

REPÚBLICA POPULAR DE MOÇAMBIQUE

Gabinete do Secretário de Estado do Carvão e Hidrocarbonetos

CPRM·MT-GEIPOT·COBRAPI

Mucanha-Vuzi Coal Development Program

Chapter 9 - Study of Outflow Alternatives

C P R M - D I R E T O R I O

ARQUIVO TÉCNICO

Relatório n.º 9025 - I - S

N.º de Volumes: 6 + 24 v: 4 - C

PHL
Clique anexos

Contract

Gabinete do Secretário de Estado do Carvão e Hidrocarbonetos
Companhia de Pesquisa de Recursos Minerais - CPRM

Financing

OPEC - Fund for International Development
Banco do Brasil SA

General Coordination and Execution

Companhia de Pesquisa de Recursos Minerais - CPRM

Subcontracted Agencies

Empresa Brasileira de Planejamento de Transportes - GEIPOT
Study of Outflow Alternatives

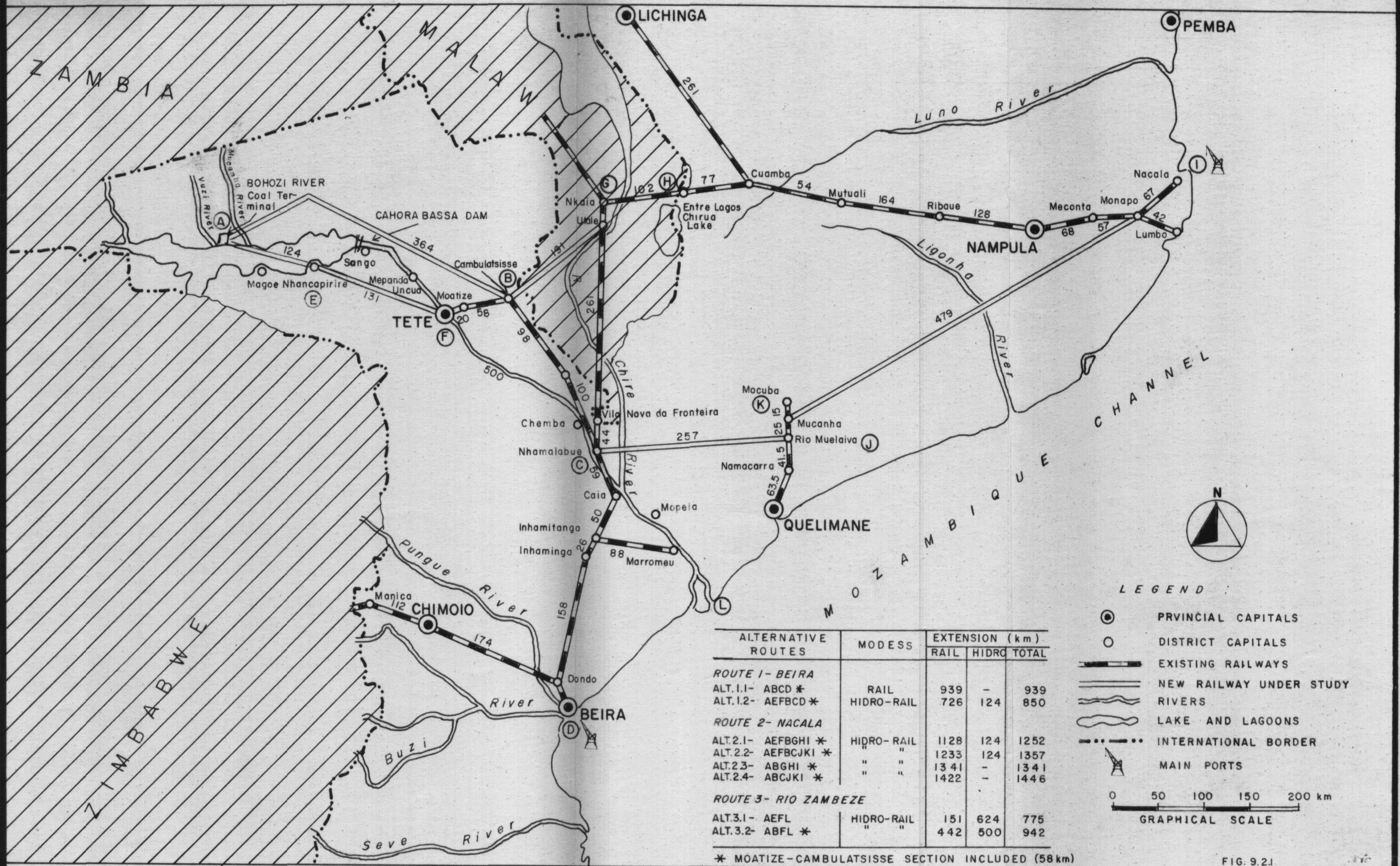
Companhia Brasileira de Projetos Industriais - COBRAPI
Study of Technical and Economic Feasibility

C O N T E N T S

- 9.2.1 - ALTERNATIVE ROUTES UNDER STUDY.
- 9.2.2 - GENERAL SITUATION MAP - ROUTES AND ALTERNATIVES
- 9.2.3 - SITUATION MAP OF ALTERNATIVE MUCANHA/VUZI MINE CONNECTION
- 9.2.4 - CAMBULATSISSE TO UTALE SECTION
- 9.2.5 - NHAMALABUE-MONAPO-NACALA CONNECTION (km 540 to 790)
- 9.2.6 - NHAMALABUE-MONAPO-NACALA CONNECTION (km 340 to 540)
- 9.2.7 - NHAMALABUE-MONAPO-NACALA CONNECTION (km 140 to 340)
- 9.2.8 - NHAMALABUE-MONAPO-NACALA CONNECTION (km 0 to 140)
- 9.2.9 - ZAMBEZE BASIN GEOLOGICAL MAP
- 9.2.10 - CAMEULATSISSE-MUCANHA/VUZI CONNECTION(km195 to 230)
- 9.2.11 - CAMBULATSISSE-MUCANHA/VUZI CONNECTION(km230 to 265)
- 9.2.12 - CAMBULATSISSE-MUCANHA/VUZI CONNECTION(km265 to 300)
- 9.2.13 - CAMBULATSISSE-MUCANHA/VUZI CONNECTION(km300 to 340)
- 9.2.14 - CAMBULATSISSE-MUCANHA/VUZI CONNECTION(km340 to 375)
- 9.2.15 - CAMEULATSISSE-MUCANHA/VUZI CONNECTION(km375 to 410)
- 9.2.16 - CAMBULATSISSE-MUCANHA/VUZI CONNECTION(km410 to 445)
- 9.2.17 - CAMBULATSISSE-MUCANHA/VUZI CONNECTION(km445 to 480)

- 9.2.18 - CAMEULATSISSE-MUCANHA/VUZI CONNECTION (km 480 to 510)
- 9.2.19 - CAMEULATSISSE-MUCANHA/VUZI CONNECTION (km 510 to 535)
- 9.2.20 - CAMEULATSISSE-MUCANHA/VUZI CONNECTION (km 535 to 559)
- 9.2.21 - BOHOZI RIVER TERMINAL
- 9.2.22 - CAMEULATSISSE-NHANCAPIRIRE CONNECTION (km 195 to 225)
- 9.2.23 - CAMEULATSISSE-NHANCAPIRIRE CONNECTION (km 225 to 260)
- 9.2.24 - CAMEULATSISSE-NHANCAPIRIRE CONNECTION (km 260 to 295)
- 9.2.25 - CAMEULATSISSE-NHANCAPIRIRE CONNECTION (km 295 to 335)
- 9.2.26 - CAMEULATSISSE-NHANCAPIRIRE CONNECTION (km 335 to 370)
- 9.2.27 - CAMEULATSISSE-NHANCAPIRIRE CONNECTION (km 370 to 405)
- 9.2.28 - SEA TERMINAL - FLOW CHART FOR THE THREE ALTERNATIVES
- 9.2.29 - BEIRA/ESTUÁRIO ALTERNATIVE
- 9.2.30 - NACALA ALTERNATIVE
- 9.2.31 - LAKE TERMINAL - LOADING TERMINAL AT MUCANHA
- 9.2.32 - LAKE TERMINAL - UNLOADING TERMINAL AT NHANCAPIRIRE
- 9.2.33 - RIVER TERMINAL AT CHINDE
- 9.2.34 - RIVER TERMINAL AT CHINDE - FLOW CHART

MT-GEIPOT



ALTERNATIVE ROUTES	MODESS	EXTENSION (km)		
		RAIL	HIDRO	TOTAL
ROUTE 1- BEIRA				
ALT.1.1- ABCD *	RAIL	939	-	939
ALT.1.2- AEFBCD *	HIDRO-RAIL	726	124	850
ROUTE 2- NACALA				
ALT.2.1- AEFBGHI *	HIDRO-RAIL	1128	124	1252
ALT.2.2- AEFBCJKI *	" "	1233	124	1357
ALT.2.3- ABGHI *	" "	1341	-	1341
ALT.2.4- ABCJKI *	" "	1422	-	1446
ROUTE 3- RIO ZAMBEZE				
ALT.3.1- AEFL	HIDRO-RAIL	151	624	775
ALT.3.2- ABFL *	" "	442	500	942

* MOATIZE-CAMBULATSISSE SECTION INCLUDED (58 km)

LEGEND

- PRVINCIAL CAPITALS
- DISTRICT CAPITALS
- EXISTING RAILWAYS
- NEW RAILWAY UNDER STUDY
- RIVERS
- LAKE AND LAGOONS
- - - INTERNATIONAL BORDER
- ⚓ MAIN PORTS

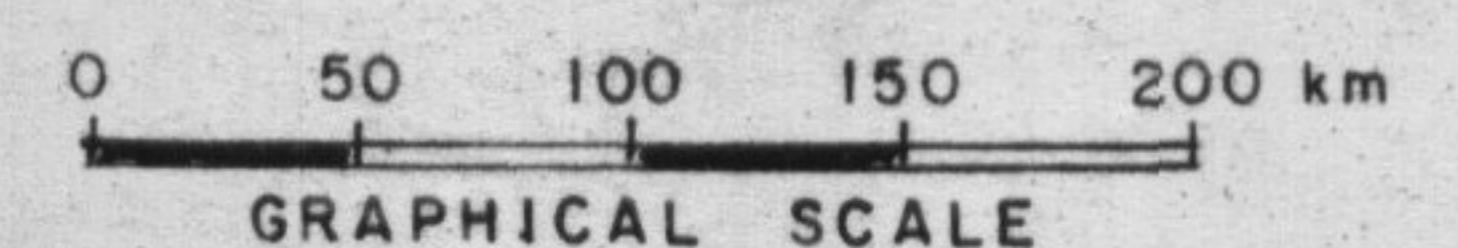


FIG. 9.2.1

STUDY OF OUTFLOW ALTERNATIVES

Alternative Routes Under Study

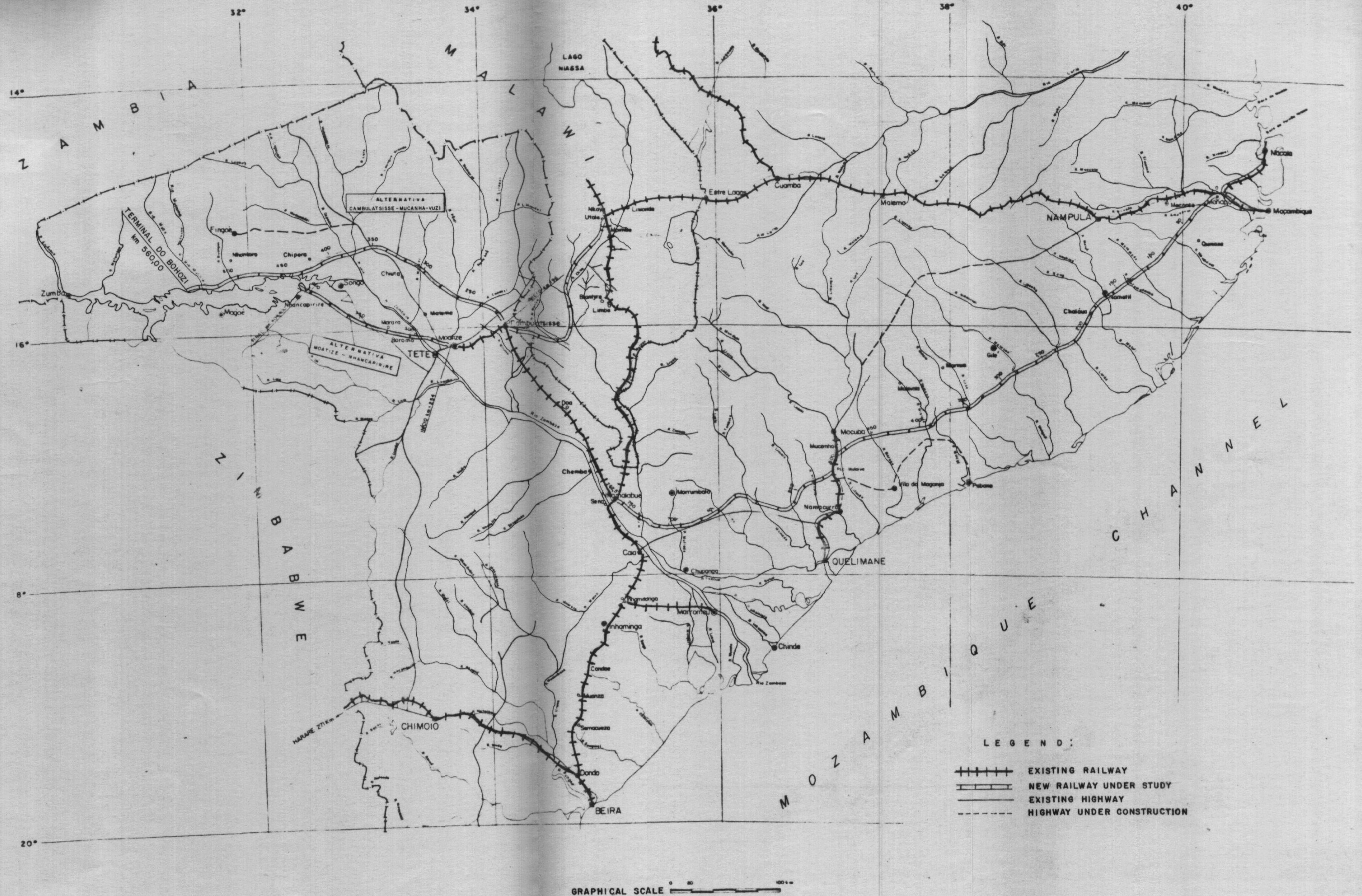


FIG. 9.2.2

ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA / VUZI

"STUDY OF OUTFLOW ALTERNATIVES"

General Situation Map — Routes and Alternatives

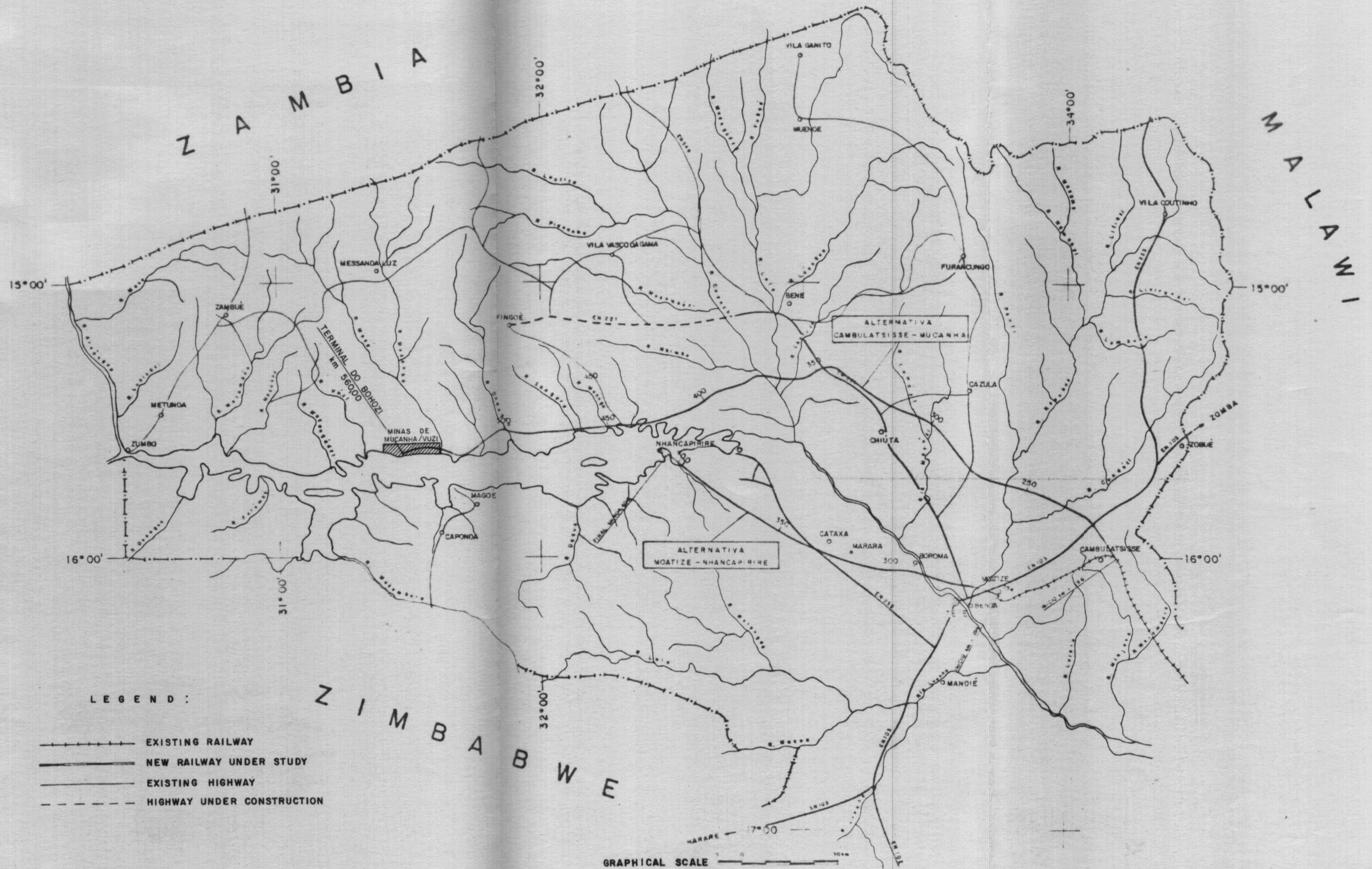
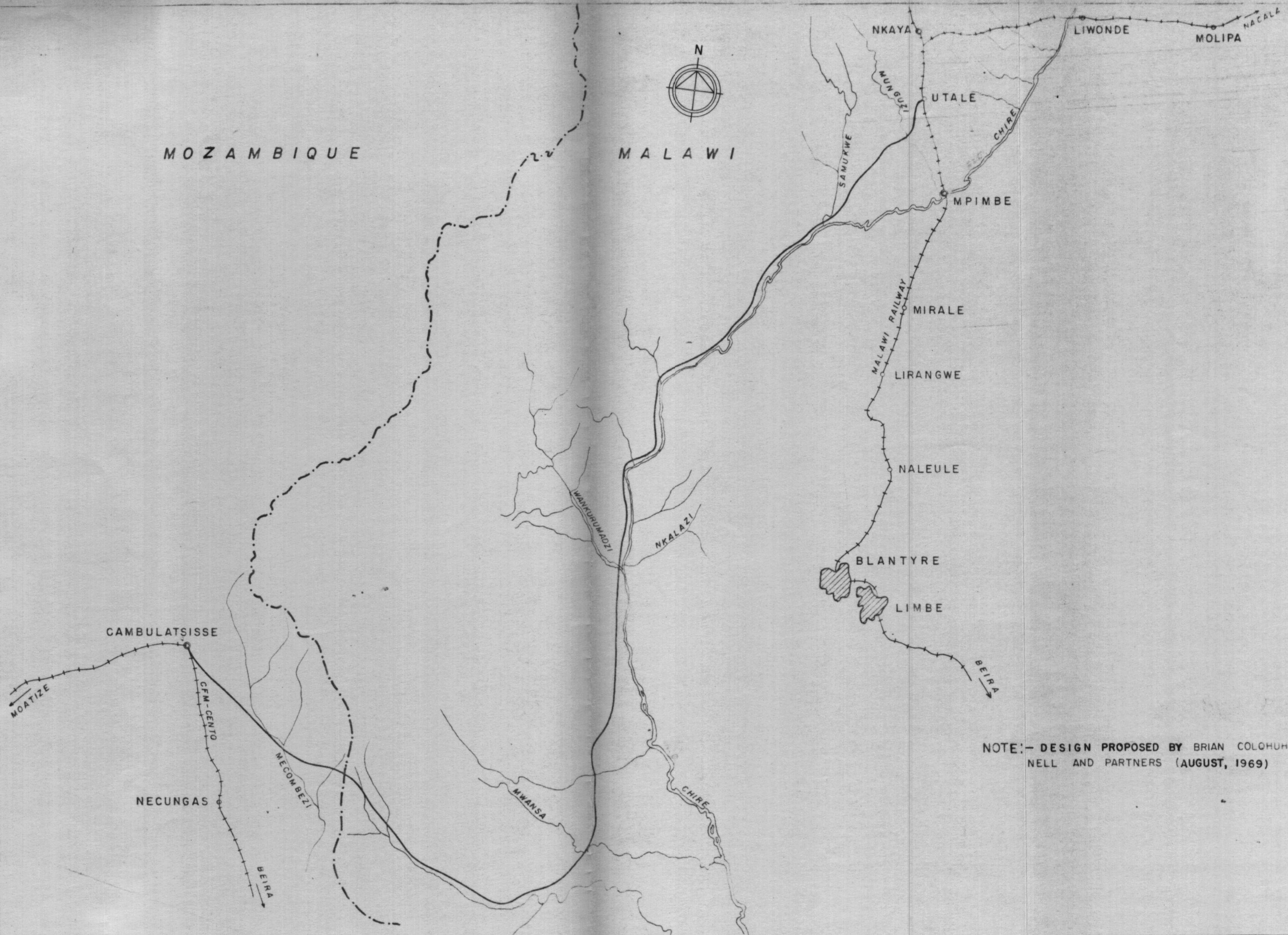


FIG. 9.2.3

ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA / VUZI "STUDY OF OUTFLOW ALTERNATIVES"

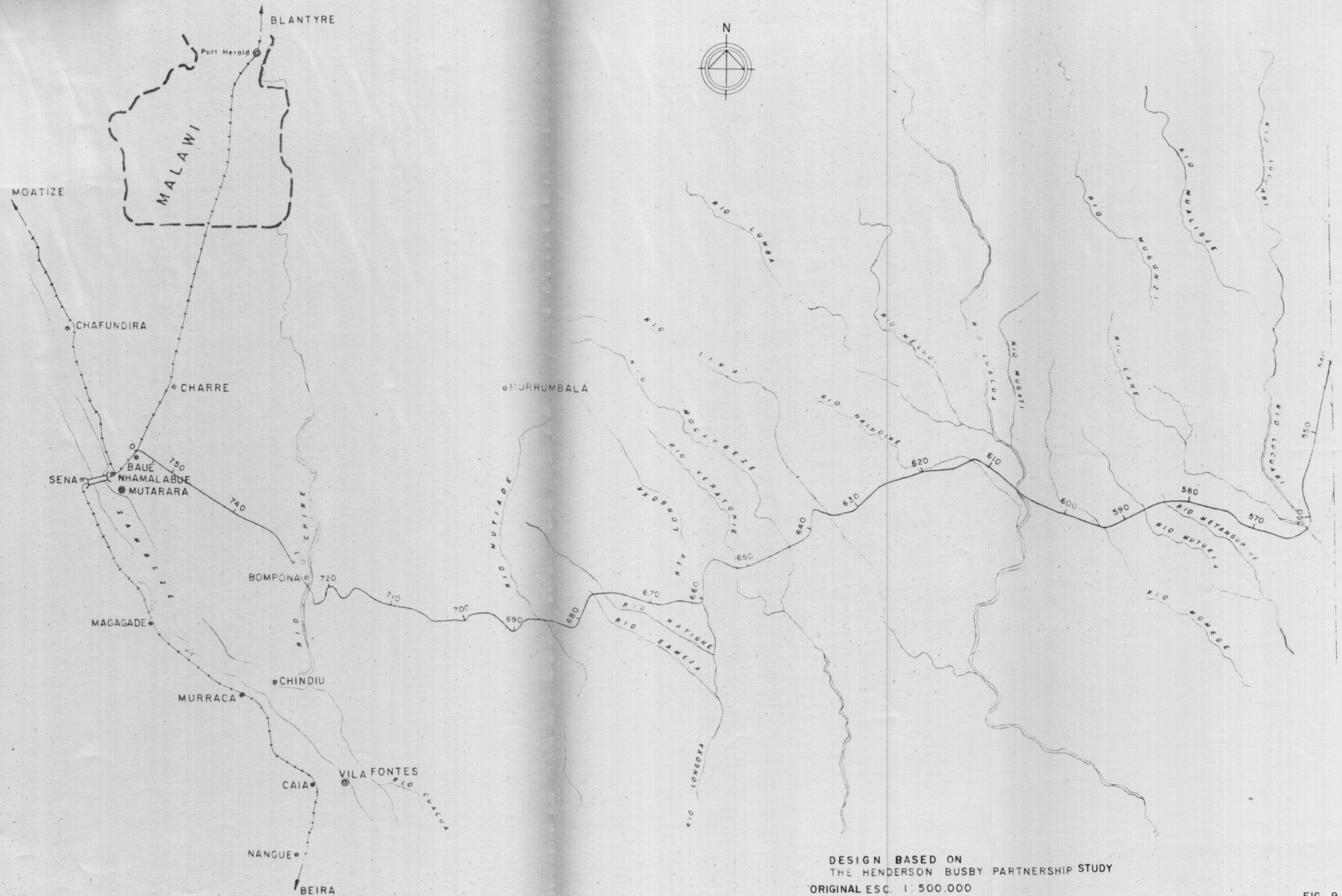
Situation Map of Alternative Mucanha/Vuzi Mine Connection



NOTE: - DESIGN PROPOSED BY BRIAN COLOHOUN, HUGH O DONNELL AND PARTNERS (AUGUST, 1969)

