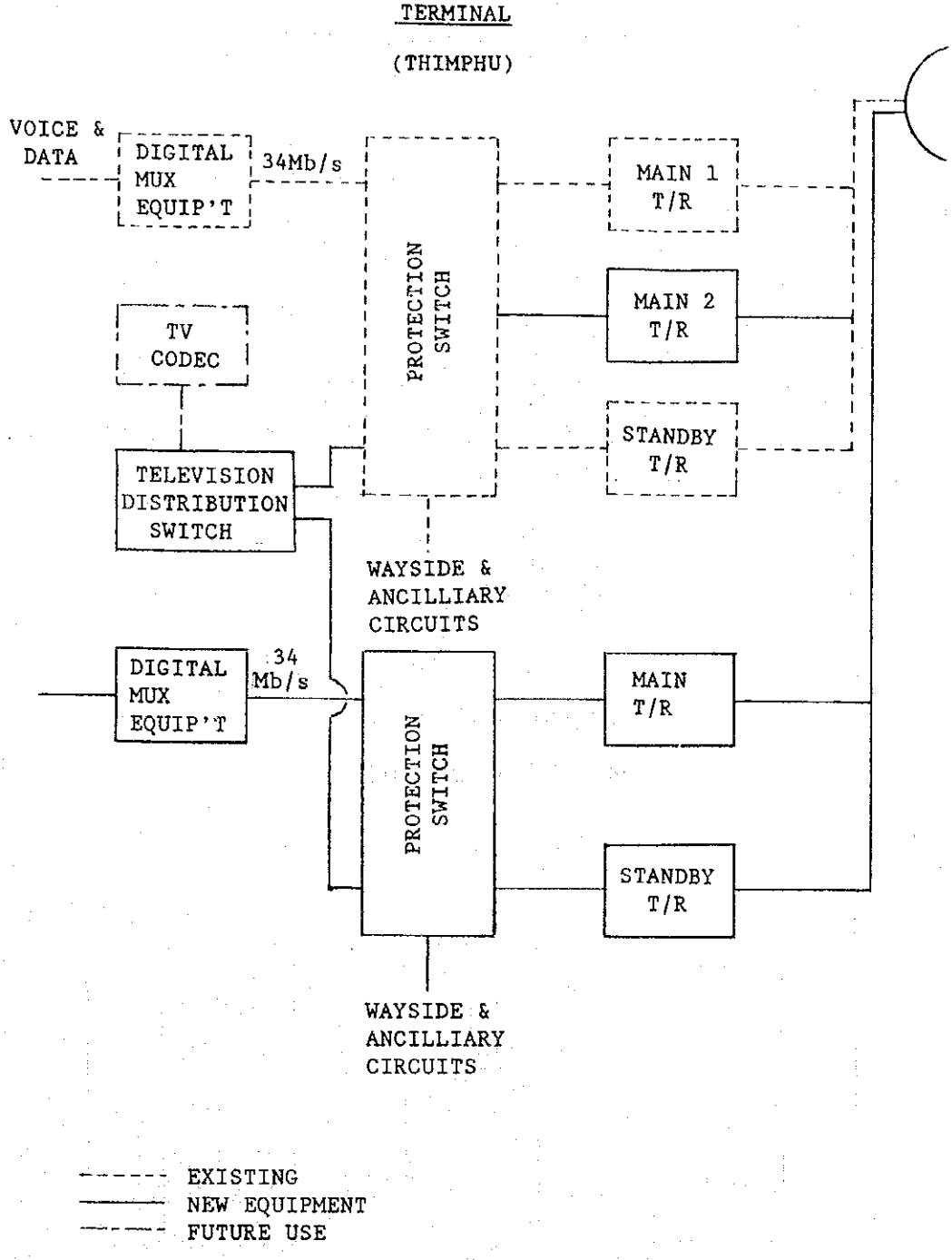
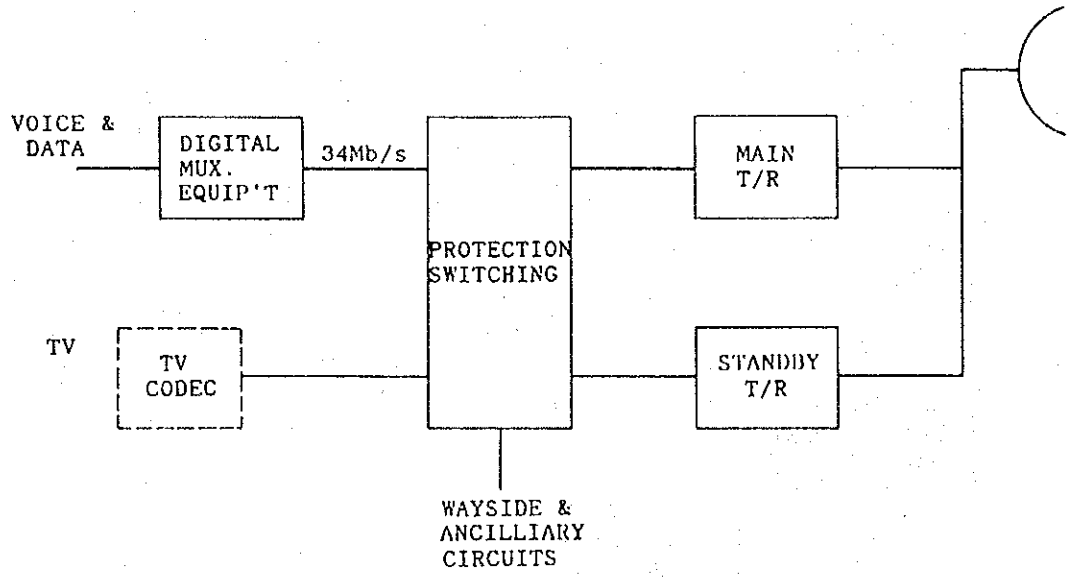


TRANSMISSION EQUIPMENT BLOCK SCHEMATIC		FIG. NO. : TR—1

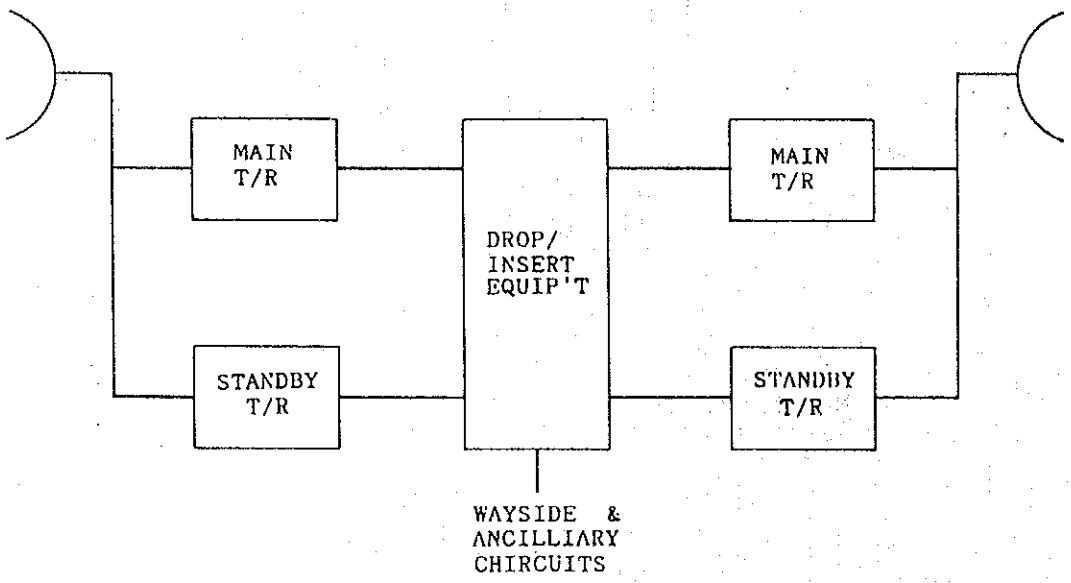
TERMINAL

(PHUENTSHOLING AND PARO)
(WANDUEPHODRANG, PUNAKA AND SAMTSE)



THROUGH REPEATER

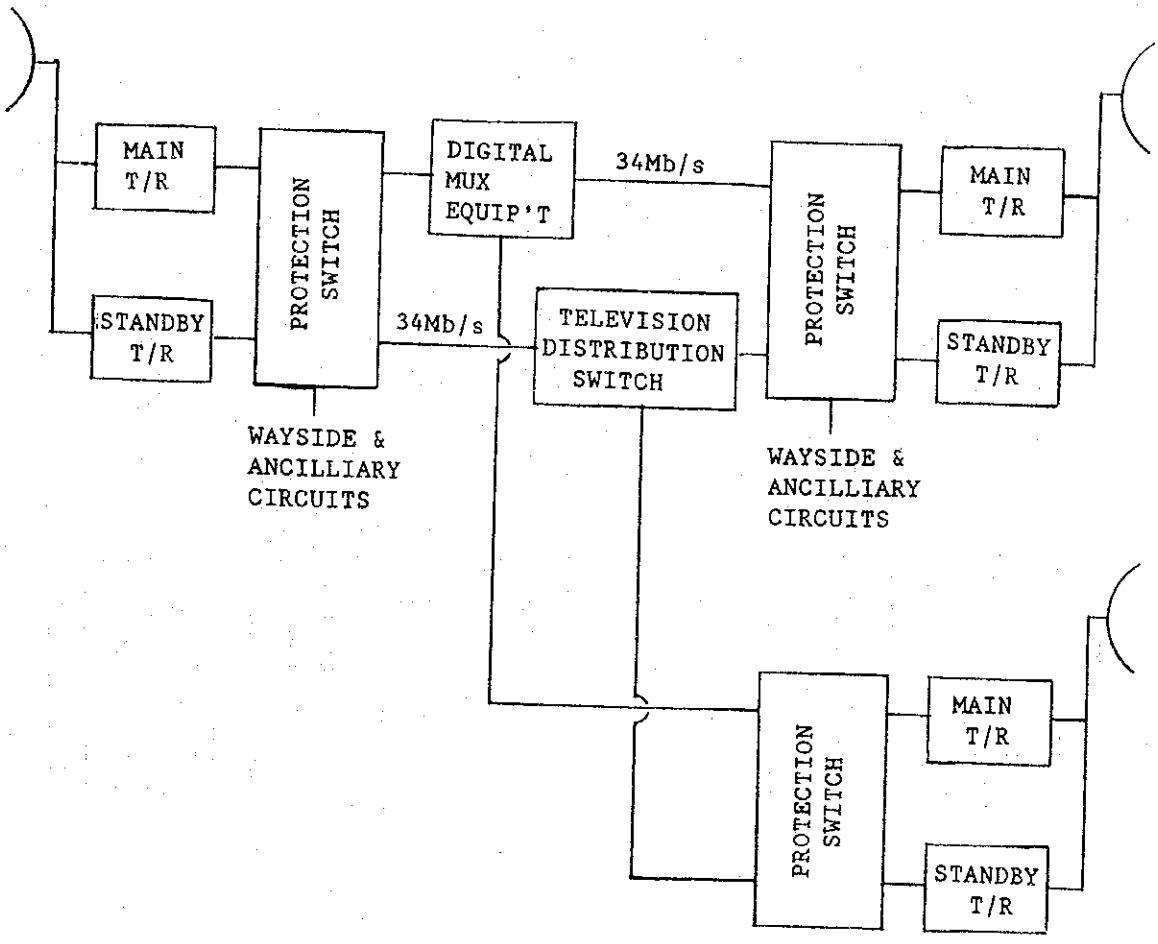
(PEPCHU AND SAURENI)



TRANSMISSION EQUIPMENT BLOCK SCHEMATIC		FIG. NO. : TR—2

BRANCHING REPEATER

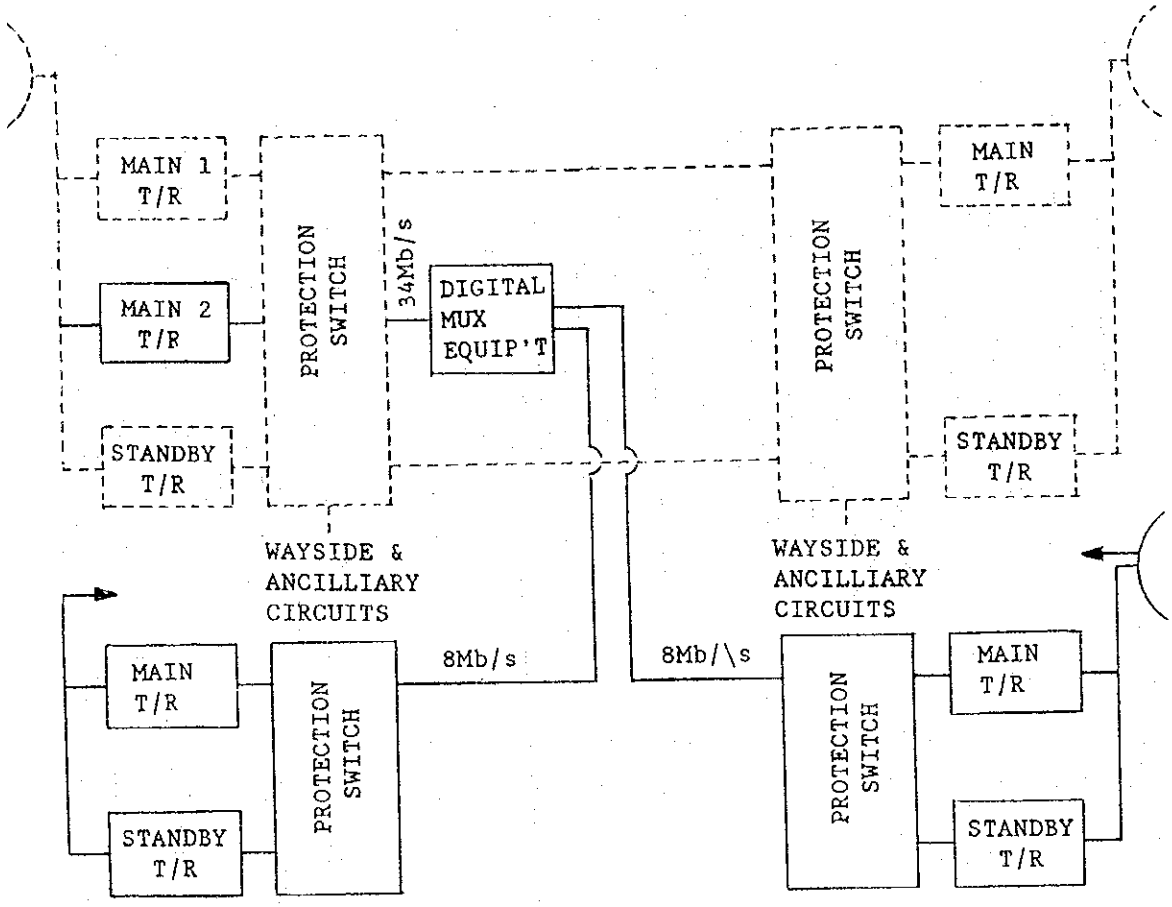
(JAPJEKHA AND TAKTI)



TRANSMISSION EQUIPMENT BLOCK SCHEMATIC		FIG. NO. : TR—3

BRANCHING REPEATER

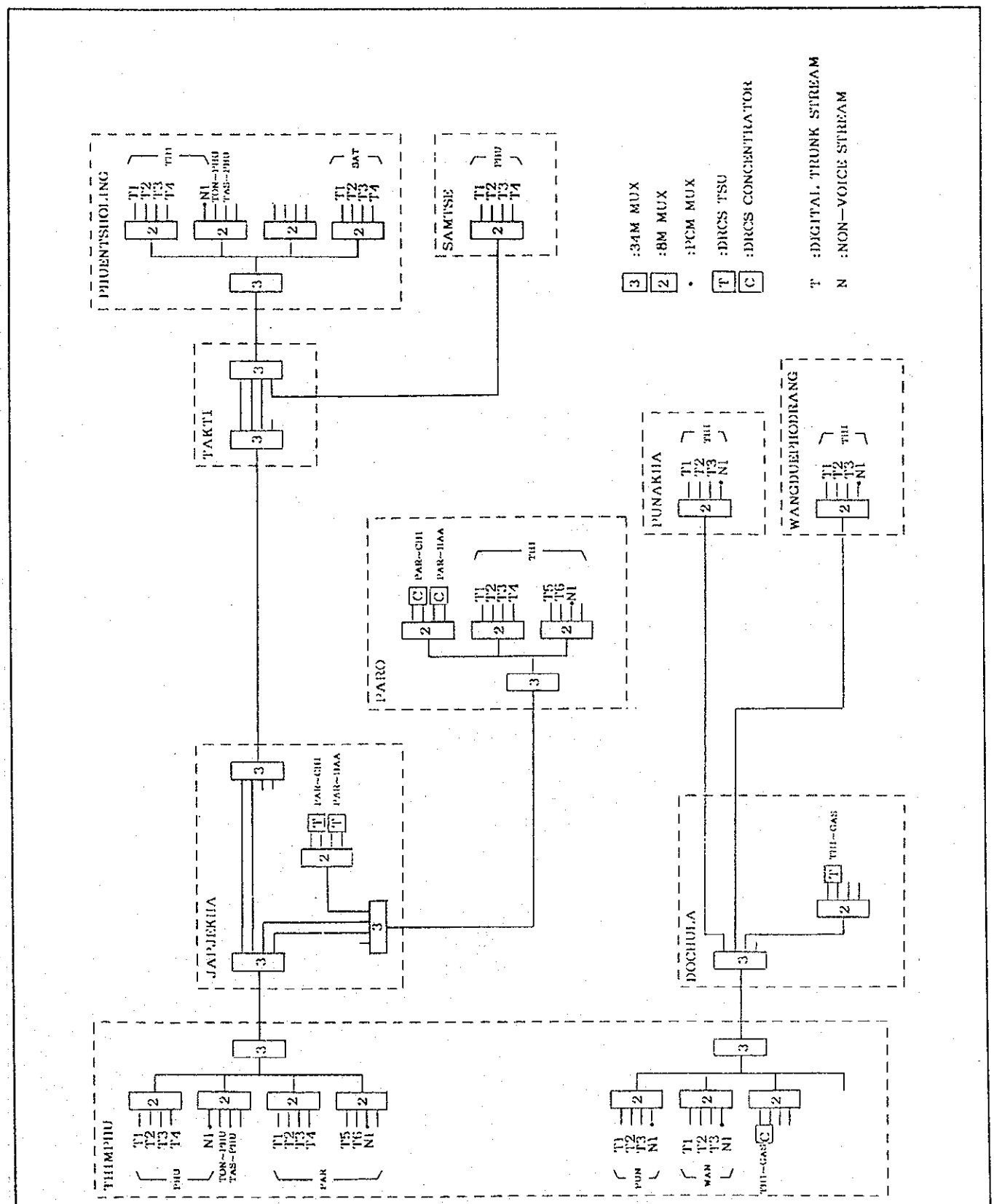
(DOCHULA)



---- EXISTING

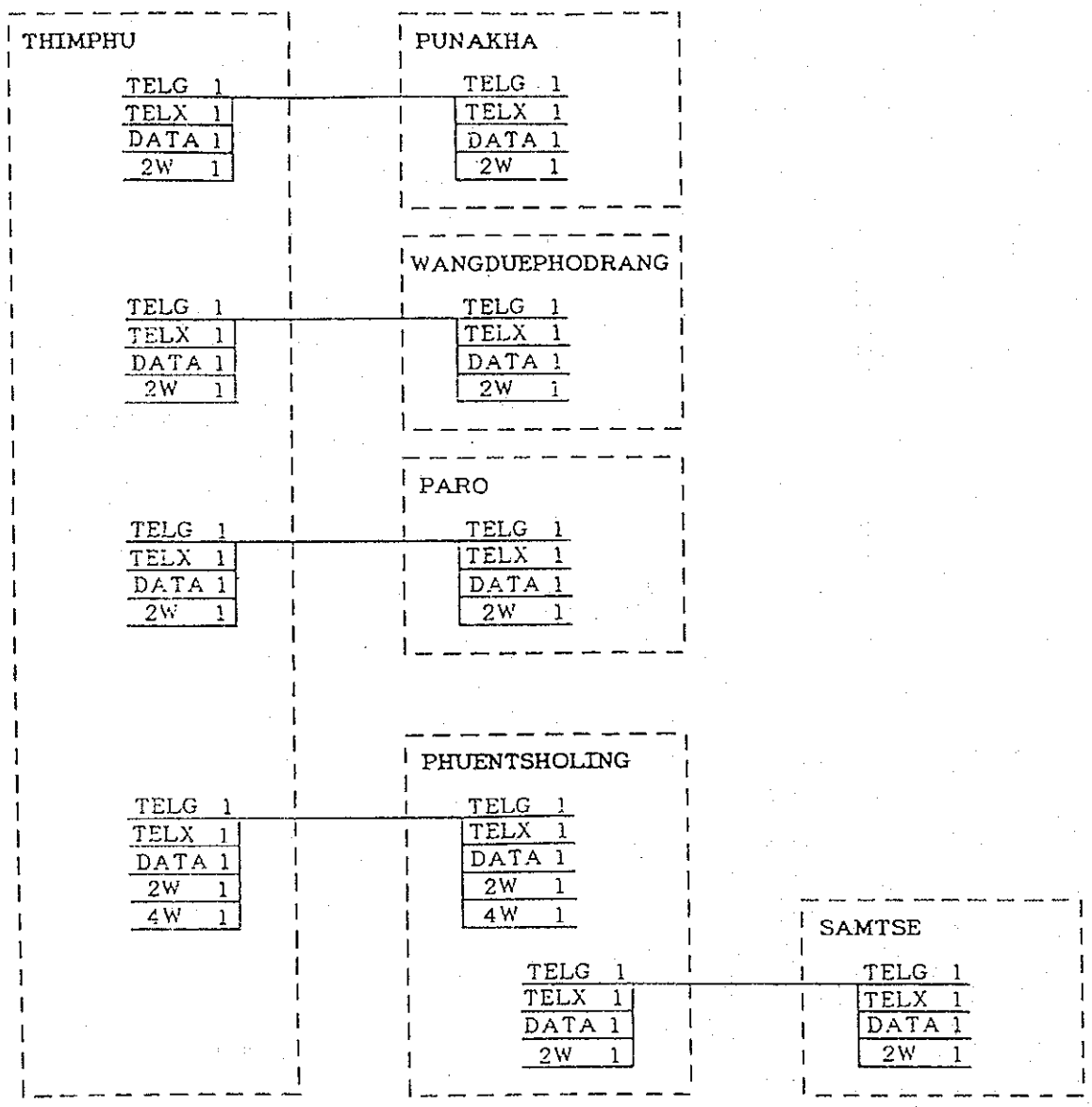
—— NEW EQUIPMENT

TRANSMISSION EQUIPMENT BLOCK SCHEMATIC		FIG. NO. : TR—4



MULTIPLEX ARRANGEMENT PLAN

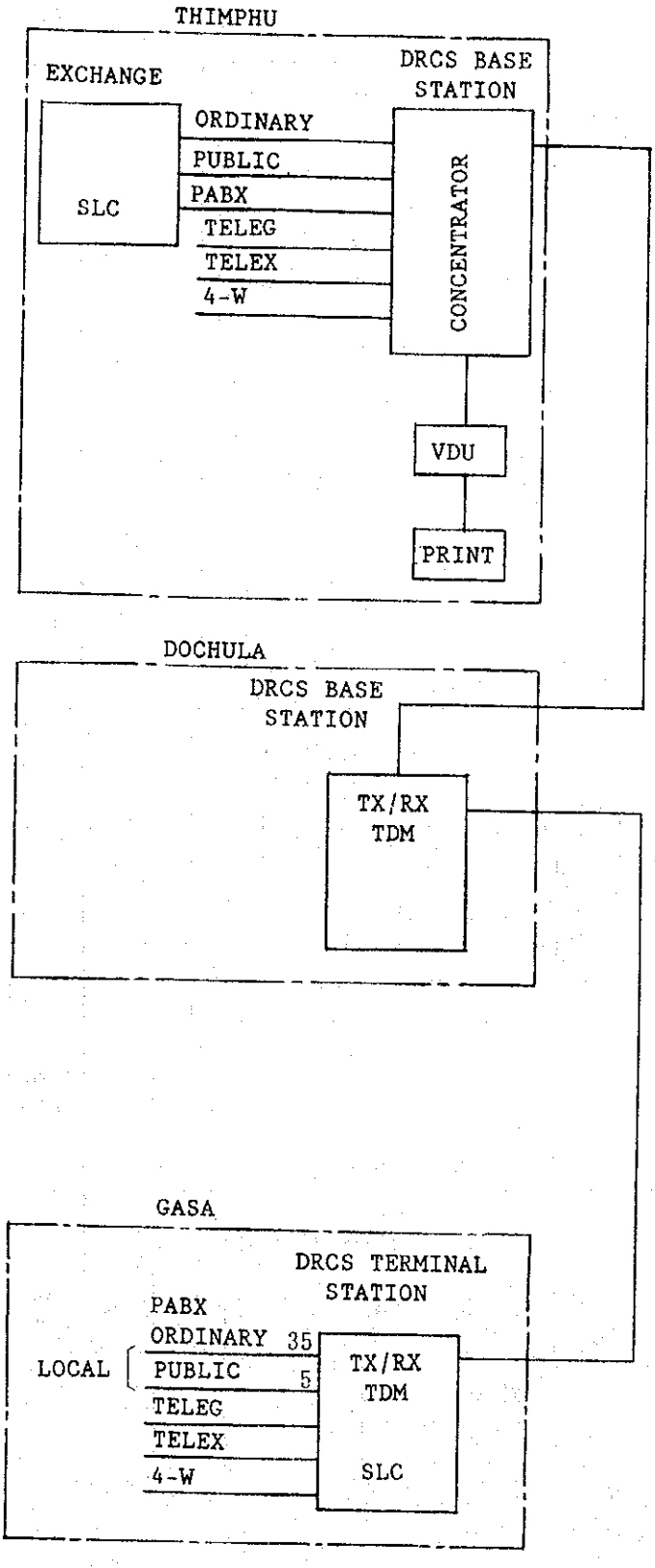
FIG. NO. : TR—5



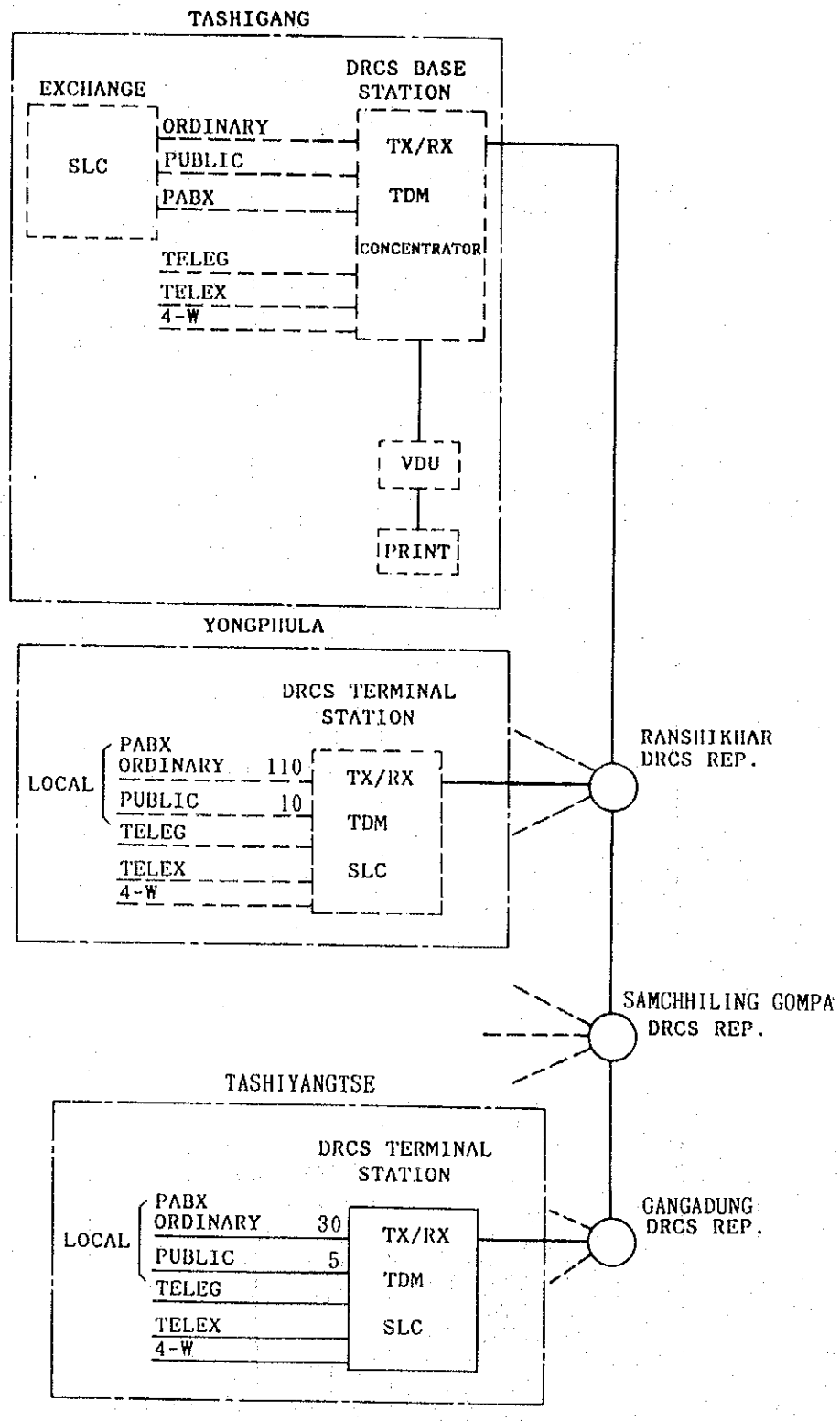
NON—VOICE CIRCUIT ARRANGEMENT PLAN		FIG. NO. : TR—6

SYSTEM CONFIGURATION OF SUPERVISORY AND CONTROL SYSTEM		FIG. NO. : TR—7

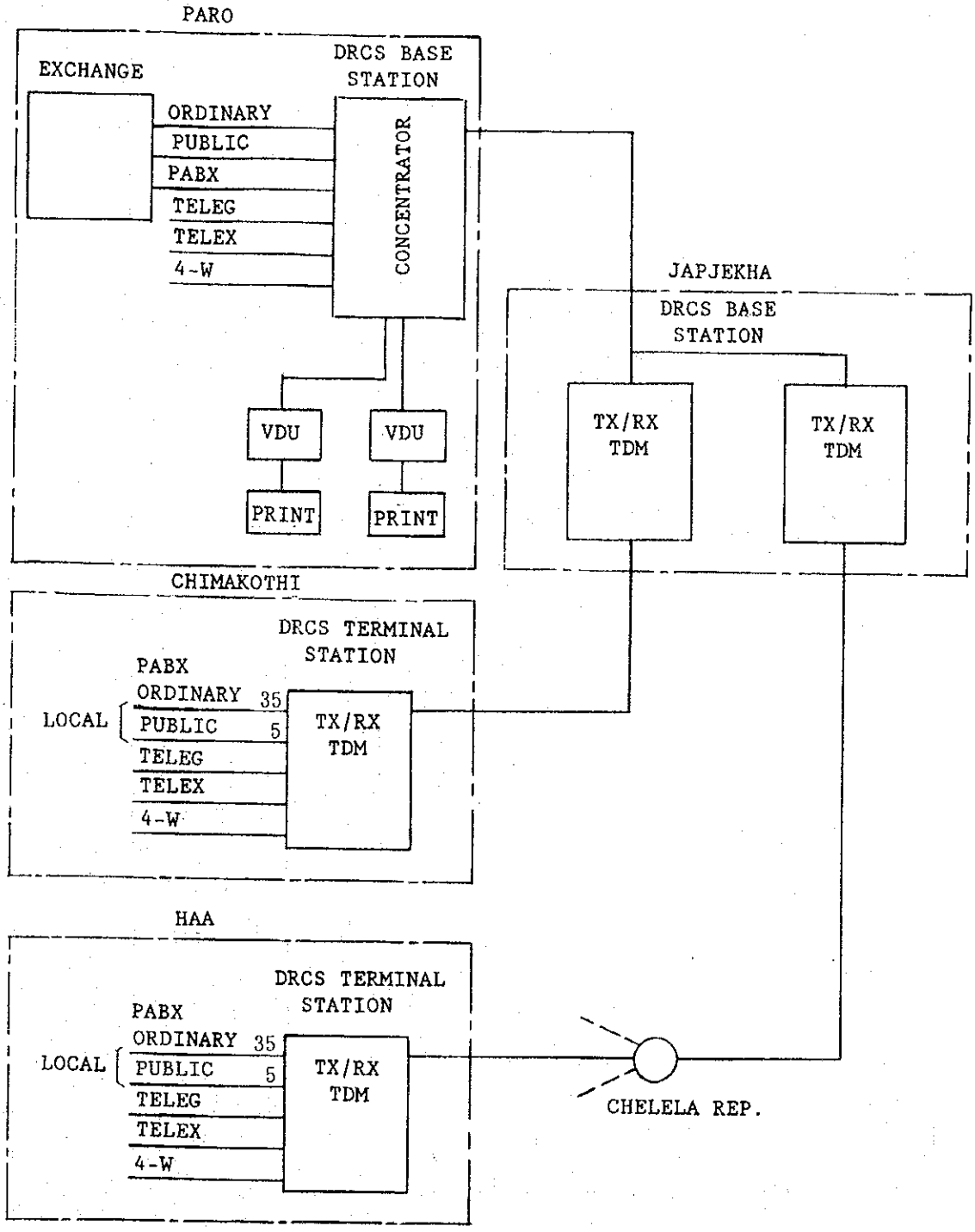
SYSTEM CONFIGURATION OF ORDERWIRE SYSTEM		FIG. NO. : TR—8



