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ESTUDIO DE FACTIBILIDAD DEL
NUEVO PUENTE BIOBIO EN CONCEPCION
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Vehicles/day

CAR AND PICKUP																																																						
OD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	TOTAL				
1	62	131	161	24	763	46	4	78	0	73	37	215	7	0	20	10	6	18	00	41	21	13	6	86	41	19	193	79	85	210	27	122	114	66	0	242	50	0	6	147	244	503	123	259	27	0	0	65	0	4541				
2	260	187	131	150	252	150	61	235	111	137	160	205	72	142	143	122	87	26	137	106	71	441	26	49	75	70	32	118	191	439	188	450	76	6	0	1578	71	0	0	321	533	1098	269	565	60	0	0	142	0	9912				
3	123	245	160	80	170	213	45	73	29	157	84	94	101	32	0	69	47	42	40	60	82	20	0	68	47	50	22	0	184	114	100	179	78	34	0	785	45	0	0	171	284	586	143	301	32	0	0	76	0	5290				
4	24	171	116	24	80	35	0	29	0	53	21	35	0	0	0	49	0	12	19	20	0	0	0	0	0	0	0	0	19	0	101	4	19	142	0	83	17	0	0	154	59	0	0	60	99	205	50	105	11	0	0	26	0	1850
5	552	242	203	92	506	202	71	40	51	105	101	95	0	11	0	10	39	22	36	18	19	40	4	40	35	9	101	90	60	348	80	407	33	32	0	411	55	0	0	194	321	663	162	341	36	0	0	86	0	5984				
6	26	199	183	35	351	49	01	49	49	60	51	27	0	0	0	9	11	22	35	0	21	17	11	0	21	26	9	66	63	12	29	17	11	0	180	12	0	39	82	136	281	69	144	15	0	0	36	0	2503					
7	11	64	45	0	41	100	0	7	0	42	8	21	6	0	0	0	13	11	5	0	6	79	5	0	0	0	0	0	0	0	0	0	0	14	0	23	5	0	4	13	22	47	7	34	1	0	0	6	0	610				
8	56	162	141	5	40	34	7	14	11	37	78	0	0	0	0	0	0	0	4	102	53	49	12	0	65	0	6	0	27	33	0	0	0	23	0	134	19	0	0	32	53	109	16	80	3	0	0	15	0	1420				
9	41	61	67	0	42	0	0	11	0	3	56	7	14	9	0	0	59	29	0	16	0	0	23	29	9	40	0	12	33	96	10	47	20	0	0	169	16	0	0	26	43	89	13	66	3	0	0	12	0	1165				
10	16	98	169	67	197	77	18	88	71	139	83	32	33	82	70	19	16	25	23	55	21	51	17	17	19	10	0	36	216	70	104	104	20	0	0	197	56	0	0	66	110	226	34	167	7	0	0	32	0	2960				
11	51	142	105	30	134	40	14	66	26	63	81	23	12	78	42	14	19	49	20	79	45	30	55	42	19	0	22	72	17	90	42	37	0	383	153	0	0	63	104	215	32	158	7	0	0	30	0	2796						
12	202	328	66	96	85	48	5	0	7	74	10	38	0	0	0	29	24	0	12	0	12	34	0	13	13	0	0	20	56	156	24	43	5	30	0	88	42	0	0	43	72	148	22	109	5	0	0	20	0	1929				
13	0	102	73	24	10	25	28	0	5	27	12	5	46	0	0	19	6	0	0	0	0	0	0	0	0	0	0	0	5	19	16	0	24	20	0	0	0	0	66	23	0	0	16	26	54	8	40	1	0	0	7	0	708	
14	0	103	76	7	13	0	0	0	9	91	20	0	0	5	4	12	0	0	0	0	0	0	0	0	0	0	0	0	0	174	0	0	0	27	4	25	12	0	0	63	40	0	0	0	0	1	0	0	0	0	0	0	0	723
15	20	27	0	0	0	0	9	0	0	39	11	0	0	4	0	16	0	0	0	0	29	0	0	0	0	0	0	0	7	0	0	19	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	276	
16	0	129	69	76	32	0	0	0	0	19	6	30	0	12	16	7	0	0	0	43	0	0	0	0	0	0	0	0	0	0	0	9	40	55	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	548
17	16	63	79	0	40	48	13	0	32	12	19	46	19	0	0	86	12	0	4	0	0	53	0	14	0	0	0	0	8	82	4	6	0	0	0	65	18	0	0	1	2	4	0	1	0	0	0	0	0	0	0	0	755	
18	0	44	24	5	22	0	11	7	35	25	59	10	6	0	0	12	0	24	10	0	0	0	0	0	0	0	0	0	43	57	12	17	12	14	0	0	37	0	0	0	0	1	2	0	0	0	0	0	0	0	0	489		
19	92	119	26	16	58	22	0	0	0	24	52	12	0	0	0	0	24	0	40	44	7	25	0	0	0	0	0	28	4	23	13	37	19	7	0	54	9	0	9	1	2	4	0	1	0	0	0	0	0	0	0	772		
20	41	191	116	20	5	31	21	58	9	79	141	0	0	0	43	4	10	5	147	27	41	50	26	26	0	0	11	43	29	25	18	45	0	0	316	28	0	0	15	26	53	2	29	0	0	0	4	0	1743					
21	21	69	39	0	28	20	6	41	0	50	5	12	0	0	29	0	0	0	44	12	0	12	0	0	0	0	49	0	25	14	0	30	0	13	0	0	270	0	0	0	7	12	26	1	14	0	0	0	2	0	851			
22	11	389	20	8	54	46	68	35	25	58	87	7	9	0	0	0	0	0	7	59	21	5	0	0	26	27	12	11	43	37	0	0	20	9	0	132	9	0	0	12	20	41	2	22	0	0	0	3	0	1351				
23	6	11	0	5	4	17	5	12	17	17	31	0	0	0	0	45	0	25	55	0	0	22	14	21	6	8	0	24	10	4	31	0	0	0	32	8	0	0	4	7	14	1	9	0	0	0	1	0	466					
24	128	90	76	0	22	11	0	0	41	0	7	26	17	125	0	0	0	0	0	26	0	0	6	68	5	0	0	0	0	11	0	82	0	28	0	52	0	0	0	8	13	27	3	16	1	0	0	3	0	906				
25	36	111	40	38	27	0	0	50	17	51	67	13	0	0	0	8	21	0	7	16	21	19	20	11	53	36	0	15	18	6	9	0	0	39	0	82	14	0	0	8	13	28	3	18	1	0	0	3	0	919				
26	5	121	23	0	7	21	0	0	28	10	53	45	19	0	7	0	0	0	0	11	0	27	6	0	0	0	0	6	27	0	7	74	172	55	0	0	342	0	0	0	13	22	45	5	29	2	0	0	6	0	1474			
27	167	128	22	96	97	31	0	6	13	0	10	0	16	0	0	0	0	0	0	0	56	5	6	0	0	0	0	6	27	0	7	74	172	55	0	0	342	0	0	0	13	22	45	5	29	2	0	0	6	0	650			
28	74	171	42	0	61	0	0	0	13	15	8	66	0	21	0	0	0	40	28	0	0	11	0	0	15	49	0	37	126	89	73	56	118	3	0	135	10	0	0	24	40	83	3	22	3	0	0	0	0	1430				
29	65	254	224	19	84	78	0	31	0	105	24	51	16	4	19	0	0	43	14	29	0	65	24	0	18	33	7	116	151	91	7	26	67	24	0	283	19	0	0	1	2	5	0	1	0	0	0	0	0	0	2080			
30	309	509	158	122	384	82	0	24	97	50	89	92	14	27	10	9	81	0	64	67	7	40	10	11	11	0	0	92	39	211	141	203	39	99	0	326	58	0	0	2	4	9	1	2	0	0	0	0	0	0	3493			
31	25	240	87	10	106	12	0	0	10	127	3	24	5	12	0	23	4	12	13	20	0	0	4	0	4	6	176	2	7	123	88	117	0	11	0	179	139	0	0	1	2	4	0	0	0	0	0	0	0	0	0	1601		
32	68	492	286	121	581	101	0	6	33	93	115	9	0	10	57	29	6	0	12	29	13	0	0	82	0	14	55	56	26	150	162	1568	59	6	0	236	19	0	111	63	104	215	73	156	9	0	0	11	0	5220				
33	114	129	76	48	44	16	0	72	20	35	35	5	0	0	0	0	0	34	0	51	0	14	0	0	5	9	0	81	24	64	0	32	28	32	0	78	16	0	0	3	6	12	0	0	0	0	0	0	0	0	1083			
34	60	18	34	0	19	11	0	13	0	0	33	35	0	29	0	0	0	0	7	0	0	9	0	28	25	12	0	1																										

Tabla A.6-1(2) Matriz O-D de Actual (1993:Taxibus)

TAXI BUS																																																				
OD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	TOTAL		
1	1	8	4	3	2	1	1	3	3	1	1	0	0	3	3	4	5	0	1	9	12	5	4	3	14	4	3	6	13	5	4	39	11	1	0	112	16	0	9	5	17	47	1	45	1	0	0	6	0	430		
2	5	10	3	1	6	27	10	29	33	19	5	0	10	21	6	28	41	20	55	107	54	95	32	70	104	49	4	23	137	40	10	333	57	4	0	1183	198	0	35	52	165	449	12	427	12	0	0	63	0	4080		
3	3	3	0	0	3	0	7	0	15	3	6	0	3	2	1	15	16	17	9	23	34	32	12	15	25	16	1	12	46	17	4	96	22	2	0	286	39	0	3	14	46	125	3	119	3	0	0	17	0	1139		
4	3	5	0	0	0	3	3	2	1	0	0	2	8	0	0	11	3	9	0	7	11	7	3	3	14	2	4	2	14	8	3	30	7	0	0	70	20	0	1	4	15	40	1	36	1	0	0	5	0	368		
5	2	4	1	0	2	8	6	10	5	3	3	3	3	3	0	4	7	6	8	8	15	18	5	20	18	8	6	5	41	11	4	74	25	0	0	209	51	0	4	10	34	93	2	88	2	0	0	13	0	842		
6	3	33	11	3	4	0	3	4	7	1	12	3	0	6	0	3	8	10	6	8	8	13	6	11	12	12	6	8	31	7	3	40	23	3	0	109	35	0	3	8	25	70	1	67	1	0	0	9	0	636		
7	1	15	11	3	3	1	0	1	0	6	0	1	0	0	0	1	0	0	3	2	1	0	0	6	1	0	3	3	7	1	3	3	1	0	25	1	0	0	0	2	5	1	0	0	0	0	0	0	109			
8	3	22	11	8	10	5	1	1	1	14	0	0	3	0	3	0	0	2	2	4	2	8	1	2	12	2	0	3	2	9	0	2	8	0	0	13	3	0	0	1	3	8	2	0	0	0	0	0	0	171		
9	3	38	14	3	7	6	0	1	0	4	2	2	0	3	0	2	1	0	1	5	2	1	0	8	3	3	1	4	3	1	1	8	2	0	0	20	4	0	13	1	3	9	2	0	0	0	0	0	0	181		
10	5	18	1	0	1	1	3	11	2	0	1	4	2	0	0	3	3	2	0	11	8	16	6	5	16	8	1	9	17	12	3	30	13	0	0	164	25	0	5	2	8	23	7	0	0	0	0	0	0	454		
11	1	2	7	0	3	11	1	3	2	0	0	1	2	3	0	9	11	6	4	7	17	26	10	9	21	13	1	4	16	8	2	26	15	1	0	147	42	0	8	2	9	24	7	0	0	0	0	0	0	481		
12	0	6	15	4	3	2	0	0	2	1	2	0	0	3	0	5	2	0	1	1	4	8	3	6	1	2	4	1	6	3	15	1	1	0	40	0	0	0	0	0	2	8	2	0	0	0	0	0	0	155		
13	0	8	7	5	4	0	0	3	0	2	3	0	1	0	0	1	6	3	1	3	1	0	7	7	2	4	0	4	15	5	1	5	13	1	0	22	12	0	3	0	3	8	2	0	0	0	0	0	0	182		
14	2	10	3	0	8	8	0	0	3	0	3	3	0	0	0	1	1	1	3	4	2	0	0	3	0	0	4	3	3	3	0	6	1	0	0	39	4	0	1	0	0	0	0	0	0	0	0	0	0	119		
15	1	17	9	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0	8	1	0	2	1	1	4	0	6	4	1	1	8	2	0	0	10	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	5	28	13	8	4	2	0	1	2	4	10	15	2	2	0	0	0	0	0	0	0	0	0	2	1	0	2	2	3	7	2	12	3	0	0	22	3	0	0	0	0	0	0	0	0	0	0	0	0	0	155	
17	9	45	14	3	8	12	0	1	1	7	10	2	6	1	3	0	0	0	4	4	3	1	3	2	3	1	0	5	3	13	0	6	3	1	0	28	6	0	0	0	0	0	0	0	0	0	0	0	0	0	210	
18	1	31	12	9	8	11	0	3	0	2	4	0	6	1	0	0	2	1	3	3	0	0	2	10	0	1	3	6	27	0	3	1	0	0	26	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	182
19	1	61	12	6	8	6	0	2	1	5	4	1	1	3	0	0	3	3	0	7	1	3	4	5	1	3	3	7	5	12	1	12	6	0	0	43	9	0	0	0	0	0	0	0	0	0	0	0	0	0	239	
20	11	112	24	5	8	10	3	0	5	12	7	1	3	4	2	3	4	3	7	7	4	8	8	8	5	2	4	3	8	18	4	13	21	2	0	134	8	0	0	0	0	0	0	0	0	0	0	0	0	0	489	
21	11	55	28	7	14	7	2	2	2	8	16	1	1	0	2	0	3	0	1	3	0	6	0	1	2	1	6	3	12	2	3	3	0	0	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	259
22	5	84	36	8	16	13	3	7	0	18	25	4	0	0	0	0	1	0	3	2	5	4	2	0	2	4	2	3	3	20	1	3	7	0	0	32	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	320
23	3	26	13	3	6	7	0	1	5	8	12	8	7	0	3	0	3	0	6	6	2	3	0	10	3	7	0	1	1	2	0	9	2	0	0	13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	101
24	7	62	19	3	18	12	0	2	4	8	6	3	7	3	1	2	2	0	5	6	1	0	18	4	3	3	2	1	3	8	3	3	2	0	0	16	1	0	0	0	1	3	0	0	0	0	0	0	0	0	244	
25	14	99	27	16	17	10	6	13	5	11	21	4	2	0	1	1	3	10	1	7	1	4	3	3	3	1	3	0	8	3	8	9	2	0	40	2	0	0	0	1	5	0	0	0	0	0	0	0	0	367		
26	7	42	17	3	9	13	1	3	3	7	14	3	6	0	2	0	0	1	3	1	7	6	3	3	0	0	3	1	7	1	2	0	0	0	20	5	0	0	0	1	2	0	0	0	0	0	0	0	0	0	205	
27	3	13	1	0	7	3	0	0	0	1	1	2	0	4	0	2	1	1	3	1	2	0	1	1	0	0	0	0	1	2	3	6	0	0	0	27	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92
28	5	31	17	2	8	10	3	4	6	9	6	12	3	2	6	2	3	3	7	3	7	3	1	1	3	2	0	1	10	18	2	27	33	3	0	63	12	0	1	12	40	111	0	0	0	0	0	0	0	0	492	
29	20	131	44	14	40	34	3	4	5	16	15	1	16	3	4	2	2	3	5	8	4	3	2	2	0	1	1	11	33	42	0	6	18	8	0	95	2	0	0	0	0	0	0	0	0	0	0	0	0	0	500	
30	8	23	17	7	13	6	7	10	3	8	6	1	2	4	0	6	15	21	16	15	13	23	2	8	7	6	2	14	44	17	11	70	29	0	0	159	38	0	2	0	0	0	0	0	0	0	0	0	0	0	635	
31	4	27	7	4	5	4	0	0	0	2	0	4	1	0	1	2	1	0	1	6	2	1	0	2	3	1	3	2	0	9	1	32	9	0	0	23	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	163
32	40	268	100	38	74	30	3	2	4	23	18	8	5	6	6	12	8	3	9	15	1	3	9	3	8	2	7	28	10	64	24	367	10	2	0	143	8	0	25	1	5	15	0	0	7	0	0	0	0	0	1440	
33	12	58	19	6	23	25	1	3	2	14	15	1	12	1	2	3	3	2	6	20	3	7	2	2	5	0	0	35	27	26	9	13	19	1	0	55	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	439
34	1	2	1	0	0	3	0	0	0	0	1	1	1	0	0	0	2	2	3	2	0	0	0	1	2	1	0	1	4	0	0	2	2	3	0	20	1	0	0	0	0	0	0	0	0	0	0	0	0	0	56	
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
36	130	1129	290	77	206	112	28	13	31	164	140	34	22	42	20	16	29	28	50	130	54	31	13	18	39	26	20	74	95	170	30	148	61	16	0	5197	111	0	16	22	72											