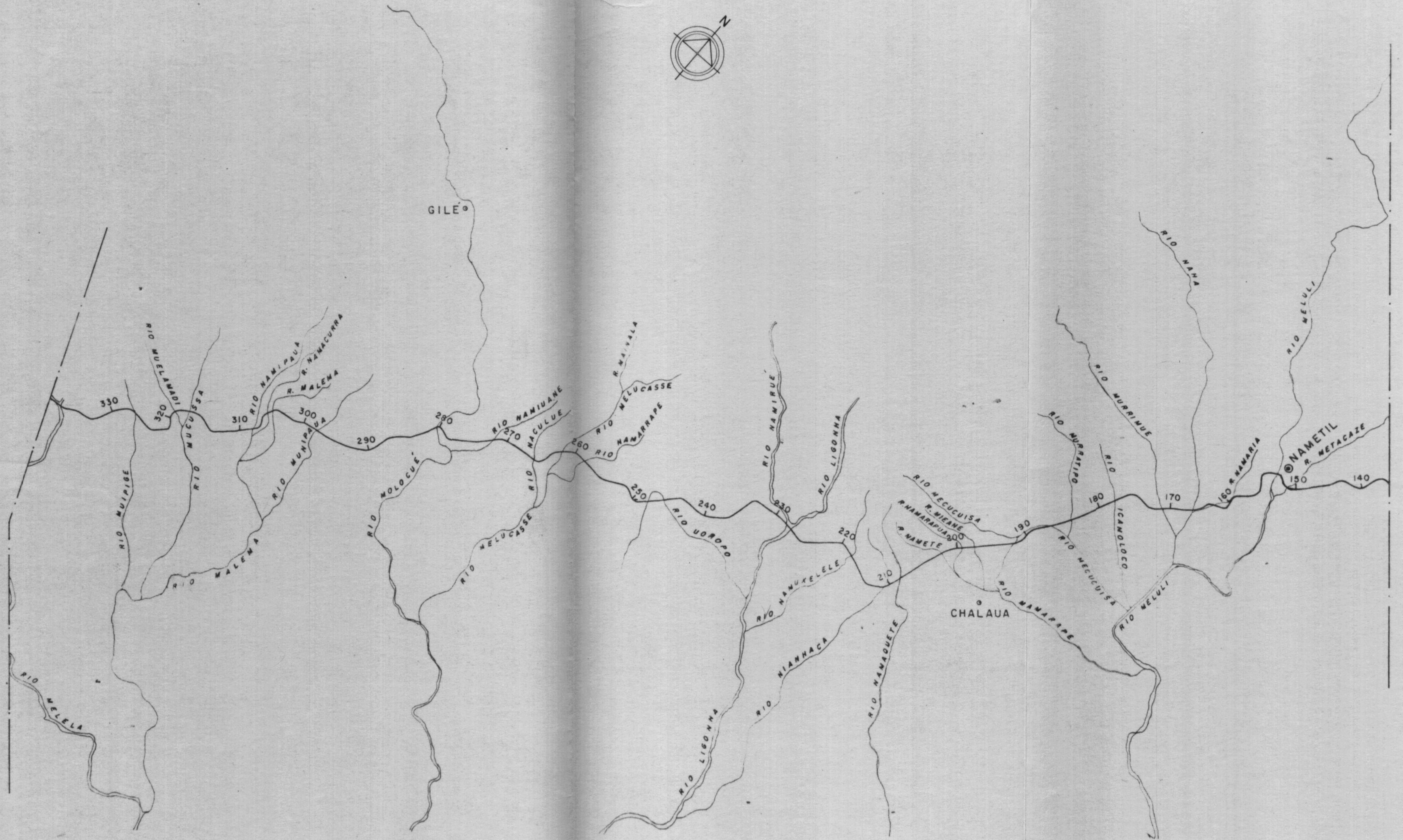
FIG. 9.2.4

MT - GEIPOT



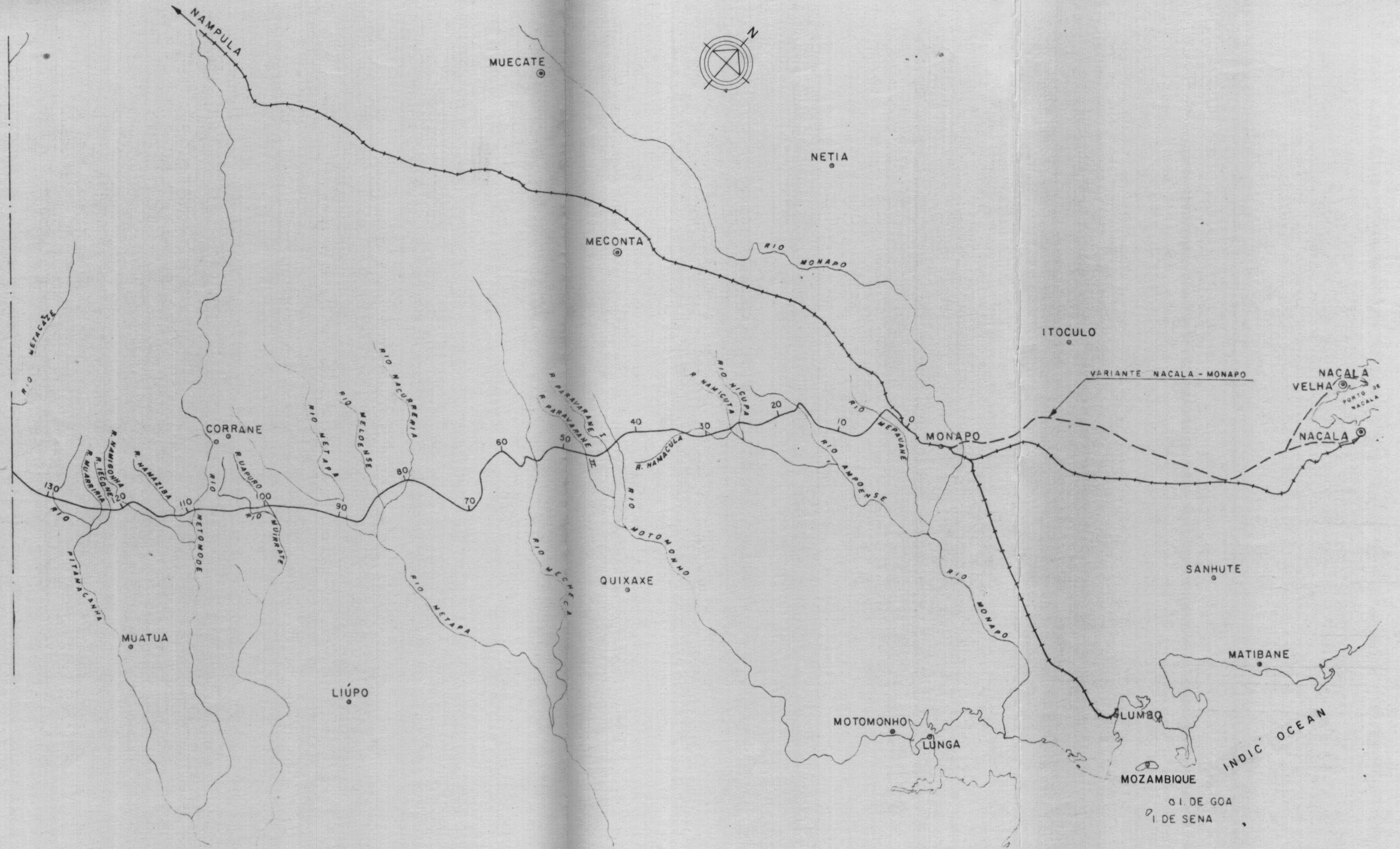
DESIGN BASED ON
THE HENDERSON BUSBY PARTNERSHIP STUDY
ORIGINAL ESC. 1: 500.000

FIG. 9. 2. 5



DESIGN BASED ON
 THE HENDERSON BUSBY PARTNERSHIP STUDY
 ORIGINAL ESC. 1:500.000

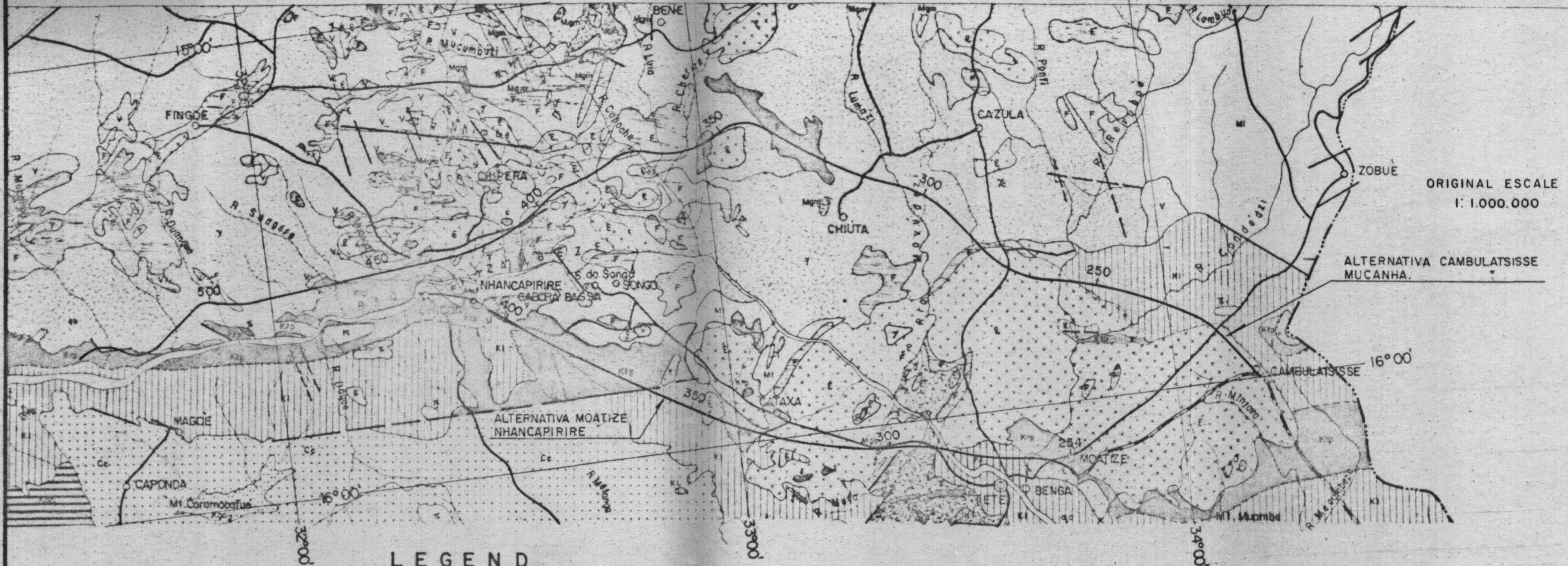
ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA / VUZI "STUDY OF OUTFLOW ALTERNATIVES"
 Nhamalabue - Monapo - Nacala Connection (Via Zambezia)



DESIGN BASED ON
 THE HENDERSON BUSBY PARTNERSHIP STUDY
 ORIGINAL ESC. 1: 500.000

FIG. 9. 2. 8

MT - GEIPOT



LEGEND

SEDIMENTARY AND METAMORPHIC FORMATIONS			ERUPTIVE ROCKS	
ERA AND SISTEMAS	SERIES AND STAGES	EQUIVALENCY		
ANTROPOZÓIC	RECENT FORMATIONS WHITE AND RED SANDS DUNE AND COASTAL STRING FLUVIAL ALLUVIUM AND SAIDSTANE/CLAY HOBBACK DEPOSITS INCLUDED ALSO TERTIARY NON POSSIBLES FORMATIONS	Antropozóic		
CRETÁCIC	CONTINENTAL CRETASSIC, SENA GRÉS (TURANIAN) AND ALSO OLDER JURASSIC FORMATIONS	Cretácic superior		ALKALINE LAVA, ALCALINE BARALT AND SO ON SIERUTE, CARBONATITES AND MORRUMBALA GRANITE
		Cretácic medle		
KARROO	CURUMACATUE GRÉS CODZI GRÉS KARROO INFERIOR NON DIFFERENTIATED SUPERIOR DOMINANT SERIE TILITICA AND PRODUTIVE SERIE	Triássic superior		MICROPEGUATITIC GRANITE QUARTZITE GABBROS S.O. ULTRABASIC ROCKS ZUMBO-CHIPERA GRANITE S.O. ULTRABASIC ROCKS
		Pérmic superior		
		Triássic inferior		
		Pérmic inferior Carbonic superior		
MOZAMBICAN	FRONTIER SERIES, MICASHISTUS AND GRANULAR AND QUARTZITE SCHISTUS FRONTIER GNESSIC SERIES (NHAGONIA GNEISS) GNEISS-MIGMATIC SERIE ESSENTIALLY GNEISS, MIGMATITES OU PHIBOLITES AND CRISTALINE CORNBRAH, QUARTZITE, FELDSPATS DIFERENCIATED MOZAMBICAN	Paleozóic inferior		
		Precâmbric medle e superior		
PRIMITIVE SISTEMAS	FINGOE VUZI CALCAREOUS SCHIST AND OTHER METASSEDMENTS GNEISSIC GRANITE	Precâmbric inferior and medle		

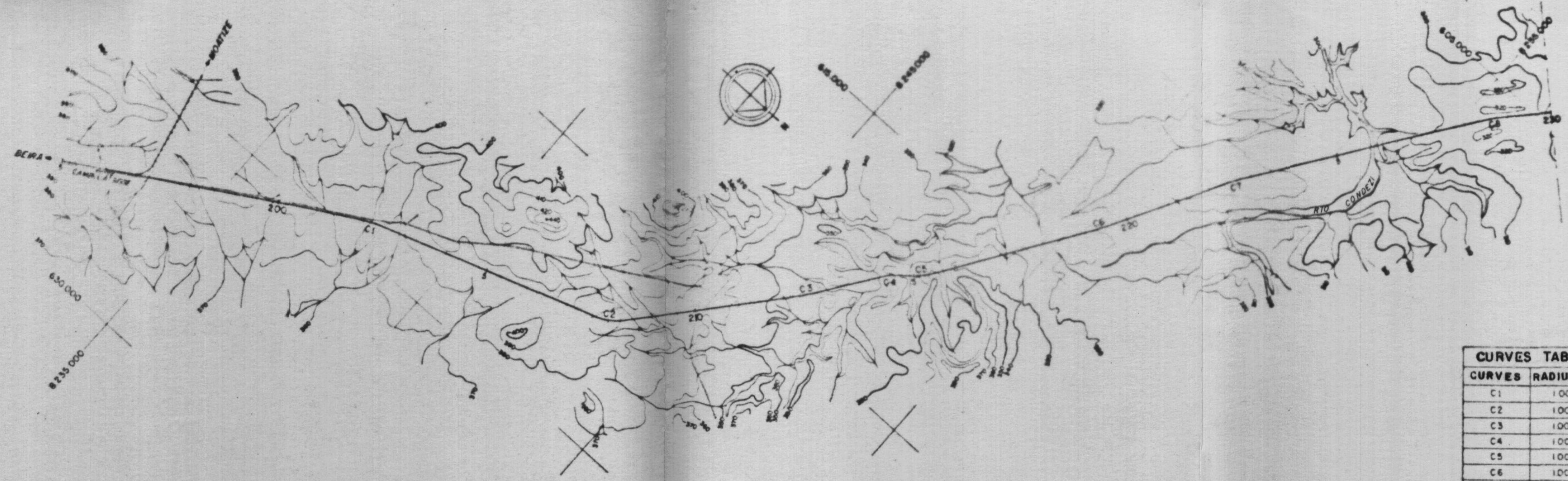
CONVENTIONS :

- FISSURE
- PROBABLE FISSURE
- LIMIT OF GEOLOGICAL CONTRACT
- BORDER LIMITS
- RIVE
- PROJECTED RAILWAY
- HIGHWAY
- EXISTING RAILWAY
- DISTRICT CAPITAL
- ADMINISTRATIVE HEADQUARTER

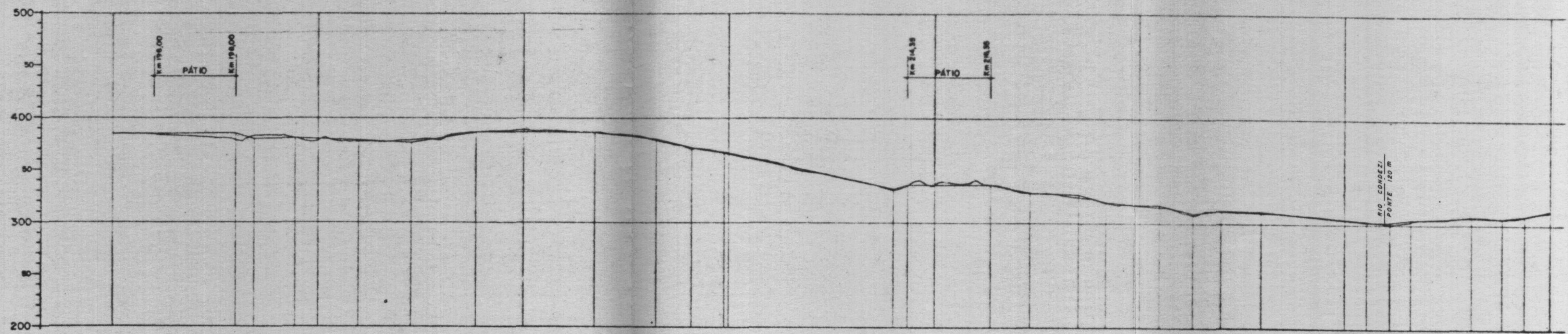
OBS EXECUTED FROM THE GEOLOGICAL SKETCH FROM ZAMBEZE BASIN
COMPLYED BY FERNANDO REAL - YEAR 1966

ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA / VUZI "STUDY OF OUTFLOW ALTERNATIVES"

Zambeze Basin Geological Map



CURVES TABLE	
CURVES	RADIUS (m)
C1	1000,00
C2	1000,00
C3	1000,00
C4	1000,00
C5	1000,00
C6	1000,00
C7	1000,00
C8	1000,00



SECTION	%	0,00	-10	+0,50	-1,29	-2,50	+7,58	-0,52	-4,00	-10,29	-5,94	-8,41	3,43	0,00	-7,37	-1,25	-10,38	-3,93	0,00	-8,70	+4,44	-1,03	-3,65	0,00	+4,25	+1,38	-1,33	+3,64	+8,31
EXT (m)		2000	450	1000	1550	1300	1550	2900	1500	850	800	4100	350	2000	950	1200	650	700	625	825	675	875	2600	550	550	1450	750	550	1480
KILOMETERS		195			200			205				210		215					220				225						230

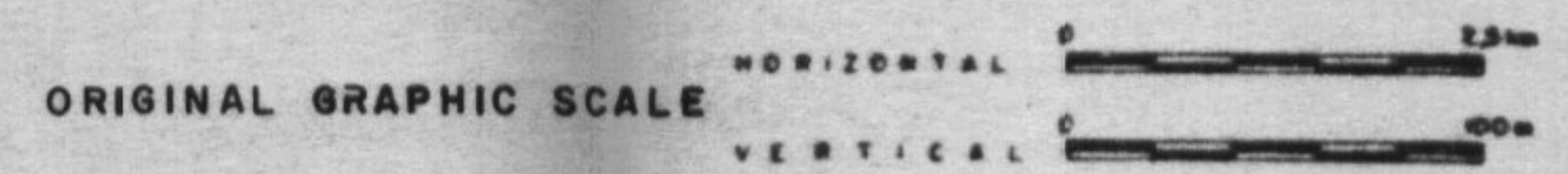
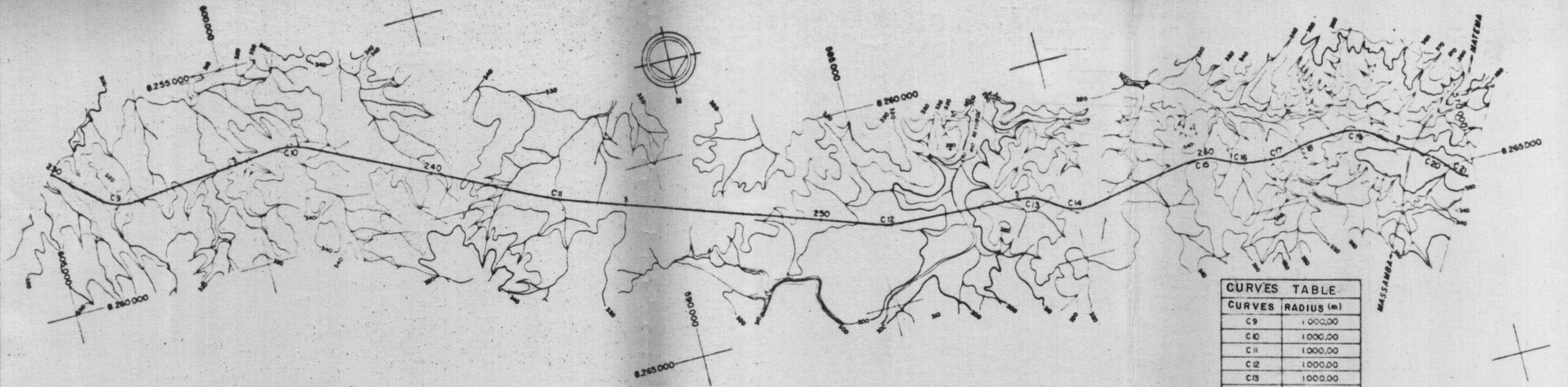
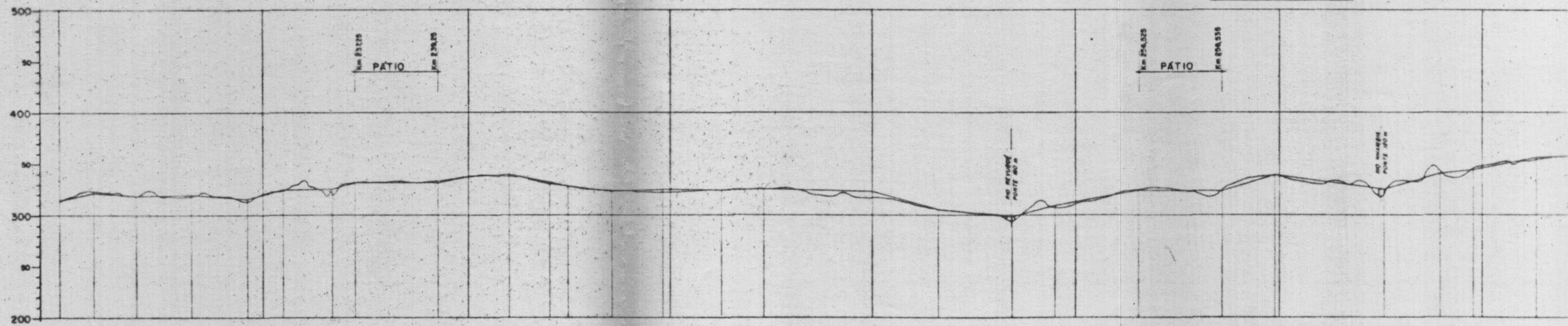


FIG. 9. 2. 10

MT - GEIPOT



CURVES TABLE	
CURVES	RADIUS (m)
C9	1000,00
C10	1000,00
C11	1000,00
C12	1000,00
C13	1000,00
C14	1000,00
C15	1000,00
C16	1000,00
C17	1000,00
C18	1000,00
C19	1000,00
C20	1000,00
C21	1000,00



SECTION	700	+8,3	-3,33	+0,74	-2,36	+8,43	+0,83	+11,82	0,00	+8,67	+1,00	-7,25	-8,33	-4,19	+1,18	-1,03	+1,43	-0,74	-11,06	-3,99	+10,49	+7,28	0,00	+11,90	-5,20	+11,10	+4,10	+7,87	+1,18
EXT (m)	1450	1050	1350	1375	875	1200	550	2000	750	1000	1000	450	1075	1275	1450	1050	2700	1650	1800	1050	2025	2010	1340	2700	1375	825	1525	3350	
KILOMETERS	230				235					240					245				250			255			260			265	

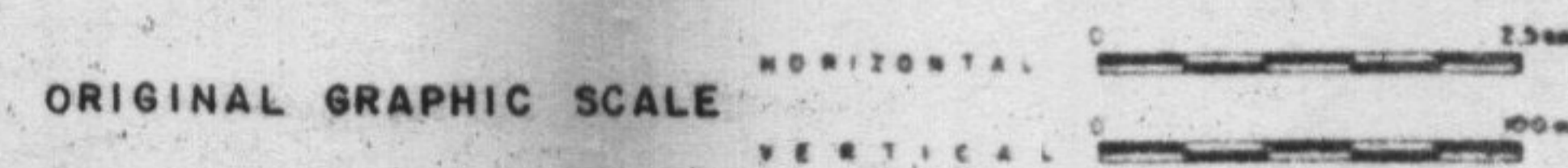
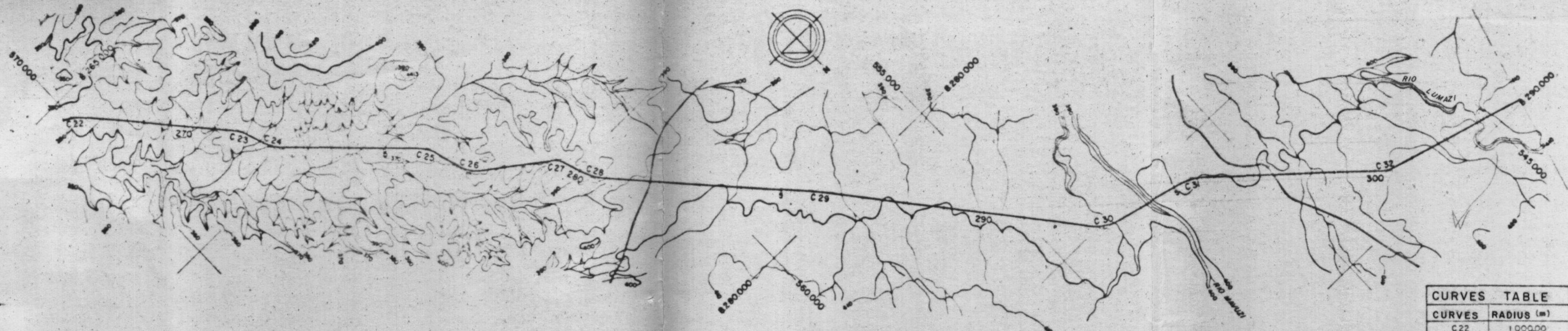


FIG. 9. 2. II

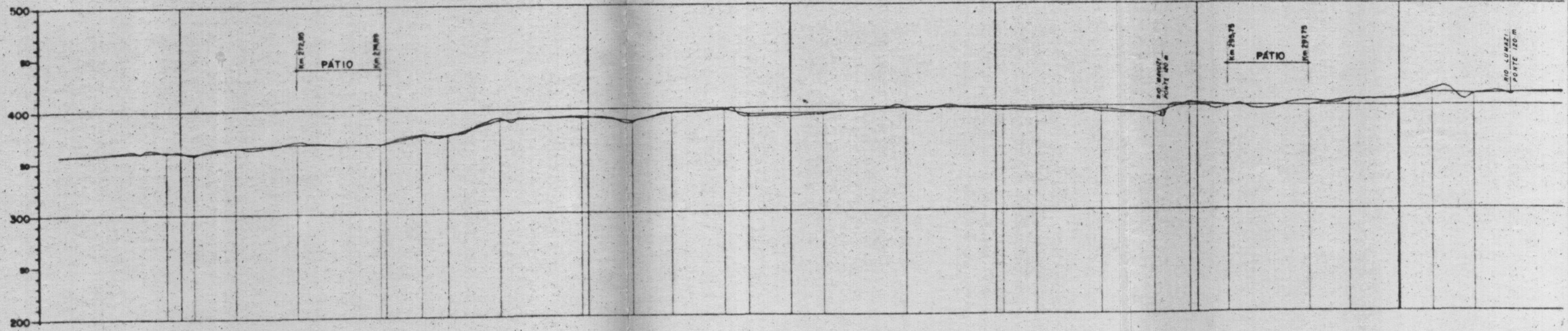
ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUCAO DE CARVAO DE MUCANHA / VUZI "STUDY OF OUTFLOW ALTERNATIVES"

Cambulatsisse - Mucanha Connection

MT - GEIPOT



CURVES TABLE	
CURVES	RADIUS (m)
C22	1000,00
C23	1000,00
C24	1000,00
C25	1000,00
C26	1000,00
C27	1000,00
C28	1000,00
C29	2000,00
C30	1000,00
C31	1000,00
C32	1000,00



SECTION	%	+1,81	-2,96	+3,50	+1,64	0,00	+8,54	-0,04	+11,35	+1,63	-3,91	+8,51	+1,56	-7,18	0,00	+2,35	0,00	-1,52	-0,63	-3,40	+12,57	-3,68	0,00	+6,00	0,00	+6,73	-2,16	+0,91
EXT (m)		3350	675	1000	1525	2040	995	640	1300	2000	280	970	1290	585	1950	2000	2375	825	1600	1325	875	950	2000	1000	1210	850	1035	3850
KILOMETERS			270			275				280					285					290				295				300

