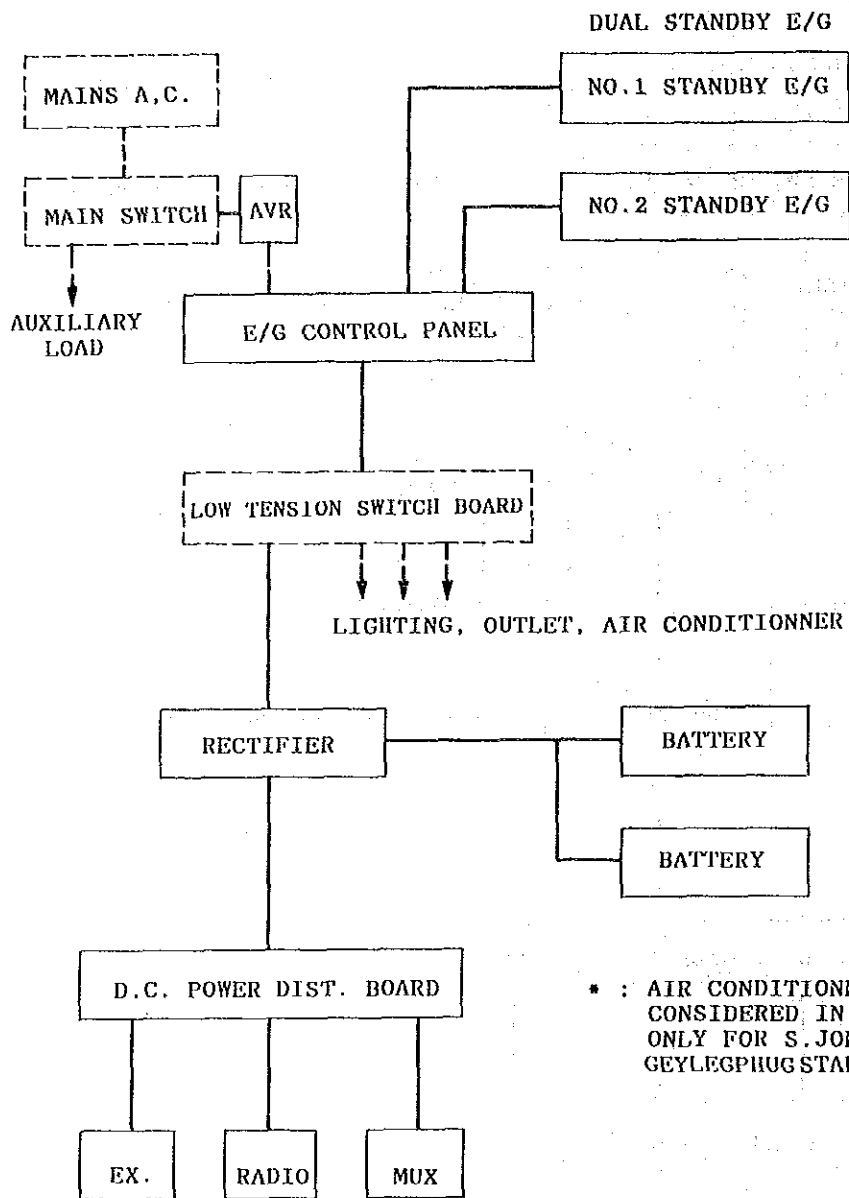
FIG. NO.
SW-8



EQUIPMENT BLOCK SCHEMATIC

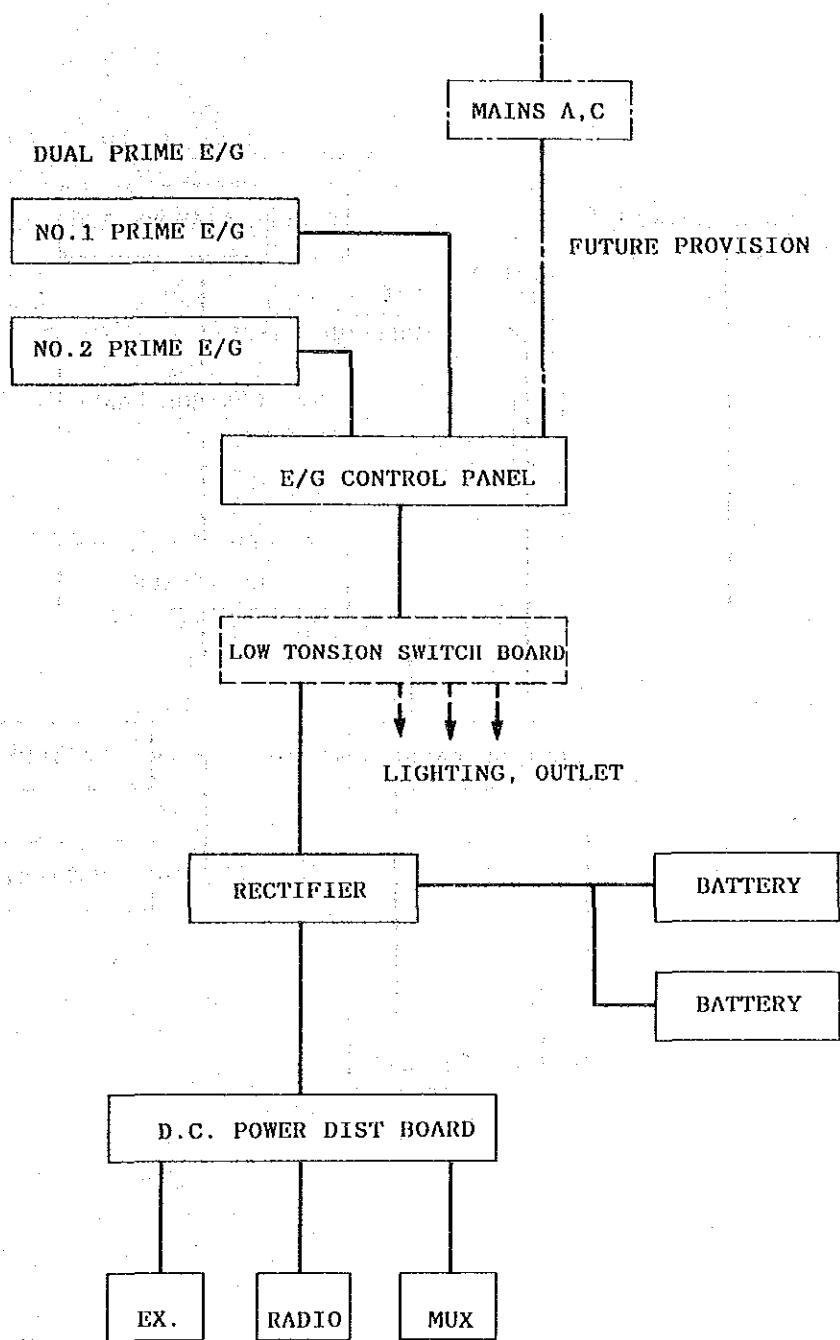
SITE NAME :
 JAKAR, TONGSA, MONGAR,
 SHEMGANG, DANPHU

FIG. NO.
 PW-1

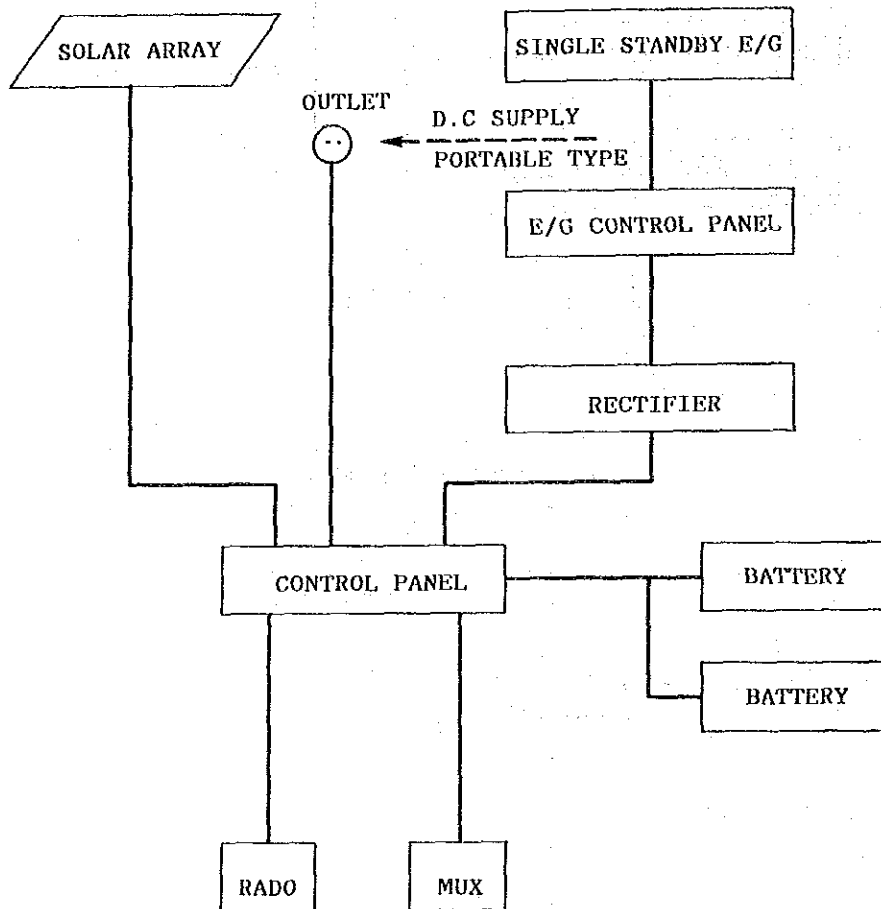


* : AIR CONDITIONNER LOAD IS CONSIDERED IN E/G CAPACITY ONLY FOR S. JONGKAR AND GEYLEGPHUG STALIONS.

EQUIPMENT BLOCK SCHEMATIC	SITE NAME : TASHIGANG, GEYLEGPHUG SAMDRUP, JONKHAR	FIG. NO. PW-2
---------------------------	--	------------------



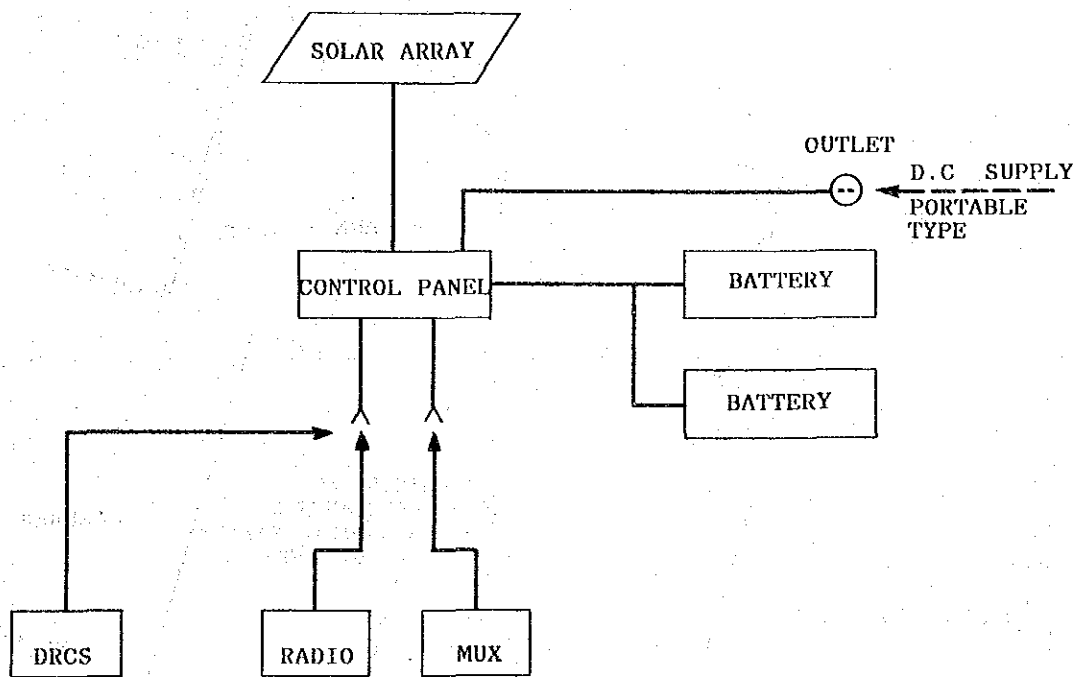
EQUIPMENT BLOCK SCHEMATIC	SITE NAME : PEMAGATSEL	FIG. NO. PW-3
---------------------------	---------------------------	------------------



EQUIPMENT BLOCK SCHEMATIC

SITE NAME :
YUTOLA, THUMSINGLA, KORILA,
TAMULA, DARECHU, KHERI

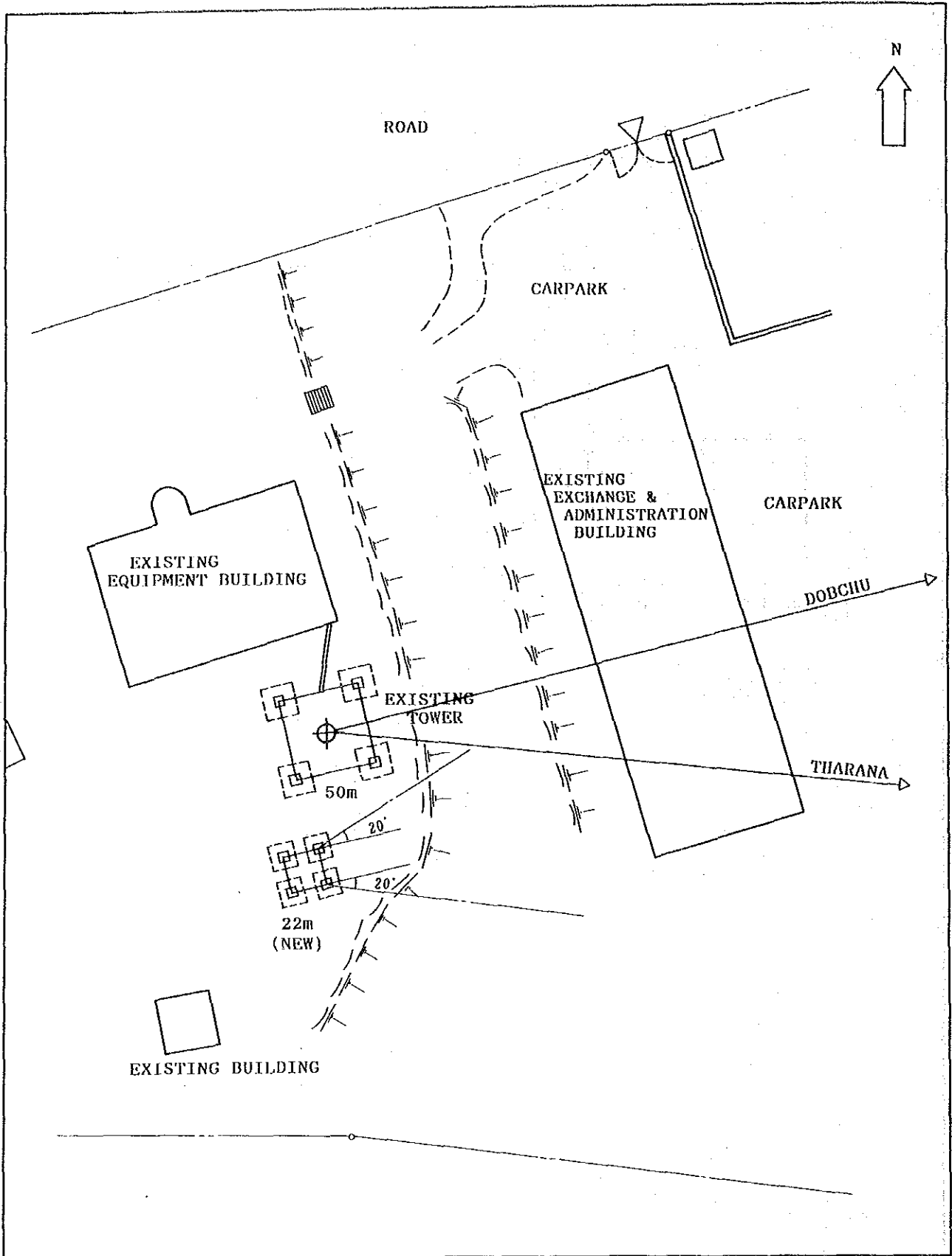
FIG. NO.
PW-4



EQUIPMENT BLOCK SCHEMATIC

SITE NAME :
OTHER REPEATER STATIONS
& DRCS TERMINAL STATIONS

FIG. NO.
PW-5



<p>EQUIPMENT SITE LAYOUT PLAN</p> <p>SCALE : 1/500</p>	<p>SITE NAME : THIMPHU</p>	<p>FIG. NO. EQ-1</p>
--	----------------------------	----------------------

EQUIPMENT



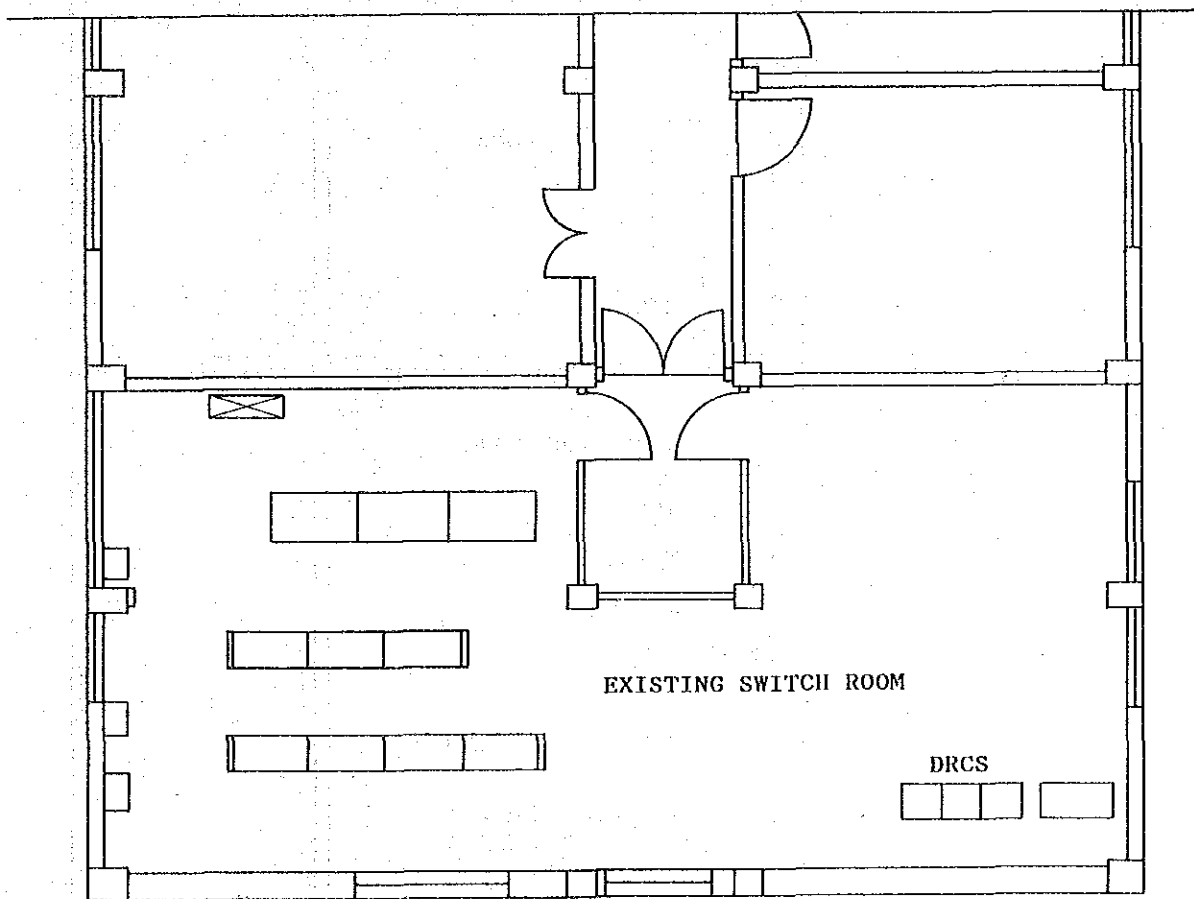
NEW



FUTURE





EXISTING

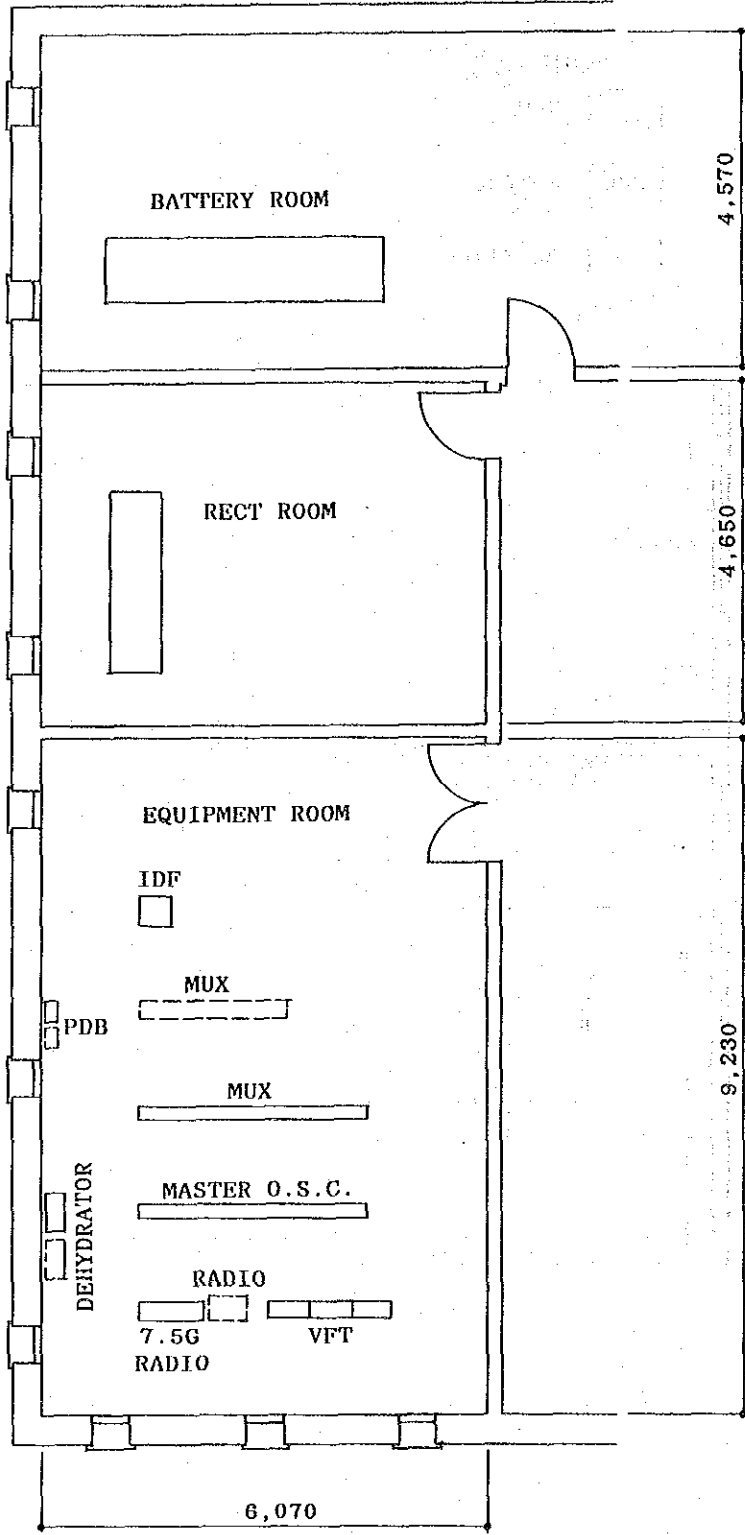


<p>EQUIPMENT FLOOR LAYOUT PLAN</p> <p>SCALE : 1/100</p>	<p>SITE NAME : THIMPHU</p>	<p>FIG. NO. EQ-2</p>
---	--------------------------------	--------------------------

EQUIPMENT BUILDING

UNIT : mm

-  NEW EQUIPMENT
-  EXISTING EQUIPMENT



EQUIPMENT FLOOR LAYOUT PLAN

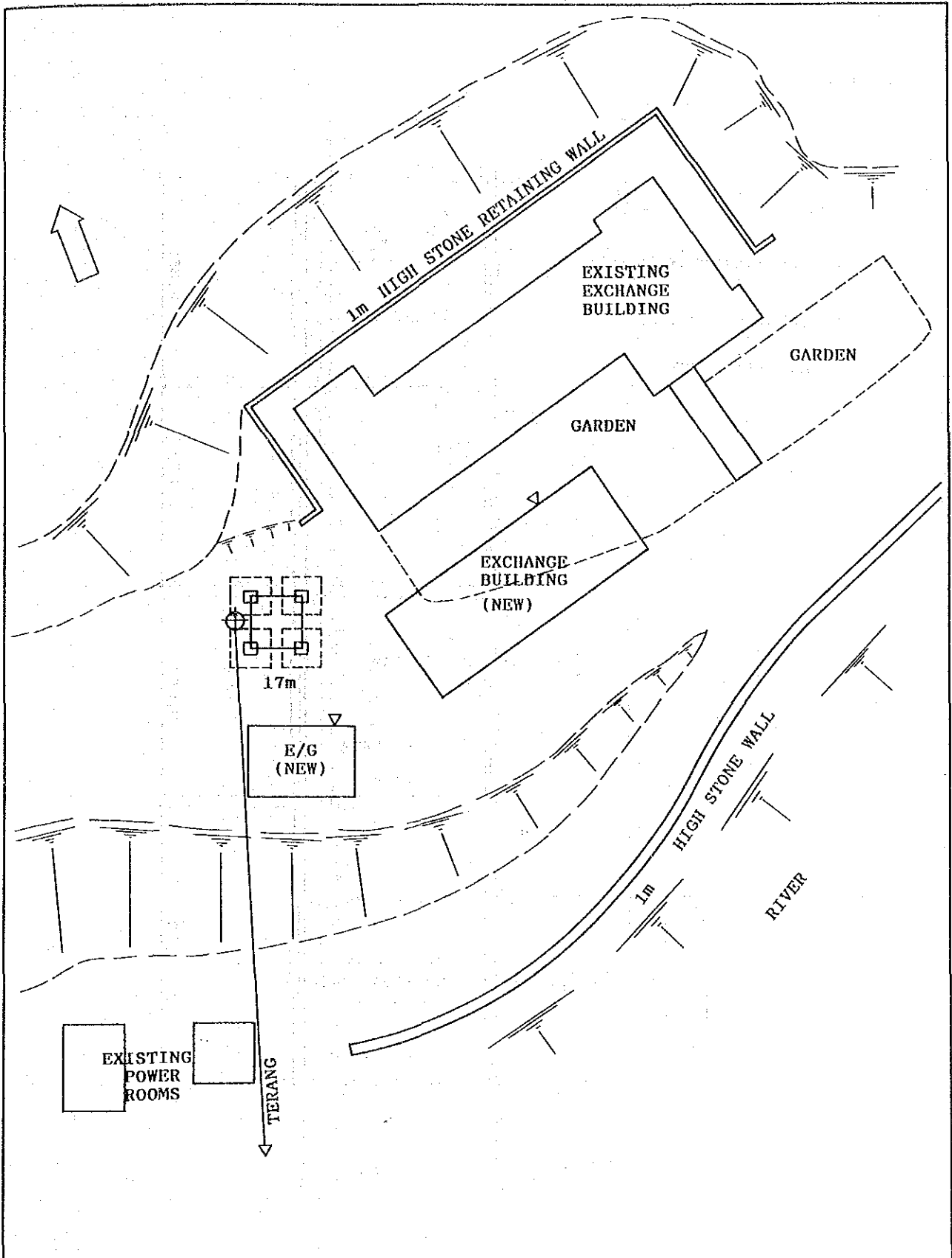
SCALE : 1/100

SITE NAME :

THIMPHU




FIG. NO.