Tabla A.6-1(5) Matriz O-D de Actual
(1993: Todos los Vehículos)

TOTAL																																																		
OD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	TOTAL
1	63	141	166	27	765	47	5	82	12	74	38	215	7	3	23	15	12	18	81	52	35	19	11	69	58	24	196	86	100	224	32	169	127	67	0	393	71	0	9	158	263	555	124	313	29	1	1	74	0	5064
2	266	199	134	151	261	182	82	270	150	160	166	304	84	167	150	155	136	62	203	314	135	554	64	133	199	128	37	146	355	487	209	858	144	12	1	3008	314	1	43	397	706	1587	283	1058	76	4	5	233	0	14753
3	128	250	160	80	174	222	53	82	47	160	91	103	104	34	1	87	66	62	57	88	123	58	14	86	77	69	23	14	249	134	113	297	104	36	0	1142	100	0	5	202	335	725	147	447	38	1	2	103	0	6693
4	28	177	116	24	80	38	3	31	1	53	21	37	10	0	62	3	23	28	28	13	16	4	4	36	2	106	6	36	151	4	120	25	0	0	237	85	0	1	66	114	247	51	149	12	1	1	33	0	2283	
5	554	247	234	92	508	212	78	52	57	100	105	89	3	14	0	15	47	29	46	28	37	81	10	64	56	9	108	96	109	381	85	496	62	32	0	662	118	0	5	206	355	758	164	440	38	0	0	103	0	6904
6	29	218	176	38	356	48	84	51	57	61	65	30	0	7	0	3	18	23	29	44	9	36	24	24	14	35	33	19	123	71	15	77	45	15	0	311	55	0	43	93	162	350	69	210	16	1	2	40	0	3270
7	12	82	56	3	44	101	0	0	0	19	8	22	0	0	0	0	14	11	5	3	8	80	5	0	7	1	0	4	4	8	1	3	1	15	0	62	11	0	4	17	25	55	8	39	1	0	0	7	0	782
8	60	185	154	15	52	40	8	17	12	54	78	0	3	0	3	0	0	2	6	107	55	58	13	2	79	2	6	4	29	44	0	2	10	24	1	159	28	1	2	41	58	124	18	90	4	2	3	18	0	1678
9	44	106	84	3	50	7	0	12	0	8	58	9	14	12	0	2	60	23	1	22	2	1	23	39	13	44	1	17	37	97	11	59	22	1	1	204	27	1	15	35	48	105	15	76	4	2	3	15	0	1433
10	22	120	170	67	198	78	21	101	73	139	84	37	35	82	79	23	20	27	30	68	31	72	24	23	38	20	1	47	236	84	107	142	35	0	0	407	95	0	7	78	121	258	41	178	8	1	2	35	0	3554
11	53	144	113	35	138	53	15	69	20	63	81	24	14	81	42	25	33	56	33	87	20	110	57	41	80	58	19	5	41	81	19	124	60	38	0	591	217	0	11	81	118	253	40	179	10	1	1	36	0	3479
12	202	335	84	41	95	50	5	0	9	75	12	30	0	3	0	35	26	0	13	1	13	39	9	16	20	1	2	25	57	163	28	61	6	31	0	141	45	0	0	45	74	158	24	111	5	0	0	20	0	2121
13	0	112	81	30	15	25	28	3	5	29	16	5	47	0	0	1	26	9	1	3	1	0	8	7	24	16	5	47	26	1	6	16	1	0	96	39	0	4	17	29	63	10	41	1	0	0	7	0	904	
14	2	115	80	7	22	10	0	0	12	91	33	3	0	5	4	13	1	1	3	5	2	0	0	178	0	0	5	31	7	29	12	9	1	30	1	112	50	1	2	0	0	1	0	1	0	2	2	1	0	884
15	21	47	0	0	0	0	9	3	0	39	11	0	0	4	0	16	1	0	0	9	30	0	2	1	12	0	1	12	0	7	24	1	1	81	2	1	1	50	12	1	0	0	0	0	0	2	2	0	0	991
16	6	162	78	86	37	2	0	1	2	24	18	48	2	14	16	7	0	0	0	43	0	0	0	2	9	0	2	2	4	17	42	69	3	0	0	28	4	0	1	0	0	0	0	0	4	0	0	0	0	733
17	27	117	96	4	50	62	13	1	33	20	31	48	26	1	3	0	66	12	5	9	4	1	57	2	18	9	0	6	11	98	4	15	4	1	0	102	25	0	0	1	2	4	0	1	0	0	0	0	0	1009
18	1	81	38	16	31	13	11	10	35	27	64	10	13	1	0	14	1	27	13	0	0	0	2	12	0	1	46	64	44	17	16	15	0	0	72	13	0	0	0	1	2	0	0	0	0	0	0	0	0	711
19	93	192	40	23	68	29	0	2	1	30	57	13	1	3	0	0	4	27	0	48	45	10	38	6	1	3	36	10	37	14	55	26	7	0	117	23	0	9	1	2	4	0	2	0	1	1	0	0	1074	
20	54	325	145	26	14	43	25	67	15	93	149	1	3	5	2	46	0	10	13	155	32	50	59	35	32	2	13	15	52	51	30	43	70	4	2	517	57	2	4	20	27	57	2	34	0	7	10	5	0	2435
21	34	135	72	8	45	28	8	43	2	60	24	13	1	0	31	0	3	0	45	15	0	19	0	0	50	2	26	21	4	44	2	16	4	0	0	341	4	0	0	7	12	26	1	14	0	1	1	2	0	1164
22	17	489	63	18	73	61	72	43	25	70	117	12	9	0	0	0	9	0	11	61	27	10	2	0	28	32	14	14	46	61	1	3	30	9	0	173	17	0	1	12	20	41	2	22	0	0	0	3	0	1733
23	10	42	15	8	11	25	5	13	23	26	45	9	8	0	3	0	49	0	32	62	2	3	22	35	25	14	8	1	25	12	4	44	2	0	0	56	17	0	0	5	7	16	1	12	0	1	1	2	0	703
24	135	164	99	4	43	25	0	2	46	9	14	30	25	129	1	2	2	0	6	33	1	0	27	85	8	3	2	1	4	21	3	87	2	1	1	76	4	1	0	8	14	30	3	20	1	3	4	3	0	1213
25	53	229	72	57	47	12	7	66	23	64	92	18	2	0	1	9	24	12	8	24	22	24	14	56	39	1	19	18	15	12	19	11	42	1	171	31	1	2	12	15	36	3	29	1	2	3	7	0	1450	
26	13	171	43	3	18	37	1	4	32	18	70	48	26	0	9	0	0	0	1	14	1	35	13	3	33	46	6	14	24	15	7	16	9	0	0	65	43	0	0	5	10	22	2	13	0	0	0	2	0	892
27	171	144	23	96	105	35	0	6	13	1	19	2	16	5	0	2	1	1	3	57	6	8	8	1	1	6	27	0	8	76	175	62	0	0	0	374	5	0	0	13	22	46	5	29	2	0	0	6	0	1580
28	80	208	62	2	70	12	4	5	20	26	15	80	3	23	7	2	3	43	36	4	8	14	1	1	18	51	0	38	138	104	75	90	158	8	1	216	28	1	1	36	80	194	3	23	3	2	3	1	0	2001
29	89	411	276	36	132	119	4	36	6	204	42	52	35	7	24	2	2	46	20	39	5	60	26	2	18	34	8	129	191	141	7	35	88	33	0	400	28	0	1	2	5	0	1	0	1	1	0	0	2006	
30	318	536	178	130	399	89	8	36	100	59	96	93	16	32	10	16	99	25	83	85	22	68	12	21	19	10	2	109	92	231	154	288	74	101	2	518	109	2	2	4	9	1	2	0	7	9	0	6	4278	
31	36	272	95	15	112	17	0	0	10	129	3	29	6	12	1	25	5	17	14	27	2	1	4	2	7	7	179	4	7	134	89	157	11	12	1	210	148	1	7	1	2	4	0	0	0	2	2	0	0	1813
32	116	836	408	167	669	146	3	12	40	126	139	20	7	20	66	45	16	5	25	52	17	3	13	86	13	16	63	90	40	230	184	2042	76	13	5	484	52	5	142	73	112	237	73	184	24	15	20	20	0	7260
33	128	198	99	55	71	46	1	76	22	52	53	6	14	1	2	3	4	36	7	75	4	22	2	2	11	9	0	123	56	95	11	49	51	34	1	169	28	1	0	3	6	12	0	0	0	2	2	4	0	1646
34	61	24	36	0	19	15	0	14	1	1	35	56	1	30	0	0	2	2	10	5	0	9	0	0	29	28	13	0	20	106	47	12	23	29	71	0	146	50	0	14	1	2	4							

Tabla A.6-2(2) Matriz O-D Futura (2010:Taxibus)

TAXIBUS																																																					
O-D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	TOTAL			
1	1	6	3	2	2	1	1	3	3	1	1	0	0	4	4	5	5	0	1	0	12	5	5	3	17	5	3	6	15	5	4	38	14	2	0	117	16	0	3	12	37	101	3	06	3	0	0	14	0	587			
2	4	0	2	1	6	22	16	26	29	16	4	7	8	29	0	32	30	28	51	101	51	96	36	81	124	57	4	23	161	44	20	327	72	7	0	1244	194	0	34	110	350	954	26	907	26	0	0	134	0	5527			
3	2	2	0	0	2	6	6	7	13	2	5	7	2	3	1	17	15	10	0	22	34	33	14	17	30	19	1	12	54	19	4	95	20	3	0	301	38	0	3	31	99	267	7	254	7	0	0	37	0	1542			
4	2	4	0	0	0	2	3	2	1	0	0	2	7	0	0	10	3	0	7	7	11	7	3	4	17	2	4	2	17	9	3	30	9	0	0	75	20	0	1	10	32	87	2	83	2	0	0	12	0	504			
5	2	3	1	0	2	6	5	9	4	2	2	2	2	4	0	5	7	6	7	0	15	18	6	23	21	9	6	5	46	12	4	73	31	0	0	219	50	0	4	23	72	197	5	188	5	0	0	28	0	1139			
6	2	27	9	2	3	0	3	4	6	1	10	3	0	8	0	3	0	9	6	8	6	13	7	13	14	14	7	8	37	8	3	40	29	5	0	116	35	0	3	17	55	150	4	142	4	0	0	21	0	865			
7	1	13	10	3	3	1	0	1	0	6	0	1	0	0	0	0	1	0	0	3	2	1	0	0	8	1	0	3	4	9	1	3	1	2	0	29	1	0	0	1	4	12	4	0	0	0	0	0	0	129			
8	3	20	10	7	9	5	1	1	1	13	0	0	3	0	4	0	0	2	2	4	2	9	1	3	16	3	0	3	3	11	0	2	11	0	0	15	3	0	0	2	7	19	6	0	0	0	0	0	0	201			
9	3	35	13	3	6	6	0	1	0	4	2	2	0	5	0	3	1	0	1	5	2	1	0	11	4	4	1	5	4	1	1	9	3	0	0	24	4	0	15	2	7	20	6	0	0	0	0	0	0	214			
10	4	15	1	0	1	1	3	10	2	0	1	3	2	0	0	4	3	2	6	11	0	19	7	6	20	10	1	9	21	14	3	31	17	0	0	179	25	0	5	6	18	50	15	1	1	0	0	0	0	535			
11	1	2	6	0	2	9	1	3	2	0	0	1	2	4	0	11	11	6	4	7	17	22	12	11	26	15	1	4	19	9	2	26	18	2	0	159	42	0	8	6	19	53	16	1	1	0	0	0	0	567			
12	0	5	13	3	3	2	0	0	2	1	2	0	0	4	0	6	2	0	1	1	1	4	10	4	8	1	2	4	1	7	4	16	1	2	0	44	0	0	0	2	6	17	5	0	0	0	0	0	0	184			
13	0	7	6	4	3	0	0	3	0	2	3	0	1	0	0	1	6	3	1	3	1	0	8	8	2	5	0	4	18	6	1	5	17	2	0	24	12	0	3	2	7	16	5	0	0	0	0	0	0	0	191		
14	3	14	4	0	11	11	0	0	5	0	4	4	0	0	0	2	2	2	5	7	3	0	0	6	0	0	7	5	6	6	0	10	2	0	0	71	7	0	2	0	0	0	0	0	0	0	0	0	0	0	0	189	
15	1	23	0	0	0	0	0	5	0	0	0	0	0	0	0	2	0	0	13	2	0	4	2	2	8	0	0	10	8	2	2	13	4	0	0	32	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	146	
16	6	32	15	9	5	2	0	1	3	5	12	18	2	4	0	0	0	0	0	0	0	0	0	3	2	6	0	3	3	5	11	3	17	5	0	0	33	4	0	0	0	0	0	0	0	0	0	0	0	0	0	203	
17	3	43	14	3	8	12	0	1	1	7	10	2	6	2	5	0	0	0	4	5	4	1	4	3	4	1	0	6	4	17	0	9	5	2	0	0	35	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	234
18	1	29	11	9	7	10	0	3	9	2	4	0	6	2	0	0	2	1	3	3	0	0	3	14	0	1	4	8	25	0	3	1	0	0	32	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	201	
19	1	57	11	6	7	6	0	2	1	5	4	1	1	5	0	0	3	3	0	0	1	4	5	7	1	4	4	8	7	15	1	14	9	0	0	53	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	264	
20	10	106	23	5	8	10	3	8	5	12	7	1	3	7	3	4	4	3	8	0	5	10	11	11	7	3	5	4	11	23	5	15	31	4	0	167	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	559	
21	11	55	28	7	14	7	2	2	2	8	16	1	1	0	3	0	4	0	1	4	0	8	0	0	1	3	1	8	4	16	3	4	5	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	294	
22	5	86	37	8	16	13	3	8	0	19	26	4	0	0	0	0	1	0	4	2	6	5	3	0	6	3	4	5	28	1	4	11	0	0	43	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	363
23	3	29	15	3	7	8	0	1	6	9	14	5	8	0	6	0	4	0	8	8	3	4	0	29	5	11	0	1	2	3	0	13	4	0	0	19	1	0	0	1	2	6	1	0	0	0	0	0	0	0	0	243	
24	8	72	22	4	21	14	0	3	5	10	7	4	8	6	2	3	3	0	7	8	1	0	29	7	5	5	3	1	5	13	5	4	4	0	0	27	1	0	0	1	3	7	1	0	0	0	0	0	0	0	0	329	
25	16	117	32	19	20	12	8	17	7	13	25	5	2	0	2	2	4	14	1	10	1	6	5	5	5	5	2	4	0	13	5	12	17	5	0	62	3	0	0	1	4	11	2	0	0	0	0	0	0	0	494		
26	8	49	20	4	10	15	1	4	4	8	17	4	7	0	4	0	0	0	1	4	1	10	10	5	5	0	0	4	2	11	2	3	0	0	0	45	7	0	0	1	2	6	1	0	0	0	0	0	0	0	275		
27	3	14	1	0	8	3	0	0	1	1	2	0	0	0	3	1	1	4	1	1	1	3	0	2	0	0	0	0	2	3	0	0	0	0	0	38	5	0	0	0	1	3	0	0	0	0	0	0	0	0	0	124	
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29	23	155	52	17	47	40	4	5	7	20	19	1	20	6	8	3	3	4	7	11	6	4	3	3	0	2	2	16	57	68	0	0	33	20	0	148	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	825	
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32	39	281	99	36	72	38	3	2	4	23	18	8	5	10	10	17	9	3	16	17	1	4	13	4	12	3	9	35	14	86	33	443	15	4	0	165	10	0	30	4	12	32	0	0	16	0	0	0	0	0	0	1672	
33	15	73	24	8	29	32	1	4	3	18	19	1	16	2	4	5	5	3	9	30	5	11	4	4	9	0	0	56	50	45	16	20	38	3	0	91	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	664
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36	136	1187	306	82	218	119	33	15	36	179	151	37	24	77	35	24	36	34	61	161	71	41	19	27	61	40	39	99	147	2																							