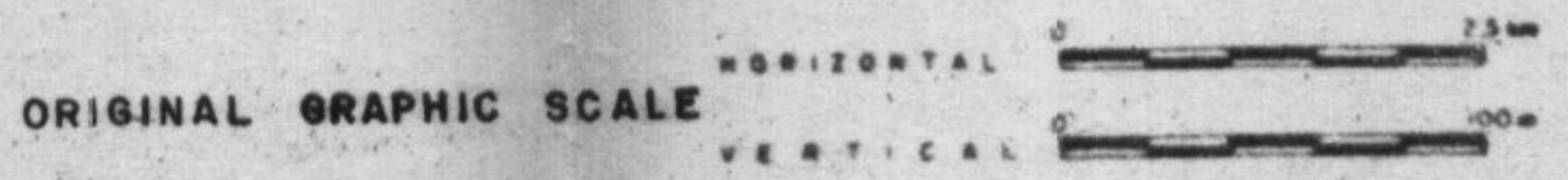
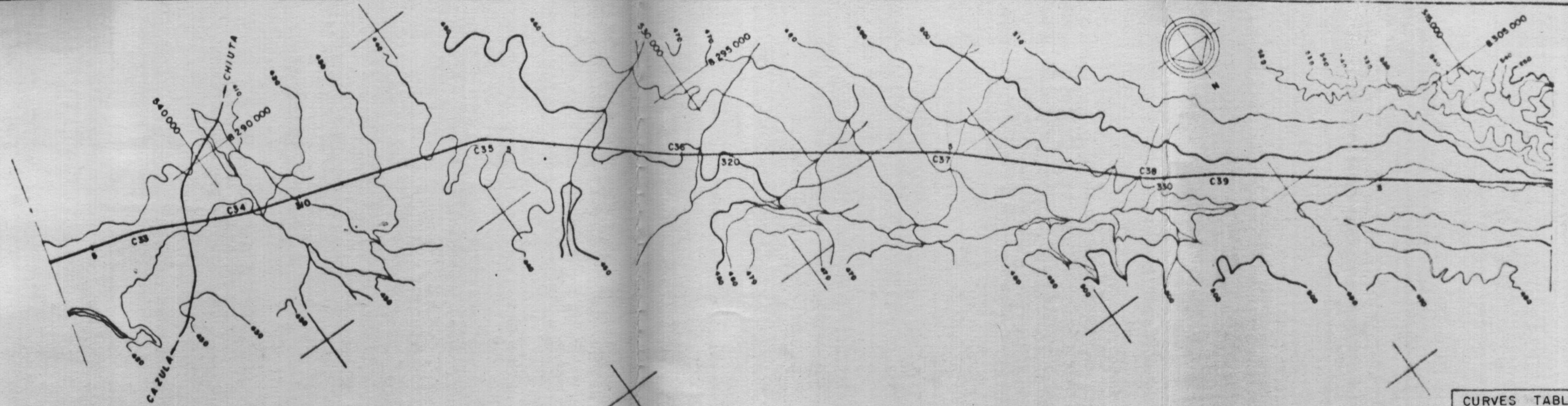


FIG. 9. 2. 12

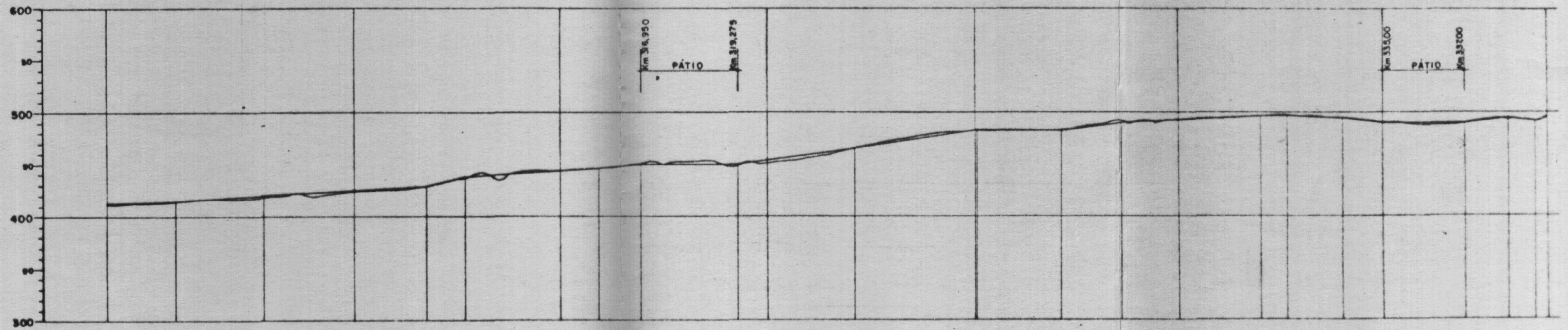
ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA / VUZI "STUDY OF OUTFLOW ALTERNATIVES"

Cambulatsisse - Mucanha Connection

MT - GEIPOT



CURVES TABLE	
CURVES	RADIUS (m)
C33	1000,00
C34	1000,00
C35	1000,00
C36	1000,00
C37	1000,00
C38	1000,00
C39	1000,00



SECTION	%	+0,91	+2,82	+2,09	+5,89	+2,53	+4,17	0,00	+5,13	+6,15	-0,12	+4,75	+1,97	0,00	-1,20	-5,52	0,00	+4,80	-4,30
EXT (m)		8850	2125	8950	925	3250	1025	2325	2825	2950	2080	1475	3425	650	1350	1000	2000	1050	650
KILOMETERS		305		310		315		320		325		330		335					

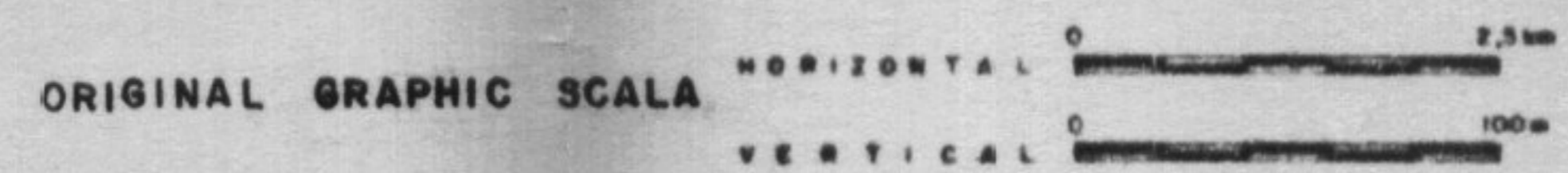


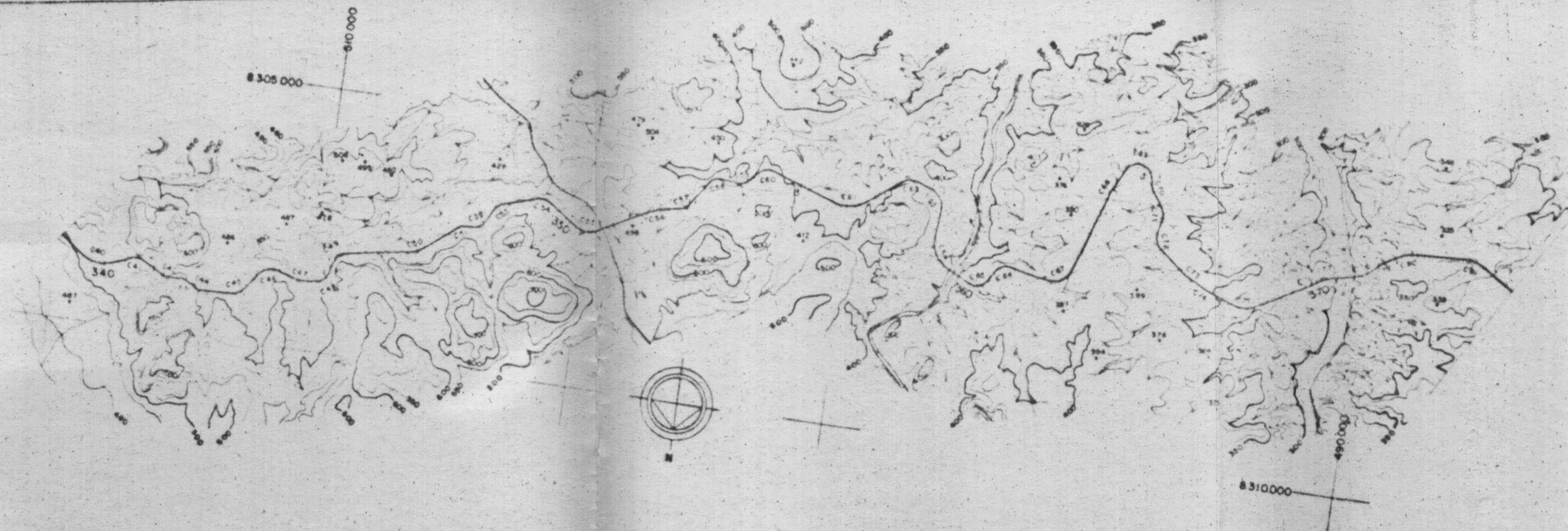
FIG. 9. 2. 13

ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA / VUZI "STUDY OF OUTFLOW ALTERNATIVES"

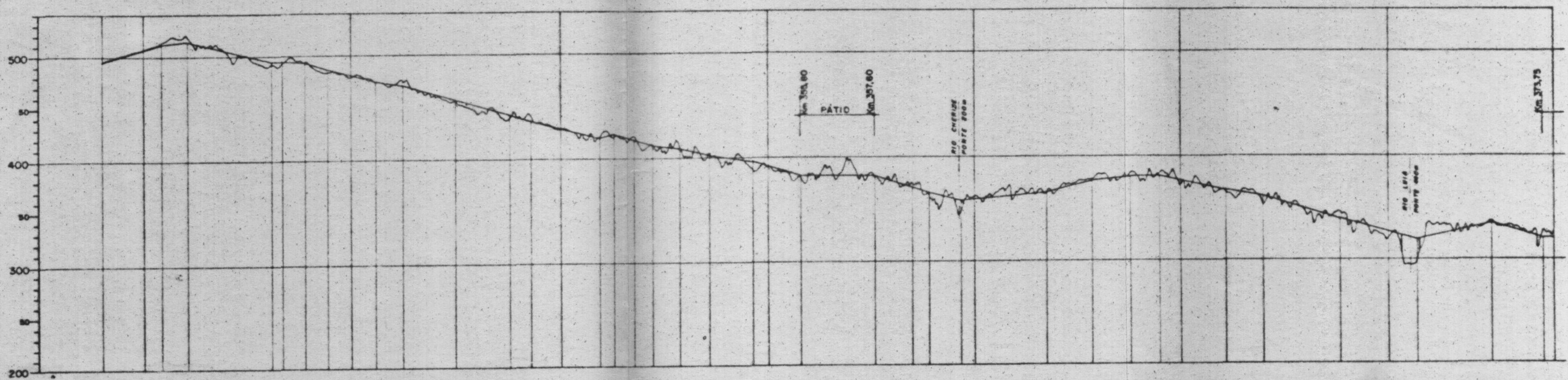
Cambulatsisse - Mucanha Connection

MT - GEIPOT

CURVES TABLE	
CURVES	RADIUS (m)
C40	600,00
C41	300,00
C42	300,00
C43	300,00
C44	300,00
C45	800,00
C46	300,00
C47	500,00
C48	300,00
C49	300,00
C50	1000,00
C51	300,00
C52	300,00
C53	300,00
C54	300,00
C55	500,00
C56	300,00
C57	400,00
C58	300,00
C59	300,00
C60	300,00



CURVES TABLE	
CURVES	RADIUS (m)
C61	700,00
C62	300,00
C63	300,00
C64	400,00
C65	300,00
C66	300,00
C67	500,00
C68	1000,00
C69	300,00
C70	300,00
C71	300,00
C72	300,00
C73	1000,00
C74	1000,00
C75	600,00
C76	1000,00
C77	300,00
C78	300,00
C79	300,00
C80	700,00
C81	1000,00



SECTION	%	+11,80	+5,20	+10,20	5,00-2,50-11,80	-10,70	-6,00	-11,90	-10,70	+1,60	-10,00	-12,50-10,70-5,00-10,00	-6,00	-12,00	0,00	-11,80	-11,10	+3,80	+10,70	+3,10	0,00	-8,60	-7,00	-11,60	-8,70	+8,63	-12,00	0,00							
EXT (m)		1750	625	2025	850	550	550	1150	550	1250	1275	530	1645	250	500	500	600	700	1050	1150	1800	900	800	775	2075	1100	950	725	1575	900	1850	1850	1800	1250	1800
KILOMETERS		340		345		350		355		360		365		370																					

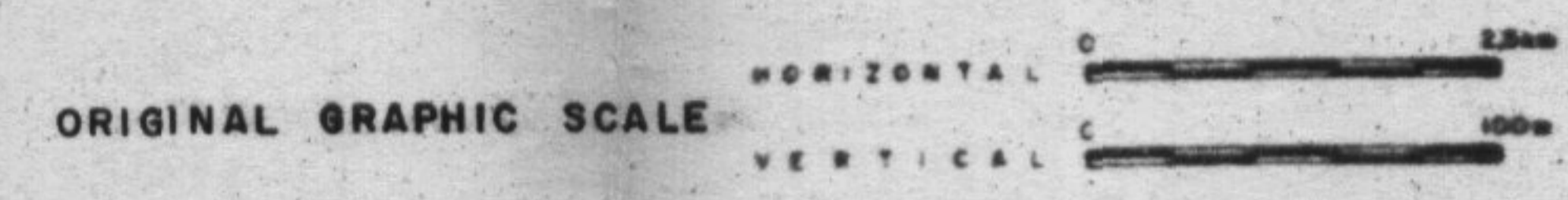


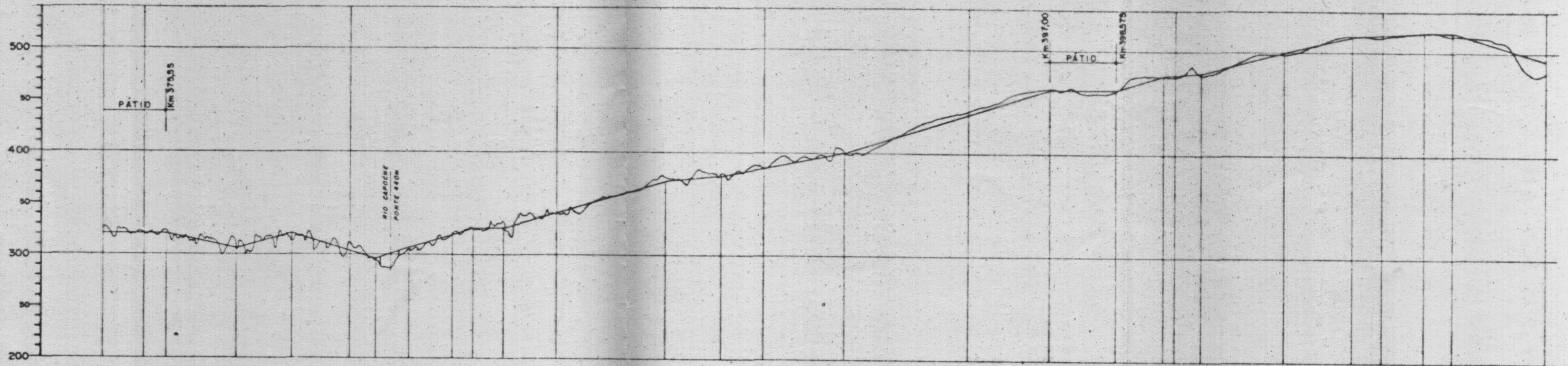
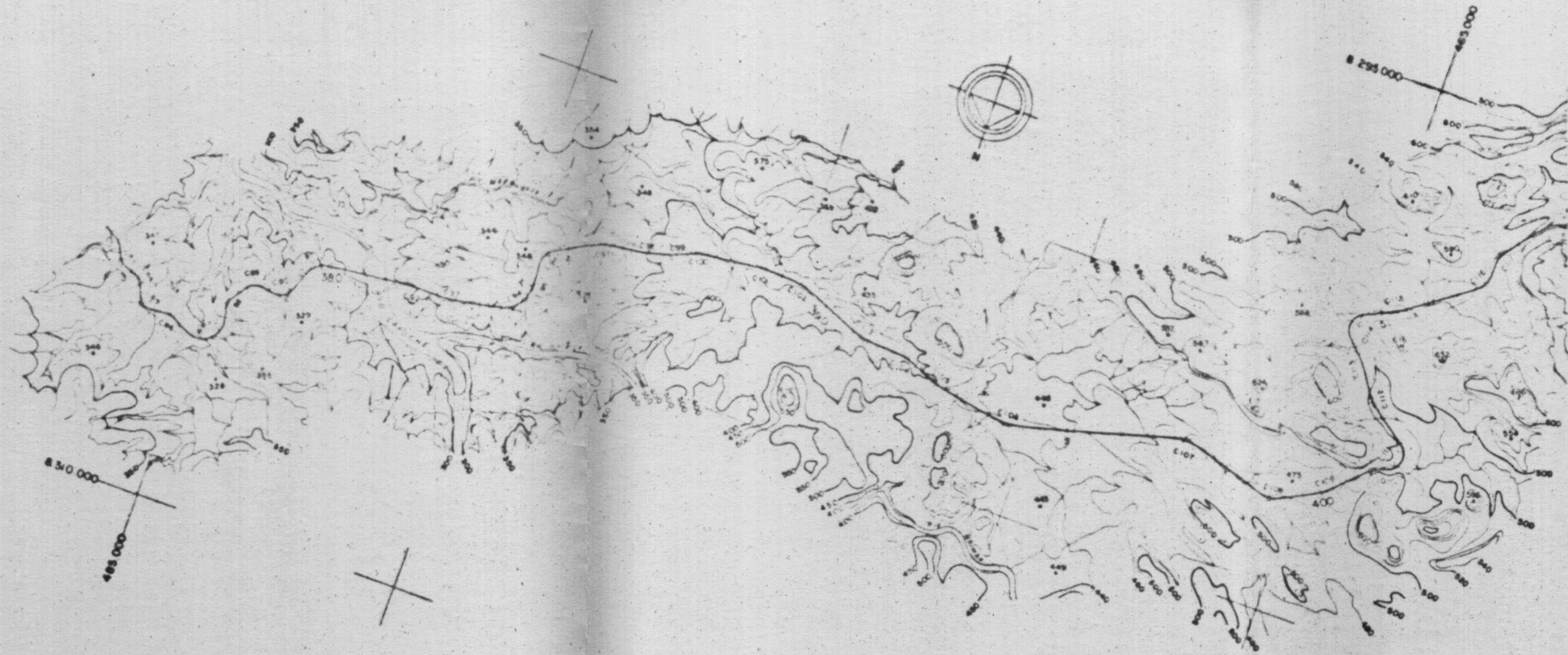
FIG. 9. 2. 14

ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA /VUZI "STUDY OF OUTFLOW ALTERNATIVES"

Cambulatsisse - Mucanha Connection

CURVES TABLE	
CURVES	RADIUS (m)
C 82	300,00
C 83	300,00
C 84	300,00
C 85	300,00
C 86	600,00
C 87	400,00
C 88	300,00
C 89	300,00
C 90	300,00
C 91	600,00
C 92	1000,00
C 93	1000,00
C 94	500,00
C 95	500,00
C 96	400,00
C 97	1000,00
C 98	1000,00
C 99	1000,00
C 100	1000,00

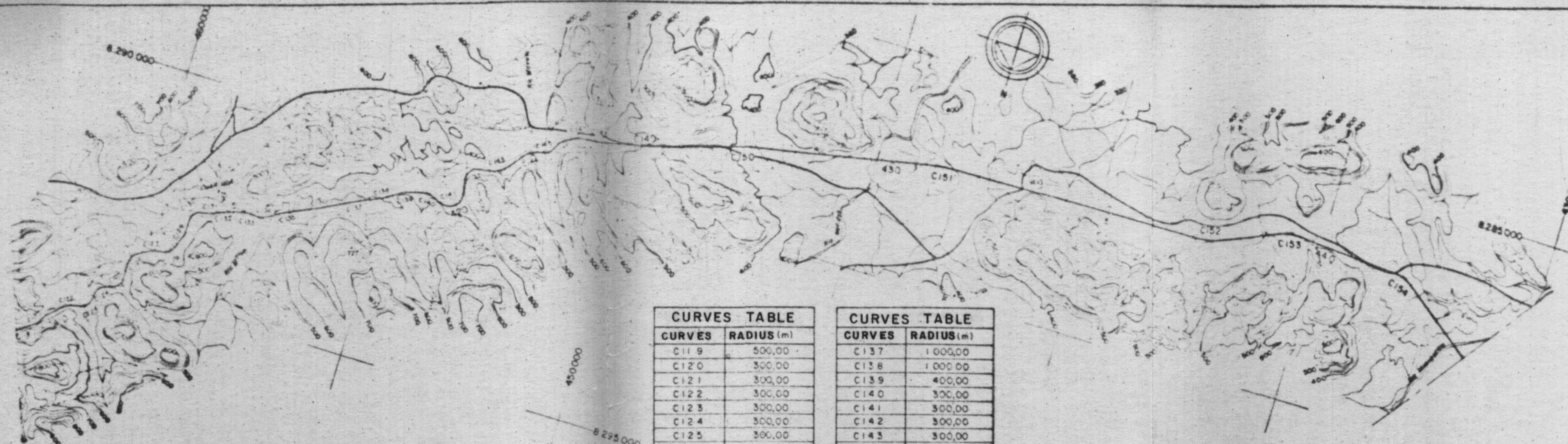
CURVES TABLE	
CURVES	RADIUS (m)
C 101	1000,00
C 102	1000,00
C 103	1000,00
C 104	1000,00
C 105	1000,00
C 106	1000,00
C 107	1000,00
C 108	500,00
C 109	1000,00
C 110	300,00
C 111	300,00
C 112	500,00
C 113	500,00
C 114	300,00
C 115	1000,00
C 116	500,00
C 117	500,00
C 118	500,00



SECTION	%	0,00	-8,28	+10,90	-11,62	+12,50	+11,90	+2,50	0,00	+11,90	+3,30	+7,69	+12,50	0,00	+11,89	+2,60	+10,50	+9,20	+2,40	-0,37	-10,94
EXT (m)		1800	1700	1525	2050	825	1050	500	725	3925	1350	3000	8000	1575	1175	900	2000	1650	1750	700	10 800
KILOMETERS		375			380					385			390		395		400			405	

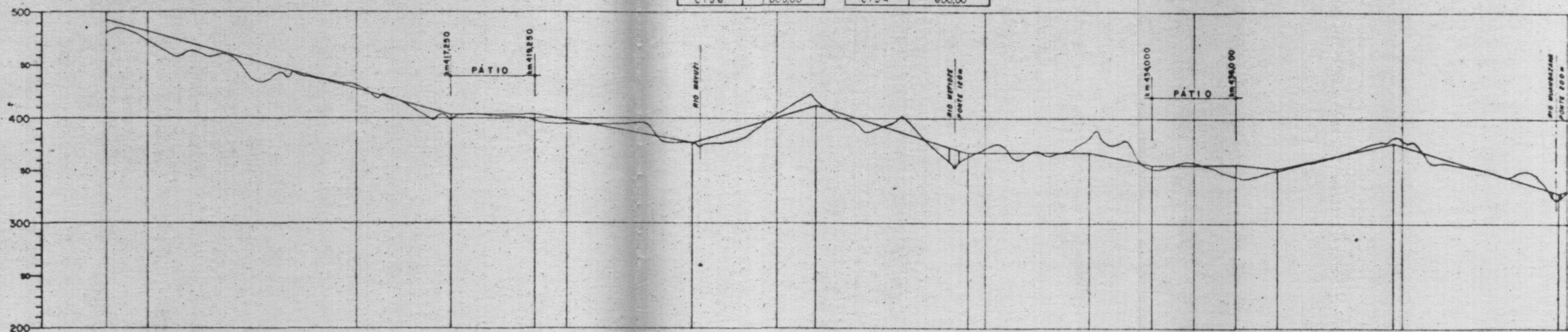


MT - GEIPOT



CURVES TABLE	
CURVES	RADIUS (m)
C119	500,00
C120	300,00
C121	300,00
C122	300,00
C123	300,00
C124	300,00
C125	300,00
C126	450,00
C127	400,00
C128	300,00
C129	700,00
C130	300,00
C131	300,00
C132	1000,00
C133	300,00
C134	300,00
C135	1000,00
C136	1000,00

CURVES TABLE	
CURVES	RADIUS (m)
C137	1000,00
C138	1000,00
C139	400,00
C140	300,00
C141	300,00
C142	300,00
C143	300,00
C144	300,00
C145	300,00
C146	300,00
C147	300,00
C148	1000,00
C149	1500,00
C150	1000,00
C151	1000,00
C152	1000,00
C153	600,00
C154	600,00



SECTION	%	EXT. (m)	EXT. (m)	EXT. (m)	EXT. (m)	EXT. (m)	EXT. (m)	EXT. (m)	EXT. (m)	EXT. (m)	EXT. (m)	EXT. (m)	EXT. (m)	EXT. (m)
		-10,94	0,00	-7,24	+11,86	-12,04	0,00	-8,00	0,00	-4,02	+8,96	-12,00		
		10500	2000	3750	2950	3650	2900	1500	2000	1000	2800	4000		
KILOMETERS		410	415	420	425	430	435	440						

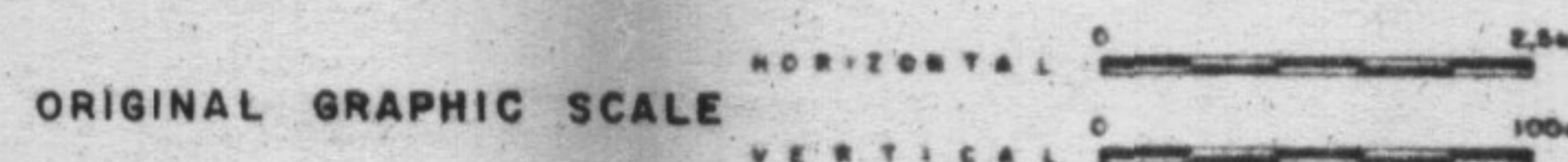
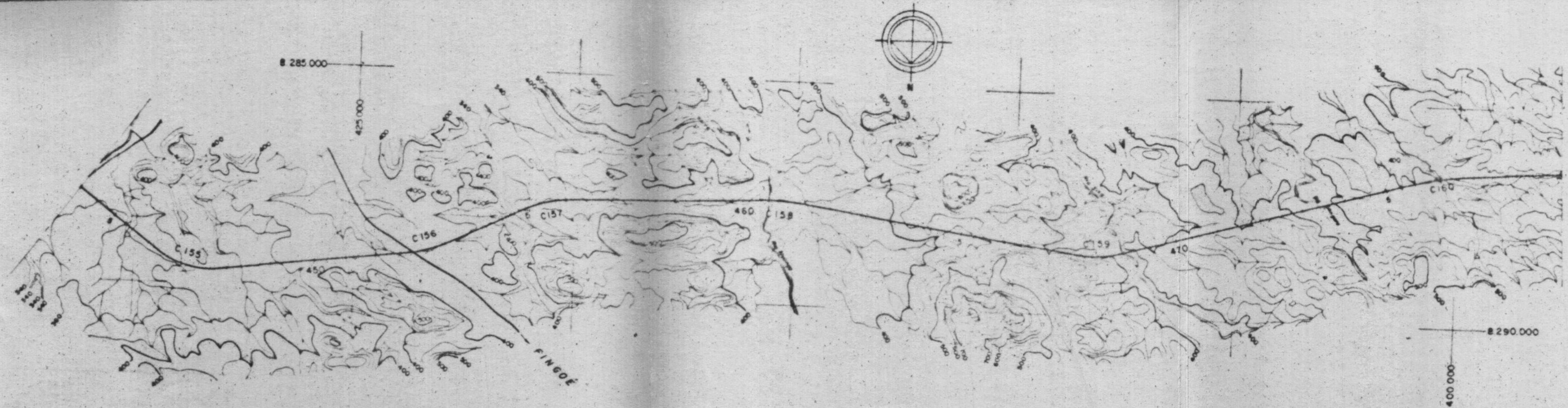