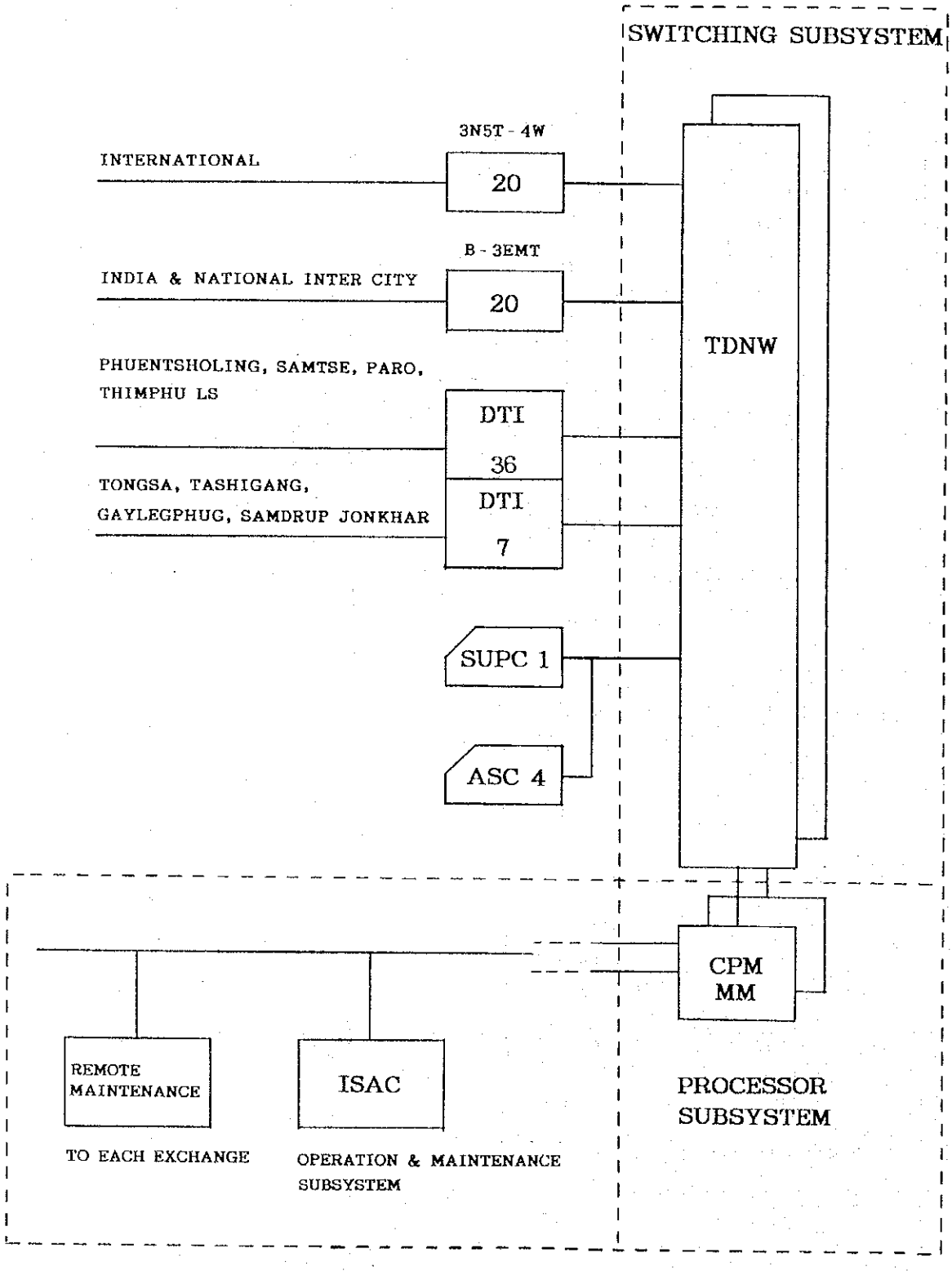
DRCS EQUIPMENT BLOCK SCHEMATIC	SITE NAME: GASA	FIG. NO. : DR—1



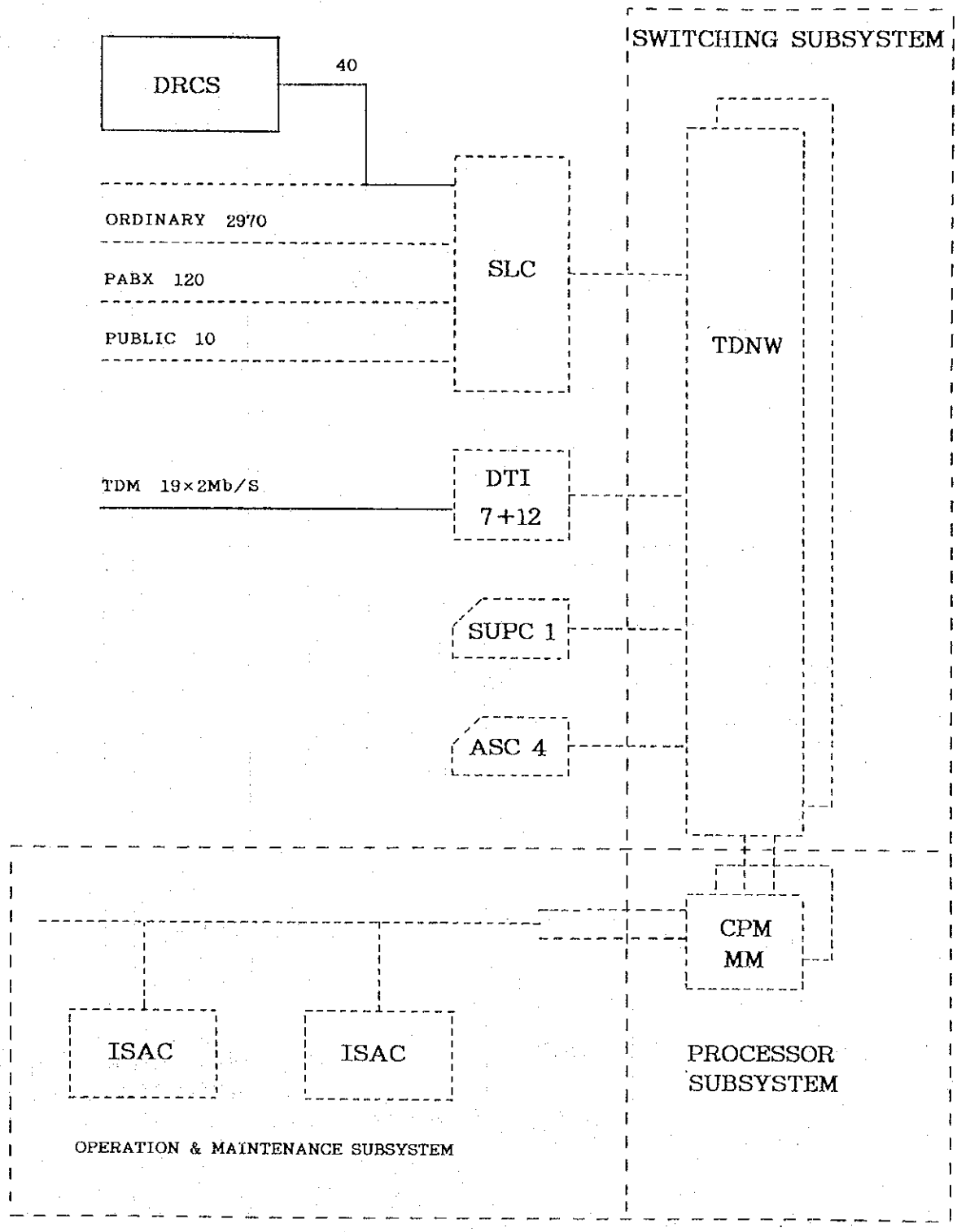
DRCS EQUIPMENT BLOCK SCHEMATIC	SITE NAME : TASHIYANGTSE	FIG. NO. : DR—2



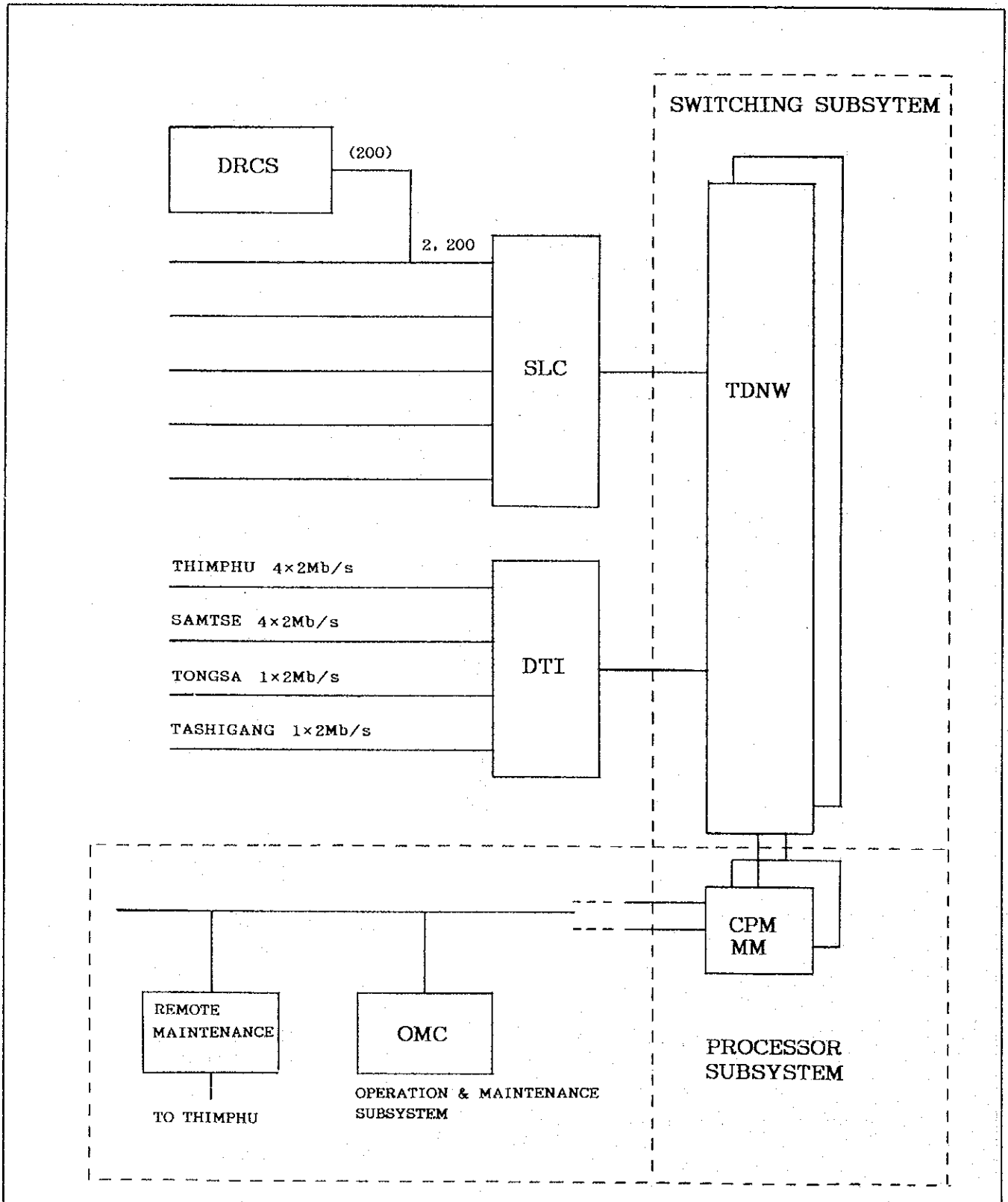
DRCS EQUIPMENT BLOCK SCHEMATIC	SITE NAME: CHIMAKOTHI, HAA	FIG. NO. : DR—3



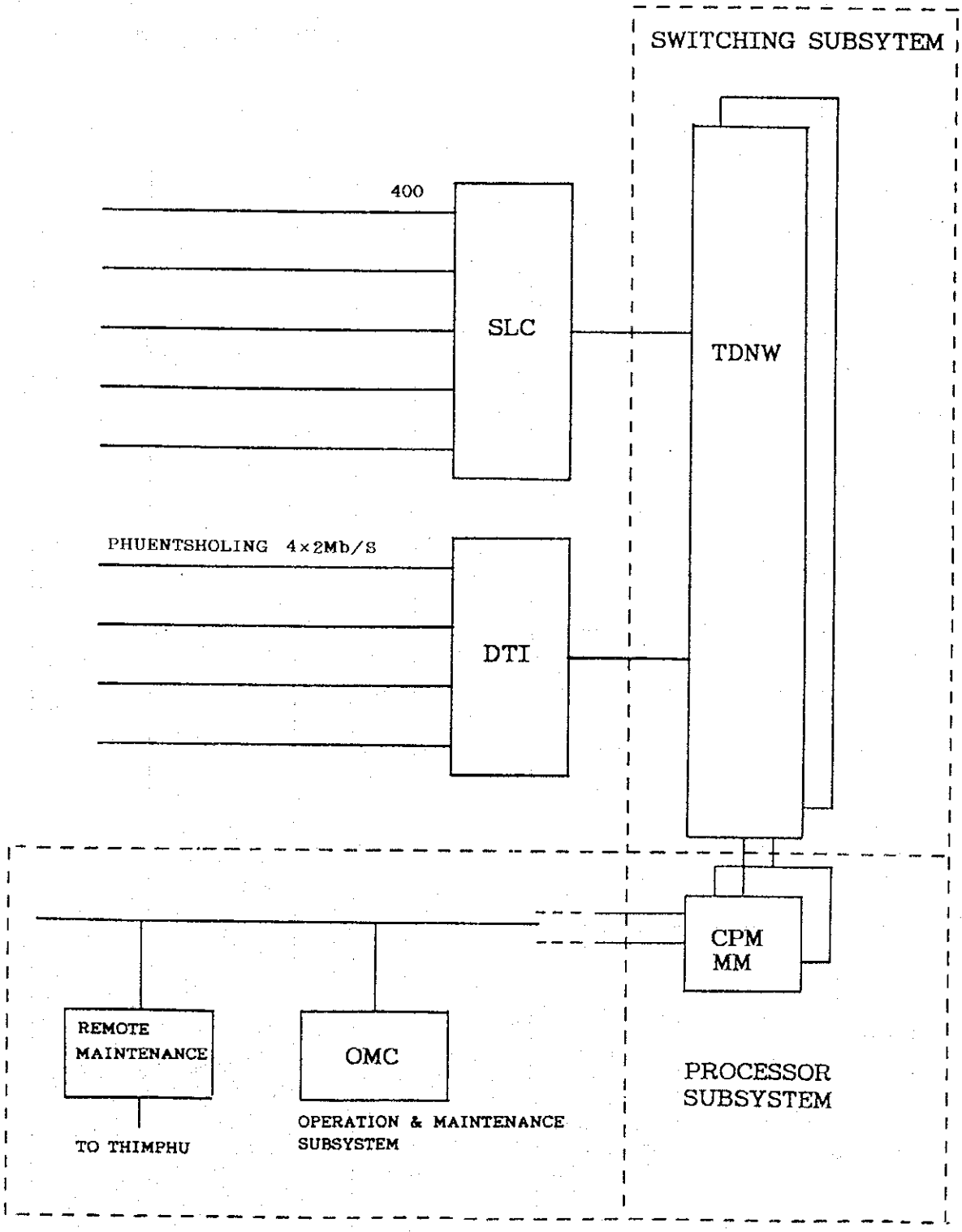
SWITCHING EQUIPMENT BLOCK SCHEMATIC	SITE NAME : THIMPHU TDM	FIG. NO. : SW—1



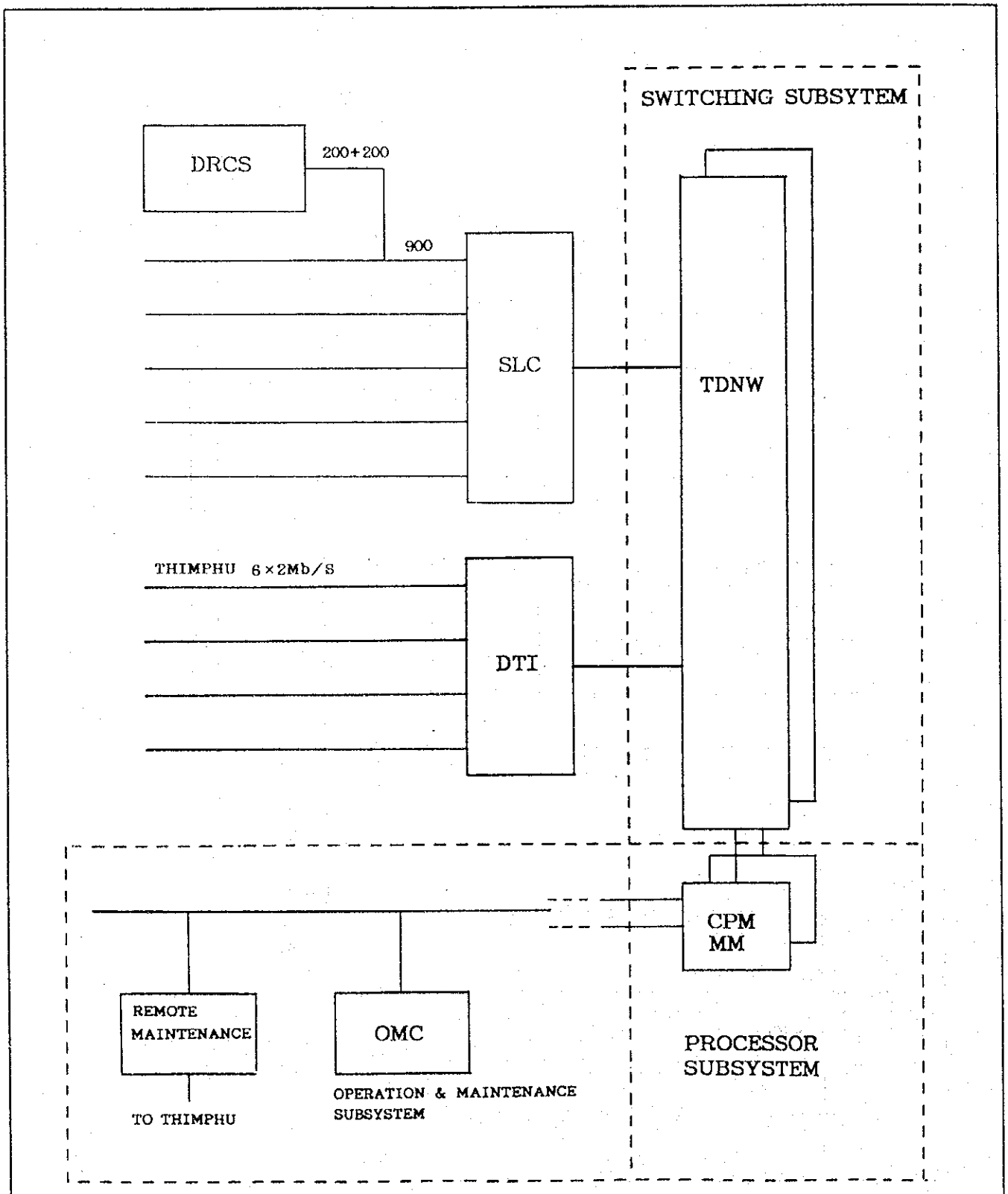
SWITCHING EQUIPMENT BLOCK SCHEMATIC	SITE NAME : THIMPHU LS	FIG. NO. : SW—2



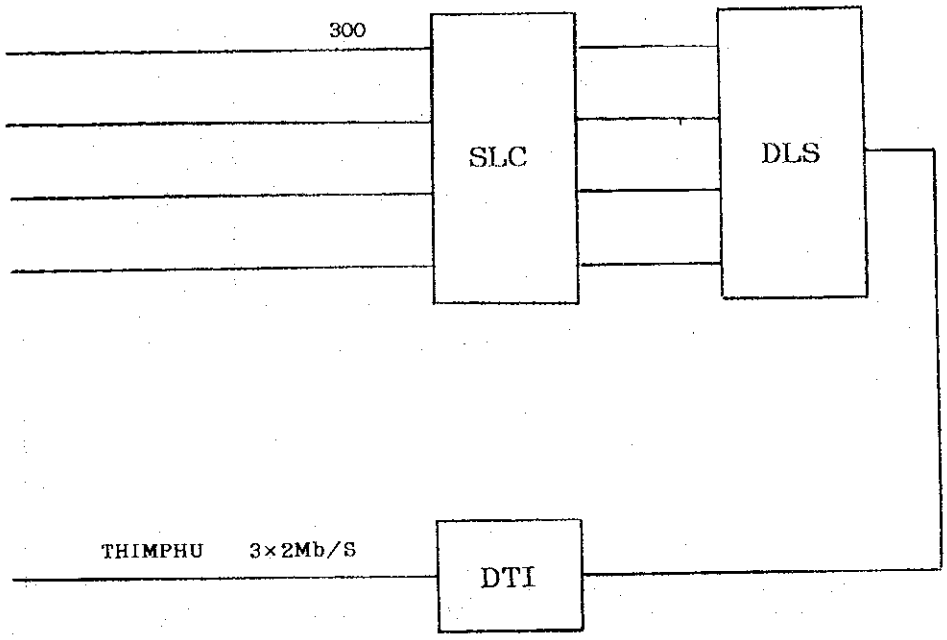
SWITCHING EQUIPMENT BLOCK SCHEMATIC	SITE NAME : PHUENTSHOLING	FIG. NO. : SW—3



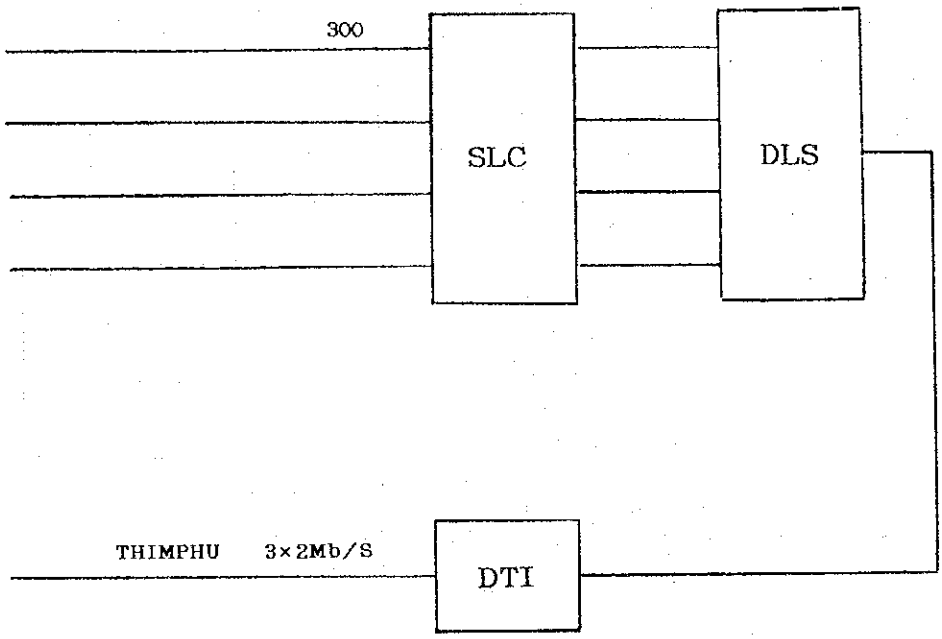
SWITCHING EQUIPMENT BLOCK SCHEMATIC	SITE NAME : SAMTSE	FIG. NO. : SW—4



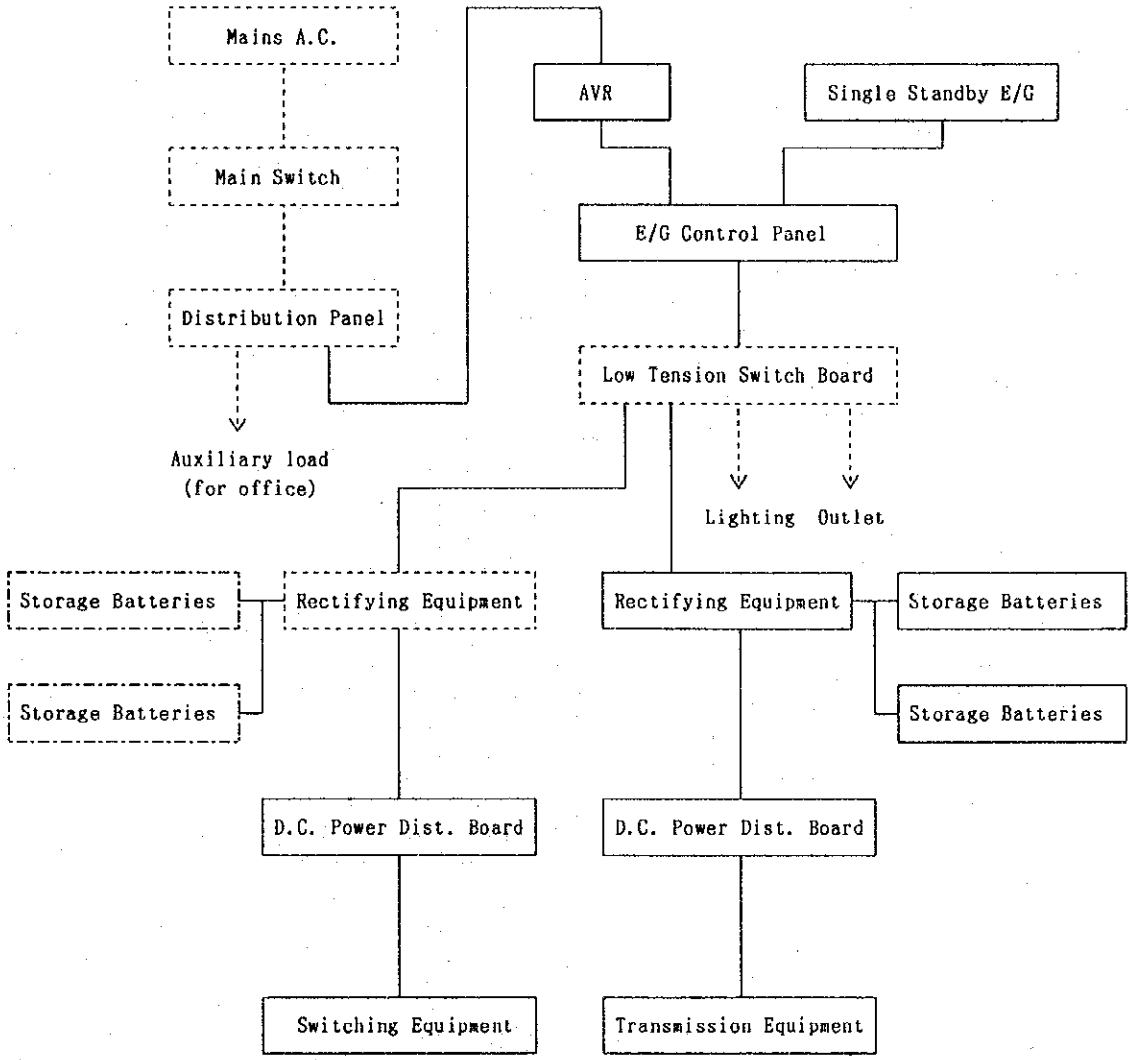
SWITCHING EQUIPMENT BLOCK SCHEMATIC	SITE NAME : PARO	FIG. NO. : SW—5



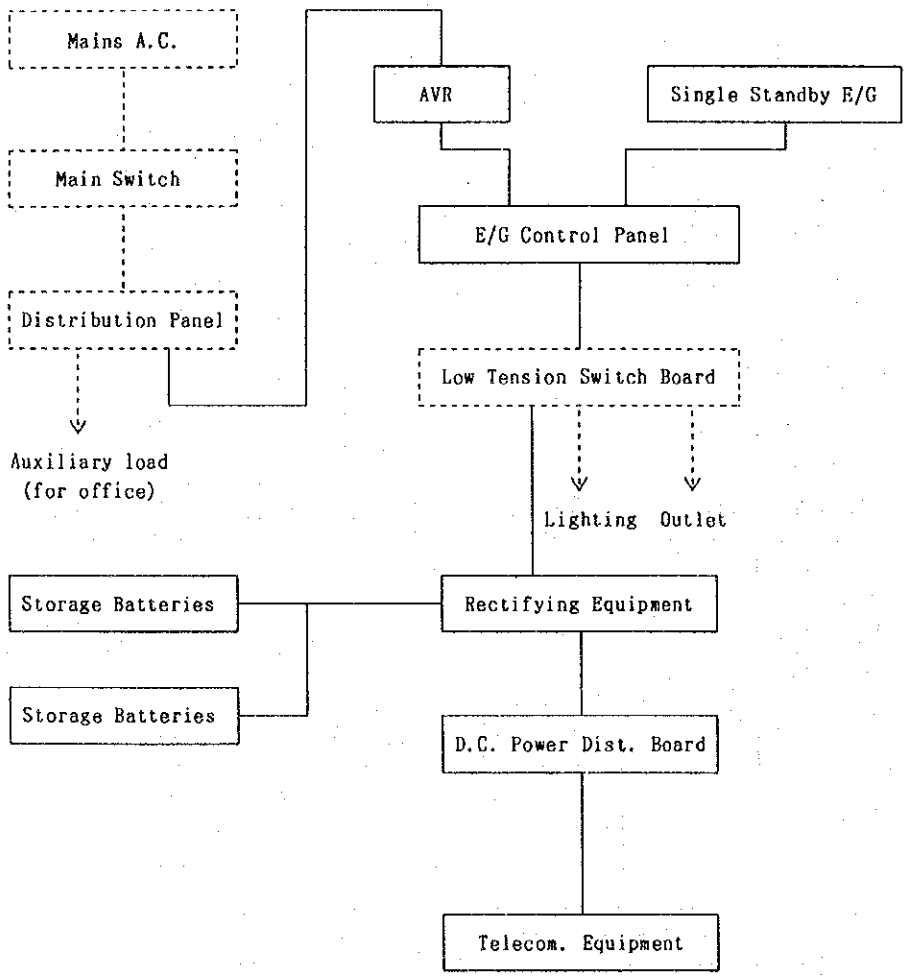
SWITCHING EQUIPMENT BLOCK SCHEMATIC	SITE NAME : WANGDUEPHODRANG	FIG. NO. : SW—6



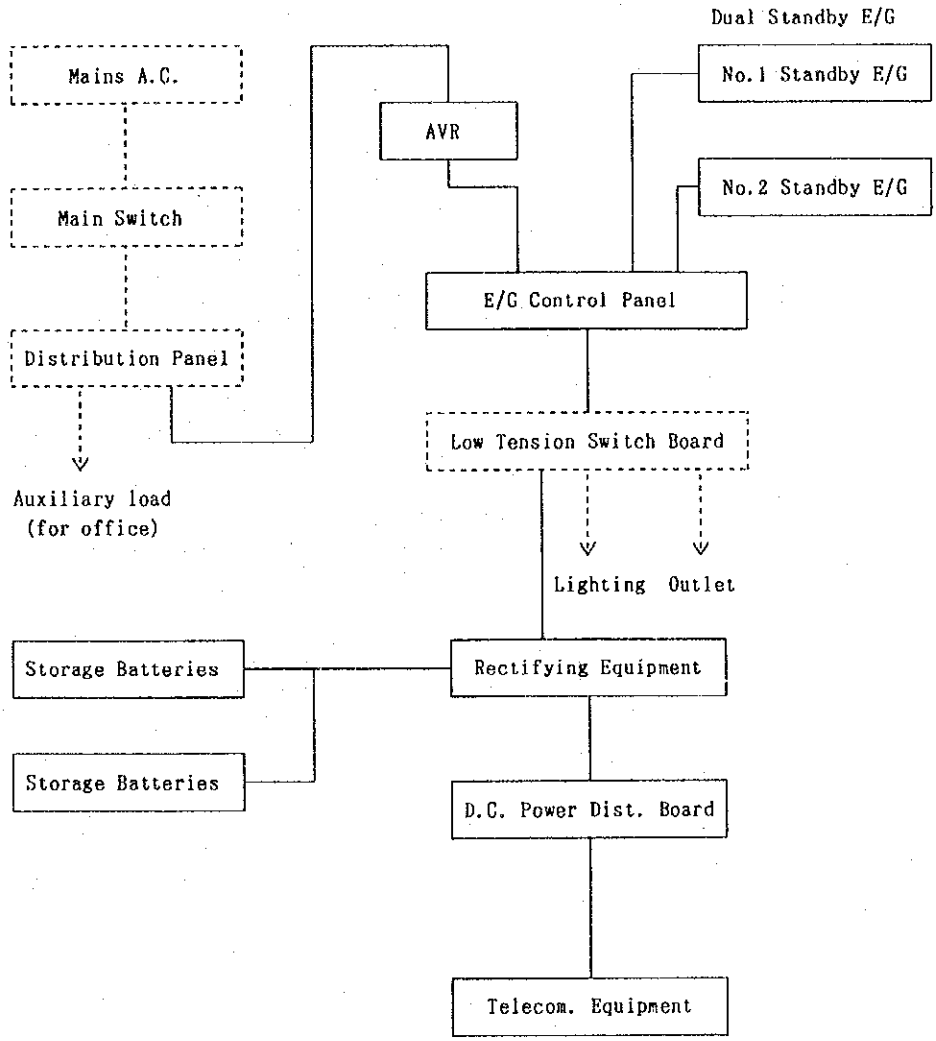
SWITCHING EQUIPMENT BLOCK SCHEMATIC	SITE NAME : PUNAKHA	FIG. NO. : SW—7



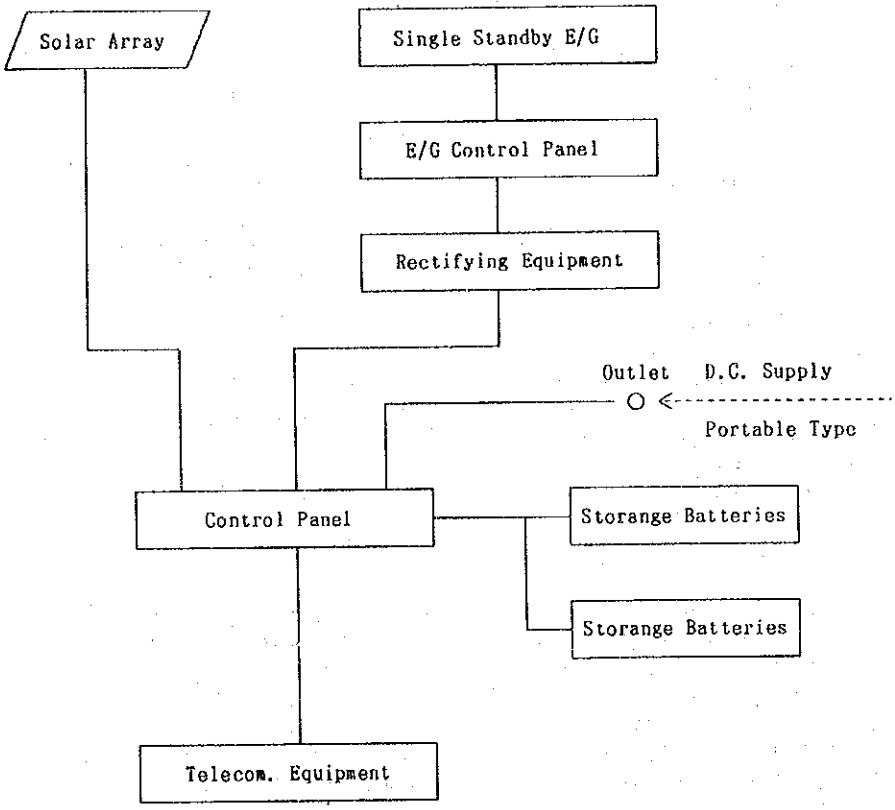
POWER SUPPLY EQUIPMENT BLOCK SCHEMATIC	SITE NAME : THIMPHU	FIG. NO. : PW—1



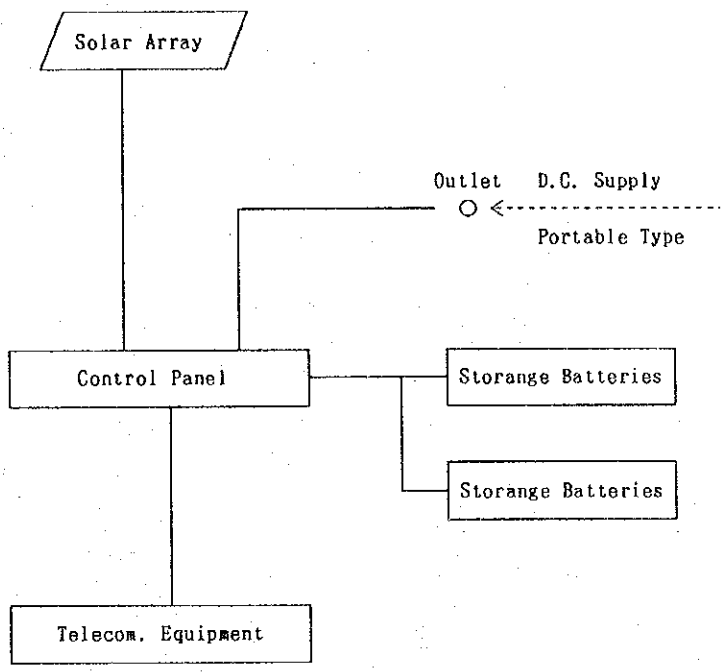
POWER SUPPLY EQUIPMENT BLOCK SCHEMATIC	SITE NAME : TERMINAL STATIONS	FIG. NO. : PW—2