Tabla A.6-2(4) Matriz O-D Futura (2010:Camión)

TRUCK																																																					
O/D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	TOTAL			
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9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	140		
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14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92		
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16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8		
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27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
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30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	
32	0	17	4	1	0	0	0	6	3	7	3	1	2	13	9	3	1	3	3	7	4	0	3	0	5	0	0	2	3	7	5	50	11	13	8	125	32	6	1	25	9	21	0	71	22	21	28	24	0	579			
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	109	
34	0	11	3	0	0	0	0	3	3	3	3	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	302	
35	0	7	2	0	0	0	0	2	2	2	2	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	273	
36	5	40	20	3	3	3	18	30	25	23	50	12	2	11	31	6	5	10	21	40	8	2	68	7	01	4	0	20	10	10	16	108	51	165	110	1232	564	73	37	267	93	221	73	524	59	272	376	184	0	5011			
37	1	14	7	3	0	0	20	5	9	8	21	6	3	23	5	5	0																																				

Tabla A.6-2(5) Matriz O-D Futura
(2010:Todos los Vehículos)

TOTAL																																																				
O/D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	TOTAL		
1	98	78	97	15	495	31	5	81	11	66	32	221	7	4	35	25	14	24	116	60	42	27	15	130	84	36	314	22	121	207	36	206	219	139	0	477	83	0	7	426	700	1469	336	817	81	1	1	109	0	7774		
2	144	109	70	77	153	113	75	240	119	129	124	280	72	207	207	242	148	65	238	327	148	741	76	162	251	166	51	116	403	562	214	934	204	23	2	3421	319	1	42	1041	1006	3965	759	2583	202	6	7	584	0	21919		
3	74	131	89	43	109	140	51	78	40	137	73	101	85	45	1	145	76	73	74	98	146	59	16	118	105	98	35	14	294	164	123	344	163	71	0	1404	111	0	0	530	880	1883	398	1131	103	1	3	262	0	10158		
4	17	96	66	13	51	24	3	30	1	47	17	30	9	0	0	105	3	27	34	32	13	21	4	5	50	2	166	5	44	191	4	145	39	0	0	294	99	0	1	179	302	645	138	392	33	2	2	90	0	3470		
5	360	145	147	56	358	150	85	54	50	104	94	109	2	20	0	26	63	39	65	24	45	90	13	92	93	10	184	87	137	503	104	668	99	72	0	866	137	0	5	553	840	1988	443	1133	104	0	0	272	0	18992		
6	20	155	119	25	265	36	98	61	55	63	61	35	0	9	0	3	22	28	43	59	9	51	36	34	16	54	56	19	165	103	19	92	69	33	0	419	60	0	37	246	425	913	191	553	48	1	3	128	0	4939		
7	12	73	55	3	47	108	0	13	0	25	11	37	10	0	0	0	29	24	12	3	15	209	12	0	9	1	0	4	5	10	1	3	1	50	0	102	10	0	5	50	70	149	24	108	6	0	0	22	0	1336		
8	57	161	141	13	52	41	12	26	16	68	103	0	3	0	4	0	0	2	11	204	117	133	29	3	177	3	15	4	55	81	0	2	14	78	2	320	49	1	3	111	150	333	52	245	15	3	5	49	0	2966		
9	37	87	71	3	45	7	0	16	0	9	60	12	19	22	0	3	109	43	1	34	2	1	46	75	24	93	1	20	62	176	17	102	52	3	2	370	42	1	17	96	132	281	44	206	13	3	5	42	0	2514		
10	19	98	149	57	194	76	31	144	94	189	106	54	50	168	164	59	35	52	57	116	52	141	45	45	69	36	1	56	427	153	102	246	72	0	0	641	148	0	7	210	324	684	110	485	27	2	3	95	0	6125		
11	44	107	91	28	129	47	21	93	33	78	93	34	18	150	89	49	49	97	61	142	20	205	103	74	147	110	41	5	62	138	29	199	123	108	0	960	393	0	11	221	316	670	108	484	31	1	2	97	0	6041		
12	206	308	81	39	108	55	9	0	12	115	16	67	0	4	0	99	55	0	31	1	28	97	11	37	43	1	2	33	119	353	52	116	16	109	0	265	93	0	0	126	202	422	56	304	15	0	0	58	0	3774		
13	0	102	70	28	15	27	49	3	7	43	21	9	26	0	0	1	49	17	1	3	1	0	9	9	15	56	44	5	77	51	1	6	21	2	0	187	65	0	4	49	80	169	27	115	6	0	0	22	0	1545		
14	3	140	103	9	31	14	0	0	22	182	62	4	0	15	14	52	2	2	5	9	3	0	0	581	0	0	0	57	17	80	30	21	2	142	5	285	142	4	6	1	2	5	0	3	0	8	9	3	0	2085		
15	26	58	0	0	0	0	20	5	0	75	20	0	0	12	0	64	2	0	0	15	84	0	4	2	2	33	0	12	60	2	2	216	4	8	5	126	22	3	0	1	1	2	0	2	0	9	9	2	0	909		
16	7	259	133	147	72	2	0	1	3	69	30	121	2	56	79	42	0	0	0	169	0	0	0	3	41	0	3	3	7	50	148	250	5	0	0	43	6	0	2	0	0	0	0	12	0	0	0	0	0	0	0	1756
17	32	127	118	4	67	82	29	1	62	32	47	106	47	2	5	0	245	35	5	17	5	1	172	3	52	29	0	7	26	255	10	27	7	2	0	241	57	0	0	4	6	12	0	3	0	0	0	0	0	0	0	1982
18	1	88	44	17	40	12	25	19	60	52	116	23	20	2	0	0	37	1	81	31	0	0	0	3	17	0	1	84	167	76	44	39	56	0	0	157	17	0	0	3	4	9	0	4	0	0	0	0	0	0	0	1358
19	132	221	49	28	99	41	0	2	1	57	108	39	1	5	0	0	4	79	0	127	140	30	91	8	1	4	4	64	20	89	36	138	89	35	0	257	42	0	16	5	6	14	0	6	0	1	1	0	0	2081		
20	65	350	174	30	16	56	51	134	23	168	263	1	3	9	3	178	16	32	25	403	84	152	160	96	95	3	34	25	127	109	68	83	206	0	3	1195	119	2	0	57	75	157	8	93	0	10	15	17	0	5010		
21	39	142	79	8	54	35	15	88	2	102	28	26	1	0	95	0	4	0	132	34	0	48	0	0	156	3	84	33	5	99	3	39	7	0	0	844	6	0	0	22	34	72	4	39	0	1	1	6	0	2388		
22	23	633	73	21	108	90	181	97	54	154	215	23	22	0	0	0	27	0	31	187	78	26	3	0	104	115	52	27	139	155	1	4	136	47	0	507	38	0	1	34	54	113	6	62	0	0	0	10	0	3651		
23	12	49	17	9	14	34	12	28	41	45	75	10	9	0	6	0	139	0	92	165	3	4	72	82	81	35	30	1	70	33	10	115	4	0	0	139	38	0	0	15	22	48	6	34	2	2	2	8	0	1611		
24	210	213	143	5	61	35	0	3	99	11	23	75	52	455	2	3	3	0	8	93	1	0	57	321	25	5	3	1	7	53	5	290	4	156	2	226	6	1	0	26	41	84	10	57	4	5	7	13	0	2904		
25	75	293	97	78	69	14	9	148	45	132	173	40	2	0	2	40	74	17	27	62	77	85	80	47	214	150	2	38	57	35	31	38	21	216	2	437	72	1	3	34	45	96	11	82	4	3	5	21	0	3291		
26	17	230	59	4	24	55	1	5	69	33	138	127	56	0	33	0	0	0	1	40	1	125	35	5	127	191	26	28	77	37	20	52	41	0	0	160	127	0	0	17	28	60	7	36	3	0	0	7	0	2182		
27	276	204	36	147	180	59	0	16	30	1	42	2	42	10	0	3	1	1	4	189	19	29	31	2	2	26	119	0	25	264	537	208	0	0	1302	6	0	0	36	60	125	15	80	6	0	0	16	0	4149			
28	67	166	55	2	64	12	4	6	24	31	16	109	3	44	12	3	4	78	65	5	10	28	1	1	37	110	0	44	239	178	118	145	349	20	2	368	41	1	1	93	196	460	9	66	9	3	5	5	0	3902		
29	109	470	231	43	169	153	5	70	0	369	64	110	56	17	71	3	3	123	50	88	8	218	74	3	57	110	25	219	455	326	17	85	200	127	0	978	65	0	0	5	7	15	3	3	0	2	2	0	0	6398		
30	414	628	222	159	561	124	9	66	166	108	171	209	31	90	34	48	253	32	227	204	41	178	34	52	50	16	3	190	190	627	371	699	208	457	4	1240	228	3	3	8	12	26	4	6	0	12	16	0	0	8454		
31	35	287	197	17	140	21	0	0	17	223	5	54	10	32	2	86	11	44	37	57	3	1	11	3	17	20	557	5	17	326	196	355	20	47	2	518	347	1	10	4	5	12	2	3	0	3	4	0	0	3675		
32	141	954	596	204	959	197	3	22	74	278	247	32	8	57	225	148	29	6	55	110	45	4	19	287	20	54	216	151	94	559	472	5352	268	48	8	1085	98	6	225	199	302	634	198	496	64	21	28	56	0	15210		
33	222	295	161	90	119	69	1	219	55	116	111	16	19	2	4	5	7	139	10	225	7	80	4	4	34	42	0	268	148	302	20	153	191	206	3	487	81	2	0	1												

Appendix- 7

Tabla A.7-1
 Temperatura Media Mensual en
 Concepcion-Cariel Sur

Latitude : 36° 46' South
 Longitude: 73° 03' West
 Elevation: 12 m

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
1961	15.9	16.5	15.0	12.2	11.3	7.7	9.5	10.6	9.8	12.6	14.0	16.1	12.6
1962	17.2	16.2	15.7	11.5	10.3	9.5	7.2	9.5	9.3	12.3	15.6	17.8	12.7
1963	16.7	16.8	14.3	13.4	9.7	8.5	9.2	10.3	9.5	12.2	13.0	16.0	12.5
1964	17.6	15.9	14.0	11.7	10.7	7.5	8.1	8.4	9.7	13.2	14.5	16.5	12.3
1965	18.3	17.4	16.4	12.2	9.7	11.7	9.0	8.5	9.2	11.7	14.3	15.7	12.8
1966	15.6	14.3	13.6	13.0	10.4	10.1	8.7	8.5	8.9	10.2	13.6	15.0	11.8
1967	16.7	14.7	13.9	11.6	11.5	6.1	7.0	7.4	9.0	11.6	13.8	15.5	11.6
1968	16.0	15.9	13.8	11.7	11.4	10.7	8.2	9.4	10.9	10.2	14.6	15.0	12.3
1969	16.6	14.2	13.4	12.2	10.7	9.5	9.3	8.6	12.6	10.2	16.2	15.4	12.4
1970	16.4	15.8	14.1	12.8	10.4	8.7	8.4	7.5	9.2	10.7	13.2	14.6	11.8
1971	15.1	14.3	12.2	10.2	10.4	7.8	9.9	8.5	9.5	11.8	14.1	15.0	11.6
1972	16.6	15.9	13.1	11.7	11.5	10.5	8.0	9.7	9.9	10.5	13.4	16.0	12.2
1973	16.0	15.3	13.6	11.4	9.6	8.8	7.3	8.2	8.2	11.1	12.6	14.6	11.4
1974	15.7	14.5	13.4	10.8	11.4	8.8	7.9	8.3	9.0	11.3	12.4	14.3	11.5
1975	15.5	15.2	13.3	12.5	10.7	10.0	8.7	7.9	9.2	10.6	12.7	14.5	11.7
1976	15.5	15.2	12.9	10.9	10.7	8.8	7.6	8.8	9.6	11.8	13.9	16.2	11.8
1977	16.9	16.1	13.8	12.1	11.7	10.0	9.0	9.5	10.3	12.4	13.3	16.3	12.6
1978	16.0	15.7	13.6	12.0	11.2	9.6	11.2	8.4	10.8	11.3	14.2	16.0	12.5
1979	16.0	15.8	13.9	11.5	10.8	7.8	8.7	10.3	9.3	11.1	13.7	16.2	12.1
1980	17.3	17.2	15.5	11.5	11.5	9.4	9.2	10.3	9.9	11.6	12.9	15.7	12.7
1981	16.5	15.9	14.6	13.9	12.5	9.8	9.8	9.2	9.9	11.7	13.1	14.9	12.7
1982	16.6	15.4	14.2	12.7	12.0	9.4	10.0	10.0	11.4	11.8	13.0	16.2	12.7
1983	17.5	16.3	14.0	12.5	9.9	7.6	7.6	9.5	9.1	12.6	14.4	16.4	12.3
1984	16.9	15.2	14.5	11.6	9.9	7.0	8.7	8.5	10.7	11.7	13.5	15.4	12.0
1985	16.4	16.0	14.0	10.9	10.6	11.8	8.8	9.0	10.6	11.6	13.9	15.2	12.4
1986	16.0	15.8	13.4	12.0	11.4	10.1	8.3	9.9	10.2	13.4	13.3	15.3	12.5
1987	16.0	16.5	15.9	12.8	10.3	10.0	10.4	9.8	10.0	12.4	14.6	15.6	12.9
1988	15.8	16.9	14.6	12.8	9.4	9.5	8.0	8.9	9.6	11.2	13.8	15.3	12.2
1989	16.9	16.4	13.5	11.9	10.2	10.2	9.0	9.0	9.9	11.8	14.2	16.4	12.5
1990	16.5	15.7	13.5	12.2	10.4	8.7	8.7	9.6	10.4	11.1	13.0	15.1	12.1
1991	16.1	15.6	14.2	13.1	11.1	9.5	9.2	8.7	10.5	11.3	13.8	15.2	12.4
1992	17.0	15.3	15.6	12.2	11.1	8.9	7.8	9.6	10.3	11.0	14.1	15.4	12.4
Mean	16.4	15.7	14.1	12.0	10.8	9.2	8.7	9.1	9.9	11.6	13.8	15.6	12.2