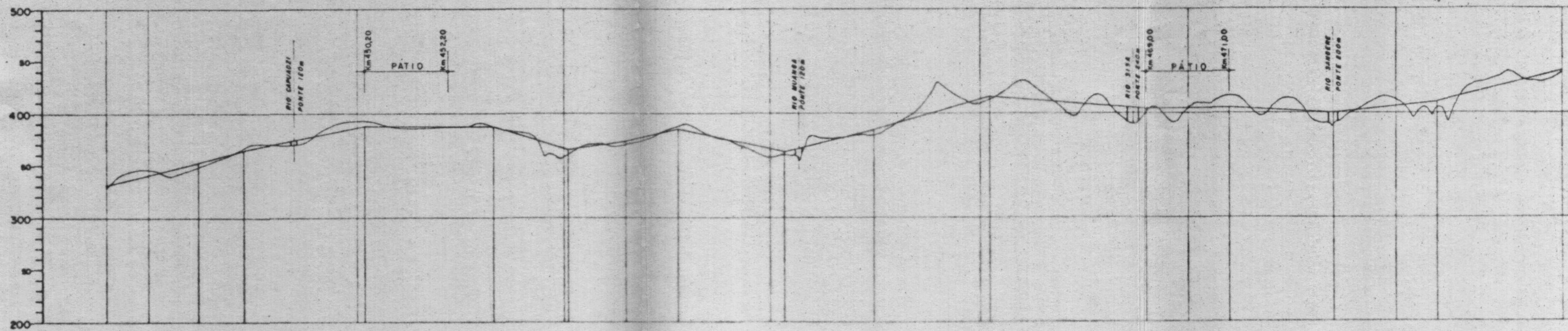
FIG. 9. 2. 16

ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA / VUZI "STUDY OF OUTFLOW ALTERNATIVES"

Cambulatsisse - Mucanha Connection



CURVES TABLE	
CURVES	RADIUS (m)
C155	1000,00
C156	1000,00
C157	1000,00
C158	1000,00
C159	1000,00
C160	1500,00



SECTION	%	+9,0	+11,70	+7,60	0,00	-12,10	+3,50	+3,0	-6,60	+10,00	+11,80	-4,09	0,00	-2,00	+4,00	+10,00
EXT (m)		2400	1100	2900	3100	1800	1400	1300	2550	2150	2700	3800	2000	2500	2500	4000
KILOMETERS		445		450		455		460		465		470		475		

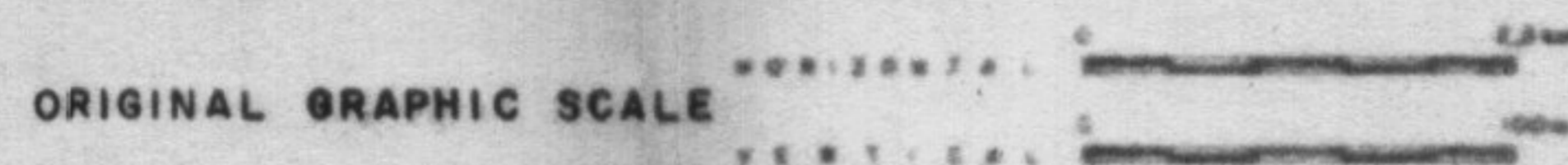
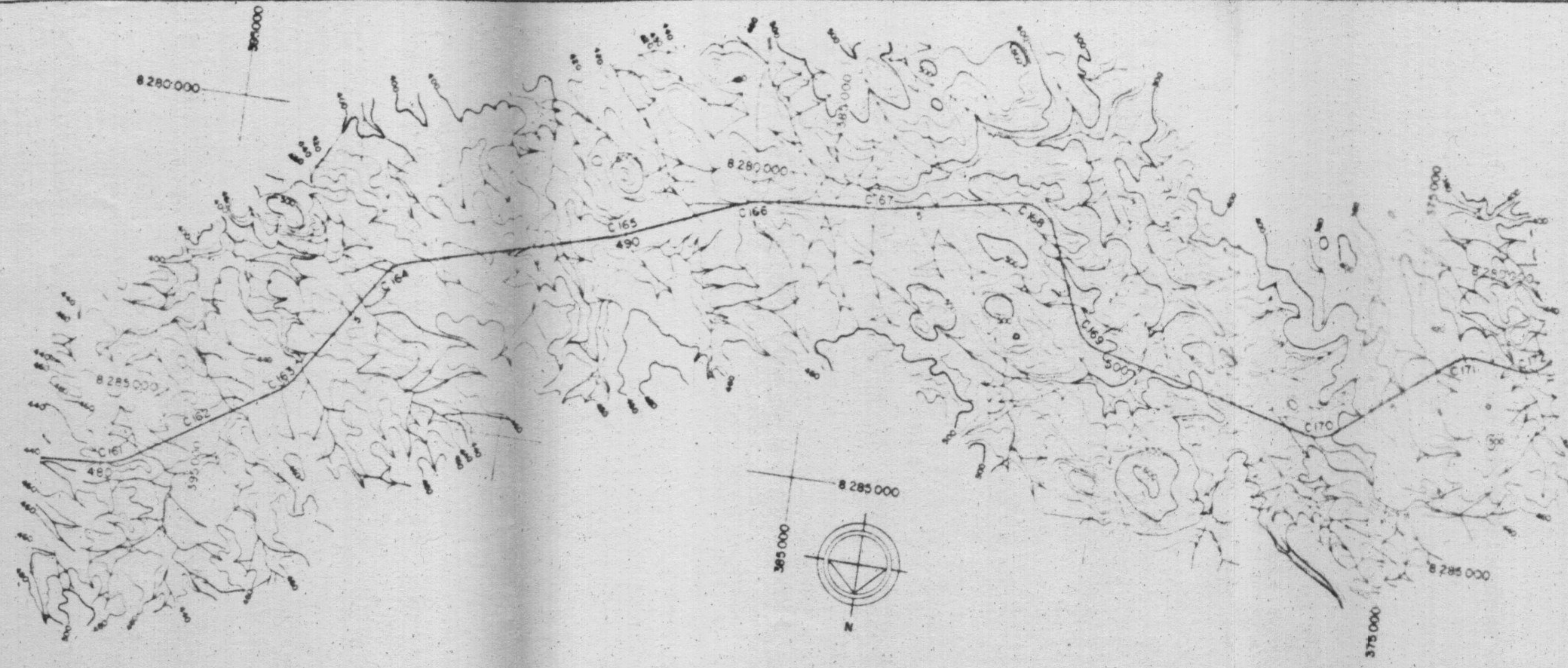
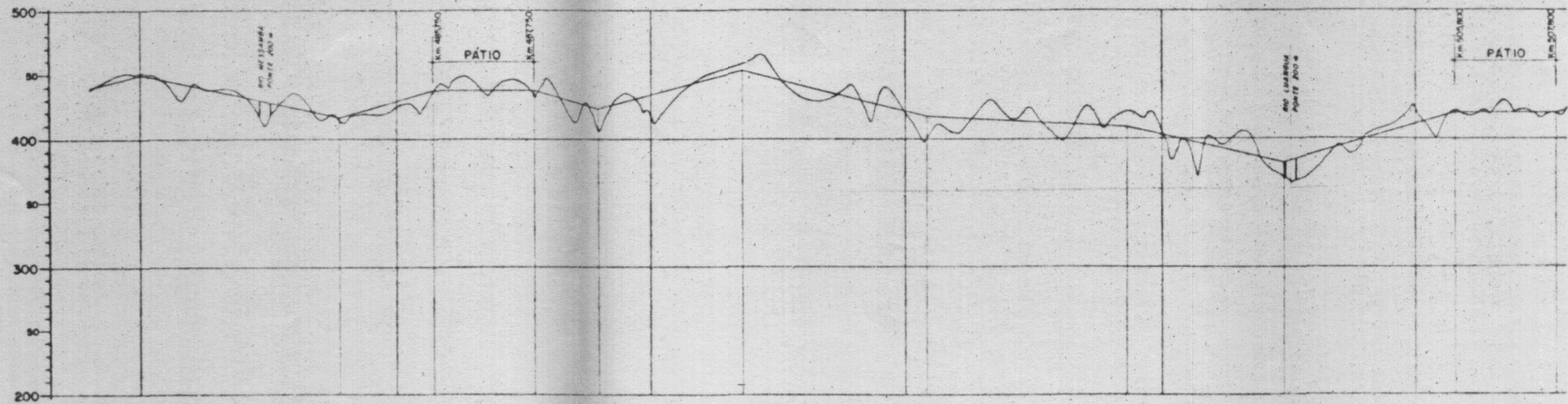


FIG. 9. 2. 17



CURVES TABLE	
CURVES	RADIUS (m)
C 161	600.00
C 162	3000.00
C 163	600.00
C 164	600.00
C 165	500.00
C 166	1000.00
C 167	1500.00
C 168	600.00
C 169	600.00
C 170	600.00
C 171	600.00
C 172	600.00



SECTION	%	+11.00	-8.70	+8.80	0.00	-8.90	+10.70	-10.00	-2.30	-8.70	+11.45	0.00
EXT (m)		4000	3900	1850	2000	1250	2800	3600	3900	3100	3400	2000
KILOMETERS		480		485		490		495		500		500

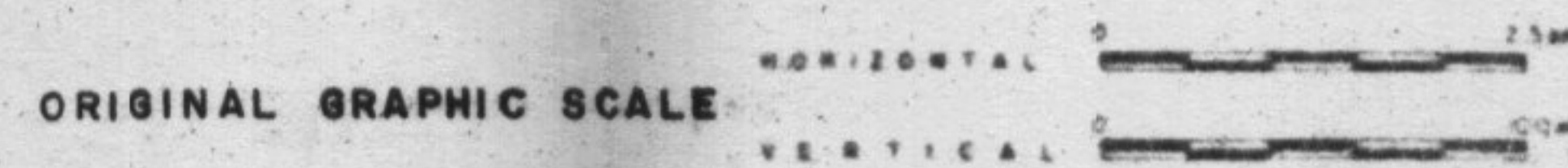
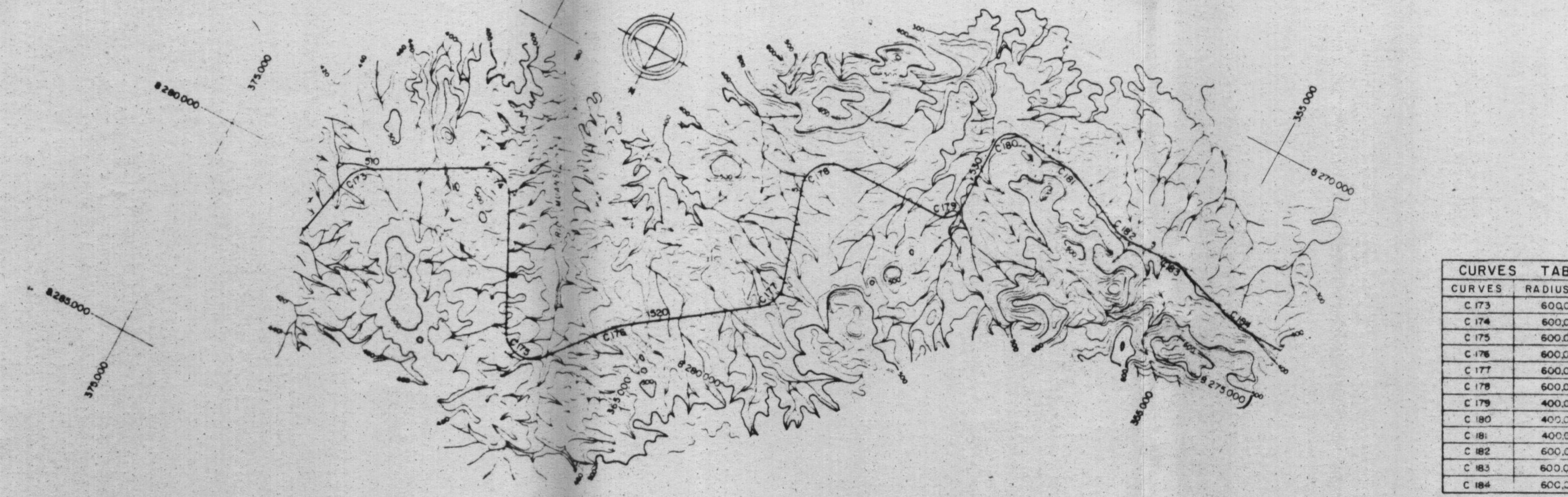
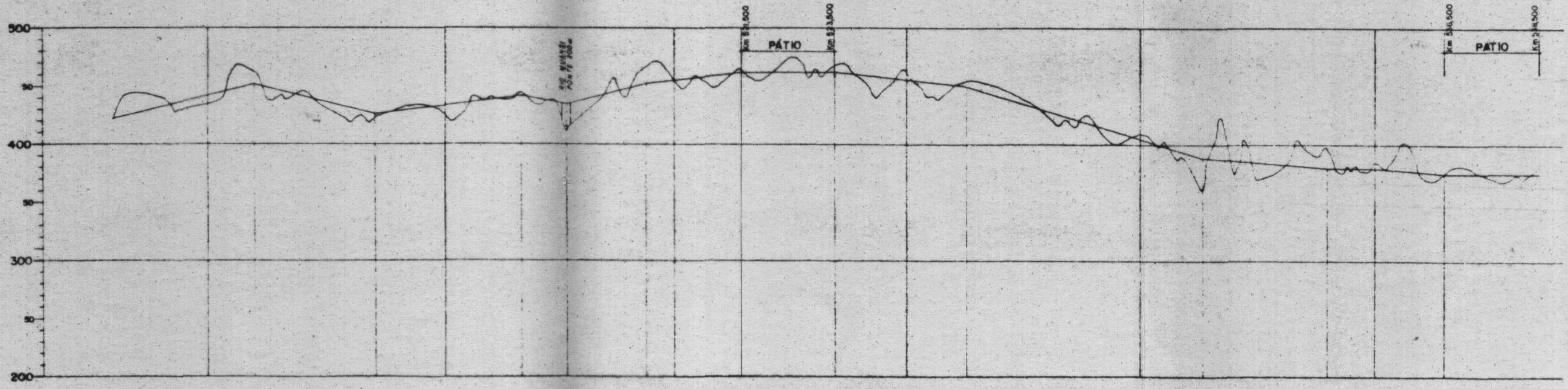


FIG. 9. 2. 18



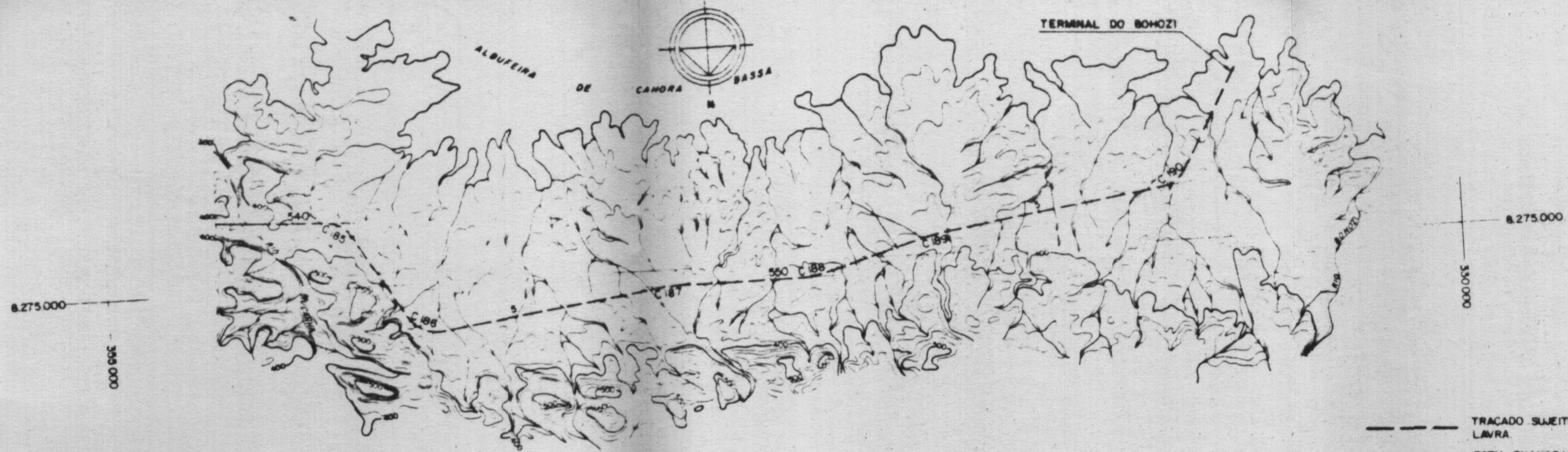
CURVES TABLE	
CURVES	RADIUS (m)
C.173	600,00
C.174	600,00
C.175	600,00
C.176	600,00
C.177	600,00
C.178	600,00
C.179	400,00
C.180	400,00
C.181	400,00
C.182	600,00
C.183	600,00
C.184	600,00



SECTION	%	+10,30	-10,10	+4,90	-6,90	+10,70	+4,10	0,00	-4,30	-12,00	-3,57	0,00	-3,33	0,00
EXT (m)		3200	2550	3150	1000	1700	2100	2000	2800	5050	2650	1000	1500	3750
KILOMETERS		510		515		520		525		530		535		

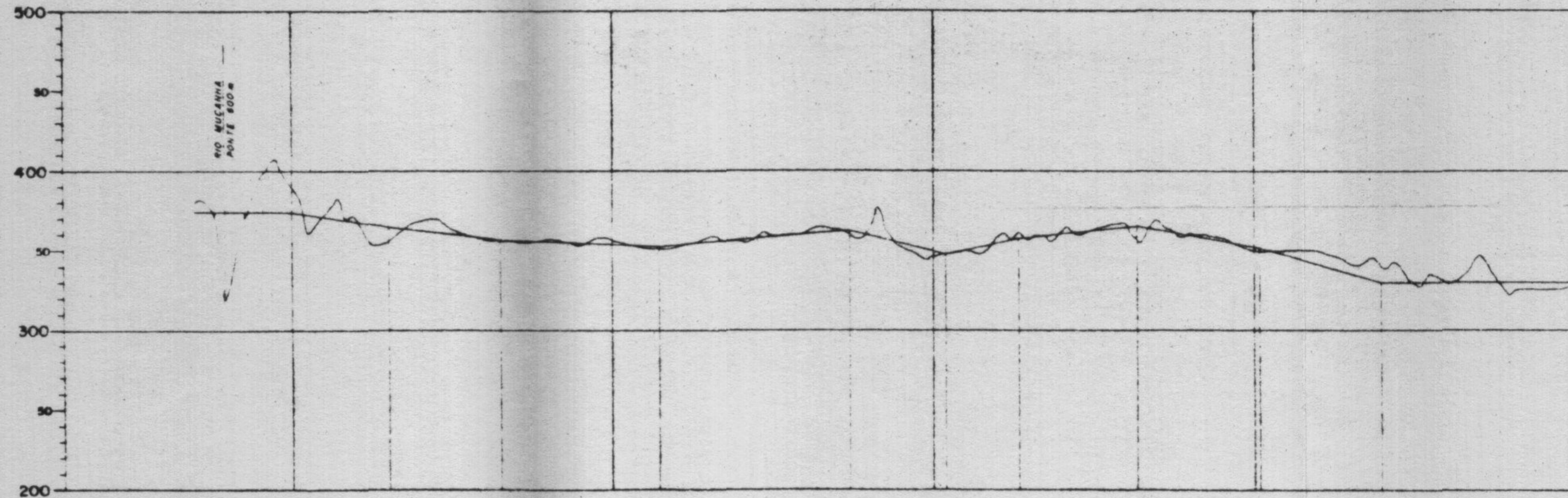


FIG. 9. 2. 19



CURVES TABLE	
CURVES	RADIUS (m)
C 185	600,00
C 186	600,00
C 187	1000,00
C 188	1000,00
C 189	1000,00
C 190	600,00

NOTA:
 - - - - - TRACADO SUJEITO A FUTURAS ADAPTAÇÕES APÓS O PROJETO DE LAVRA
 PATH CHANGEABLE AFTER MINING PLAN



SECTION	%de	0,00	-6,67	-3,70	-2,20	+3,40	-10,37	+9,14	+4,30	-6,93	-12,00	0,00
	EXT (m)	3750	1500	1750	2500	2950	1900	1150	1850	1900	1900	3000
KILOMETERS		540		545		550		555				

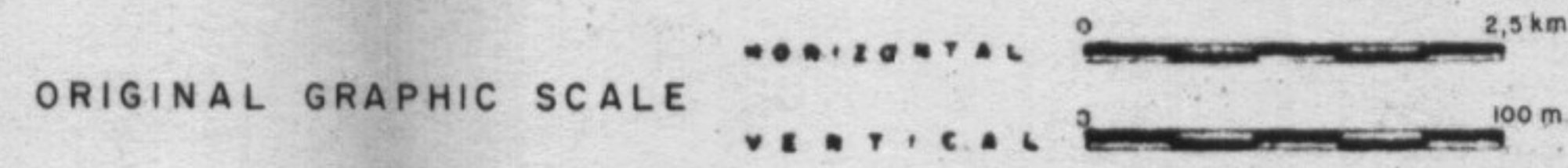
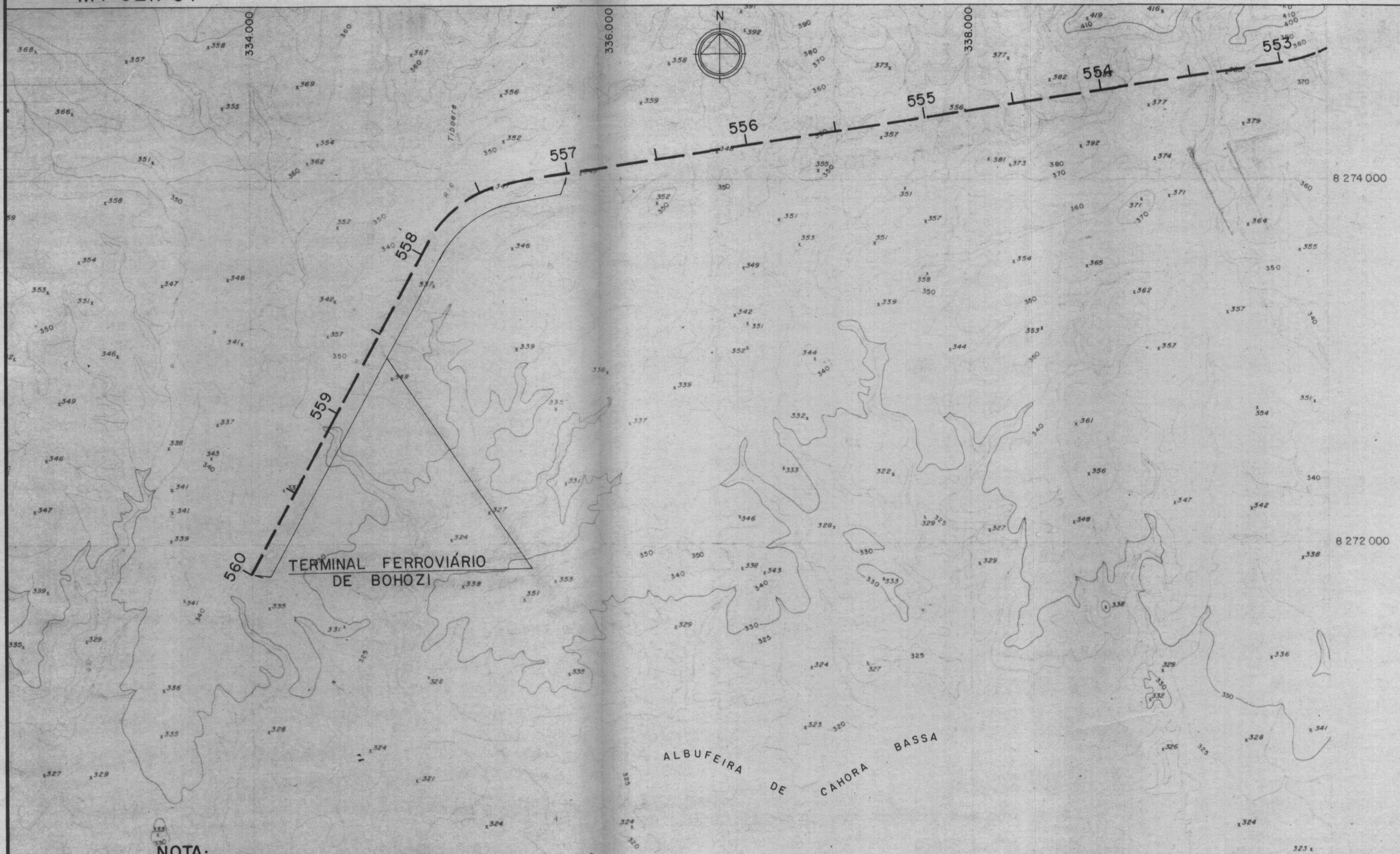


FIG. 9. 2. 20

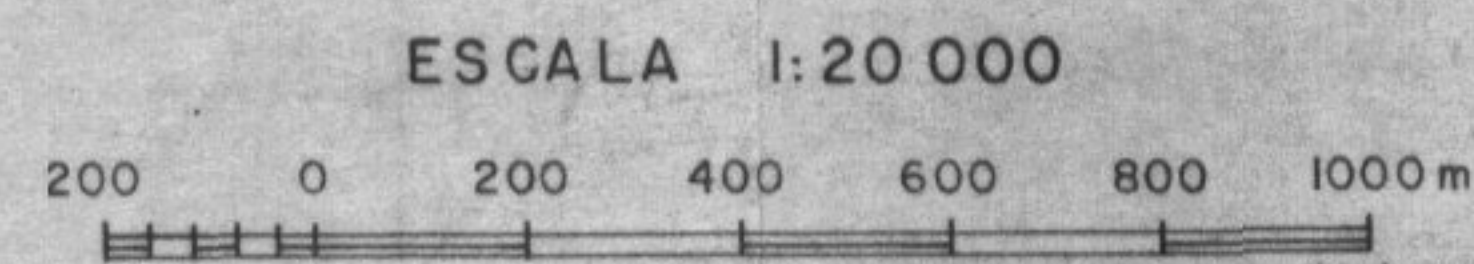
MT-GEIPOT



NOTA:

--- TRACADO SUJEITO A FUTURAS ADAPTAÇÕES APÓS O PROJETO DE LAVRA.

PATH CHANGEABLE AFTER MINING PLAN.