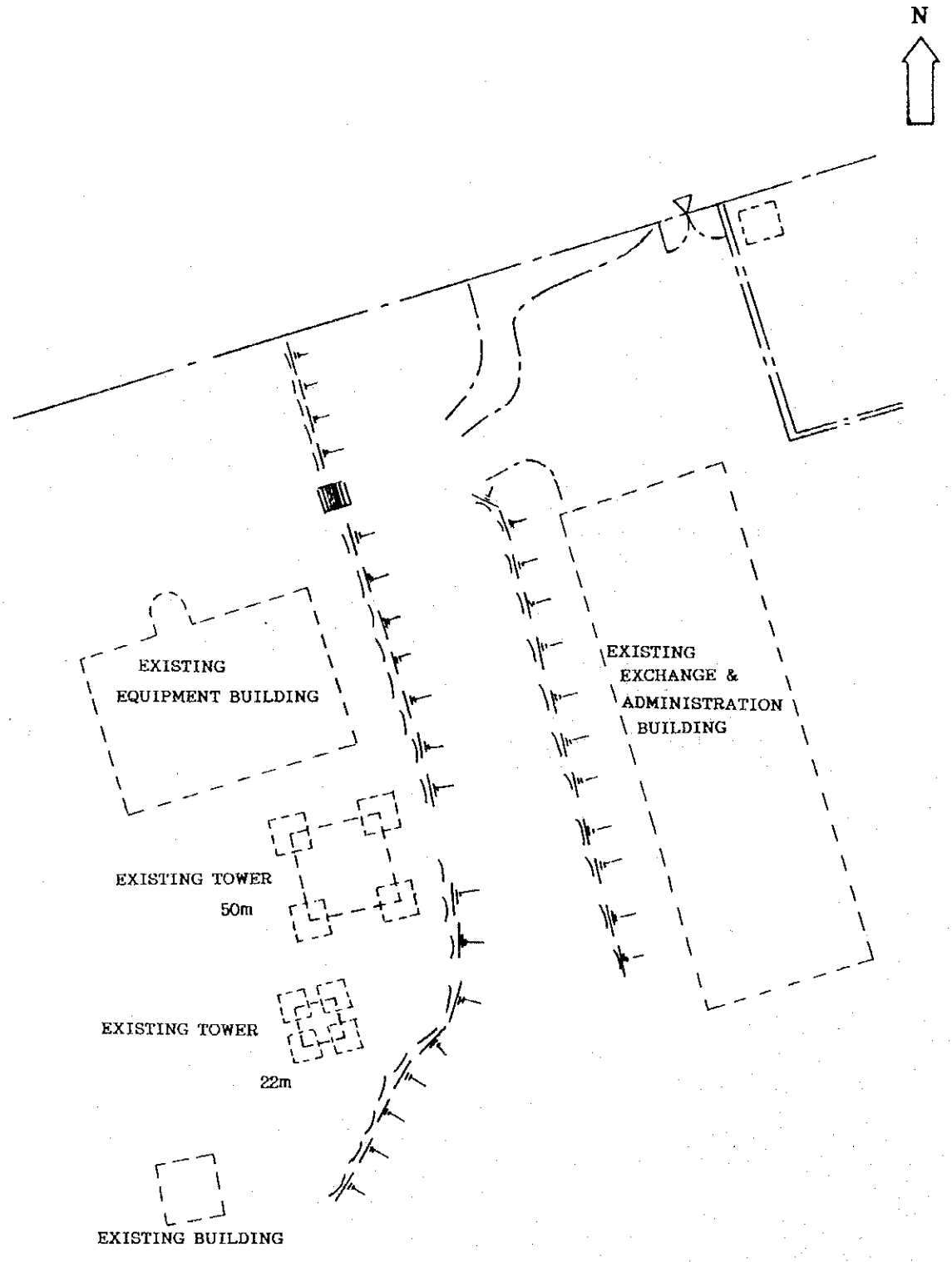
POWER SUPPLY EQUIPMENT BLOCK SCHEMATIC	SITE NAME : TAKTI	FIG. NO. : PW—3



POWER SUPPLY EQUIPMENT BLOCK SCHEMATIC	SITE NAME : JAPJEKHA, PEPCHU, SAURENI	FIG. NO. : PW—4



POWER SUPPLY EQUIPMENT BLOCK SCHEMATIC	SITE NAME : DRCS SUBSCRIBER STATIONS DRCS REPEATER STATIONS	FIG. NO. : PW—5

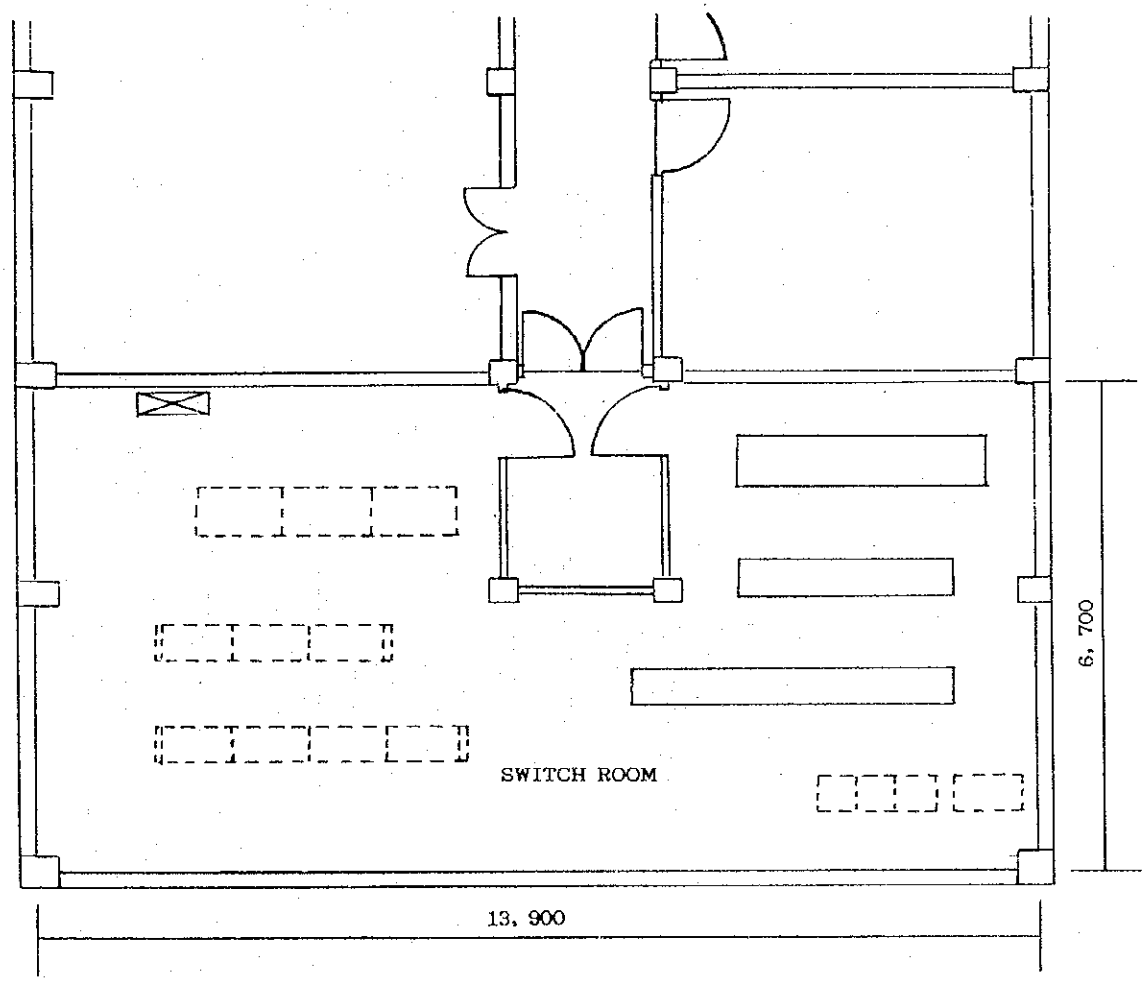


SITE LAYOUT PLAN SCALE : 1/500	SITE NAME : THIMPHU	FIG. NO. : EL—1

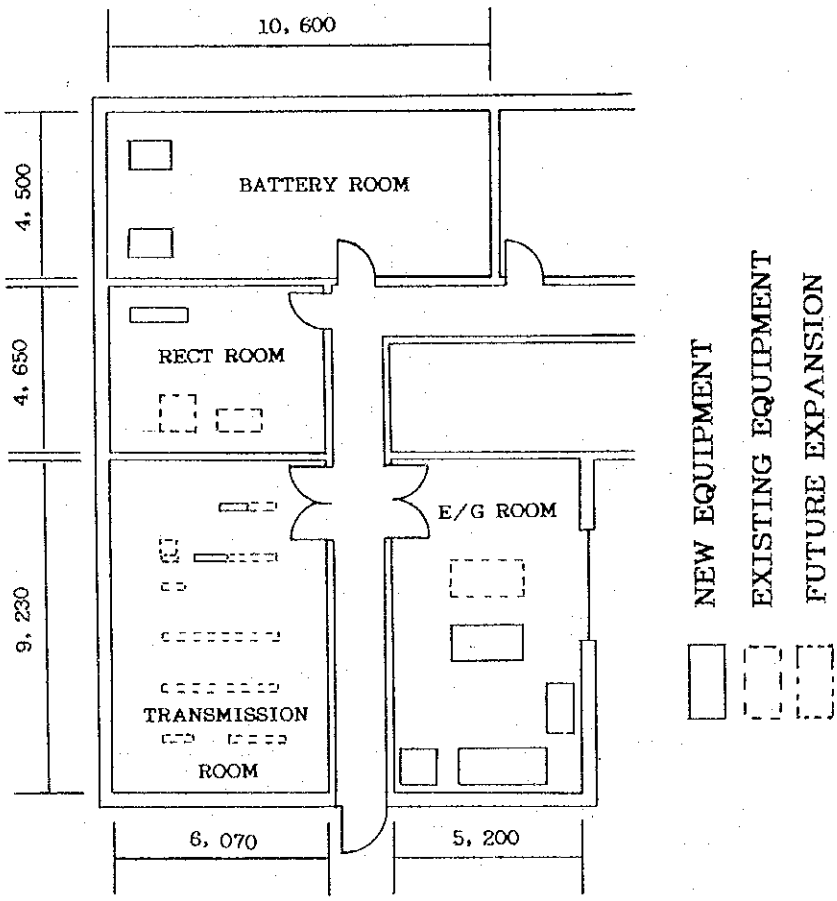
NEW EQUIPMENT

EXISTING EQUIPMENT

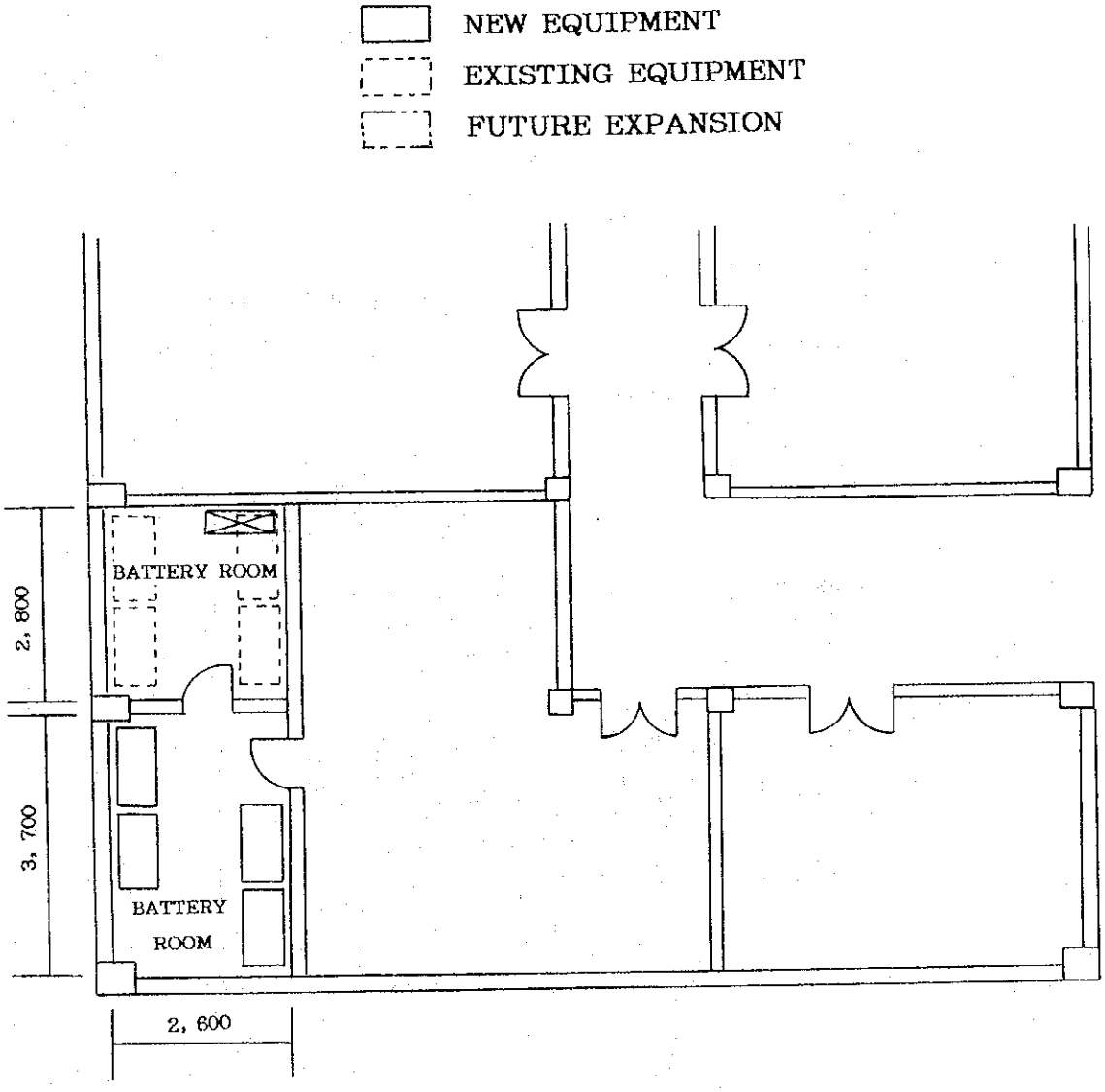
FUTURE EXPANSION



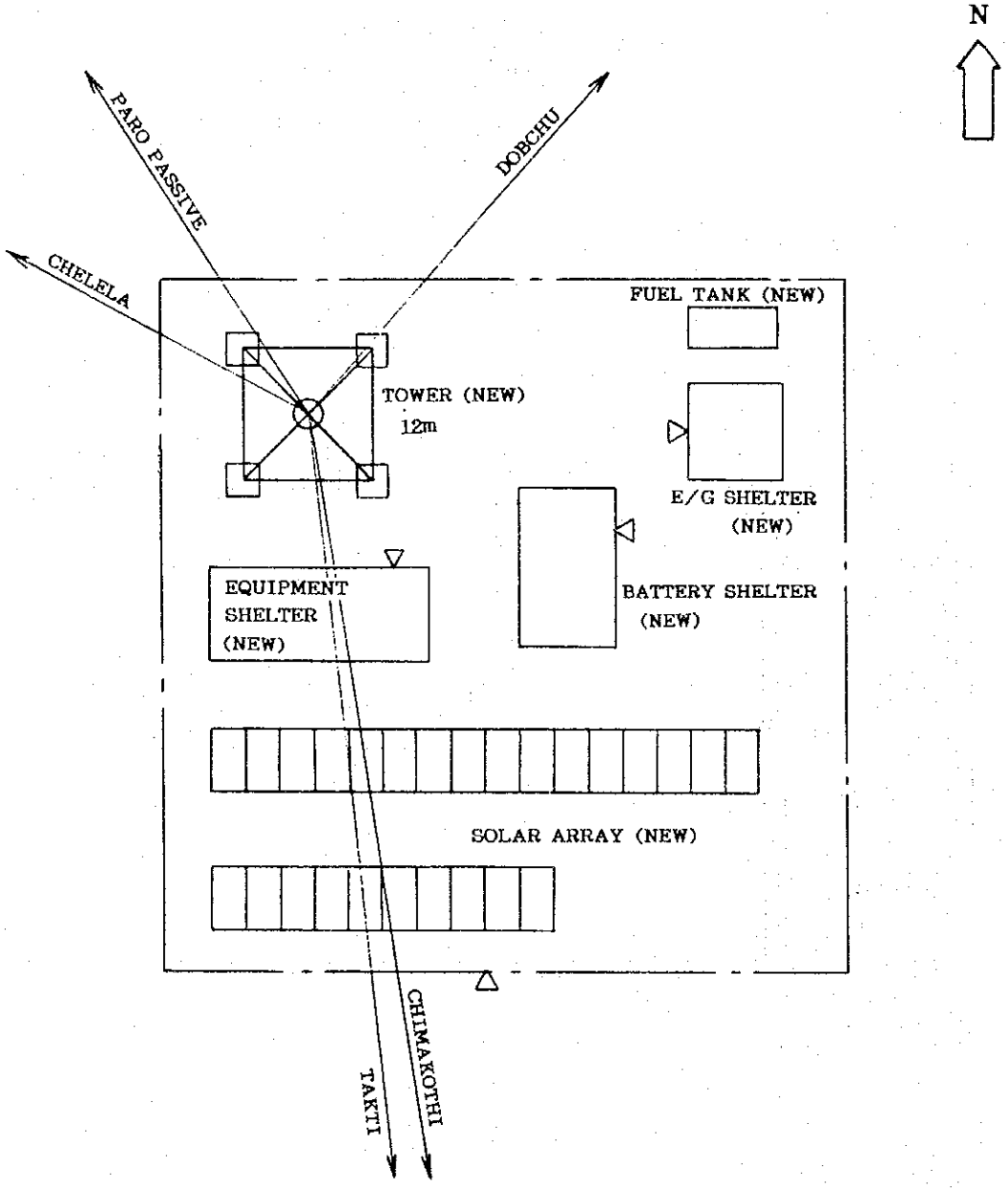
FLOOR LAYOUT PLAN SCALE : 1/100	SITE NAME : THIMPHU (FIRST FLOOR)	FIG. NO. : EL-2



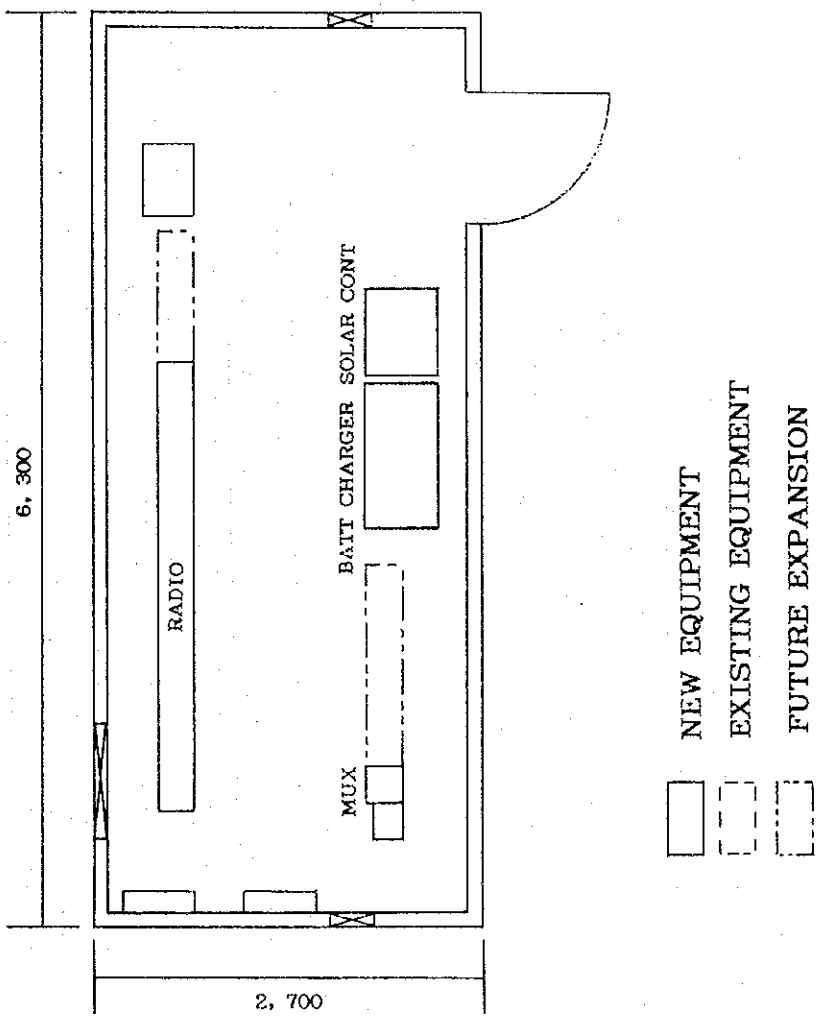
FLOOR LAYOUT PLAN SCALE : 1/200	SITE NAME : THIMPHU (TRANSMISSION)	FIG. NO. : EL—3



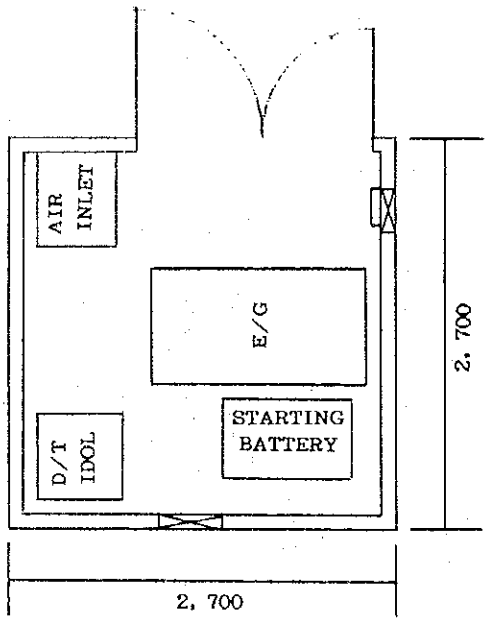
FLOOR LAYOUT PLAN SCALE : 1/100	SITE NAME : THIMPHU (GROUND FLOOR)	FIG. NO. : EL—4

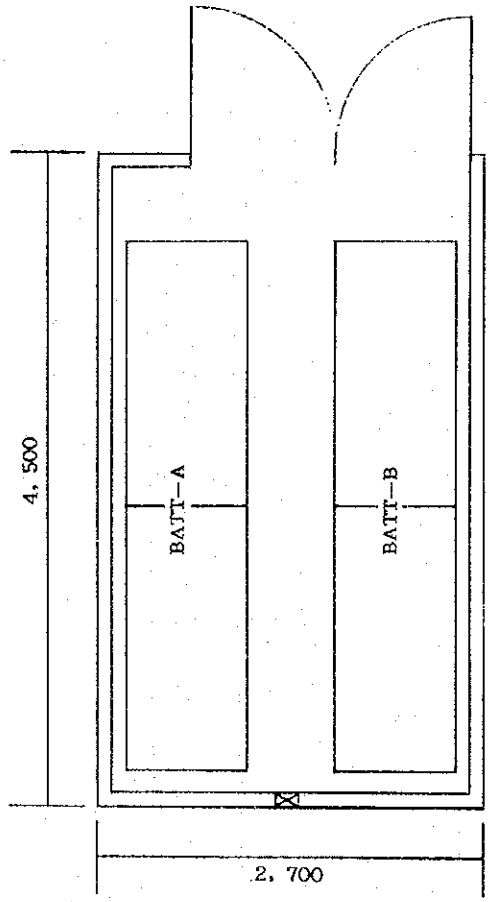


SITE LAYOUT PLAN SCALE : 1/200	SITE NAME : JAPJEKHA	FIG. NO. : EL-5

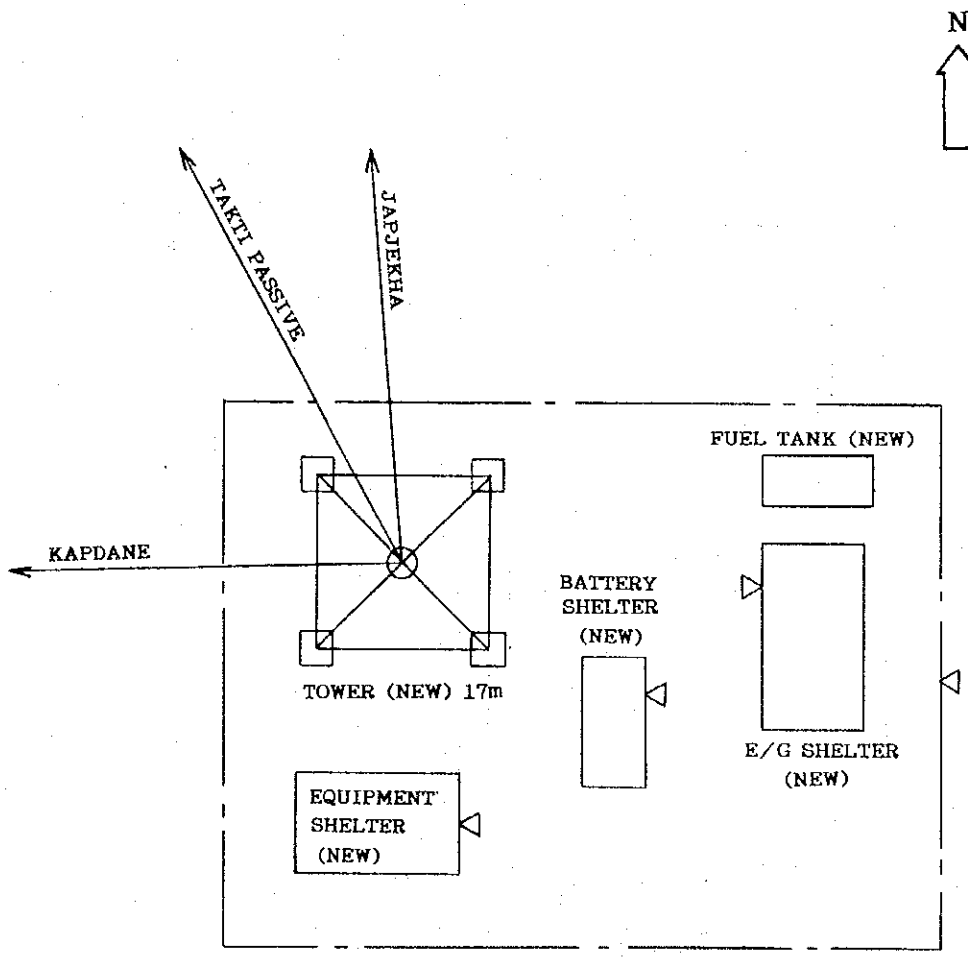


FLOOR LAYOUT PLAN SCALE : 1/50	SITE NAME : JAPJEKHA	FIG. NO. : EL—6

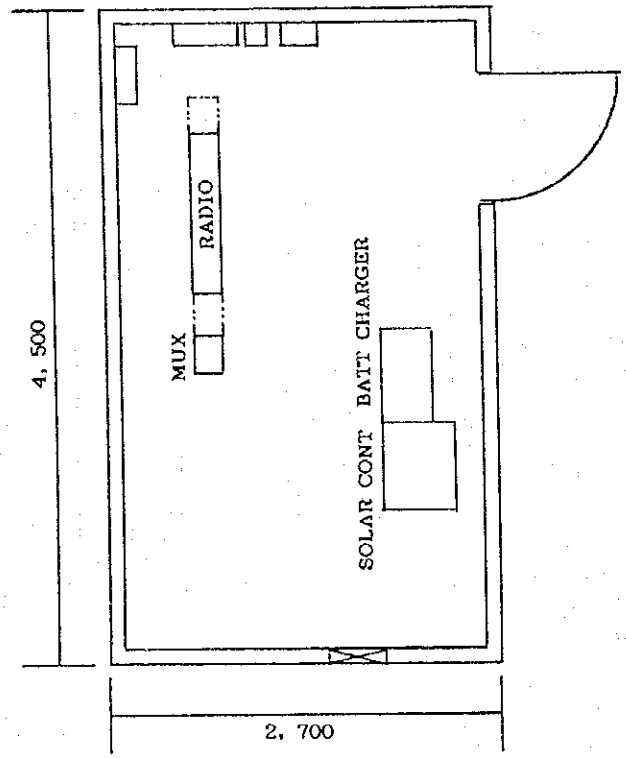




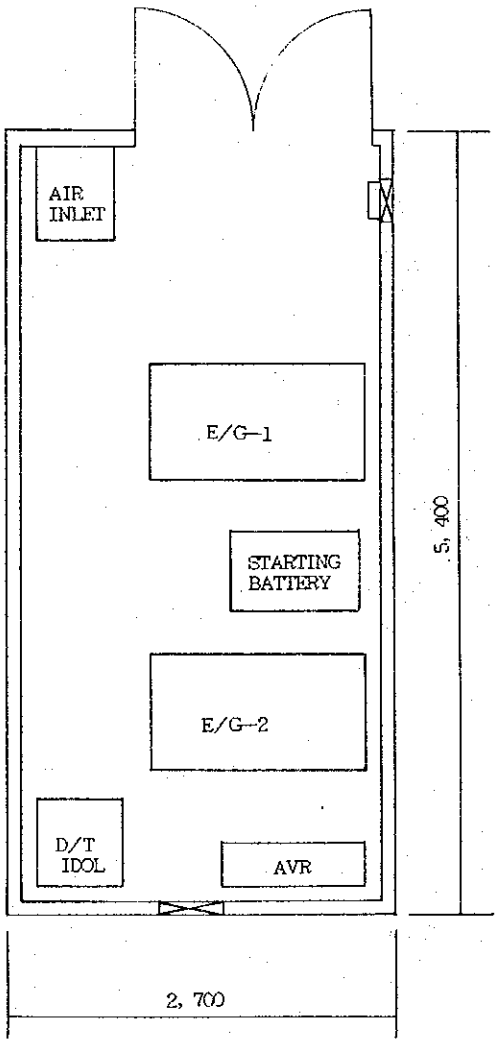
FLOOR LAYOUT PLAN SCALE : 1/50	SITE NAME : JAPJEKHA	FIG. NO. : EL-7