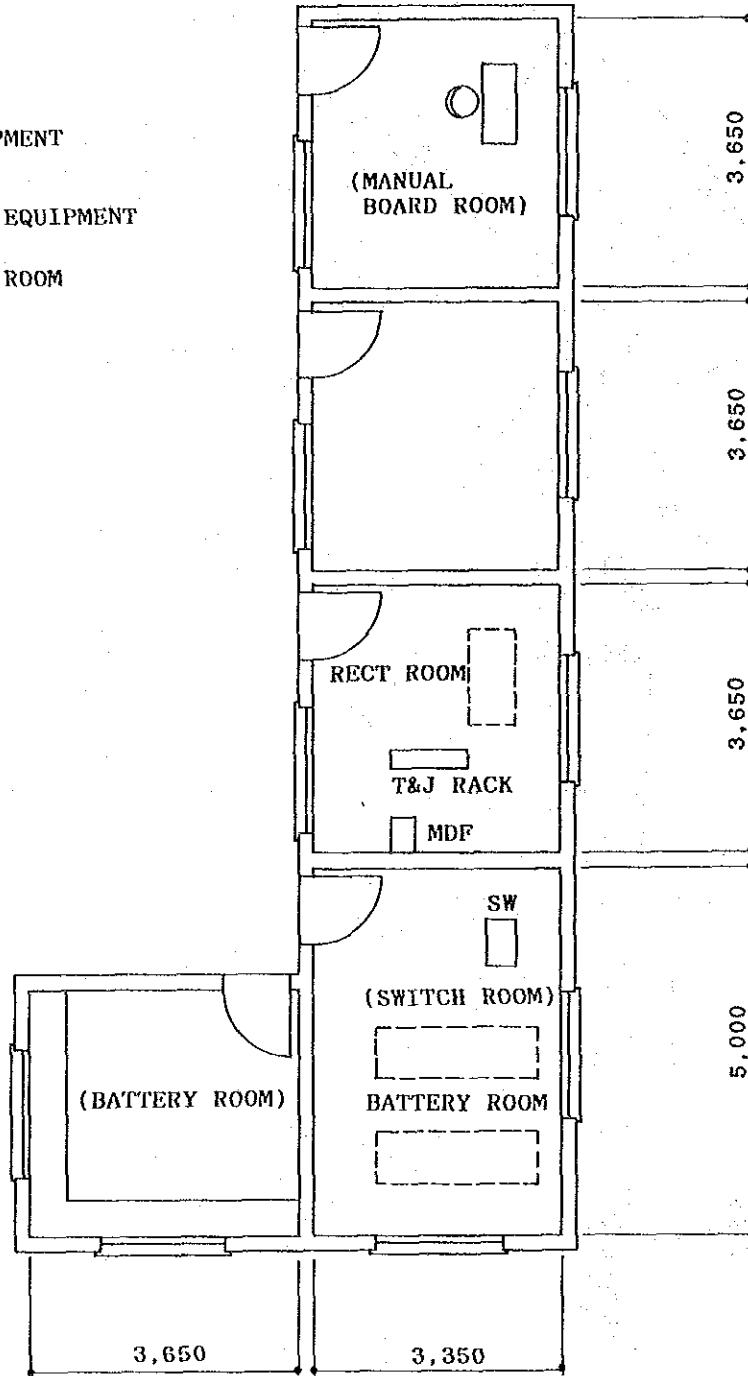
EQ-3



<p>EQUIPMENT SITE LAYOUT PLAN</p> <p>SCALE : 1/300</p>	<p>SITE NAME : TONGSA</p>	<p>FIG. NO. EQ-4</p>
--	---------------------------	----------------------

UNIT : mm

-  NEW EQUIPMENT
-  EXISTING EQUIPMENT
-  EXISTING ROOM

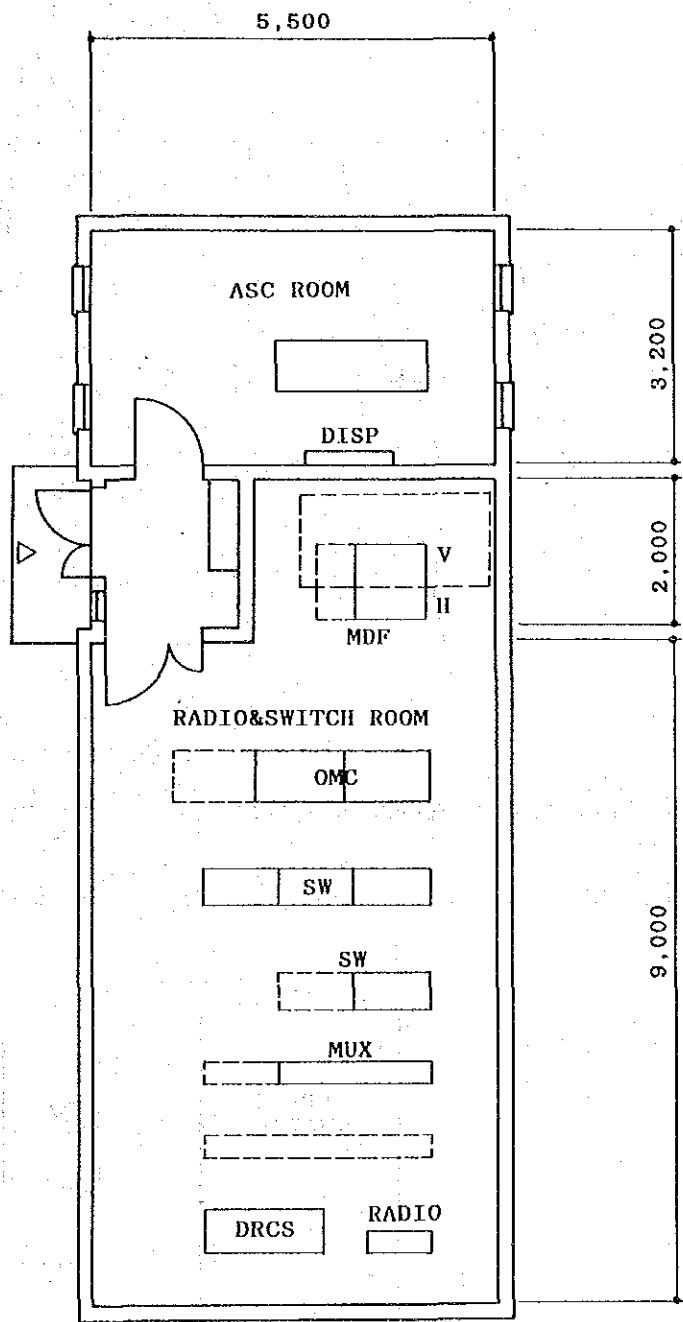


EQUIPMENT FLOOR LAYOUT PLAN

SCALE : 1/100

SITE NAME :
TONGSA

FIG. NO.
EQ-5



EQUIPMENT FLOOR LAYOUT PLAN

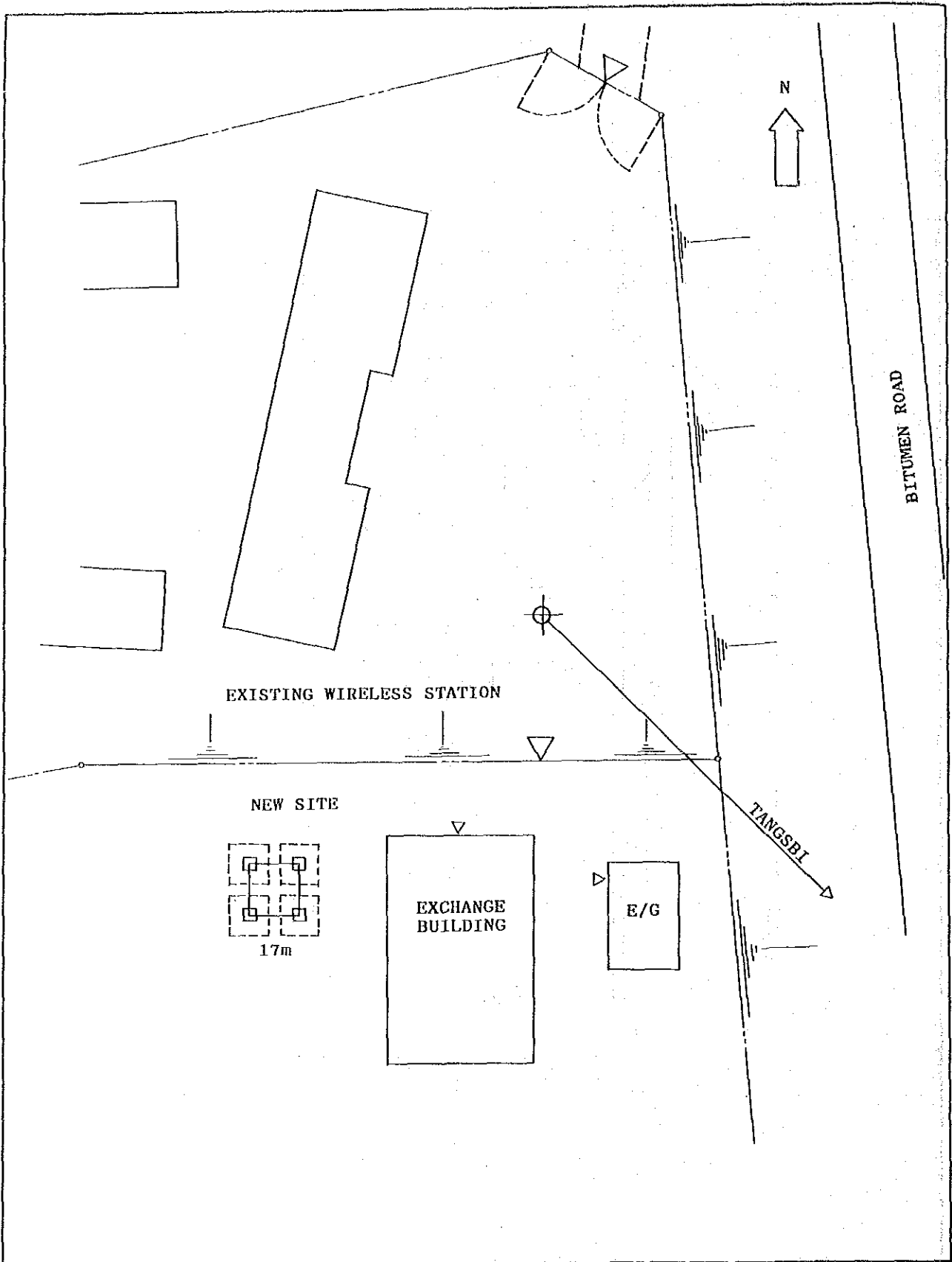
SCALE : 1/100

SITE NAME :

TONGSA

FIG. NO.

EQ-6



EQUIPMENT SITE LAYOUT PLAN

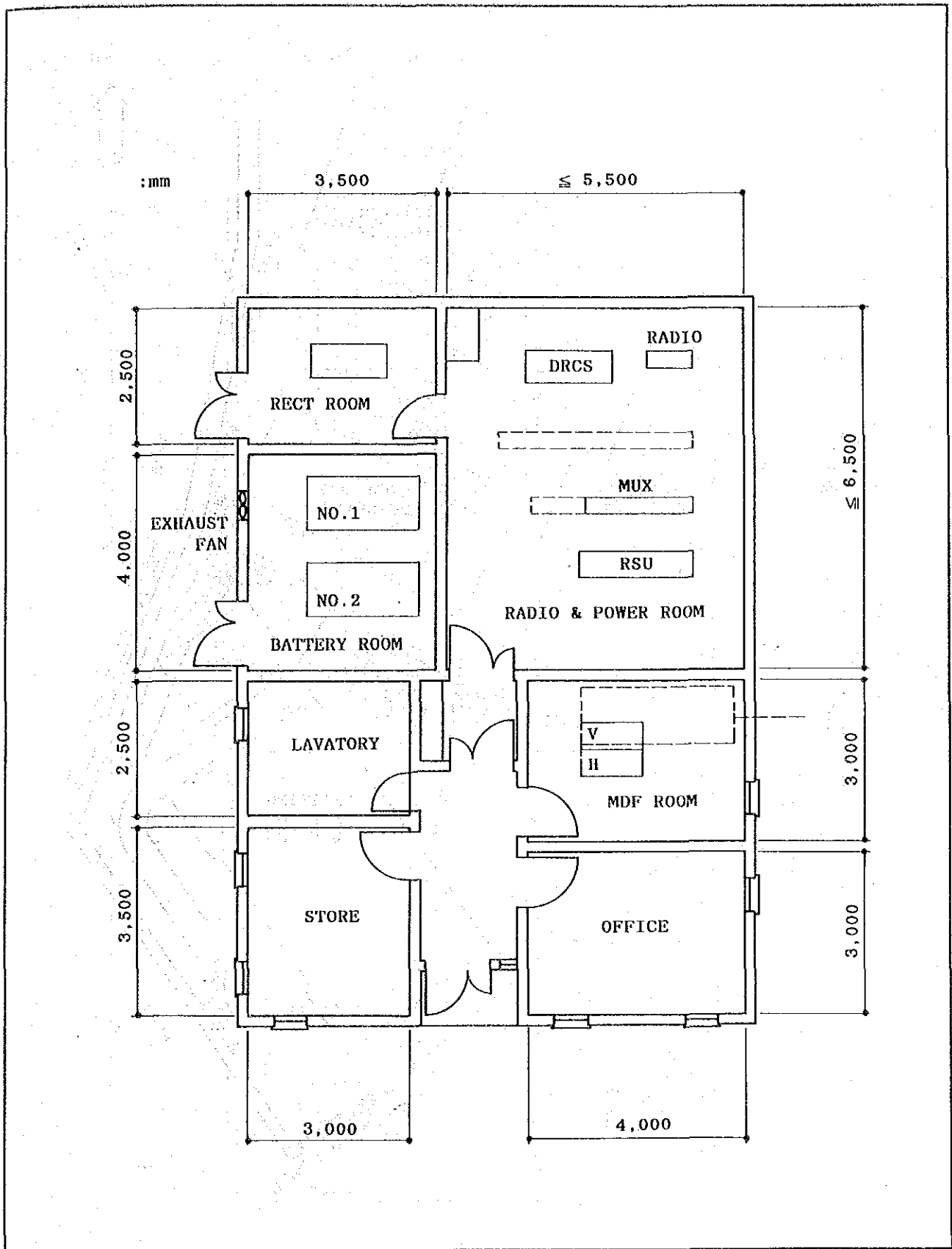
SCALE : 1/300

SITE NAME :

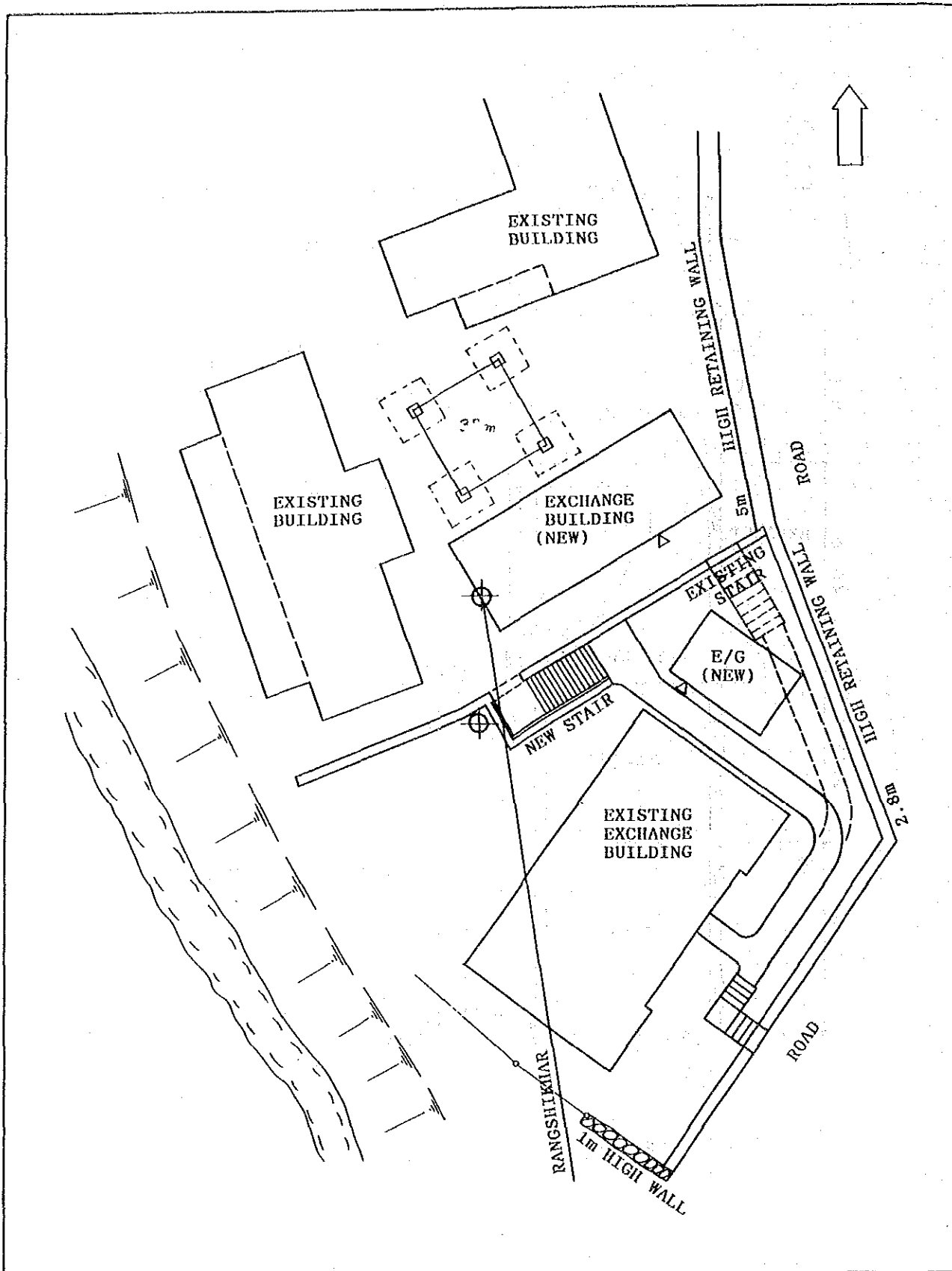
JAKAR

FIG. NO.

EQ-7



<p>EQUIPMENT FLOOR LAYOUT PLAN</p> <p>SCALE : 1/100</p>	<p>SITE NAME : JAKAR</p>	<p>FIG. NO. EQ-8</p>
---	------------------------------	--------------------------






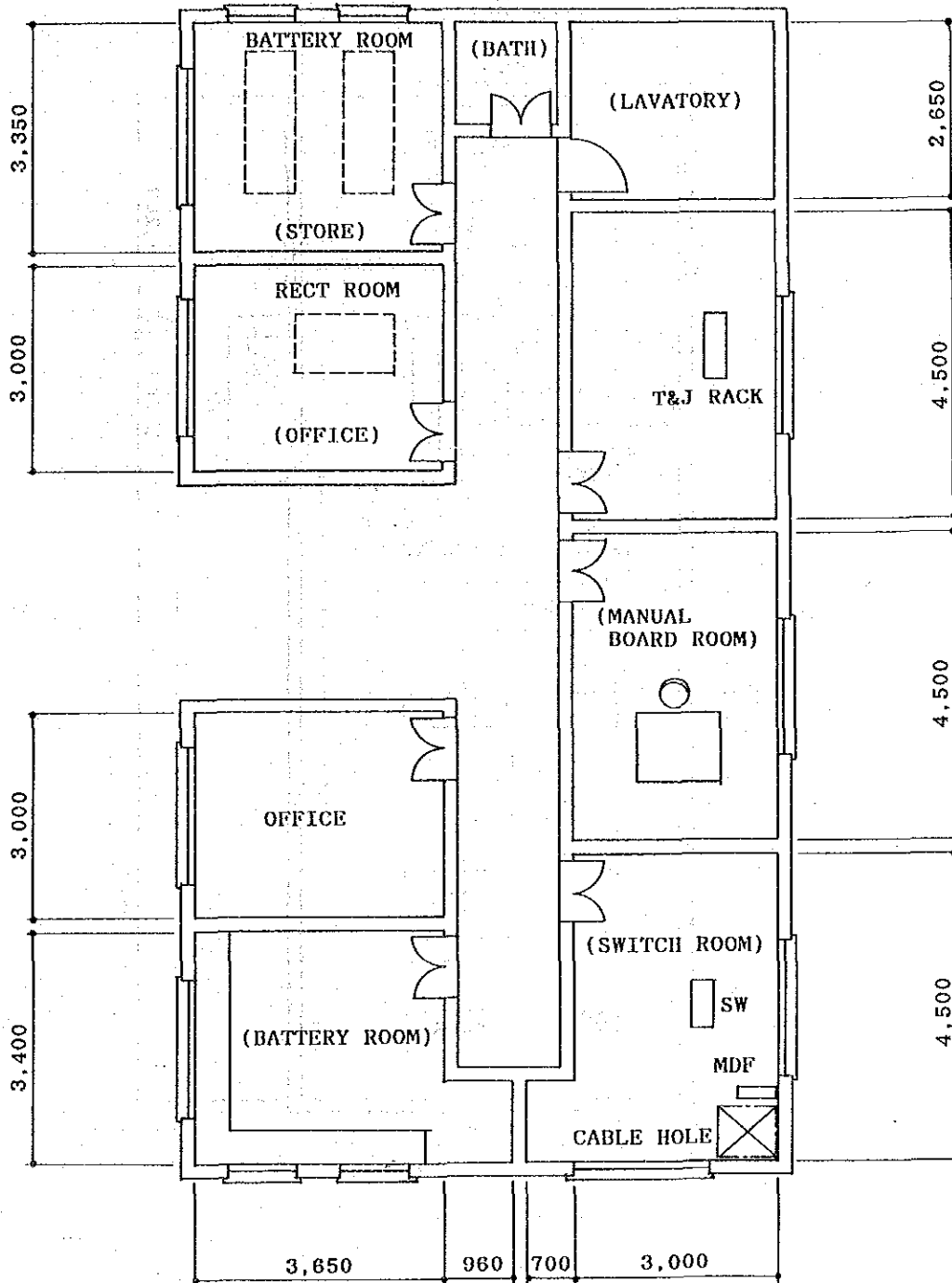
EQUIPMENT SITE LAYOUT PLAN
SCALE : 1/300

SITE NAME :
TASHIGANG

FIG. NO.
EQ-9

UNIT : mm

-  NEW EQUIPMENT
-  EXISTING EQUIPMENT
-  EXISTING ROOM



EQUIPMENT FLOOR LAYOUT PLAN

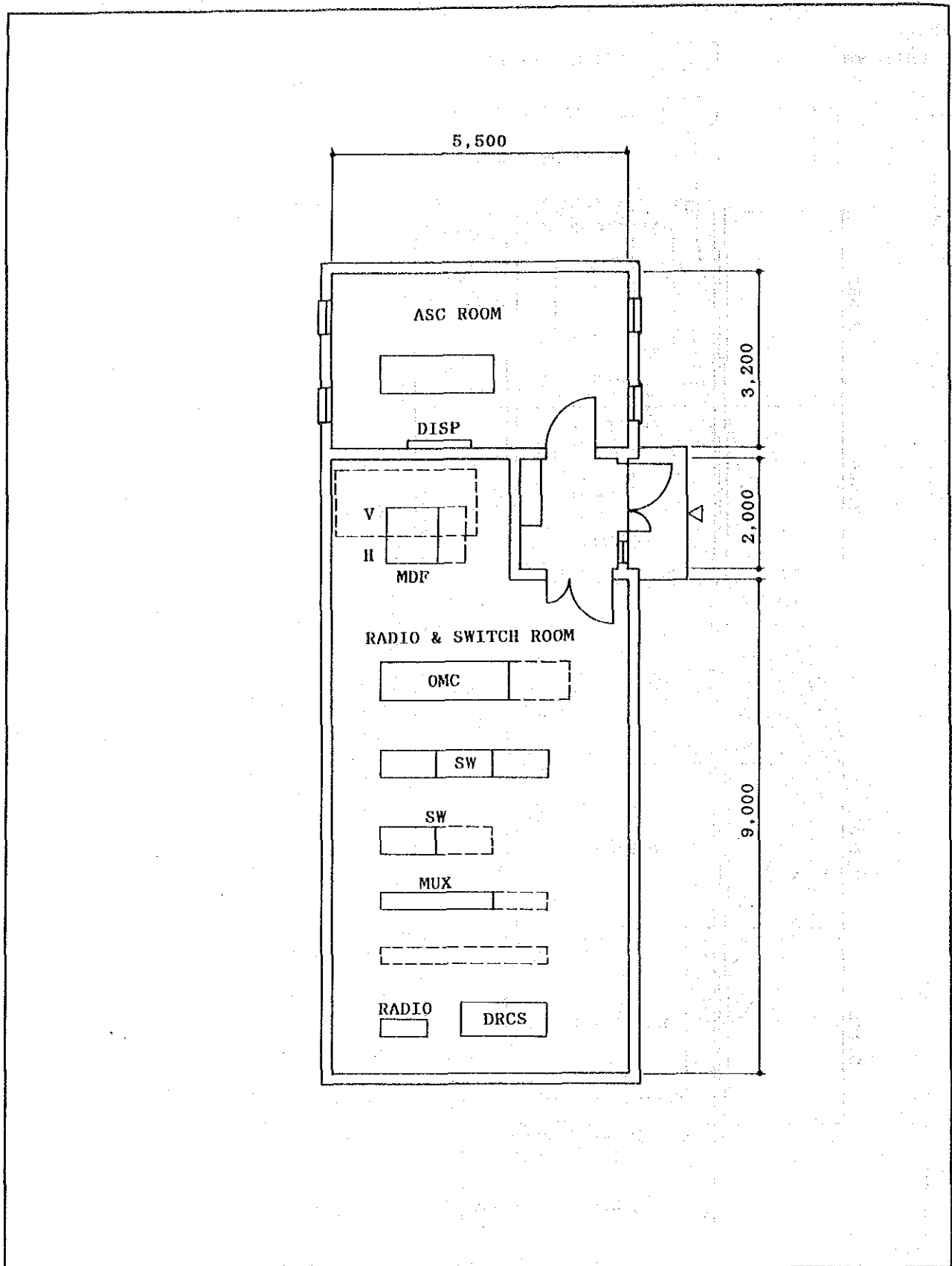
SCALE : 1/100

SITE NAME:

TASHIGANG

FIG. NO.