Tabla A.7-2 Temperatura Máxima Mensual en
Concepcion-Carriel Sur

Latitude: 36° 46' South
Longitude: 73° 03' West
Elevation: 12 m

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
1961	32.0	30.4	30.0	24.4	20.6	16.8	18.4	20.8	20.4	26.8	23.8	28.2	32.0
1962	32.4	31.0	32.0	26.0	22.6	17.2	20.0	18.6	22.8	25.2	26.6	29.0	32.4
1963	28.2	30.8	26.6	24.7	28.8	16.6	17.6	20.0	18.0	22.6	24.8	27.4	30.8
1964	33.2	27.2	28.8	21.0	23.6	14.6	19.8	21.6	22.2	26.6	25.8	25.8	33.2
1965	31.2	28.0	30.0	24.6	18.4	18.8	15.0	16.2	21.4	29.0	28.8	33.4	33.4
1966	24.4	25.4	23.2	22.4	19.8	21.4	16.0	16.0	18.2	24.3	21.8	27.6	27.6
1967	29.9	26.7	31.0	25.2	19.0	16.5	14.6	14.8	23.6	20.6	25.0	28.6	31.0
1968	28.0	31.0	24.8	26.8	25.8	17.8	18.0	17.4	22.8	18.6	24.4	23.5	31.0
1969	28.6	24.7	24.3	23.6	18.4	15.3	15.3	16.6	16.2	18.2	22.6	26.0	28.6
1970	27.3	28.0	29.4	22.3	21.1	14.8	15.8	14.6	17.7	22.8	22.6	25.9	29.4
1971	26.2	28.2	22.2	23.6	18.4	14.7	16.1	18.6	17.2	25.6	23.7	24.6	28.2
1972	29.2	30.2	23.2	24.0	19.6	18.2	15.1	16.9	19.0	20.6	23.0	27.2	30.2
1973	26.4	28.2	28.0	22.8	17.4	16.4	14.6	21.9	20.4	20.4	26.0	24.4	28.2
1974	28.5	23.6	23.4	23.4	22.9	14.8	15.3	20.8	19.6	22.8	26.4	24.6	28.5
1975	25.2	23.8	23.2	22.0	17.6	16.0	18.0	20.4	20.8	20.7	20.8	24.6	25.2
1976	25.3	25.4	26.6	22.4	18.6	15.4	17.2	17.0	24.2	20.0	22.8	25.7	26.6
1977	25.9	28.0	24.2	22.0	19.8	16.6	16.0	19.8	25.3	22.4	22.8	33.4	33.4
1978	26.2	26.2	24.8	24.8	20.4	18.2	17.7	25.0	18.0	20.9	25.2	30.4	30.4
1979	25.4	26.8	23.6	25.0	18.6	16.0	19.4	16.4	18.5	24.2	25.9	28.4	28.4
1980	26.8	24.6	28.4	20.8	17.6	20.8	18.4	18.0	19.6	21.1	25.2	26.8	28.4
1981	24.1	25.2	27.0	23.0	18.2	16.4	17.4	20.4	20.8	21.8	22.2	26.4	27.0
1982	27.6	24.4	24.6	23.1	17.6	16.7	16.0	18.4	19.0	22.2	22.0	26.0	27.6
1983	28.8	26.6	23.6	23.9	18.1	15.4	15.8	19.1	19.4	27.6	26.5	25.3	28.8
1984	26.8	28.0	24.7	23.1	15.9	14.2	17.7	16.8	19.5	20.0	22.6	23.1	28.0
1985	27.0	26.8	27.7	21.1	18.6	22.0	14.6	21.0	25.7	19.4	24.8	26.6	27.7
1986	28.3	26.7	24.5	22.2	20.1	16.9	16.9	19.2	22.2	27.0	24.0	24.0	28.3
1987	25.6	27.4	28.4	24.0	17.8	19.0	16.4	16.2	20.0	21.6	24.8	25.2	28.4
1988	26.0	27.4	25.9	27.0	19.0	16.6	20.0	21.8	21.2	19.4	23.6	25.4	27.4
1989	27.8	28.0	24.0	24.0	19.4	17.2	18.2	15.8	20.7	21.6	24.4	26.6	28.0
1990	25.2	26.4	23.8	20.8	18.4	17.4	21.7	18.6	20.6	20.8	23.8	25.7	26.4
1991	29.1	35.6	30.4	26.8	17.4	17.2	14.2	20.8	20.6	29.6	25.4	27.4	35.6
1992	27.0	26.2	28.2	21.8	17.4	17.6	16.9	16.6	20.4	19.8	24.3	23.8	28.2
Max.	33.2	35.6	32.0	27.0	28.8	22.0	21.7	25.0	25.7	29.6	28.8	33.4	35.6

Tabla A.7-3

Temperatura Mínima Mensual en
Concepción-Carriel Sur

Latitude : 36° 46' South
Longitude: 73° 03' West
Elevation: 12 m

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
1961	6.2	6.0	6.6	3.8	1.4	-2.2	-0.2	3.8	-0.4	3.2	5.4	6.4	-2.2
1962	5.0	6.8	7.4	3.4	-0.4	0.8	-1.2	0.6	0.6	2.6	5.8	8.0	-1.2
1963	6.0	8.4	4.8	5.4	0.8	-1.6	-1.0	-0.8	1.6	3.4	4.4	5.8	-1.6
1964	7.6	7.0	2.6	2.2	0.8	-1.4	-1.6	-1.2	-1.2	3.2	5.0	5.2	-1.6
1965	7.6	7.8	6.0	2.0	-1.8	2.8	-0.2	-0.6	-0.2	1.6	4.4	5.8	-1.8
1966	7.6	4.3	2.8	4.6	-0.8	0.8	-0.6	-2.0	-1.2	0.7	5.0	4.6	-2.0
1967	7.4	5.0	2.6	2.5	0.4	-3.2	-1.8	-0.7	-0.4	3.0	4.0	5.9	-3.2
1968	5.0	6.0	2.0	2.4	3.2	2.1	-1.2	0.4	2.2	0.9	3.0	5.0	-1.2
1969	6.4	4.3	1.8	2.4	0.4	-0.2	-0.3	0.8	1.4	1.0	2.2	3.4	-0.3
1970	6.5	4.1	3.4	2.1	0.2	-0.6	-1.3	-0.6	-0.6	0.8	3.9	5.2	-1.3
1971	5.8	3.6	1.6	0.1	-1.2	-1.5	0.6	-1.2	0.2	2.7	4.1	4.0	-1.5
1972	7.2	6.2	2.3	2.0	2.0	1.6	-2.0	-0.4	1.6	1.3	3.8	6.1	-2.0
1973	6.0	5.0	5.1	1.2	-0.5	0.6	-2.6	-0.5	-1.2	3.0	3.2	6.0	-2.6
1974	5.2	4.8	2.4	-0.9	1.0	-0.7	0.6	-0.6	-0.8	1.4	3.0	3.5	-0.9
1975	6.4	5.8	4.6	2.7	1.2	-1.0	-0.1	0.0	0.0	1.5	4.0	5.0	-1.0
1976	4.6	6.3	1.8	-0.3	-2.1	-1.4	-3.8	-0.2	-1.4	2.7	4.7	6.3	-3.8
1977	5.8	5.0	2.8	0.8	2.0	-0.8	0.4	-0.2	0.6	3.8	3.1	5.4	-0.8
1978	5.8	6.2	3.8	2.8	-0.7	-0.6	-0.6	-1.2	0.6	1.5	5.6	5.8	-1.2
1979	5.2	6.4	4.9	2.4	2.0	-2.0	-0.6	2.1	0.6	1.8	3.8	6.2	-2.0
1980	8.5	7.7	5.4	2.2	1.4	0.2	-0.8	1.0	0.1	-0.2	2.7	4.3	-0.8
1981	7.5	7.0	6.0	5.9	3.4	-1.0	0.6	0.2	-0.2	0.2	3.2	5.0	-1.0
1982	7.6	5.2	2.4	3.5	2.2	0.1	0.9	0.4	2.9	3.6	3.6	6.6	0.1
1983	8.6	4.7	5.2	4.4	2.2	-0.8	-0.7	0.4	0.3	2.9	5.2	6.7	-0.8
1984	7.4	5.9	6.0	1.0	0.4	-1.3	1.4	-0.6	3.2	2.4	4.9	5.8	-1.3
1985	7.4	5.6	4.0	0.2	0.6	1.4	0.0	1.0	0.1	2.6	3.6	6.0	0.0
1986	6.6	5.2	3.0	3.2	3.0	0.6	-0.3	0.8	0.4	4.0	6.0	6.2	-0.3
1987	7.4	5.2	6.2	4.3	0.8	-0.8	-1.8	1.6	1.4	4.5	6.2	5.2	-1.8
1988	7.4	8.2	3.3	2.4	-0.2	0.6	-0.4	-1.6	0.6	3.2	5.2	6.2	-1.6
1989	8.7	7.5	4.8	-1.0	2.6	3.2	0.0	0.0	0.0	3.4	5.4	5.6	-1.0
1990	6.6	7.0	3.2	4.0	2.0	-1.4	0.2	-2.5	0.4	-0.8	2.4	5.8	-2.5
1991	6.5	5.0	4.4	4.8	2.2	0.4	0.5	-1.8	2.8	1.8	5.8	5.0	-1.8
1992	7.8	5.5	8.0	3.2	-0.8	-1.3	-1.0	0.2	1.9	1.5	1.6	7.0	-1.3
Min.	4.6	3.6	1.6	-1.0	-2.1	-3.2	-3.8	-2.5	-1.4	-0.8	1.6	3.4	-3.8

Tabla A.7-4 Temperatura Media Máxima Mensual en
Concepción-Carriel Sur

Latitude : 36° 45' South
Longitude: 73° 03' West
Elevation: 12 m

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
1961	21.8	24.0	21.6	18.9	16.0	12.8	13.3	14.8	15.2	18.7	20.1	23.1	18.4
1962	24.4	23.5	22.9	18.6	16.4	14.0	13.9	14.5	15.4	19.1	20.9	24.8	19.0
1963	23.9	24.0	21.5	20.1	16.4	13.4	13.5	14.6	14.8	17.8	18.9	22.6	18.5
1964	25.0	23.6	21.8	18.1	16.3	13.2	12.6	13.9	15.9	19.5	20.1	21.4	18.5
1965	24.9	23.8	23.8	18.4	15.2	15.4	13.2	13.9	15.5	17.5	19.8	21.2	18.6
1966	21.8	21.3	20.1	17.9	16.1	13.6	12.9	13.4	14.7	16.4	19.1	20.2	17.3
1967	22.7	22.5	20.6	20.0	15.3	12.0	12.1	12.1	14.8	16.3	19.5	21.2	17.4
1968	23.2	22.5	20.6	17.5	16.7	13.8	12.0	14.7	15.6	16.2	19.3	20.7	17.7
1969	23.5	21.9	20.5	17.9	15.1	13.2	13.1	13.5	14.3	15.5	17.7	21.6	17.3
1970	23.3	23.5	21.6	19.5	15.9	13.0	12.8	12.6	14.9	16.4	19.1	20.1	17.7
1971	21.2	20.2	19.6	17.6	15.0	12.3	12.8	13.2	14.1	17.5	20.5	20.5	17.0
1972	22.9	23.0	19.9	18.7	15.1	13.8	12.5	13.6	14.8	15.3	18.3	22.6	17.5
1973	23.0	22.0	20.3	17.7	14.9	13.0	12.1	13.9	14.5	15.5	19.0	20.9	17.2
1974	21.8	20.4	19.9	18.7	15.7	12.9	12.6	13.6	15.1	17.6	17.9	20.0	17.2
1975	21.5	20.8	19.9	18.0	15.3	14.3	13.3	12.9	14.5	16.5	18.2	20.8	17.2
1976	22.0	21.7	20.5	18.3	15.6	13.0	12.8	13.6	15.8	16.9	19.4	21.8	17.6
1977	22.9	23.2	20.8	17.9	16.4	13.9	12.6	14.2	15.6	17.5	18.6	22.2	18.0
1978	23.1	22.1	21.0	18.8	16.0	13.7	14.4	14.3	14.8	16.2	19.6	22.2	18.0
1979	22.4	23.0	20.6	18.7	15.9	13.4	13.5	13.8	14.6	17.1	19.0	21.8	17.8
1980	24.0	22.6	22.6	16.7	15.3	14.1	13.3	14.6	15.4	17.9	18.8	21.2	18.0
1981	21.8	22.5	20.4	19.0	16.2	14.2	14.2	14.3	15.6	17.5	19.3	21.5	18.0
1982	22.6	21.2	21.0	18.8	15.6	13.2	13.2	14.6	16.0	16.6	18.2	22.5	17.8
1983	23.2	23.2	20.2	18.7	15.3	12.1	12.6	14.0	14.8	18.0	20.5	21.8	17.9
1984	22.7	21.8	20.2	19.0	13.6	11.4	12.4	13.2	14.9	16.0	18.3	20.4	17.0
1985	21.9	23.2	20.4	16.7	15.0	14.8	12.8	14.6	15.7	16.4	18.5	21.0	17.6
1986	22.2	22.0	20.2	17.1	15.2	13.6	13.6	14.1	15.2	18.5	18.4	21.0	17.6
1987	22.6	22.9	22.3	18.1	15.2	14.2	13.8	14.0	15.2	17.2	20.2	21.6	18.1
1988	21.8	22.6	21.1	19.0	15.2	13.7	12.9	13.1	14.9	16.9	19.6	20.9	17.6
1989	23.0	23.1	20.2	19.0	15.6	13.9	13.6	13.5	15.6	17.2	20.1	21.3	18.0
1990	22.9	21.1	19.9	17.1	15.1	13.2	12.8	13.9	15.2	16.1	18.8	20.8	17.2
1991	22.5	22.7	20.1	18.3	15.5	13.9	13.5	14.1	15.5	17.3	19.3	20.0	17.7
1992	23.3	22.1	21.6	18.3	14.8	13.3	12.8	13.8	15.6	16.3	19.7	20.9	17.7
Mean	22.8	22.4	20.9	18.3	15.5	13.4	13.0	13.8	15.1	17.0	19.2	21.4	17.8