8 270 000

FIG. 9.2.21

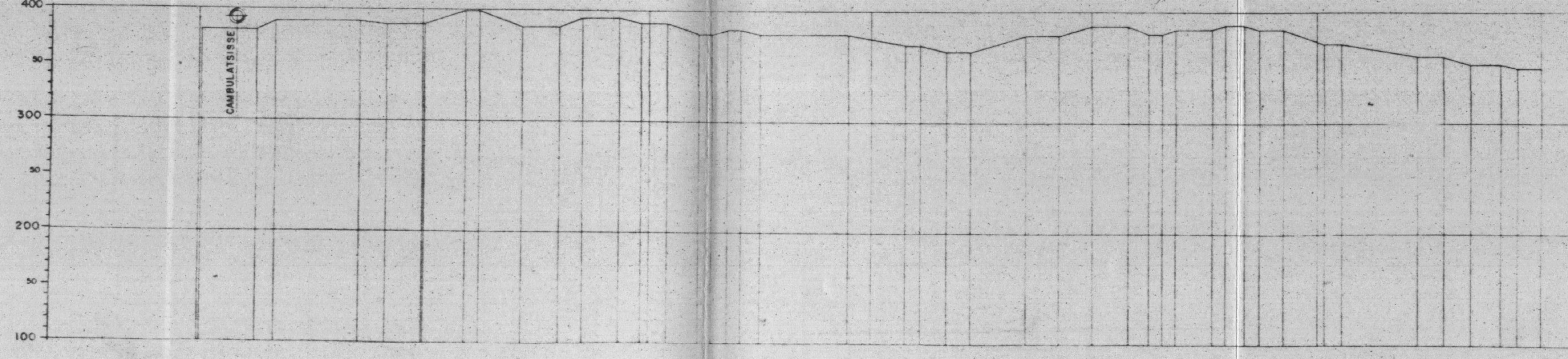
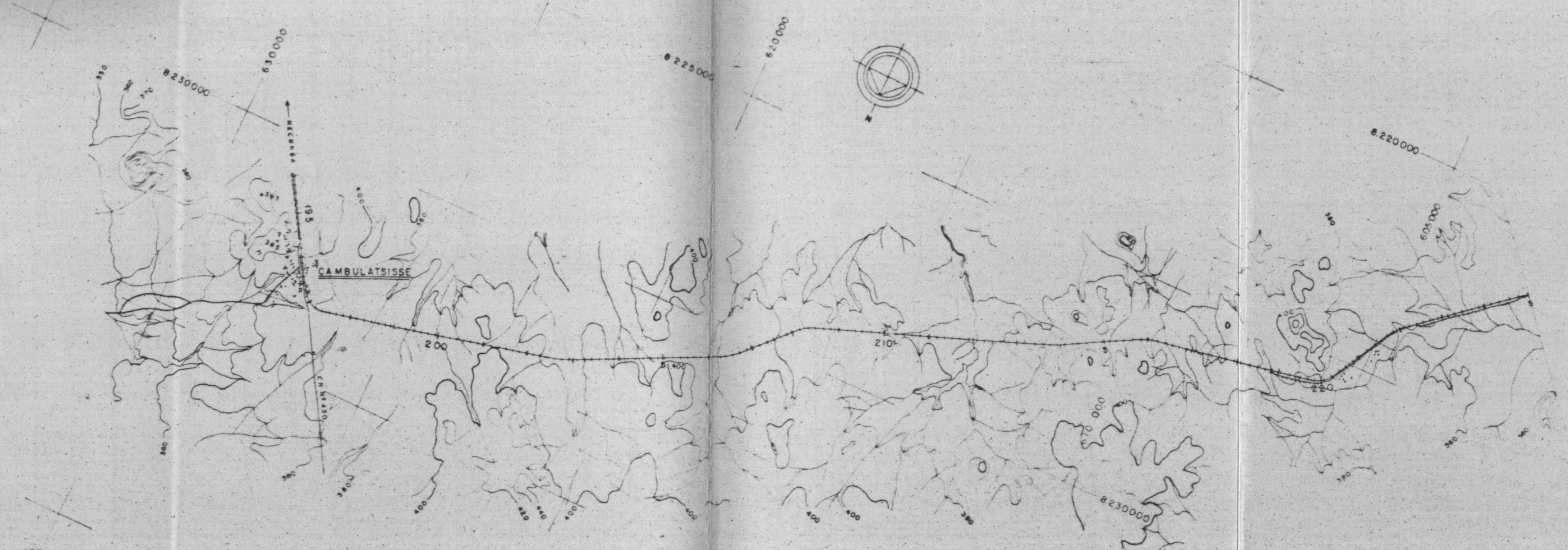
MINAS DE MUCANHA / VUZI ESTUDO DE ESCOAMENTO DO CARVÃO

"STUDY OF OUTFLOW ALTERNATIVES"

Localização do Terminal de Bohozi

"Bohozi River Terminal"

MT - GEI POT



SECTION EXT (m)	0.00		4.00		0.00		-5.00		0.00		13.00		-15.00		0.00		16.00		0.00		10.00		0.00		-15.00		300.00		350.00		150.00		0.00		-8.00		550.00		400.00		10.00		0.00		2.00		0.00		-130.00		0.00		0.00		820.00		310.00		0.00		-1400.00		-6.00		0.00		-1400.00		0.00		350.00		100.00																						
	1150		430		950		584		864		08		876.92		315		0000		926.66		820.84		500		812.50		490		530		700		800		440		1980		127.6		350		0.00		575		550		1250		750		725		825		450		300		0.00		0.00		300		16.0		8.00		300		820		310		550		900		400		0.00		1665		585		600		700		350		250
KILOMETERS	195				200						205						210						215						220						225																																																												

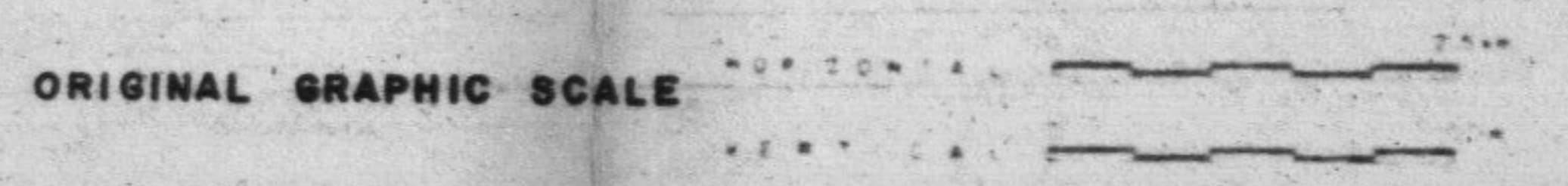


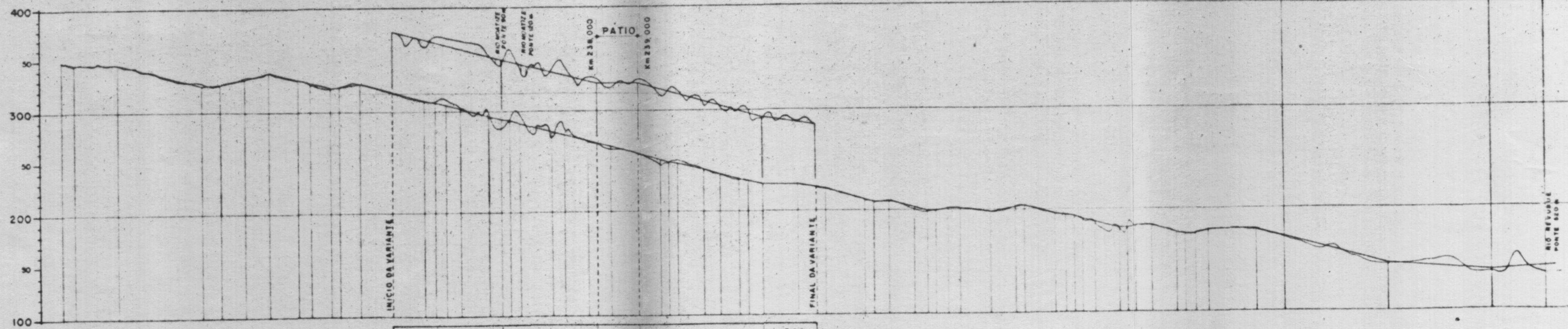
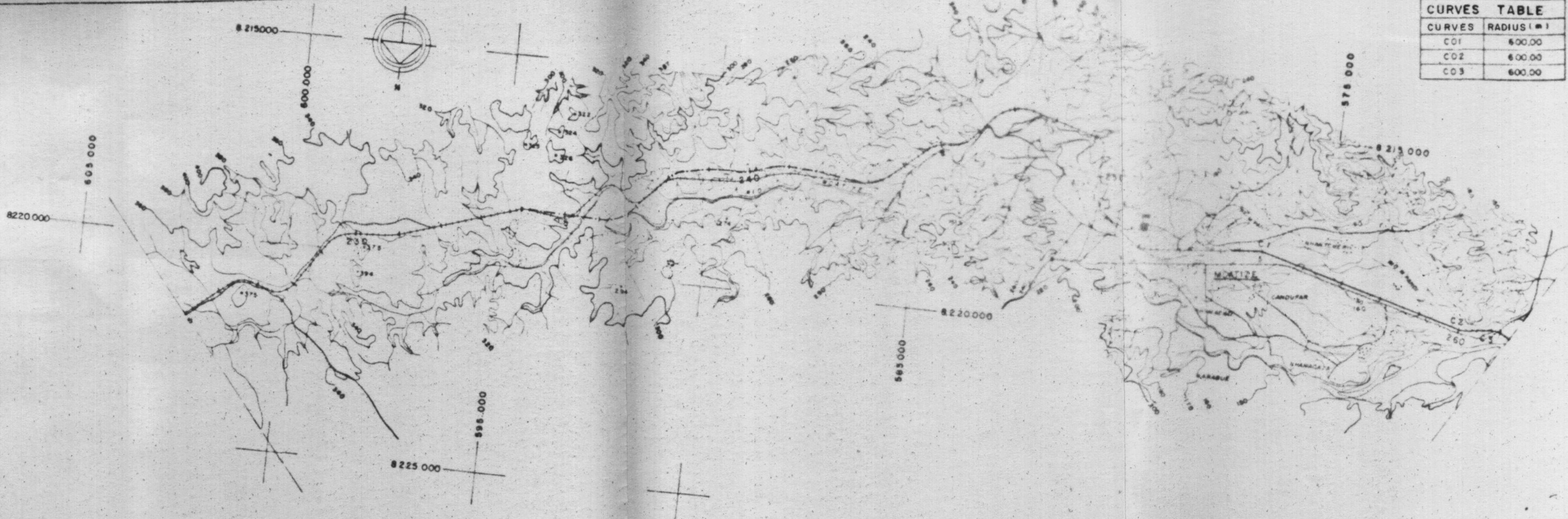
FIG. 9. 2. 22

ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA / VUZI "STUDY OF OUTFLOW ALTERNATIVES"

Cambulatsisse - Nhancapirre Connection

MT - GEIPOT

CURVES TABLE	
CURVES	RADIUS (m)
C01	600.00
C02	600.00
C03	600.00



SECTION	γ ₀₀	EXT(m)	225	230	235	240	242.200	242.464	245	250	255	260																																																																				
	0,00	1050	2050	450	600	700	300	480	310	502	1568	250	670	270	1054	400	880	620	340	874	200	375	240	974	780	300	110	800	560	1240	201	1400	639	389	1074	471	200	850	395	100	700	1100	210	144	380	1000	600	340	1054	200	1000	300	930	280	1000	4882	8677	40352	252000	220	110	300	400	596	204	100	400	590	200	1076	200	1000	240	1000	322	804	1158	3200	2500	2000
KILOMETERS			225	230	235	240	242.200	242.464	245	250	255	260																																																																				

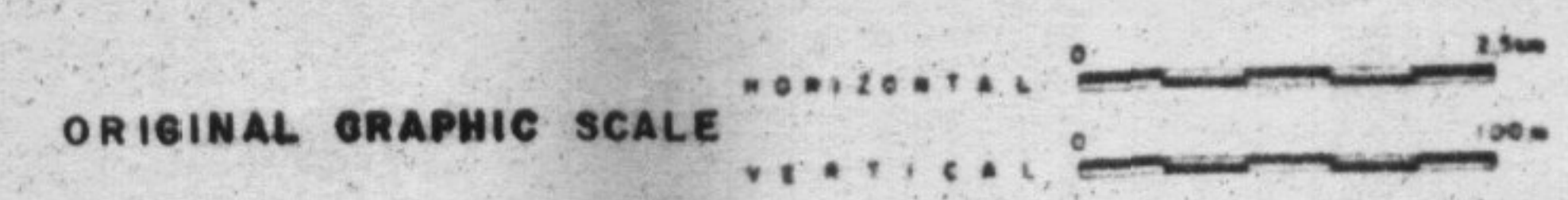


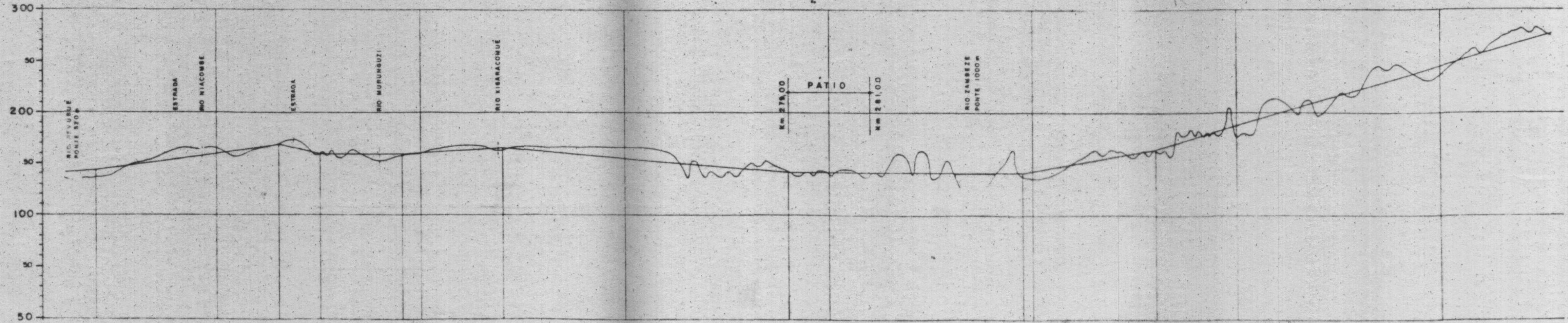
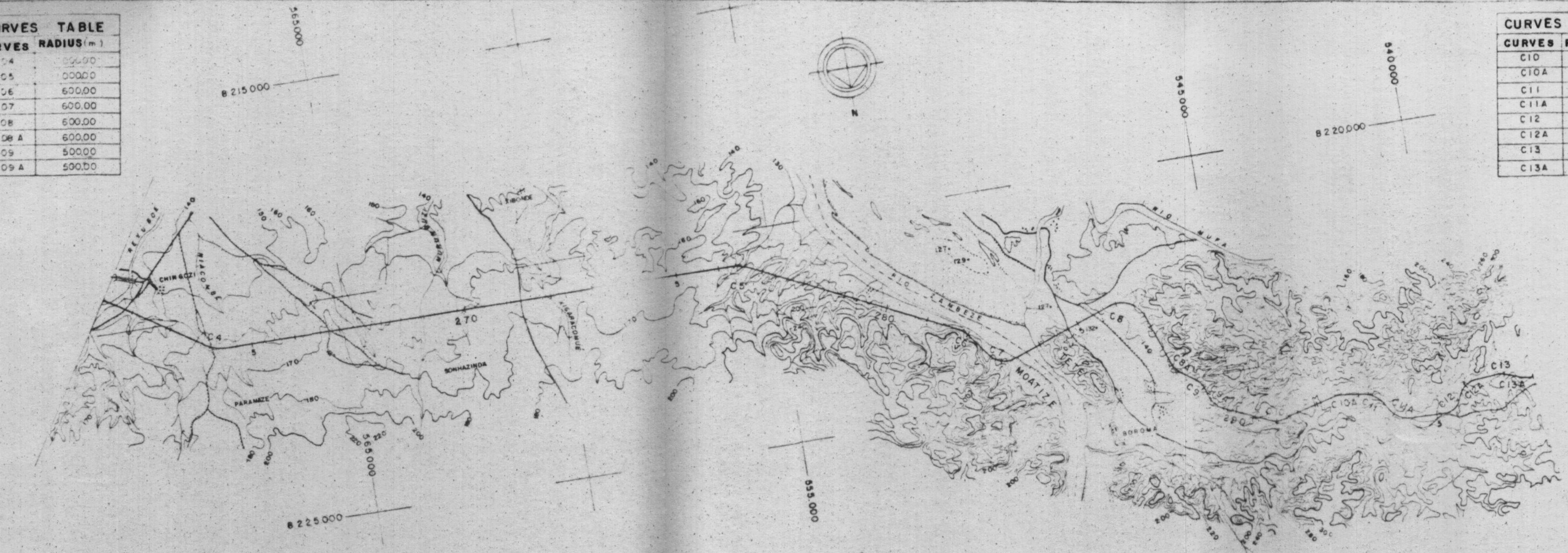
FIG. 9. 2. 23

ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA / VUZI "STUDY OF OUTFLOW ALTERNATIVES"
 Cambulatsisse - Nhancapirre Connection

MT - GEIPOT

CURVES TABLE	
CURVES	RADIUS (m)
C04	600,00
C05	600,00
C06	600,00
C07	600,00
C08	600,00
C08 A	600,00
C09	500,00
C09 A	500,00

CURVES TABLE	
CURVES	RADIUS (m)
C10	600,00
C10A	600,00
C11	500,00
C11A	500,00
C12	400,00
C12A	400,00
C13	600,00
C13A	600,00



SECTION	2,75	5,71	9,20	0,00	2,40	3,39	0,00	7,15	11,548
EXT (m)	2000	4500	1000	2000	2500	7000	5750	3250	12500
KILOMETERS	265	270	275	280	285	290	295		

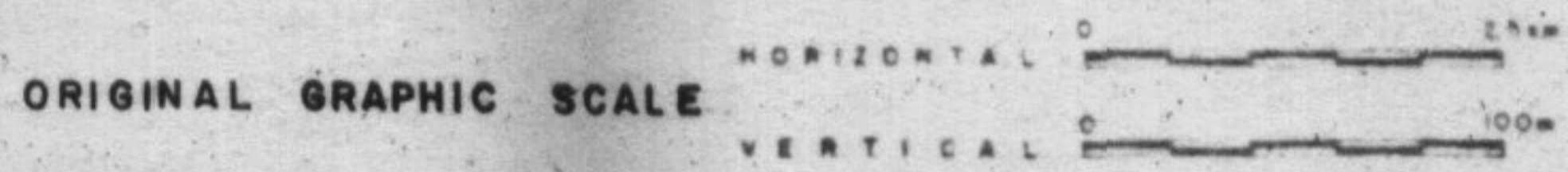
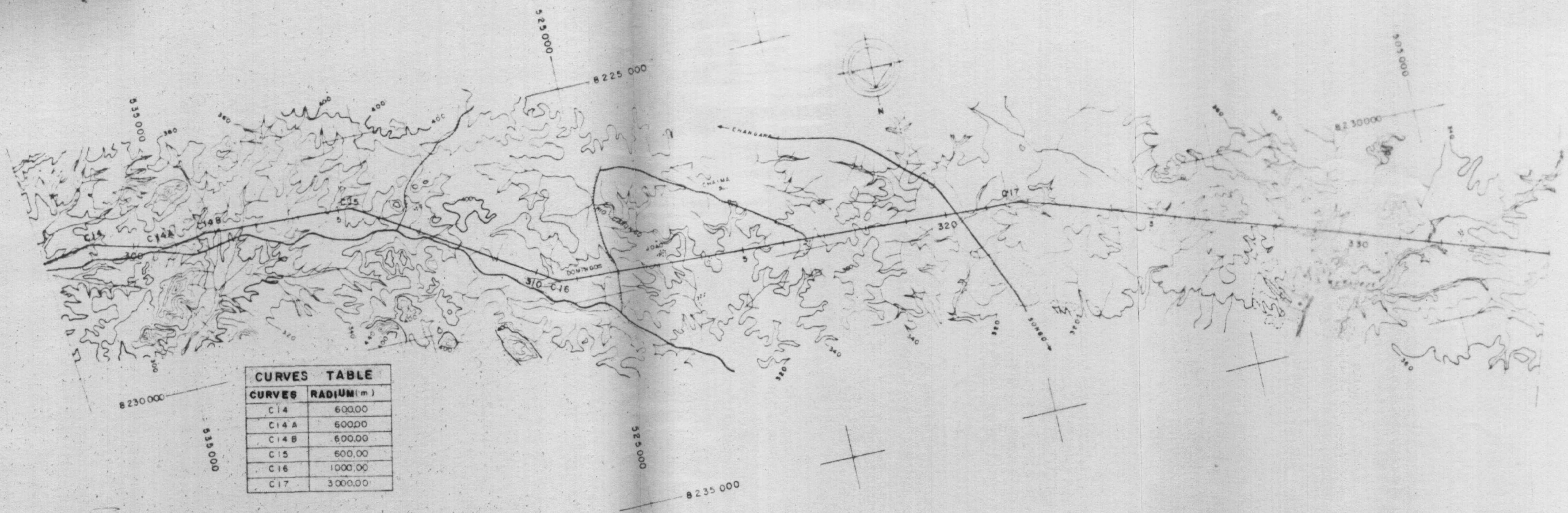
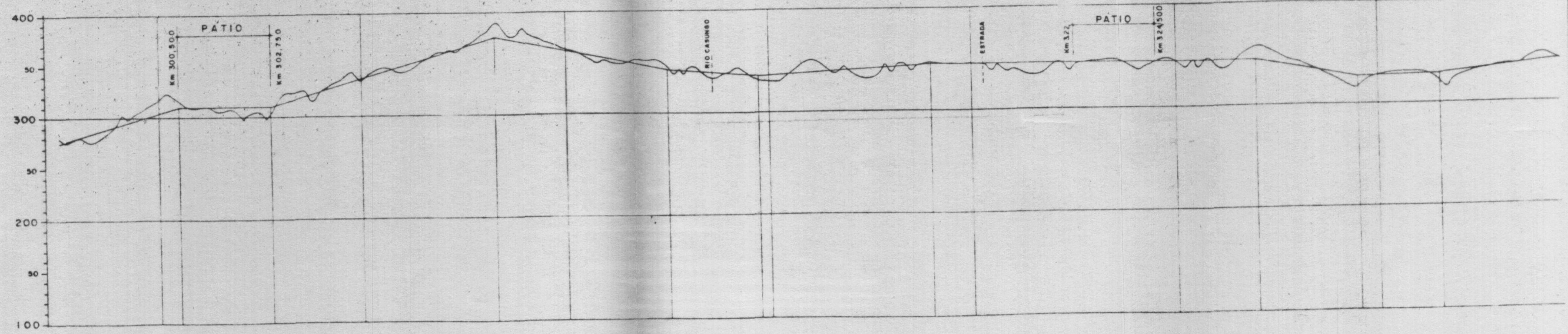


FIG. 9. 2. 24

MT - GEIPOT



CURVES TABLE	
CURVES	RADIUM (m)
C14	600,00
C14A	600,00
C14B	600,00
C15	600,00
C16	1000,00
C17	3000,00



SECTION	11.548	0.00	11.664	-7.388	-1.540	-2.045	0.00	-7.098	0.925	4.472
EXT (m)	12.500	2.250	5.500	4.250	2.250	4.250	8.000	2.500	2.000	9.000
KILOMETERS	300	305	310	315	320	325	330			

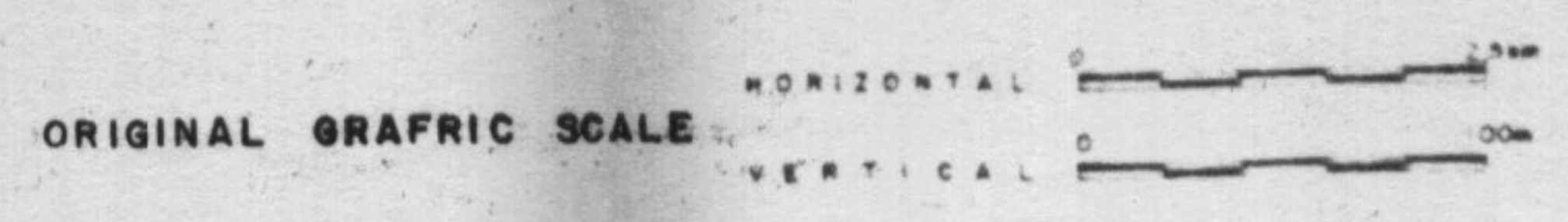
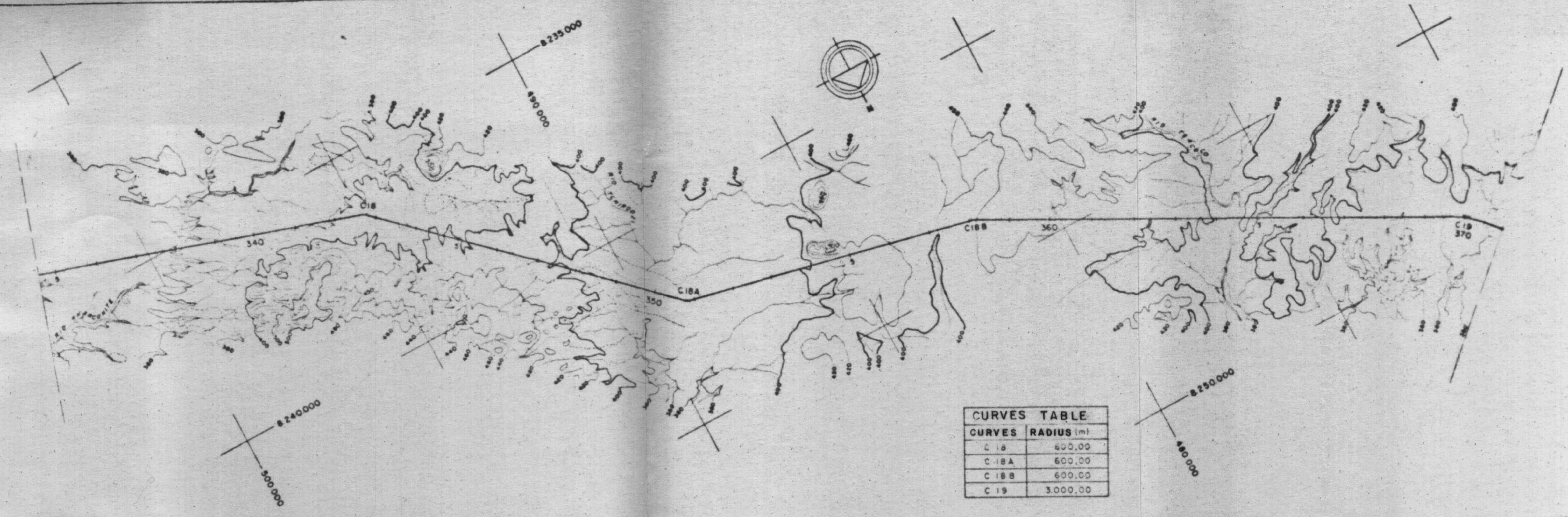


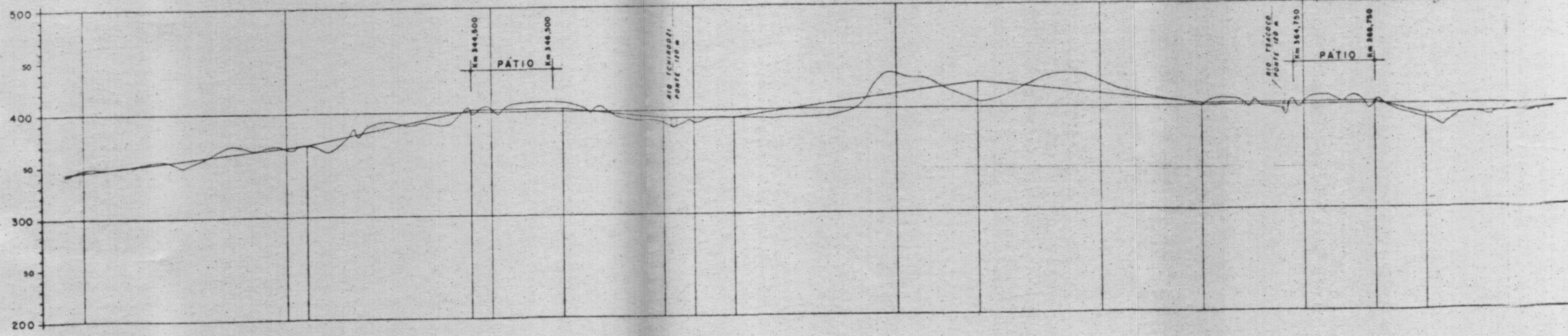
FIG. 9. 2. 25

ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA / VUZI "STUDY OF OUTFLOW ALTERNATIVES"
 Cambulatsisse - Nhancapirire Connection