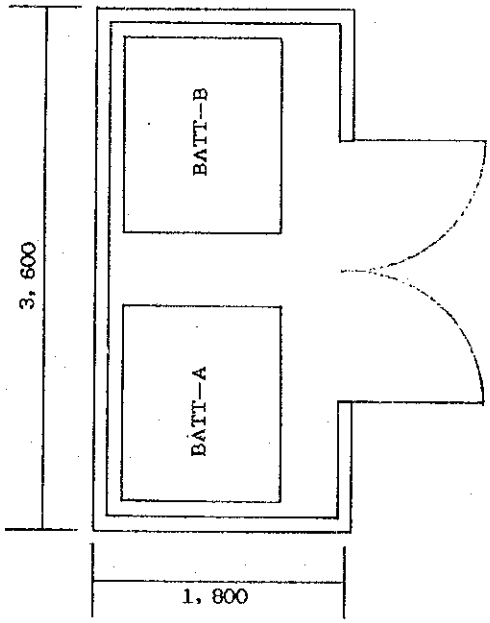


SITE LAYOUT PLAN SCALE : 1/200	SITE NAME : TAKTI	FIG. NO. : EL—8

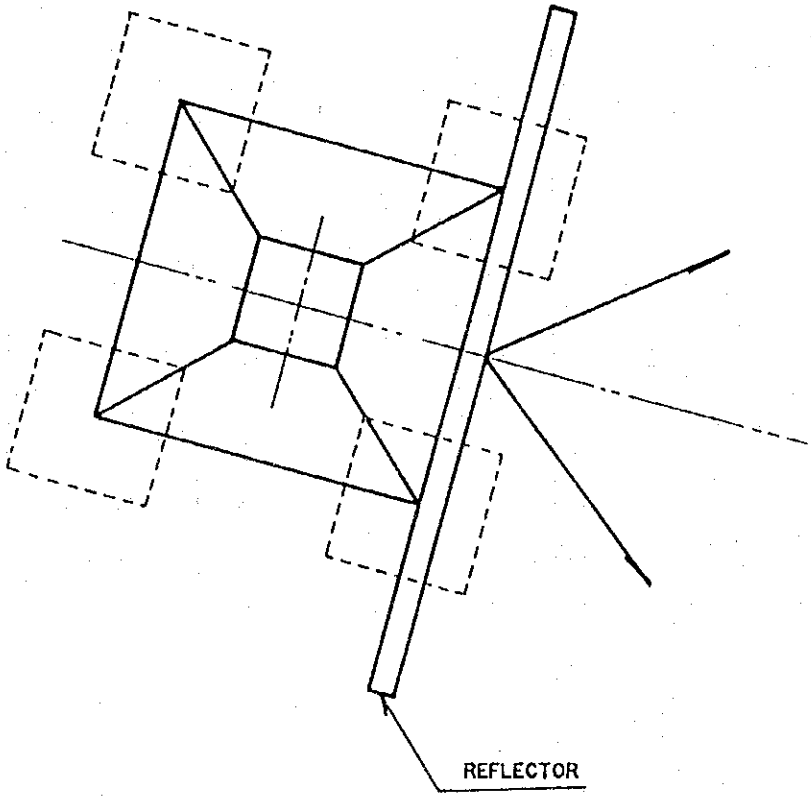


FLOOR LAYOUT PLAN SCALE : 1/50	SITE NAME : TAKTI	FIG. NO. : EL-9

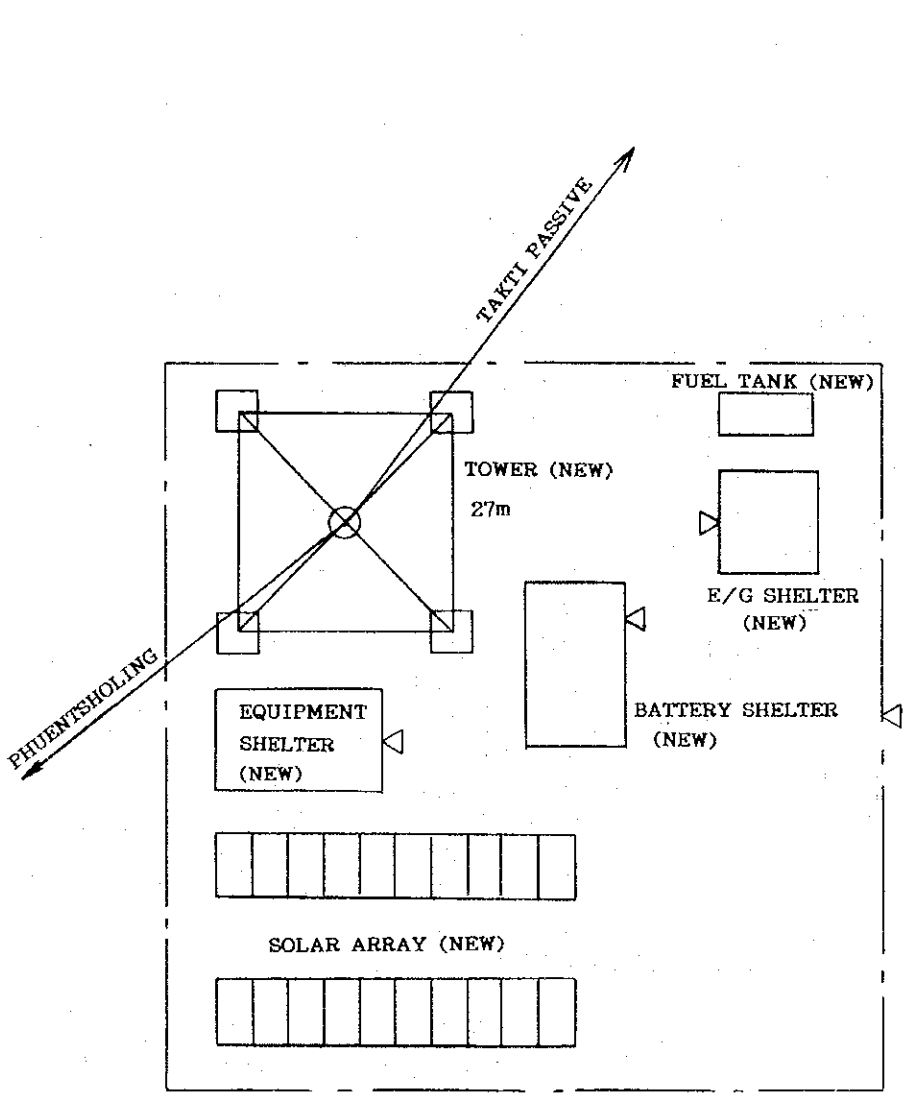




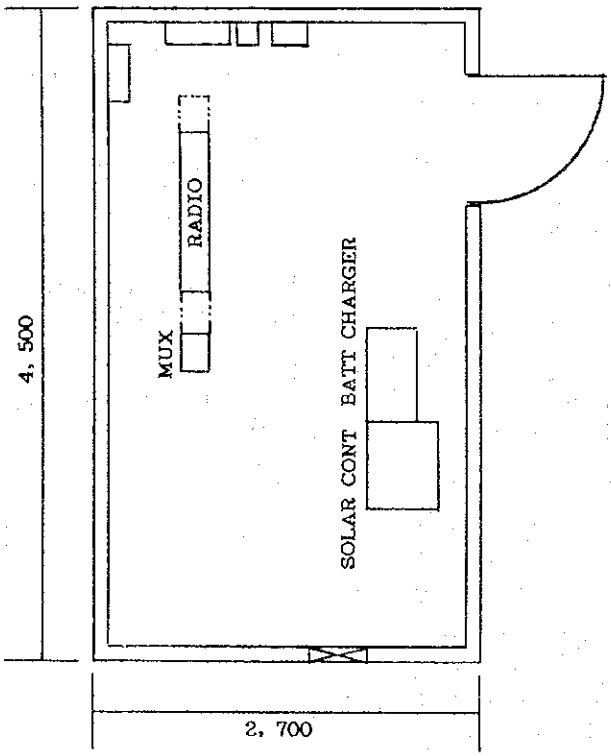
FLOOR LAYOUT PLAN SCALE:1/200	SITE NAME: TAKTI	FIG. NO: EL-10



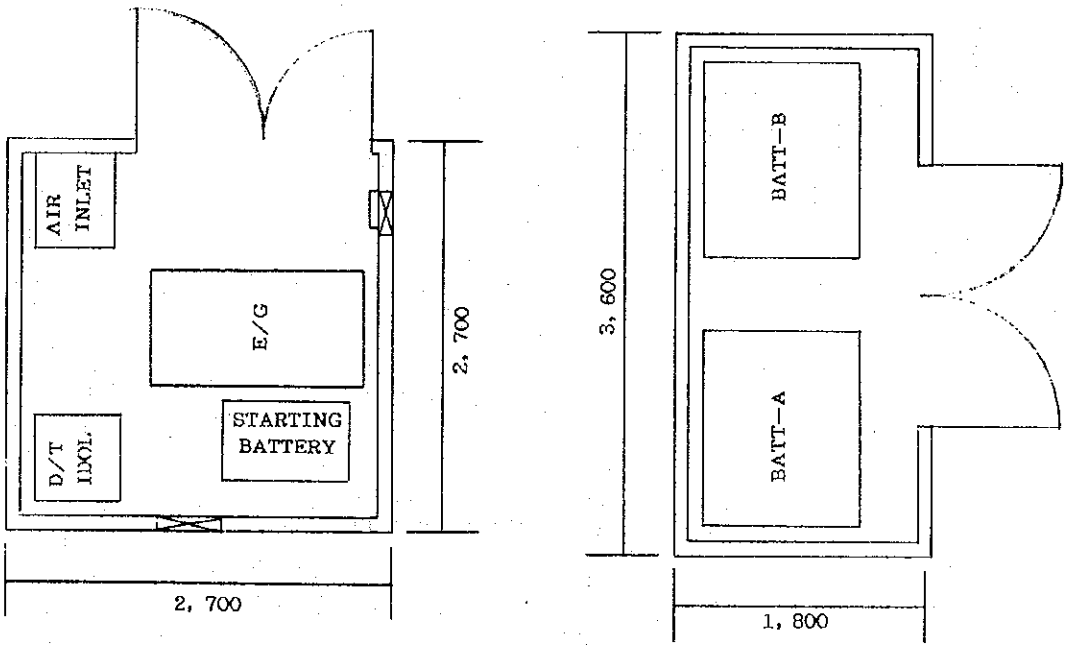
SITE LAYOUT PLAN SCALE:1/100	SITE NAME: TAKTI PASSIVE, KAPDANE	FIG. NO. : EL–11



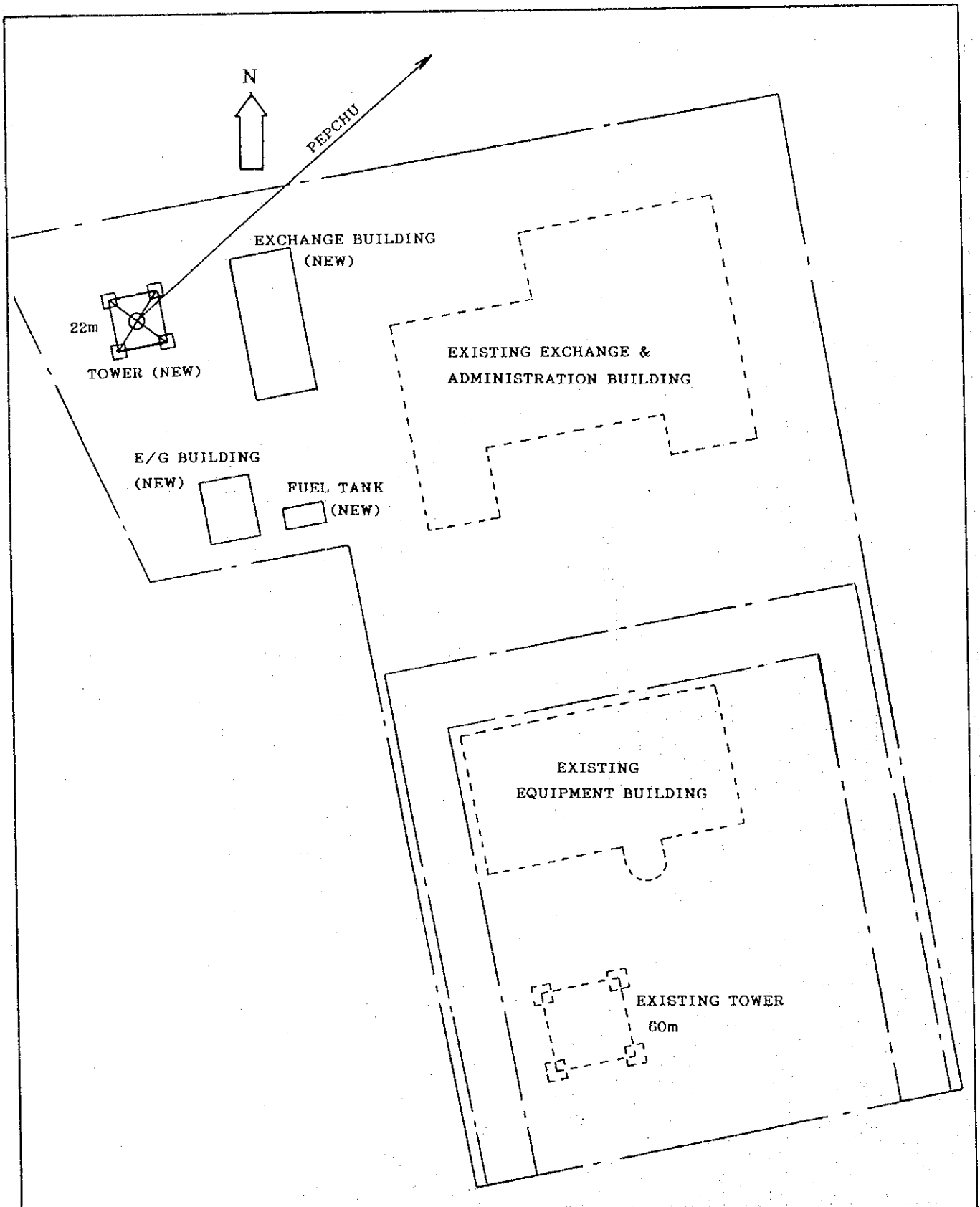
SITE LAYOUT PLAN SCALE : 1/200	SITE NAME : PEPCHU	FIG. NO. : EL—12



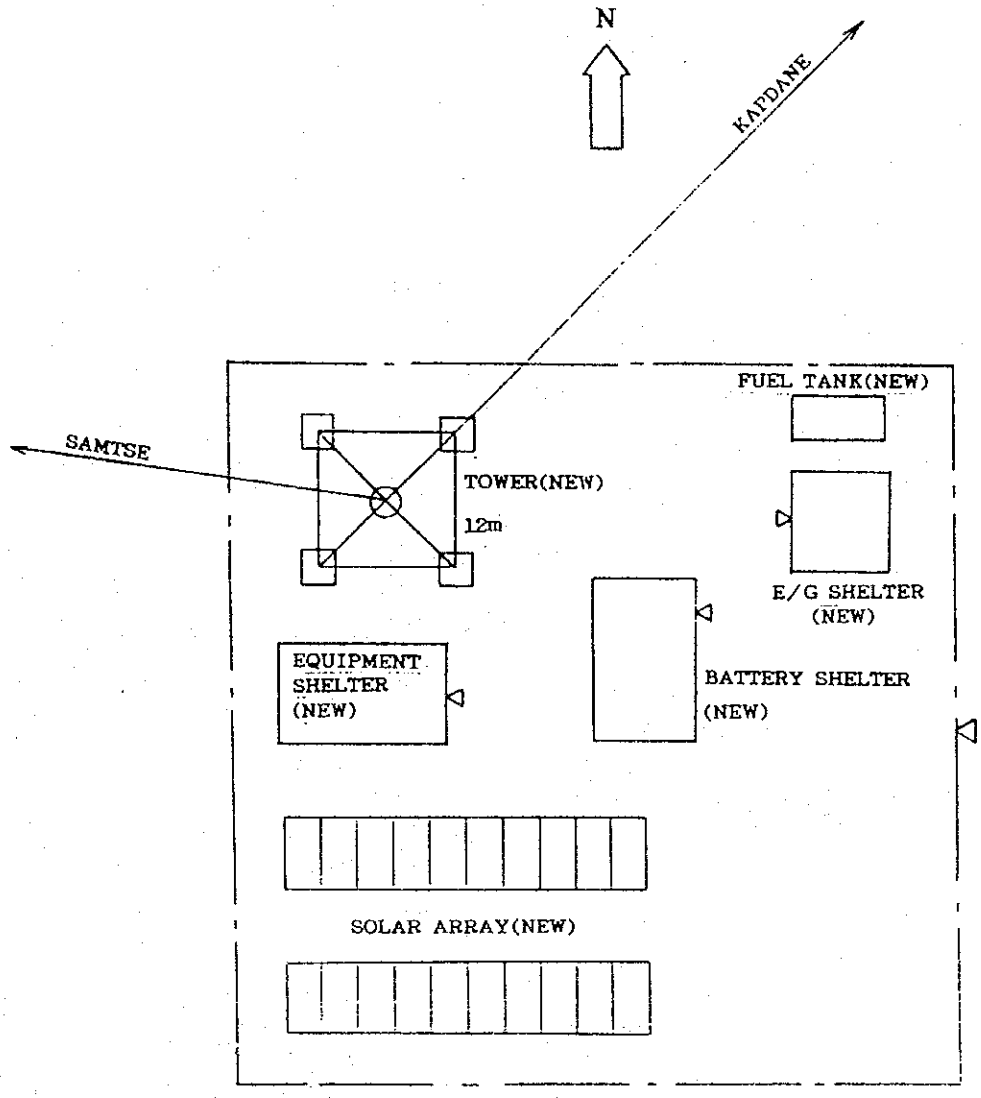
FLOOR LAYOUT PLAN SCALE : 1/50	SITE NAME : PEPCHU, SAURENI	FIG. NO. : EL-13



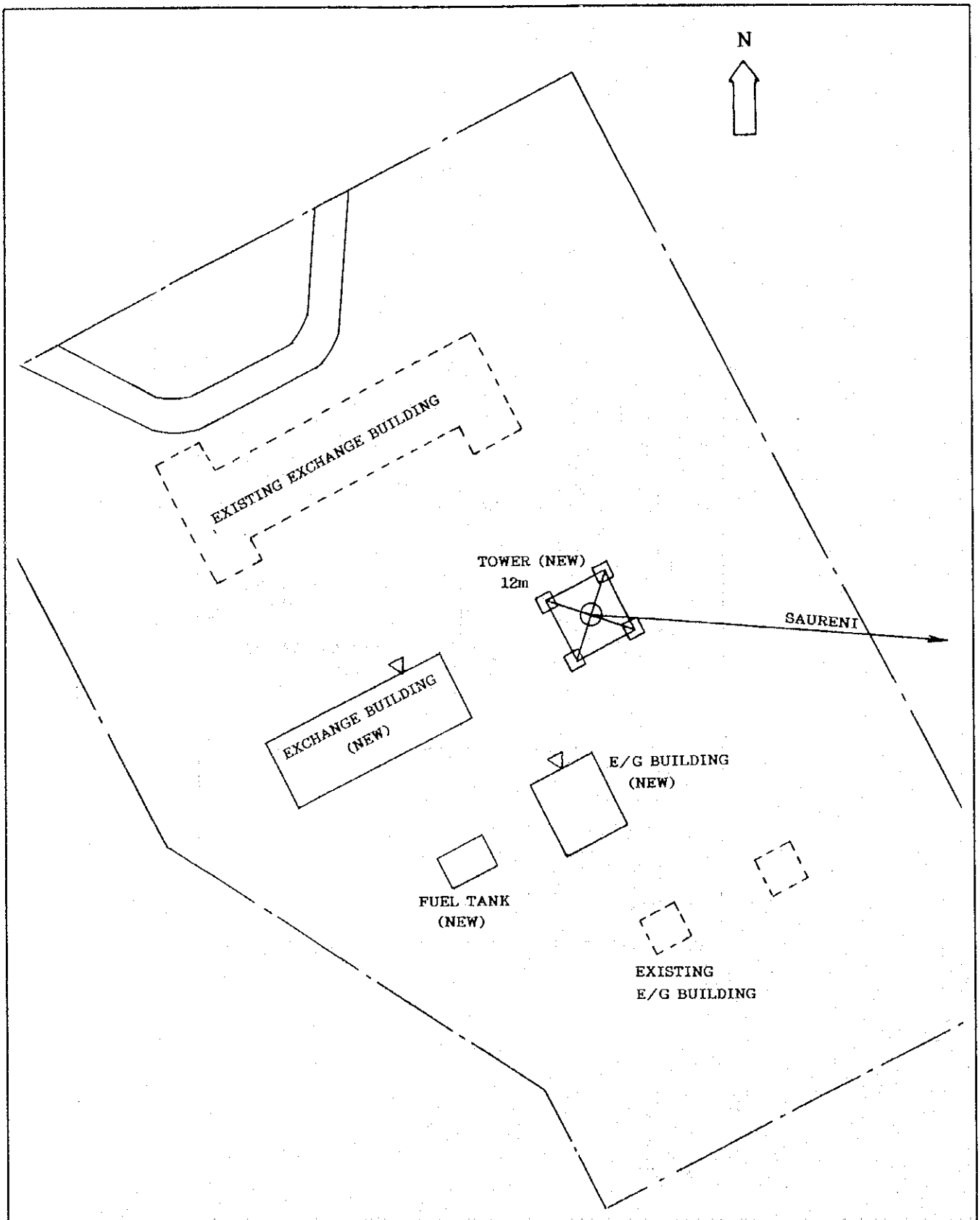
FLOOR LAYOUT PLAN SCALE : 1/50	SITE NAME : PEPCHU, SAURENI	FIG. NO. : EL-14



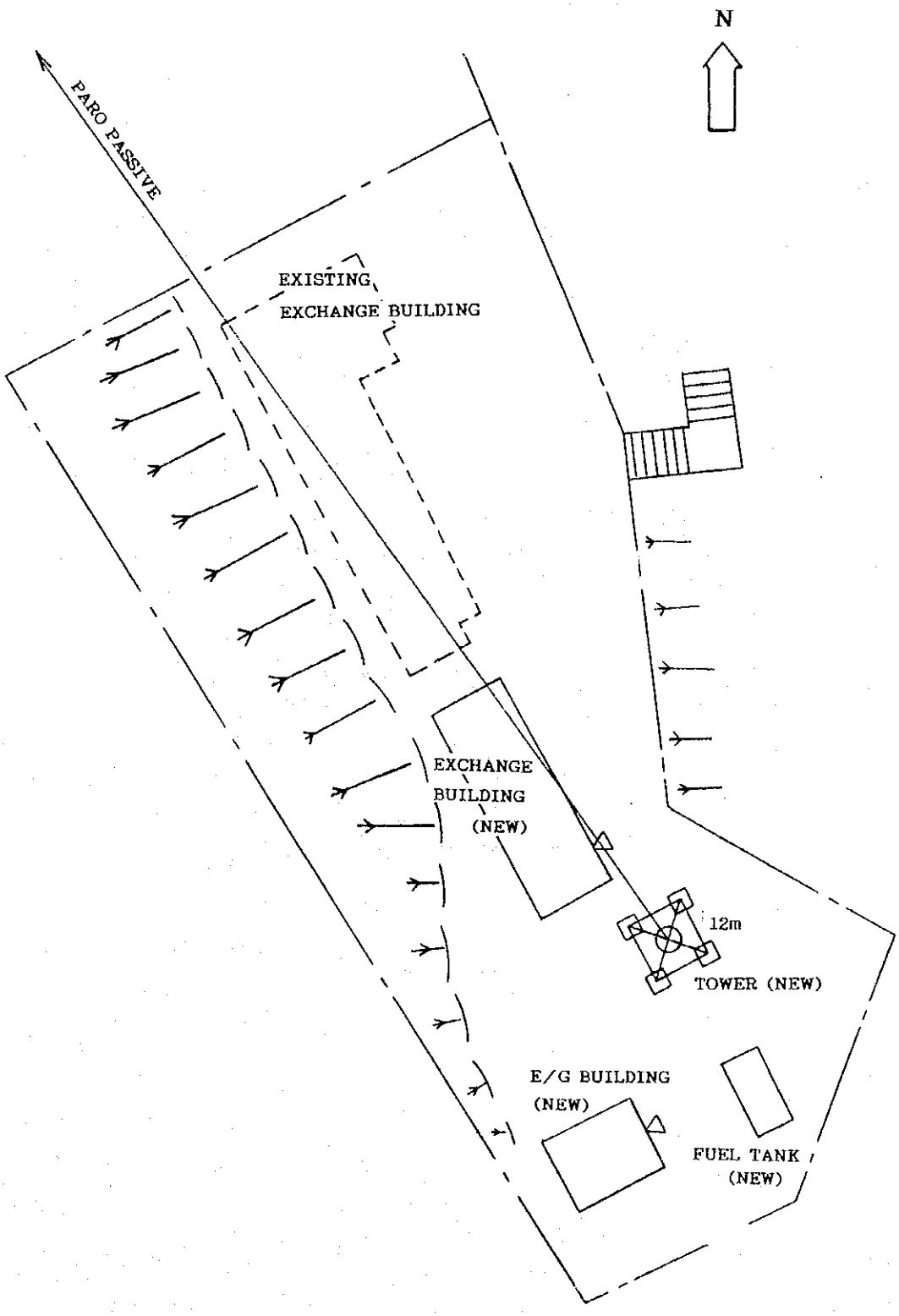
SITE LAYOUT PLAN SCALE : 1/500	SITE NAME : PHUENTSHOLING	FIG. NO. : EL—15



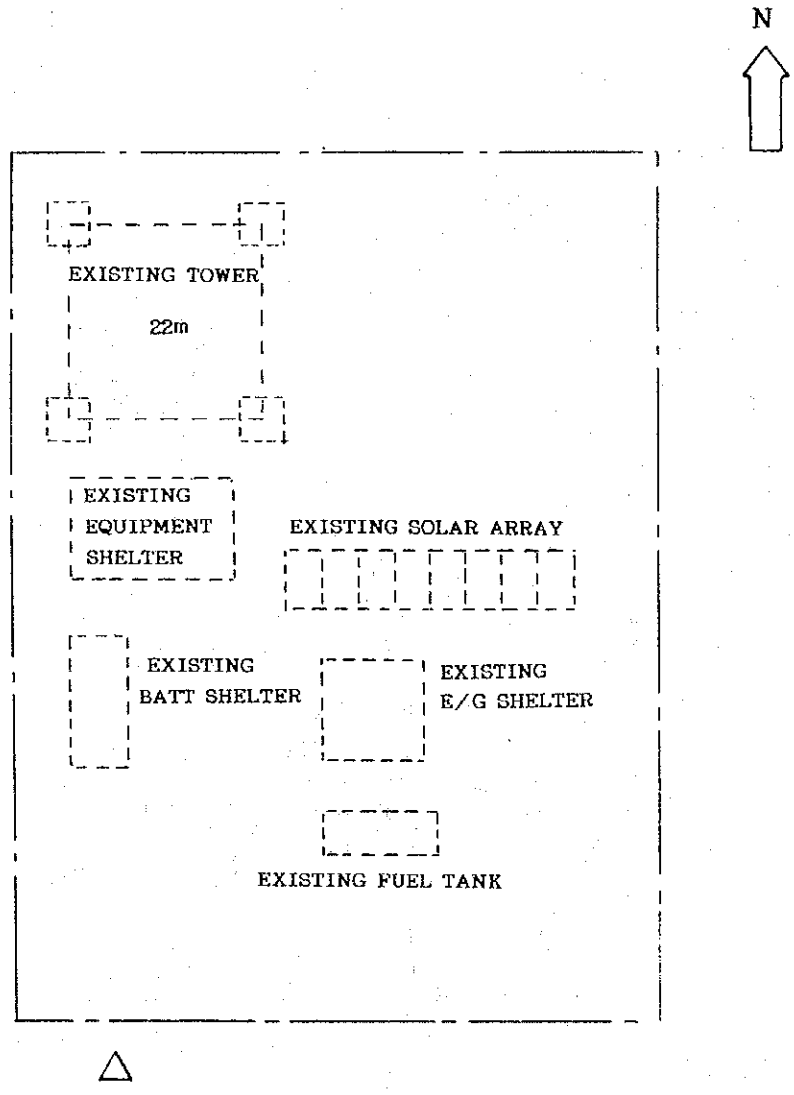
SITE LAYOUT PLAN SCALE:1/200	SITE NAME: SAURENI	FIG. NO: EL-16



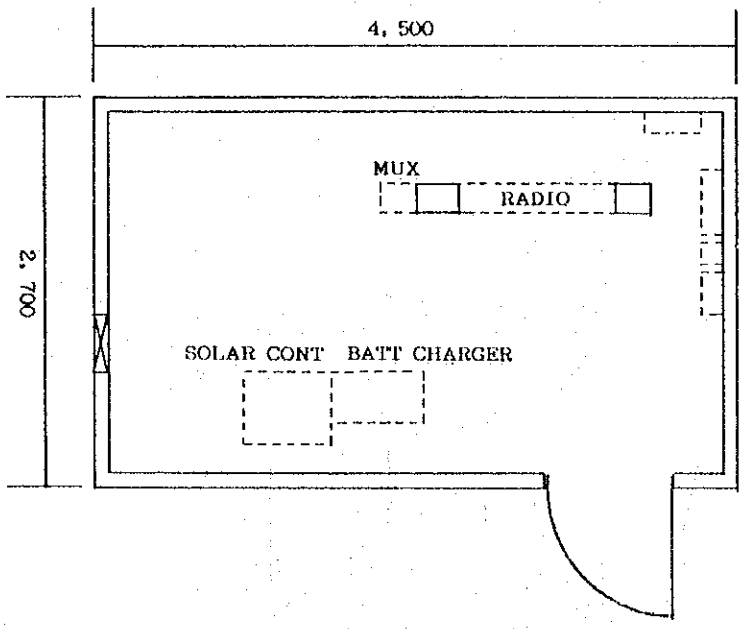
SITE LAYOUT PLAN SCALE : 1/400	SITE NAME : SAMTSE	FIG. NO. : EL-17



SITE LAYOUT PLAN SCALE : 1/400	SITE NAME : PARO	FIG. NO. : EL—18



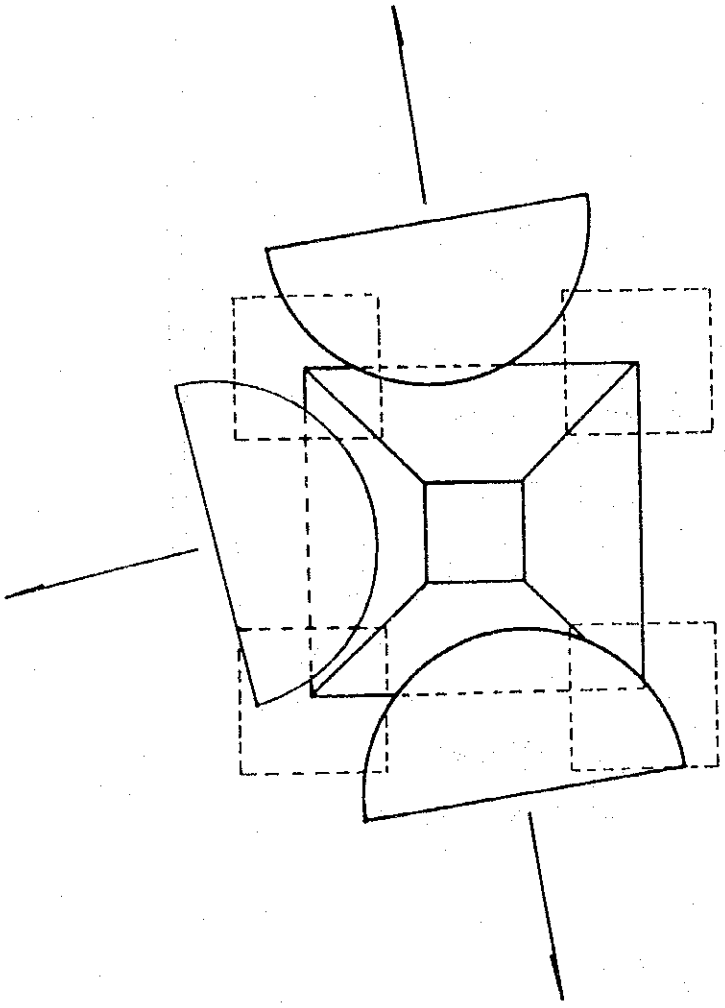
SITE LAYOUT PLAN SCALE : 1/200	SITE NAME : DOCHULA	FIG. NO. : EL—19