Tabla A.7-5

Temperatura Media Mínima Mensual en
Concepción-Carriel Sur

Latitude : 36° 46' South
Longitude: 73° 03' West
Elevation: 12 m

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
1961	10.5	9.8	10.1	7.4	8.2	4.0	6.6	7.7	5.6	7.3	8.1	9.1	7.9
1962	10.3	10.0	10.2	6.4	6.3	6.5	2.8	6.1	4.6	7.0	9.9	11.2	7.6
1963	10.2	11.3	8.8	8.6	5.3	5.2	5.9	7.2	5.3	7.6	7.2	9.4	7.7
1964	10.9	9.5	8.3	7.1	7.4	3.8	4.5	4.4	4.6	7.5	8.7	11.2	7.3
1965	11.0	11.0	9.9	7.1	5.5	8.6	5.8	4.1	3.6	6.2	8.5	9.6	7.6
1966	10.1	8.7	9.0	9.5	7.2	7.4	5.6	4.8	4.3	4.7	8.5	9.8	7.5
1967	11.1	7.9	8.0	6.4	9.1	2.7	3.9	4.3	4.9	7.5	8.4	9.5	7.0
1968	9.1	10.4	9.1	7.5	7.7	9.6	5.2	5.7	7.3	4.6	9.0	9.3	7.9
1969	10.4	7.7	7.9	8.0	7.4	6.6	6.6	5.0	5.8	5.7	7.5	9.3	7.3
1970	9.9	9.2	8.6	7.9	6.6	5.5	4.9	3.4	4.7	5.5	7.2	8.8	6.9
1971	9.1	9.2	6.5	5.1	7.1	4.2	7.7	5.2	5.7	7.0	8.0	9.3	7.0
1972	10.7	9.7	7.0	7.1	8.8	8.1	4.9	6.7	6.3	6.1	8.8	9.7	7.9
1973	9.2	9.6	8.6	6.9	5.6	5.7	3.9	3.8	3.3	7.5	6.5	8.9	6.6
1974	9.9	9.9	8.3	5.3	8.3	6.0	4.6	4.6	4.6	6.2	7.7	8.5	7.0
1975	10.1	10.6	8.3	8.5	7.6	6.8	5.4	4.2	5.2	5.5	7.6	8.4	7.4
1976	9.2	9.8	7.2	5.7	7.4	6.0	4.1	5.0	4.7	7.3	8.6	10.4	7.1
1977	11.3	10.1	8.1	7.8	8.5	7.2	6.3	6.1	6.5	7.8	7.8	11.0	8.2
1978	9.4	10.5	7.6	7.3	7.9	7.0	8.8	4.3	7.7	6.6	9.2	9.9	8.0
1979	9.9	10.2	8.9	6.6	7.3	3.9	5.2	7.7	5.1	5.9	9.0	10.8	7.5
1980	11.5	12.6	10.1	7.6	8.8	6.2	6.4	7.3	5.6	5.8	7.0	9.9	8.2
1981	11.4	10.3	10.7	9.6	9.6	6.7	7.0	5.8	5.5	6.9	7.3	8.9	8.3
1982	11.2	10.4	9.3	8.6	9.1	6.6	7.8	6.7	8.0	7.4	8.1	10.4	8.6
1983	12.5	10.4	9.3	8.1	6.3	4.6	4.1	6.4	4.8	8.0	9.2	11.4	7.9
1984	11.4	9.6	10.3	6.7	7.3	4.1	6.1	5.0	7.3	7.9	8.9	10.9	8.0
1985	11.3	10.2	9.1	6.5	7.5	9.6	5.8	4.6	6.6	7.3	9.8	9.5	8.2
1986	9.8	10.3	8.2	8.2	8.6	7.7	6.3	7.0	6.5	9.4	8.5	10.1	8.4
1987	9.9	11.4	11.4	9.4	6.9	7.2	8.2	6.8	6.2	8.6	9.9	10.0	8.8
1988	10.3	11.7	10.2	8.9	5.7	6.5	4.7	5.8	5.6	6.3	8.8	10.3	7.9
1989	11.4	11.4	8.6	7.4	6.9	7.7	5.9	5.9	5.9	7.5	9.2	11.7	8.3
1990	10.8	11.5	8.8	9.0	7.2	5.4	5.7	6.6	6.6	6.4	7.5	9.8	7.9
1991	10.1	9.5	9.9	9.7	8.2	6.5	6.4	5.1	6.9	6.3	9.0	10.8	8.2
1992	11.8	9.8	11.5	8.0	8.8	6.0	4.4	6.9	6.6	6.6	9.5	10.1	8.3
Mean	10.5	10.1	9.0	7.6	7.5	6.2	5.7	5.6	5.7	6.8	8.4	9.9	7.8

Tabla A.7-6

Humidad Relativa Media Mensual en
Concepción-Carriel Sur

Latitude : 36° 46' South

Longitude: 73° 03' West

Elevation: 12 m

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
1961	60	52	63	64	76	73	84	76	63	69	54	51	65
1962	51	57	61	60	69	77	59	72	60	56	57	49	61
1963	48	52	52	61	62	71	74	70	65	64	63	55	61
1964	57	55	55	67	73	74	78	69	61	57	64	72	65
1965	62	65	62	72	78	84	83	75	73	72	72	69	72
1966	61	58	-	-	-	-	-	-	-	64	63	63	-
1967	62	53	56	55	71	68	64	70	70	70	65	61	64
1968	58	64	65	75	77	82	78	70	67	58	62	57	68
1969	54	52	51	59	70	70	72	68	61	57	55	48	60
1970	54	56	59	66	69	79	78	64	63	59	57	64	64
1971	54	62	56	55	75	75	85	77	75	70	53	55	66
1972	55	56	64	67	79	82	78	78	71	69	67	61	69
1973	56	60	63	69	75	80	74	73	65	75	63	62	68
1974	62	64	66	59	76	80	78	69	64	64	64	60	67
1975	65	68	65	72	75	78	73	72	71	67	67	62	70
1976	59	61	57	60	74	77	74	73	66	64	63	59	66
1977	54	54	59	71	82	85	80	70	64	68	58	57	67
1978	54	59	51	62	75	77	79	60	73	63	60	53	64
1979	-	-	-	-	-	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-	-	-	-	-	-
1981	-	-	-	-	-	-	-	-	-	-	-	-	-
1982	-	-	-	-	-	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-	-	-	-	-	-
1985	63	53	61	67	78	79	76	66	-	67	70	58	-
1986	-	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-	-
1988	52	57	57	55	62	70	60	67	65	56	59	55	60
1989	55	54	60	55	65	76	68	68	55	58	53	59	61
1990	48	60	58	61	71	74	78	77	76	73	63	64	67
1991	47	43	55	69	74	74	72	65	60	46	53	61	60
1992	59	57	69	66	77	77	69	77	69	63	62	61	67
Mean	56	57	59	64	73	77	75	71	66	64	61	59	65

Tabla A.7-7

Velocidad Máxima Mensual y Dirección del Viento en Concepción-Carriel Sur

Latitude : 36° 46' South
 Longitude: 73° 03' West
 Elevation: 12 m

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Ann.
1961	N 24	W 19	NW 18	W 8	N 36	N 47	NW 24	NW 24	NW 44	VAR. 18	W 24	SW 24	N
1962	W 24	SW 24	SW 26	NW 18	NW 12	N 44	S 37	N 36	N 24	VAR. 18	S/NW 24	SW/W 18	N
1963	SW 24	NW 12	N 23	SW 7	N 7	N 22	N 22	N 40	VAR. 11	NW 15	N 22	SW 8	N
1964	N 20	N 21	S 33	VAR. 7	N 13	N 18	N 13	N 20	NW 10	SW 10	SW 10	N 13	S
1965	W 21	NW 14	SW 15	N 21	N 21	NW 27	N 36	N 27	VAR. 6	W/SW 9	W 15	SW/N 25	N
1966	SW 26	SW 30	SW 26	N 20	N 25	N 44	N 26	N 35	N 20	SW 24	N 27	SW 24	N
1967	S 16	SW 21	N 18	N 20	N 25	N 29	N 24	N 20	N/W 17	N 17	NW 17	W 12	N
1968	SW 30	W 26	SW 24	N 30	SE 24	N 24	N 25	N 30	N 25	NW 24	N 34	SW 24	N
1969	SW 26	SW 22	SW 20	N 34	NW 30	N 38	N 30	N 24	N 24	SW 22	N 25	SW 28	N
1970	SW 24	SW 28	SW 18	S 20	N 34	N 38	N 45	N 26	N 26	SW 22	SW 24	SW 24	N
1971	VAR. 26	VAR. 20	SW 26	W 22	N 30	NW 35	N 36	N 34	N 30	N 22	SW 28	N 30	N
1972	SW 24	SW 28	N/SW 30	SW 20	N 48	NE 44	N 34	N 38	N 30	N/SW 24	SW 24	S 24	N
1973	S 28	S 22	SW 19	N 24	N 34	NE 46	N 24	VAR. 18	N 24	N 30	SW 28	SW 30	NE
1974	SW 24	SW 28	SW 24	SW 20	N 40	N 50	N 30	N 22	N 32	N 25	N 25	SW 22	N
1975	SW 34	N 30	SW 24	N 40	N 35	N 45	N 50	NW 18	N/SW 28	N/SW 20	N 30	SW 30	N
1976	VAR. 24	SW 22	SW 30	SW 20	N 40	N 50	N 28	VAR. 22	N 38	N 36	VAR. 26	SW 22	N
1977	SW 28	SW 35	N 30	N 24	N 38	N 40	N 60	N 30	N 24	N 32	N 30	SW 30	N
1978	SW 30	N/SW 30	SW 24	SW 24	N 50	N 40	N 60	N 26	N 40	N 36	N 40	N/SW 30	N
1979													
1980													
1981													
1982													
1983													
1984													
1985	SW 28	SW 28	NE 34	SW 24	N 45	N 40	N 40	NW 25	N 28	N 42	N 38	SW 30	N
1986													
1987													
1988													
1989													
1990													
1991													
1992													
	SW 34	SW 35	NE 34	N 40	N 50	N 50	N 60	N 40	NW 44	N 42	N 40	SW 30	N

Tabla A.7-8 Precipitación Mensual en
Concepción-Carriel Sur

Latitude : 36° 46' South
Longitude: 73° 03' West
Elevation: 12 m

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
1961	72.4	0.4	68.6	18.4	67.1	181.3	303.1	191.3	183.2	38.6	1.9	-	1126.3
1962	0.0	0.0	23.9	85.7	38.1	210.1	21.2	175.2	66.7	45.8	21.9	0.0	688.6
1963	0.0	11.7	30.8	47.6	60.6	196.8	229.5	349.1	129.8	77.9	96.7	8.0	1238.5
1964	36.8	9.7	6.5	22.1	88.5	128.5	117.4	220.0	82.3	6.0	35.5	135.4	888.7
1965	5.0	40.9	12.4	130.3	120.5	221.2	326.8	333.3	61.3	73.5	170.6	33.0	1528.8
1966	0.6	1.5	11.4	138.0	140.0	402.4	360.0	258.7	35.9	44.3	14.9	99.9	1507.6
1967	29.9	38.6	14.1	15.1	263.4	141.9	259.3	128.9	83.2	62.6	20.3	12.1	1069.4
1968	1.6	17.7	19.9	50.2	25.7	212.3	49.8	64.1	105.4	57.3	57.1	79.2	740.3
1969	-	22.5	8.9	92.2	201.2	330.3	207.1	184.6	80.4	70.7	34.1	0.0	1232.0
1970	16.6	2.2	15.1	39.3	129.2	224.3	206.1	78.9	53.2	28.4	24.2	38.3	855.8
1971	8.3	33.3	7.9	43.2	205.3	181.1	199.5	145.1	56.2	34.0	3.4	52.9	970.2
1972	57.7	1.2	64.4	23.7	426.3	213.3	174.3	190.9	130.5	155.2	18.2	7.2	1462.9
1973	5.5	1.1	10.9	30.1	161.2	232.8	151.2	74.2	37.8	161.0	0.0	23.5	889.3
1974	27.2	2.1	10.0	-	136.1	480.9	123.8	62.2	76.6	31.3	48.0	12.0	1010.2
1975	3.9	41.4	7.5	95.3	279.3	274.0	249.0	96.2	46.5	82.8	41.8	10.4	1228.1
1976	12.0	9.7	22.9	-	94.0	228.3	72.1	110.6	68.0	149.5	45.6	46.1	858.8
1977	43.7	0.0	35.5	44.6	205.0	246.3	431.3	147.9	69.7	166.5	72.5	6.5	1469.5
1978	2.5	16.7	0.0	2.6	169.9	158.4	496.0	100.9	154.7	98.0	93.7	0.0	1293.4
1979	41.7	0.9	3.3	52.6	144.6	59.2	238.2	223.8	115.6	21.3	52.8	69.1	1023.1
1980	1.0	61.6	12.5	174.8	367.2	264.7	199.6	102.2	81.6	0.6	17.7	57.0	1340.5
1981	78.3	7.9	34.5	98.4	501.0	93.9	195.5	104.4	39.4	27.1	3.4	2.6	1186.4
1982	83.7	24.3	4.4	24.7	211.7	357.2	225.4	130.4	172.5	86.9	33.7	0.0	1354.9
1983	24.3	6.7	20.0	67.8	115.9	225.6	204.2	126.1	57.3	24.9	0.0	28.1	900.9
1984	7.9	33.0	14.9	24.1	389.9	205.9	255.4	75.6	112.1	163.7	10.4	0.1	1293.0
1985	45.1	1.2	19.1	80.3	185.1	167.2	211.0	26.2	92.0	67.0	44.2	0.5	938.9
1986	6.1	10.0	47.2	142.0	259.2	223.9	85.7	180.0	69.0	27.5	207.5	6.5	1264.6
1987	0.0	4.0	58.7	55.1	137.1	112.8	436.0	207.1	127.6	37.3	20.3	1.4	1197.4
1988	8.5	-	10.7	24.6	81.4	210.5	287.1	222.7	90.3	26.2	18.6	15.0	995.6
1989	3.3	3.3	28.3	2.5	36.8	259.8	225.8	176.0	35.4	33.3	4.9	88.2	897.6
1990	6.4	32.7	126.8	50.4	97.3	104.5	98.1	134.6	114.8	50.7	27.2	4.5	848.0
1991	8.7	3.1	9.0	115.5	267.3	142.8	234.2	87.7	62.4	64.0	47.3	97.1	1139.1
1992	0.0	17.7	48.2	112.7	449.7	293.5	100.5	166.0	122.9	56.5	15.3	71.9	1454.9
Mean	20.0	14.3	25.3	59.5	189.2	218.3	217.9	152.3	87.9	64.7	40.7	31.5	1121.7

Tabla A.7-9 Probable Ocurrencia de Inundaciones

Return Period (Year)	Method		
	Hazen	Gumbel	Pearson III
2	7150	7166	7113
5	9235	9534	9176
10	10530	11102	10545
20	11825	12605	11839
50	13453	14552	13601
100	14672	16010	14926
200	15868	17464	16277

Tabla A.7-10

Cálculo del Nivel de Flujo de Agua en el
Puente Biobío Existente (Río Abajo)

Name of Flood	A (m ²)	P (m)	R (m)	I	n	v (m/s)	Q (m ³ /s)	Flood Discharge (m ³ /s)	Water Level (E.L.m)
Flood of May 29, 1972	6248	1428.8	4.373	1600	0.031	2.16	13474.7	13110	8.46
Flood of May 31, 1991	5822	1428.2	4.076	1600	0.033	1.93	11255.7	10935	8.15
50-year Probable Flood	6674	1429.4	4.669	1600	0.032	2.18	14566.4	14552	8.96

Tabla A.7-11(1) Terremotos con Magnitud Richter
 $M_s \geq 4.5$ para la Región de Concepción
entre $36^\circ S$ a $38^\circ S$

Date	Time	Latitude	Longitude	Depth (km)	Magnitude
1570 /Feb. / 8	5 : 0	36 75	73 0	0	8.3
1657 /Mar. /15	23 :30	36 83	73 3	0	8.0
1751 /May /25	5 :30	36 83	73 3	0	8.5
1835 /Feb. /20	15 :30	36 83	73 3	0	8.1
1923 /Nov. / 6	17 :15	38 0	73 50	0	6.2
1928 /Jan. /16	10 :26	36 0	70 0	0	5.2
1931 /Oct. / 8	1 :12	37 50	68 0	0	4.7
1932 /Jan. / 4	2 :41	37 0	70 50	0	5.5
1932 /Mar. / 1	19 :10	36 50	70 0	290	5.5
1937 /Jan. /30	10 :31	36 0	72 0	100	5.5
1937 /Dec. /24	3 :23	37 0	72 0	70	5.5
1939 /Jan. /25	3 :32	36 25	72 25	55	7.8
1953 /May / 6	17 :16	36 50	73 0	60	7.6
1955 /Oct. / 6	11 :30	36 0	70 0	150	6.5
1960 /May /21	10 :20	37 50	73 50	0	7.5
1960 /May /22	10 :30	38 0	73 50	0	6.5
1960 /May /22	10 :32	37 50	73 0	0	7.4
1960 /May /23	5 :13	38 0	73 50	0	6.4
1960 /May /23	9 :52	37 50	73 0	0	5.9
1960 /May /26	22 :59	38 0	73 0	0	5.3
1960 /May /27	10 :25	38 0	75 0	60	5.0
1960 /May /29	7 :39	38 0	72 50	0	6.5
1960 /Jun. / 1	5 : 2	38 0	73 0	0	5.7
1960 /Jun. /20	2 : 1	38 0	73 50	0	7.0
1960 /Jul. /11	8 : 6	37 0	73 0	0	5.4
1960 /Jul. /21	4 : 1	38 0	73 50	0	5.5
1960 /Nov. /27	21 :24	37 20	73 40	61	5.3
1961 /May /11	8 :38	37 20	73 60	47	6.3
1961 /Oct. /18	16 :51	36 70	73 0	0	6.5
1961 /Oct. /19	11 :19	37 10	70 60	149	6.2
1962 /Feb. /14	6 :36	37 80	72 50	45	7.3
1962 /Feb. /27	12 :40	37 40	72 50	63	6.4
1962 /Jun. /25	6 :25	37 30	73 50	40	5.8
1963 /Feb. / 6	8 :21	38 0	70 50	0	5.3
1963 /Oct. /20	0 :22	37 70	73 20	35	4.7
1964 /Oct. /19	21 :17	36 50	73 30	27	4.6