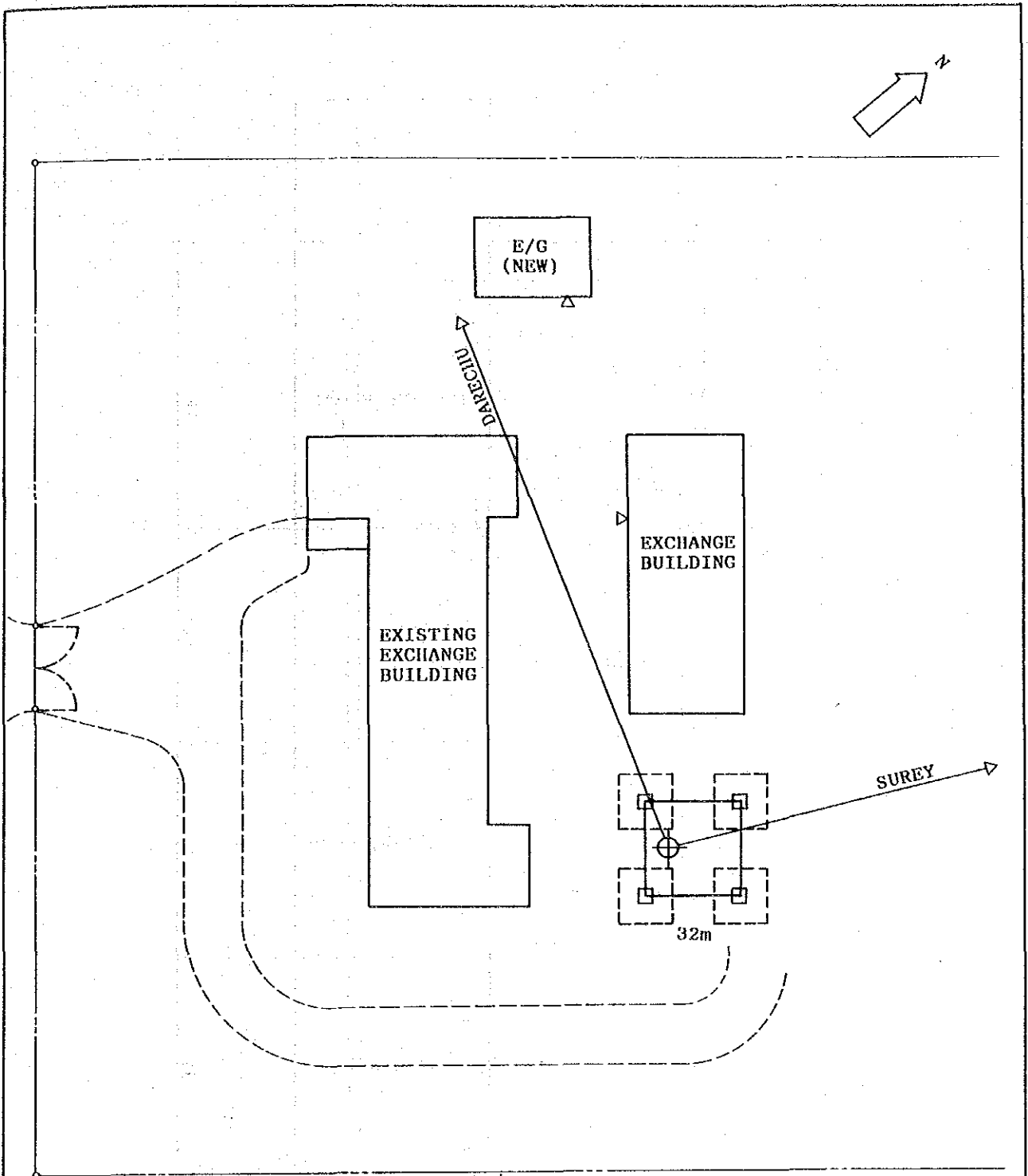
EQ-10



EQUIPMENT FLOOR LAYOUT PLAN
SCALE 1/100

SITE NAME :
TASHIGANG

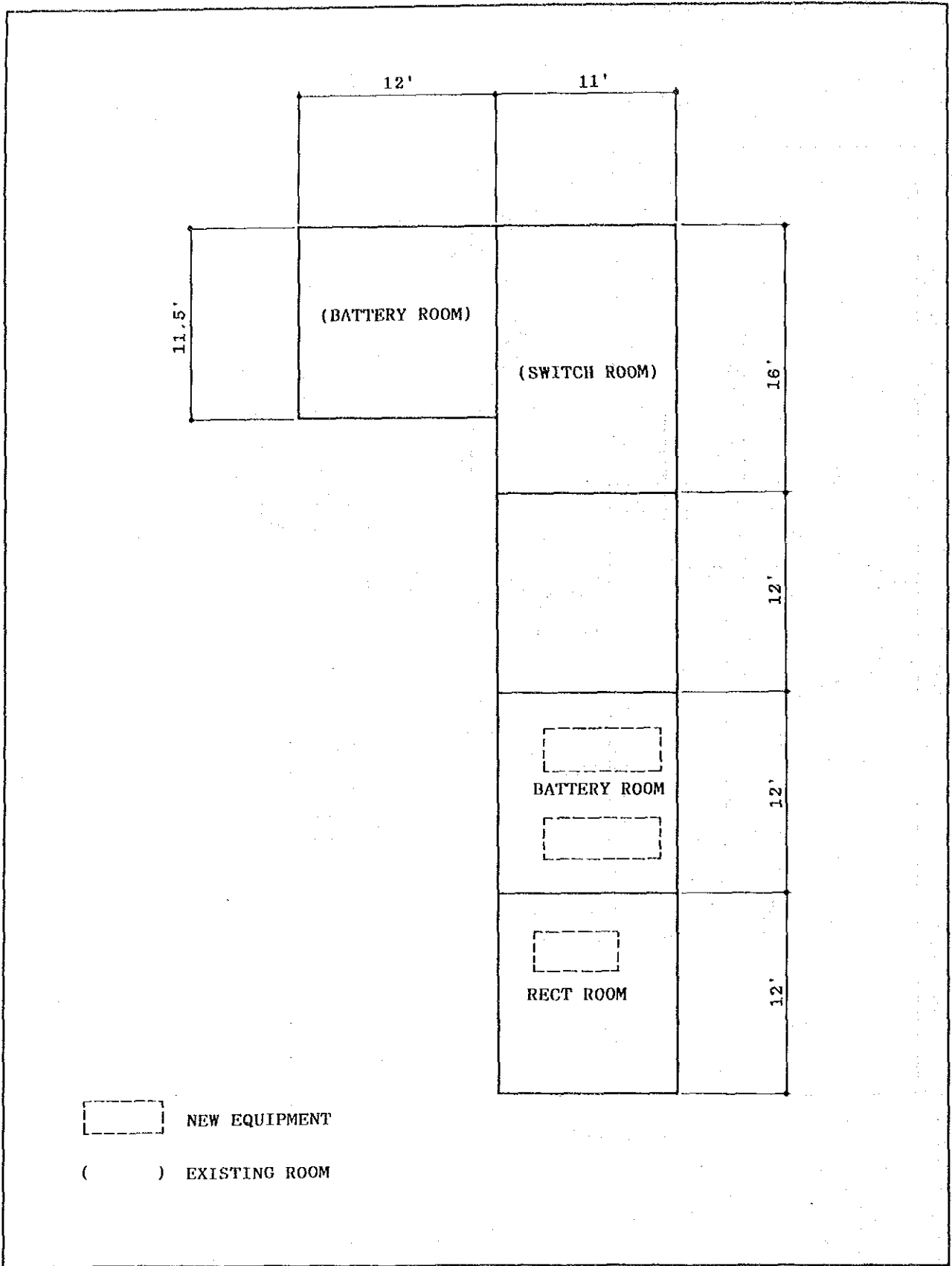
FIG. NO.
EQ-11



EQUIPMENT SITE LAYOUT PLAN
 SCALE : 1/300

SITE NAME :
 GEYLEGPHUG

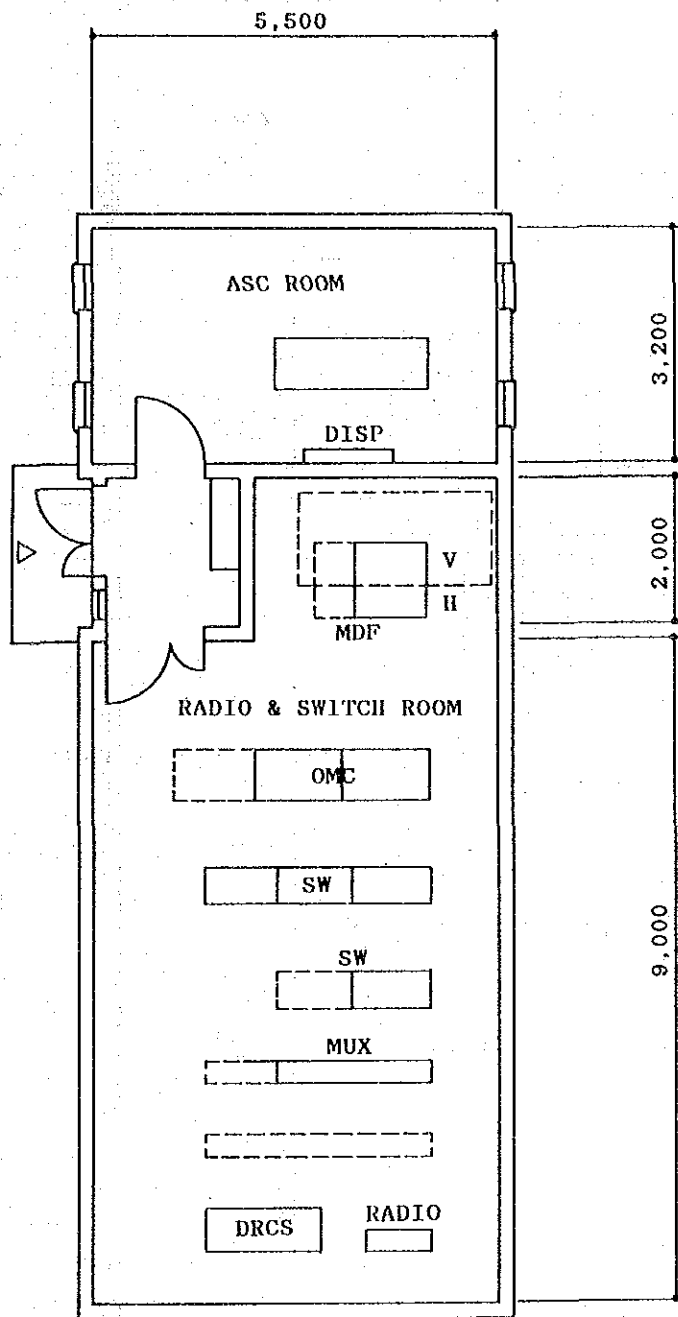
FIG. NO.
 EQ-12



EQUIPMENT FLOOR LAYOUT PLAN
SCALE : 1/100

SITE NAME :
GEYLEGPHUG

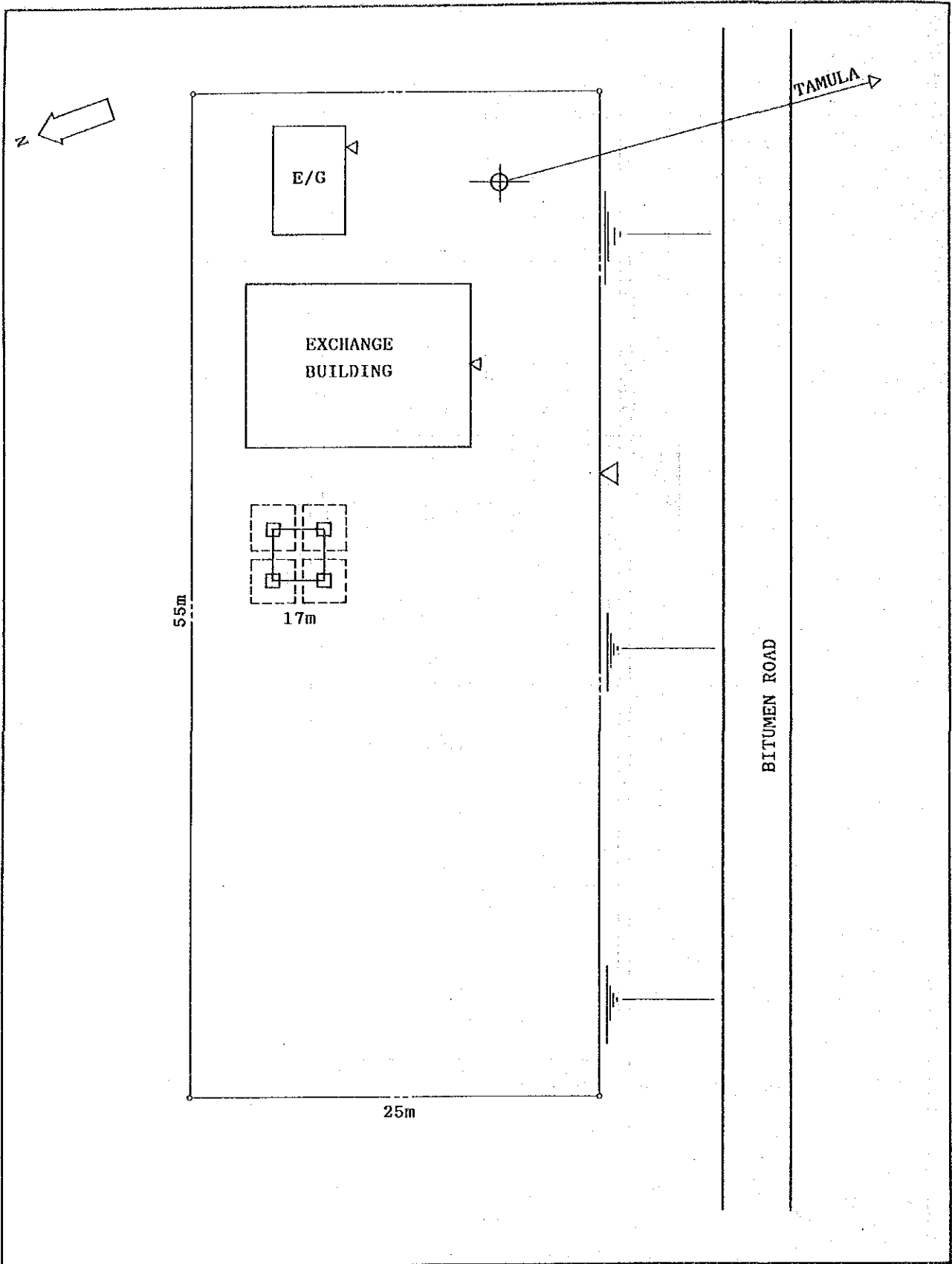
FIG. NO.
EQ-13



EQUIPMENT FLOOR LAYOUT PLAN
 SCALE : 1/100

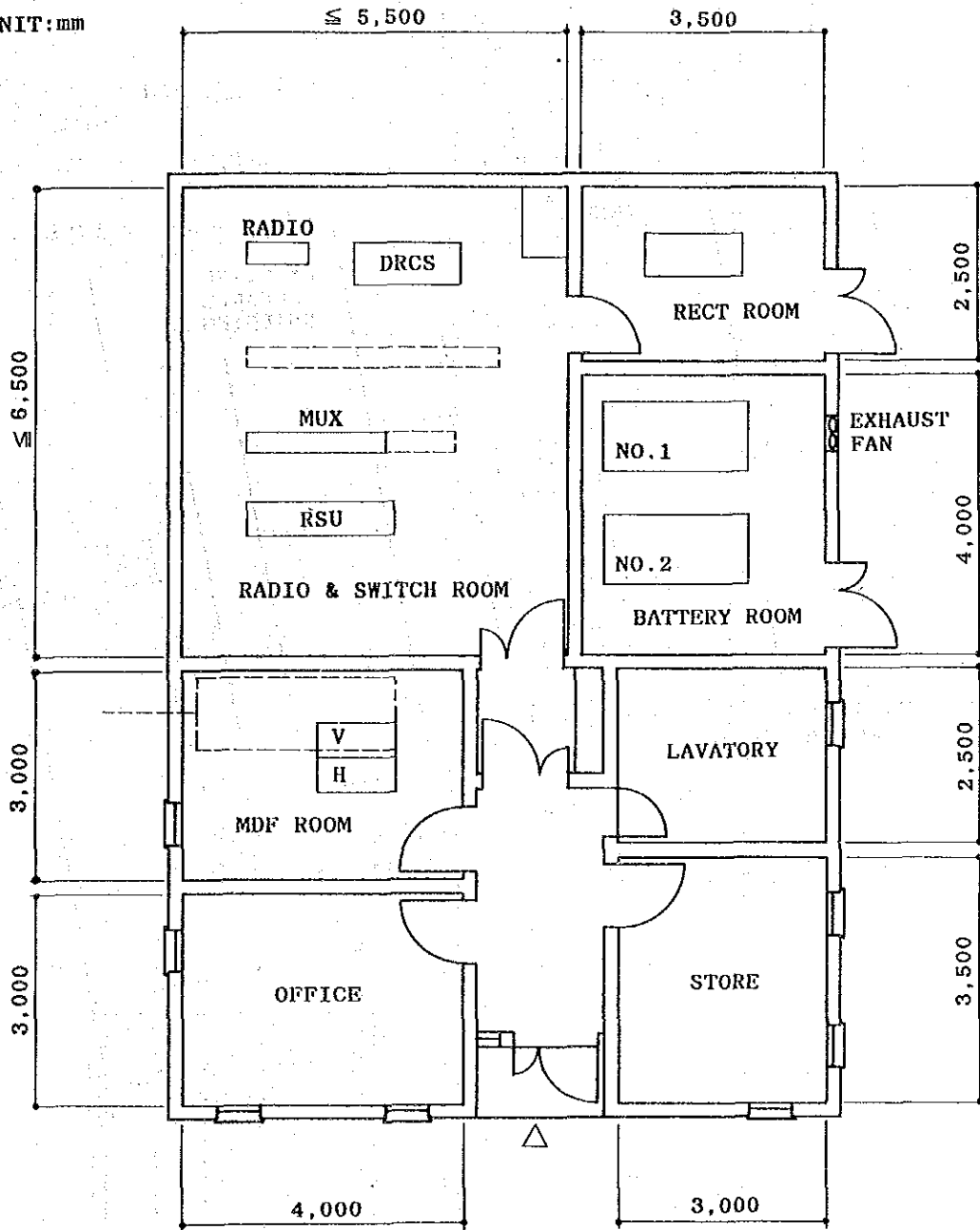
SITE NAME :
 GEYLEGPHUG

FIG. NO.
 EQ-14



<p>EQUIPMENT SITE LAYOUT PLAN</p> <p>SCALE : 1/300</p>	<p>SITE NAME : SHEMGANG</p>	<p>FIG. NO. EQ-15</p>
--	---------------------------------	---------------------------

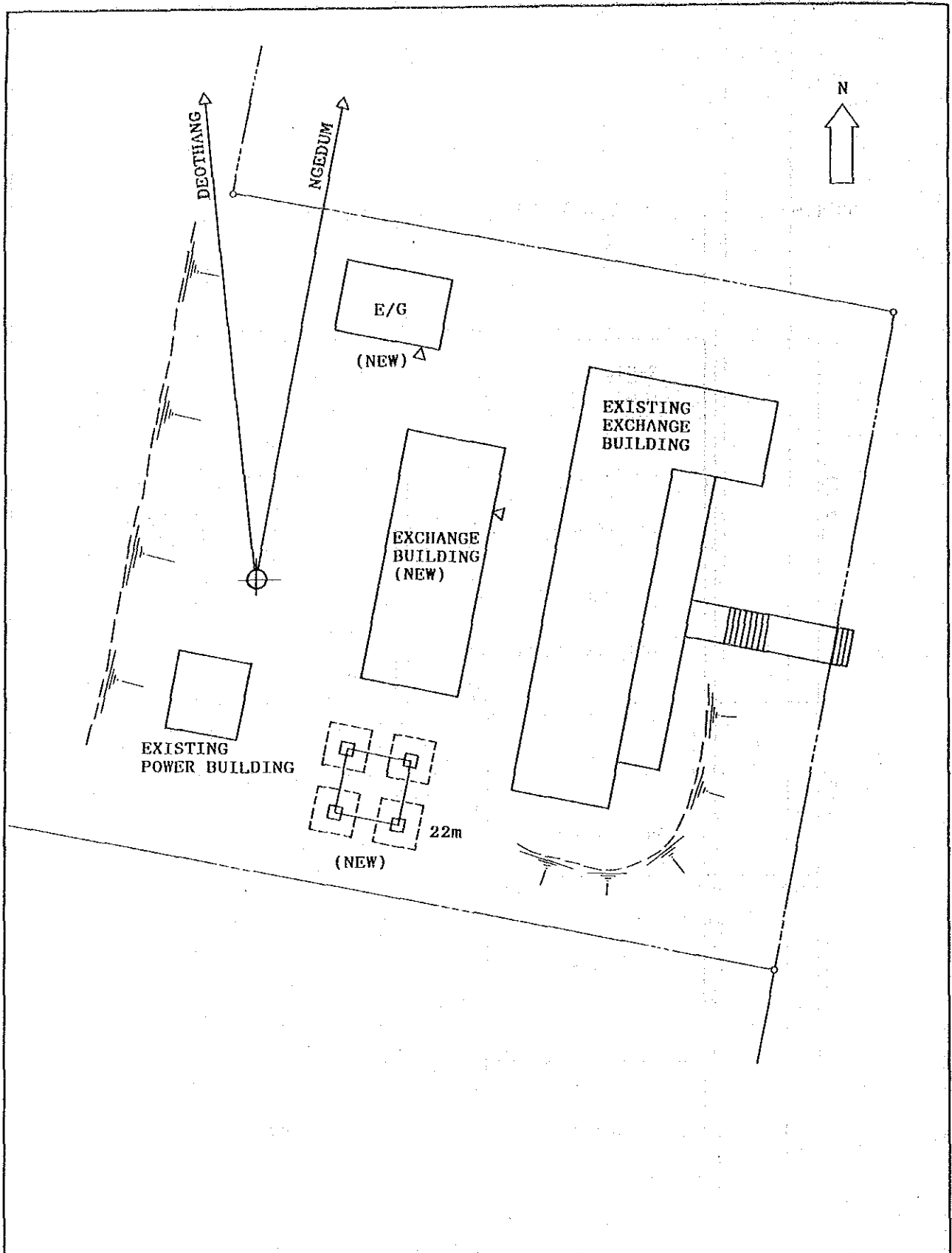
UNIT: mm



EQUIPMENT FLOOR LAYOUT PLAN
SCALE : 1/100




SITE NAME :
SHEMGANG

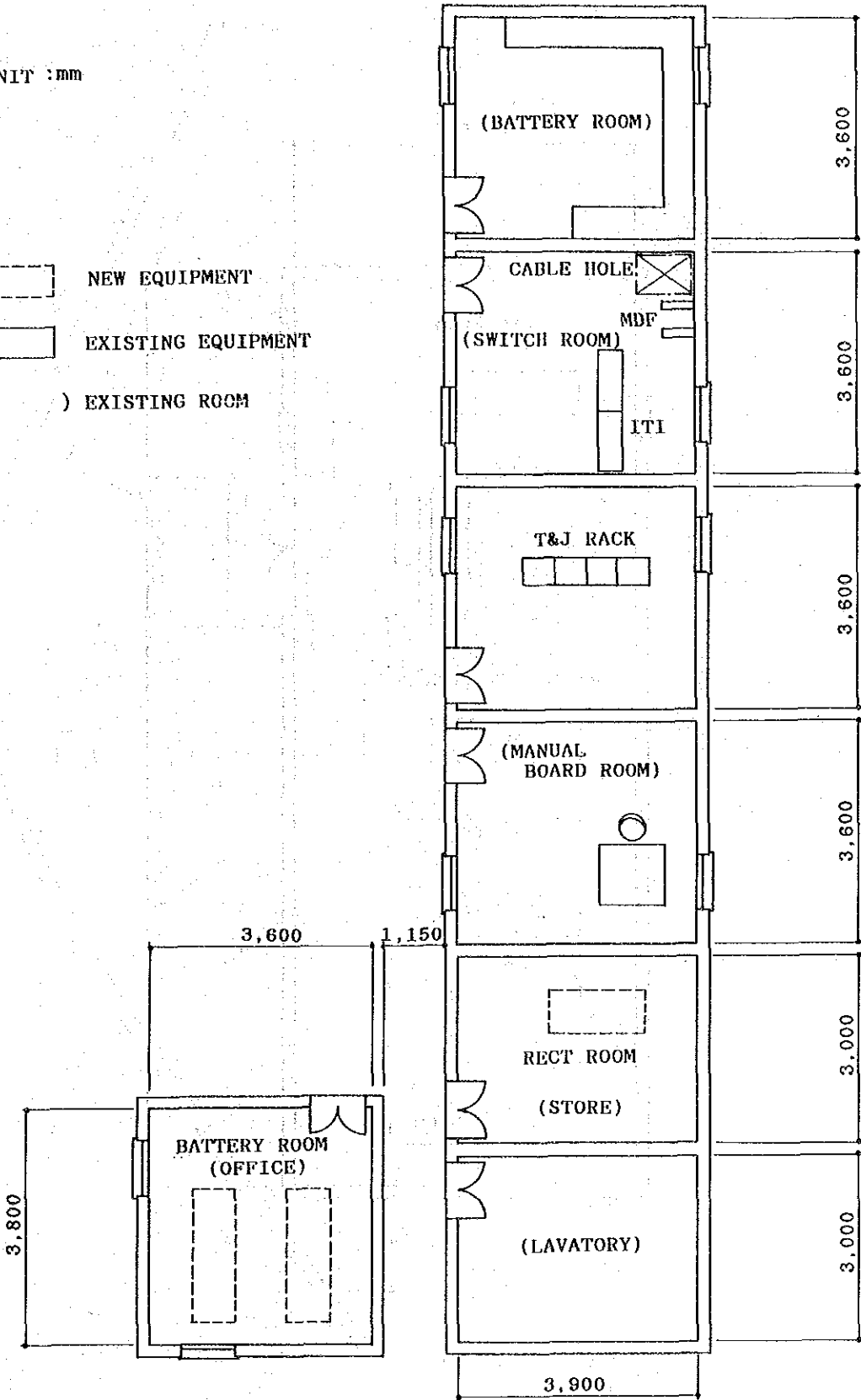
FIG. NO.
EQ-16



<p>EQUIPMENT SITE LAYOUT PLAN</p> <p>SCALE : 1/300</p>	<p>SITE NAME : SAMDRUP JONGKHAR</p>	<p>FIG. NO. EQ-17</p>
--	---	---------------------------

UNIT : mm

-  NEW EQUIPMENT
-  EXISTING EQUIPMENT
-  EXISTING ROOM

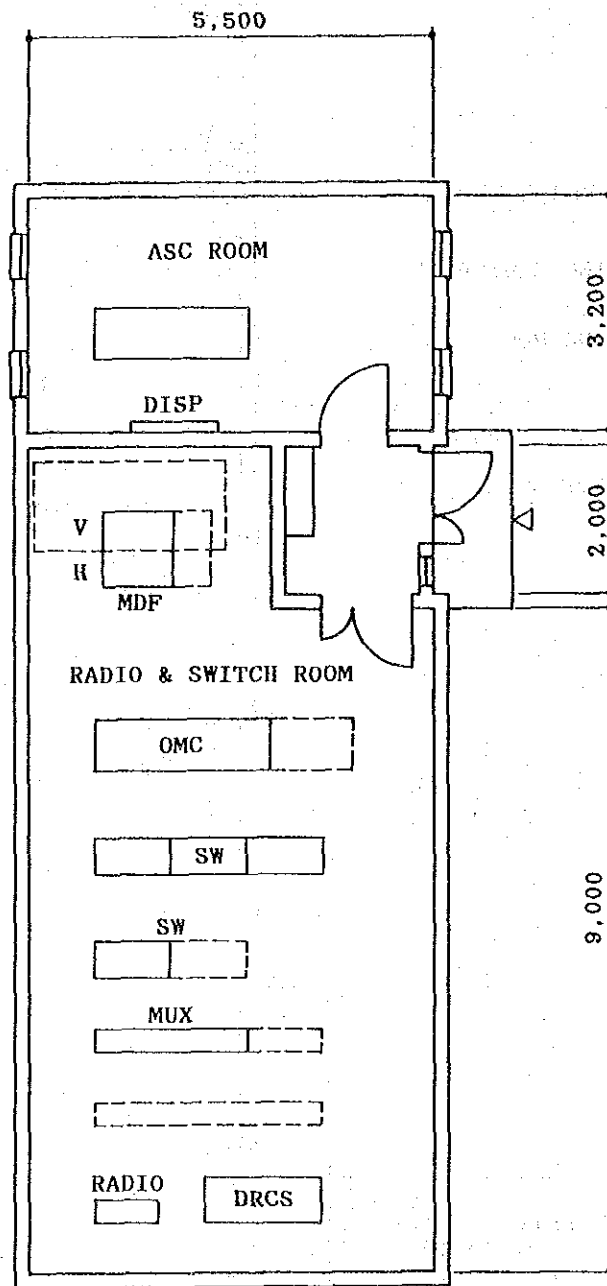


EQUIPMENT FLOOR LAYOUT PLAN

SCALE : 1/100

SITE NAME :
SAMDRUP JONGKHAR

FIG. NO.
EQ-18

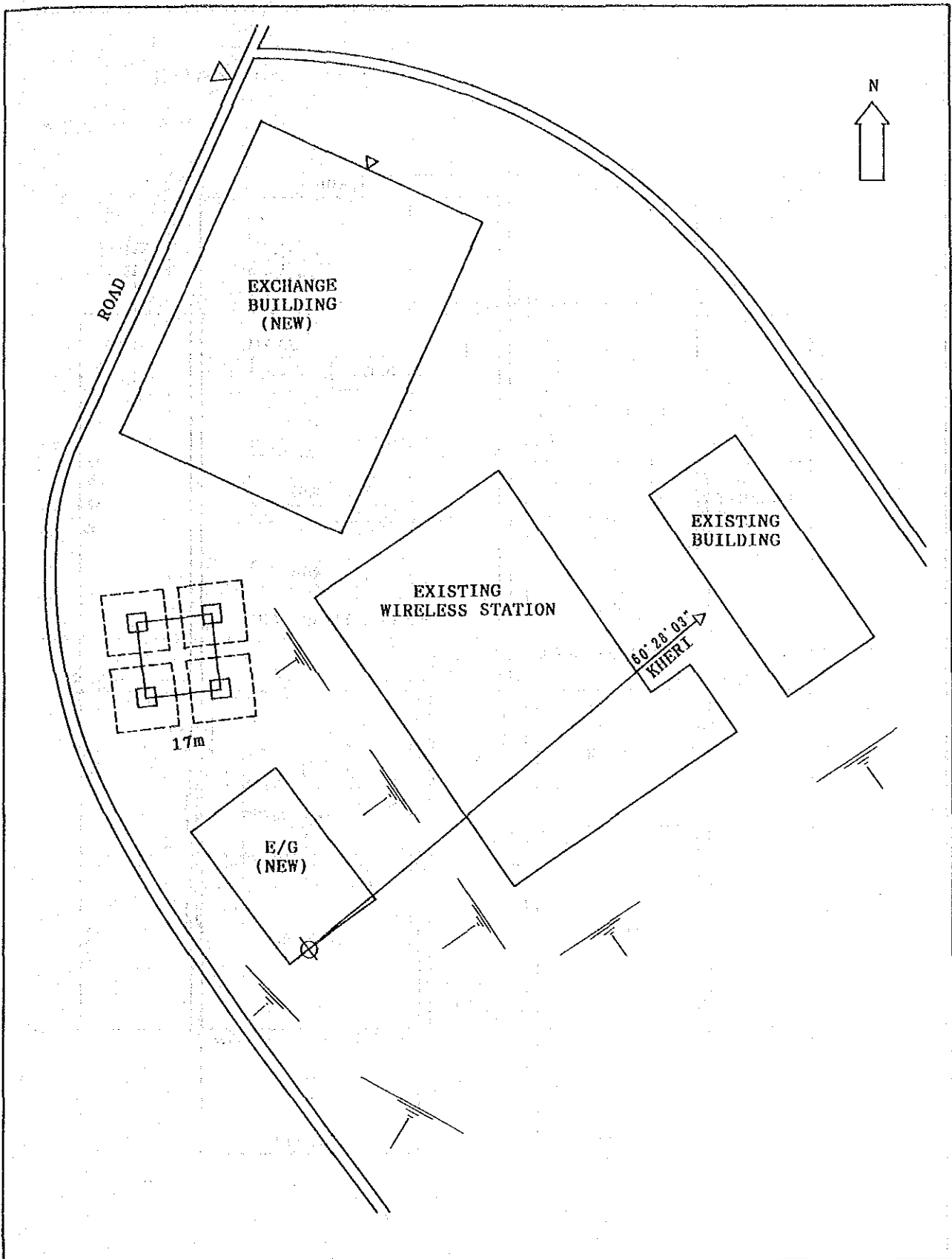


EQUIPMENT FLOOR LAYOUT PLAN

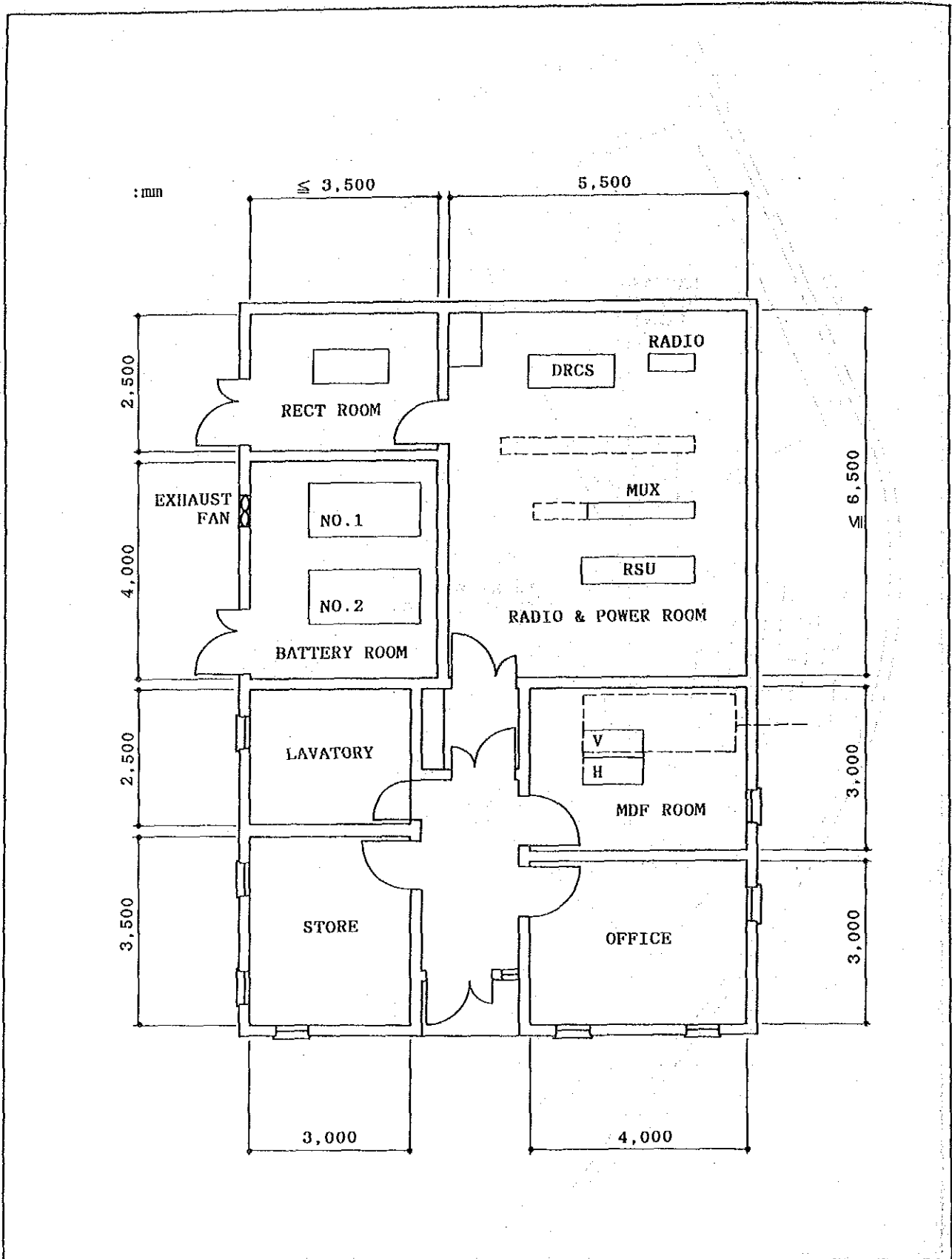
SCALE : 1/100

SITE NAME :
SAMDRUP JONGKHAR

FIG. NO.
EQ-19



<p>EQUIPMENT SITE LAYOUT PLAN</p> <p>SCALE : 1/200</p>	<p>SITE NAME : PEMAGATSEL</p>	<p>FIG. NO. EQ-20</p>
--	-----------------------------------	---------------------------



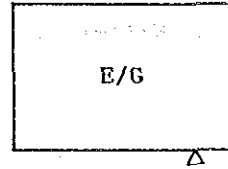
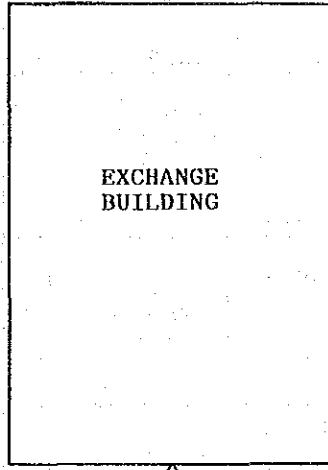
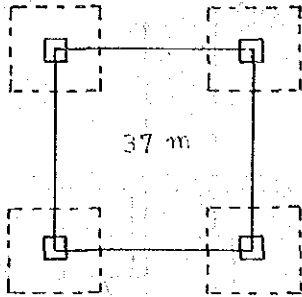
EQUIPMENT FLOOR LAYOUT PLAN
SCALE : 1/100

SITE NAME :
PEMAGATSEL

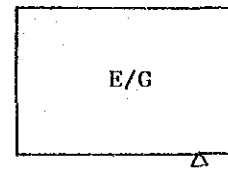
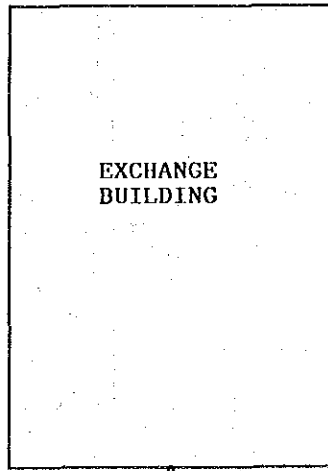
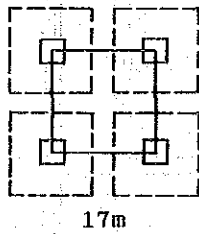
FIG. NO.
EQ-21