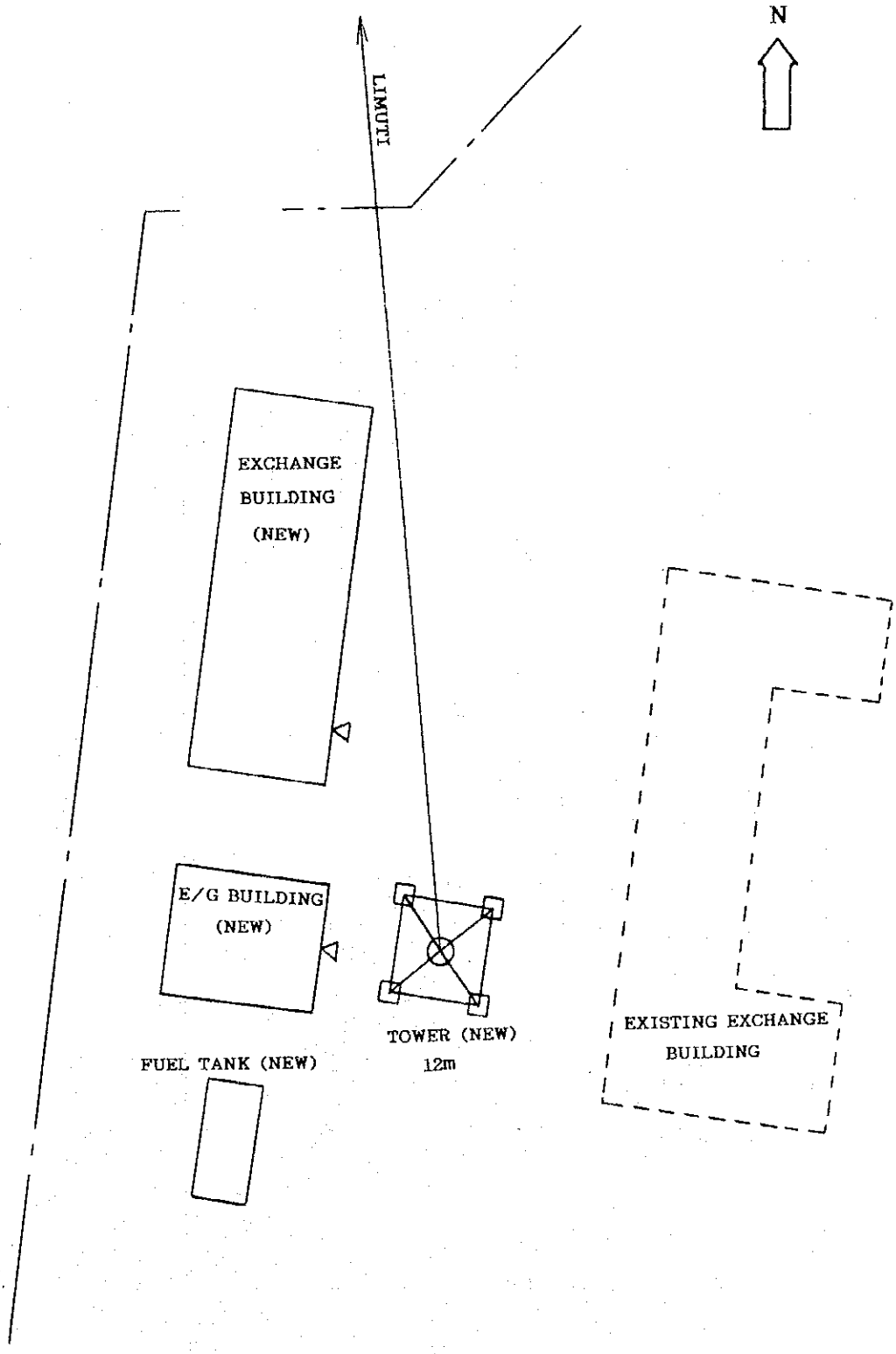
NEW EQUIPMENT

EXISTING EQUIPMENT

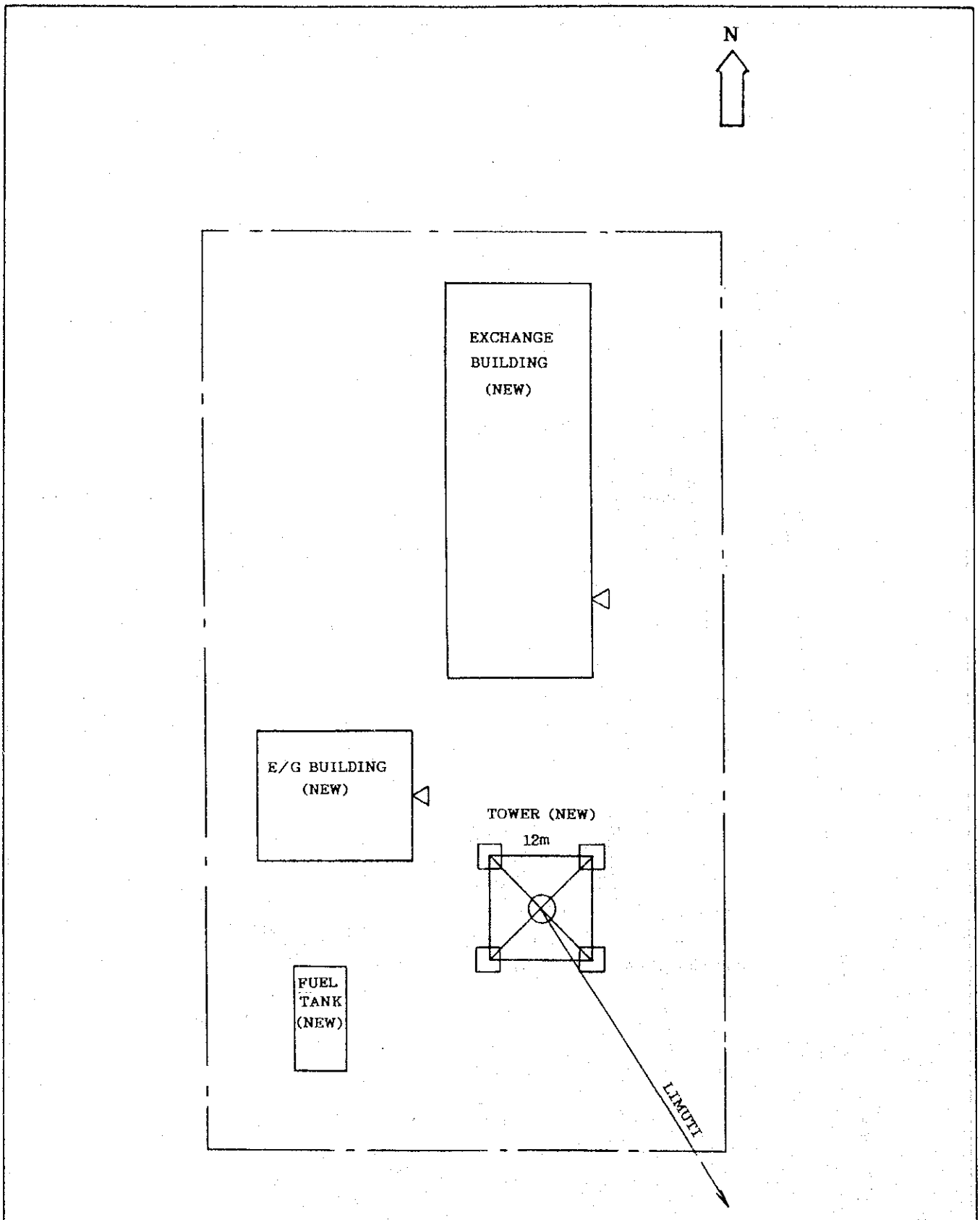
FLOOR LAYOUT PLAN SCALE : 1/50	SITE NAME : DOCHULA	FIG. NO. : EL-20



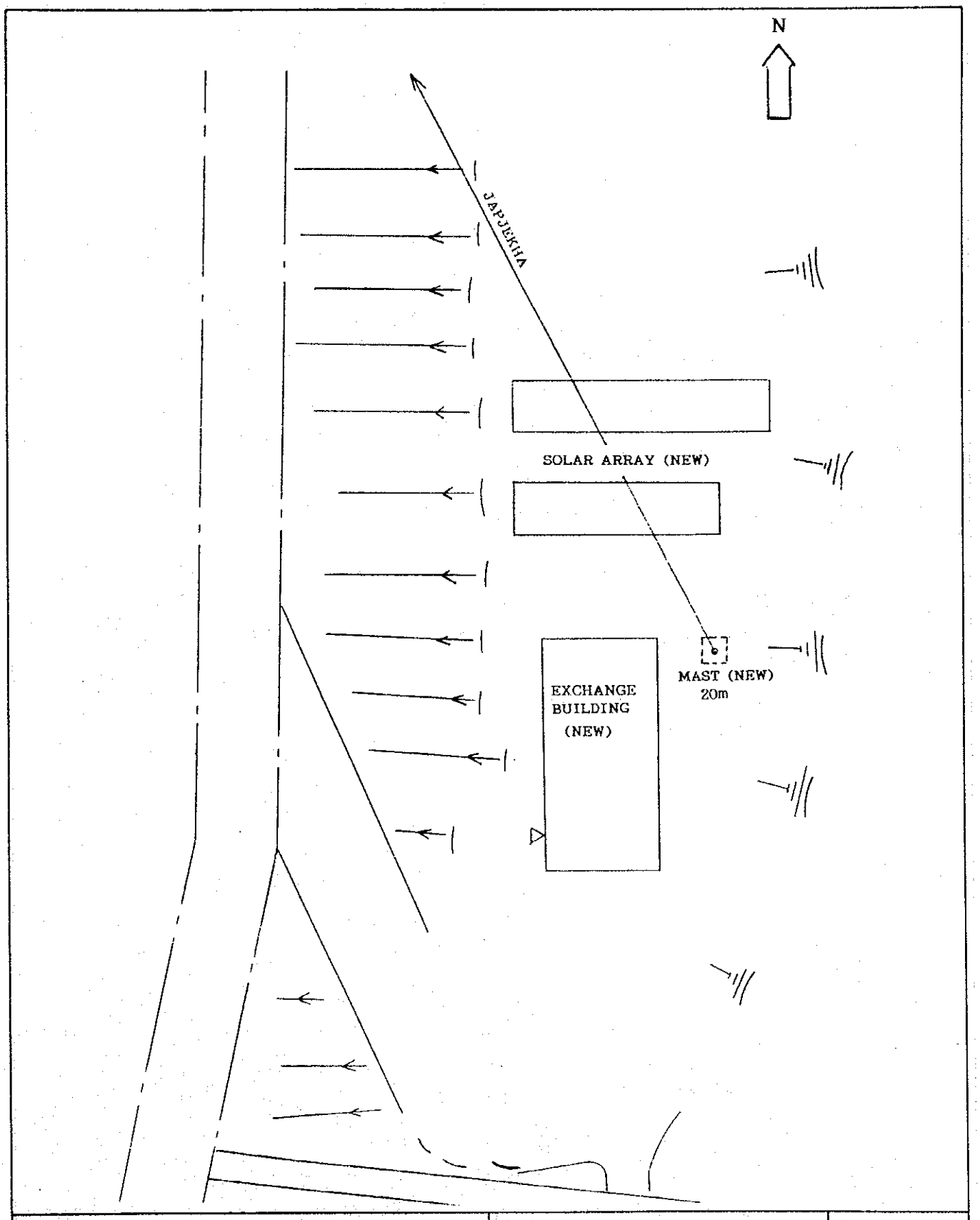
SITE LAYOUT PLAN SCALE:1/100	SITE NAME: LIMUTI	FIG. NO. : EL—21



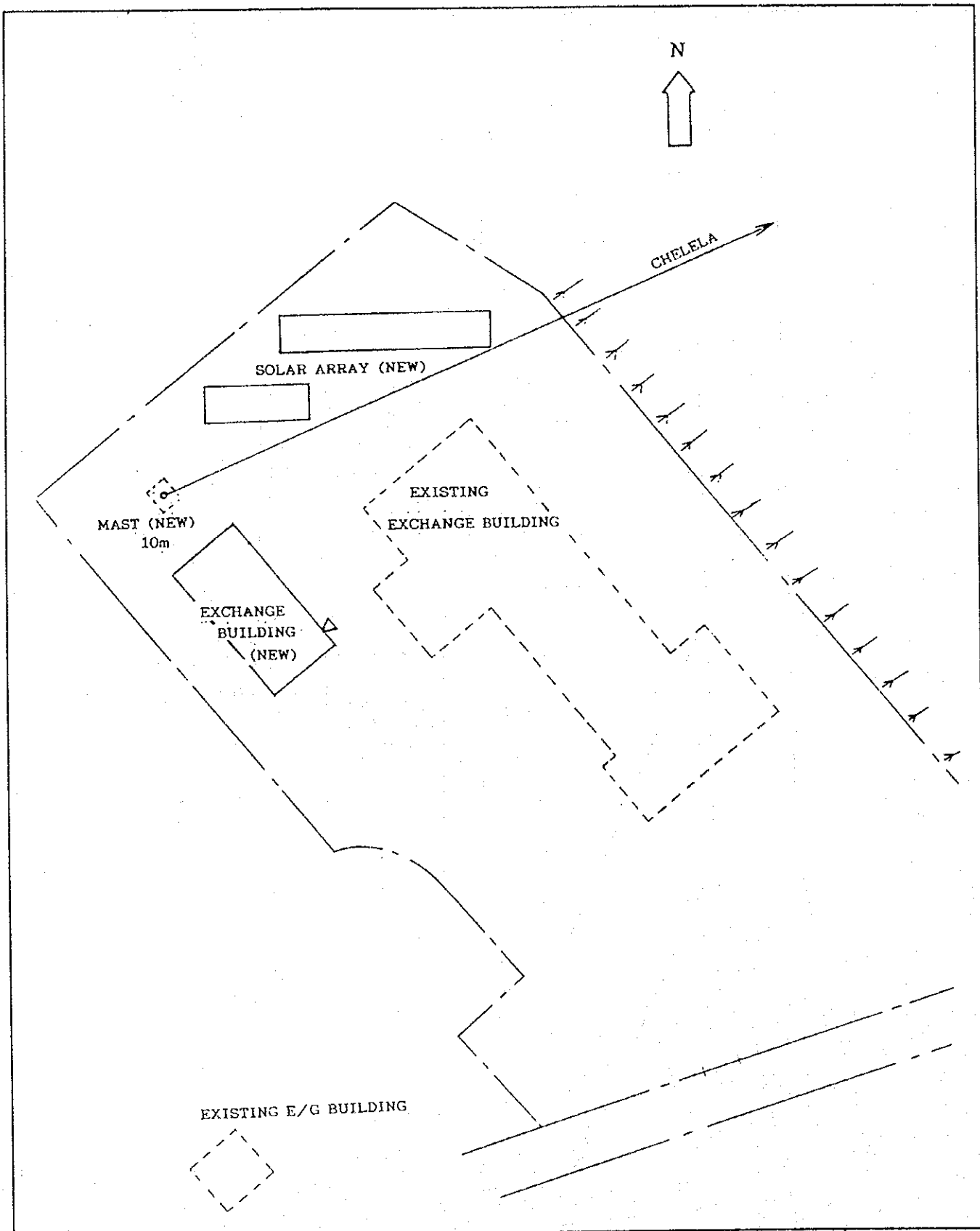
SITE LAYOUT PLAN SCALE :1/250	SITE NAME : WANGDUEPHODRANG	FIG. NO. : EL—22



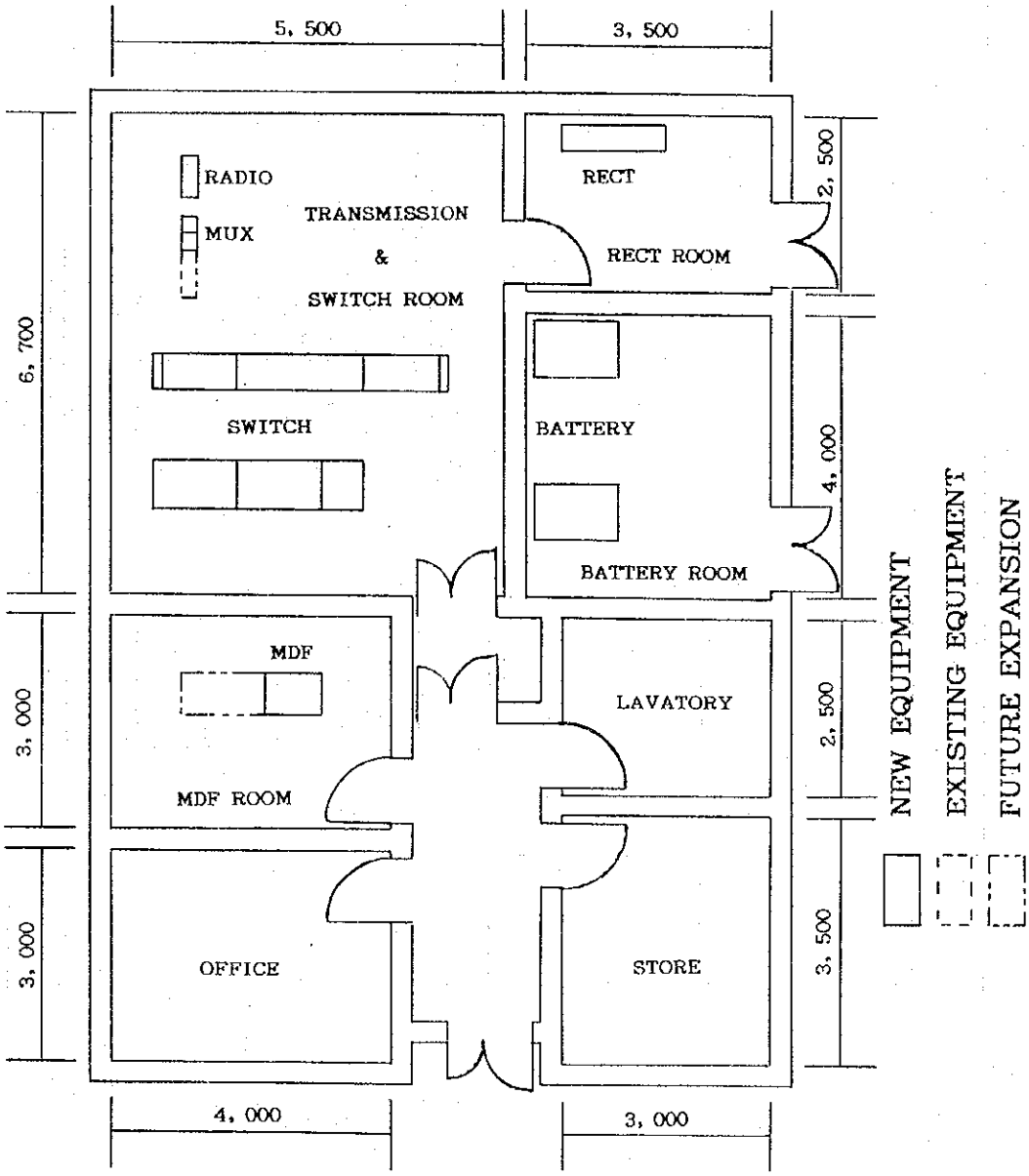
SITE LAYOUT PLAN SCALE : 1/200	SITE NAME : PUNAKHA	FIG. NO. : EL—23



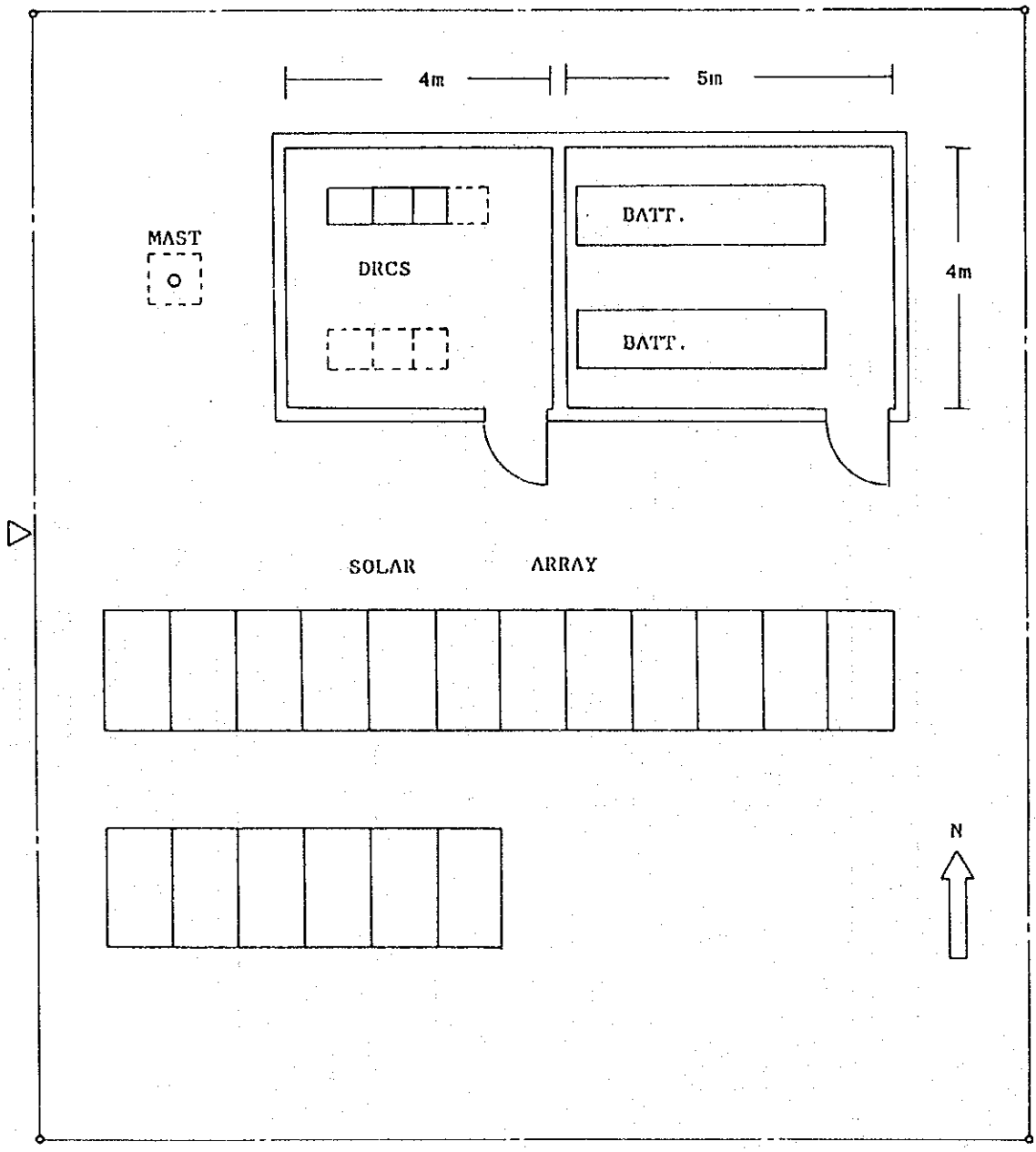
SITE LAYOUT PLAN SCALE:1/200	SITE NAME: CHIMAKOTHI	FIG. NO: EL—24



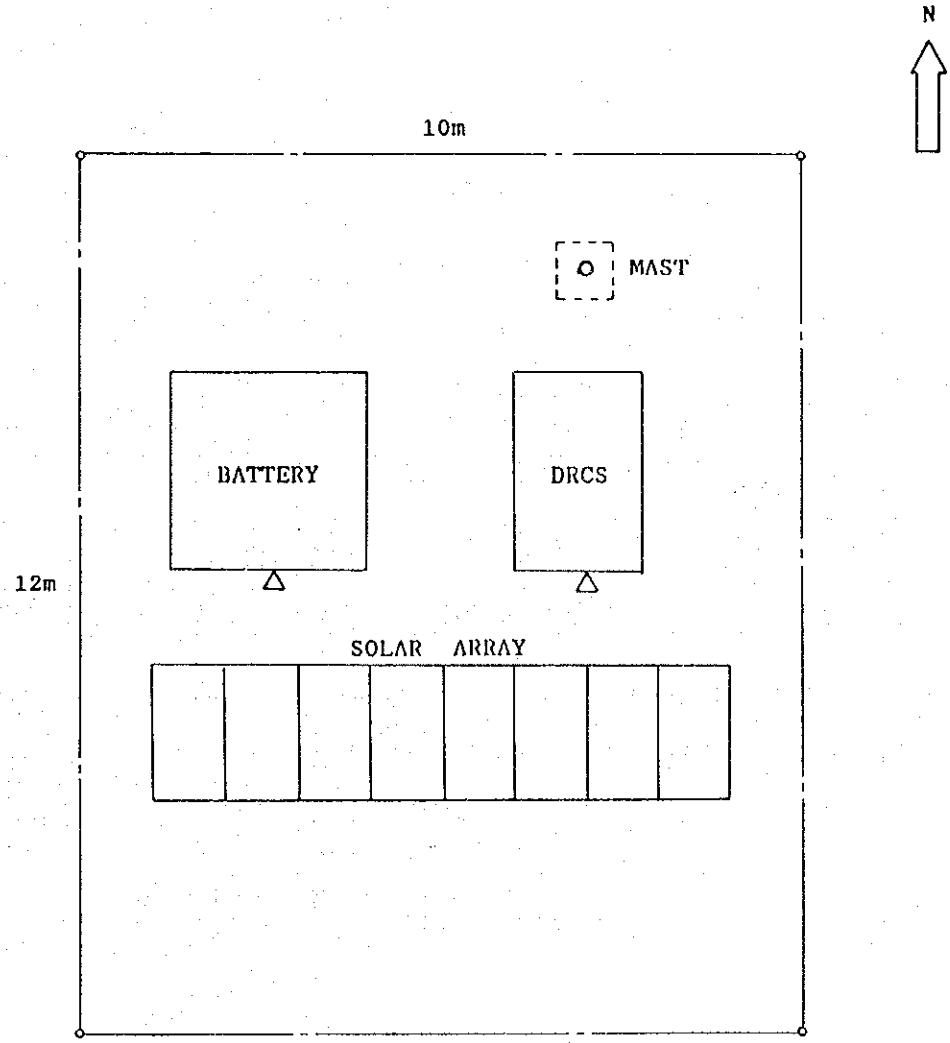
SITE LAYOUT PLAN SCALE:1/300	SITE NAME: HAA	FIG. NO: EL—25



FLOOR LAYOUT PLAN SCALE : 1/100	SITE NAME : TERMINAL STATIONS	FIG. NO. : EL—26



SITE LAYOUT PLAN	SITE NAME : DRCS SUBSCRIBER STATIONS	FIG. NO. : EL—27



SITE LAYOUT PLAN	SITE NAME : DRCS REPEATER STATIONS	FIG. NO. : EL—28

MICRO ROUTE

SITE NAME	(Ab.)	LONGITUDE	LATITUDE	GROUND LEVEL(m)	AZIMUTH	DISTANCE (Km)	DIRECTION
THIMPHU	THI	89° 38′ 10″	27° 28′ 49″	2360	27° 28′ 49″	5.32	DOB
DOBCHU	DOB	89° 41′ 18″	27° 29′ 30″	3880	256° 19′ 49″	5.32	THI
					219° 55′ 19″	27.63	JAP
					89° 59′ 09″	6.02	DOC
JAPJEKHA	JAP	89° 30′ 32″	27° 18′ 04″	3440	39° 50′ 22″	27.63	DOB
					174° 48′ 12″	34.54	TAK
					325° 38′ 39″	16.41	PAR-P
TAKTI	TAK	89° 32′ 26″	26° 59′ 31″	3329	354° 49′ 04″	34.54	JAP
					333° 31′ 52″	1.20	TAK-P
					263° 56′ 33″	35.26	KAP
TAKTI-P	TAK-P	89° 32′ 07″	27° 00′ 05″	3388	153° 31′ 43″	1.20	TAK
					217° 33′ 14″	14.40	PEP
PEPCHU	PEP	89° 26′ 49″	26° 53′ 56″	1759	37° 30′ 50″	14.40	TAK-P
					232° 47′ 52″	7.31	PHU
PHUENTSHOLING	PHU	89° 23′ 18″	26° 51′ 33″	225	52° 46′ 16″	7.31	PEP
KAPDANE	KAP	89° 11′ 23″	26° 57′ 29″	1550	83° 46′ 55″	35.26	TAK
					223° 07′ 12″	9.37	SAU
SAURENI	SAU	89° 07′ 31″	26° 53′ 48″	1080	43° 05′ 27″	9.37	KAP
					276° 36′ 01″	2.71	SAT
SAMTSE	SAT	89° 05′ 54″	26° 53′ 58″	405	96° 35′ 17″	2.71	SAU
PARO-P	PAR-P	89° 24′ 55″	27° 25′ 22″	2316	145° 36′ 04″	16.41	JAP
					138° 24′ 23″	0.19	PAR
PARO	PAR	89° 24′ 59″	27° 25′ 18″	2280	318° 24′ 25″	0.19	PAR-P

SITE NAME	(Ab.)	LONGITUDE	LATITUDE	GROUND LEVEL(m)	AZIMUTH	DISTANCE (Km)	DIRECTION
DOCHULA	DOC	89° 44′ 57″	27° 29′ 30″	3129	270° 00′ 51″	6.02	DOB
					71° 19′ 18″	15.29	LIM
LIMUTI	LIM	89° 53′ 45″	27° 32′ 08″	1930	251° 23′ 22″	15.29	DOC
					175° 53′ 31″	6.53	WAN
					329° 08′ 13″	6.45	PUN
WANGDUEPHODRANG	WAN	89° 54′ 02″	27° 28′ 38″	1240	355° 53′ 39″	6.53	LIM
PUNAKHA	PUN	89° 51′ 45″	27° 35′ 07″	1220	149° 07′ 17″	6.45	LIM

COORDINATES OF OBJECTIVE SITES		TABLE NO. : 1

DRCS ROUTE

SITE NAME	(Ab.)	LONGITUDE	LATITUDE	GROUND LEVEL(m)	AZIMUTH	DISTANCE (Km)	DIRECTION
TASHIGANG	TAS	91° 33′ 12″	27° 19′ 58″	1090	170° 29′ 53″	3.68	RAN
RANGSHIKHAR	RAN	91° 33′ 34″	27° 18′ 01″	2080	350° 30′ 03″	3.68	TAS
					27° 05′ 15″	2.13	SAG
SAMCHHILING GOMPA	SAG	91° 34′ 09″	27° 19′ 02″	2420	207° 05′ 31″	2.13	RAN
					346° 34′ 33″	33.62	GAN
GANGADUNG	GAN	91° 29′ 24″	27° 36′ 40″	2060	166° 32′ 21″	33.62	SAG
					140° 59′ 01″	1.41	TAY
TASHIYANGTSE	TAY	91° 29′ 56″	27° 36′ 05″	1770	320° 59′ 16″	1.41	GAN

SITE NAME	(Ab.)	LONGITUDE	LATITUDE	GROUND LEVEL(m)	AZIMUTH	DISTANCE (Km)	DIRECTION
DOCHULA	DOC	89° 44′ 57″	27° 29′ 30″	3129	270° 00′ 51″	6.02	DOB
					357° 38′ 38″	45.83	GAS
GASA	GAS	89° 43′ 48″	27° 54′ 12″	2780	177° 38′ 06″	45.83	DOC

SITE NAME	(Ab.)	LONGITUDE	LATITUDE	GROUND LEVEL(m)	AZIMUTH	DISTANCE (Km)	DIRECTION
JAPJEKHA	JAP	89° 30′ 32″	27° 18′ 04″	3440	173° 00′ 45″	22.98	CHI
					298° 01′ 40″	19.7	CHE
CHIMAKOTHI	CHI	89° 32′ 14″	27° 05′ 46″	2245	353° 01′ 32″	22.98	JAP
CHELELA	CHE	89° 19′ 59″	27° 23′ 03″	4110	117° 56′ 49″	19.70	JAP
					248° 54′ 31″	4.23	HAA
HAA	HAA	89° 17′ 36″	27° 22′ 14″	2729	68° 53′ 26″	4.23	CHE

COORDINATES OF OBJECTIVE SITES		TABLE NO. : 2

PHUENTSHOLING ROUTE

SITE NAME	(Ab.)	ANTENNA TYPE	ANTENNA SIZE	ANTENNA HEIGHT(m)	DIRECTION	REMARKS
THIMPHU	THI	Parabolic	3.6mD,dual	20	DOB	EXISTING
DOBCHU	DOB	Parabolic	3.6mD,dual	5	THI	EXISTING
		Parabolic	4.6mD,single	10	JAP	NEW
JAPJEKHA	JAP	Parabolic	4.6mD,single	10	DOB	NEW
		Parabolic	1.8mD,single	10	TAK	
TAKTI	TAK	Parabolic	1.8mD,single	10	JAP	NEW
		Parabolic	2.4mD,single	10	TAK-P	
TAKTI-P	TAK-P	Reflector	8*10feet	3	TAK	NEW
					PEP	
PEPCHU	PEP	Parabolic	2.4mD,single	25	TAK-P	NEW
		Parabolic	1.2mD,single	10	PHU	
PHUENTSHOLING	PHU	Parabolic	1.2mD,single	20	PEP	NEW