(to be continued)

Tabla A.7-11(2) Continuación de la Tabla A7-11(1)

Date	Time	Latitude	Longitude	Depth (km)	Magnitude
1965 /Jan./18	0 : 3	37 70	72 90	52	5.2
1965 /Oct./ 5	3 : 38	36 0	72 50	17	5.2
1966 /Jan./14	21 : 49	37 90	73 50	36	4.7
1966 /Apr./22	3 : 6	37 62	73 33	37	5.4
1966 /Aug./31	19 : 39	37 73	72 70	32	4.6
1967 /Aug./29	3 : 55	36 50	69 70	55	4.6
1969 /Jan./13	6 : 36	37 10	73 60	33	4.9
1969 /Jun./ 8	14 : 52	36 50	73 60	30	4.7
1971 /Feb./18	7 : 47	36 73	73 34	12	6.3
1971 /Jun./ 7	21 : 30	37 65	73 88	23	4.7
1972 /Mar./20	20 : 12	37 92	74 85	33	4.7
1973 /Jul./31	5 : 41	37 65	73 37	32	5.5
1974 /Aug./ 9	22 : 17	37 23	73 62	18	4.7
1975 /May /22	14 : 59	37 96	73 92	33	4.9
1975 /May /28	13 : 57	37 92	73 41	24	5.5
1975 /Jun./18	4 : 16	36 37	65 67	0	4.6
1975 /Jul./11	10 : 41	37 75	73 68	43	4.7
1976 /May /22	15 : 53	36 13	71 48	91	4.7
1976 /Oct./13	11 : 30	36 50	73 9	27	4.8
1978 /Oct./ 6	15 : 7	37 73	72 79	33	4.6
1979 /Jun./19	20 : 24	36 42	71 94	61	4.9
1979 /Dec./26	19 : 43	36 0	71 34	92	5.6
1980 /Mar./29	17 : 49	37 95	73 52	11	4.8
1980 /May / 9	6 : 17	37 92	73 65	33	4.6
1980 /May /10	23 : 50	37 74	73 73	33	4.6
1980 /Dec./27	12 : 32	36 51	73 14	14	4.9
1981 /Dec./15	12 : 31	36 28	71 36	95	5.0
1982 /Feb./ 9	3 : 15	37 33	73 39	33	4.7
1982 /Feb./ 9	13 : 42	37 47	73 31	33	4.8
1982 /Apr./30	21 : 3	37 61	73 79	33	4.9
1982 /Aug./ 5	8 : 15	37 62	73 1	33	4.7
1983 /Mar./ 1	12 : 7	36 80	72 95	45	4.9
1983 /Sep./14	0 : 47	36 42	73 9	30	5.0
1985 /Jun./ 2	16 : 26	37 73	73 65	33	5.5
1985 /Jun./13	1 : 58	36 54	72 34	55	4.7

Figura A.7-1 Documentación de Probabilidad (Distribución Normal-Log)

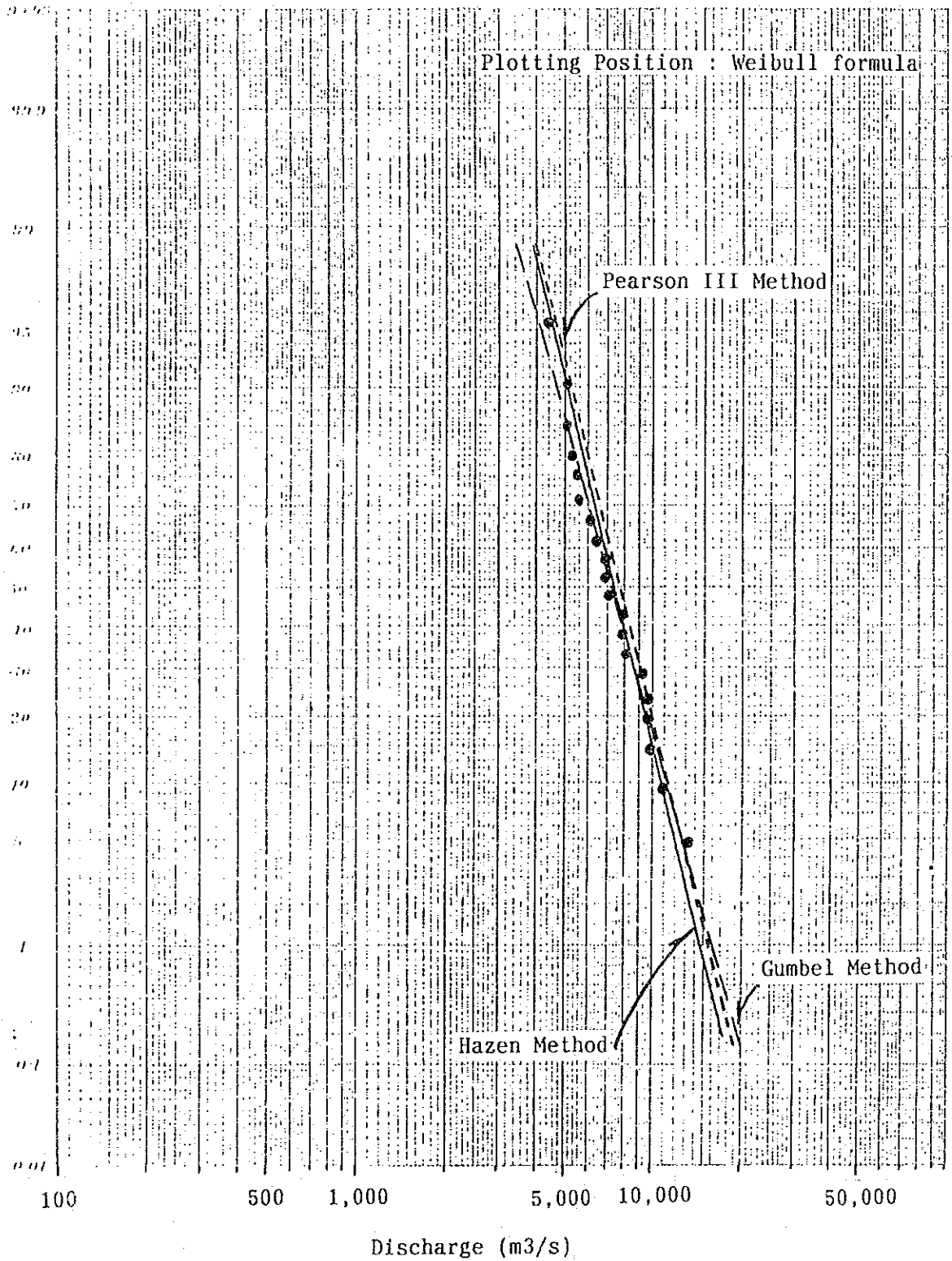
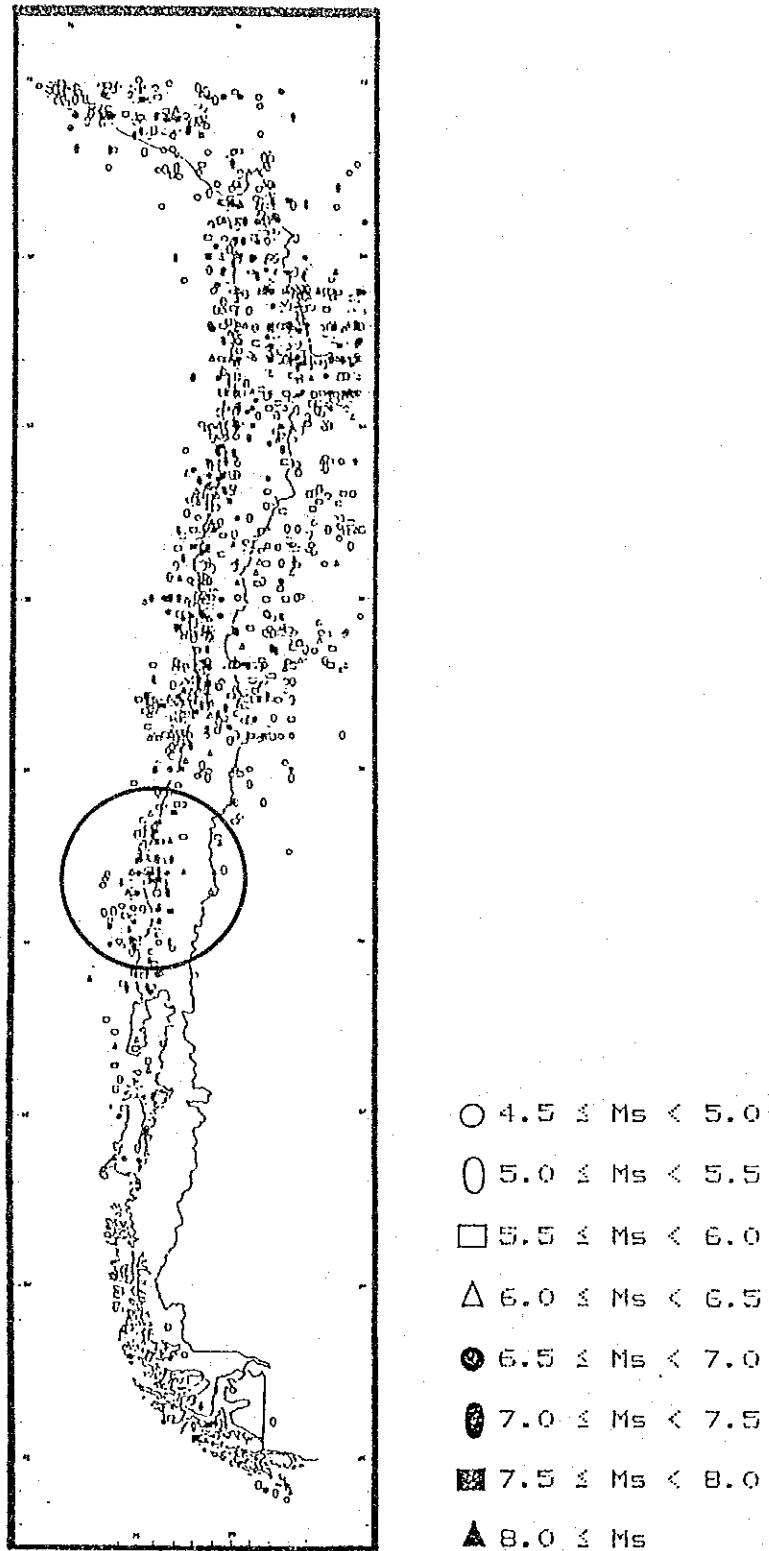
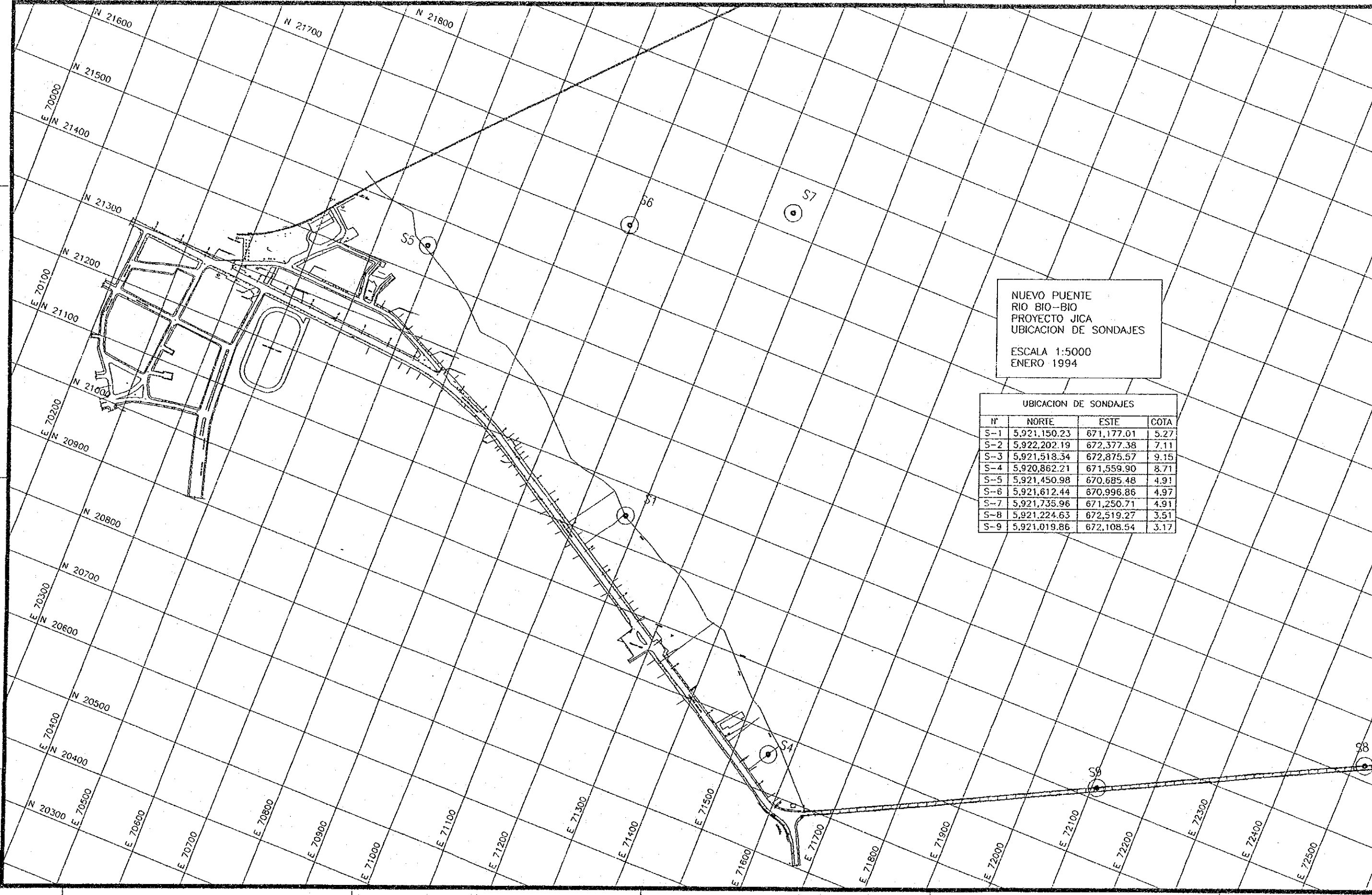