(ILLUSTRATION)

DAMPHU



MONGAR



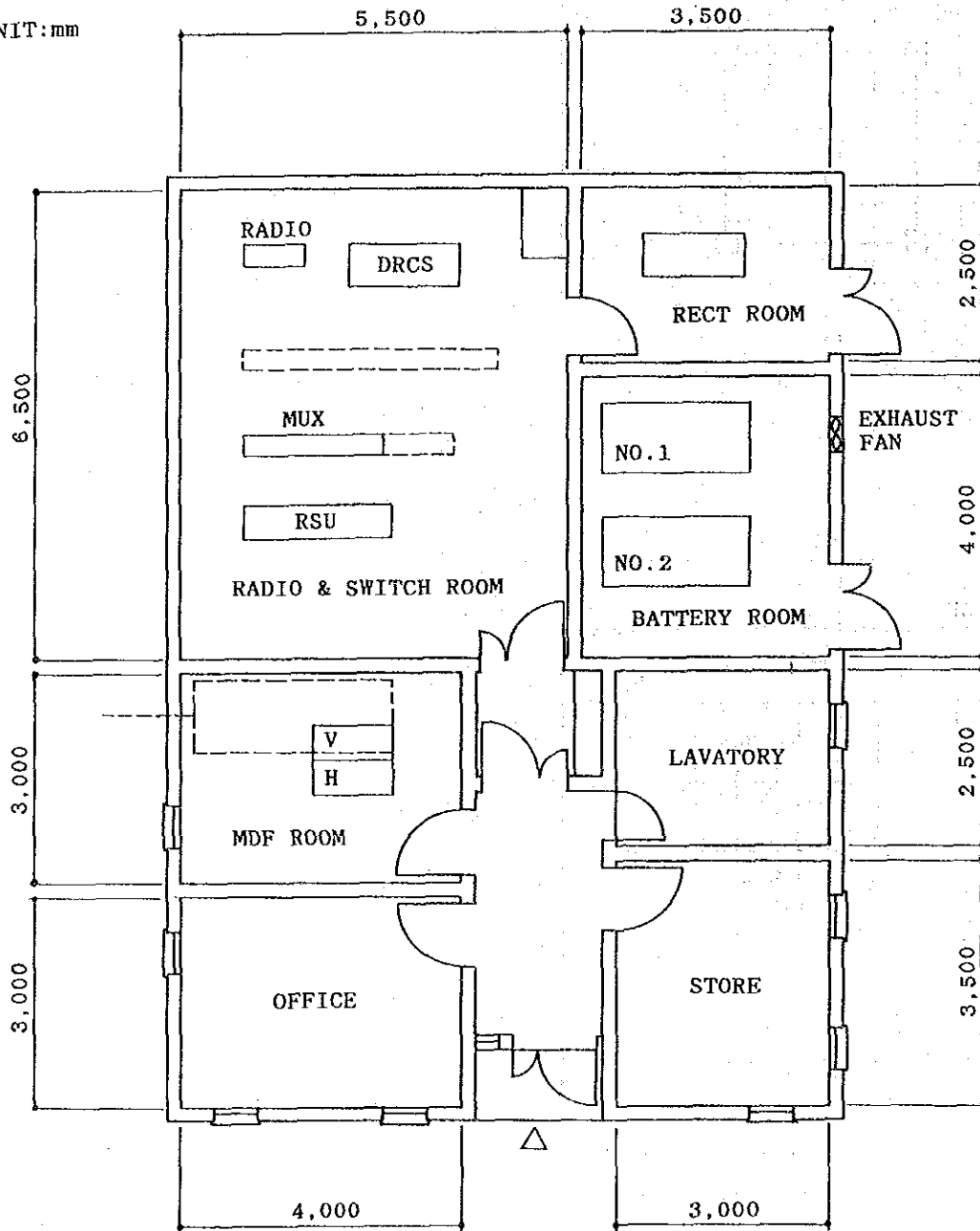
EQUIPMENT SITE LAYOUT PLAN

SCALE : 1/200

SITE NAME :
DAMPHU
MONGAR

FIG. NO.
EQ-22

UNIT: mm

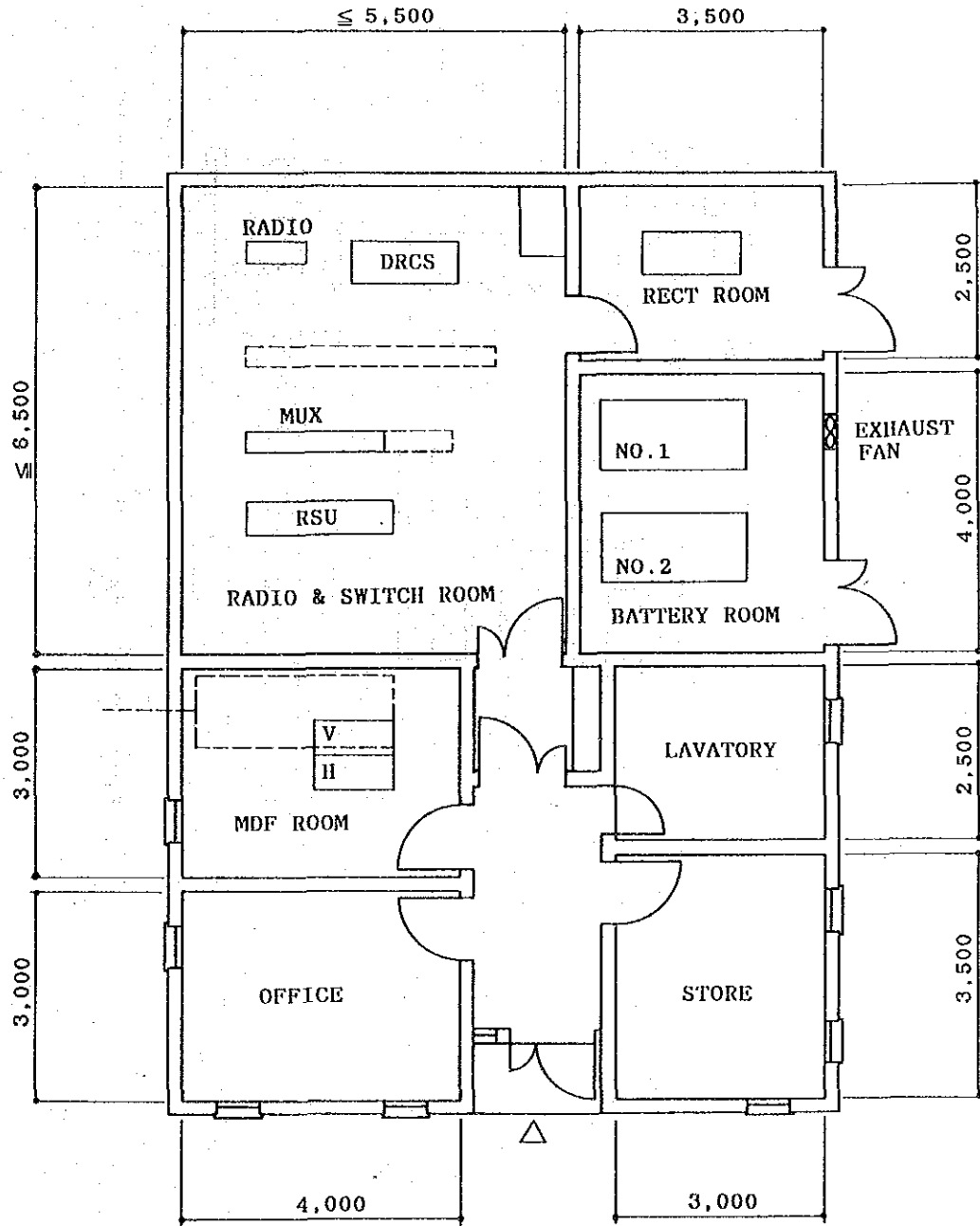


EQUIPMENT FLOOR LAYOUT PLAN
SCALE : 1/100

SITE NAME :
DAMPHU

FIG. NO.
EQ-23

UNIT: mm

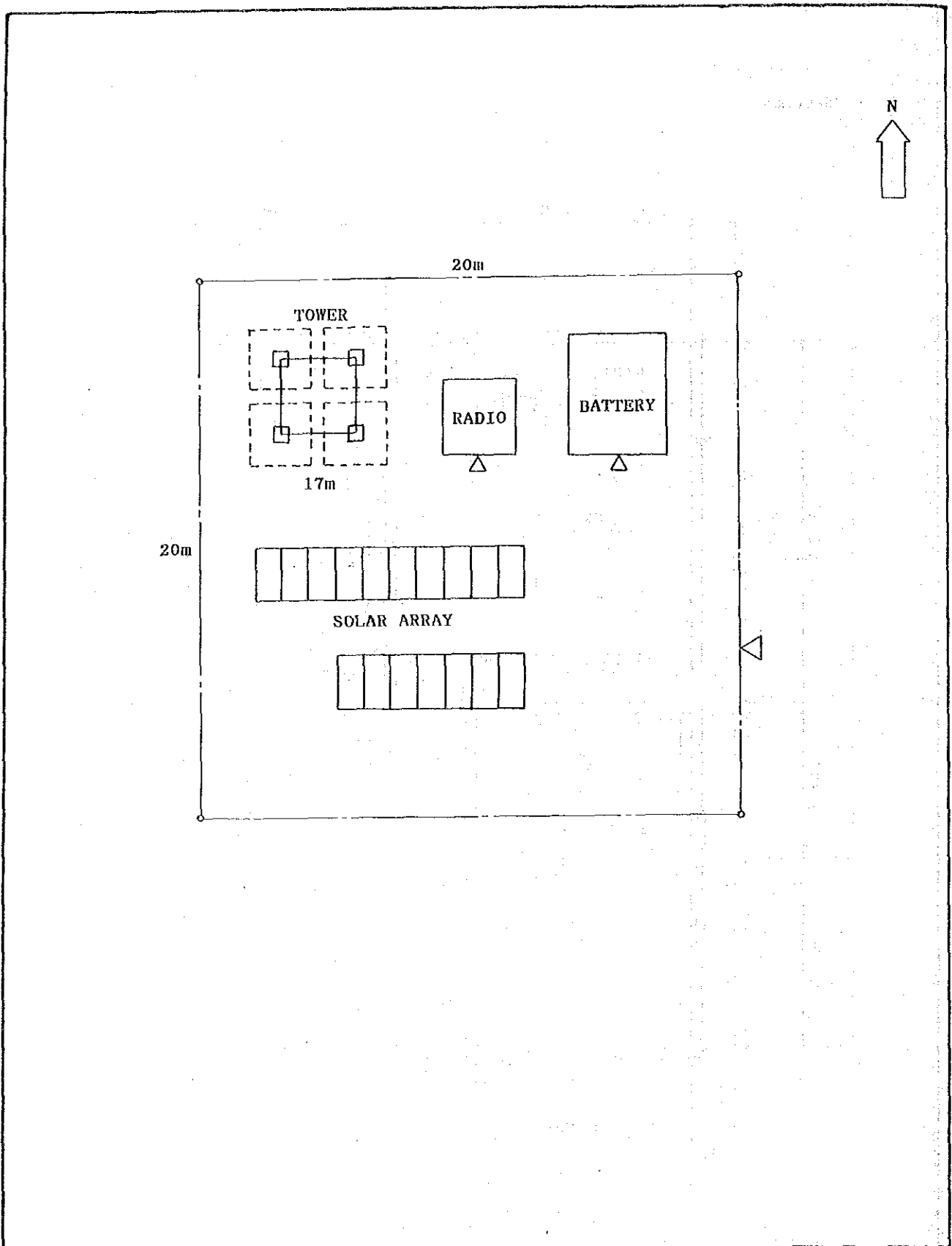


EQUIPMENT FLOOR LAYOUT PLAN

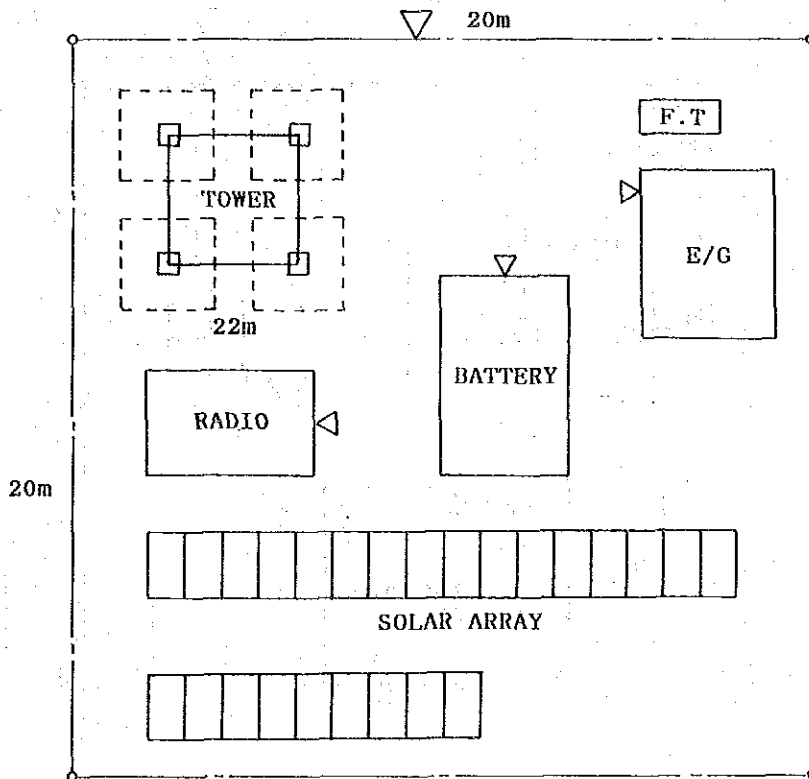
SCALE : 1/100

SITE NAME :
MONGAR

FIG. NO.
EQ-24



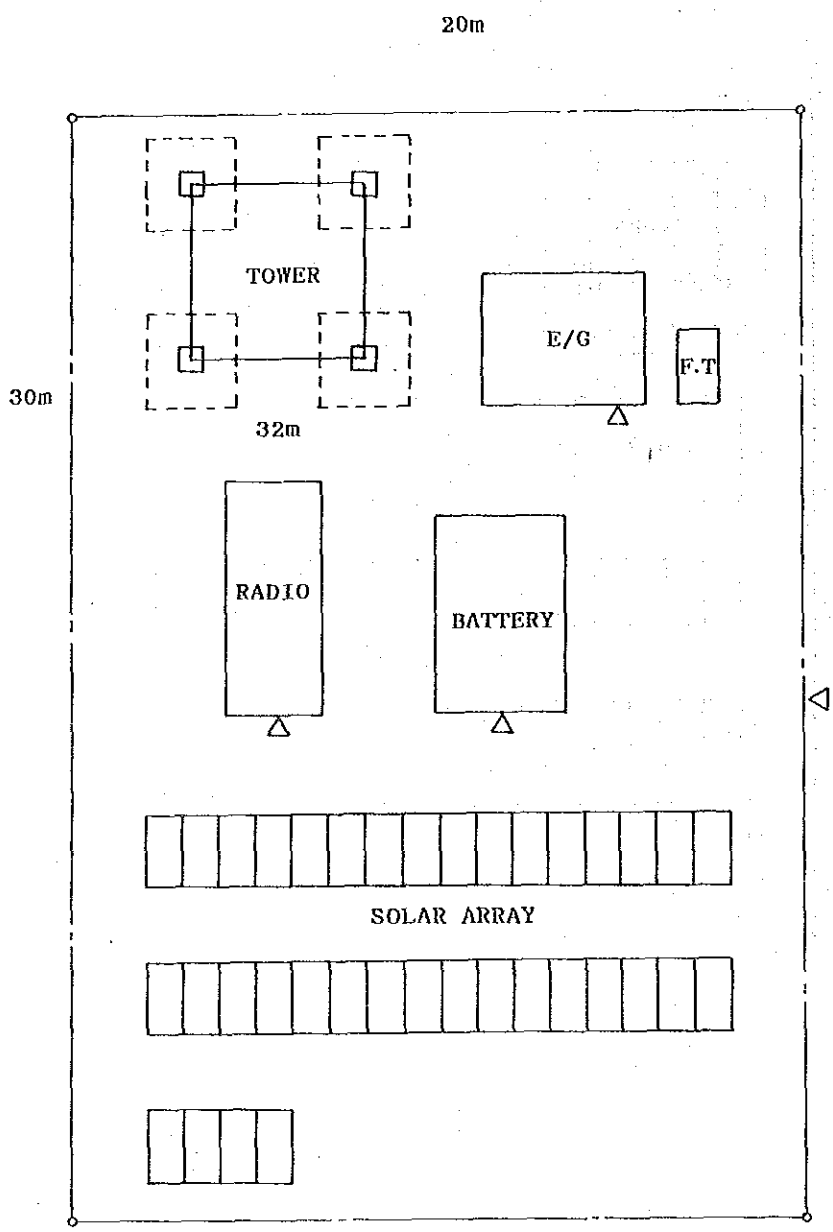
EQUIPMENT SITE LAYOUT PLAN	SITE NAME : TYPICAL THROUGH REPEATER STATION	FIG. NO. EQ-25
----------------------------	--	-------------------



EQUIPMENT SITE LAYOUT PLAN

SITE NAME :
TYPICAL BRANCH REPEATER
STATION (A)

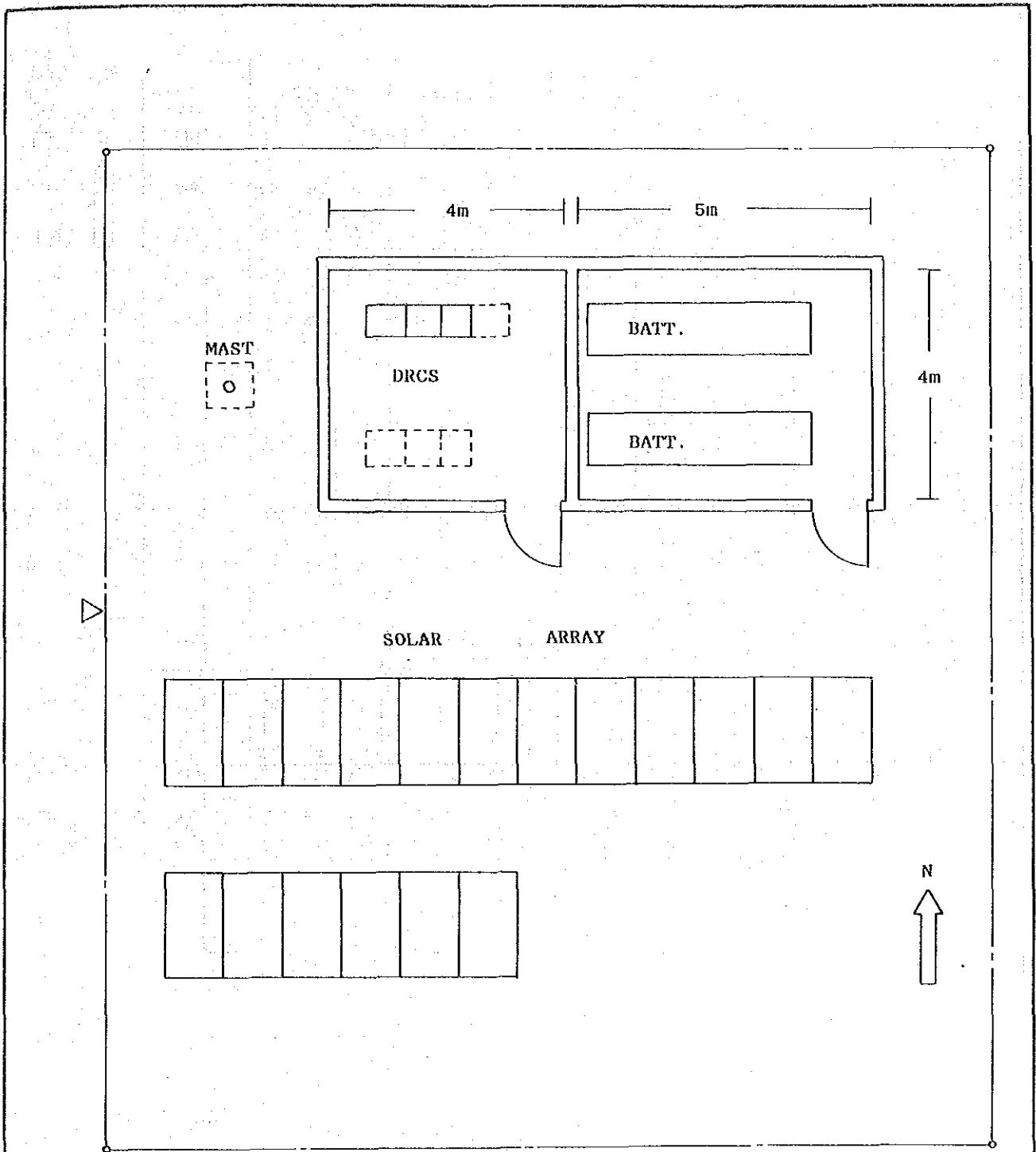
FIG. NO.
EQ-26



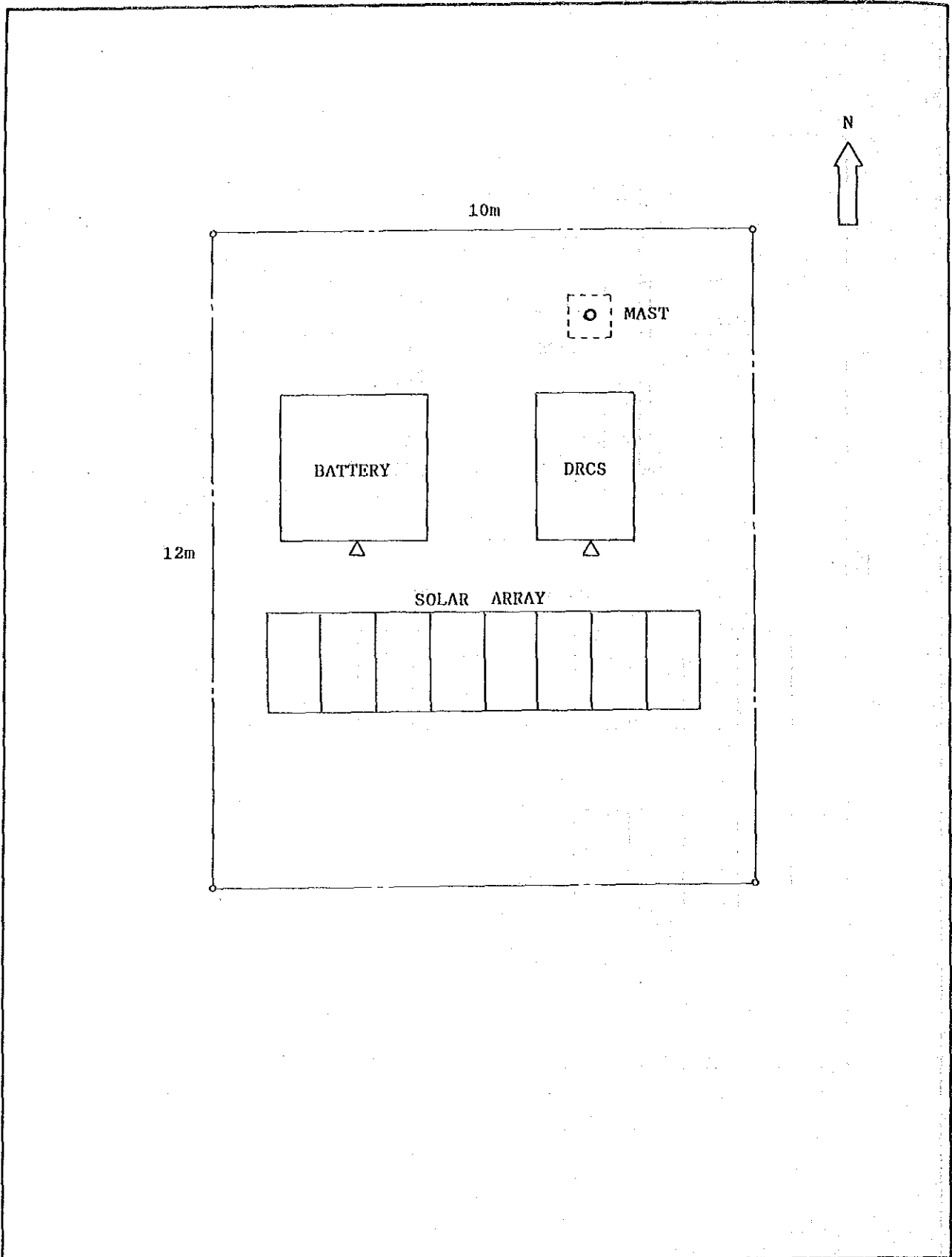
EQUIPMENT SITE LAYOUT PLAN

SITE NAME :
TYPICAL BRANCH REPEATER
STATION (B)

FIG. NO.
EQ-27



EQUIPMENT SITE LAYOUT PLAN	SITE NAME : TYPICAL DRCS SUBSCRIBER STATION	FIG. NO. EQ-28
----------------------------	--	-------------------



EQUIPMENT SITE LAYOUT PLAN	SITE NAME : TYPICAL DRCS REPEATER STATION	FIG. NO. EQ-29
----------------------------	--	-------------------

ROUTE 1

SITE NAME	(Ab.)	LONGITUDE	LATITUDE	GROUND LEVEL(m)	AZIMUTH	DISTANCE (Km)	DIRECTION
THIMPHU	THI	89° 38' 10"	27° 28' 50"	2360	76° 19' 00"	5.34	DOB
DOBCHU	DOB	89° 41' 19"	27° 29' 31"	3880	256° 20' 27"	5.34	THI
DOCHULA	DOC	89° 44' 55"	27° 29' 31"	3160	89° 59' 10"	5.93	DOC
					270° 00' 50"	5.93	DOB
PELELA	PEL	90° 12' 17"	27° 32' 16"	3480	83° 27' 54"	45.32	PEL
					263° 40' 28"	45.32	DOC
PELELA-P	PEL-P	90° 12' 26"	27° 31' 52"	3600	161° 30' 55"	0.78	PEL-P
					341° 30' 59"	0.78	PEL
YUTOLA	YUT	90° 35' 27"	27° 30' 47"	3520	92° 56' 02"	37.93	YUT
					273° 06' 37"	37.93	PEL-P
					109° 00' 55"	40.14	THM
					96° 53' 53"	23.13	TAN
THUMSINGLA	THM	90° 58' 29"	27° 23' 40"	4015	250° 32' 53"	9.14	TER
					248° 02' 30"	13.64	TAL
					289° 11' 28"	40.14	YUT
TANDI	TAD	90° 57' 59"	27° 23' 09"	4000	220° 49' 23"	1.26	TAD
					130° 17' 34"	60.71	KHE
					40° 49' 09"	1.26	THM
KORILA	KOR	91° 18' 12"	27° 17' 09"	2440	108° 18' 21"	35.12	KOR
					288° 27' 35"	35.12	TAD
RANGSIKHAR	RAN	91° 33' 34"	27° 18' 00"	2080	86° 23' 55"	25.39	RAN
					260° 25' 29"	5.91	MON
					266° 30' 56"	25.39	KOR
TASHIGANG	TAS	91° 33' 12"	27° 19' 58"	1090	350° 32' 48"	3.68	TAS
					170° 25' 38"	3.68	RAN
TANGSBI	TAN	90° 49' 24"	27° 29' 16"	2900	277° 00' 17"	23.13	YUT
JAKAR	JAK	90° 45' 22"	27° 32' 47"	2580	314° 22' 34"	9.28	JAK
					134° 20' 43"	9.28	TAN
TERANG	TER	90° 30' 13"	27° 29' 08"	2140	70° 30' 29"	9.14	YUT
					18° 52' 16"	1.95	TON
TONGSA	TON	90° 30' 36"	27° 30' 08"	2040	198° 52' 27"	1.95	TER
MONGAR	MON	91° 14' 40"	27° 16' 37"	1580	80° 23' 52"	5.91	KOR

COORDINATE OF SITE

TABLE NO.

1

ROUTE 2

SITE NAME	(Ab.)	LONGITUDE	LATITUDE	GROUND LEVEL (m)	AZIMUTH	DISTANCE (Km)	DIRECTION
TASHILING	TAL	90° 27' 46"	27° 28' 01"	2435	67° 58' 59"	13.64	YUT
					143° 47' 54"	24.62	BAL
BALING	BAL	90° 36' 35"	27° 17' 15"	1500	323° 51' 56"	24.62	TAL
					181° 11' 26"	2.65	PAN
PANJARMANI	PAN	90° 36' 33"	27° 15' 49"	1720	1° 11' 26"	2.65	BAL
					168° 05' 03"	20.4	TAM
TAMULA	TAM	90° 39' 06"	27° 05' 00"	2280	348° 06' 12"	20.4	PAN
					209° 58' 58"	7.88	SAM
					3° 29' 27"	14.45	SHM
SAMKHARA	SAM	90° 36' 43"	27° 01' 18"	2080	29° 57' 53"	7.88	TAM
					245° 33' 19"	6.54	SUR
SUREY	SUR	90° 33' 07"	26° 59' 50"	1230	65° 31' 41"	6.54	SAM
					203° 21' 50"	15.51	GEY
GEYLEGPHUG	GEY	90° 29' 24"	26° 52' 07"	215	23° 20' 10"	15.51	SUR
					285° 31' 47"	29.42	DAR
DARECHU	DAR	90° 12' 16"	26° 56' 22"	2100	105° 24' 05"	29.42	GEY
					288° 57' 43"	6.06	DUP
DHUPIDARA	DUP	90° 08' 48"	26° 57' 26"	1840	108° 56' 10"	6.06	DAR
					320° 30' 22"	3.99	CHA
CHANAUTI	CHA	90° 07' 16"	26° 59' 06"	1660	140° 29' 40"	3.99	DUP
					12° 55' 10"	2.59	DAP
SAMPHU	DAP	90° 07' 37"	27° 00' 28"	1600	192° 55' 20"	2.59	CHA
SHEMGANG	SHM	90° 39' 38"	27° 12' 49"	1930	183° 29' 42"	14.45	TAM

ROUTE 3

SITE NAME	(Ab.)	LONGITUDE	LATITUDE	GROUND LEVEL (m)	AZIMUTH	DISTANCE (Km)	DIRECTION
KHERI	KHE	91° 26' 30"	27° 02' 21"	2300	310° 30' 19"	60.71	THM
					154° 25' 23"	18.72	NED
					230° 35' 35"	1.89	PEM
NGEDUM	NED	91° 31' 23"	26° 53' 12"	1832	334° 27' 35"	18.72	KHE
					190° 06' 59"	10.53	SJK
SANDRUP JONKHAR	SJK	91° 30' 16"	26° 47' 35"	190	10° 06' 29"	10.53	NED
PEMAGATSEL	PEM	91° 25' 37"	27° 01' 42"	1550	50° 35' 11"	1.89	KHE

COORDINATE OF SITE

TABLE NO.