SAMTSE ROUTE

SITE NAME	(Ab.)	ANTENNA TYPE	ANTENNA SIZE	ANTENNA HEIGHT(m)	DIRECTION	REMARKS
TAKTI	TAK	Parabolic	4.6mD,single	15	KAP	NEW
KAPDANE	KAP	Reflector	20*32feet	3	TAK	NEW
					SAU	
SAURENI	SAU	Parabolic	4.6mD,single	10	KAP	NEW
		Parabolic	1.2mD,single	10	SAT	
SAMTSE	SAT	Parabolic	1.2mD,single	10	SAU	NEW

PARO ROUTE

SITE NAME	(Ab.)	ANTENNA TYPE	ANTENNA SIZE	ANTENNA HEIGHT(m)	DIRECTION	REMARKS
JAPJEKHA	JAP	Parabolic	1.2mD,single	10	PAR-P	NEW
PARO-P	PAR-P	Reflector	8*10feet	3	JAP	NEW
					PAR	
PARO	PAR	Parabolic	1.2mD,single	10	PAR-P	NEW

WANGDUEPHODRANG ROUTE

SITE NAME	(Ab.)	ANTENNA TYPE	ANTENNA SIZE	ANTENNA HEIGHT(m)	DIRECTION	REMARKS
DOBCHU	DOB	Parabolic	3.6mD,dual	10	DOC	EXISTING
DOCHULA	DOC	Parabolic	3.6mD,dual	20	DOB	EXISTING
		Parabolic	3.6mD,dual	15	LIM	NEW
LIMUTI	LIM	Parabolic	4.6mD,dual	10	DOC	NEW
		Parabolic	4.6mD,single	5	WAN	NEW
		Parabolic	3.6mD,single	5	PUN	NEW
WANGDUEPHODRANG	WAN	Parabolic	3.6mD,single	10	LIM	NEW
PUNAKHA	PUN	Parabolic	3.6mD,single	10	LIM	NEW

ANTENNA INFORMATION		TABLE NO. : 3

TASHIGANG-TASHIYANGTSE ROUTE

SITE NAME	(Ab.)	ANTENNA TYPE	ANTENNA HEIGHT(m)	DIRECTION	REMARKS
TASHIGANG	TAS	HORN EXIST.	23	RAN	EXISTING TOWER
RANGSHIKHAR	RAN	HORN EXIST.	32	TAS	EXISTING TOWER
		HORN	32	SAG	NEW
SAMCHHILING GOMPA	SAG	HORN	10	RAN	NEW
		HORN	10	GAN	
GANGADUNG	GAN	1.8mD GP	10	SAG	NEW
		HORN	10	TAY	
TASHIYANGTSE	TAY	HORN	10	GAN	NEW

THIMPHU-GASA ROUTE

SITE NAME	(Ab.)	ANTENNA TYPE	ANTENNA HEIGHT(m)	DIRECTION	REMARKS
THIMPHU	THI	-	-	DOC	BSC SITE
DOCHULA	DOC	-	-	THI	TDM CONT SITE
		1.8mD GP	20	GAS	NEW
GASA	GAS	1.8mD GP	9	DOC	NEW

PARO-CHIMAKOTHI ROUTE

SITE NAME	(Ab.)	ANTENNA TYPE	ANTENNA HEIGHT(m)	DIRECTION	REMARKS
PARO	PAR	-	-	JAP	BSC SITE
JAPJEKHA	JAP	-	-	PAR	TDM CONT SITE
		1.2mD GP	12	CHI	NEW
CHIMAKOTHI	CHI	1.2mD GP	20	JAP	NEW

PARO-HAA ROUTE

SITE NAME	(Ab.)	ANTENNA TYPE	ANTENNA HEIGHT(m)	DIRECTION	REMARKS
PARO	PAR	-	-	JAP	BSC SITE
JAPJEKHA	JAP	-	-	PAR	TDM CONT SITE
		HORN	12	CHE	NEW
CHELELA	CHE	HORN	10	JAP	NEW
		HORN	10	HAA	
HAA	HAA	HORN	10	CHE	NEW

ANTENNA INFORMATION		TABLE NO. : 4

TABLE NO. : 5

	B to B		B to B					REFLECTOR		
STATION A	THIMPHU	DOBCHU	THIMPHU	THIMPHU	DOBCHU	THIMPHU	JAPJEKHA	TAKTI	TAKTI(P)	TAKTI
STATION B	DOBCHU	DOCHULA	DOCHULA	DOBCHU	JAPJEKHA	JAPJEKHA	TAKTI	TAKTI(P)	PEPCHU	PEPCHU
FREQUENCY	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
TRANS CAPACITY	34	34	34	34	34	34	34	34	34	34
HOP DISTANCE	5.32	6.02	11.34	5.32	27.63	32.95	34.54	1.20	14.40	15.60
ANT H A	20	10	20	20	10	20	10	10	5	10
ANT H B	5	20	20	5	10	10	10	5	25	25
SPAN LOSS	125.00	126.10	251.10	125.03	139.30	264.33	141.28	112.10	133.68	245.78
FEEDER LENGTH A	50	10	60	50	10	60	25	25	0	25
FEEDER LENGTH B	10	35	45	10	25	35	25	0	40	40
FEEDER LOSS/m	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.068
FEEDER LOSS A+B	4.080	3.060	7.140	4.080	2.380	6.460	3.400	1.700	2.720	4.420
BR CKT LOSS	6.3	6.3	6.3	5.8	5.8	5.8	5.8	5.8	5.8	5.8
TOTAL LOSS	132.23	132.31	264.54	132.01	144.58	276.59	150.48	116.70	139.30	256.00
ANT DIA A	3.6	3.6	3.6*2	3.6	4.6	3.6+4.6	1.8	2.4	8*10FT	8*10FT
ANT DIA B	3.6	3.6	3.6*2	3.6	4.6	3.6+4.6	1.8	8*10FT	2.4	2.4*2
ANT GAIN A	47	47	94	47	48.5	95.5	41	43.5		92.80
ANT GAIN B	47	47	94	47	48.5	95.5	41		43.5	87
TOTAL GAIN	94	94	188	94	97	191	82			179.8
NET LOSS			76.54			85.59	68.48			76.20
TX POWER			30			33	30			30
RX INPUT			-46.54			-52.59	-38.48			-46.20
THRESHOLD LEVEL			-84.5			-84.5	-84.5			-84.5
FADE MARGIN			37.96			31.91	46.02			38.30
RAYLEIGH FADE			0.000238			0.009960	0.011746			0.000727
PROBABILITY %			0.000004			0.000642	0.000029			0.000011
OBJECTIVE %			0.000245			0.000712	0.000746			0.000337

TRANSMISSION ENGINEERING

TABLE NO. : 6

			→ → → → → → → → →		REFLECTOR **********			
STATION A	PEPCHU	TOTAL	TAKTI	KAPDANE	TAKTI	SAURENI	TOTAL	
STATION B	P.TSHOLING		KAPDANE	SAURENI	SAURENI	SAMTSE		
FREQUENCY	8000		8300	8300	8300	8300		
TRANS CAPACITY	34		8	8	8	8		
HOP DISTANCE	7.31	101.7	35.26	9.37	44.63	2.71	47.34	
ANT H A	10		15	5	15	10		
ANT H B	20		5	10	10	10		
SPAN LOSS	127.79		141.78	130.27	272.05	119.49		
FEEDER LENGTH A	25		30	0	30	25		
FEEDER LENGTH B	35		0	25	25	25		
FEEDER LOSS/m	0.068		0.066	0.066	0.066	0.066		
FEEDER LOSS A+B	4.080		1.980	1.650	3.630	3.300		
BR CKT LOSS	5.8		5.8	5.8	5.8	5.8		
TOTAL LOSS	137.67		146.66	134.82	281.48	128.59		
ANT DIA A	1.2		4.6	20*32FT	20*32FT	1.2		
ANT DIA B	1.2		20*32FT	4.6	4.6*2	1.2		
ANT GAIN A	37.5		48.5		97	37.8		
ANT GAIN B	37.5			48.5	103.78	37.8		
TOTAL GAIN	75				200.78	75.6		
NET LOSS	62.67				80.70	52.99		
TX POWER	30				33	10		
RX INPUT	-32.67				-47.7	-42.99		
THRESHOLD LEVEL	-84.5				-84.5	-84.5		
FADE MARGIN	51.83				36.8	41.51		
RAYLEIGH FADE	0.000051				0.028805	0.000002		
PROBABILITY %	0.000000	0.000686			0.000602	0.000000	0.000602	
OBJECTIVE %	0.000158	0.002198			0.000964	0.000059	0.001023	

			REFLECTOR		B to B		B to B
STATION A	JAPJEKHA	PARO(P)	JAPJEKHA	DOCHULA	LIMUTI	DOCHULA	LIMUTI	DOCHULA
STATION B	PARO(P)	PARO	PARO	LIMUTI	WANGDUEP.	WANGDUEP.	PUNAKHA	PUNAKHA
FREQUENCY	8300	8300	8300	8300	8300	8300	8300	8300
TRANS CAPACITY	34	34	34	8	8	8	8	8
HOP DISTANCE	16.41	0.19	16.6	15.29	6.53	21.82	6.45	21.74
ANT H A	10	5	20	15	5	15	5	15
ANT H B	5	10	20	10	10	10	10	10
SPAN LOSS	135.13	96.41	231.54	134.52	127.13	261.65	127.02	261.54
FEEDER LENGTH A	25	0	25	30	10	40	10	40
FEEDER LENGTH B	0	25	25	10	25	35	25	35
FEEDER LOSS/m	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066
FEEDER LOSS A+B	1.650	1.650	3.300	2.640	2.310	4.950	2.310	4.950
BR CKT LOSS	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
TOTAL LOSS	139.68	100.96	240.64	140.06	132.34	272.40	132.23	272.29
ANT DIA A	1.2	8*10FT	8*10FT	3.6	4.6	3.6+4.6	4.6	3.6+4.6
ANT DIA B	8*10FT	1.2	1.2*2	4.6	3.6	4.6+3.6	3.6	4.6+3.6
ANT GAIN A	37.8		94.86	47.4	48.5	95.9	48.5	95.9
ANT GAIN B		37.8	75.6	48.5	47.4	95.9	47.4	95.9
TOTAL GAIN			170.46	95.9	95.9	191.8	95.9	191.8
NET LOSS			70.18			80.6		80.49
TX POWER			30			30		30
RX INPUT			-40.18			-50.6		-50.49
THRESHOLD LEVEL			-84.5			-84.5		-84.5
FADE MARGIN			44.32			33.9		34.01
RAYLEIGH FADE			0.000904			0.002354		0.002324
PROBABILITY %			0.000003			0.000096		0.000092
OBJECTIVE %			0.000359			0.000471		0.000470

TABLE NO. : 7

TRANSMISSION ENGINEERING

TABLE NO. : 8

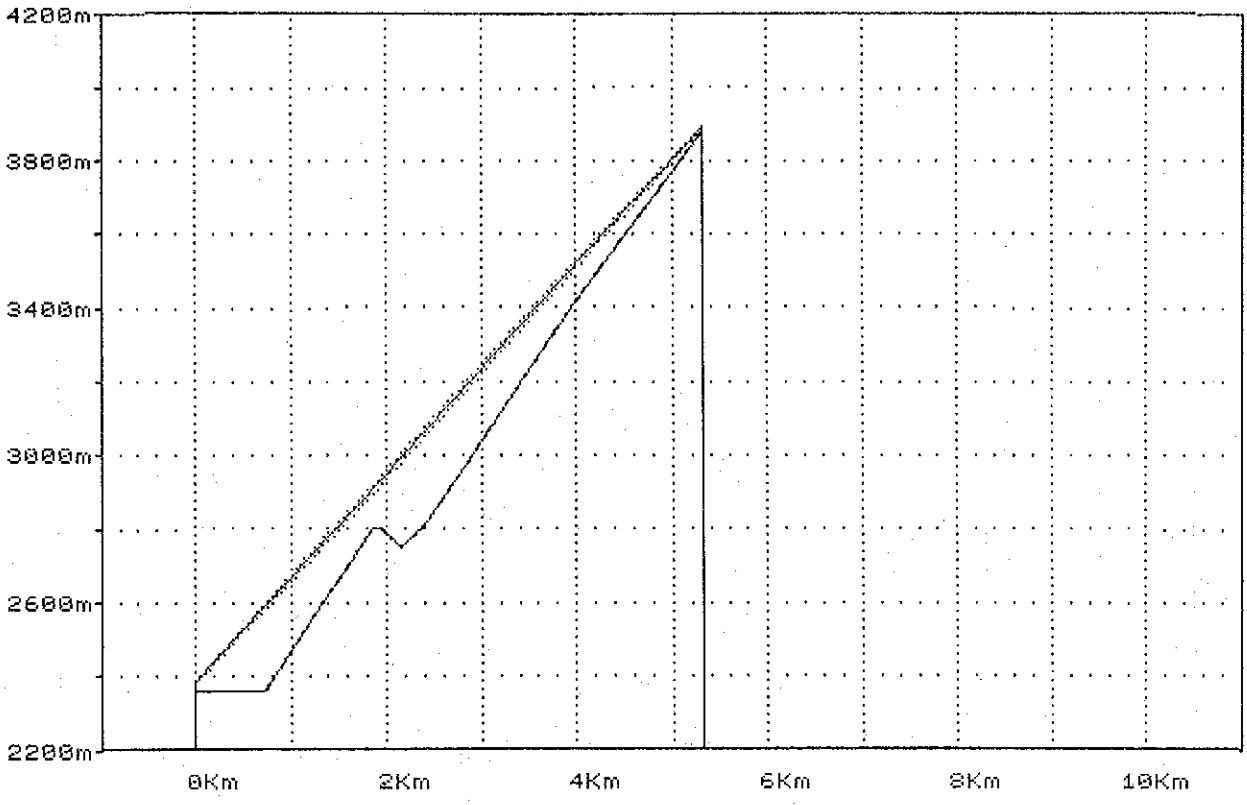
STATION A	TASHIGANG	R.SHIKHAR	S.CHHLING	GANGADUNG	TOTAL	DOCHULA	TOTAL
STATION B	R.SHIKHAR	S.CHHLING	GANGADUNG	TASHIYANGTSE		GASA	
FREQUENCY	2400	2400	2400	2400		2400	
TRANS CAPACITY	4	4	4	4		4	
HOP DISTANCE	3.68	2.13	33.62	1.41	40.84	45.83	45.83
ANT H A	23	32	10	10		22	
ANT H B	32	10	10	10		10	
SPAN LOSS	111.37	106.62	130.59	103.04		133.28	
FEEDER LENGTH A	68	47	15	15		37	
FEEDER LENGTH B	47	15	15	25		25	
FEEDER LOSS/m	0.13	0.13	0.13	0.13		0.13	
FEEDER LOSS A+B	14.950	8.060	3.900	5.200		8.060	
BR CKT LOSS	7.5	11.6	7.5	7.5		6.5	
TOTAL LOSS	133.82	126.28	141.99	115.74		147.84	
ANT DIA A	HORN	HORN	HORN	HORN		1.8GP	
ANT DIA B	HORN	HORN	1.2GP	HORN		1.8GP	
ANT GAIN A	20	20	20	20		30.1	
ANT GAIN B	20	20	26.6	20		30.1	
TOTAL GAIN	40	40	46.6	40		60.2	
NET LOSS	93.82	86.28	95.39	75.74		87.64	
TX POWER	31	31	31	31		31	
RX INPUT	-62.82	-55.28	-64.39	-44.74		-56.64	
THRESHOLD LEVEL	-92	-92	-92	-92		-92	
FADE MARGIN	29.18	36.72	27.61	47.26		35.36	
RAYLEIGH FADE	0.000003	0.000000	0.007403	0.000000		0.021896	
PROBABILITY %	0.000000	0.000000	0.001282	0.000000	0.001283	0.000637	0.000637
OBJECTIVE %	0.000368	0.000213	0.003362	0.000141	0.004084	0.004583	0.004583

		JAPJEKHA	CHELELA	TOTAL
STATION A	JAPJEKHA	CHELELA	HAA	
STATION B	CHIMAKOTHI	2400	2400	
FREQUENCY	2400	4	4	
TRANS CAPACITY	4	19.7	4.23	23.93
HOP DISTANCE	22.98	12	10	
ANT H A	12	10	10	
ANT H B	20	125.94	112.58	
SPAN LOSS	127.28	27	15	
FEEDER LENGTH A	27	15	25	
FEEDER LENGTH B	35	0.13	0.13	
FEEDER LOSS/m	0.13	5.460	5.200	
FEEDER LOSS A+B	8.060	11.6	12.7	
BR CKT LOSS	16.8	143.00	130.48	
TOTAL LOSS	152.14			
		HORN	HORN	
ANT DIA A	1.2GP	HORN	HORN	
ANT DIA B	1.2GP	20	20	
ANT GAIN A	26.6	20	20	
ANT GAIN B	26.6	40	40	
TOTAL GAIN	53.2			
		103.00	90.48	
NET LOSS	98.94	31	31	
TX POWER	31	-72.00	-59.48	
RX INPUT	-67.94	-92	-92	
THRESHOLD LEVEL	-92	20.00	32.52	
FADE MARGIN	24.06	0.001140	0.000005	
RAYLEIGH FADE	0.001955	0.001141	0.000000	0.001141
PROBABILITY %	0.000768			
		0.001970	0.000423	0.002393
OBJECTIVE %	0.002298			

TRANSMISSION ENGINEERING

TABLE NO. :

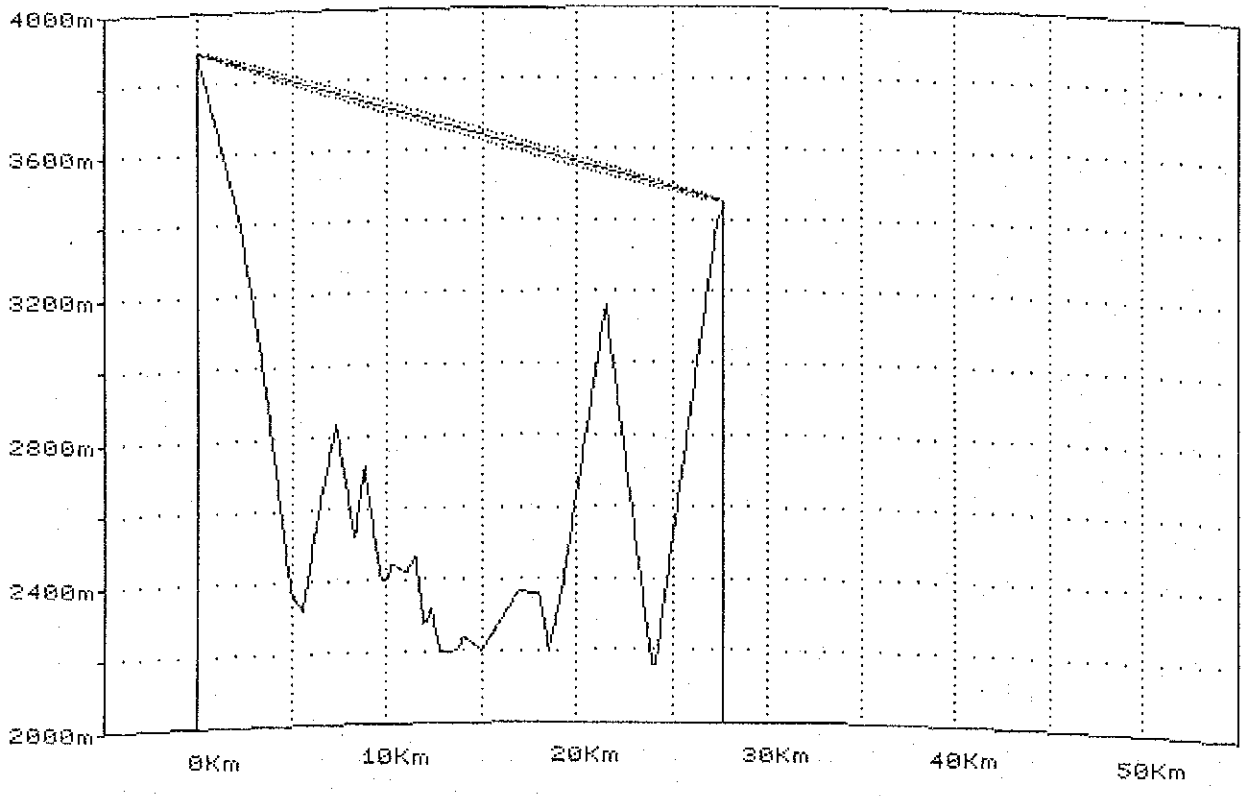
9



Station No.	1-1	1-2	
Station Name	THIMPHU	DOBCHU	
Elavation	2360.00 m	3880.00 m	
ANT. Height	22.0 m	12.0 m	
Angle of Elavation	+16° 14′ 41"	Angle of Depression	-16° 16′ 50"
Distance	5.32 km	Frequency	2400.00 MHz

Ridge Point	5.12 km	Ridge Height	3809.90 m
Radio Path Height	3835.20 m	1st Fresnel Radius	4.90 m
Path Clearance	25.30 m		
Clearance Margin	20.40 m	Clearance Factor	5.16

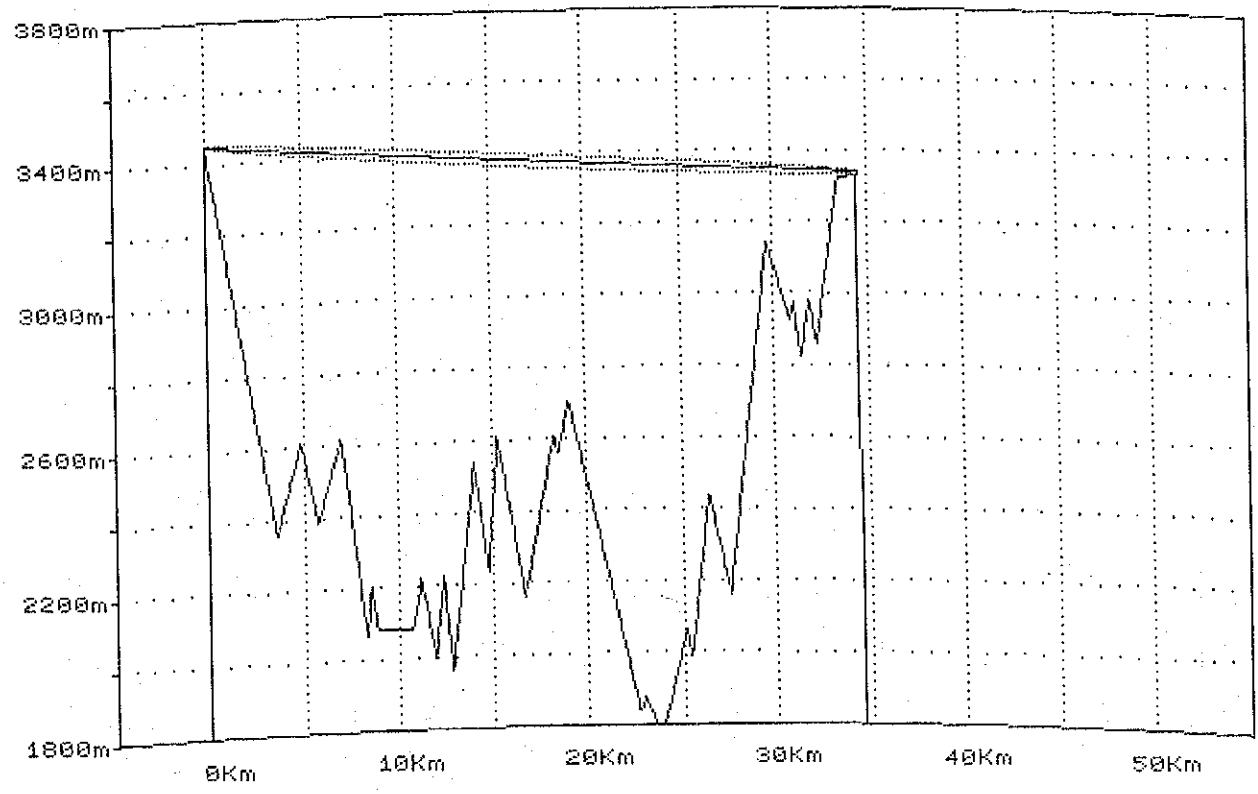
PATH PROFILE	PATH NAME : THIMPHU ~ DOBCHU	FIG. NO. : PF—1



Station No.	1-1	1-2	
Station Name	DOBCHU	JAPJEKHA	
Elavation	3880.00 m	3440.00 m	
ANT. Height	10.0 m	10.0 m	
Angle of Depression	- 1° 0′ 20"	Angle of Elavation	+ 0° 49′ 9"
Distance	27.63 km	Frequency	8000.00 MHz

Ridge Point	27.53 km	Ridge Height	3427.90 m
Radio Path Height	3451.40 m	1st Fresnel Radius	1.90 m
Path Clearance	23.50 m		
Clearance Margin	21.60 m	Clearance Factor	12.37

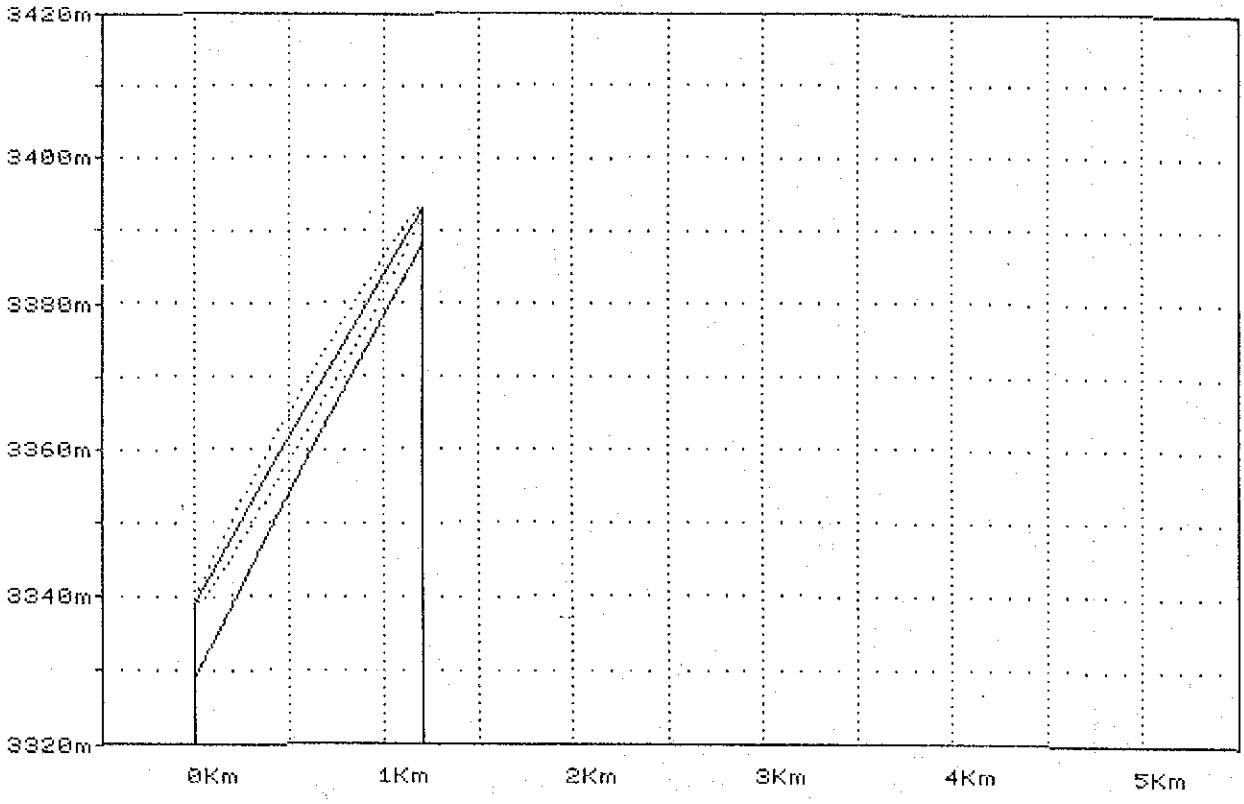
PATH PROFILE	PATH NAME : DOBCHU ~ JAPJEKHA	FIG. NO. : PF-2



Station No.	2-1	2-2	
Station Name	JAPJEKHA	TAKTI	
Elavation	3440.00 m	3329.00 m	
ANT. Height	10.0 m	10.0 m	
Angle of Depression	- 0° 18′ 2"	Angle of Elavation	+ 0° 4′ 3"
Distance	34.54 km	Frequency	8000.00 MHz

Ridge Point	33.60 km	Ridge Height	3320.90 m
Radio Path Height	3340.20 m	1st Fresnel Radius	5.90 m
Path Clearance	19.30 m		
Clearance Margin	13.40 m	Clearance Factor	3.27

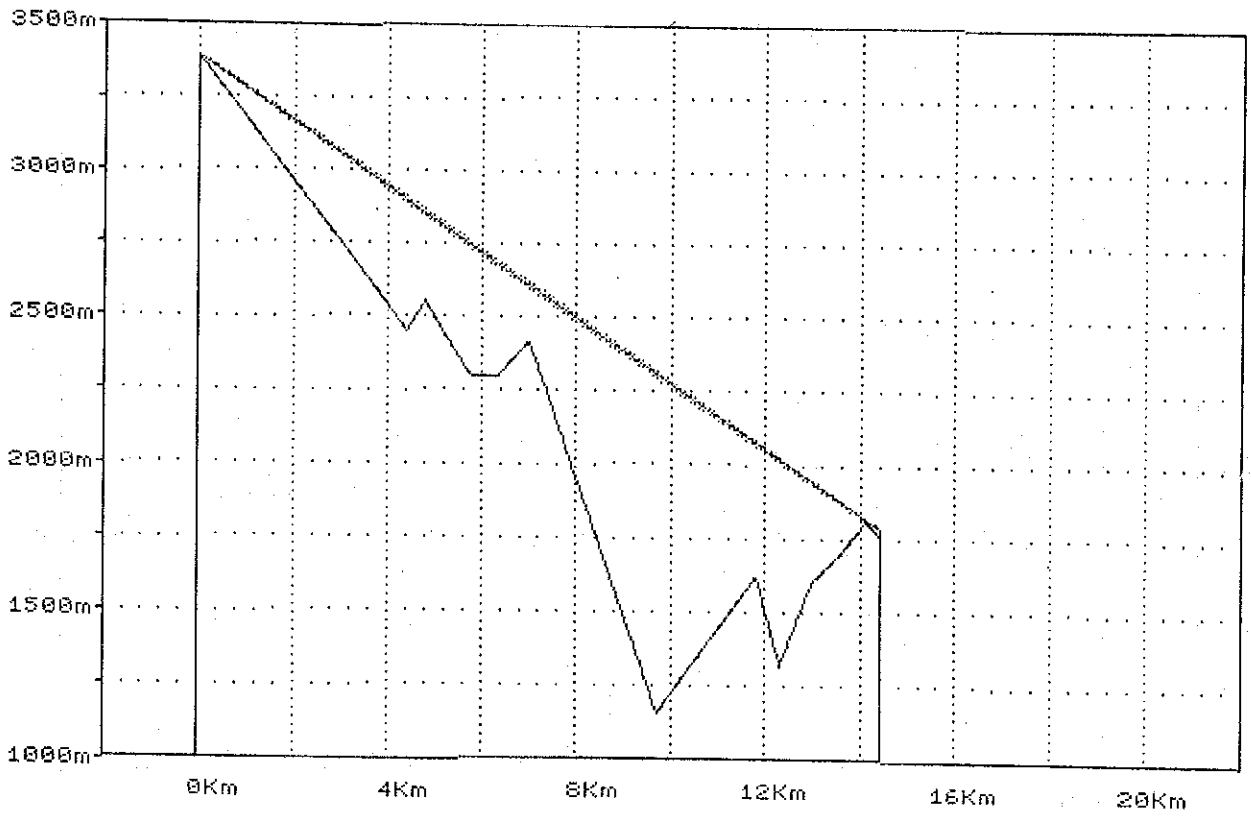
PATH PROFILE	PATH NAME : JAPJEKHA ~ TAKTI	FIG. NO. : PF—3



Station No.	3-1	3-2	
Station Name	TAKTI	TAKTI PASSIVE	
Elavation	3329.00 m	3388.00 m	
ANT. Height	10.0 m	5.0 m	
Angle of Elavation	+ 2° 34′ 27"	Angle of Depression	- 2° 34′ 56"
Distance	1.20 km	Frequency	8000.00 MHz

Ridge Point	0.80 km	Ridge Height	3368.70 m
Radio Path Height	3375.00 m	1st Fresnel Radius	3.20 m
Path Clearance	6.30 m		
Clearance Margin	3.10 m	Clearance Factor	1.97