MT - GEIPOT



CURVES TABLE	
CURVES	RADIUS (m)
C 18	600,00
C 18A	600,00
C 18B	600,00
C 19	3000,00



SECTION	%	9 000	4 000	2 250	2 500	1 750	6 000	5 500	4 250	1 250	37
EXT(m)											
KILOMETERS		335	340	345	350	355	360	365			

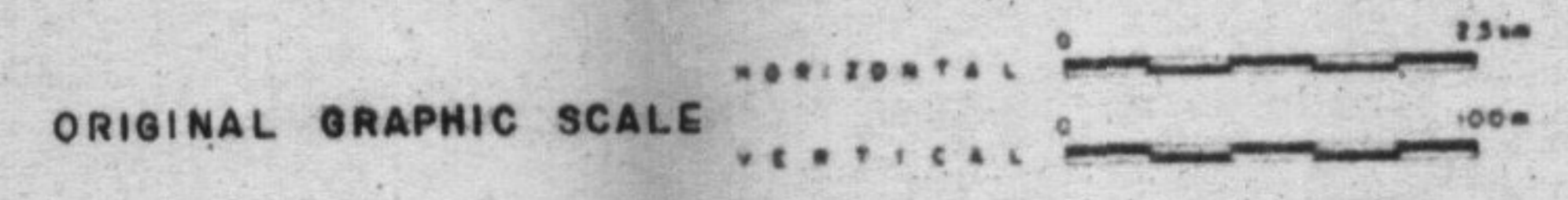
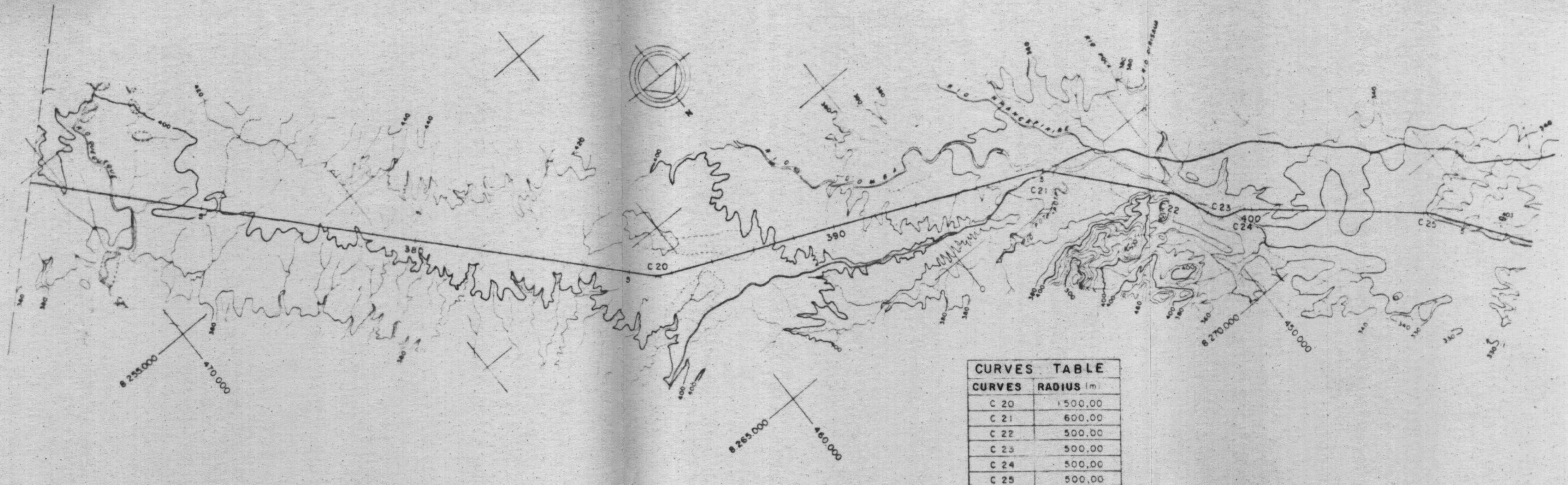
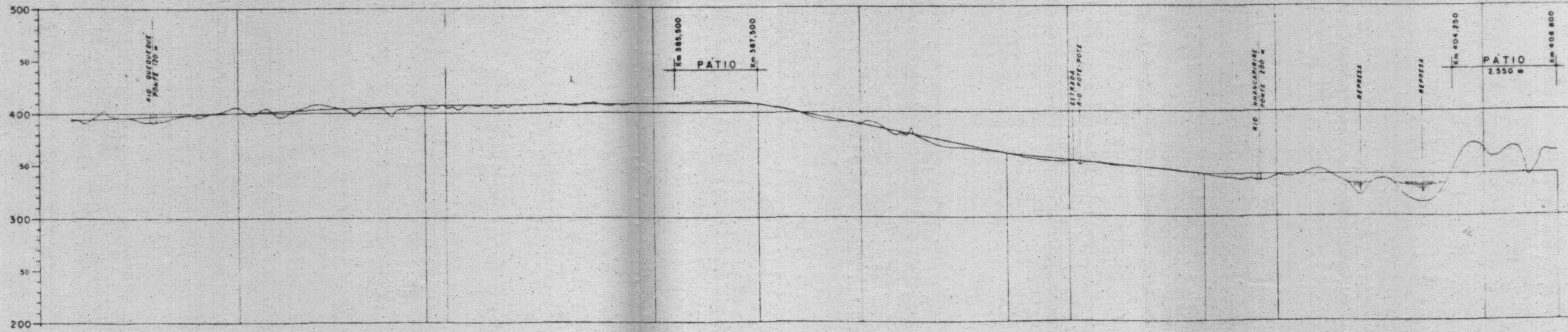


FIG. 9. 2. 26

ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA/VUZI "STUDY OF OUTFLOW ALTERNATIVES"
 Cambulatsisse - Nhancapirre Connection



CURVES TABLE	
CURVES	RADIUS (m)
C 20	1500,00
C 21	600,00
C 22	500,00
C 23	500,00
C 24	500,00
C 25	500,00



SECTION	%	Ext(m)	KILOMETERS
	+ 1,622	0,000	375
		8,000	380
	- 7,950	6,000	385
	- 4,274	4,750	390
	0,000	8,550	395
			400
			405

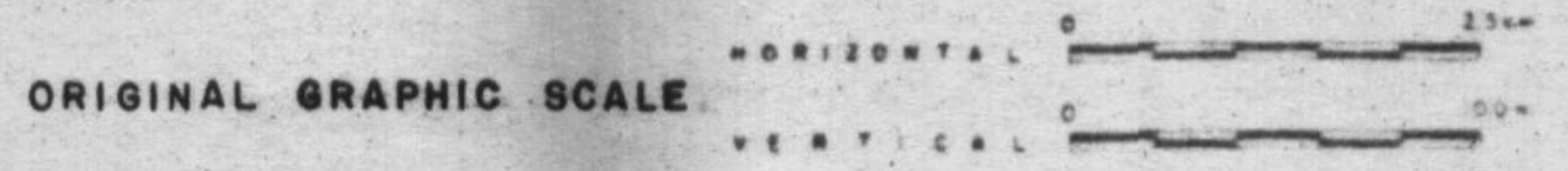
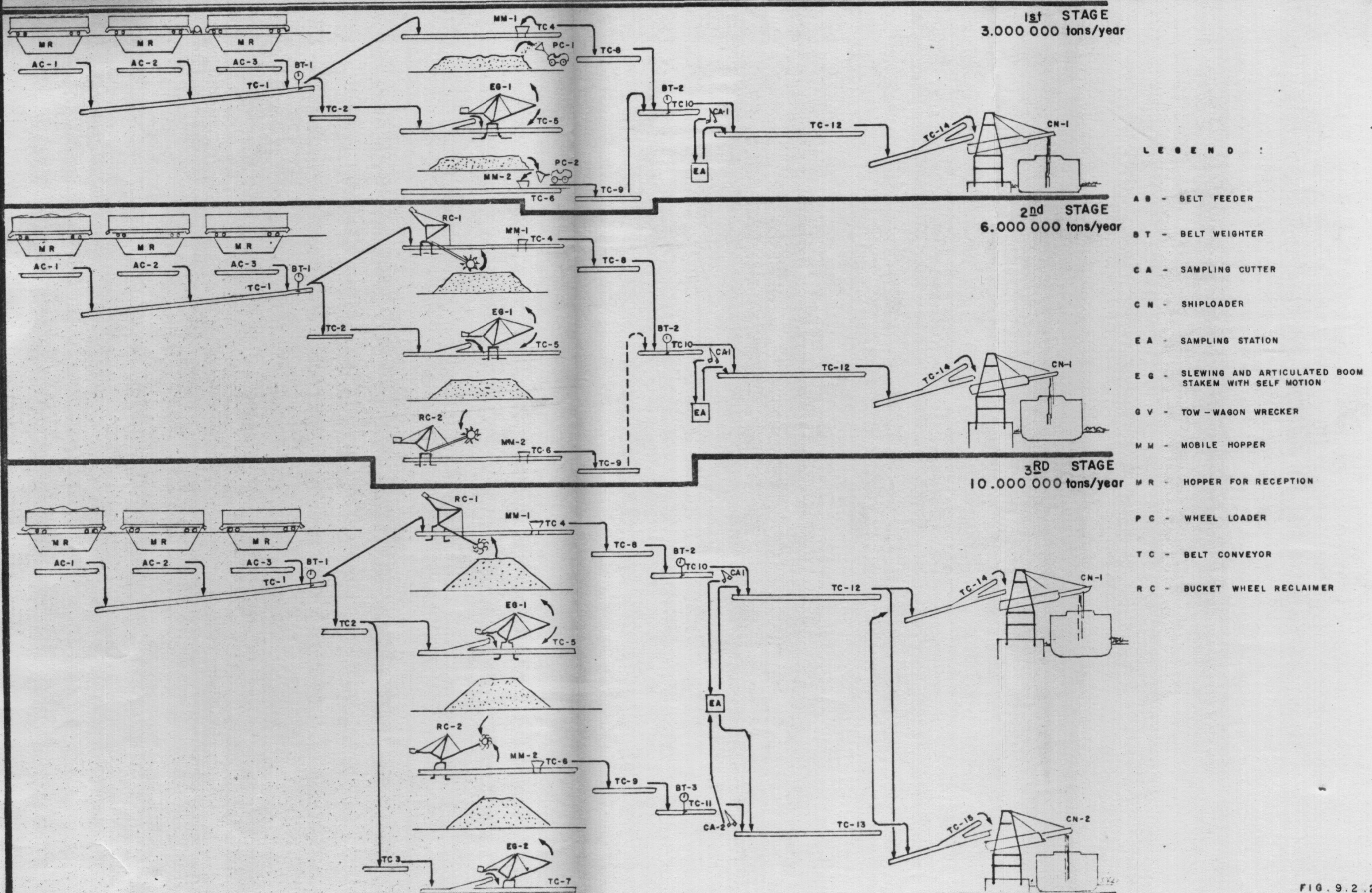
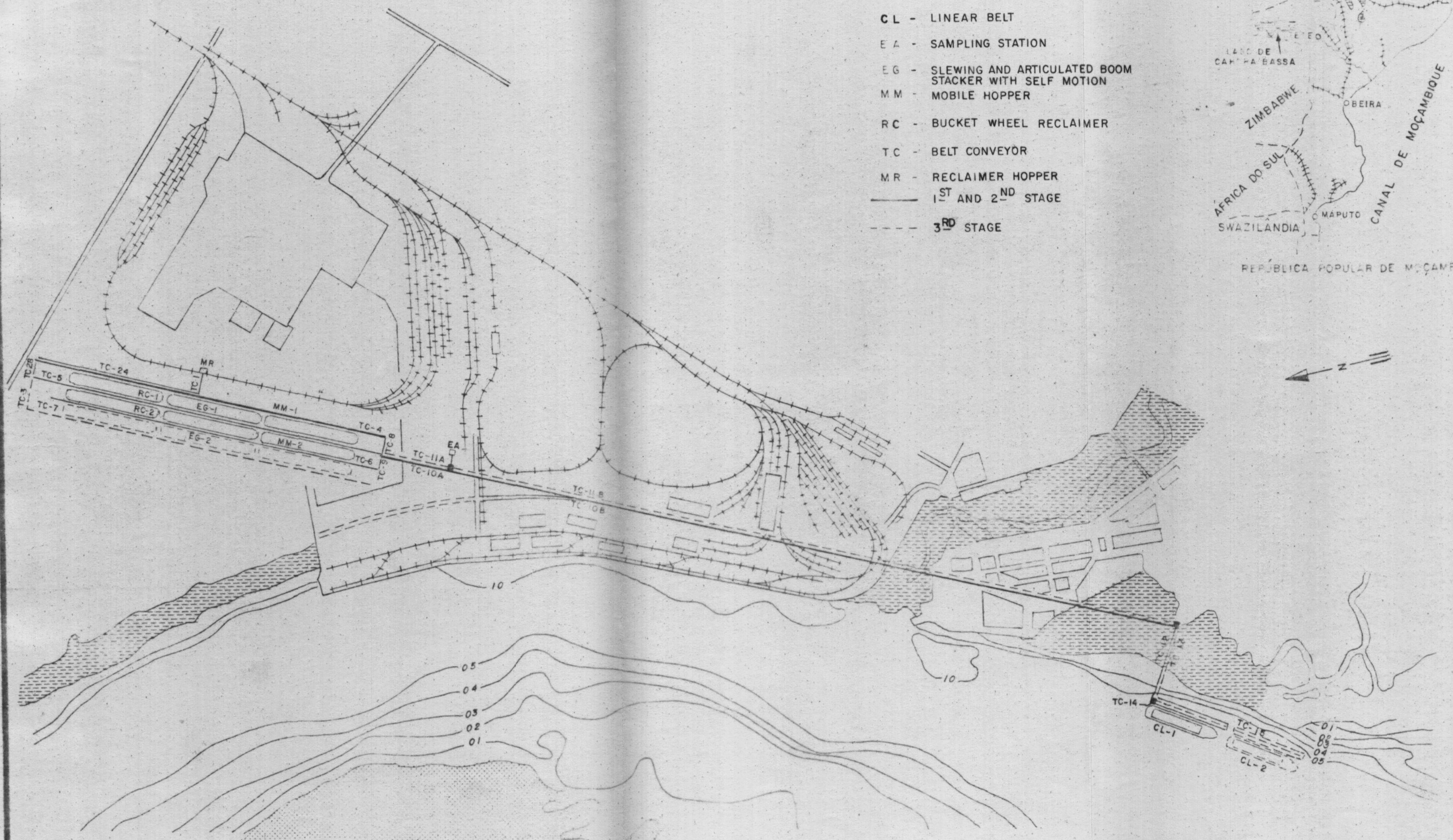


FIG. 9. 2. 27

MT-GEIPOT





LEGEND

- CL - LINEAR BELT
- EA - SAMPLING STATION
- EG - SLEWING AND ARTICULATED BOOM STACKER WITH SELF MOTION
- MM - MOBILE HOPPER
- RC - BUCKET WHEEL RECLAIMER
- TC - BELT CONVEYOR
- MR - RECLAIMER HOPPER
- 1ST AND 2ND STAGE
- - - 3RD STAGE

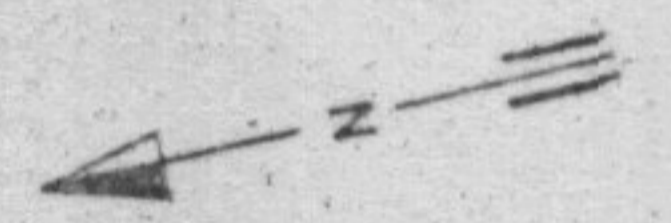
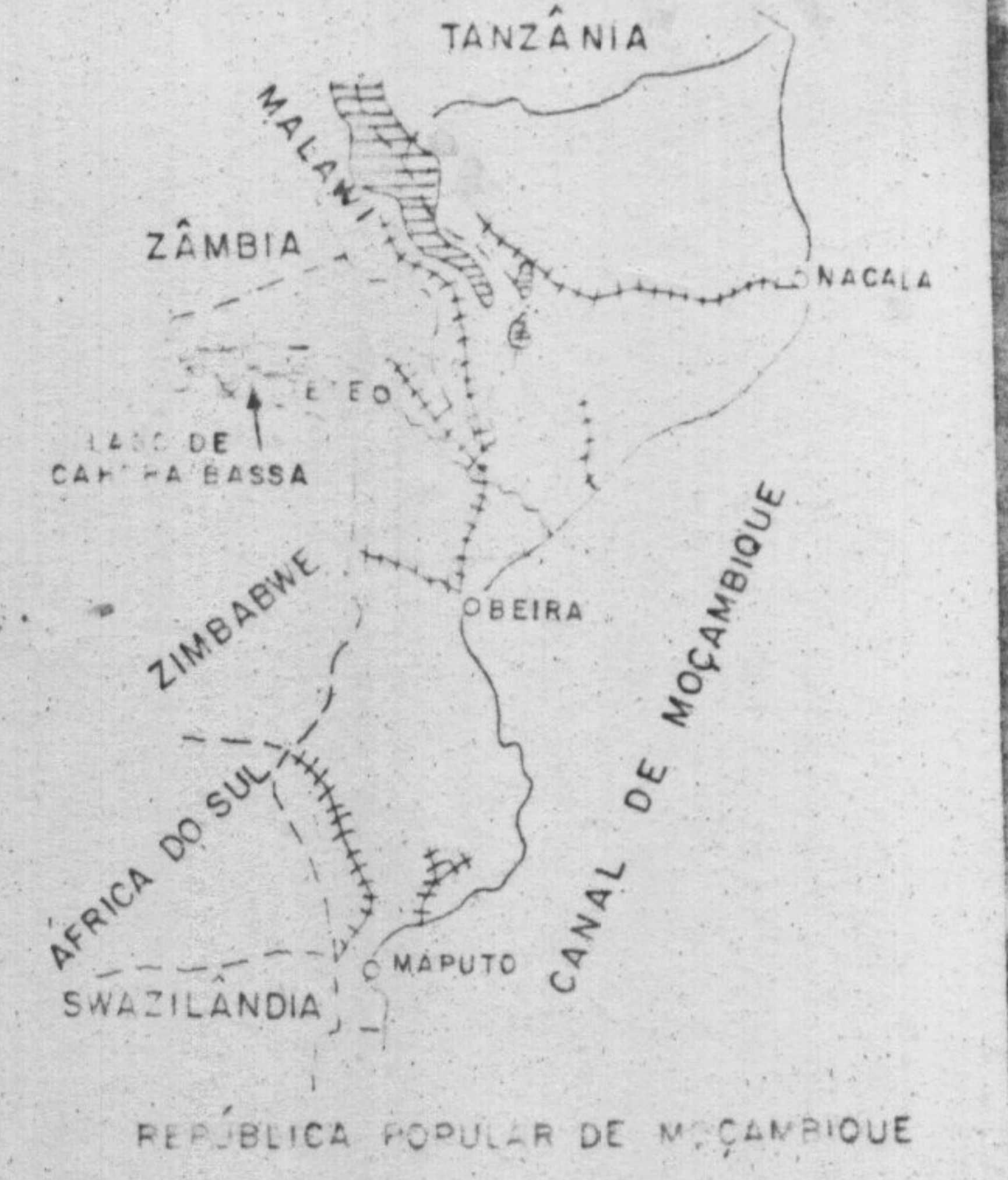
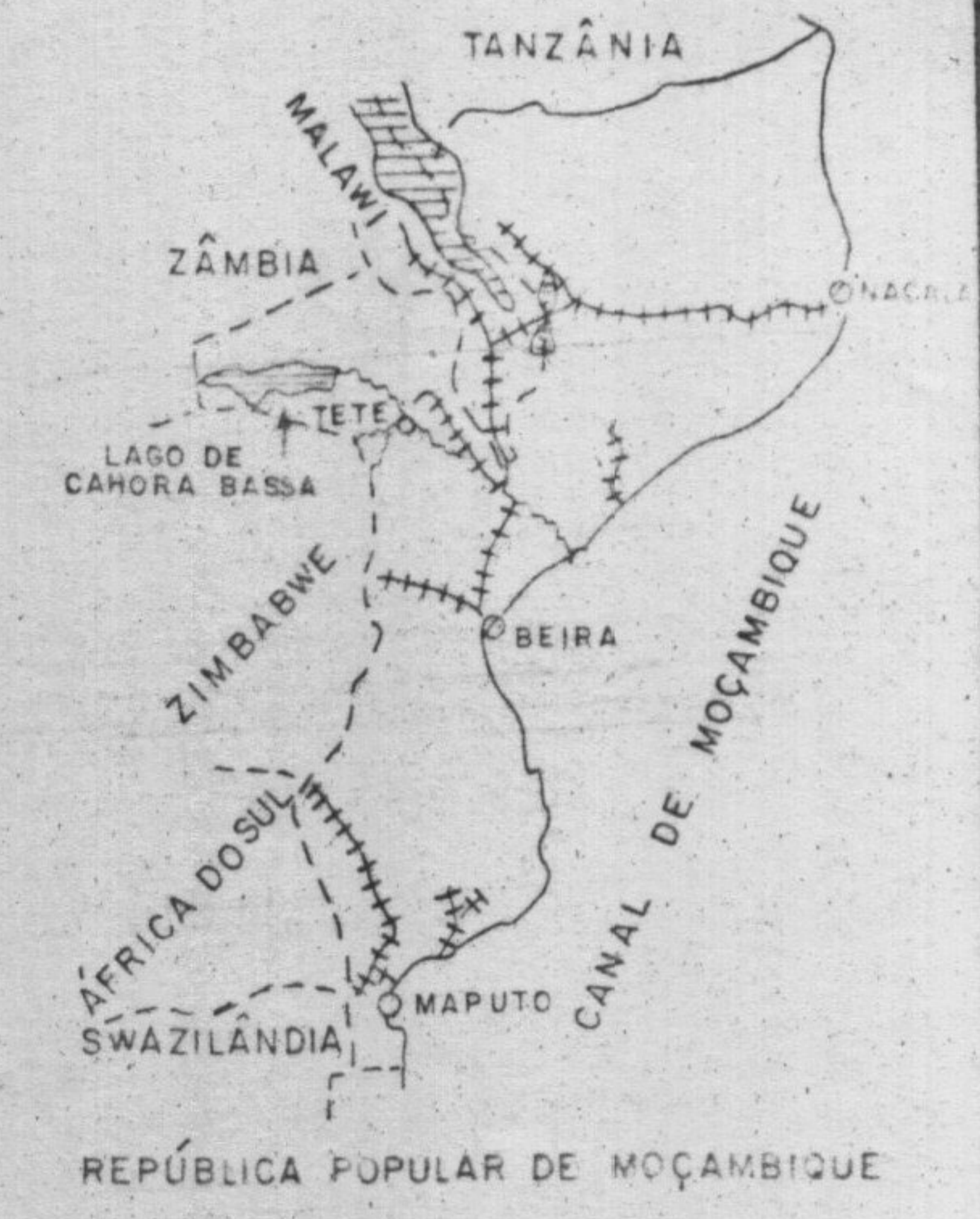
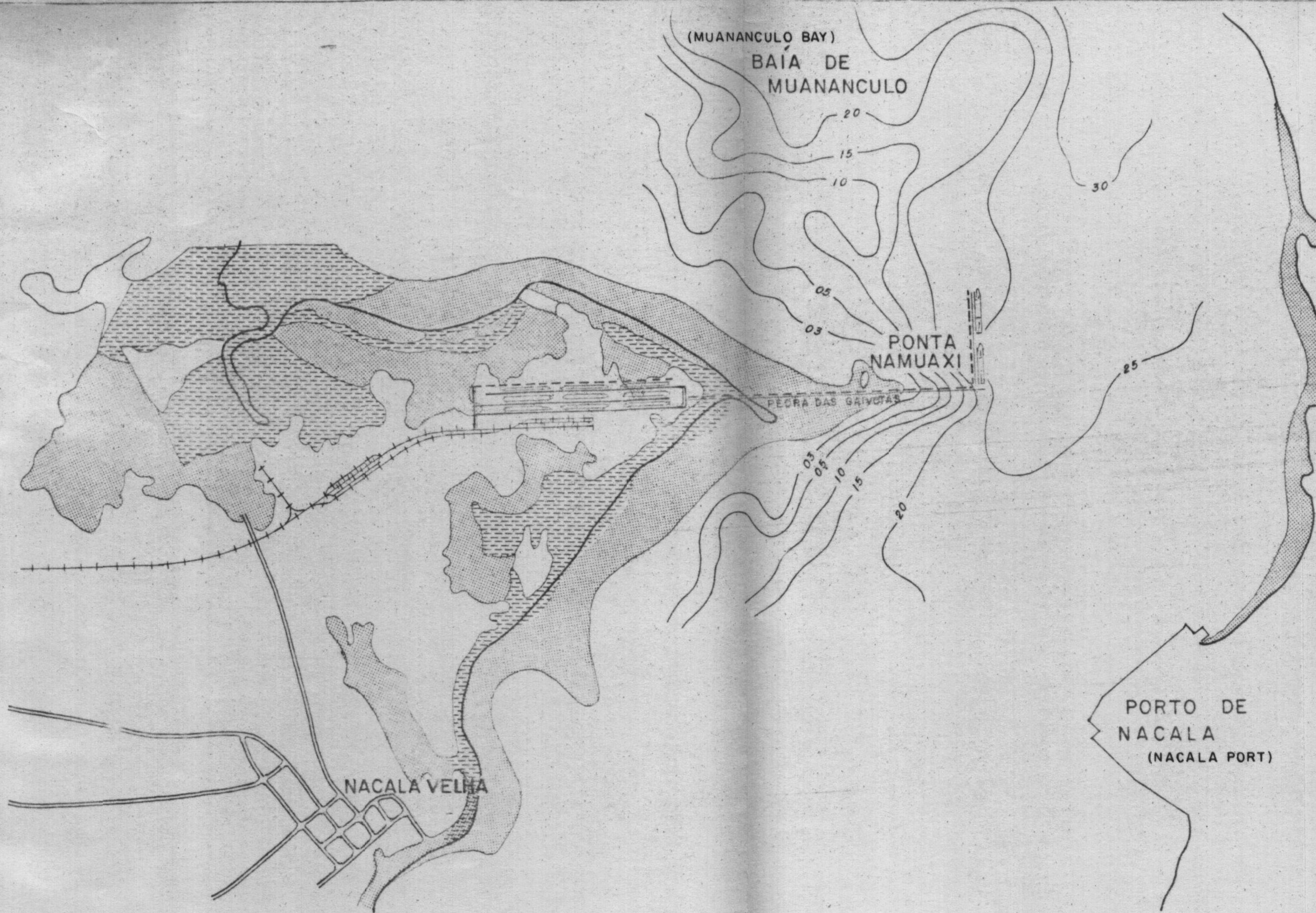


FIG. 9.2.29

ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA/VUZI "STUDY OF OUTFLOW ALTERNATIVES"

Beira Estuário Alternative



LEGEND :

- CL - LINEAR BELT
- EA - SAMPLING STATION
- EG - SLEWING AND ARTICULATED BOOM STACKER WITH SELF MOTION
- MM - MOBILE HOPPER
- RC - BUCKET WHEEL RECLAIMER
- TC - BELT CONVEYOR
- MR - RECLAIMER HOPPER
- 1ST AND 2ND STAGE
- - - 3RD STAGE