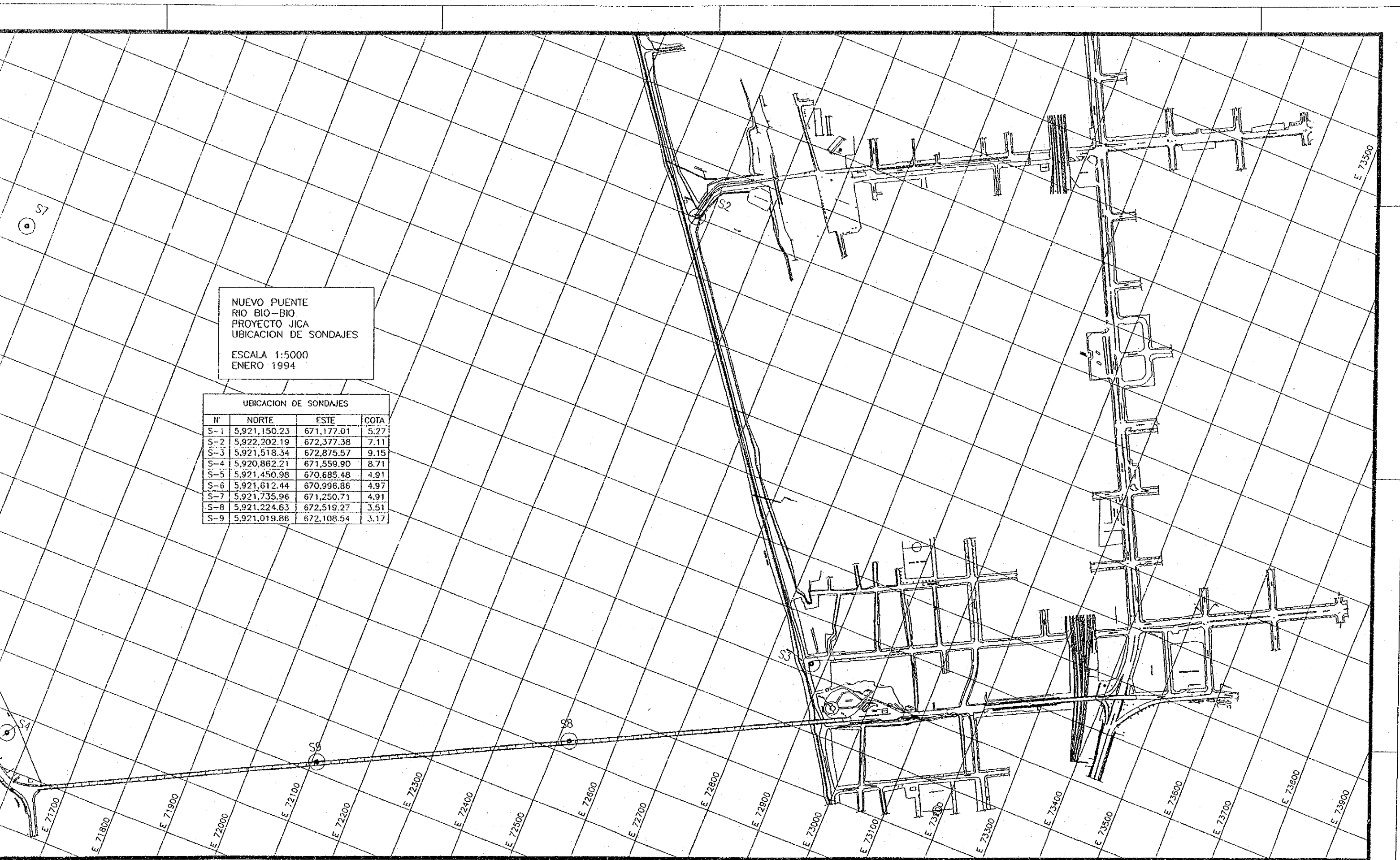
Figura A.7-2: Distribución de Terremotos con Magnitud Richter Ms en y en los Alrededores de Chile





NUEVO PUENTE
 RIO BIO-BIO
 PROYECTO JICA
 UBICACION DE SONDAJES
 ESCALA 1:5000
 ENERO 1994

UBICACION DE SONDAJES			
Nº	NORTE	ESTE	COTA
S-1	5,921,150.23	671,177.01	5.27
S-2	5,922,202.19	672,377.38	7.11
S-3	5,921,518.34	672,875.57	9.15
S-4	5,920,862.21	671,559.90	8.71
S-5	5,921,450.98	670,685.48	4.91
S-8	5,921,812.44	670,996.86	4.97
S-7	5,921,735.96	671,250.71	4.91
S-8	5,921,224.63	672,519.27	3.51
S-9	5,921,019.86	672,108.54	3.17



NUEVO PUENTE
 RIO BIO-BIO
 PROYECTO JICA
 UBICACION DE SONDAJES

 ESCALA 1:5000
 ENERO 1994

UBICACION DE SONDAJES			
N°	NORTE	ESTE	COTA
S-1	5,921,150.23	671,177.01	5.27
S-2	5,922,202.19	672,377.38	7.11
S-3	5,921,518.34	672,875.57	9.15
S-4	5,920,862.21	671,559.90	8.71
S-5	5,921,450.98	670,685.48	4.91
S-6	5,921,612.44	670,996.86	4.97
S-7	5,921,735.96	671,250.71	4.91
S-8	5,921,224.63	672,519.27	3.51
S-9	5,921,019.86	672,108.54	3.17

Figura A.7-3 Mapa de Localización de las Pruebas de Perforación

Asistecsa

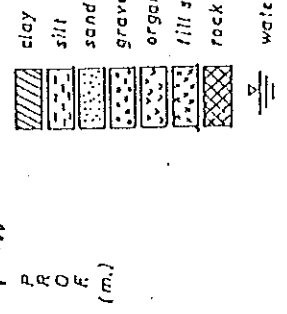
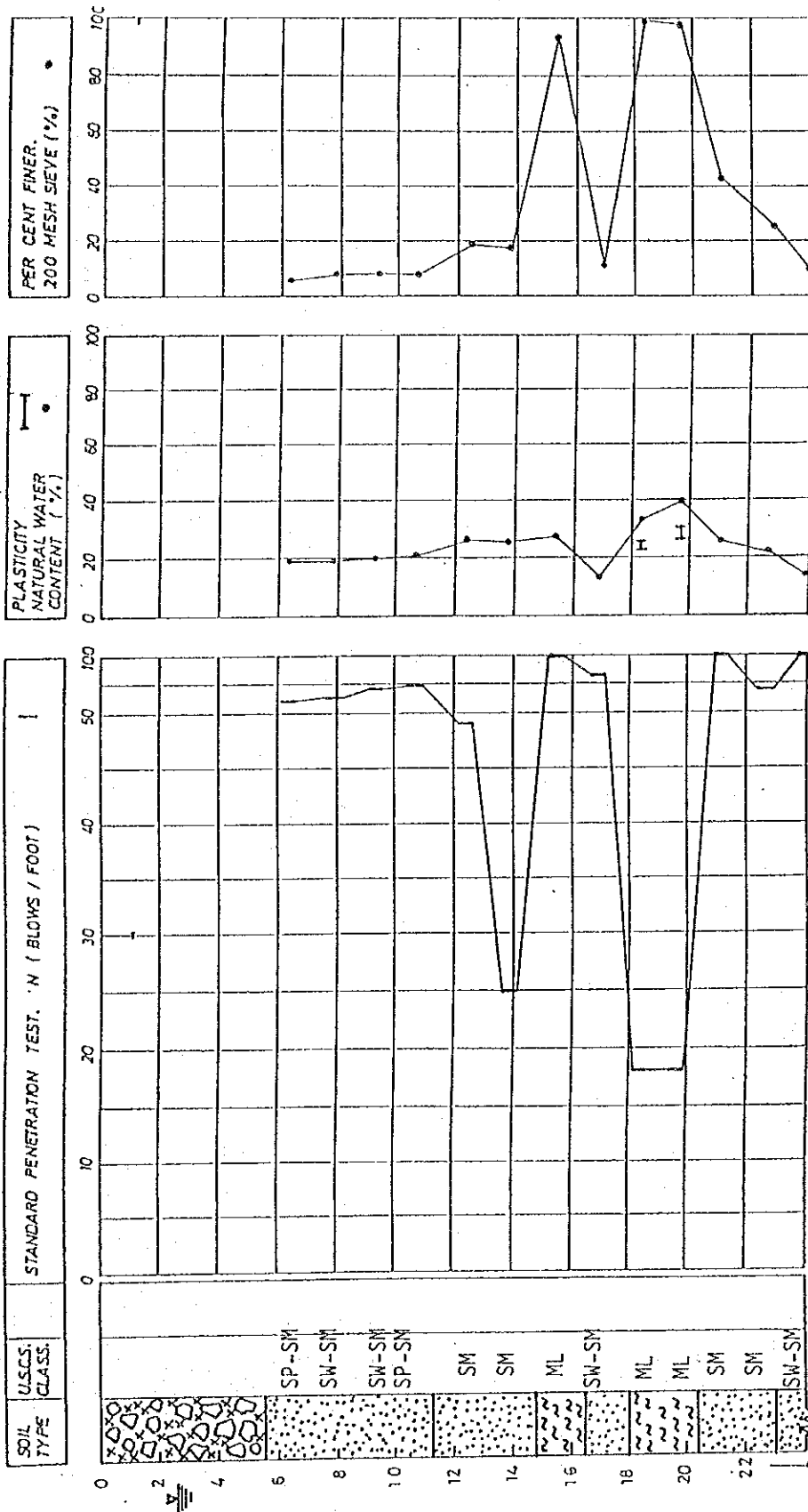
INGENIEROS CONSULTORES

WORK: Bío-Bío Bridge (JICA)

BORING: # S-2

Nº

TEST BY Asistecsa



Date: 12.12.93 13.12.93 13.12.93 14.12.93 15.12.93

Ground water table: -2.55 -2.50 -2.55 -2.55 -2.55

Observations:

Figura A.7-4 Fecha de las Pruebas de Perforación(2)

Asistecsa

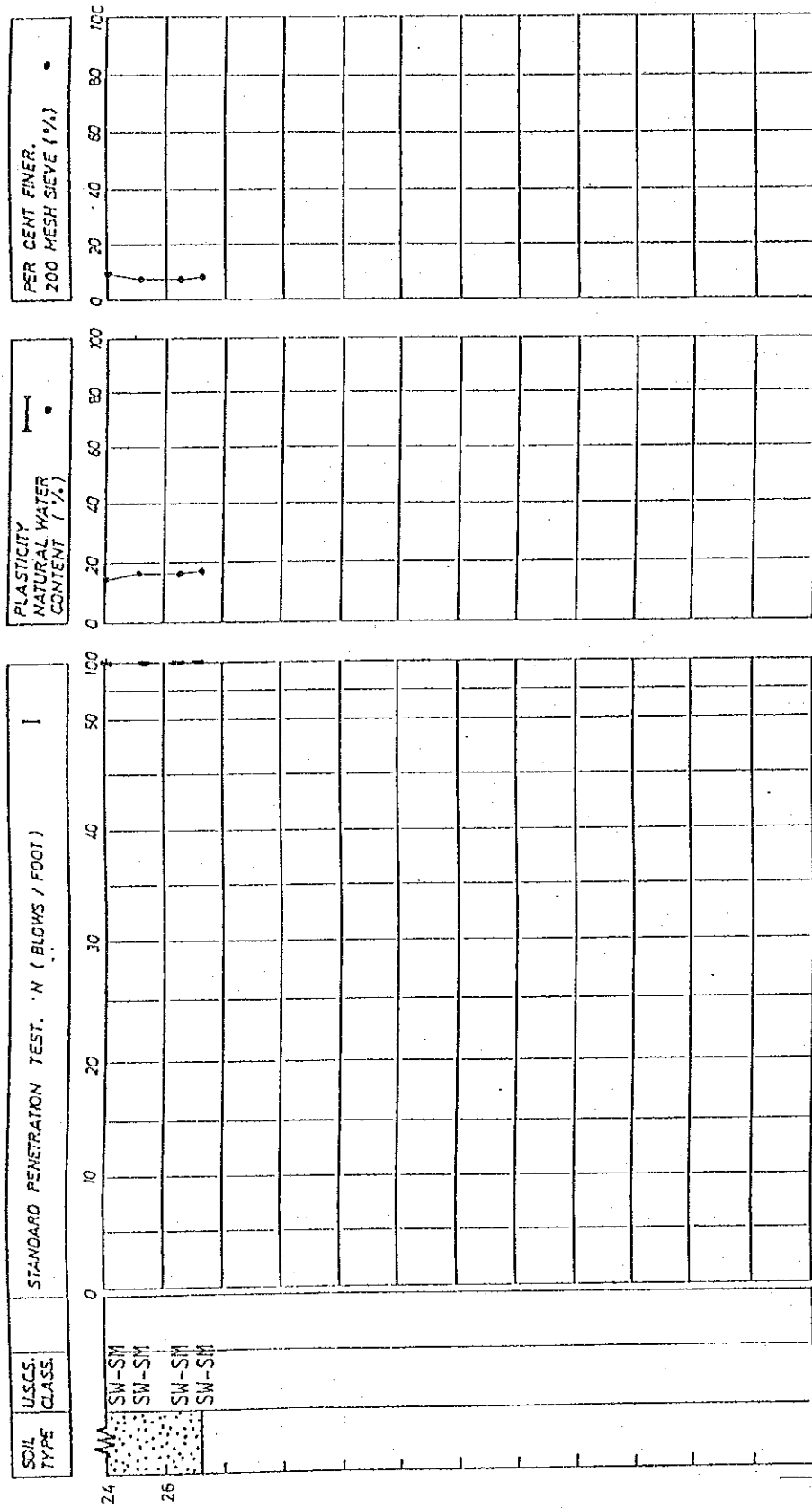
INGENIEROS CONSULTORES

WORK: Bío-Bío Bridge (JICA)

Nº

BORING: # S-2 (cont.)

TEST BY Asistecsa



- PROF. (m.)
- clay
 - silt
 - sand
 - gravel
 - organic soil
 - fill soil
 - rock
 - water table

Date.

Ground water table.

Observations.