2

DRCS

SITE NAME (Ab.)		LONGITUDE	LATITUDE	GROUND LEVEL(m)	AZIMUTH	DISTANCE (Km)	DIRECTION
MONGAR	MON	91° 14' 40"	27° 16' 37"	1580	313° 17' 38"	8.79	THN
THINMUNG	THN	91° 10' 47"	27° 19' 53"	2343	133° 15' 51"	8.79	MON
					6° 22' 08"	20.52	WAM
WAMBUR	WAM	91° 12' 10"	27° 30' 56"	2210	186° 22' 46"	20.52	THN
					359° 40' 19"	19.14	NAM
NUMGUNG	NUM	91° 12' 06"	27° 41' 18"	2400	179° 40' 17"	19.14	WAM
					203° 32' 03"	3.09	LHU
LHUNTSI	LHU	91° 11' 21"	27° 39' 46"	1660	23° 31' 42"	3.09	NAM
TASHIGANG	TAS	91° 33' 12"	27° 19' 58"	1090	170° 32' 38"	3.68	RAN
RANGSIKHAL	RAN	91° 33' 34"	27° 18' 00"	2080	350° 32' 48"	3.68	TAS
					226° 48' 48"	5.62	YON
YONGPHULA	YON	91° 31' 05"	27° 15' 55"	2400	46° 47' 41"	5.62	RAN
GEYLEGPHUG	GEY	90° 29' 24"	26° 52' 07"	215	285° 31' 47"	29.42	DAR
DARECHU	DAR	90° 12' 16"	26° 56' 22"	2100	105° 24' 05"	29.42	GEY
					141° 58' 37"	10.35	SAR
SARBHANG	SAR	90° 16' 07"	26° 51' 57"	320	322° 00' 21"	10.35	DAR
DAMPHU	DAP	90° 07' 37"	27° 00' 28"	1600	192° 55' 20"	2.59	CHA
CHANAUTI	CHA	91° 07' 16"	26° 59' 06"	1660	12° 55' 10"	2.59	DAP
					237° 38' 36"	13.61	NAM
NAMCHHELA	NAM	90° 00' 19"	26° 55' 09"	1440	57° 35' 28"	13.61	CHA
					324° 35' 12"	20.58	DAG
DAGA	DAG	89° 53' 06"	27° 04' 14"	1520	144° 31' 57"	20.58	NAM

COORDINATE OF SITE

TABLE NO.

3

ROUTE 1

SITE NAME	(Ab.)	ANT TYPE	ANT SIZE	ANT HEIGHT (m)	DIRECTION
THIMPHU	THI	Parabolic	3.6mD	20	DOB
DOBCHU	DOB	Parabolic	3.6mD	5	THI
		Parabolic	3.6mD	5	DOC
DOCHULA	DOC	Parabolic	3.6mD	30	DOB
		Parabolic	3.0mD	30	PEL
PELELA	PEL	Parabolic	3.6mD	15	DOC
		Parabolic	3.0mD	10	PEL-P
PELELA-P	PEL-P	Reflector	12*16ft	3	PEL YUT
YUTOLA	YUT	Parabolic	3.0mD	30	PEL-P
		Parabolic	3.0mD	30	THM
		Parabolic	3.0mD	10	TAN
		Parabolic	1.8mD	20	TER
		Parabolic	4.6mD	30	TAL
THUMSINGLA	THM	Parabolic	3.0mD	20	YUT
		Parabolic	2.4mD	10	TAD
		Parabolic	2.4mD	20	KHE
TANDI	TAD	Reflector	12*16ft	3	THM KOR
KORILA	KOR	Parabolic	3.0mD	20	TAD
		Parabolic	4.6mD	20	RAN
		Parabolic	1.2mD	10	MON
RANGSIKHAR	RAN	Parabolic	4.6mD	35	KOR
		Parabolic	4.6mD	35	TAS
TASHIGANG	TAS	Parabolic	4.6mD	35	RAN
TANGSBI	TAN	Reflector	20*32ft	3	YUT
					JAK
JAKAR	JAK	Parabolic	3.0mD	15	TAN
TERANG	TER	Reflector	8*10ft	3	YUT
					TON
TONGSA	TON	Parabolic	2.4mD	15	TER
MONGAR	MON	Parabolic	1.2mD	15	KOR

ANTENNAS FOR ROUTE 1

TABLE NO.

4

ROUTE 2

SITE NAME	(Ad.)	ANT TYPE	ANT SIZE	ANT HEIGHT (m)	DIRECTION
TASHILING	TAL	Reflector	20*30ft	3	YUT BAL
BALING	BAL	Parabolic	4.6mD	15	TAL
		Parabolic	3.6mD	15	PAN
PANJARMANI	PAN	Parabolic	3.6mD	5	BAL
		Parabolic	3.6mD	5	TAM
TAMULA	TAM	Parabolic	3.6mD	20	PAN
		Parabolic	3.6mD	20	SAM
		Parabolic	1.2mD	10	SHM
SAMKHARA	SAM	Parabolic	3.0mD	5	TAM
		Parabolic	3.0mD	5	SUR
SUREY	SUR	Parabolic	3.6mD	20	SAM
		Parabolic	1.2mD	20	GEY
GEYLECPHUG	GEY	Parabolic	1.2mD	20	SUR
		Parabolic	2.4mD	30	DAR
DARECHU	DAR	Parabolic	1.8mD	20	GEY
		Parabolic	1.2mD	10	DUP
DHUPIDARA	DUP	Parabolic	1.2mD	10	DAR
		Parabolic	1.2mD	10	CHA
CHANAUTI	CHA	Reflector	8*10ft	3	DUP DAP
DAMPHU	DAP	Parabolic	1.8mD	35	CHA
HEMGANG	SHM	Parabolic	1.2mD	15	TAM

ANTENNAS FOR ROUTE 2

TABLE NO.

5

ROUTE 3

SITE NAME		ANT TYPE	ANT SIZE	ANT HEIGHT (m)	DIRECTION
	(Ad.)				
KHERI	KHE	Parabolic	2.4mD	20	THM
		Parabolic	4.6mD	30	NED
		Parabolic	1.2mD	25	PEM
NGEDUM	NED	Reflector	16*20ft	3	KHE SJK
SANDRUP JONKHAR	SJK	Parabolic	4.6mD	20	NED
PEMAGATSEL	PEM	Parabolic	1.2mD	20	KHE

ANTENNAS FOR ROUTE 3

TABLE NO.

6

DRCS

SITE NAME	(Ab.)	ANT TYPE	ANT HEIGHT (m)	DIRECTION
MONGAR	MON	OMNI	10	THN
THINMUNG	THN	HORN	10	MON
		OMNI	10	WAM
WAMBUR	WAM	HORN	10	THN
		OMNI	10	NAM
NUMGUNG	NUM	HORN	10	WAM
		OMNI	10	LHU
LHUNTSI	LHU	HORN	10	NAM

TASHIGANG	TAS	OMNI	10	RAN
RANGSIKHAL	RAN	HORN	10	TAS
		OMNI	10	YON
YONGPHULA	YON	HORN	10	RAN

GEYLEGPHUG	GEY	OMNI	10	DAR
DARECHU	DAR	HORN	10	GEY
		OMNI	10	SAR
SARBHANG	SAR	HORN	10	DAR

DAMPHU	DAP	OMNI	10	CHA
CHANAUTI	CHA	1.2mD GP	10	DAP
		OMNI	10	NAM
NAMCHHELA	NAM	HORN	10	CHA
		OMNI	10	DAG
DAGA	DAG	HORN	10	NAM

ANTENNAS FOR DRCS

TABLE NO.

7

TRANSMISSION ENGINEERING

TABLE NO.

8

	B to B		DOCHULA		PELELA		PELELA(P)		YUTOLA		YUTOLA		YUTOLA		THUMSINGLA		REFLECTOR
	THIMPHU	DUBCHU	DUBCHU	THMPHU	DOCHULA	DOCHULA	PELELA	PELELA(P)	YUTOLA	YUTOLA	PELELA	PELELA(P)	YUTOLA	YUTOLA	THUMSINGLA	8000	
STATION A																	
STATION B																	
FREQUENCY	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	
TRANS CAPACITY	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	
HOP DISTANCE	5.34	5.93	11.27	11.27	45.32	45.32	0.78	0.78	37.93	37.93	38.71	38.71	38.71	40.14	40.14	40.14	
ANT H A	20	5	20	20	30	30	10	10	5	5	10	10	10	30	30	30	
ANT H B	5	30	30	30	15	15	5	5	30	30	30	30	30	20	20	20	
SPAN LOSS	125.05	125.96	251.02	251.02	143.63	143.63	108.34	108.34	142.08	142.08	250.43	250.43	250.43	142.57	142.57	142.57	
FEEDER LENGTH A	35	1.5	36.5	36.5	45	45	25	25	0	0	25	25	25	45	45	45	
FEEDER LENGTH B	1.5	45	46.5	46.5	30	30	0	0	45	45	45	45	45	35	35	35	
FEEDER LOSS/m	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	
FEEDER LOSS A+B	2.482	3.162	5.644	5.644	5.1	5.1	1.7	1.7	3.06	3.06	4.76	4.76	4.76	5.44	5.44	5.44	
BR CKT LOSS	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	
TOTAL LOSS	133.33	134.92	262.46	262.46	154.53	154.53	115.84	115.84	150.94	150.94	260.99	260.99	260.99	153.81	153.81	153.81	
ANT DIA A	3.6	3.6	3.6	3.6	3.6	3.6	3	3	12*16FT	12*16FT	12*16FT	12*16FT	12*16FT	3	3	3	
ANT DIA B	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	12*16FT	12*16FT	3.0*2	3.0*2	3.0*2	3	3	3	
ANT GAIN A	47	47	94	94	45.4	45.4	45.4	45.4	45.4	45.4	97.47	97.47	97.47	45.4	45.4	45.4	
ANT GAIN B	47	47	94	94	47	47	47	47	47	47	94	94	94	45.4	45.4	45.4	
TOTAL GAIN	94	94	188	188	92.4	92.4	92.4	92.4	92.4	92.4	191.47	191.47	191.47	90.8	90.8	90.8	
NET LOSS			74.46	74.46	62.13	62.13					69.52	69.52	69.52	63.01	63.01	63.01	
TX POWER			20	20	20	20					30	30	30	20	20	20	
RX INPUT			-54.46	-54.46	-42.13	-42.13					-39.52	-39.52	-39.52	-43.01	-43.01	-43.01	
THRESHOLD LEVEL			-84.5	-84.5	-84.5	-84.5					-84.5	-84.5	-84.5	-84.5	-84.5	-84.5	
FADE MARGIN			30.04	30.04	42.37	42.37					44.98	44.98	44.98	41.49	41.49	41.49	
RAYLEIGH FADE			0.000928	0.000928	0.060318	0.060318					0.037588	0.037588	0.037588	0.041909	0.041909	0.041909	
PROBABILITY %			0.000092	0.000092	0.000349	0.000349					0.000119	0.000119	0.000119	0.000298	0.000298	0.000298	
OBJECTIVE %			0.000225	0.000225	0.000906	0.000906					0.000774	0.000774	0.000774	0.000803	0.000803	0.000803	

	REFLECTOR		B to B		TOTAL
	THUMSINGLA TANDI	KORILA TANDI	THUMSINGLA KORILA	RANGSHIKHAR TANDI	KORILA TANDI
STATION A	8000	8000	8000	8000	8000
STATION B	34	34	34	34	34
FREQUENCY	1.26	35.12	36.38	3.68	29.07
TRANS CAPACITY	10	5	20	35	20
HOP DISTANCE	5	20	35	35	35
ANT H A	112.51	141.41	253.92	121.82	260.41
ANT H B	25	0	35	1.5	36.5
SPAN LOSS	0	35	1.5	50	51.5
FEEDER LENGTH A	0.068	0.068	0.068	0.068	0.068
FEEDER LENGTH B	1.7	2.38	4.08	3.502	5.984
FEEDER LOSS/m	5.8	5.8	5.8	5.8	5.8
FEEDER LOSS A+B	120.01	149.59	263.80	131.12	272.20
BR CKT LOSS					
TOTAL LOSS	2.4	12*16FT	12*16FT	4.6	4.6*2
ANT DIA A	12*16FT	3	2.4+3.0	4.6	4.6*2
ANT DIA B	43.5	45.4	100.76	48.5	97
ANT GAIN A			88.9	48.5	97
ANT GAIN B			189.66	97	194
TOTAL GAIN					
NET LOSS	74.14	49.88	34.12	78.20	
TX POWER	30	30	30	30	
RX INPUT	-44.14	-44.14	-48.20	-48.20	
THRESHOLD LEVEL	-84.5	-84.5	-84.5	-84.5	
FADE MARGIN	40.36	40.36	36.30	36.30	
RAYLEIGH FADE	0.031201	0.031201	0.015919	0.015919	
PROBABILITY %	0.000287	0.000287	0.000373	0.000373	0.0015183
OBJECTIVE %	0.000728	0.000728	0.000581	0.000581	0.0040178

	REFLECTOR	REFLECTOR	REFLECTOR	REFLECTOR	REFLECTOR	REFLECTOR
	*****	*****	*****	*****	*****	*****
	→→→→→	→→→→→	→→→→→	→→→→→	→→→→→	→→→→→
STATION A	YUTOLA	TANGSBI	YUTOLA	YUTOLA	TERANG	YUTOLA
STATION B	TANGSBI	JAKAR	JAKAR	TERANG	TONGSA	TONGSA
FREQUENCY	8300	8300	8300	8300	8300	8300
TRANS CAPACITY	34	34	34	34	34	34
HOP DISTANCE	23.13	9.28	32.41	9.14	1.95	11.09
ANT H A	10	5	10	20	5	20
ANT H B	5	15	15	5	15	15
SPAN LOSS	138.11	130.17	268.28	130.04	116.62	246.66
FEEDER LENGTH A	25	0	25	35	0	35
FEEDER LENGTH B	0	30	30	0	30	30
FEEDER LOSS/m	0.068	0.068	0.068	0.068	0.068	0.068
FEEDER LOSS A+B	1.7	2.04	3.74	2.38	2.04	4.42
BR CKT LOSS	5.8	5.8	5.8	5.8	5.8	5.8
TOTAL LOSS	145.61	138.01	277.82	138.22	124.46	256.88
ANT DIA A	3	20*32FT	20*32FT	1.8	8*10FT	8*10FT
ANT DIA B	20*32FT	3	3.0*2	8*10FT	2.4	1.8+2.4
ANT GAIN A	45.8	45.8	112.99	41.3	45.8	96.03
ANT GAIN B			91.6			85.1
TOTAL GAIN			204.59			181.13
NET LOSS			73.23			75.75
TX POWER			30			20
RX INPUT			-43.23			-55.75
THRESHOLD LEVEL			-84.5			-84.5
FADE MARGIN			41.27			28.75
RAYLEIGH FADE			0.022888			0.00917
PROBABILITY %			0.000171			0.000122
OBJECTIVE %			0.000648			0.000222
						0.000118

TRANSMISSION ENGINEERING

TABLE NO.
11

	REFLECTOR		B to B		B to B	
	→→→→→	→→→→→	→→→→→	→→→→→	→→→→→	→→→→→
* STATION A	YUTOLA	TASILING	YUTOLA	BALING PANJARMANI	PANJARMANI	TAMULA
STATION B	TASILING	BALING	BALING	TAMULA	TAMULA	SAMKHARA
FREQUENCY	8000	8000	8000	8000	8000	8000
TRANS CAPACITY	34	34	34	34	34	34
HOP DISTANCE	13.64	24.62	38.26	2.65	20.4	14.42
ANT H A	30	5	30	15	5	20
ANT H B	5	15	15	5	20	20
SPAN LOSS	133.20	138.33	271.53	118.97	136.69	255.25
FEEDER LENGTH A	45	0	45	30	1.5	36.5
FEEDER LENGTH B	0	30	30	1.5	35	36.5
FEEDER LOSS/m	0.068	0.068	0.068	0.068	0.068	0.068
FEEDER LOSS A+B	3.06	2.04	5.1	2.142	2.482	4.964
BR CKT LOSS	5.8	5.8	5.8	5.8	5.8	5.8
TOTAL LOSS	142.06	146.17	282.43	126.91	144.98	266.01
ANT DIA A	4.6	20*32FT	20*32FT	3.6	3.6	3.6*2
ANT DIA B	20*32FT	4.6	4.6*2	3.6	3.6	3.0*2
ANT GAIN A	48.5	48.5	110.74	47	47	45.4
ANT GAIN B	48.5	48.5	97	47	47	47
TOTAL GAIN	97	97	207.74	94	94	90.8
NET LOSS	74.69	74.69	74.69	78.09	78.09	81.21
TX POWER	30	30	30	30	30	30
RX INPUT	-44.69	-44.69	-44.69	-48.09	-48.09	-51.21
THRESHOLD LEVEL	-84.5	-84.5	-84.5	-84.5	-84.5	-84.5
FADE MARGIN	39.81	39.81	39.81	36.41	36.41	33.29
RAYLEIGH FADE	0.036292	0.036292	0.036292	0.007936	0.007936	0.001943
PROBABILITY %	0.000379	0.000379	0.000379	0.000181	0.000181	0.000091
OBJECTIVE %	0.000765	0.000765	0.000765	0.000461	0.000461	0.000288

TRANSMISSION ENGINEERING

TABLE NO.

12

STATION A	SUREY	GEYLEPHUG DARECHU	DHUPHIDARA	CHANAUTI	DHUPHIDARA	TAMULA
STATION B	8000	8000	8000	8000	8000	8300
FREQUENCY	34	34	34	34	34	34
TRANS CAPACITY	15.51	29.42	6.06	3.99	2.59	14.45
HOP DISTANCE	20	30	10	10	5	10
ANT H A	20	20	10	5	35	15
ANT H B	134.31	139.87	126.15	122.52	118.77	134.02
SPAN LOSS	35	45	25	25	0	25
FEEDER LENGTH A	35	35	25	0	50	30
FEEDER LENGTH B	0.068	0.068	0.068	0.068	0.068	0.068
FEEDER LOSS/m	4.76	5.44	3.4	1.7	3.4	3.74
FEEDER LOSS A+B	5.8	5.8	5.8	5.8	5.8	5.8
BR CKT LOSS	144.87	151.11	135.35	130.02	127.97	143.56
TOTAL LOSS						
ANT DIA A	1.2	2.4	1.2	1.2	8*10FT	1.2
ANT DIA B	1.2	1.8	1.2	8*10FT	1.8	1.2
ANT GAIN A	37.5	43.5	37.5	37.5	94.23	37.8
ANT GAIN B	37.5	41	37.5	41	78.5	37.8
TOTAL GAIN	75	84.5	75	75	172.73	75.6
NET LOSS	69.87	66.61	60.35	79.46	67.96	67.96
TX POWER	20	20	20	20	20	20
RX INPUT	-49.87	-46.61	-40.35	-59.46	-47.96	-47.96
THRESHOLD LEVEL	-84.5	-84.5	-84.5	-84.5	-84.5	-84.5
FADE MARGIN	34.63	37.89	44.15	25.04	36.54	36.54
RAYLEIGH FADE	0.002418	0.016501	0.000144	0.000185	0.0002028	0.002028
PROBABILITY %	0.000083	0.000269	0.000001	0.000058	0.000045	0.000045
OBJECTIVE %	0.000310	0.000588	0.000121	0.000132	0.004572	0.000289
TOTAL						228.6

TRANSMISSION ENGINEERING

TABLE NO.
13

STATION A	THUMSINGLA	KHERI	NGEDUM	KHERI	NGEDUM	SAMDRUP J. SANDRUP J.	KHERI	NGEDUM	KHERI	TOTAL
STATION B	KHERI	8000	8000	8000	8000	8000	8000	8000	8000	
FREQUENCY	8000	34	34	34	34	34	34	34	34	
TRANS CAPACITY	60.71	18.72	10.53	29.25	29.25	29.25	29.25	29.25	29.25	225.4
HOP DISTANCE	20	30	5	20	20	20	20	20	20	
ANT H A	20	5	20	20	20	20	20	20	20	
ANT H B	146.17	135.95	130.95	266.90	266.90	266.90	266.90	266.90	266.90	116.35
SPAN LOSS	35	45	0	45	45	45	45	45	45	40
FEEDER LENGTH A	35	0	35	35	35	35	35	35	35	35
FEEDER LENGTH B	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068
FEEDER LOSS/m	4.76	3.06	2.38	5.44	5.44	5.44	5.44	5.44	5.44	5.1
FEEDER LOSS A+B	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
BR CKT LOSS	156.73	144.81	139.13	278.14	278.14	278.14	278.14	278.14	278.14	127.25
TOTAL LOSS										
ANT DIA A	2.4	4.6	16*20FT W	16*20FT	16*20FT	16*20FT	16*20FT	16*20FT	16*20FT	1.2
ANT DIA B	2.4	16*20FT	4.6	4.6*2	4.6*2	4.6*2	4.6*2	4.6*2	4.6*2	1.2
ANT GAIN A	43.5	48.5	48.5	104.01	104.01	104.01	104.01	104.01	104.01	37.8
ANT GAIN B	43.5	48.5	48.5	97	97	97	97	97	97	37.8
TOTAL GAIN	87	87	87	201.01	201.01	201.01	201.01	201.01	201.01	75.6
NET LOSS	69.73	69.73	69.73	77.13	77.13	77.13	77.13	77.13	77.13	51.65
TX POWER	30	30	30	30	30	30	30	30	30	20
RX INPUT	-39.73	-39.73	-39.73	-47.13	-47.13	-47.13	-47.13	-47.13	-47.13	-31.65
THRESHOLD LEVEL	-84.5	-84.5	-84.5	-84.5	-84.5	-84.5	-84.5	-84.5	-84.5	-84.5
FADE MARGIN	44.77	44.77	44.77	37.37	37.37	37.37	37.37	37.37	37.37	52.85
RAYLEIGH FADE	0.144996	0.144996	0.144996	0.018216	0.018216	0.018216	0.018216	0.018216	0.018216	0.000005
PROBABILITY %	0.000483	0.000483	0.000483	0.000297	0.000297	0.000297	0.000297	0.000297	0.000297	0.000000
OBJECTIVE %	0.001214	0.000374	0.000211	0.000585	0.000585	0.000585	0.000585	0.000585	0.000585	0.000038

STATION A	MONGAR	THINMUNG	WAMBUR	THINMUNG	WAMBUR	NUMGUNG	WAMBUR	NUMGUNG	LHUNTSHI	NUMGUNG	TASHIGANG	RANGSIKHAR
STATION B	THINMUNG	WAMBUR	NUMGUNG	WAMBUR	NUMGUNG	NUMGUNG	NUMGUNG	NUMGUNG	RANGSIKHARYONGPHULA	RANGSIKHARYONGPHULA	RANGSIKHARYONGPHULA	RANGSIKHAR
FREQUENCY	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400
TRANS CAPACITY	34	34	34	34	34	34	34	34	34	34	34	34
HOP DISTANCE	8.79	20.52	19.14	3.09	3.68	3.09	3.68	3.68	5.62	5.62	5.62	5.62
ANT H A	10	10	10	10	10	10	10	10	10	10	10	10
ANT H B	10	10	10	10	10	10	10	10	10	10	10	10
SPAN LOSS	118.92	126.29	125.68	109.84	111.36	109.84	111.36	111.36	115.04	115.04	115.04	115.04
FEEDER LENGTH A	25	25	25	25	25	25	25	25	25	25	25	25
FEEDER LENGTH B	25	25	25	25	25	25	25	25	25	25	25	25
FEEDER LOSS/m	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
FEEDER LOSS A+B	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
BR CKT LOSS	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
TOTAL LOSS	128.47	135.84	135.23	119.39	120.91	119.39	120.91	120.91	124.59	124.59	124.59	124.59
ANT DIA A	OM	OM	OM	OM	OM	OM	OM	OM	OM	OM	OM	OM
ANT DIA B	HO	HO	HO	HO	HO	HO	HO	HO	HO	HO	HO	HO
ANT GAIN A	10	10	10	10	10	10	10	10	10	10	10	10
ANT GAIN B	20	20	20	20	20	20	20	20	20	20	20	20
TOTAL GAIN	30	30	30	30	30	30	30	30	30	30	30	30
NET LOSS	98.47	105.84	105.23	89.39	90.91	89.39	90.91	90.91	94.59	94.59	94.59	94.59
TX POWER	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5
RX INPUT	-66.97	-74.34	-73.73	-57.89	-59.41	-57.89	-59.41	-59.41	-63.09	-63.09	-63.09	-63.09
THRESHOLD LEVEL	-92	-92	-92	-92	-92	-92	-92	-92	-92	-92	-92	-92
FADE MARGIN	25.03	17.66	18.27	34.11	32.59	34.11	32.59	32.59	28.91	28.91	28.91	28.91
RAYLEIGH FADE	0.000132	0.001680	0.001363	0.000006	0.000010	0.000006	0.000010	0.000010	0.000035	0.000035	0.000035	0.000035
PROBABILITY %	0.000042	0.002877	0.002032	0.000000	0.000001	0.000000	0.000001	0.000001	0.000004	0.000004	0.000004	0.000004
OBJECTIVE %	0.003750	0.003750	0.003750	0.003750	0.003750	0.003750	0.003750	0.003750	0.007500	0.007500	0.007500	0.007500

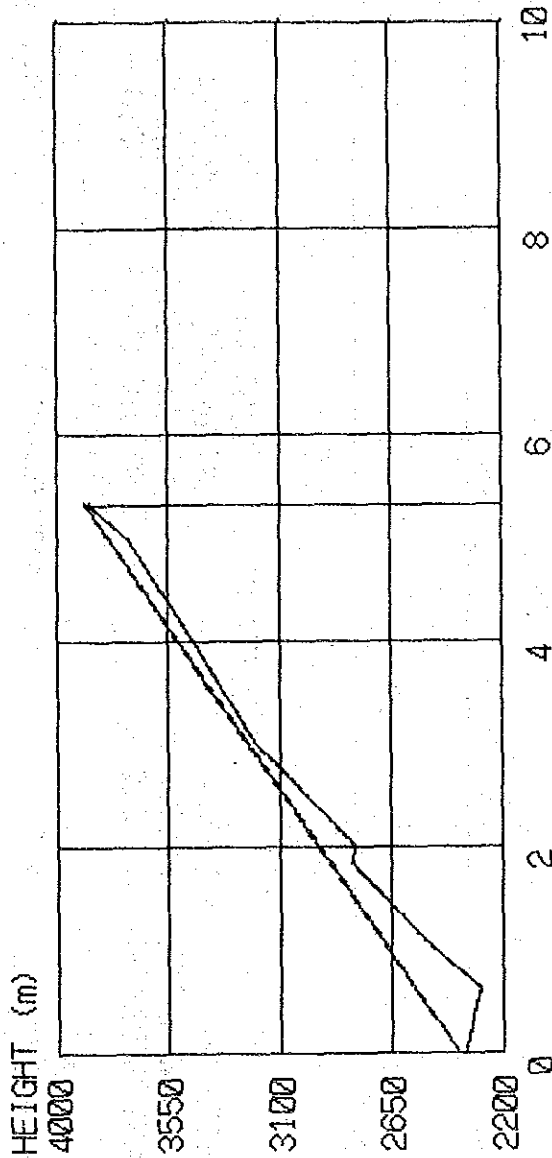
TRANSMISSION ENGINEERING

TABLE NO.