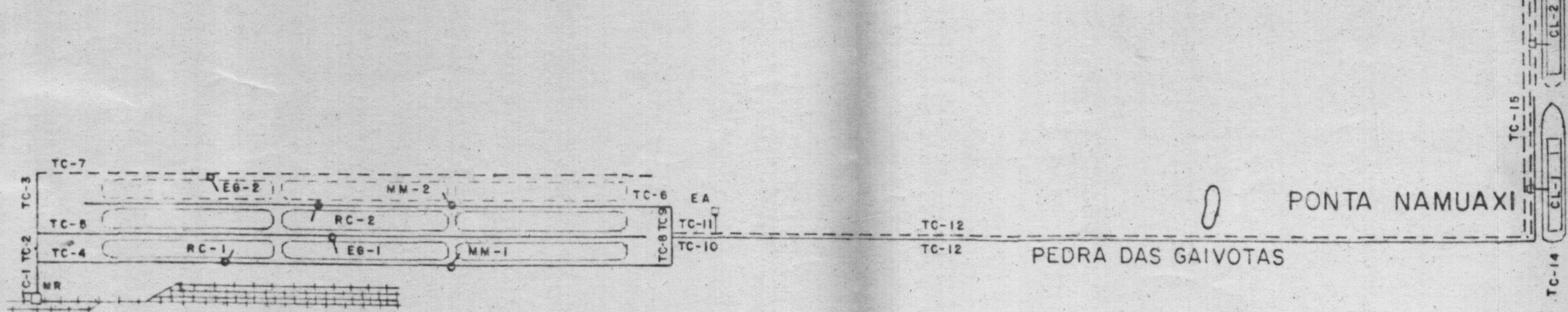


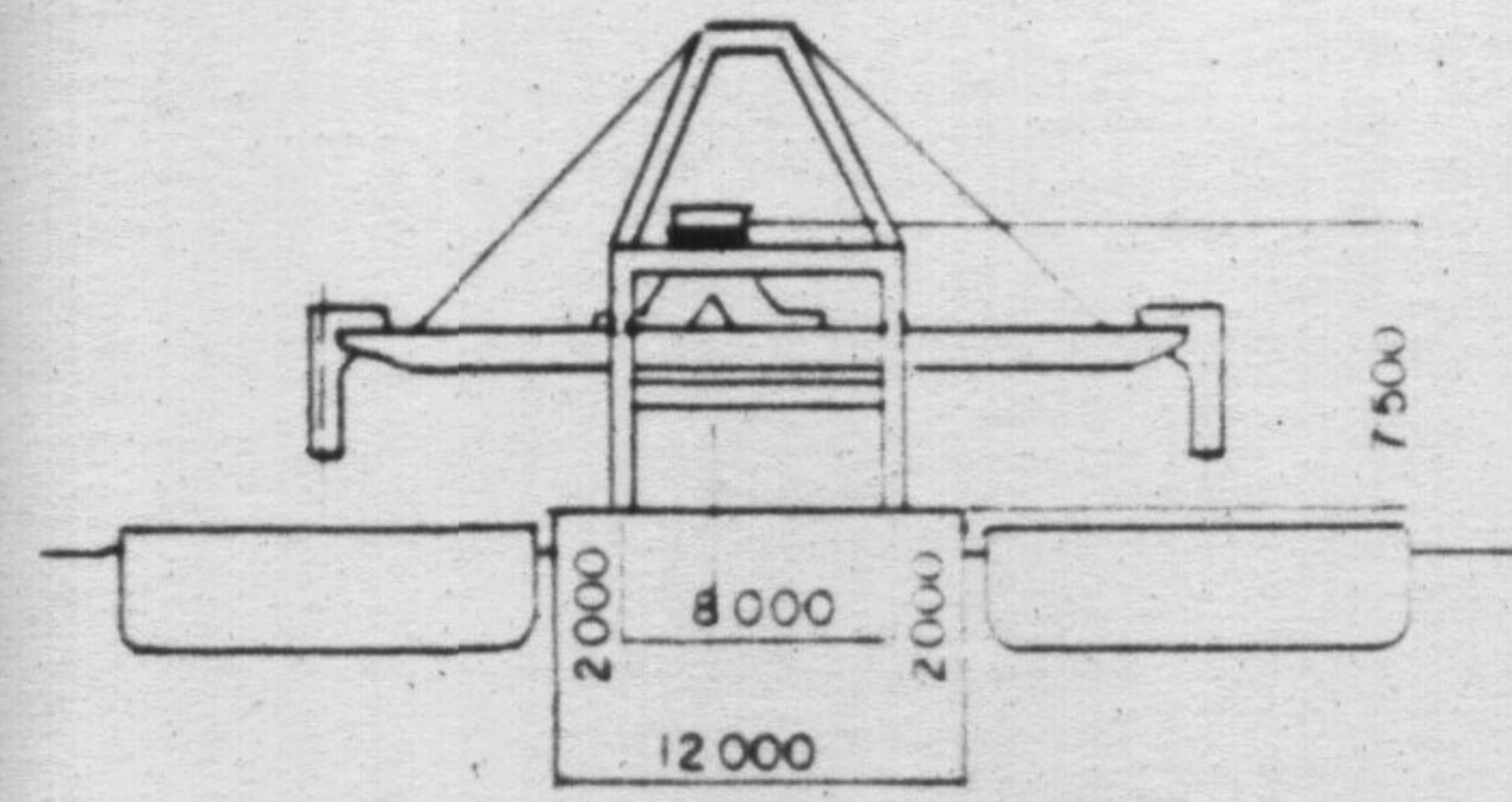
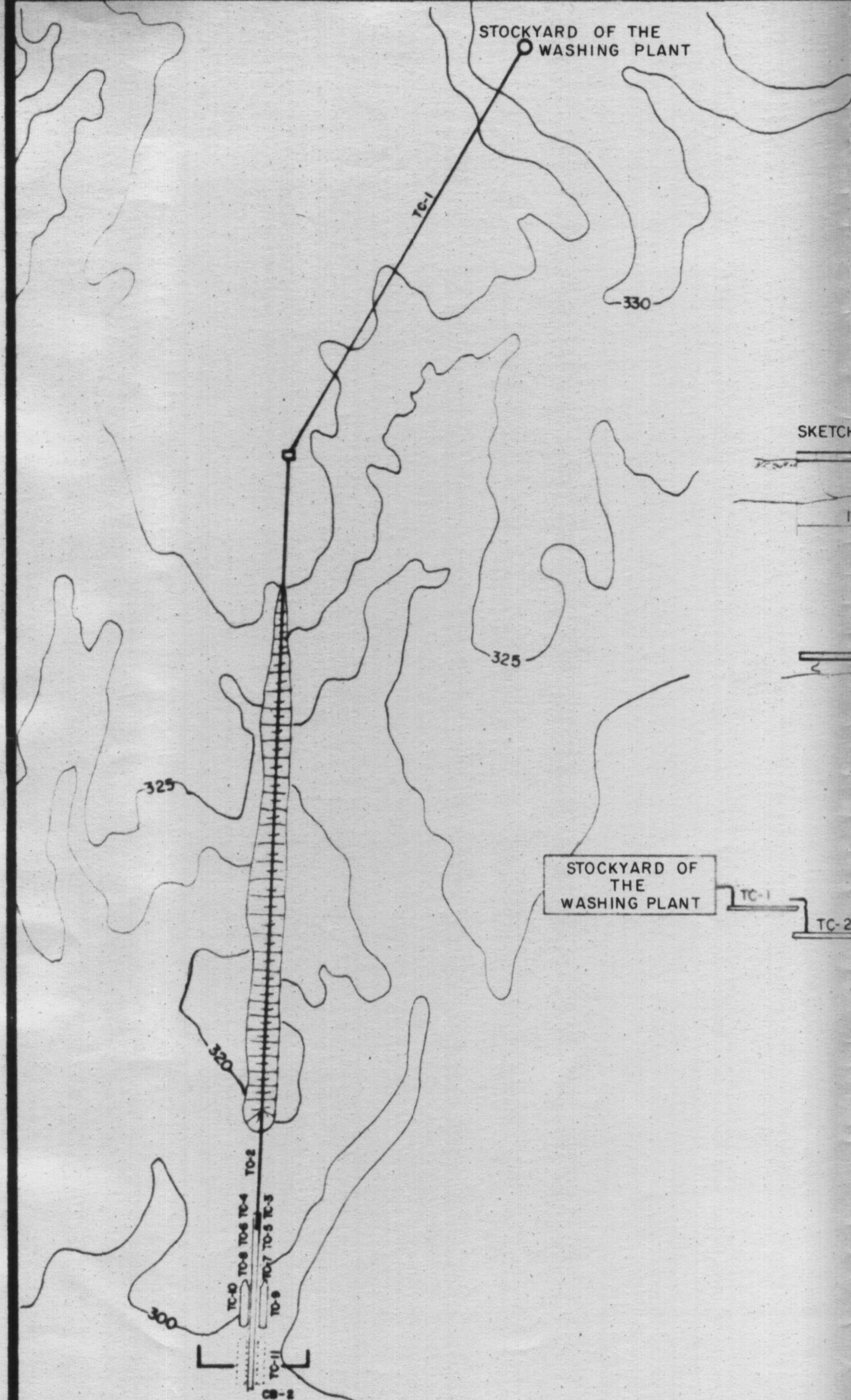
FIG. 9.2.30

ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA/VUZI

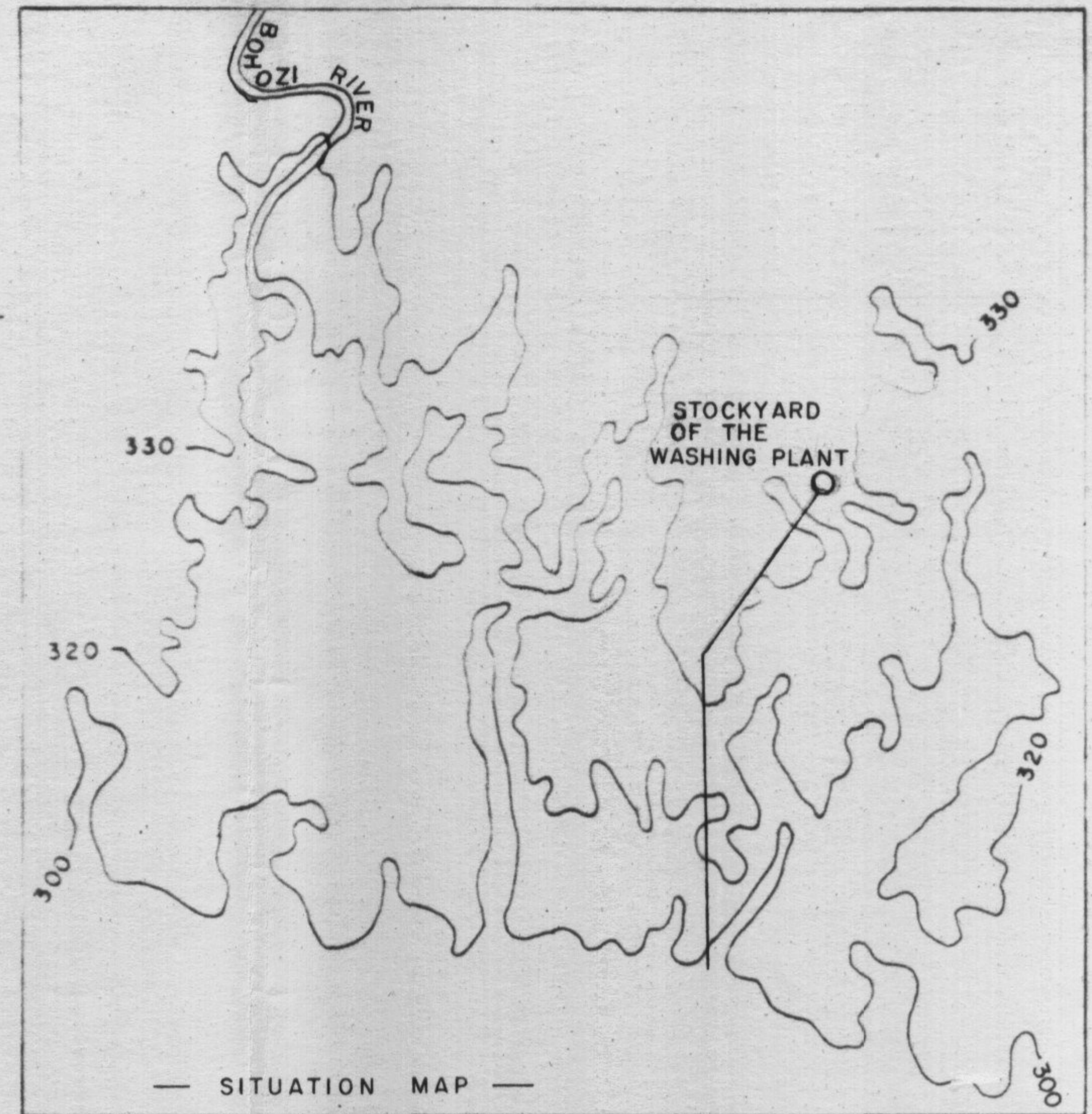
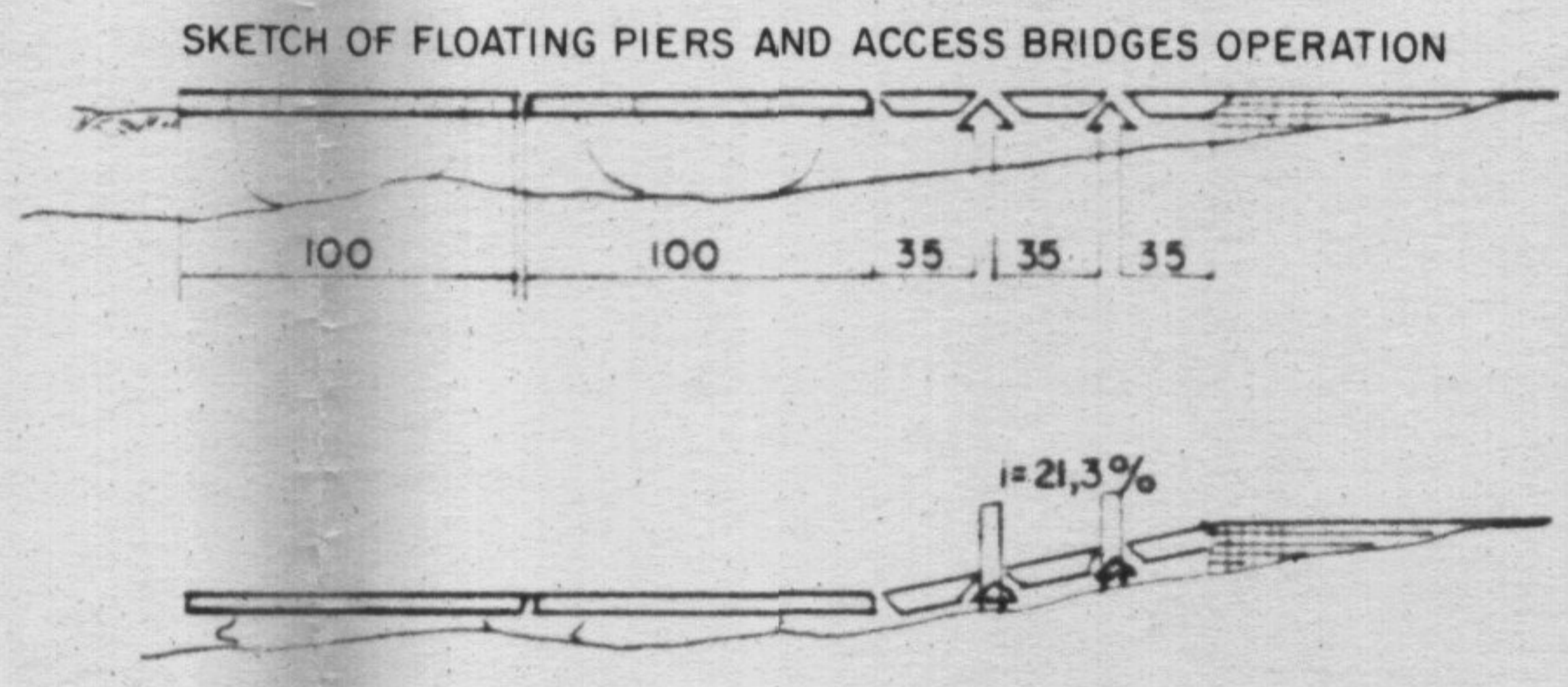
"STUDY OF OUTFLOW ALTERNATIVES"