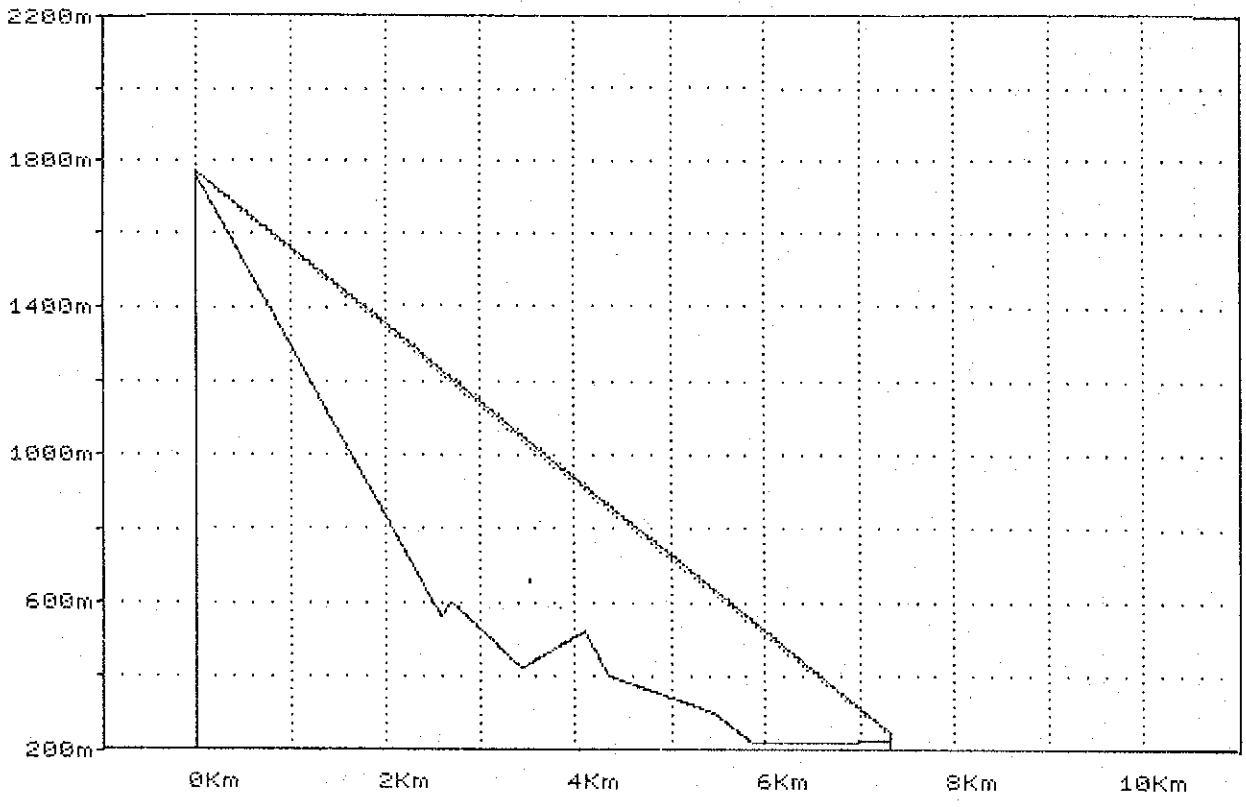
PATH PROFILE	PATH NAME : TAKTI ~ TAKTI PASSIVE	FIG. NO. : PF—4



Station No.	4-1	4-2	
Station Name	TAKTI PASSIVE	PEPCHU	
Elavation	3388.00 m	1759.00 m	
ANT. Height	5.0 m	25.0 m	
Angle of Depression	- 6° 27′ 2"	Angle of Elavation	+ 6° 21′ 12"
Distance	14.40 km	Frequency	8000.00 MHz

Ridge Point	14.10 km	Ridge Height	1810.00 m
Radio Path Height	1817.30 m	1st Fresnel Radius	3.30 m
Path Clearance	7.30 m		
Clearance Margin	4.00 m	Clearance Factor	2.21

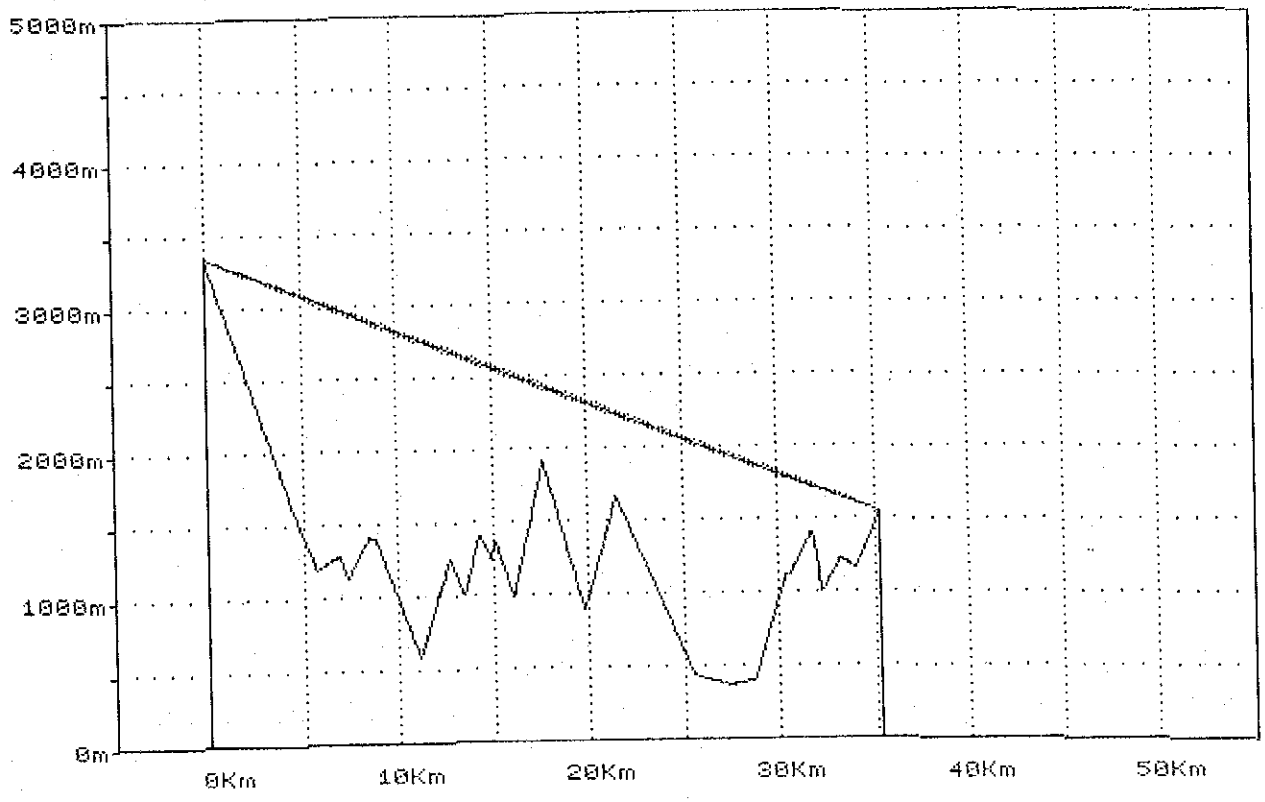
PATH PROFILE	PATH NAME : TAKTI PASSIVE ~ PEPCHU	FIG. NO. : PF—5



Station No.	5-1	5-2	
Station Name	PEPCHU	PHUENTSHOLING	
Elavation	1759.00 m	225.00 m	
ANT. Height	10.0 m	20.0 m	
Angle of Depression	-11° 58′ 11"	Angle of Elavation	+11° 55′ 14"
Distance	7.31 km	Frequency	8000.00 MHz

Ridge Point	0.10 km	Ridge Height	1713.60 m
Radio Path Height	1748.10 m	1st Fresnel Radius	1.90 m
Path Clearance	34.50 m		
Clearance Margin	32.60 m	Clearance Factor	18.16

PATH PROFILE	PATH NAME : PEPCHU ~ PHUENTSHOLING	FIG. NO. : PF-6



Station No.	10-1	10-2	
Station Name	TAKTI	KAPDANE	
Elavation	3329.00 m	1550.00 m	
ANT. Height	15.0 m	5.0 m	
Angle of Depression	- 3° 1′ 33"	Angle of Elavation	+ 2° 47′ 17"
Distance	35.26 km	Frequency	8300.00 MHz

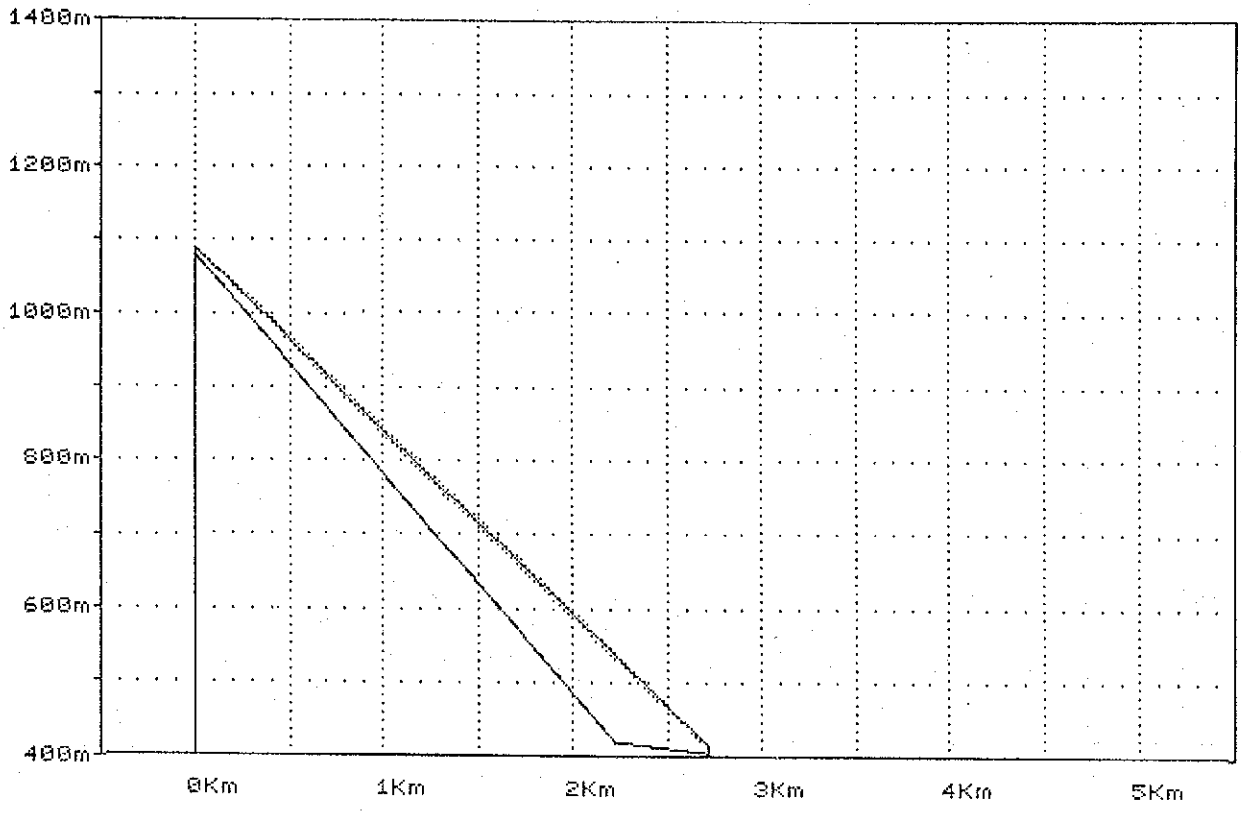
Ridge Point	35.16 km	Ridge Height	1519.00 m
Radio Path Height	1559.90 m	1st Fresnel Radius	1.90 m
Path Clearance	40.90 m		
Clearance Margin	39.00 m	Clearance Factor	21.53

PATH PROFILE	PATH NAME : TAKTI ~ KAPDANE	FIG. NO. : PF—7

Station No.	11-1	11-2	
Station Name	KAPDANE	SAURENI	
Elavation	1550.00 m	1080.00 m	
ANT. Height	5.0 m	10.0 m	
Angle of Depression	- 2° 52′ 30"	Angle of Elavation	+ 2° 48′ 42"
Distance	9.37 km	Frequency	8300.00 MHz

Ridge Point	9.27 km	Ridge Height	1064.60 m
Radio Path Height	1094.90 m	1st Fresnel Radius	1.90 m
Path Clearance	30.30 m		
Clearance Margin	28.40 m	Clearance Factor	15.95

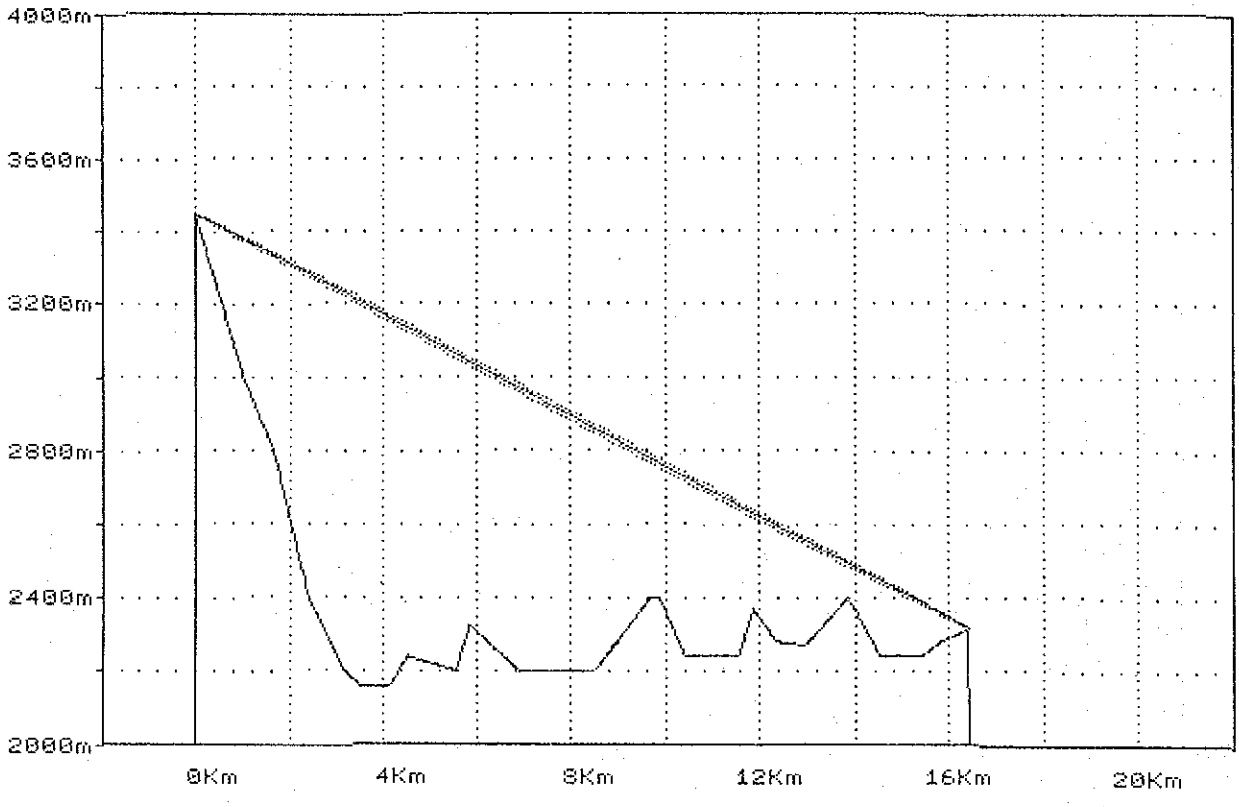
PATH PROFILE	PATH NAME : KAPDANE ~ SAURENI	FIG. NO. : PF-8



Station No.	12-1	12-2	
Station Name	SAURENI	SAMTSE	
Elavation	1080.00 m	405.00 m	
ANT. Height	10.0 m	10.0 m	
Angle of Depression	-14° 16′ 49"	Angle of Elavation	+14° 15′ 43"
Distance	2.71 km	Frequency	8300.00 MHz

Ridge Point	0.20 km	Ridge Height	1020.50 m
Radio Path Height	1040.20 m	1st Fresnel Radius	2.60 m
Path Clearance	19.70 m		
Clearance Margin	17.10 m	Clearance Factor	7.58

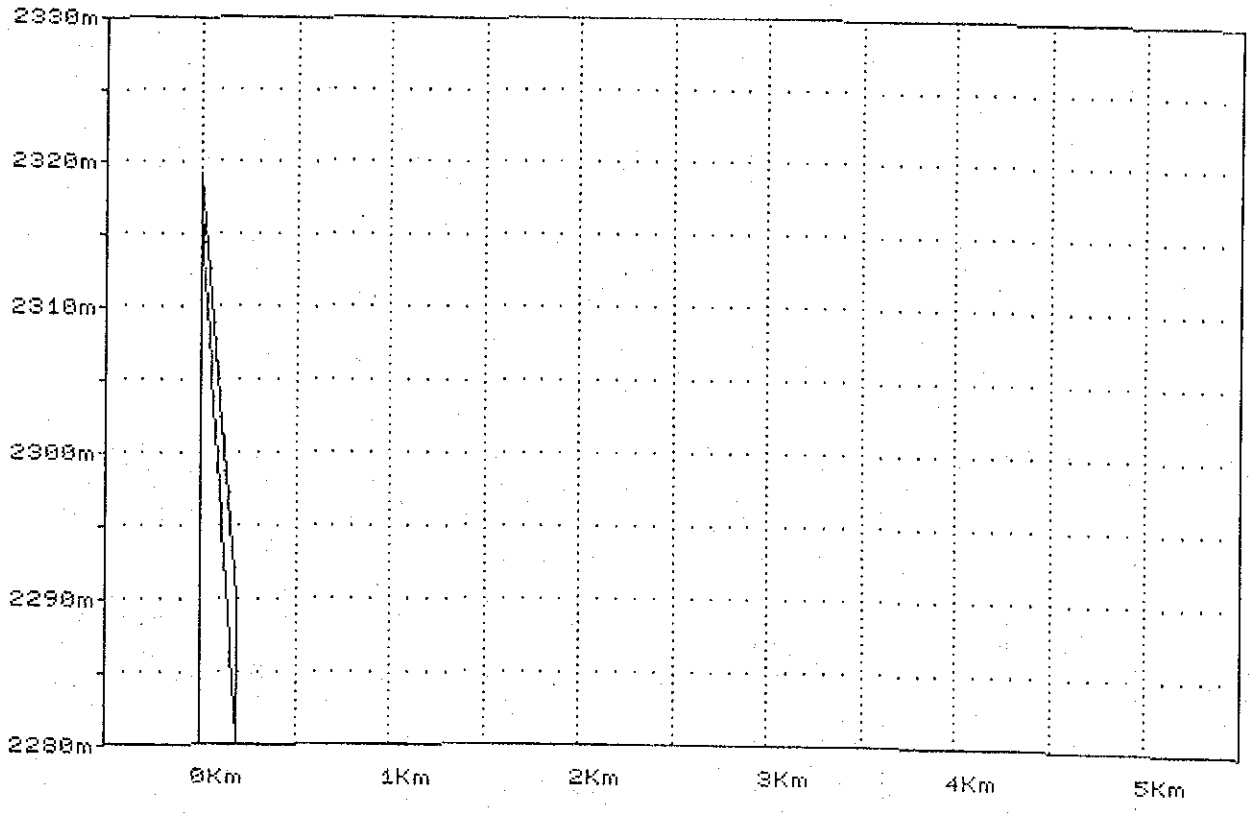
PATH PROFILE	PATH NAME : SAURENI ~ SAMTSE	FIG. NO. : PF—9



Station No.	6-1	6-2	
Station Name	JAPJEKHA	PARO PASSIVE	
Elavation	3440.00 m	2316.00 m	
ANT. Height	10.0 m	3.0 m	
Angle of Depression	- 4° 0′ 15"	Angle of Elavation	+ 3° 53′ 37"
Distance	16.41 km	Frequency	8300.00 MHz

Ridge Point	16.31 km	Ridge Height	2310.10 m
Radio Path Height	2325.80 m	1st Fresnel Radius	1.90 m
Path Clearance	15.70 m		
Clearance Margin	13.80 m	Clearance Factor	8.26

PATH PROFILE	PATH NAME : JAPJEKHA ~ PARO PASSIVE	FIG. NO. : PF-10



Station No.	7-1	7-2	
Station Name	PARO PASSIVE	PARO	
Elavation	2316.00 m	2280.00 m	
ANT. Height	3.0 m	10.0 m	
Angle of Depression	- 8° 44′ 45"	Angle of Elavation	+ 8° 44′ 40"
Distance	0.19 km	Frequency	8300.00 MHz

Ridge Point	0.00 km	Ridge Height	2310.10 m
Radio Path Height	2325.80 m	1st Fresnel Radius	1.90 m
Path Clearance	15.70 m		
Clearance Margin	13.80 m	Clearance Factor	8.26

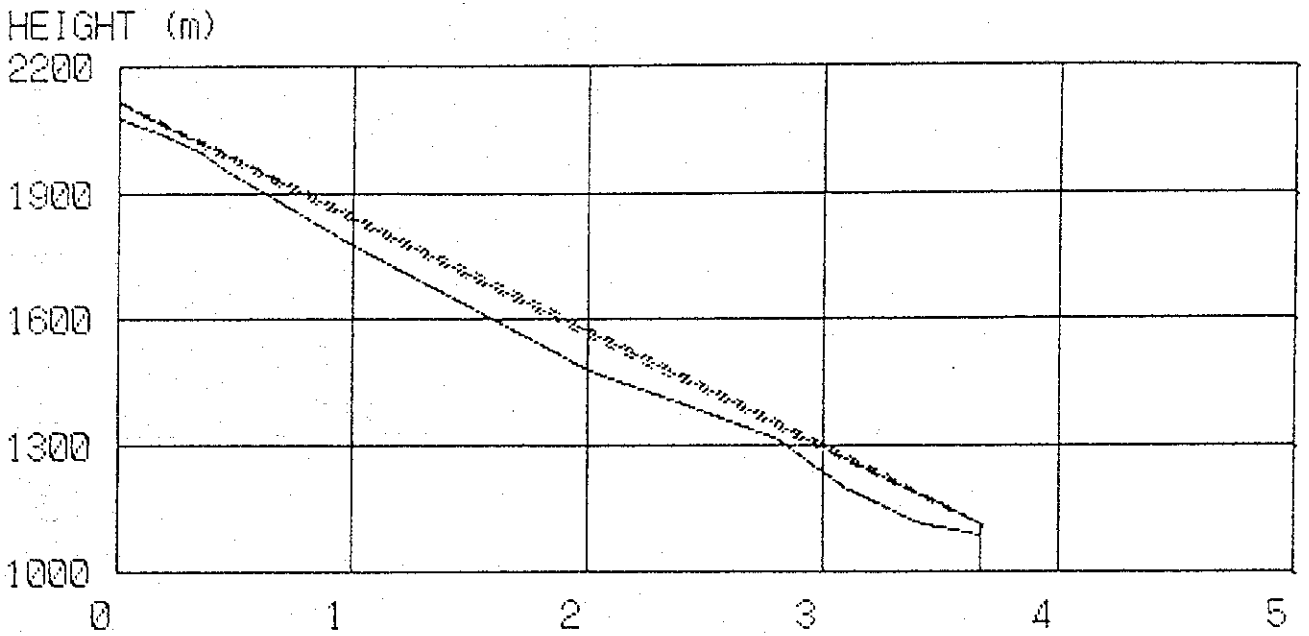
PATH PROFILE	PATH NAME : PARO PASSIVE ~ PARO	FIG. NO. : PF—11

PATH PROFILE

PATH NAME : RANGSHIKHAR ~ TASHIGANG

FIG. NO. : PF-12

(K : 1.33 FREQUENCY : 2400 MHz)



DISTANCE : 3.68 km

SITE NAME	: Rangshikhar	SITE NAME	: Tashigang
GROUND LEVEL	: 2080.0 m	GROUND LEVEL	: 1090.0 m
ANT.HEIGHT 1	: 35.0 m	ANT.HEIGHT 2	: 20.0 m

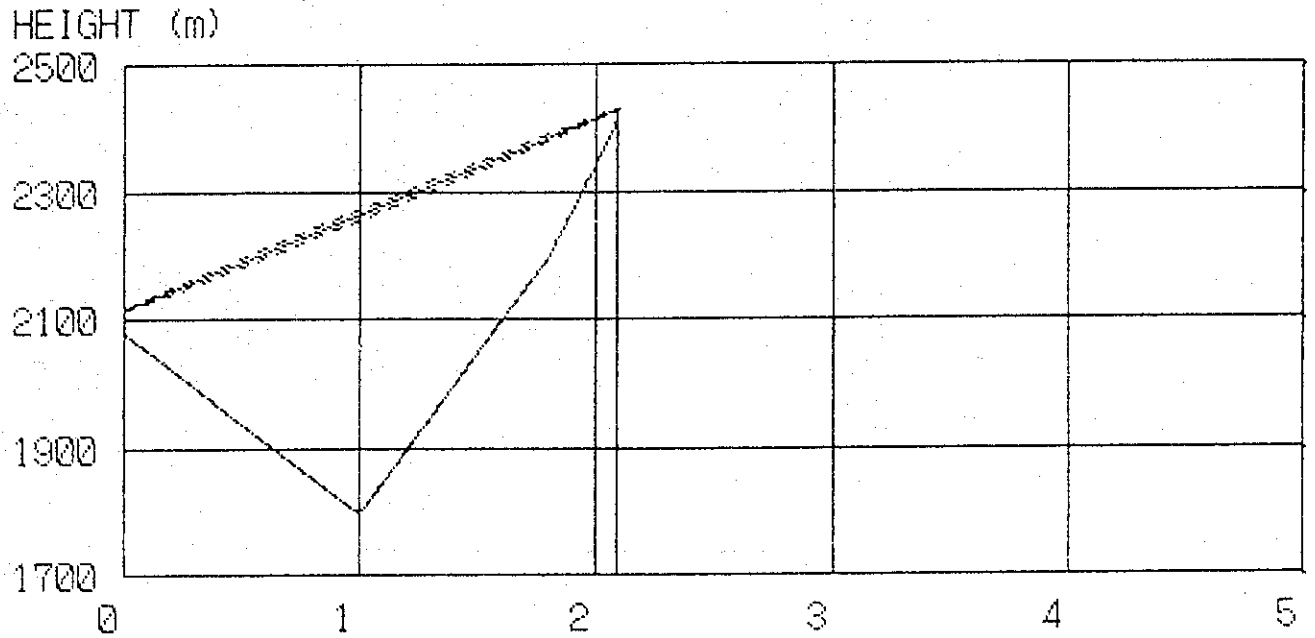
ANT.HEIGHT 1	: 35.0 m	ANT.HEIGHT 2	: 20.0 m
CRITICAL POINT	: 0.4 Km	RIDGE HEIGHT	: 2000.0 m
TREE HEIGHT	: 0.0 m	FRESNEL DEP.	: 6.3 m
CLEARANCE	: 19.3 m	CLEARANCE FAC.	: 3.1
FREE SPACE LOSS	: 111.4 dB	RIDGE LOSS	: 0.0 dB
TOTAL LOSS	: 111.4 dB		
ROUGHNESS	: 368.0 m		

PATH PROFILE

PATH NAME : RANGSHIKHAR ~ SAMCHHILING GOMPA

FIG. NO. : PF-13

(K : 1.33 FREQUENCY : 2400 MHz)



DISTANCE : 2.1 km

SITE NAME	: Rangshikhar	SITE NAME	: Samchhiling GMP
GROUND LEVEL	: 2080.0 m	GROUND LEVEL	: 2420.0 m
ANT.HEIGHT 1	: 35.0 m	ANT.HEIGHT 2	: 10.0 m

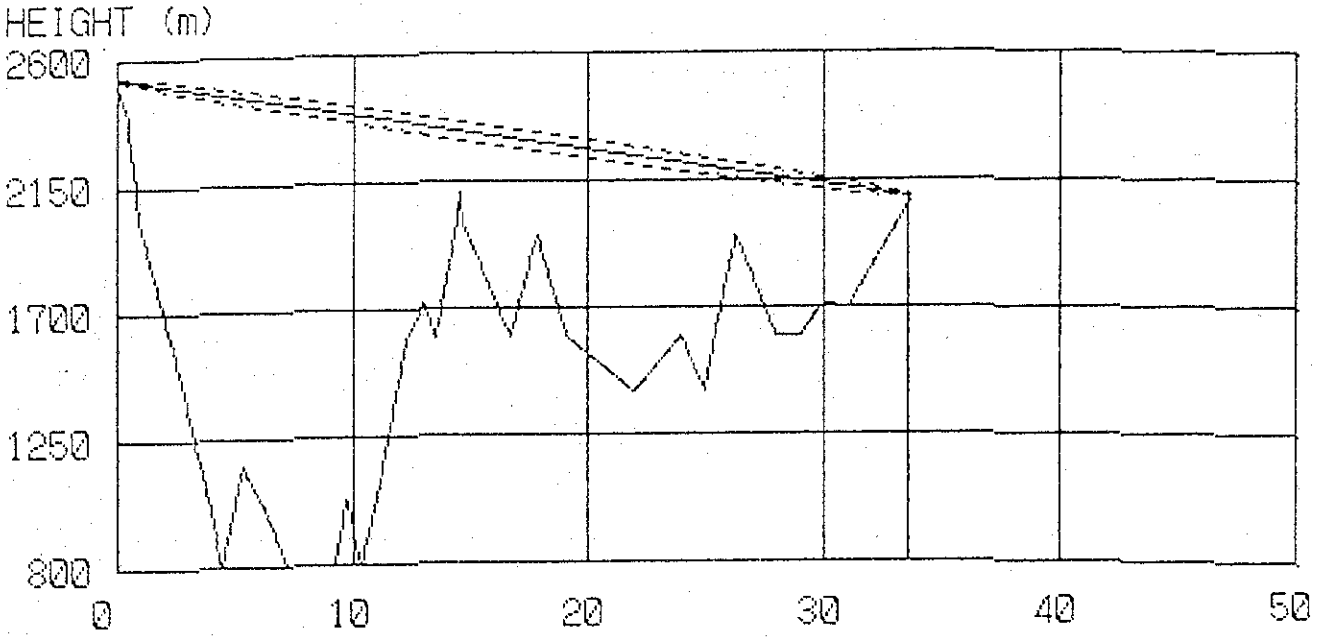
ANT.HEIGHT 1	: 35.0 m	ANT.HEIGHT 2	: 10.0 m
CRITICAL POINT	: 1.8 Km	RIDGE HEIGHT	: 2200.0 m
TREE HEIGHT	: 0.0 m	FRESNEL DEP.	: 5.7 m
CLEARANCE	: 185.0 m	CLEARANCE FAC.	: 32.6
FREE SPACE LOSS	: 106.5 dB	RIDGE LOSS	: 0.0 dB
TOTAL LOSS	: 106.5 dB		
ROUGHNESS	: 145.6 m		

PATH PROFILE

PATH NAME : SAMCHHILING GOMPA ~ GANGADUNG

FIG. NO. : PF-14

(K : 1.33 FREQUENCY : 2400 MHz)



DISTANCE : 33.6 km

SITE NAME	: Samchhiling GMP	SITE NAME	: Gangadung
GROUND LEVEL	: 2520.0 m	GROUND LEVEL	: 2080.0 m
ANT.HEIGHT 1	: 10.0 m	ANT.HEIGHT 2	: 10.0 m

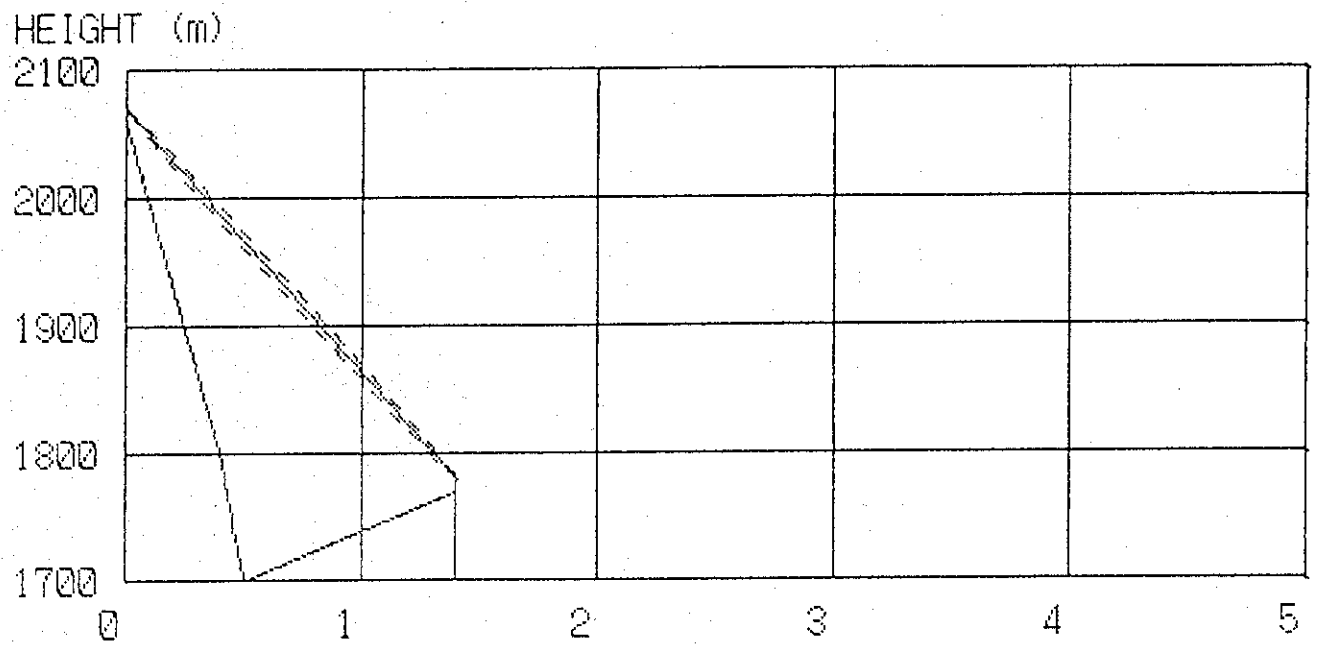
ANT.HEIGHT 1	: 10.0 m	ANT.HEIGHT 2	: 10.0 m
CRITICAL POINT	: 14.5 Km	RIDGE HEIGHT	: 2120.0 m
TREE HEIGHT	: 0.0 m	FRESNEL DEP.	: 32.1 m
CLEARANCE	: 203.8 m	CLEARANCE FAC.	: 6.3
FREE SPACE LOSS	: 130.6 dB	RIDGE LOSS	: 0.0 dB
TOTAL LOSS	: 130.6 dB		
ROUGHNESS	: 467.8 m		