14

P R O F I L E

(K : 1.33 F R E Q U E N C Y : 8000 M H Z)



SITE NAME : THIMPHU DISTANCE : 5.34 km SITE NAME : DOBCHU
 GROUND LEVEL : 2360.0 m GROUND LEVEL : 3880.0 m
 ANT. HEIGHT 1 : 20.0 m ANT. HEIGHT 2 : 5.0 m

ANT. HEIGHT 1 : 20.0 m	ANT. HEIGHT 2 : 5.0 m
CLITICAL POINT : 3.0 Km	RIDGE HEIGHT : 3200.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 7.0 m
CLEARANCE : 25.1 m	CLEARANCE FAC. : 3.6
FREE SPACE LOSS : 125.1 dB	RIDGE LOSS : -0.4 dB
TOTAL LOSS : 124.7 dB	

DRAWING NAME:

P A T H P R O F I L E

PATH NAME:

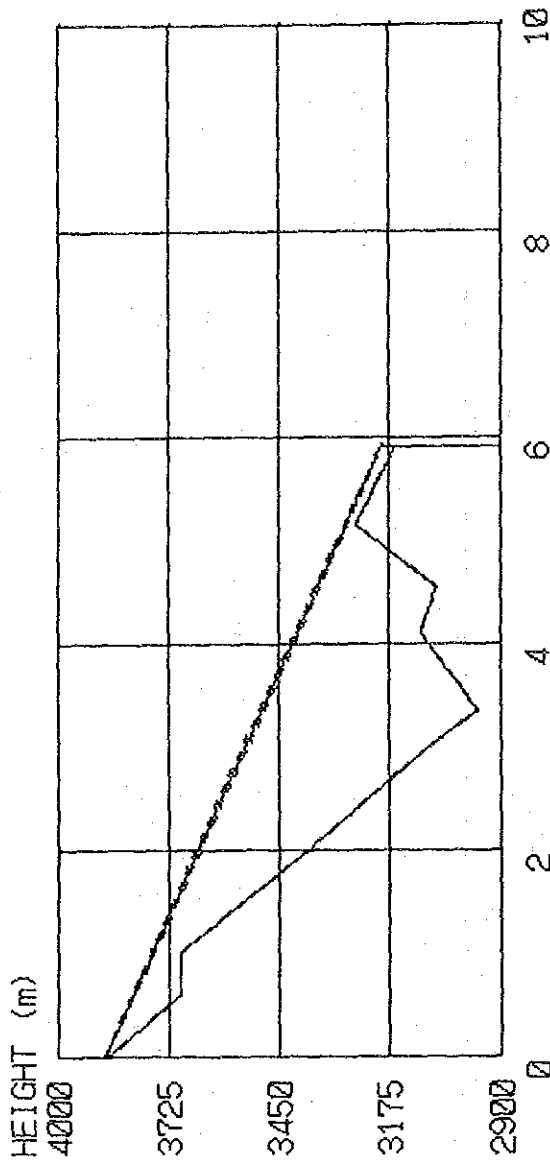
T H I M P H U ~ D O B C H U

FIG. NO. :

P-1

PROFILE

(K : 1.33 FREQUENCY : 8000 MHz)



DISTANCE : 5.93 km

SITE NAME : DOBCHU	SITE NAME : DOCHULA
GROUND LEVEL : 3880.0 m	GROUND LEVEL : 3160.0 m
ANT.HEIGHT 1 : 5.0 m	ANT.HEIGHT 2 : 30.0 m

ANT.HEIGHT 1 : 5.0 m	ANT.HEIGHT 2 : 30.0 m
CLITICAL POINT : 5.2 Km	RIDGE HEIGHT : 3260.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 5.0 m
CLEARANCE : 21.2 m	CLEARANCE FAC. : 4.2
FREE SPACE LOSS : 126.0 dB	RIDGE LOSS : 0.3 dB
TOTAL LOSS : 126.3 dB	

DRAWING NAME:

PATH PROFILE

PATH NAME:

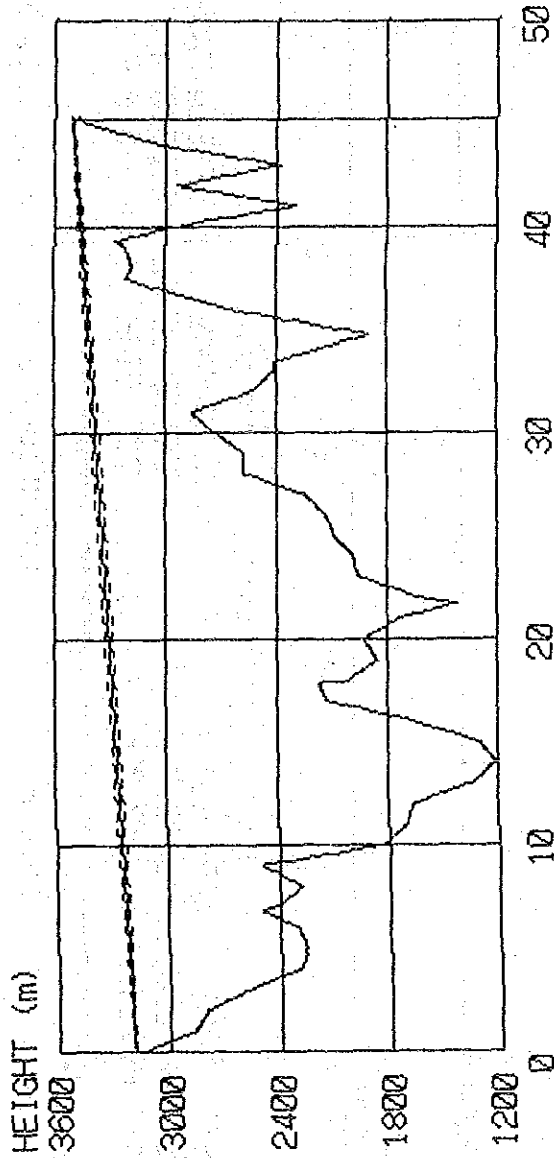
DOBCHU ~ DOCHULA

FIG. NO.:

P-2

PROFILE

(K : 1.33 FREQUENCY : 8000 MHZ)



SITE NAME : DOCHULA DISTANCE : 45.32 km SITE NAME : PELELA
 GROUND LEVEL : 3160.0 m GROUND LEVEL : 3480.0 m
 ANT.HEIGHT 1 : 30.0 m ANT.HEIGHT 2 : 15.0 m

ANT.HEIGHT 1 : 30.0 m	ANT.HEIGHT 2 : 15.0 m
CLITICAL POINT : 39.3 Km	RIDGE HEIGHT : 3280.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 14.0 m
CLEARANCE : 160.5 m	CLEARANCE FAC. : 11.5
FREE SPACE LOSS : 143.6 dB	RIDGE LOSS : 0.1 dB
TOTAL LOSS : 143.8 dB	

DRAWING NAME:

PATH PROFILE

PATH NAME:

DOCHULA ~

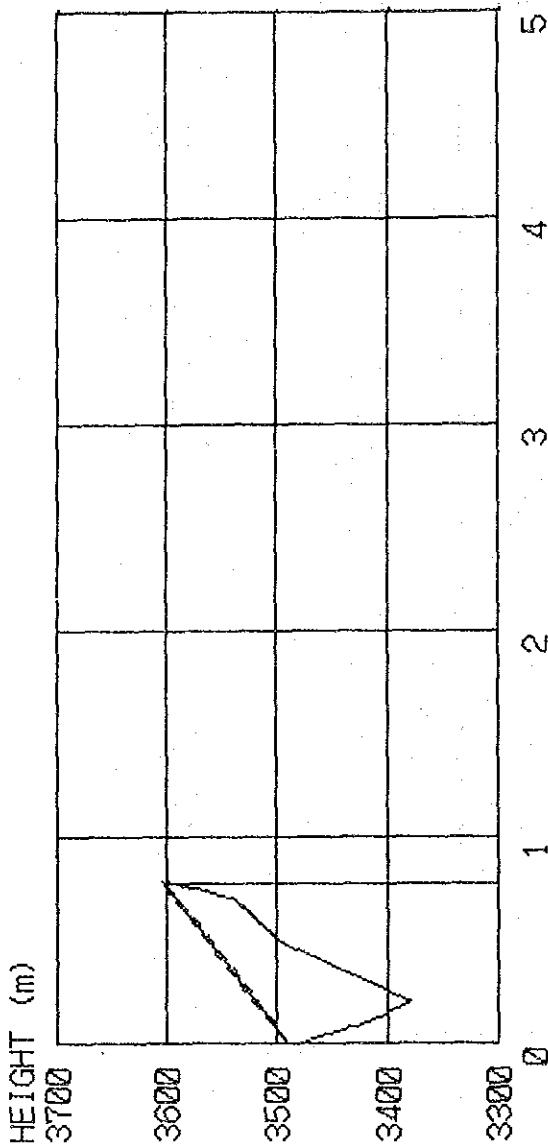
PELELA

FIG.NO.:

P-3

PROFILE

(K : 1.33 FREQUENCY : 8000 MHz)



DISTANCE : .78 km

SITE NAME : PELELA : PELELA PASS
 GROUND LEVEL : 3480.0 m : 3600.0 m
 ANT.HEIGHT 1 : 10.0 m : 3.0 m

ANT.HEIGHT 1 : 10.0 m	ANT.HEIGHT 2 : 3.0 m
CRITICAL POINT : 0.5 Km	RIDGE HEIGHT : 3500.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 2.6 m
CLEARANCE : 62.4 m	CLEARANCE FAC. : 24.1
FREE SPACE LOSS : 108.4 dB	RIDGE LOSS : -0.0 dB
TOTAL LOSS : 108.3 dB	

DRAWING NAME:

PATH PROFILE

PATH NAME:

PELELA ~

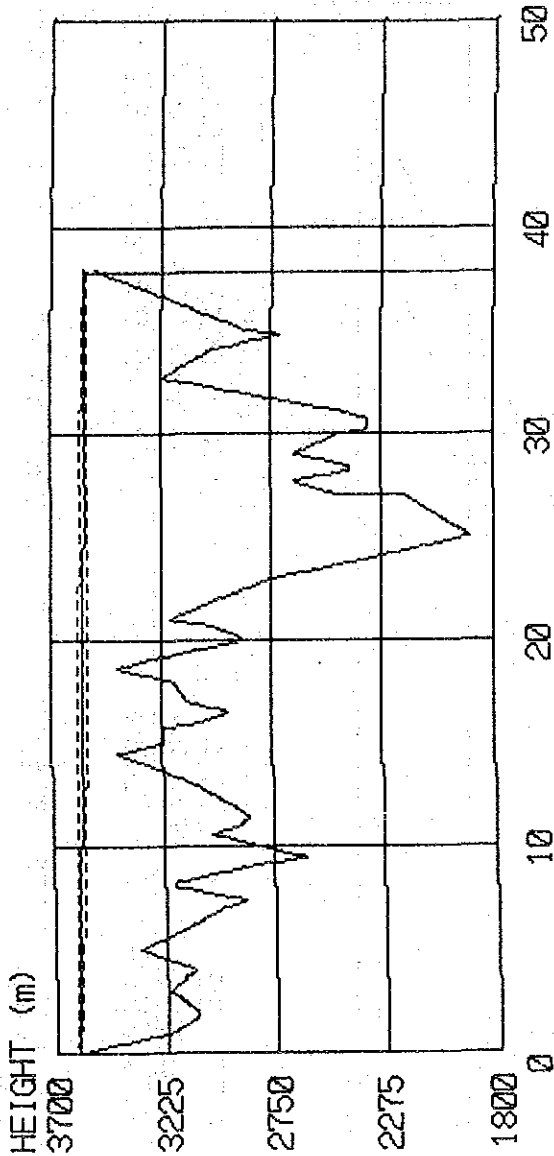
PELELA PASS

FIG. NO.:

P-4

PROFILE

(K : 1.33 FREQUENCY : 8000 MHz)



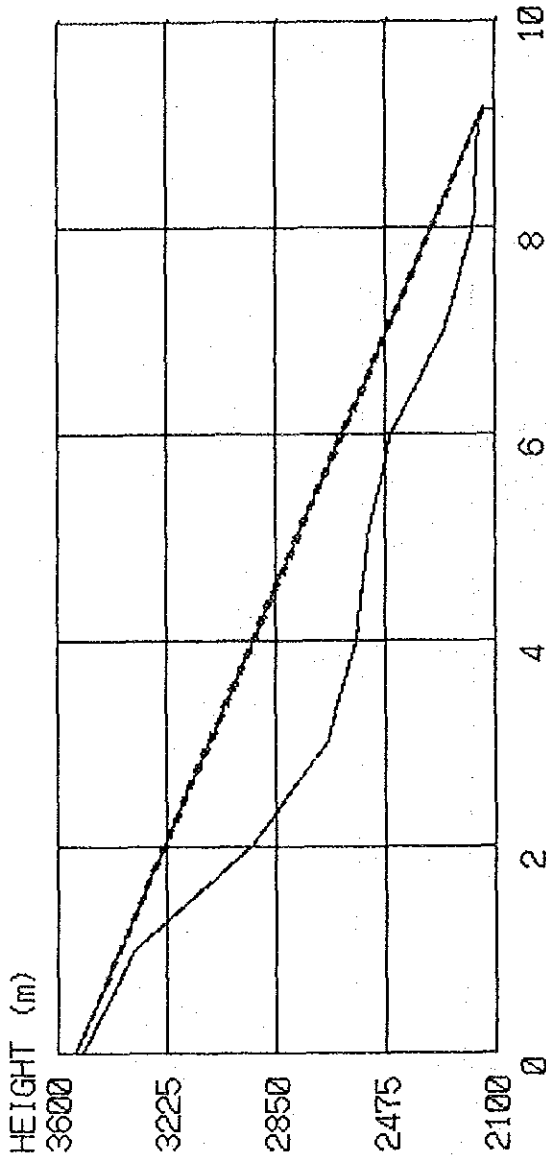
SITE NAME : PELELA PASS	DISTANCE : 37.93 km
GROUND LEVEL : 3600.0 m	SITE NAME : YUTOLA
ANT.HEIGHT 1 : 3.0 m	GROUND LEVEL : 3520.0 m
	ANT.HEIGHT 2 : 30.0 m

ANT.HEIGHT 1 : 3.0 m	ANT.HEIGHT 2 : 30.0 m
CLITICAL POINT : 18.6 Km	RIDGE HEIGHT : 3420.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 18.9 m
CLEARANCE : 135.8 m	CLEARANCE FAC. : 7.2
FREE SPACE LOSS : 142.1 dB	RIDGE LOSS : 0.2 dB
TOTAL LOSS : 142.3 dB	

DRAWING NAME: PATH PROFILE	PATH NAME: PELELA PASS ~ YUTOLA	FIG. NO. : P-5
--------------------------------------	---	--------------------------

PROFILE

(K : 1.33 FREQUENCY : 8300 MHz)



DISTANCE : 9.14 km
 SITE NAME : YUTOLA SITE NAME : TERANG
 GROUND LEVEL : 3520.0 m GROUND LEVEL : 2140.0 m
 ANT.HEIGHT 1 : 20.0 m ANT.HEIGHT 2 : 3.0 m

ANT. HEIGHT 1 : 20.0 m	ANT. HEIGHT 2 : 3.0 m
CLITICAL POINT : 9.0 Km	RIDGE HEIGHT : 2160.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 2.2 m
CLEARANCE : 4.3 m	CLEARANCE FAC. : 1.9
FREE SPACE LOSS : 130.1 dB	RIDGE LOSS : 0.7 dB
TOTAL LOSS : 130.8 dB	

DRAWING NAME:

PATH PROFILE

PATH NAME:

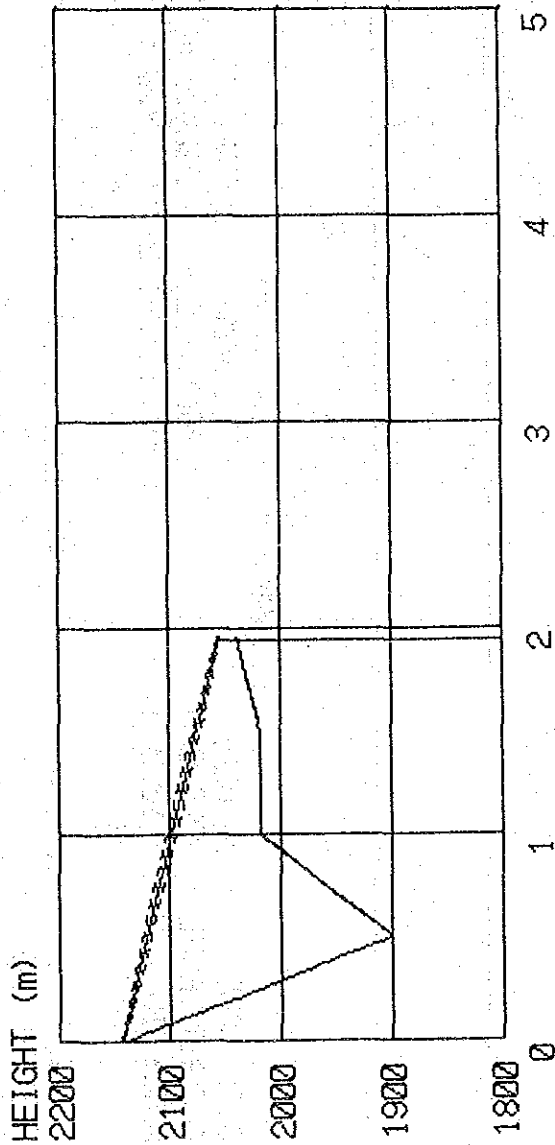
YUTOLA ~ TERANG

FIG. NO. :

P-6

PROFILE

(K : 1.33 FREQUENCY : 8300 MHz)



SITE NAME : TERANG DISTANCE : 1.95 km SITE NAME : TONGSA
 GROUND LEVEL : 2140.0 m GROUND LEVEL : 2040.0 m
 ANT.HEIGHT 1 : 3.0 m ANT.HEIGHT 2 : 15.0 m

ANT.HEIGHT 1	:	3.0 m	:	ANT.HEIGHT 2	:	15.0 m
CLITICAL POINT	:	1.5 Km	:	RIDGE HEIGHT	:	2020.0 m
TREE HEIGHT	:	0.0 m	:	FRESNEL DEP.	:	3.5 m
CLEARANCE	:	55.3 m	:	CLEARANCE FAC.	:	15.6
FREE SPACE LOSS	:	116.6 dB	:	RIDGE LOSS	:	0.0 dB
TOTAL LOSS	:	116.7 dB	:		:	

DRAWING NAME:

PATH PROFILE

PATH NAME:

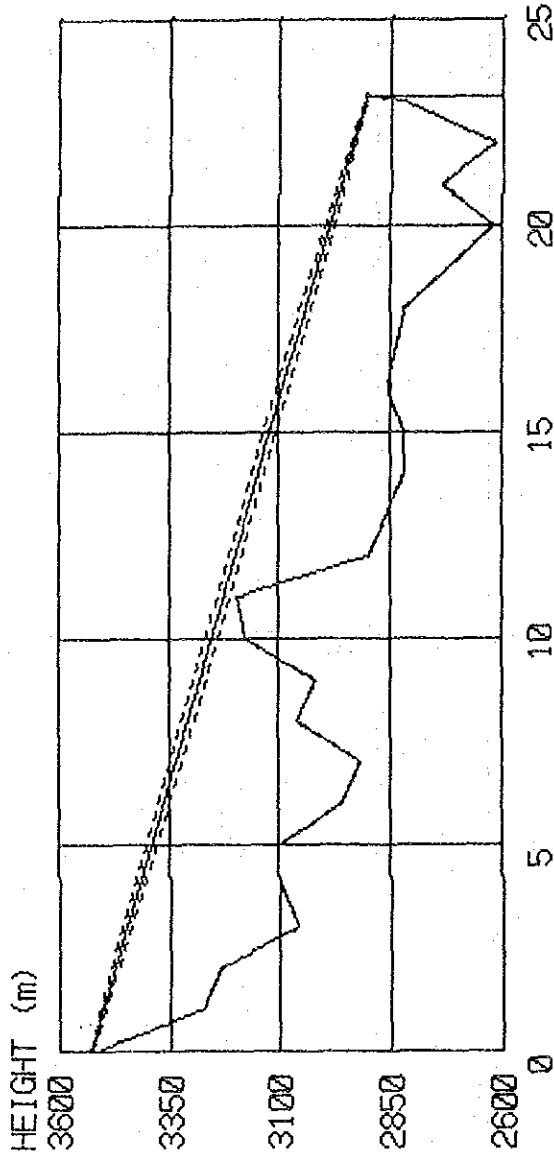
TERANG ~ TONGSA

FIG. NO.:

P-7

PROFILE

(K : 1.33 FREQUENCY : 8300 MHz)



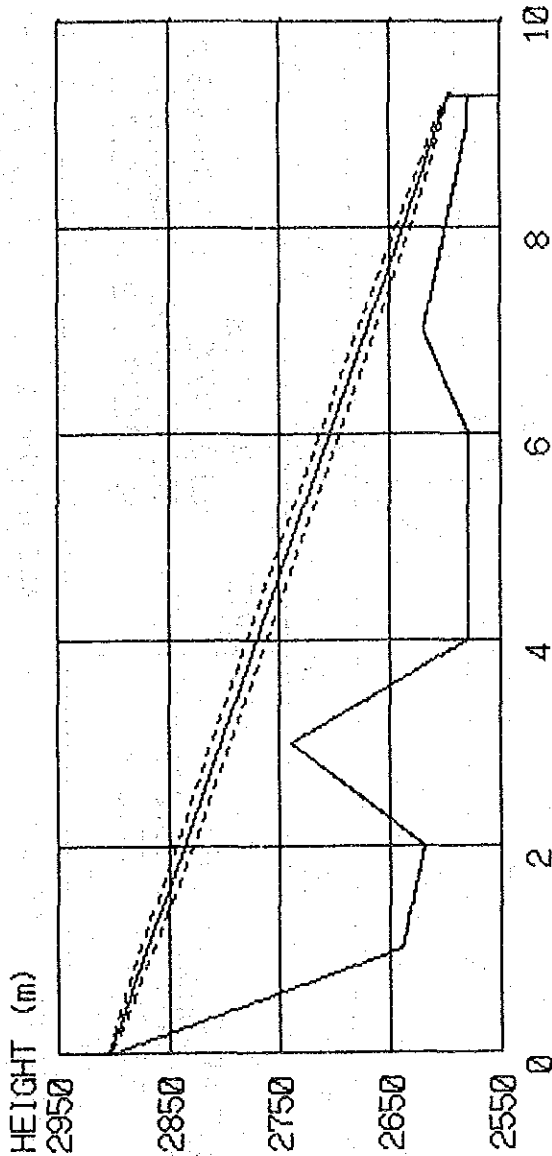
DISTANCE : 23.13 km
 SITE NAME : TANGSBI
 GROUND LEVEL : 2900.0 m
 ANT.HEIGHT 2 : 3.0 m
 SITE NAME : YUTOLA
 GROUND LEVEL : 3520.0 m
 ANT.HEIGHT 1 : 10.0 m

ANT.HEIGHT 1	:	10.0 m	ANT.HEIGHT 2	:	3.0 m
CRITICAL POINT	:	11.0 Km	RIDGE HEIGHT	:	3200.0 m
TREE HEIGHT	:	0.0 m	FRESNEL DEP.	:	14.4 m
CLEARANCE	:	23.9 m	CLEARANCE FAC.	:	1.7
FREE SPACE LOSS	:	138.1 dB	RIDGE LOSS	:	-0.8 dB
TOTAL LOSS	:	137.3 dB			

DRAWING NAME: PATH PROFILE	PATH NAME: YUTOLA ~ TANGSBI	FIG. NO. : P-8
-----------------------------------	------------------------------------	-----------------------

PROFILE

(K : 1.33 FREQUENCY : 8300 MHz)



SITE NAME : TANGSBI GROUND LEVEL : 2900.0 m ANT.HEIGHT 1 : 3.0 m	DISTANCE : 9.28 km SITE NAME : JAKARTA GROUND LEVEL : 2580.0 m ANT.HEIGHT 2 : 15.0 m
ANT.HEIGHT 1 : 3.0 m CLITICAL POINT : 8.0 Km TREE HEIGHT : 0.0 m CLEARANCE : 36.9 m FREE SPACE LOSS : 130.2 dB TOTAL LOSS : 130.3 dB	ANT.HEIGHT 2 : 15.0 m RIDGE HEIGHT : 2600.0 m FRESNEL DEP. : 6.3 m CLEARANCE FAC. : 5.8 RIDGE LOSS : 0.1 dB

DRAWING NAME:

PATH PROFILE

PATH NAME:

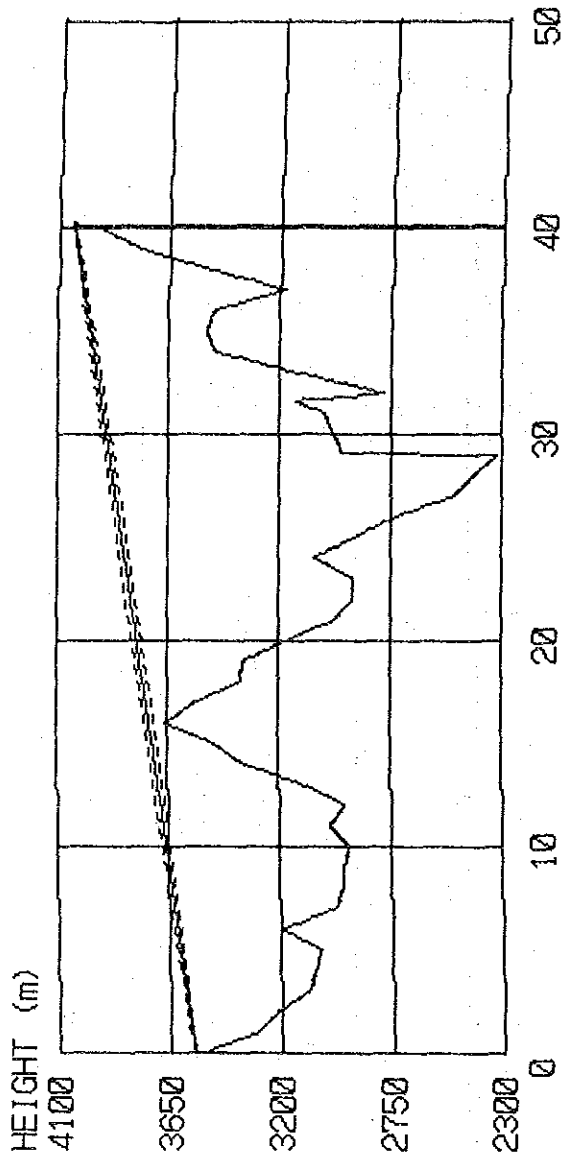
TANGSBI ~ JAKARTA

FIG. NO.:

P-9

P R O F I L E

(K : 1.33 F R E Q U E N C Y : 8000 M H Z)



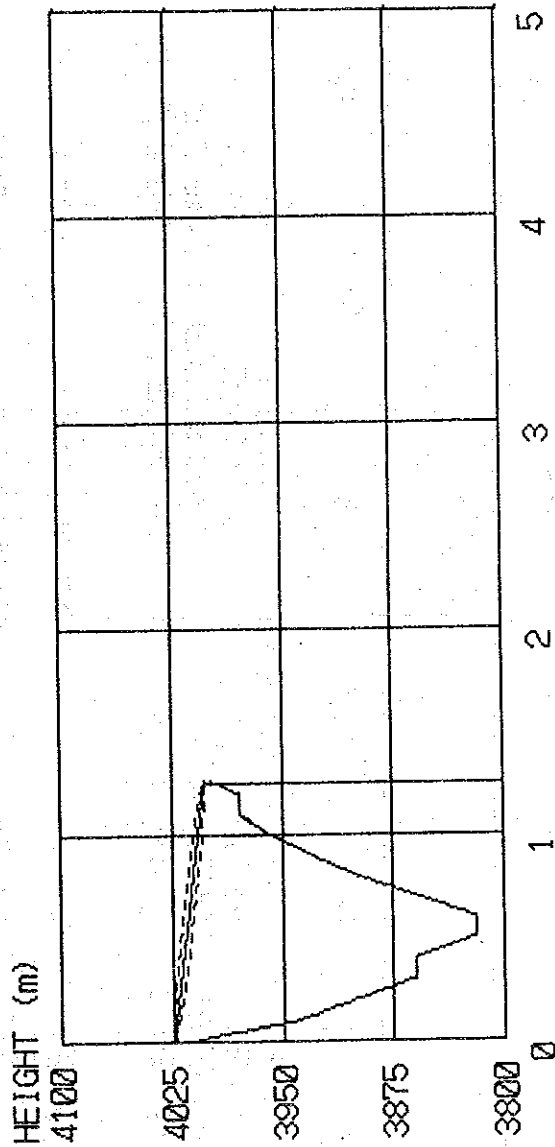
DISTANCE : 40.14 km
 SITE NAME : THUMSINGLA
 GROUND LEVEL : 4015.0 m
 ANT.HEIGHT 1 : 30.0 m ANT.HEIGHT 2 : 20.0 m

ANT.HEIGHT 1	:	30.0 m	ANT.HEIGHT 2	:	20.0 m
CRITICAL POINT	:	16.0 Km	RIDGE HEIGHT	:	3660.0 m
TREE HEIGHT	:	0.0 m	FRESNEL DEP.	:	19.0 m
CLEARANCE	:	60.5 m	CLEARANCE FAC.	:	3.2
FREE SPACE LOSS	:	142.6 dB	RIDGE LOSS	:	0.1 dB
TOTAL LOSS	:	142.7 dB			

DRAWING NAME: PATH PROFILE	PATH NAME: YUTOLA ~ THUMSINGLA	FIG. NO. : P-10
-----------------------------------	--	------------------------

PROFILE

(K : 1.33 FREQUENCY : 8000 MHZ)



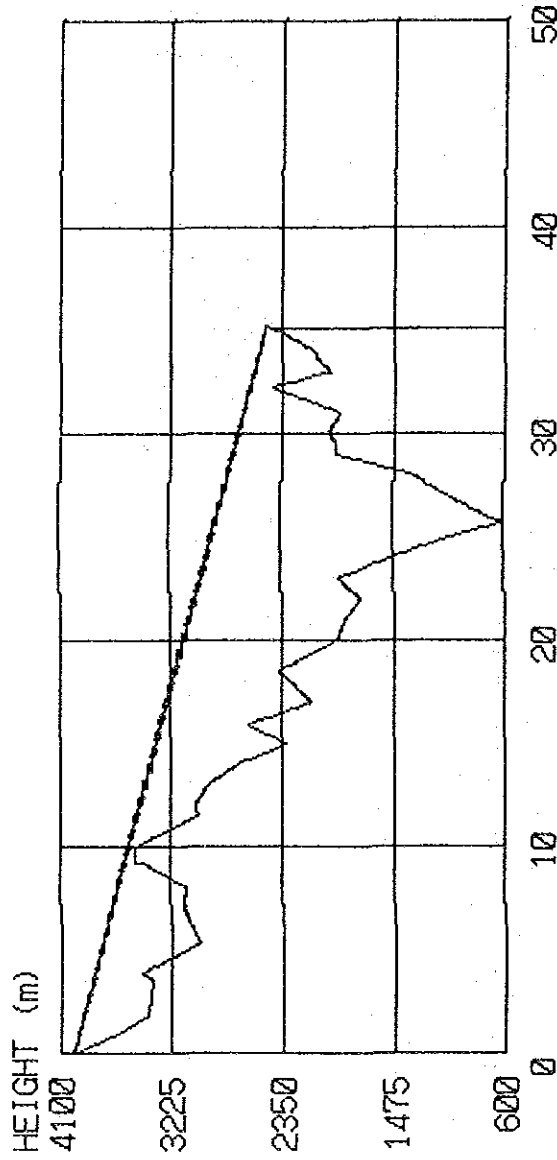
DISTANCE : 1.26 km
 SITE NAME : THUMSINGLA SITE NAME : TANDI
 GROUND LEVEL : 4015.0 m GROUND LEVEL : 4000.0 m
 ANT.HEIGHT 1 : 10.0 m ANT.HEIGHT 2 : 3.0 m

ANT.HEIGHT 1	:	10.0 m	ANT.HEIGHT 2	:	3.0 m
CLITICAL POINT	:	1.1 Km	RIDGE HEIGHT	:	3980.0 m
TREE HEIGHT	:	0.0 m	FRESNEL DEP.	:	2.3 m
CLEARANCE	:	25.8 m	CLEARANCE FAC.	:	11.3
FREE SPACE LOSS	:	112.5 dB	RIDGE LOSS	:	-0.1 dB
TOTAL LOSS	:	112.4 dB			

DRAWING NAME: PATH PROFILE	PATH NAME: THUMSINGLA ~ TANDI	FIG.NO.: P-11
-----------------------------------	---	----------------------

PROFILE

(K : 1.33 FREQUENCY : 8000 MHZ)



SITE NAME : TANDI	DISTANCE : 35.12 km	SITE NAME : KORILA
GROUND LEVEL : 4000.0 m		GROUND LEVEL : 2440.0 m
ANT.HEIGHT 1 : 3.0 m		ANT.HEIGHT 2 : 20.0 m
ANT.HEIGHT 1 : 3.0 m		ANT.HEIGHT 2 : 20.0 m
CLITICAL POINT : 10.0 Km		RIDGE HEIGHT : 3500.0 m
TREE HEIGHT : 0.0 m		FRESNEL DEP. : 16.4 m
CLEARANCE : 48.8 m		CLEARANCE FAC. : 3.0
FREE SPACE LOSS : 141.4 dB		RIDGE LOSS : -0.4 dB
TOTAL LOSS : 141.0 dB		

DRAWING NAME:

PATH PROFILE

PATH NAME:

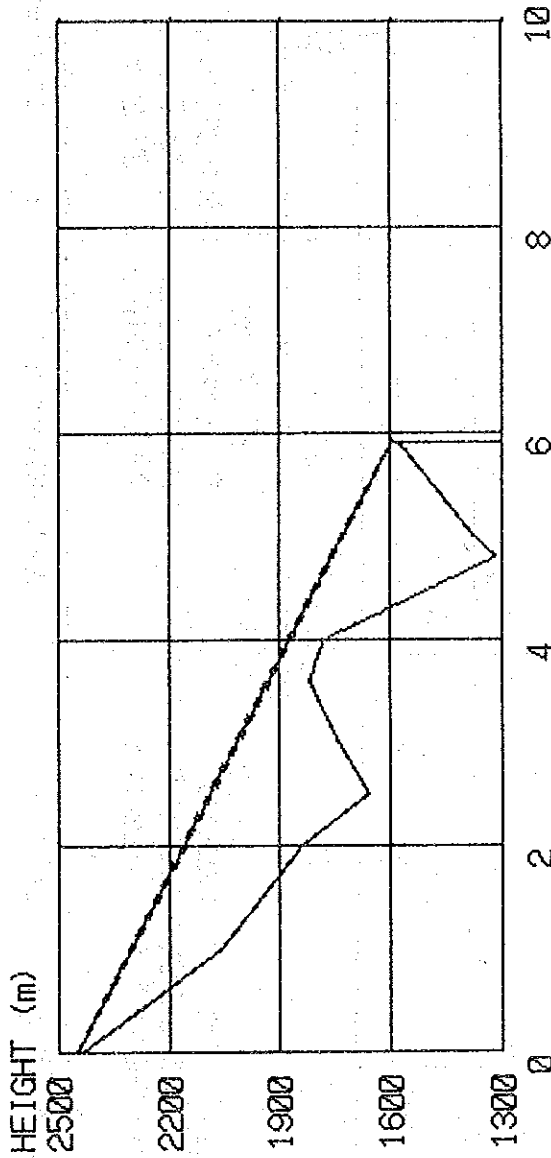
TANDI ~ KORILA

FIG. NO.:

P-12

PROFILE

(K : 1.33 FREQUENCY : 8300 MHZ)



DISTANCE : 5.91 km

SITE NAME : KORILA	SITE NAME : MONGAR
GROUND LEVEL : 2440.0 m	GROUND LEVEL : 1580.0 m
ANT.HEIGHT 1 : 10.0 m	ANT.HEIGHT 2 : 15.0 m

ANT.HEIGHT 1 : 10.0 m	ANT.HEIGHT 2 : 15.0 m
CLITICAL POINT : 4.0 Km	RIDGE HEIGHT : 1780.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 6.8 m
CLEARANCE : 90.9 m	CLEARANCE FAC. : 13.3
FREE SPACE LOSS : 126.3 dB	RIDGE LOSS : -0.1 dB
TOTAL LOSS : 126.2 dB	

DRAWING NAME:

PATH PROFILE

PATH NAME:

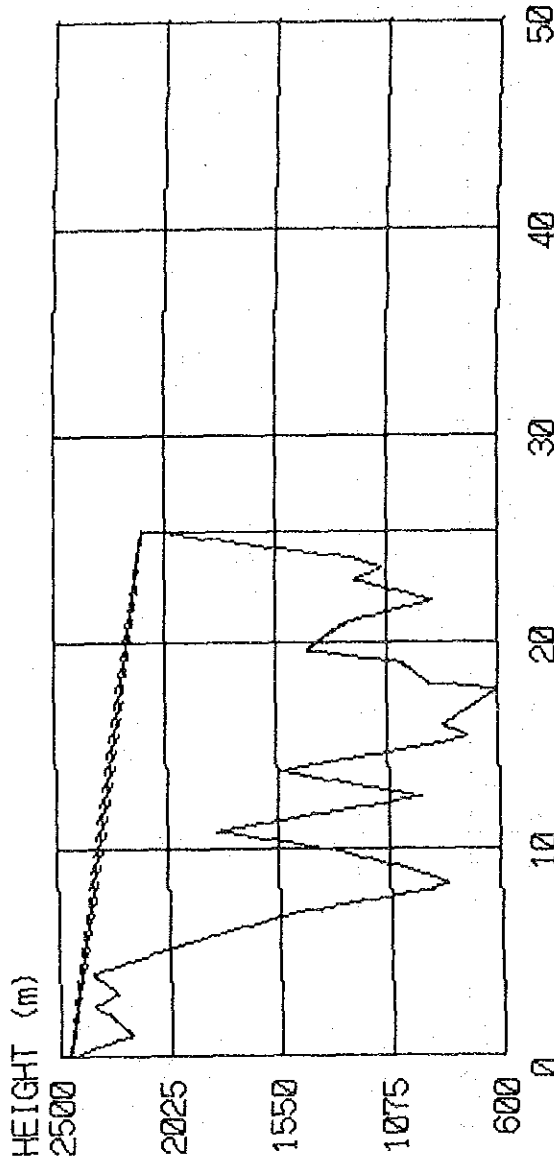
KORILA ~ MONGAR

FIG.NO.:

P-13

P R O F I L E

(K : 1.33 F R E Q U E N C Y : 8000 M H Z)



D I S T A N C E : 25.39 km

S I T E N A M E : KORILA	S I T E N A M E : RANGSIKHAR
G R O U N D L E V E L : 2440.0 m	G R O U N D L E V E L : 2080.0 m
A N T . H E I G H T 1 : 20.0 m	A N T . H E I G H T 2 : 35.0 m

A N T . H E I G H T 1 : 20.0 m	A N T . H E I G H T 2 : 35.0 m
C L I T I C A L P O I N T : 4.0 Km	R I D G E H E I G H T : 2360.0 m
T R E E H E I G H T : 0.0 m	F R E S N E L D E P . : 11.2 m
C L E A R A N C E : 41.3 m	C L E A R A N C E F A C . : 3.7
F R E E S P A C E L O S S : 138.6 dB	R I D G E L O S S : 0.4 dB
T O T A L L O S S : 139.0 dB	

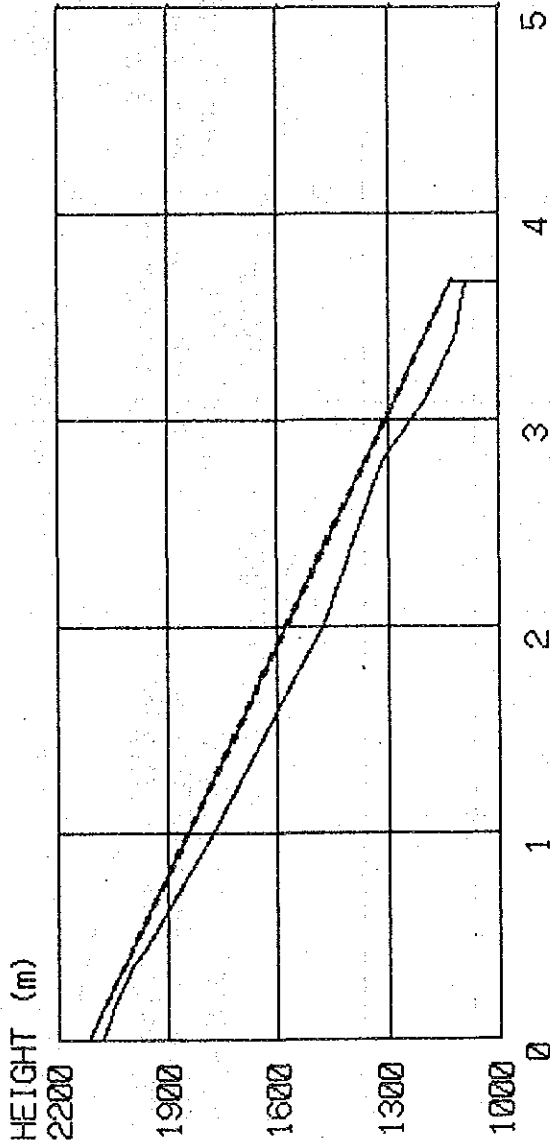
DRAWING NAME:
PATH PROFILE

PATH NAME:
K O R I L A ~
R A N G S H I K H A R

FIG. NO. :
P-14

PROFILE

(K : 1.33 FREQUENCY : 8000 MHz)



DISTANCE : 3.68 km
 SITE NAME : RANGSIKHAR TASHIGANG
 GROUND LEVEL : 2080.0 m GROUND LEVEL : 1090.0 m
 ANT.HEIGHT 1 : 35.0 m ANT.HEIGHT 2 : 35.0 m

ANT.HEIGHT 1	:	35.0 m	ANT.HEIGHT 2	:	35.0 m
CLITICAL POINT	:	0.4 Km	RIDGE HEIGHT	:	2000.0 m
TREE HEIGHT	:	0.0 m	FRESNEL DEP.	:	3.4 m
CLEARANCE	:	20.8 m	CLEARANCE FAC.	:	6.0
FREE SPACE LOSS	:	121.8 dB	RIDGE LOSS	:	-0.1 dB
TOTAL LOSS	:	121.8 dB			

DRAWING NAME:

PATH PROFILE

PATH NAME:

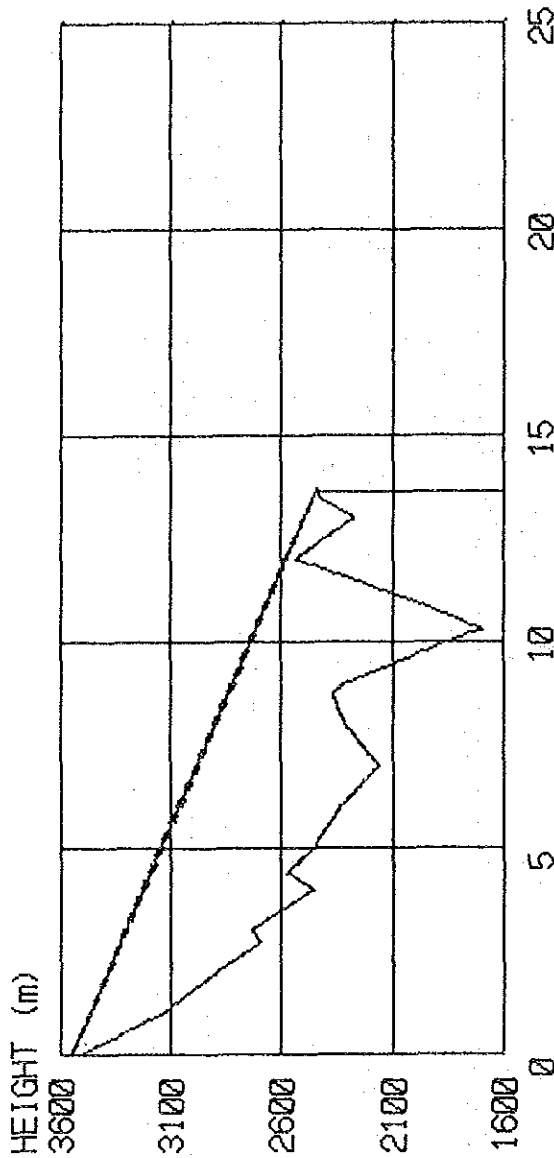
RANGSHIKHAR ~
TASHIGANG

FIG. NO. :

P-15

P R O F I L E

(K : 1.33 F R E Q U E N C Y : 8000 M H Z)



DISTANCE : 13.64 km
 SITE NAME : TASHILING
 GROUND LEVEL : 2435.0 m
 ANT.HEIGHT 2 : 3.0 m

SITE NAME : YUTOLA
 GROUND LEVEL : 3520.0 m
 ANT.HEIGHT 1 : 30.0 m

ANT.HEIGHT 1 : 30.0 m	ANT.HEIGHT 2 : 3.0 m
CLITICAL POINT : 13.5 Km	RIDGE HEIGHT : 2440.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 2.3 m
CLEARANCE : 9.3 m	CLEARANCE FAC. : 4.1
FREE SPACE LOSS : 133.2 dB	RIDGE LOSS : -0.3 dB
TOTAL LOSS : 132.9 dB	

DRAWING NAME:

PATH PROFILE

PATH NAME:

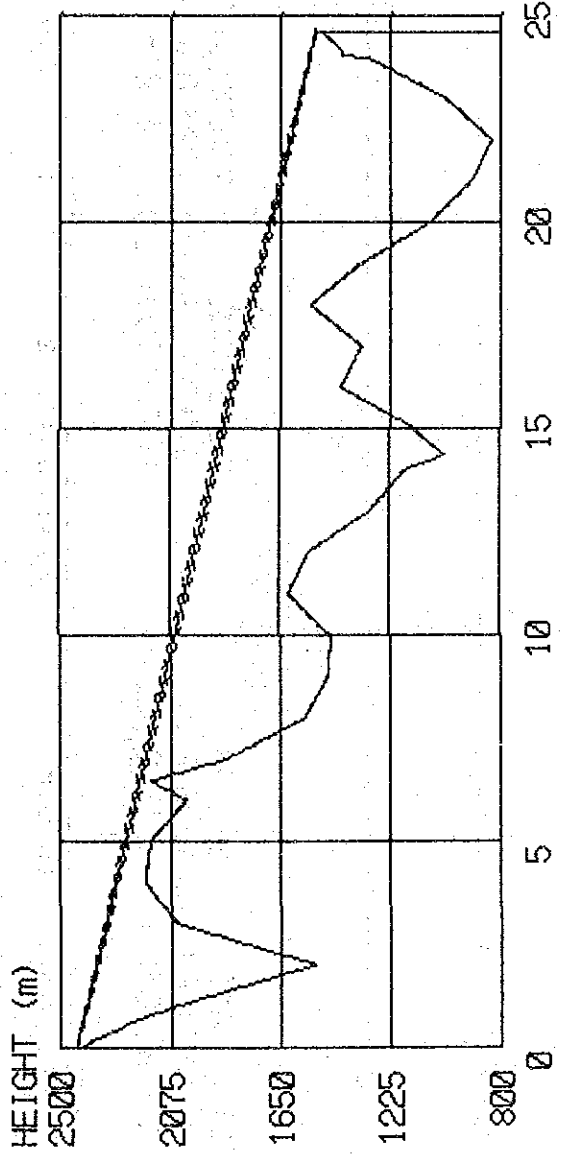
Y U T O L A ~
T A S H I L I N G

FIG. NO.:

P-16

PROFILE

(K : 1.33 FREQUENCY : 8000 MHZ)



DISTANCE : 24.62 km
 SITE NAME : TASHILING SITE NAME : BALING
 GROUND LEVEL : 2435.0 m GROUND LEVEL : 1500.0 m
 ANT.HEIGHT 1 : 3.0 m ANT.HEIGHT 2 : 15.0 m

ANT.HEIGHT 1	: 3.0 m	ANT.HEIGHT 2	: 15.0 m
CLITICAL POINT	: 6.5 Km	RIDGE HEIGHT	: 2160.0 m
TREE HEIGHT	: 0.0 m	FRESNEL DEP.	: 13.4 m
CLEARANCE	: 29.3 m	CLEARANCE FAC.	: 2.2
FREE SPACE LOSS	: 138.3 dB	RIDGE LOSS	: -0.6 dB
TOTAL LOSS	: 137.7 dB		

DRAWING NAME:

PATH PROFILE

PATH NAME:

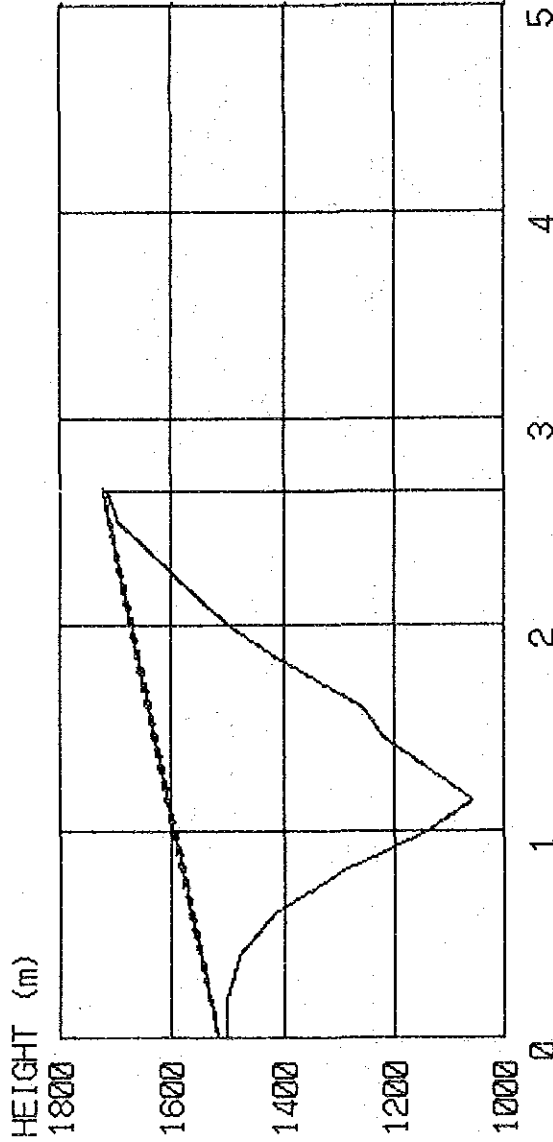
TASHILING ~
BALING

FIG. NO. :

P-17

P R O F I L E

(K : 1.33 F R E Q U E N C Y : 8000 M H Z)



D I S T A N C E : 2.65 km
 S I T E N A M E : P A N J A R M A N I
 G R O U N D L E V E L : 1720.0 m
 A N T . H E I G H T 2 : 5.0 m

S I T E N A M E : B A L I N G
 G R O U N D L E V E L : 1500.0 m
 A N T . H E I G H T 1 : 15.0 m

A N T . H E I G H T 1 : 15.0 m	A N T . H E I G H T 2 : 5.0 m
C L I T I C A L P O I N T : 2.5 Km	R I D G E H E I G H T : 1700.0 m
T R E E H E I G H T : 0.0 m	F R E S N E L D E P . : 2.3 m
C L E A R A N C E : 13.1 m	C L E A R A N C E F A C . : 5.7
F R E E S P A C E L O S S : 119.0 dB	R I D G E L O S S : -0.0 dB
T O T A L L O S S : 118.9 dB	

DRAWING NAME:

P A T H P R O F I L E

PATH NAME:

B A L I N G ~

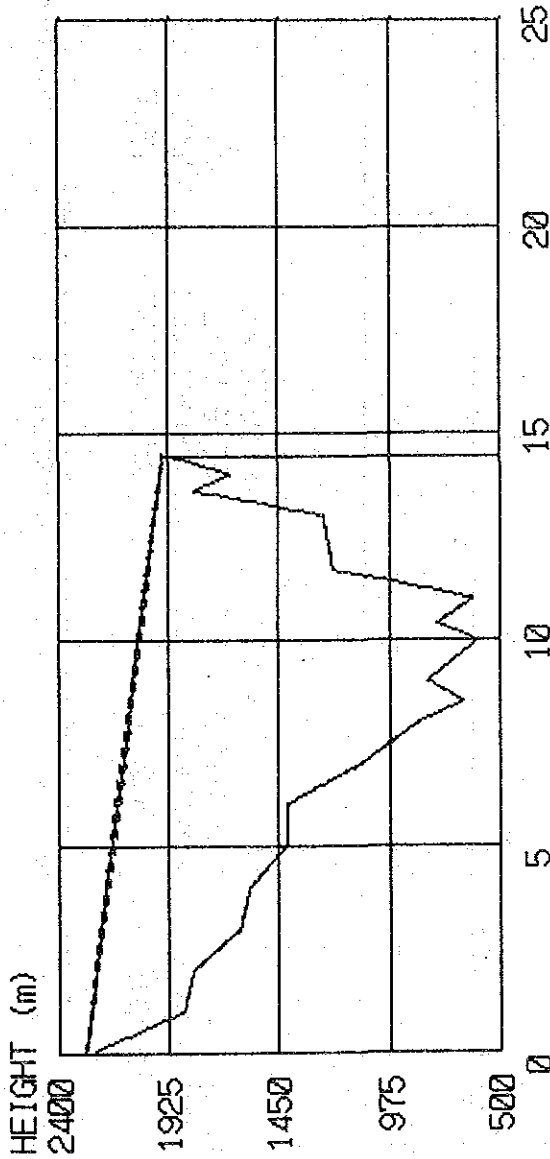
P A N J A R M A N I

FIG. NO.:

P-18

PROFILE

(K : 1.33 FREQUENCY : 8300 MHz)



DISTANCE : 14.45 km

SITE NAME : TAMULA	SITE NAME : SHEMGANG
GROUND LEVEL : 2280.0 m	GROUND LEVEL : 1930.0 m
ANT.HEIGHT 1 : 10.0 m	ANT.HEIGHT 2 : 15.0 m

ANT.HEIGHT 1 : 10.0 m	ANT.HEIGHT 2 : 15.0 m
CLITICAL POINT : 13.6 Km	RIDGE HEIGHT : 1820.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 5.4 m
CLEARANCE : 144.6 m	CLEARANCE FAC. : 26.9
FREE SPACE LOSS : 134.0 dB	RIDGE LOSS : -0.0 dB
TOTAL LOSS : 134.0 dB	

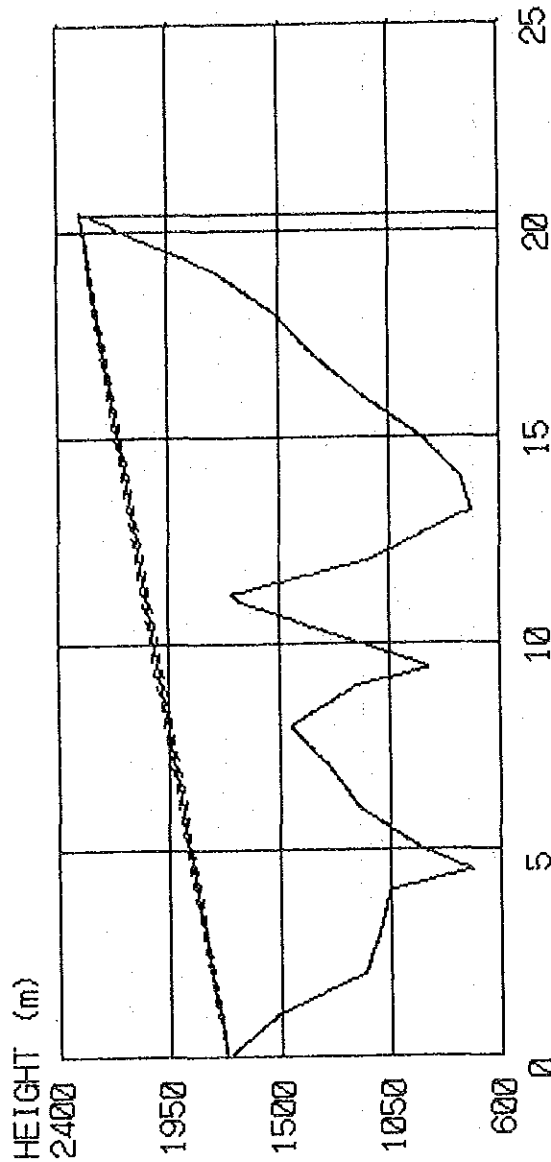
DRAWING NAME:
PATH PROFILE

PATH NAME:
TAMULA ~
SHEMGANG

FIG.NO.:
P-19

PROFILE

(K : 1.33 FREQUENCY : 8000 MHz)



DISTANCE : 20.4 km

SITE NAME : PANJARMANI	SITE NAME : TAMULA
GROUND LEVEL : 1720.0 m	GROUND LEVEL : 2280.0 m
ANT.HEIGHT 1 : 5.0 m	ANT.HEIGHT 2 : 20.0 m

ANT. HEIGHT 1 : 5.0 m	ANT. HEIGHT 2 : 20.0 m
CLITICAL POINT : 11.2 Km	RIDGE HEIGHT : 1700.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 13.8 m
CLEARANCE : 334.6 m	CLEARANCE FAC. : 24.3
FREE SPACE LOSS : 136.7 dB	RIDGE LOSS : -0.0 dB
TOTAL LOSS : 136.7 dB	

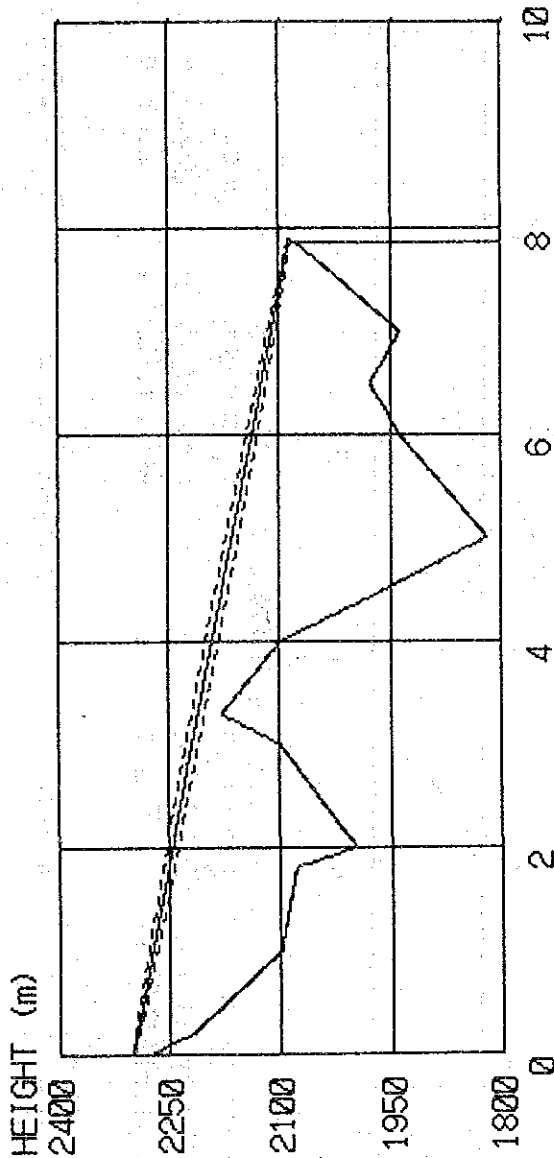
DRAWING NAME:
PATH PROFILE

PATH NAME:
PANJARMANI ~
TAMULA

FIG. NO. :
P-20

PROFILE

(K : 1.33 FREQUENCY : 8000 MHZ)



DISTANCE : 7.88 km

SITE NAME : TAMULA	SITE NAME : SAMKHARA
GROUND LEVEL : 2280.0 m	GROUND LEVEL : 2080.0 m
ANT.HEIGHT 1 : 20.0 m	ANT.HEIGHT 2 : 5.0 m

ANT.HEIGHT 1 : 20.0 m	ANT.HEIGHT 2 : 5.0 m
CLITICAL POINT : 3.3 Km	RIDGE HEIGHT : 2180.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 8.5 m
CLEARANCE : 29.1 m	CLEARANCE FAC. : 3.4
FREE SPACE LOSS : 128.5 dB	RIDGE LOSS : 0.4 dB
TOTAL LOSS : 128.9 dB	

DRAWING NAME:

PATH PROFILE

PATH NAME:

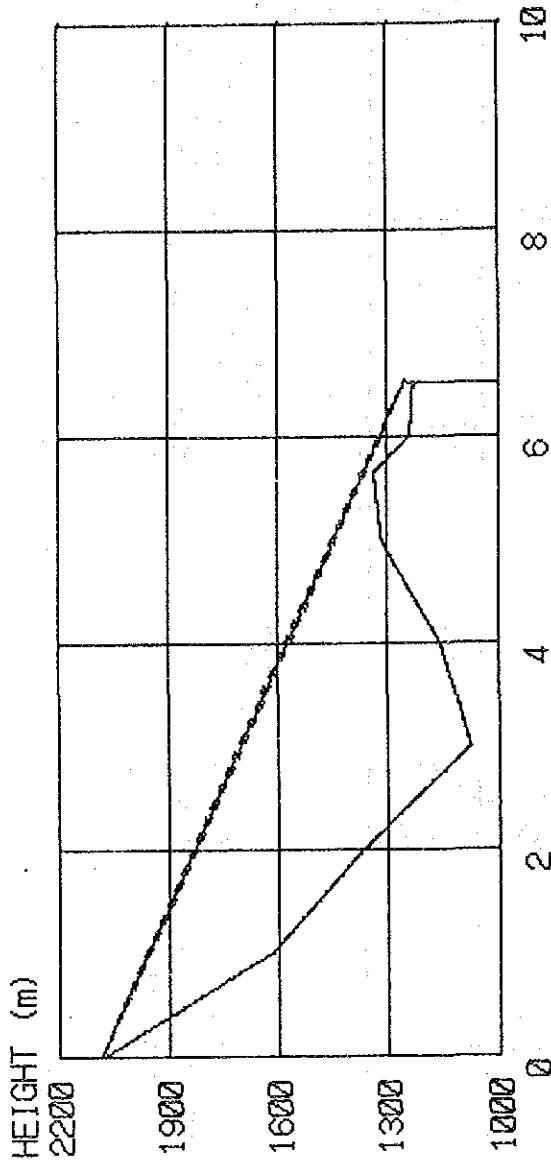
TAMULA ~ SAMKHARA

FIG. NO. :

P-21

PROFILE

(K : 1.33 FREQUENCY : 8000 MHz)



SITE NAME : SANKHARA DISTANCE : 6.54 km SITE NAME : SUREY
 GROUND LEVEL : 2080.0 m GROUND LEVEL : 1230.0 m
 ANT.HEIGHT 1 : 5.0 m ANT.HEIGHT 2 : 20.0 m

ANT.HEIGHT 1 : 5.0 m	ANT.HEIGHT 2 : 20.0 m
CLITICAL POINT : 5.7 Km	RIDGE HEIGHT : 1340.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 5.4 m
CLEARANCE : 23.3 m	CLEARANCE FAC. : 4.3
FREE SPACE LOSS : 126.8 dB	RIDGE LOSS : -0.3 dB
TOTAL LOSS : 126.5 dB	

DRAWING NAME:

PATH PROFILE

PATH NAME:

SANKHARA ~

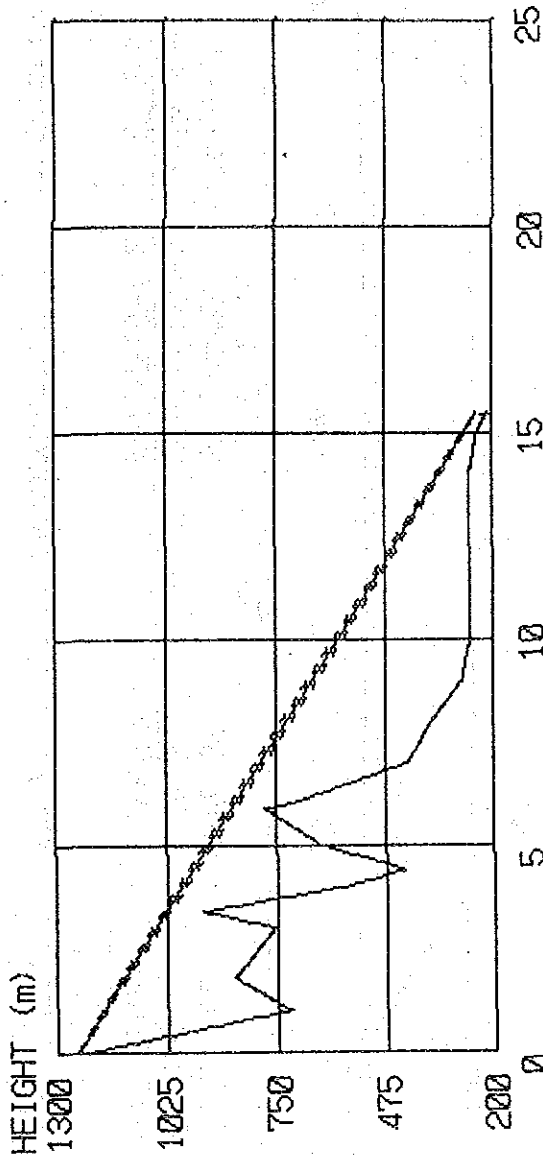
SUREY

FIG. NO.:

P-22

PROFILE

(K : 1.33 FREQUENCY : 8000 MHz)