Nacala Alternative

MT-GEIPOT

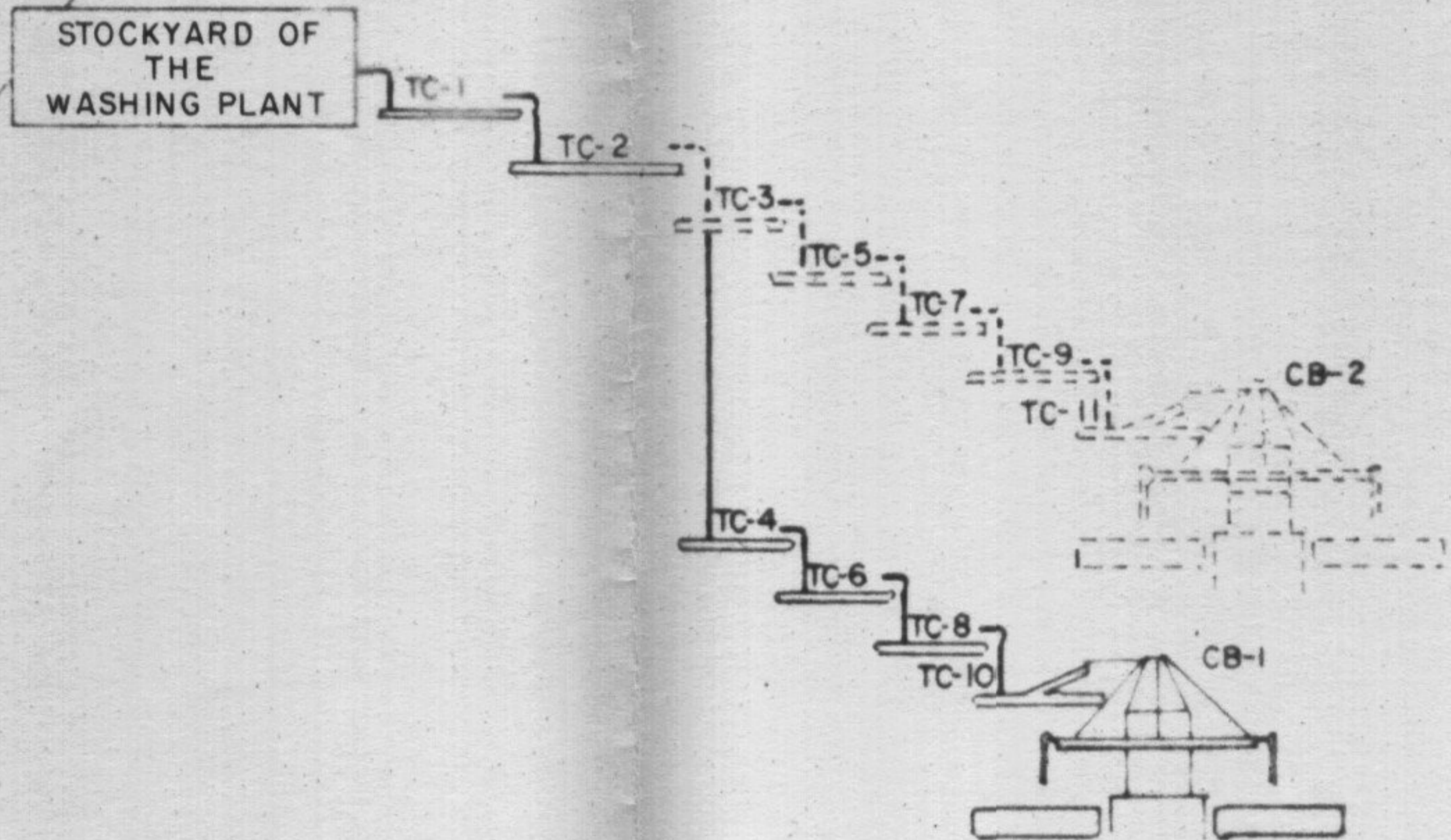


PROFILE - AA
ESC. 1:50



SITUATION MAP

REPUBLICA POPULAR DE MOÇAMBIQUE

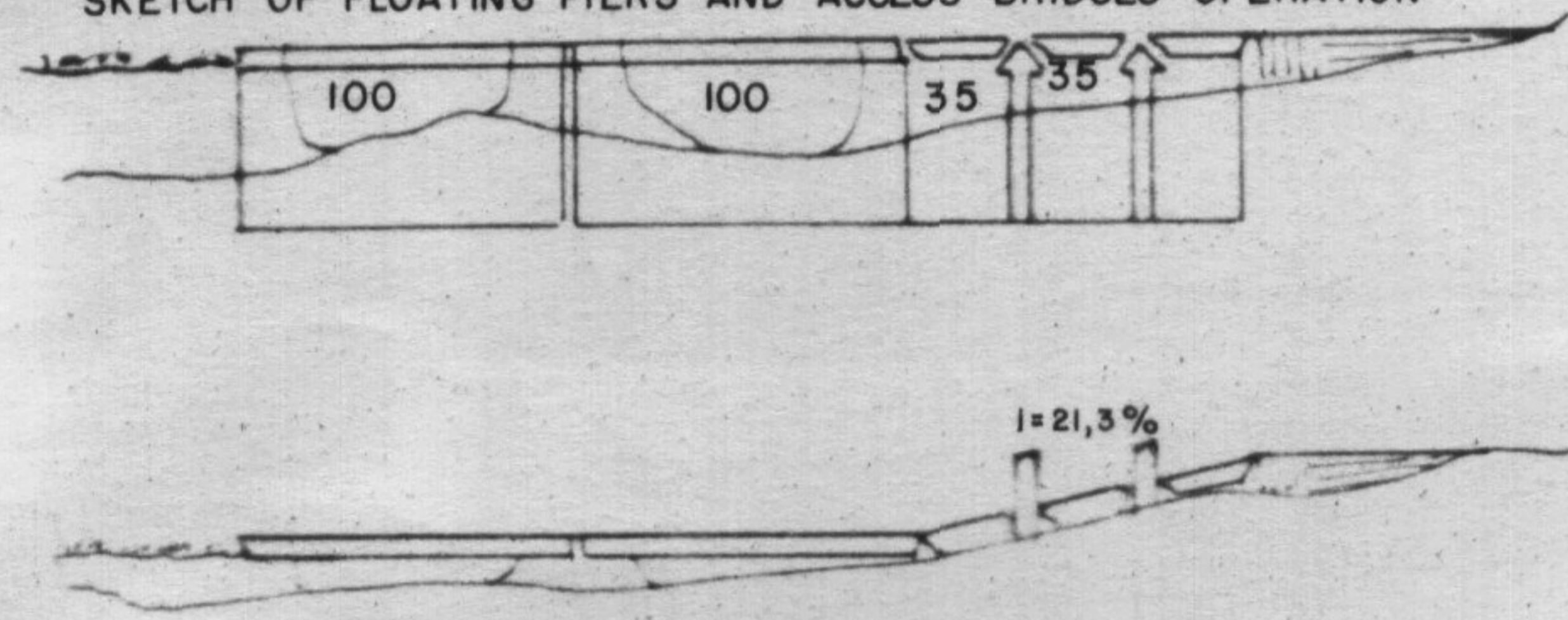


- LEGEND :
- CB - BARGE LOADER
 - TC - BELT CONVEYOR
 - 1ST AND 2ND STAGE
 - - - 3RD STAGE

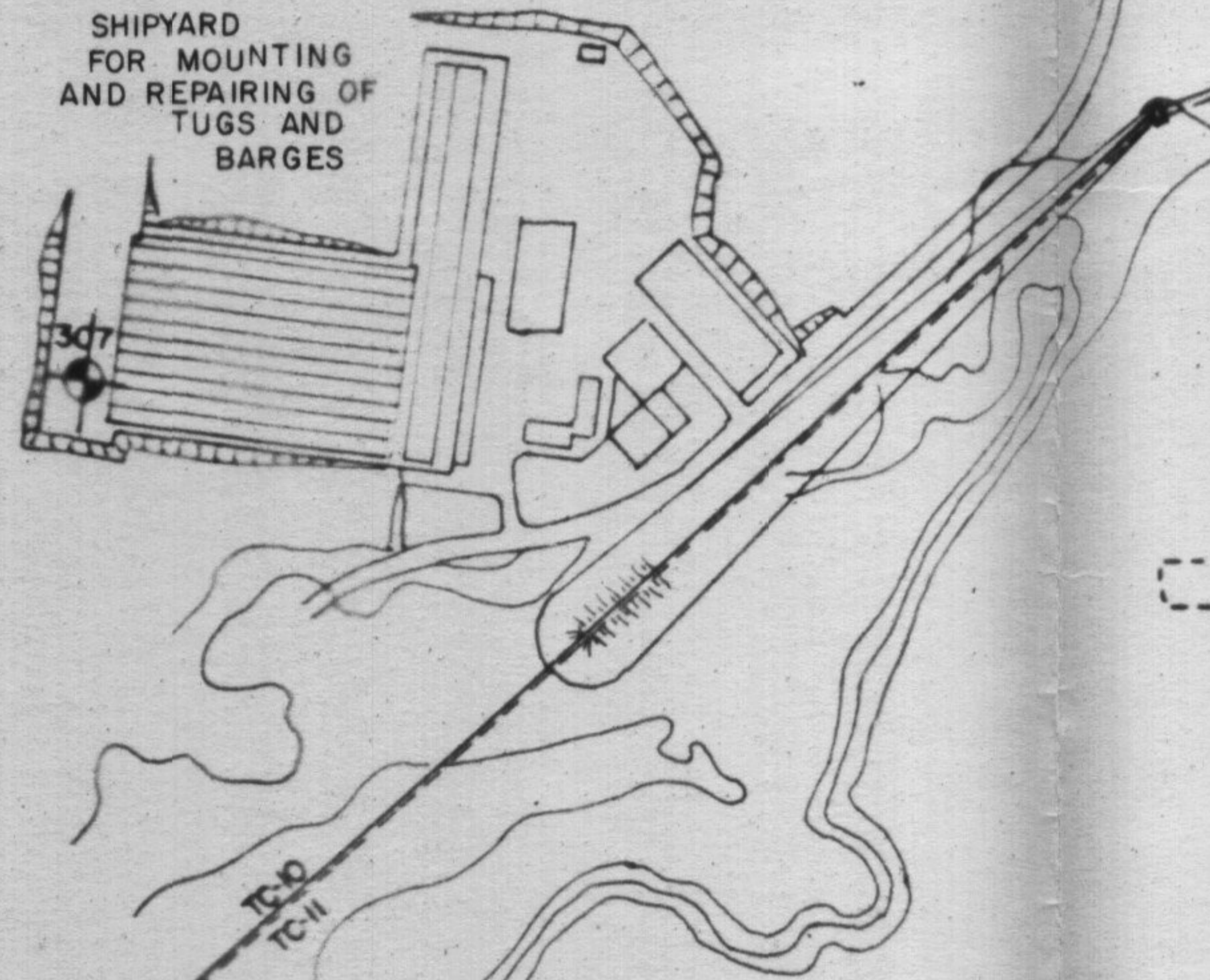


MT-GEIPOT

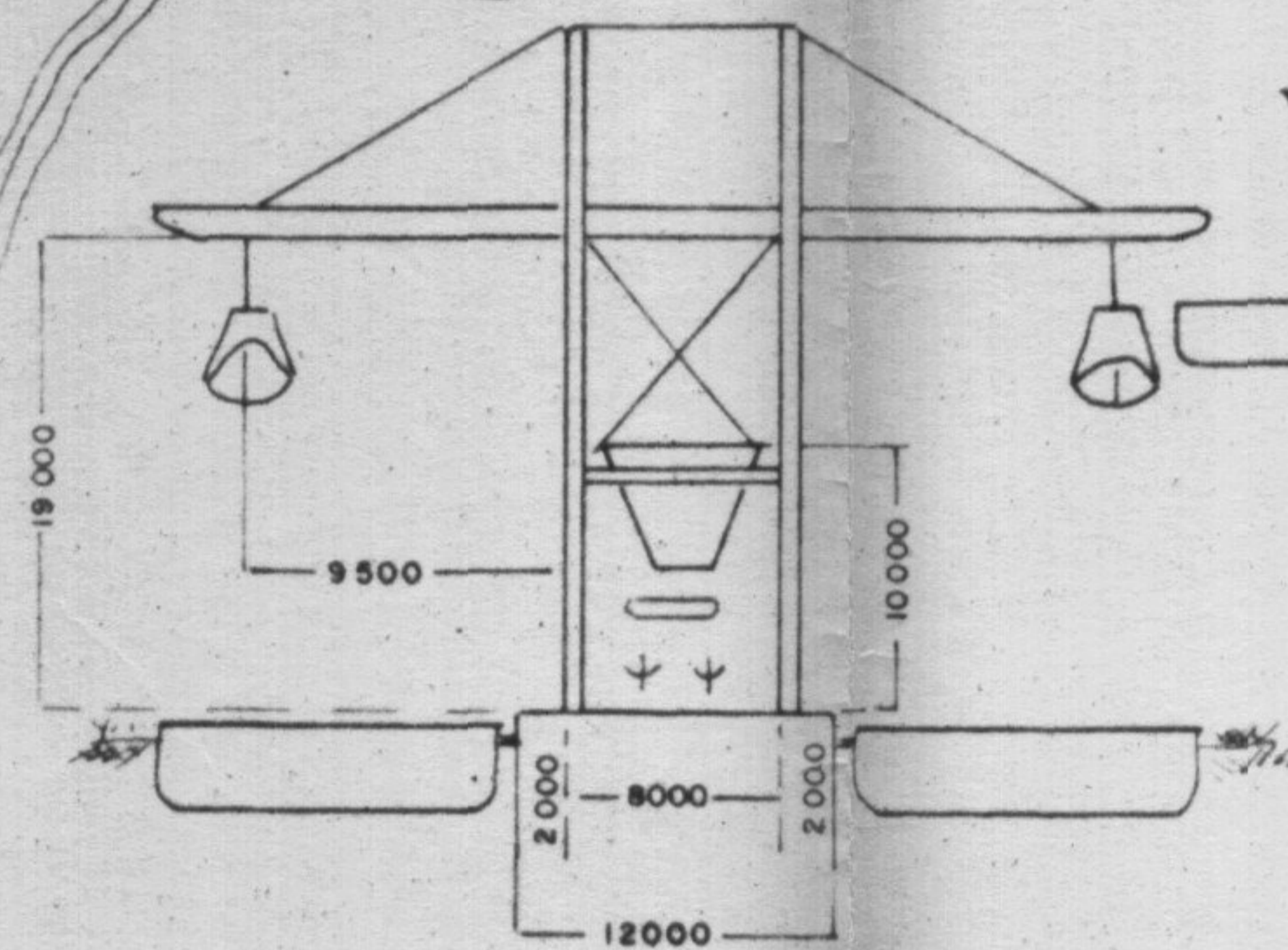
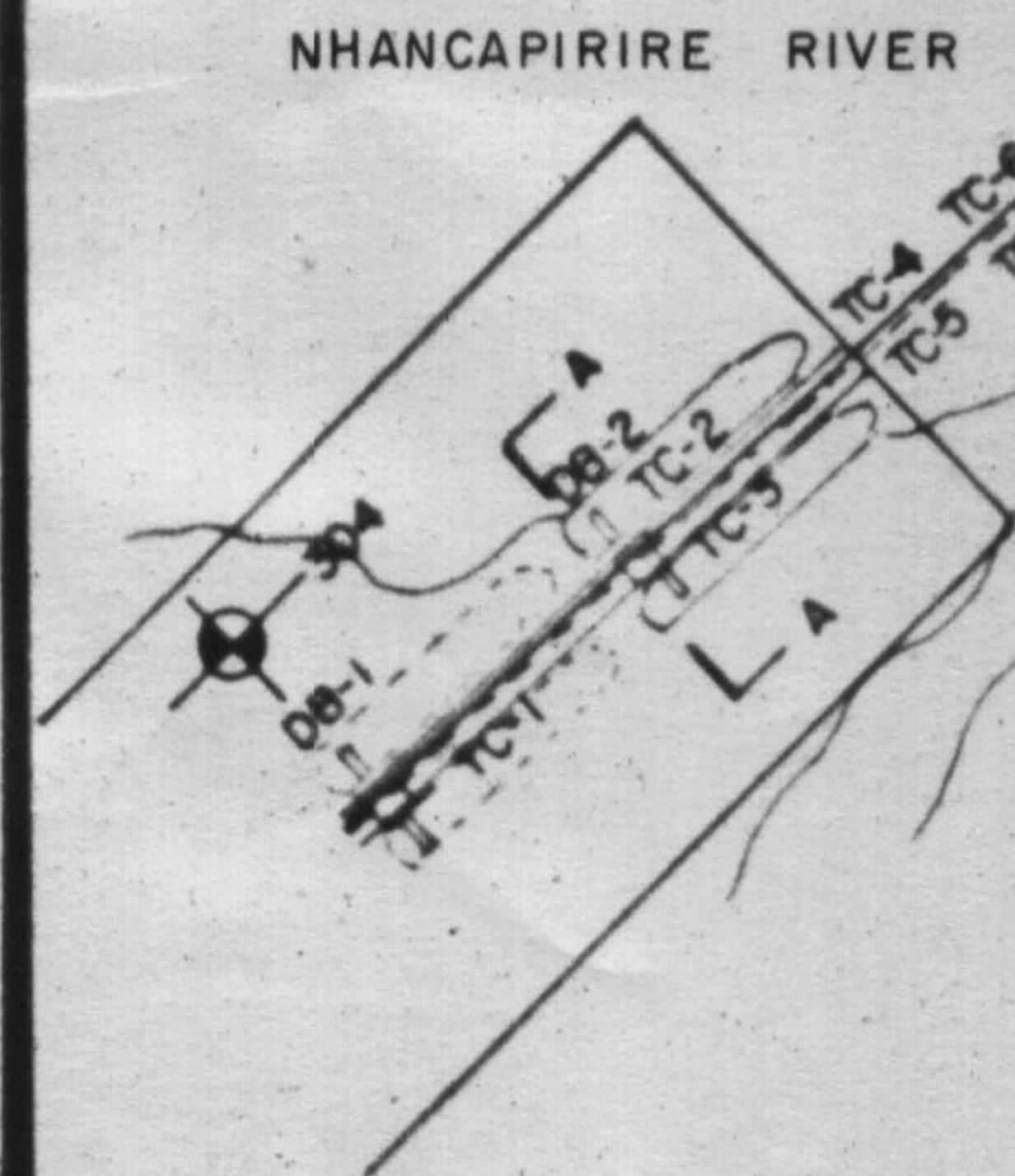
SKETCH OF FLOATING PIERS AND ACCESS BRIDGES OPERATION



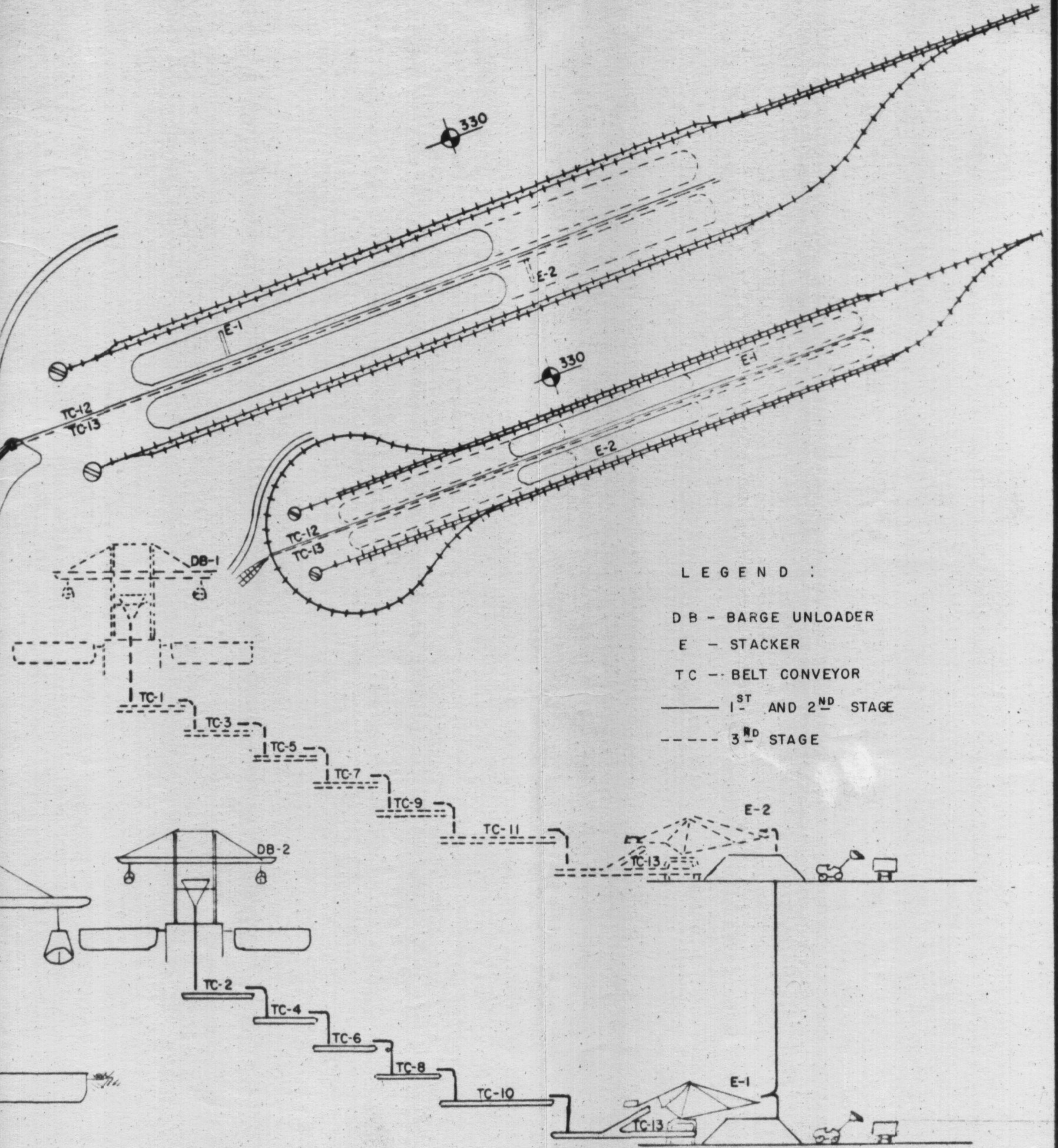
SHIPYARD
FOR MOUNTING
AND REPAIRING OF
TUGS AND
BARGES



NHANCAPIRIRE RIVER



PROFILE - A A



LEGEND :

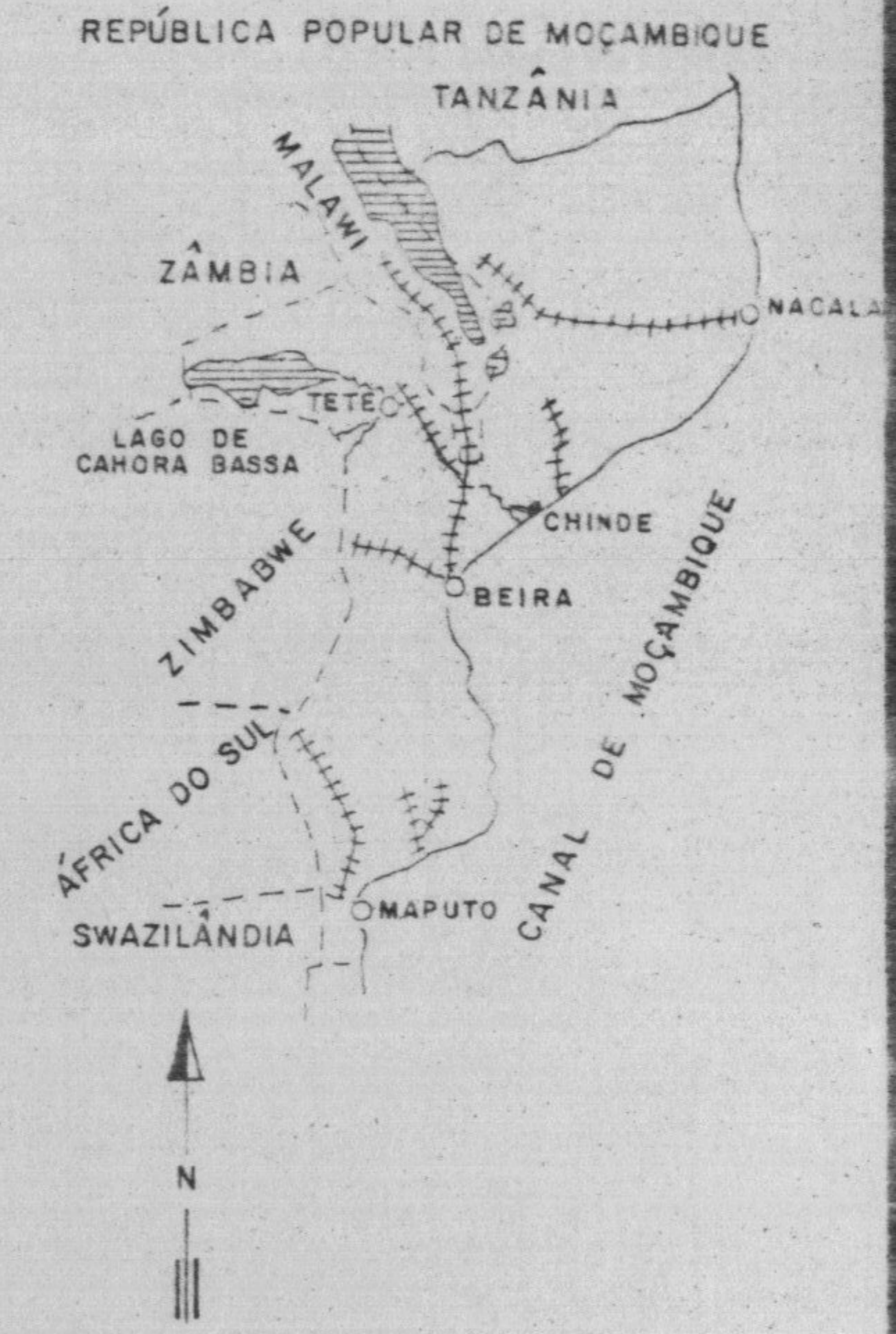
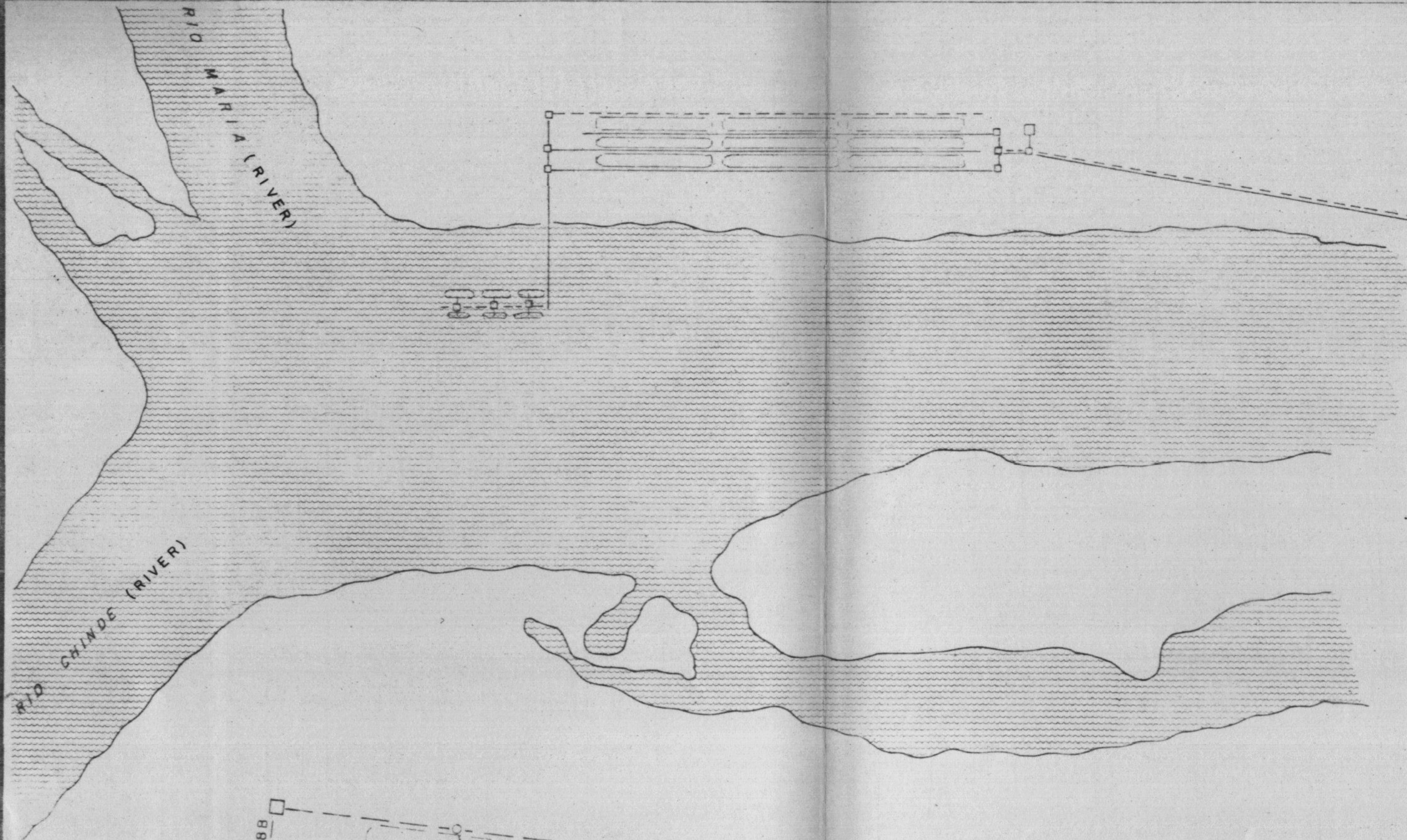
- DB - BARGE UNLOADER
- E - STACKER
- TC - BELT CONVEYOR
- 1ST AND 2ND STAGE
- - - 3RD STAGE

FIG. 9.2.32

ESTUDO DE ALTERNATIVAS DE ESCOAMENTO DA PRODUÇÃO DE CARVÃO DE MUCANHA/VUZI

"STUDY OF OUTFLOW ALTERNATIVES"

Lake Terminal - Unloading Terminal at Nhancapirire



LEGEND

- CL - LINEAR BELT CONVEYOR
- EA - SAMPLING STATION
- EG - SLEWING AND ARTICULATED BOOM STAKEN WITH SELF MOTION
- MM - MOBILE HOPPER
- RC - BUCKET WHEEL RECLAIMER
- TC - BELT CONVEYOR
- 1ST AND 2ND STAGE
- - - - 3RD STAGE

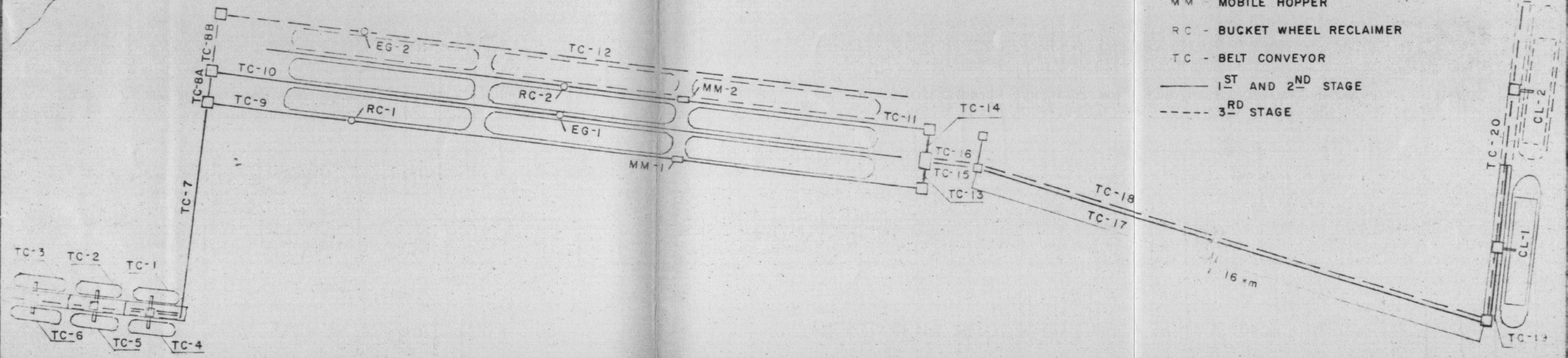
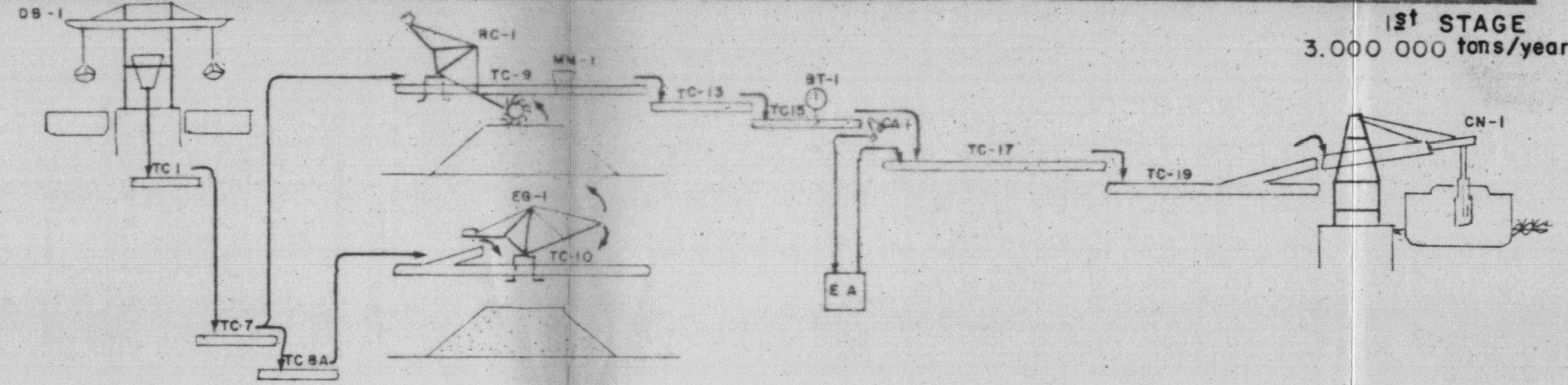
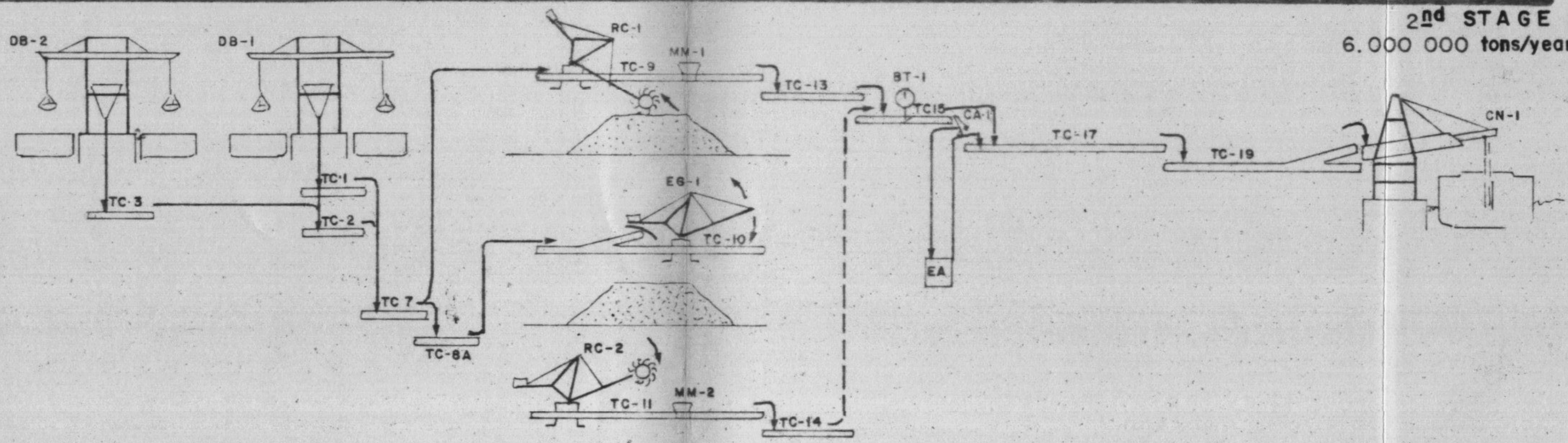


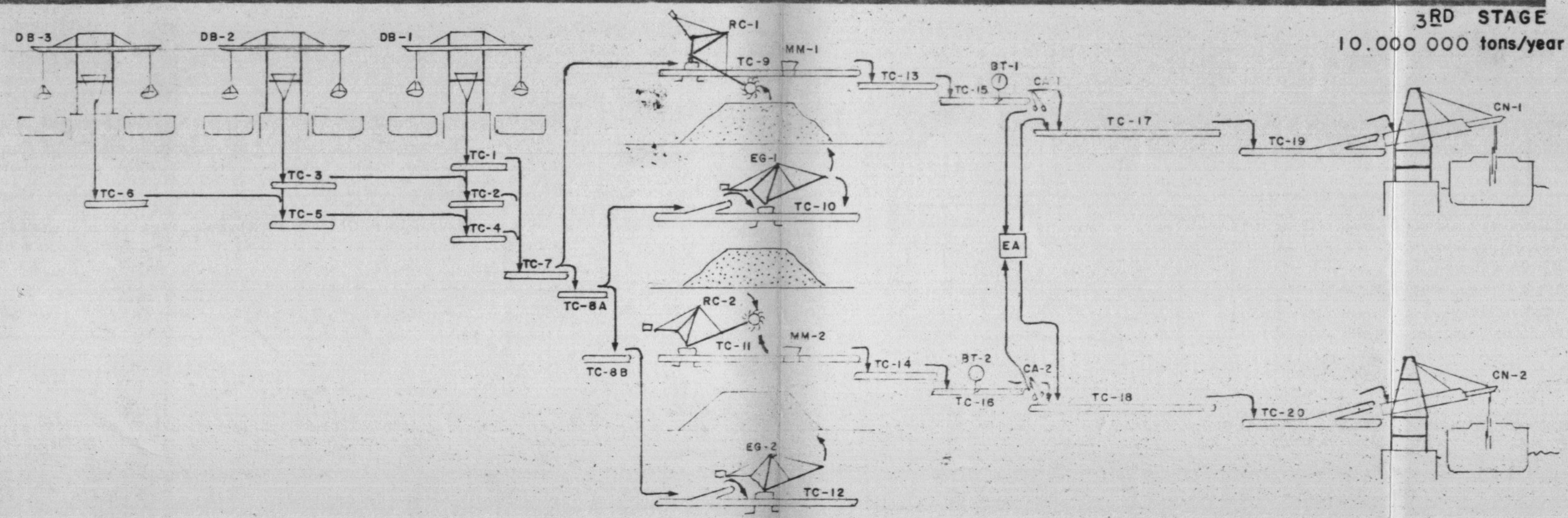
FIG 9.2.33



1st STAGE
3.000 000 tons/year



2nd STAGE
6.000 000 tons/year



3rd STAGE
10.000 000 tons/year

- LEGEND :
- DB - BARGE UNLOADER
 - CN - SHIPLOADER
 - EA - SAMPLING STATION
 - EG - SLEWING AND ARTICULATED BOOM STAKEN WITH SELF MOTION
 - RC - BUCKET WHEEL RECLAIMER
 - MM - MOBILE HOPPER
 - TC - BELT CONVEYOR
 - BT - BELT WEIGHTER
 - CA - SAMPLING CUTTER

FIG. 9.2.34