PATH PROFILE

PATH NAME : GANGADUNG ~ TASHIYANGTSE

FIG. NO. : PF-15

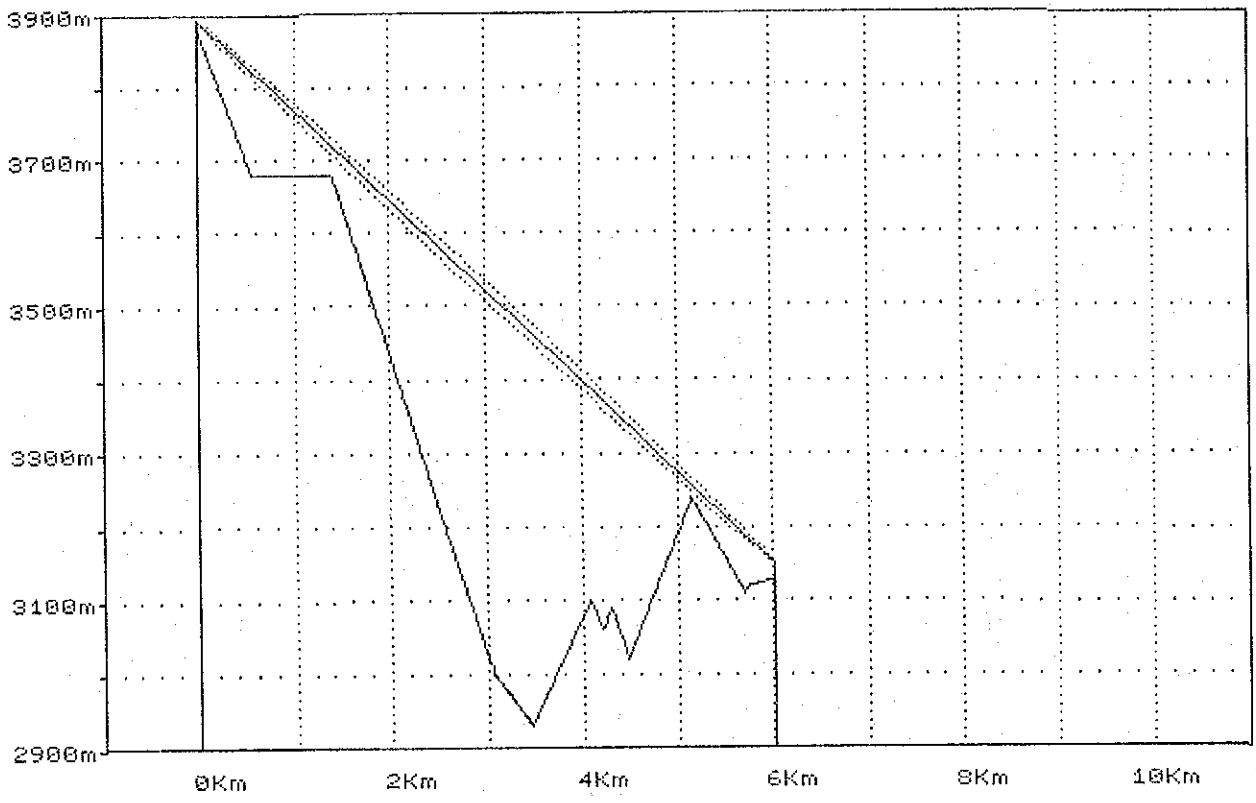
(K : 1.33 FREQUENCY : 2400 MHz)



DISTANCE : 1.4 km

SITE NAME	: Gangadung	SITE NAME	: TASHIYANGTSE
GROUND LEVEL	: 2060.0 m	GROUND LEVEL	: 1770.0 m
ANT.HEIGHT 1	: 10.0 m	ANT.HEIGHT 2	: 10.0 m

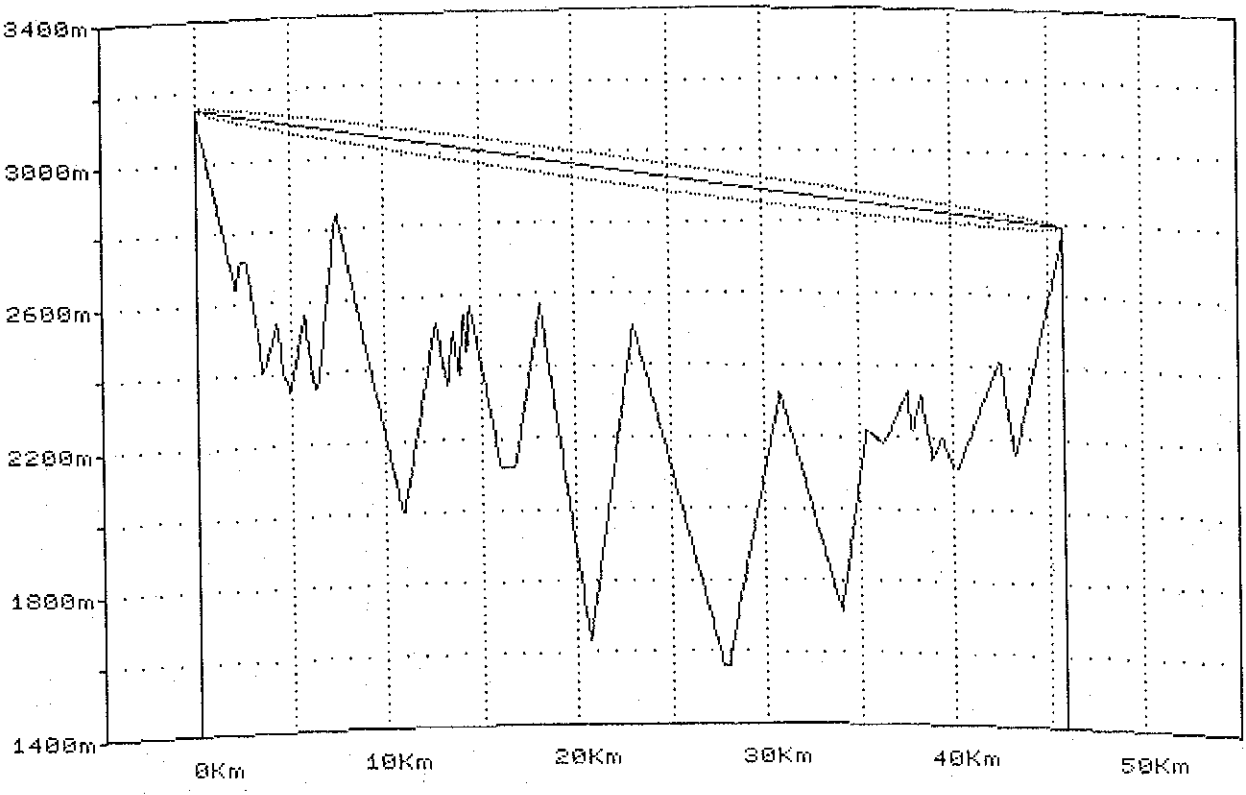
ANT.HEIGHT 1	: 10.0 m	ANT.HEIGHT 2	: 10.0 m
CRITICAL POINT	: 0.4 Km	RIDGE HEIGHT	: 1800.0 m
TREE HEIGHT	: 0.0 m	FRESNEL DEP.	: 6.0 m
CLEARANCE	: 187.1 m	CLEARANCE FAC.	: 31.3
FREE SPACE LOSS	: 103.0 dB	RIDGE LOSS	: 0.0 dB
TOTAL LOSS	: 103.0 dB		
ROUGHNESS	: 151.7 m		



Station No.	2-1	2-2	
Station Name	DOBCHU	DOCHULA	
Elavation	3880.00 m	3129.00 m	
ANT. Height	12.0 m	22.0 m	
Angle of Depression	- 7° 4′ 22"	Angle of Elavation	+ 7° 1′ 56"
Distance	6.02 km	Frequency	2400.00 MHz

Ridge Point	5.15 km	Ridge Height	3240.00 m
Radio Path Height	3257.80 m	1st Fresnel Radius	9.60 m
Path Clearance	17.80 m		
Clearance Margin	8.20 m	Clearance Factor	1.85

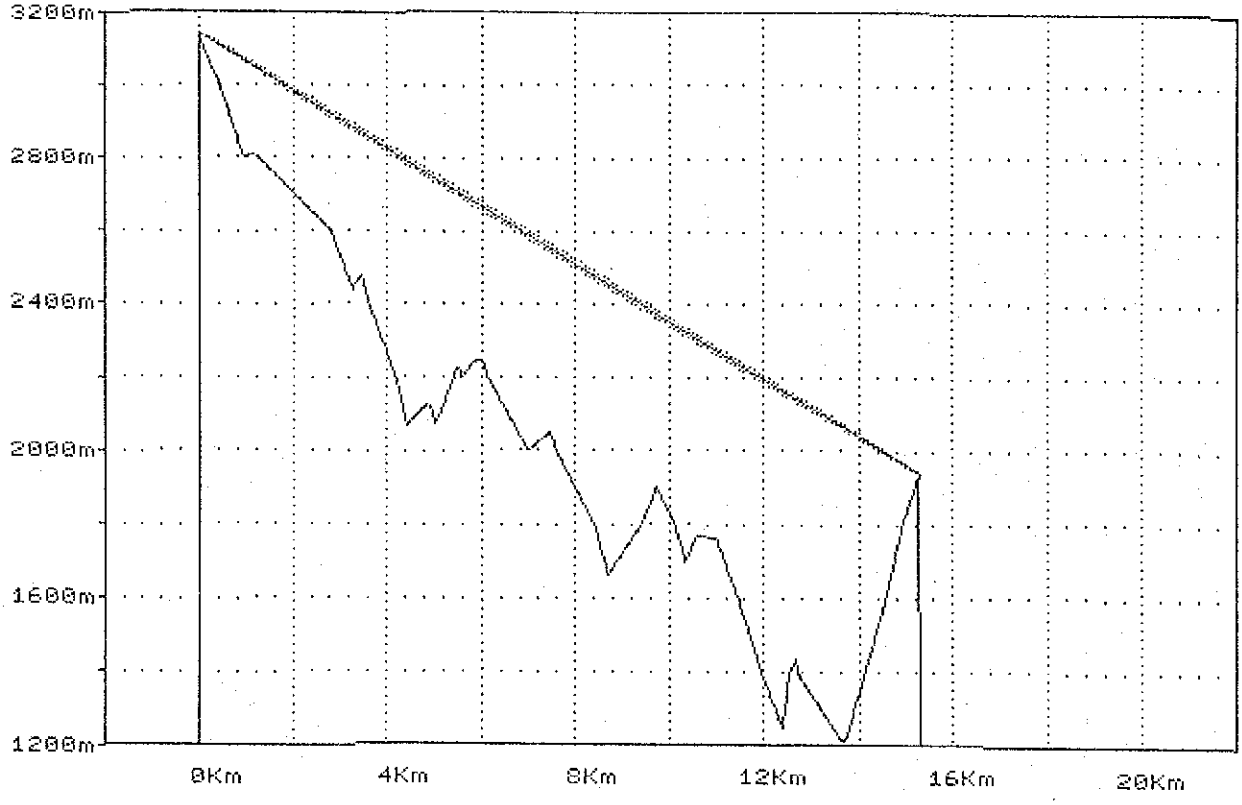
PATH PROFILE	PATH NAME : DOBCHU ~ DOCHULA	FIG. NO. : PF—16



Station No.	3-1	3-2	
Station Name	DOCHULA	GASA	
Elavation	3129.00 m	2780.00 m	
ANT. Height	22.0 m	10.0 m	
Angle of Depression	- 0° 36′ 21"	Angle of Elavation	+ 0° 17′ 48"
Distance	45.83 km	Frequency	2400.00 MHz

Ridge Point	7.40 km	Ridge Height	2850.00 m
Radio Path Height	3076.00 m	1st Fresnel Radius	27.80 m
Path Clearance	226.00 m		
Clearance Margin	198.20 m	Clearance Factor	8.13

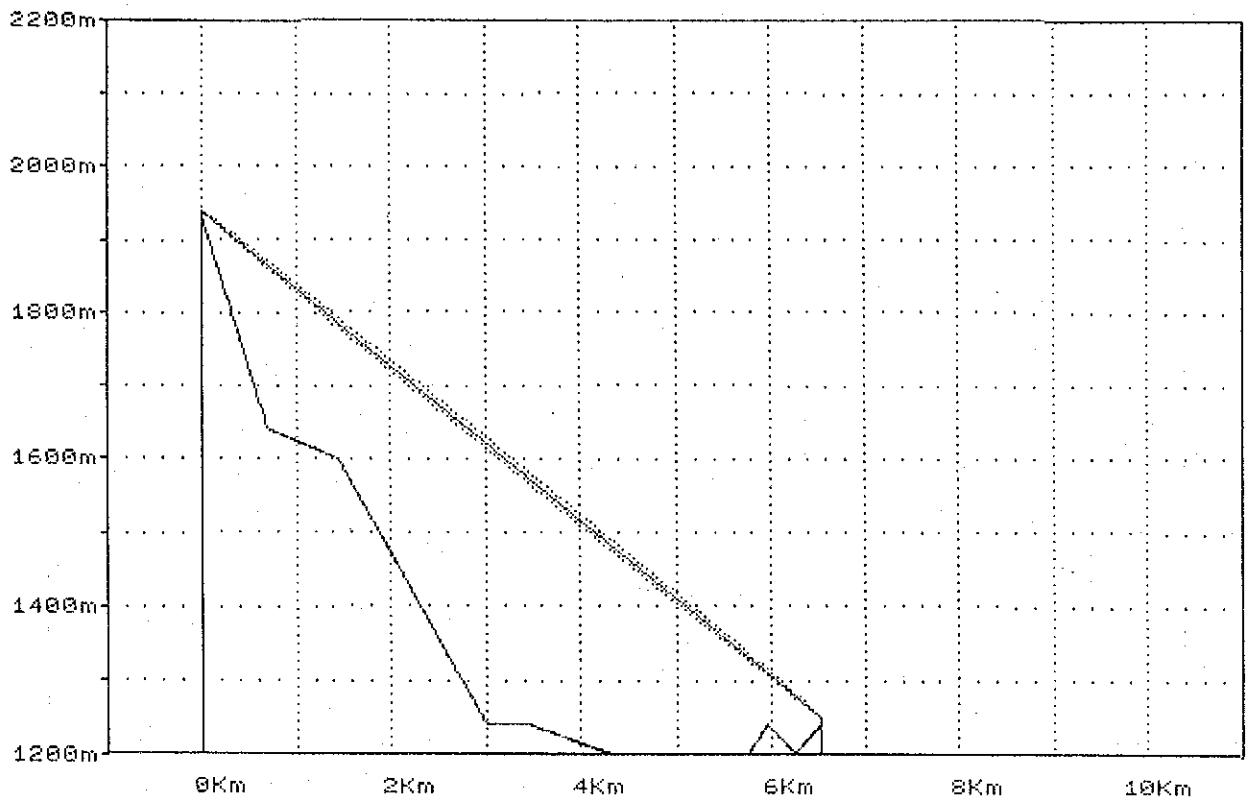
PATH PROFILE	PATH NAME : DOCHULA ~ GASA	FIG. NO. : PF—17



Station No.	13-1	13-2	
Station Name	DOCHULA	LIMUTI	
Elavation	3129.00 m	1930.00 m	
ANT. Height	15.0 m	10.0 m	
Angle of Depression	- 4° 33′ 48"	Angle of Elavation	+ 4° 27′ 37"
Distance	15.29 km	Frequency	8300.00 MHz

Ridge Point	15.24 km	Ridge Height	1920.00 m
Radio Path Height	1943.90 m	1st Fresnel Radius	1.30 m
Path Clearance	23.90 m		
Clearance Margin	22.60 m	Clearance Factor	18.38

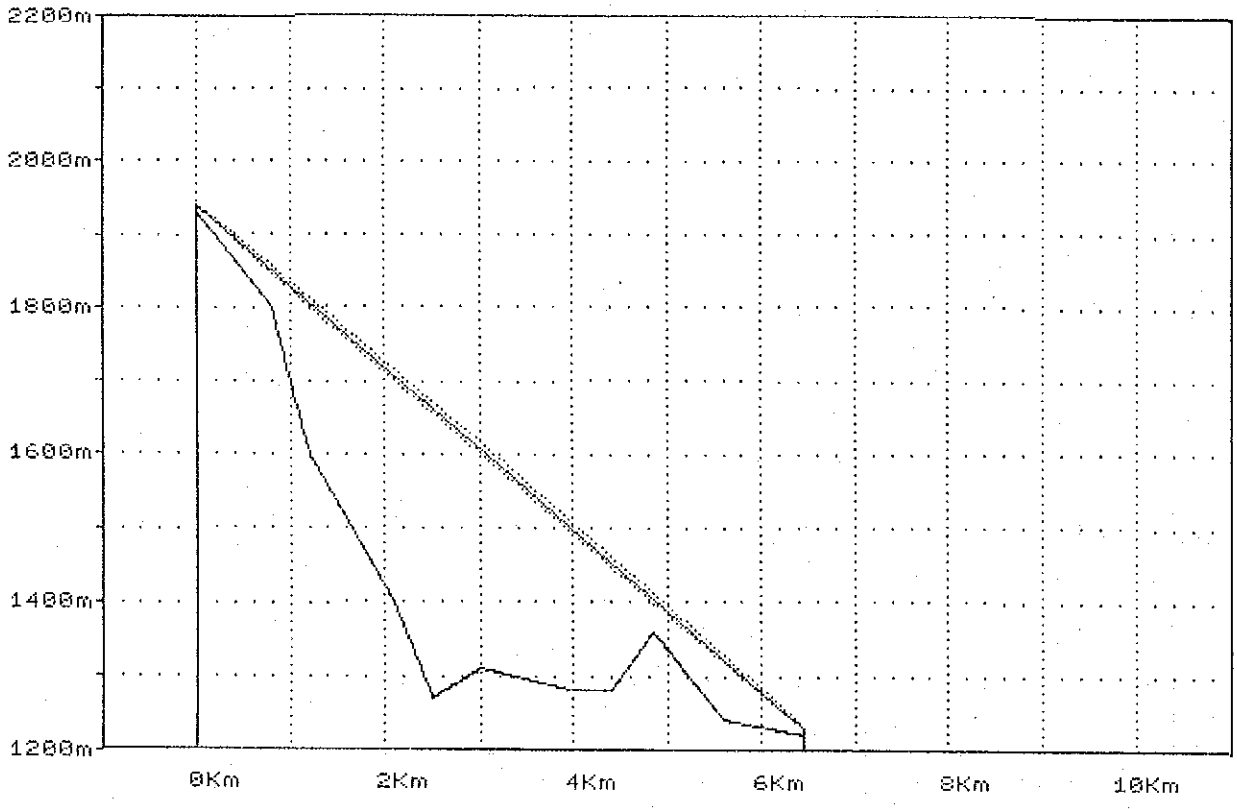
PATH PROFILE	PATH NAME : DOCHULA ~ LIMUTI	FIG. NO. : PF-18



Station No.	15-1	15-2	
Station Name	LIMUTI	WANGDUEPHODRANG	
Elavation	1930.00 m	1240.00 m	
ANT. Height	10.0 m	10.0 m	
Angle of Depression	- 6° 4′ 35"	Angle of Elavation	+ 6° 1′ 56"
Distance	6.53 km	Frequency	8300.00 MHz

Ridge Point	5.95 km	Ridge Height	1240.00 m
Radio Path Height	1311.10 m	1st Fresnel Radius	4.40 m
Path Clearance	71.10 m		
Clearance Margin	66.70 m	Clearance Factor	16.16

PATH PROFILE	PATH NAME : LIMUTI ~ WANGDUEPHODRANG	FIG. NO. : PF—19



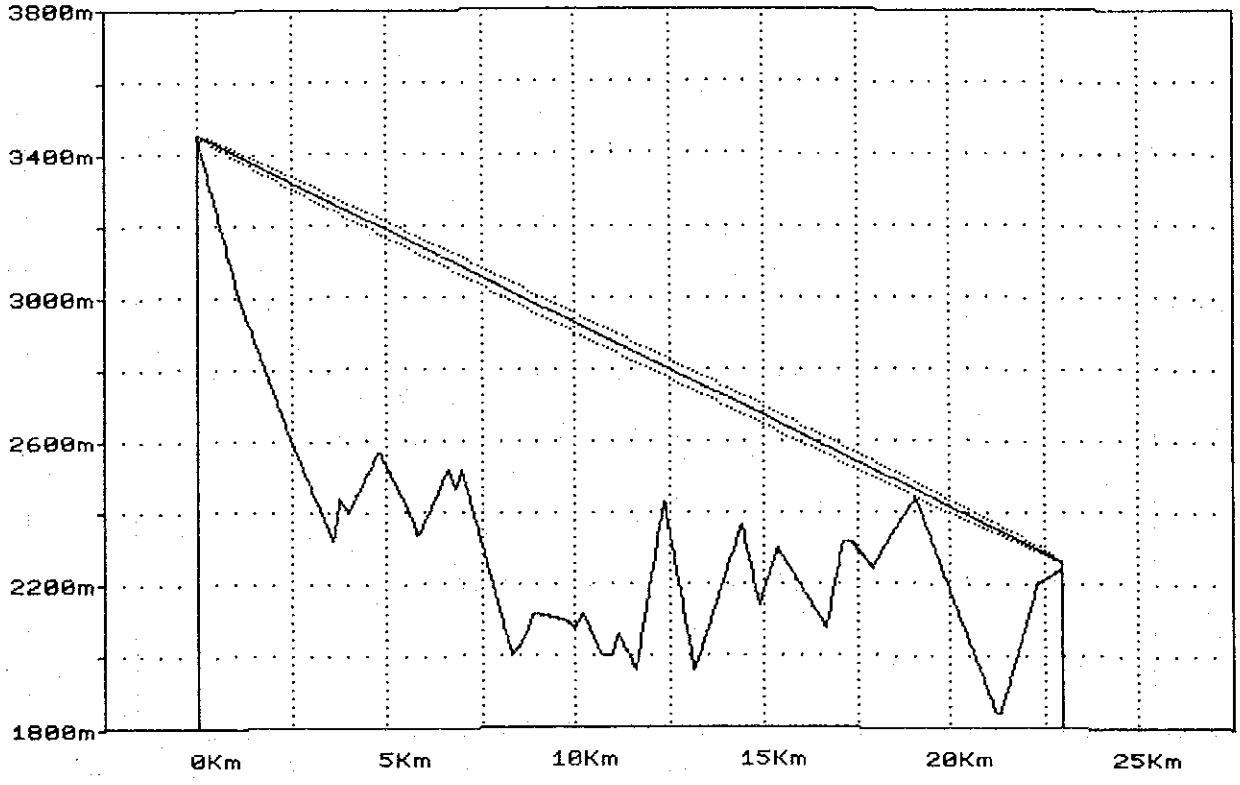
Station No.	14-1	14-2	
Station Name	LIMUTI	PUNAKHA	
Elavation	1930.00 m	1220.00 m	
ANT. Height	10.0 m	10.0 m	
Angle of Depression	- 6° 19′ 43"	Angle of Elavation	+ 6° 17′ 7"
Distance	6.45 km	Frequency	8300.00 MHz

Ridge Point	4.85 km	Ridge Height	1360.00 m
Radio Path Height	1405.70 m	1st Fresnel Radius	6.60 m
Path Clearance	45.70 m		
Clearance Margin	39.10 m	Clearance Factor	6.92

PATH PROFILE	PATH NAME : LIMUTI ~ PUNAKHA	FIG. NO. : PF—20

《 TERRAIN PROFILE MAP 》

Hop No. : DRMASS16 Area No. : Ø15 (K = 4/3)



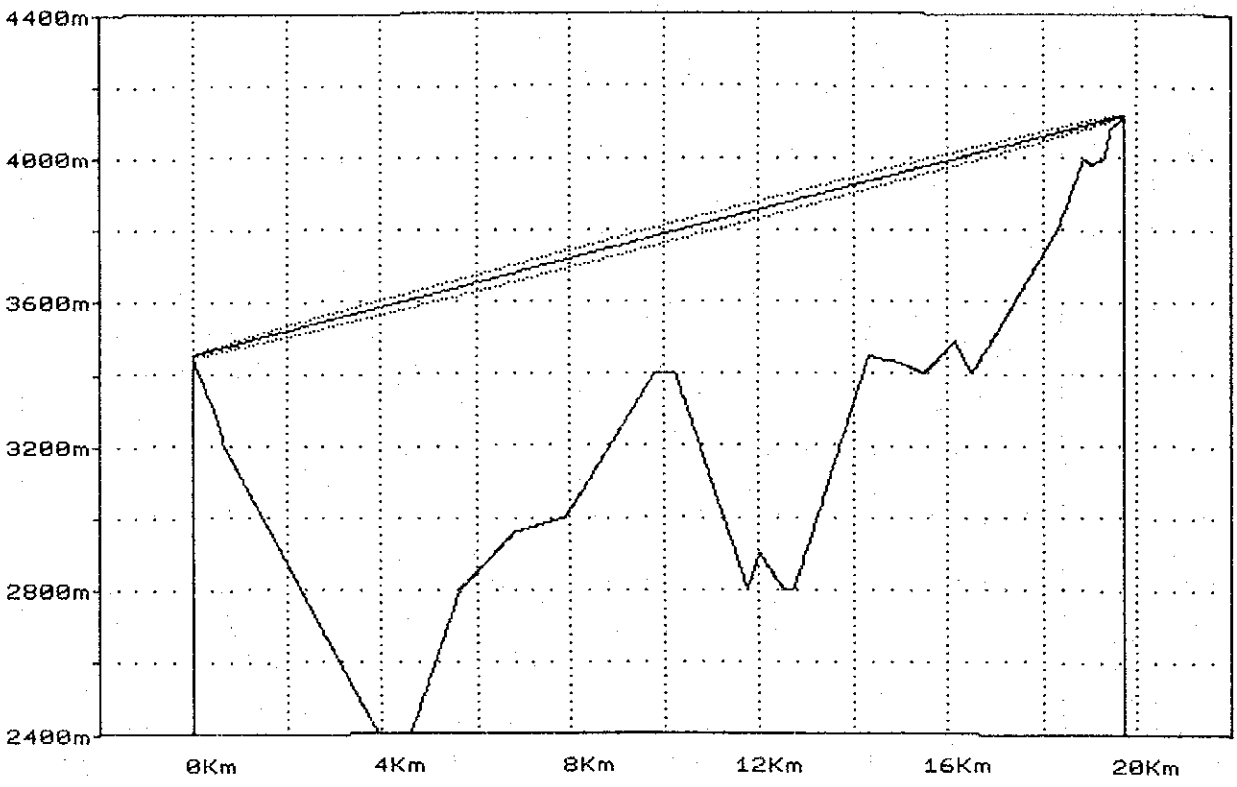
Station No.	16-1	16-2	
Station Name	JAPJEKHA	CHIMAKOTHI	
Elavation	3440.00 m	2245.00 m	
ANT. Height	12.0 m	20.0 m	
Angle of Depression	- 3° 2' 13"	Angle of Elavation	+ 2° 52' 55"
Distance	22.98 km	Frequency	2400.00 MHz

Ridge Point	19.05 km	Ridge Height	2440.00 m
Radio Path Height	2463.60 m	1st Fresnel Radius	20.20 m
Path Clearance	23.60 m		
Clearance Margin	3.40 m	Clearance Factor	1.17

PATH PROFILE	PATH NAME: JAPJEKHA ~ CHIMAKOTHI	FIG. NO. : PF—21

≪ TERRAIN PROFILE MAP ≫

Hop No. : DRMASS 8 Area No. : 007 (K = 4/3)



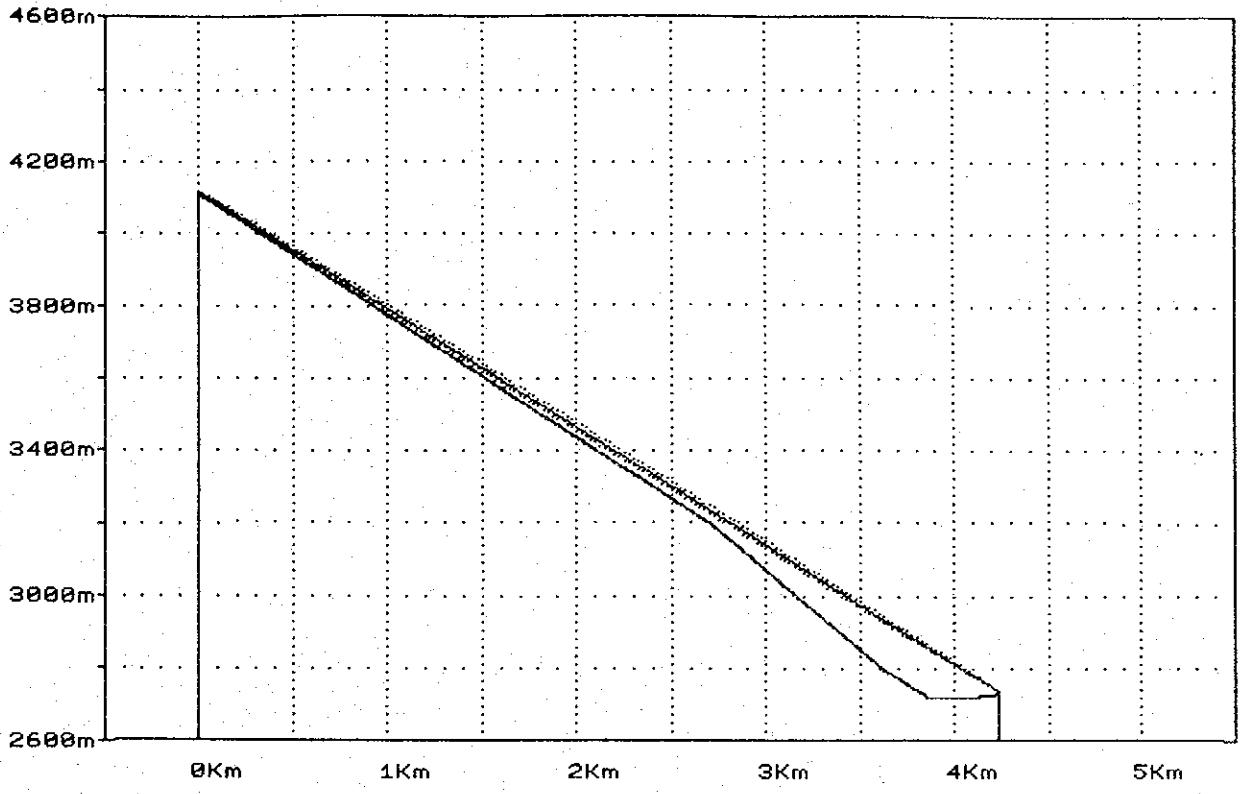
Station No.	8-1	8-2	
Station Name	JAPJEKHA	CHELELA	
Elavation	3440.00 m	4110.00 m	
ANT. Height	12.0 m	10.0 m	
Angle of Elavation	+ 1° 52' 35"	Angle of Depression	- 2° 0' 33"
Distance	19.70 km	Frequency	2400.00 MHz

Ridge Point	19.50 km	Ridge Height	4090.00 m
Radio Path Height	4113.00 m	1st Fresnel Radius	5.00 m
Path Clearance	23.00 m		
Clearance Margin	18.00 m	Clearance Factor	4.60

PATH PROFILE	PATH NAME: JAPJEKHA ~ CHELELA	FIG. NO. : PF—22

《 TERRAIN PROFILE MAP 》

Hop No. : DRMASS 9　　Area No. : 008　　(K = 4/3)



Station No.	9-1	9-2	
Station Name	CHELELA	HAA	
Elavation	4110.00 m	2729.00 m	
ANT. Height	10.0 m	10.0 m	
Angle of Depression	-18° 43' 12"	Angle of Elavation	+18° 41' 30"
Distance	4.23 km	Frequency	2400.00 MHz

Ridge Point	0.70 km	Ridge Height	3874.10 m
Radio Path Height	3891.30 m	1st Fresnel Radius	8.50 m
Path Clearance	17.20 m		
Clearance Margin	8.70 m	Clearance Factor	2.02

PATH PROFILE	PATH NAME: CHELELA ~ HAA	FIG. NO. : PF—23