DISTANCE : 15.51 km
 SITE NAME : SUREY SITE NAME : GEYLEGPHUG
 GROUND LEVEL : 1230.0 m GROUND LEVEL : 215.0 m
 ANT.HEIGHT 1 : 20.0 m ANT.HEIGHT 2 : 20.0 m

ANT.HEIGHT 1 : 20.0 m	ANT.HEIGHT 2 : 20.0 m
CLITICAL POINT : 15.0 Km	RIDGE HEIGHT : 240.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 4.3 m
CLEARANCE : 27.9 m	CLEARANCE FAC. : 6.5
FREE SPACE LOSS : 134.3 dB	RIDGE LOSS : 0.1 dB
TOTAL LOSS : 134.4 dB	

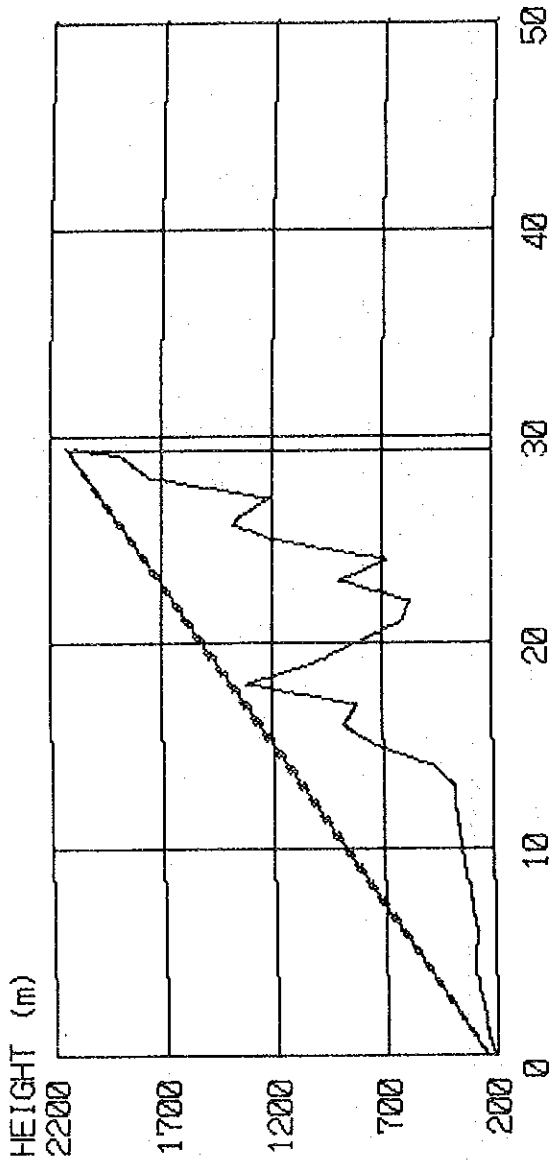
DRAWING NAME:
PATH PROFILE

PATH NAME:
SUREY ~
GEYLEGPHUG

FIG.NO. :
P-23

P R O F I L E

(K : 1.33 F R E Q U E N C Y : 8000 M H Z)



D I S T A N C E : 29.42 km

S I T E N A M E : G E Y L E G P H U G S I T E N A M E : D A R E C H U
 G R O U N D L E V E L : 215.0 m G R O U N D L E V E L : 2100.0 m
 A N T . H E I G H T 1 : 30.0 m A N T . H E I G H T 2 : 20.0 m

A N T . H E I G H T 1 : 30.0 m	A N T . H E I G H T 2 : 20.0 m
C L I T I C A L P O I N T : 18.0 Km	R I D G E H E I G H T : 1320.0 m
T R E E H E I G H T : 0.0 m	F R E S N E L D E P . : 16.2 m
C L E A R A N C E : 60.0 m	C L E A R A N C E F A C . : 3.7
F R E E S P A C E L O S S : 139.9 dB	R I D G E L O S S : 0.4 dB
T O T A L L O S S : 140.3 dB	

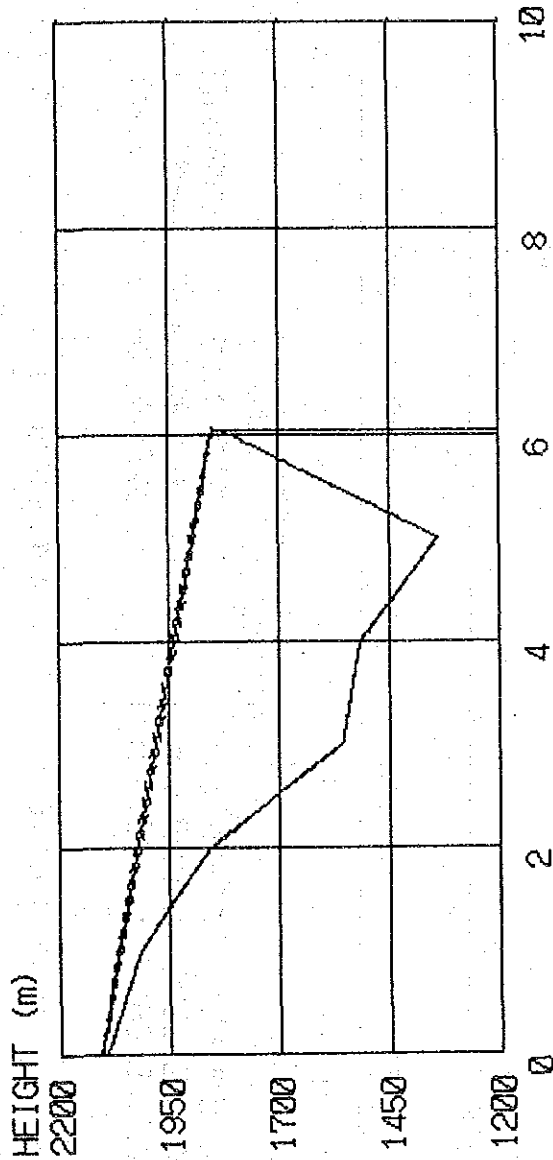
DRAWING NAME:
 P A T H P R O F I L E

PATH NAME:
 G E Y L E G P H U G ~
 D A R E C H U

FIG. NO. :
 P-24

P R O F I L E

(K : 1.33 F R E Q U E N C Y : 8000 M H Z)



D I S T A N C E : 6.06 km

S I T E N A M E : D A R E C H U	S I T E N A M E : D H U P I D A R A
G R O U N D L E V E L : 2100.0 m	G R O U N D L E V E L : 1840.0 m
A N T . H E I G H T 1 : 10.0 m	A N T . H E I G H T 2 : 10.0 m

A N T . H E I G H T 1 : 10.0 m	A N T . H E I G H T 2 : 10.0 m
C L I T I C A L P O I N T : 1.0 Km	R I D G E H E I G H T : 2020.0 m
T R E E H E I G H T : 0.0 m	F R E S N E L D E P . : 5.6 m
C L E A R A N C E : 46.8 m	C L E A R A N C E F A C . : 8.4
F R E E S P A C E L O S S : 126.2 dB	R I D G E L O S S : 0.1 dB
T O T A L L O S S : 126.3 dB	

DRAWING NAME:

P A T H P R O F I L E

PATH NAME:

D A R E C H U ~

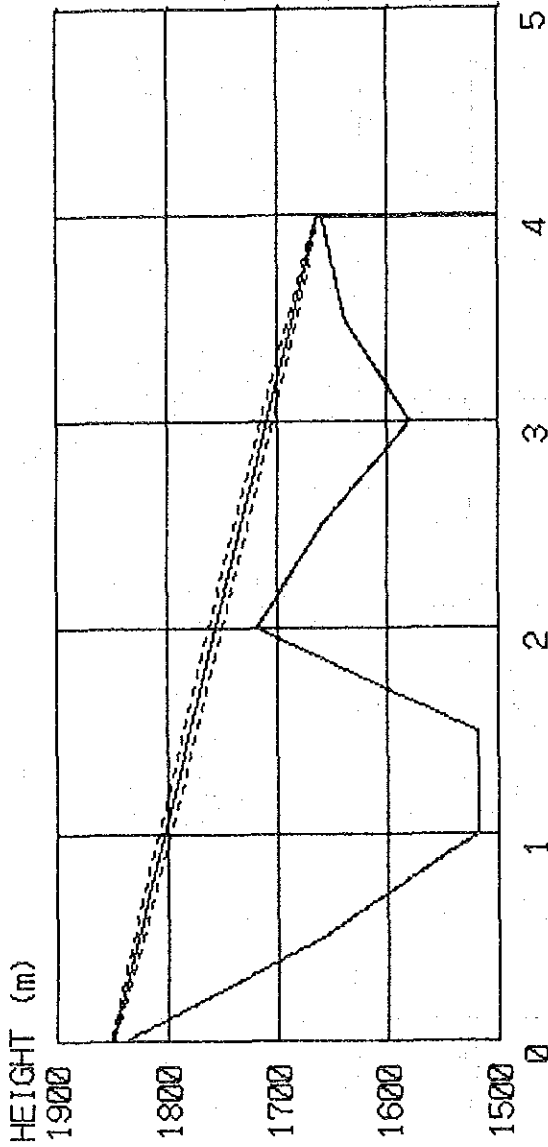
D H U P I D A R A

FIG. NO.:

P-25

PROFILE

(K : 1.33 FREQUENCY : 8000 MHz)



DISTANCE : 3.99 km

SITE NAME : DHUPIDARA	SITE NAME : CHANAUTI
GROUND LEVEL : 1840.0 m	GROUND LEVEL : 1680.0 m
ANT.HEIGHT 1 : 10.0 m	ANT.HEIGHT 2 : 3.0 m

ANT.HEIGHT 1 : 10.0 m	ANT.HEIGHT 2 : 3.0 m
CLITICAL POINT : 2.0 Km	RIDGE HEIGHT : 1720.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 6.1 m
CLEARANCE : 36.0 m	CLEARANCE FAC. : 5.9
FREE SPACE LOSS : 122.5 dB	RIDGE LOSS : -0.2 dB
TOTAL LOSS : 122.3 dB	

DRAWING NAME:

PATH PROFILE

PATH NAME:

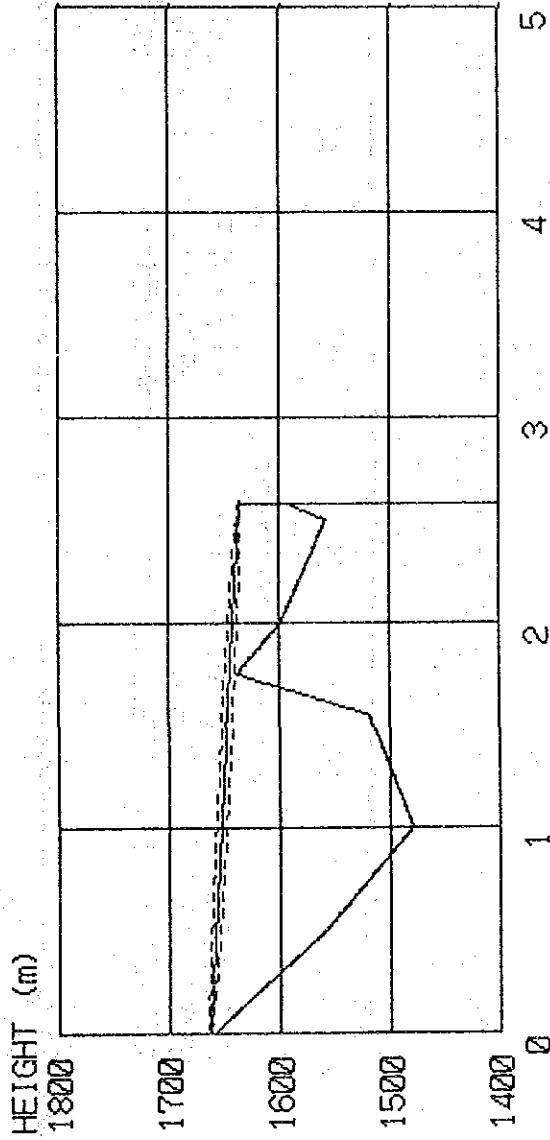
DHUPIDARA ~
CHANAUTI

FIG. NO.:

P-26

PROFILE

(K : 1.33 FREQUENCY : 8000 MHZ)



DISTANCE : 2.59 km

SITE NAME : CHANAUTI SITE NAME : DAMPHU
 GROUND LEVEL : 1600.0 m GROUND LEVEL : 1600.0 m
 ANT.HEIGHT 1 : 3.0 m ANT.HEIGHT 2 : 35.0 m

ANT.HEIGHT 1 : 3.0 m	ANT.HEIGHT 2 : 35.0 m
CLITICAL POINT : 1.8 Km	RIDGE HEIGHT : 1639.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 4.6 m
CLEARANCE : 5.0 m	CLEARANCE FAC. : 1.1
FREE SPACE LOSS : 118.8 dB	RIDGE LOSS : -0.5 dB
TOTAL LOSS : 118.3 dB	

DRAWING NAME:

PATH PROFILE

PATH NAME:

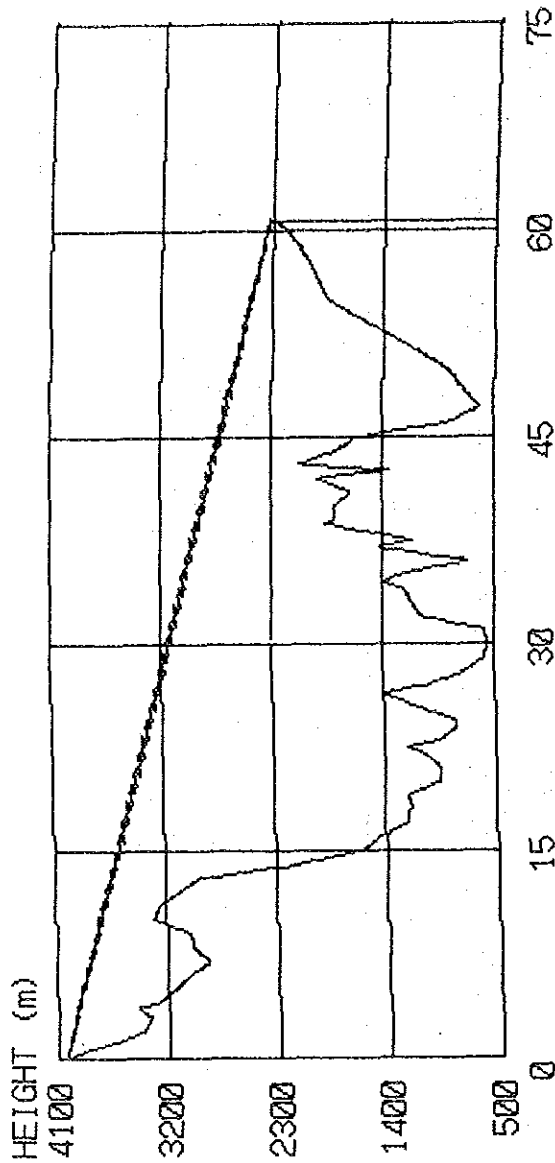
CHANAUTI ~ DAMPHU

FIG.NO.:

P-27

PROFILE

(K : 1.33 FREQUENCY : 8000 MHZ)



SITE NAME : THUMSINGLA GROUND LEVEL : 4015.0 m ANT.HEIGHT 1 : 20.0 m	DISTANCE : 60.71 km SITE NAME : KHERI GROUND LEVEL : 2300.0 m ANT.HEIGHT 2 : 20.0 m
ANT.HEIGHT 1 : 20.0 m CLITICAL POINT : 0.1 Km TREE HEIGHT : 0.0 m CLEARANCE : 11.8 m FREE SPACE LOSS : 146.2 dB TOTAL LOSS : 146.2 dB	ANT.HEIGHT 2 : 20.0 m RIDGE HEIGHT : 4020.0 m FRESNEL DEP. : 1.9 m CLEARANCE FAC. : 6.1 RIDGE LOSS : 0.0 dB

DRAWING NAME:

PATH PROFILE

PATH NAME:

THUMSINGLA ~

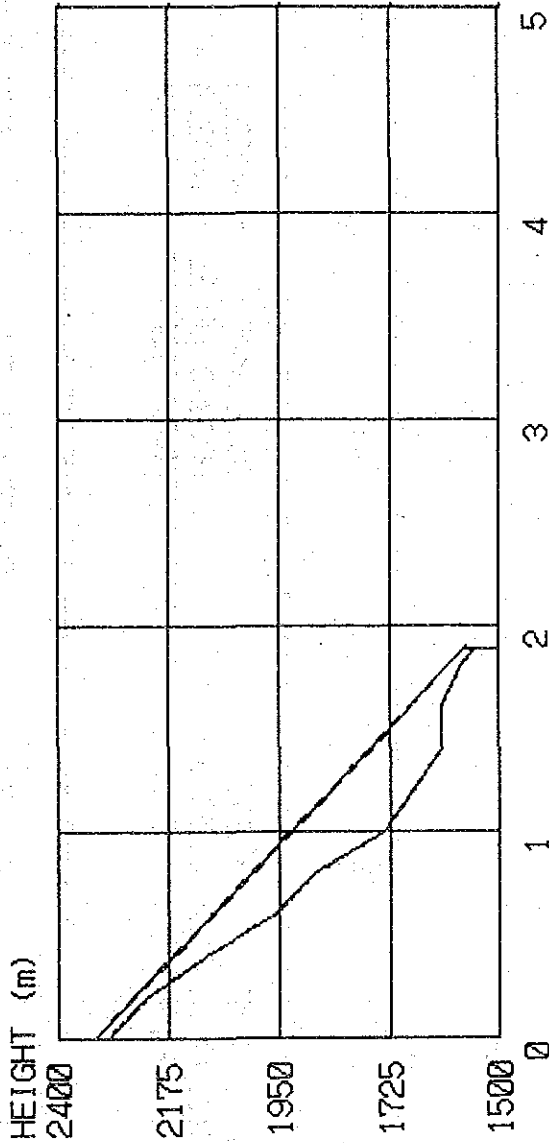
KHERI

FIG.NO.:

P-28

P R O F I L E

(K : 1.33 F R E Q U E N C Y : 8000 M H Z)



D I S T A N C E : 1.89 km

S I T E N A M E : K H E R I
 G R O U N D L E V E L : 2300.0 m
 A N T . H E I G H T 1 : 25.0 m

S I T E N A M E : P E M A G A T S E L
 G R O U N D L E V E L : 1550.0 m
 A N T . H E I G H T 2 : 20.0 m

A N T . H E I G H T 1 : 25.0 m	A N T . H E I G H T 2 : 20.0 m
C L I T I C A L P O I N T : 0.2 Km	R I D G E H E I G H T : 2220.0 m
T R E E H E I G H T : 0.0 m	F R E S N E L D E P . : 2.6 m
C L E A R A N C E : 25.1 m	C L E A R A N C E F A C . : 9.7
F R E E S P A C E L O S S : 116.0 dB	R I D G E L O S S : 0.1 dB
T O T A L L O S S : 116.2 dB	

DRAWING NAME:

PATH PROFILE

PATH NAME:

K H E R I ~

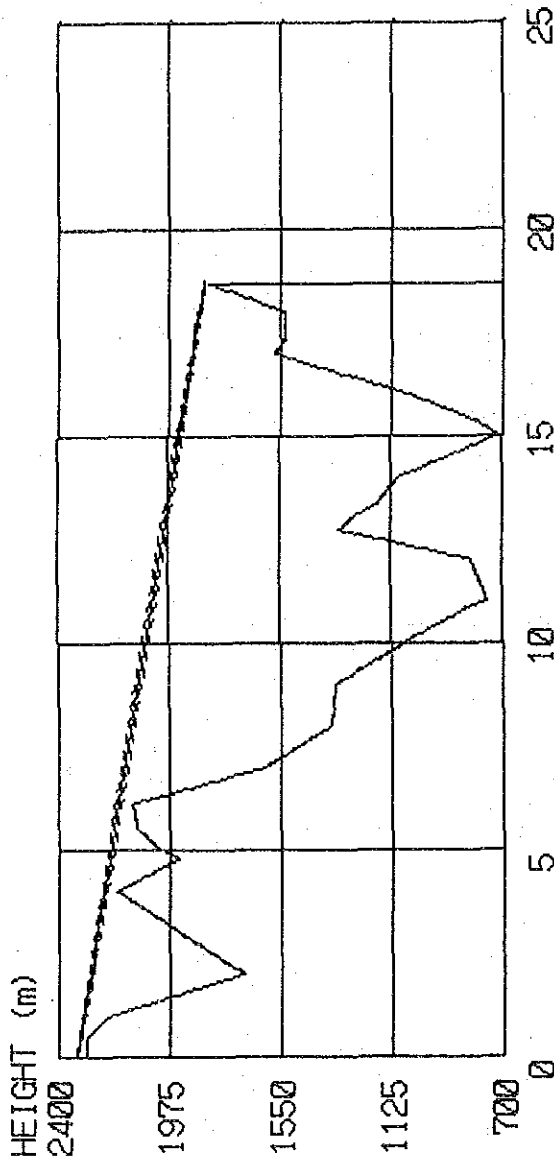
P E M A G A T S E L

FIG. NO.:

P-29

PROFILE

(K : 1.33 FREQUENCY : 8000 MHz)



DISTANCE : 18.72 km
 SITE NAME : NGEDUM
 GROUND LEVEL : 1832.0 m
 ANT. HEIGHT 2 : 3.0 m

SITE NAME : KHERI
 GROUND LEVEL : 2300.0 m
 ANT. HEIGHT 1 : 30.0 m

ANT. HEIGHT 1	: 30.0 m	ANT. HEIGHT 2	: 3.0 m
CLITICAL POINT	: 6.1 Km	RIDGE HEIGHT	: 2120.0 m
TREE HEIGHT	: 0.0 m	FRESNEL DEP.	: 12.4 m
CLEARANCE	: 44.2 m	CLEARANCE FAC.	: 3.6
FREE SPACE LOSS	: 136.0 dB	RIDGE LOSS	: -0.4 dB
TOTAL LOSS	: 135.6 dB		

DRAWING NAME:

PATH PROFILE

PATH NAME:

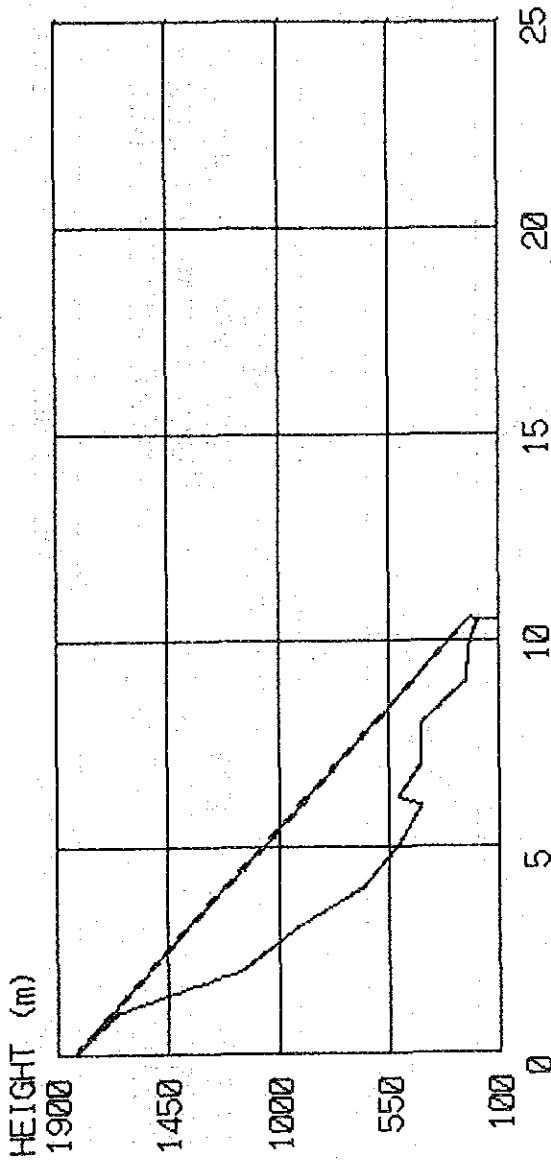
KHERI ~ NGEDUM

FIG. NO.:

P-30

P R O F I L E

(K : 1.33 F R E Q U E N C Y : 8000 M H Z)



DISTANCE : 10.53 km
 SITE NAME : SAMDRUP JONKHAR
 GROUND LEVEL : 190.0 m
 ANT.HEIGHT 1 : 3.0 m
 ANT.HEIGHT 2 : 20.0 m

ANT.HEIGHT 1	:	3.0 m	ANT.HEIGHT 2	:	20.0 m
CLITICAL POINT	:	1.0 Km	RIDGE HEIGHT	:	1660.0 m
TREE HEIGHT	:	0.0 m	FRESNEL DEP.	:	5.8 m
CLEARANCE	:	20.1 m	CLEARANCE FAC.	:	3.5
FREE SPACE LOSS	:	131.0 dB	RIDGE LOSS	:	0.3 dB
TOTAL LOSS	:	131.3 dB			

DRAWING NAME:

PATH PROFILE

PATH NAME:

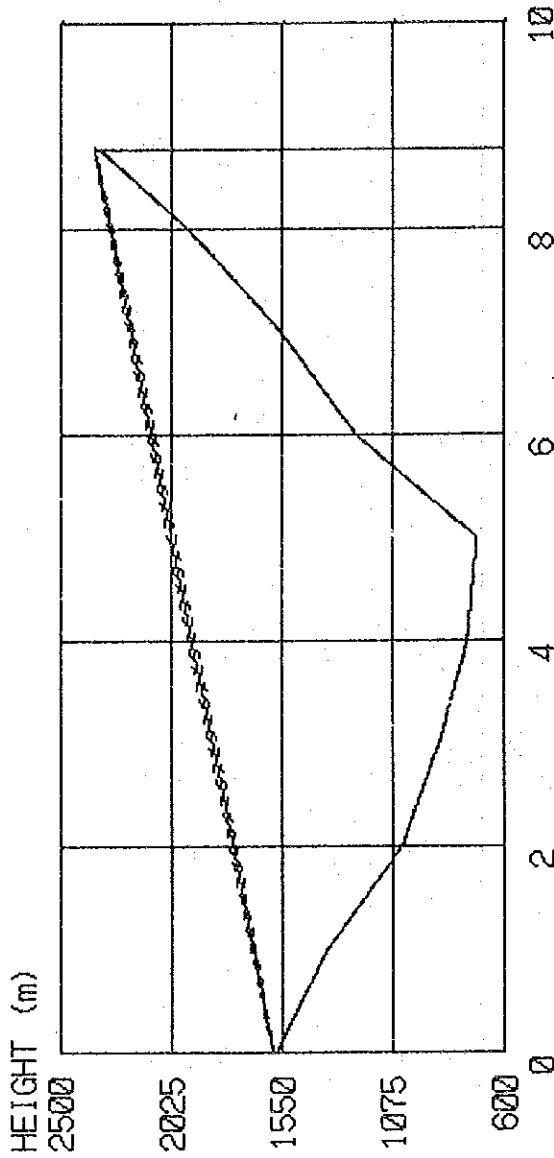
N G E D U M ~
 S A M D R U P J O N K H A L

FIG. NO.:

P-31

P R O F I L E

(K : 1.33 F R E Q U E N C Y : 2400 M H Z)



DISTANCE : 8.79 km
 SITE NAME : MONGAR SITE NAME : THINMUNG
 GROUND LEVEL : 1580.0 m GROUND LEVEL : 2343.0 m
 ANT.HEIGHT 1 : 10.0 m ANT.HEIGHT 2 : 10.0 m

ANT.HEIGHT 1	:	10.0 m	ANT.HEIGHT 2	:	10.0 m
CLITICAL POINT	:	1.0 Km	RIDGE HEIGHT	:	1360.0 m
TREE HEIGHT	:	0.0 m	FRESNEL DEP.	:	10.5 m
CLEARANCE	:	316.3 m	CLEARANCE FAC.	:	30.1
FREE SPACE LOSS	:	118.9 dB	RIDGE LOSS	:	0.0 dB
TOTAL LOSS	:	119.0 dB		:	

DRAWING NAME:

PATH NAME:

FIG. NO.:

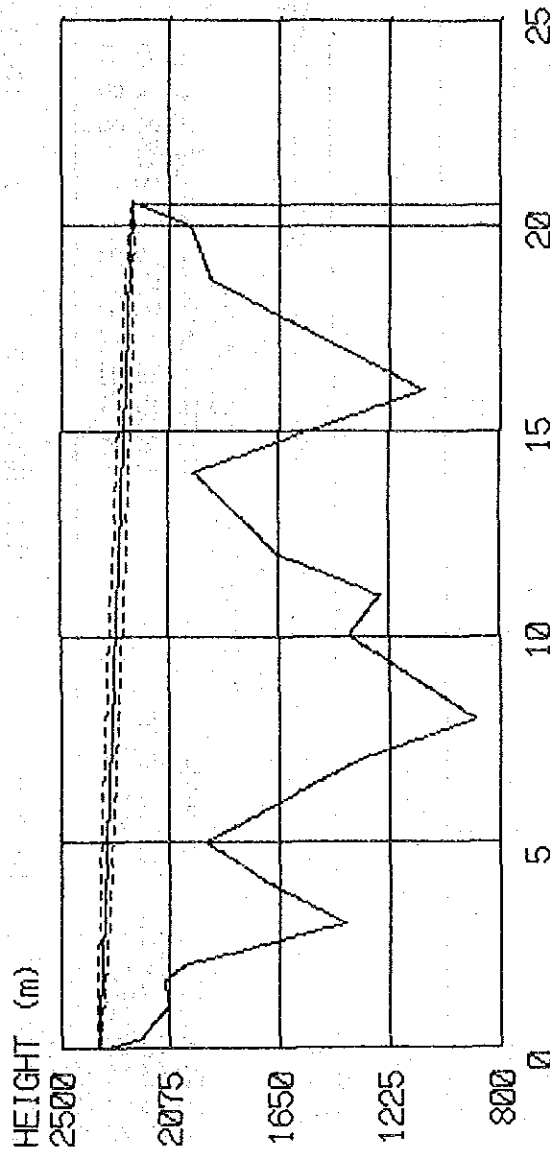
PATH PROFILE

MONGAR ~ THINMUNG

P-32

PROFILE

(K : 1.33 FREQUENCY : 2400 MHz)



DISTANCE : 20.52 km

SITE NAME : THINMUNG SITE NAME : WAMBUR
 GROUND LEVEL : 2343.0 m GROUND LEVEL : 2210.0 m
 ANT.HEIGHT 1 : 10.0 m ANT.HEIGHT 2 : 10.0 m

ANT.HEIGHT 1 : 10.0 m	ANT.HEIGHT 2 : 10.0 m
CLITICAL POINT : 14.0 Km	RIDGE HEIGHT : 1980.0 m
TREE HEIGHT : 0.0 m	FRESNEL DEP. : 23.6 m
CLEARANCE : 276.9 m	CLEARANCE FAC. : 11.7
FREE SPACE LOSS : 126.3 dB	RIDGE LOSS : 0.1 dB
TOTAL LOSS : 126.4 dB	

DRAWING NAME:

PATH PROFILE

PATH NAME:

THINMUNG ~ WAMBUR

FIG.NO.:

P-33