Figura A.7-4 Fecha de las Pruebas de Perforación(3)

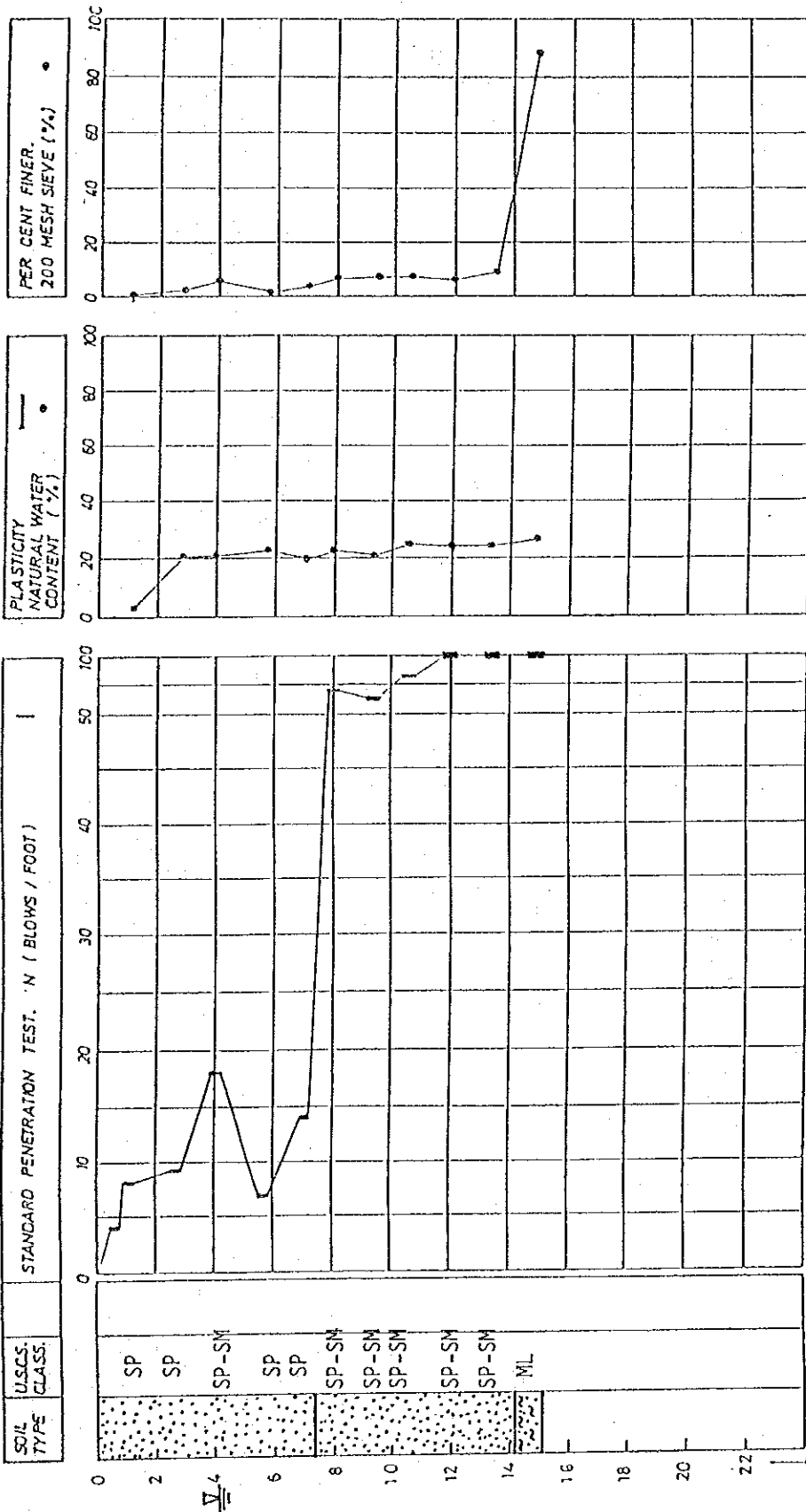
Asistecsa

WORK : Bío-Bío Bridge (JICA)
BORING : # S-3

Nº

TEST BY Asistecsa

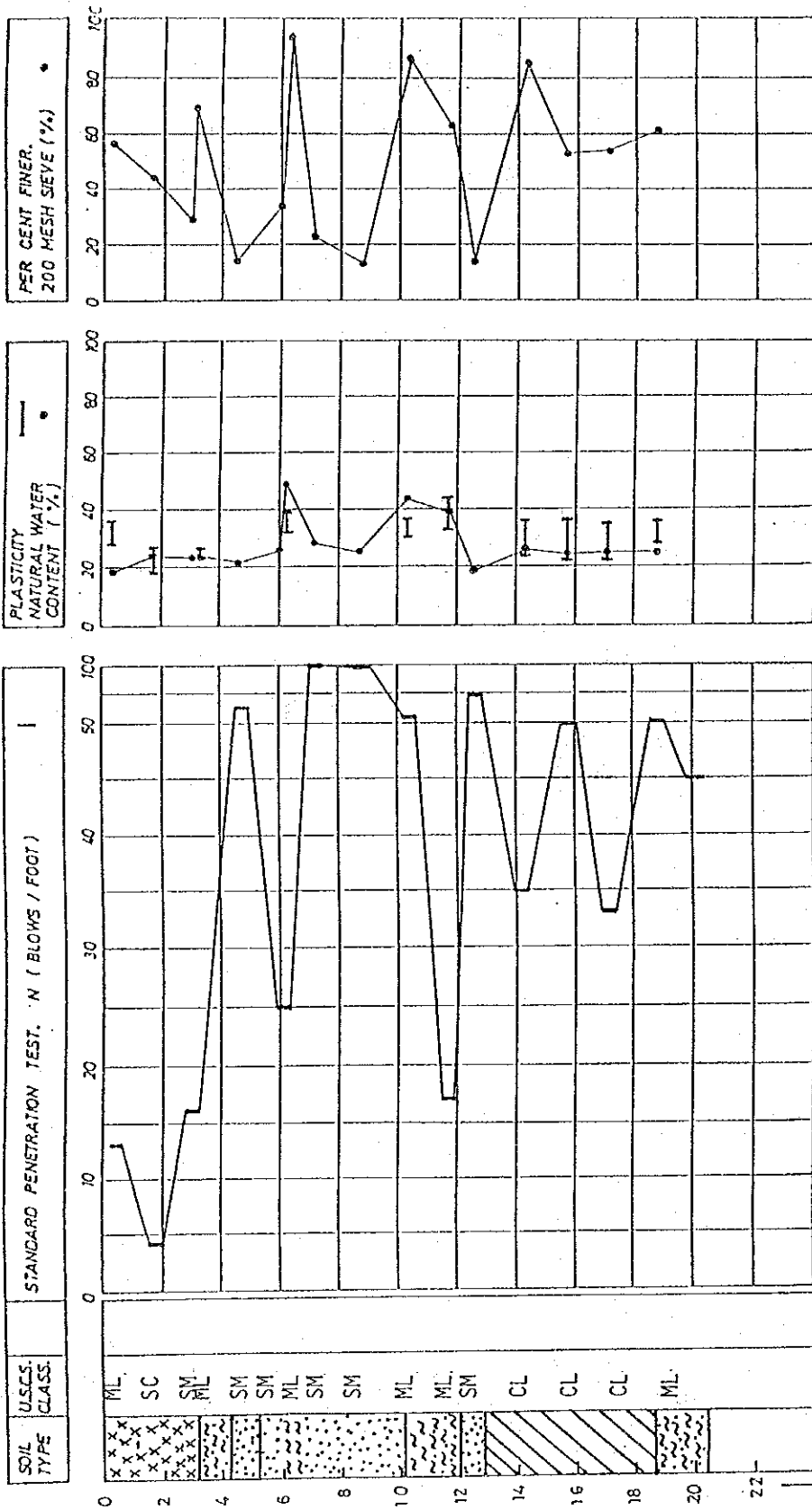
INGENIEROS CONSULTORES



- clay
- silt
- sand
- gravel
- organic soil
- fill soil
- rock
- water table

Date.	9.12.93	10.12.93
Ground water table.	-4.08	-4.07
Observations.		

Figura A.7-4 Fecha de las Pruebas de Perforación(4)



SOIL TYPE	USCS. CLASS.	STANDARD PENETRATION TEST. N (BLOWS / FOOT)	PLASTICITY NATURAL WATER CONTENT (%)	PER CENT FINER. 200 MESH SEIVE (%)
ML	ML	13	20	55
SC	SC	5	25	45
SM	SM	17	25	30
ML	ML	55	25	15
SM	SM	55	35	35
SM	SM	25	40	25
ML	ML	100	25	95
SM	SM	100	25	15
SM	SM	100	25	15
ML	ML	55	45	85
ML	ML	18	35	65
SM	SM	85	20	15
CL	CL	35	25	85
CL	CL	55	25	55
CL	CL	33	25	55
ML	ML	55	25	60

Date.	7.12.93	8.12.93
Ground water table.	-3.15	-3.15
Observations.		

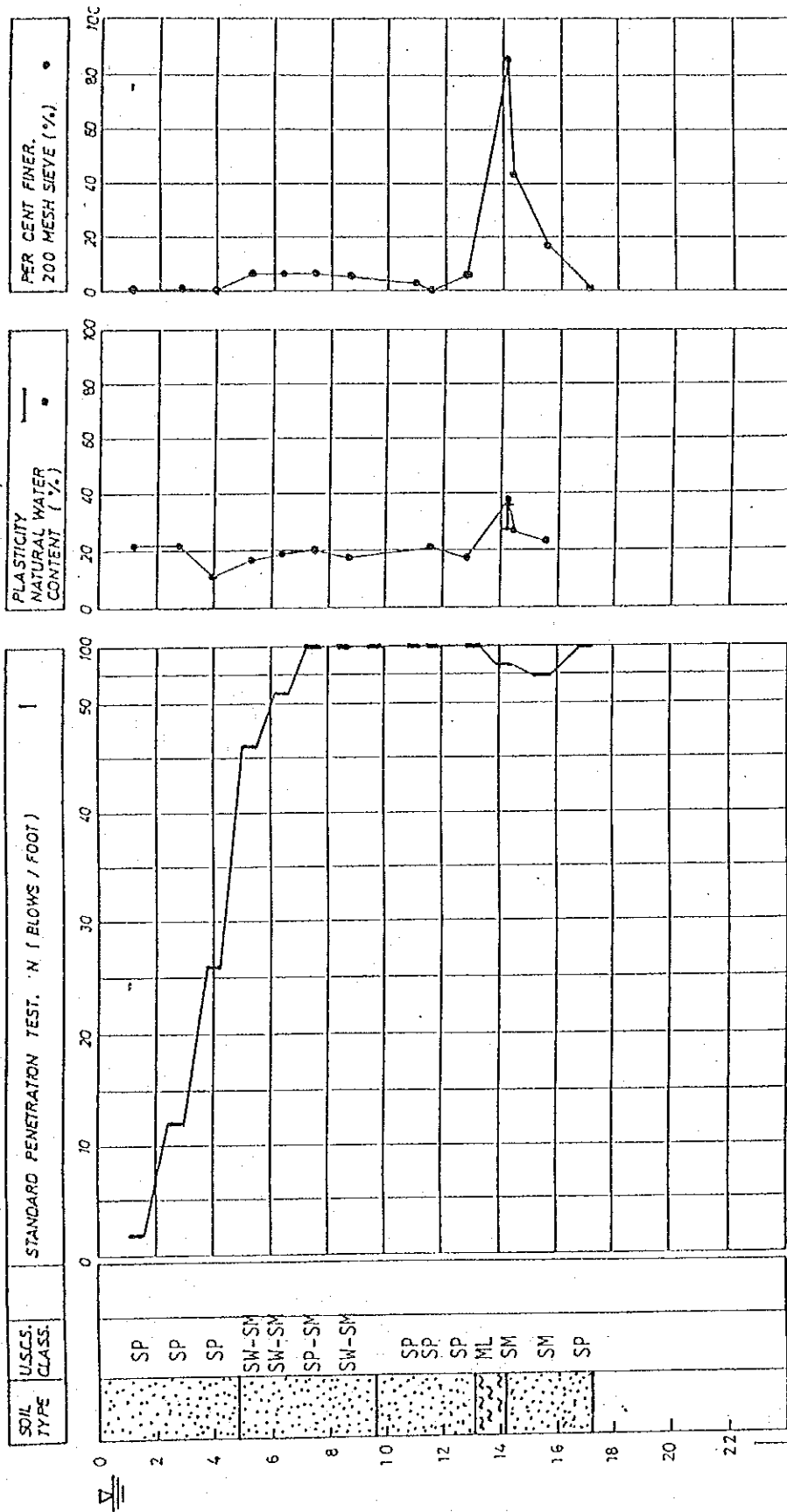
Figura A.7-4 Fecha de las Pruebas de Perforación(5)

Aristeca
INGENIEROS CONSULTORES

WORK : Bío-Bío Bridge (JICA)
BORING: # S-5

Nº

TEST BY Asistecsa



- clay
- silt
- sand
- gravel
- organic soil
- fill soil
- rock
- water table

Date.	19.12.93
Ground water table.	19.12.93
Observations.	-0.41 -0.43 -0.43

Figura A.7-4 Fecha de las Pruebas de Perforación(6)

Aristeca

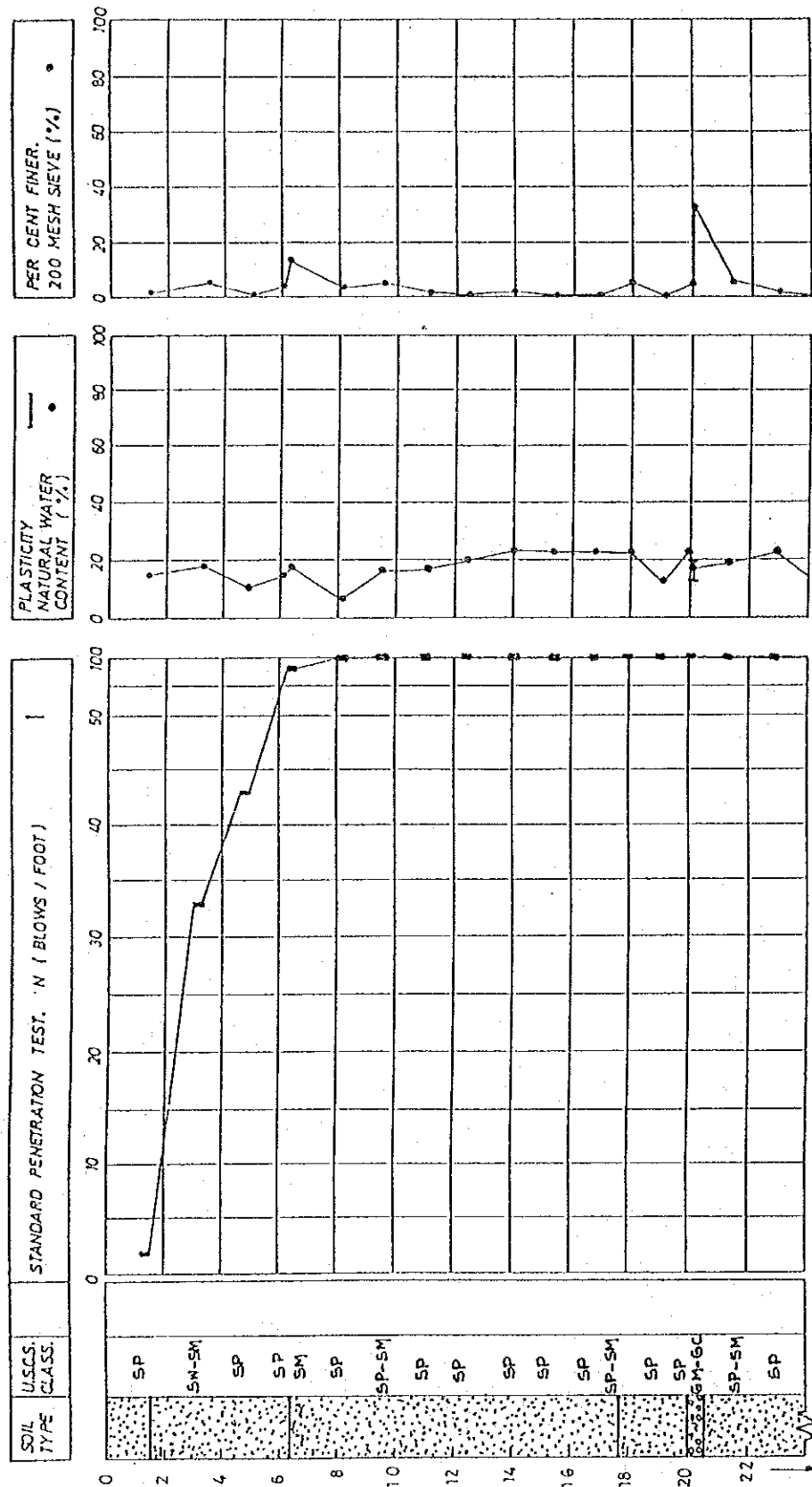
INGENIEROS CONSULTORES

WORK : BIO-BIO BRIDGE

BORING : # S-6

Nº

TEST BY ASISTECSA



- clay
- silt
- sand
- gravel
- organic soil
- fill soil
- rock
- water table

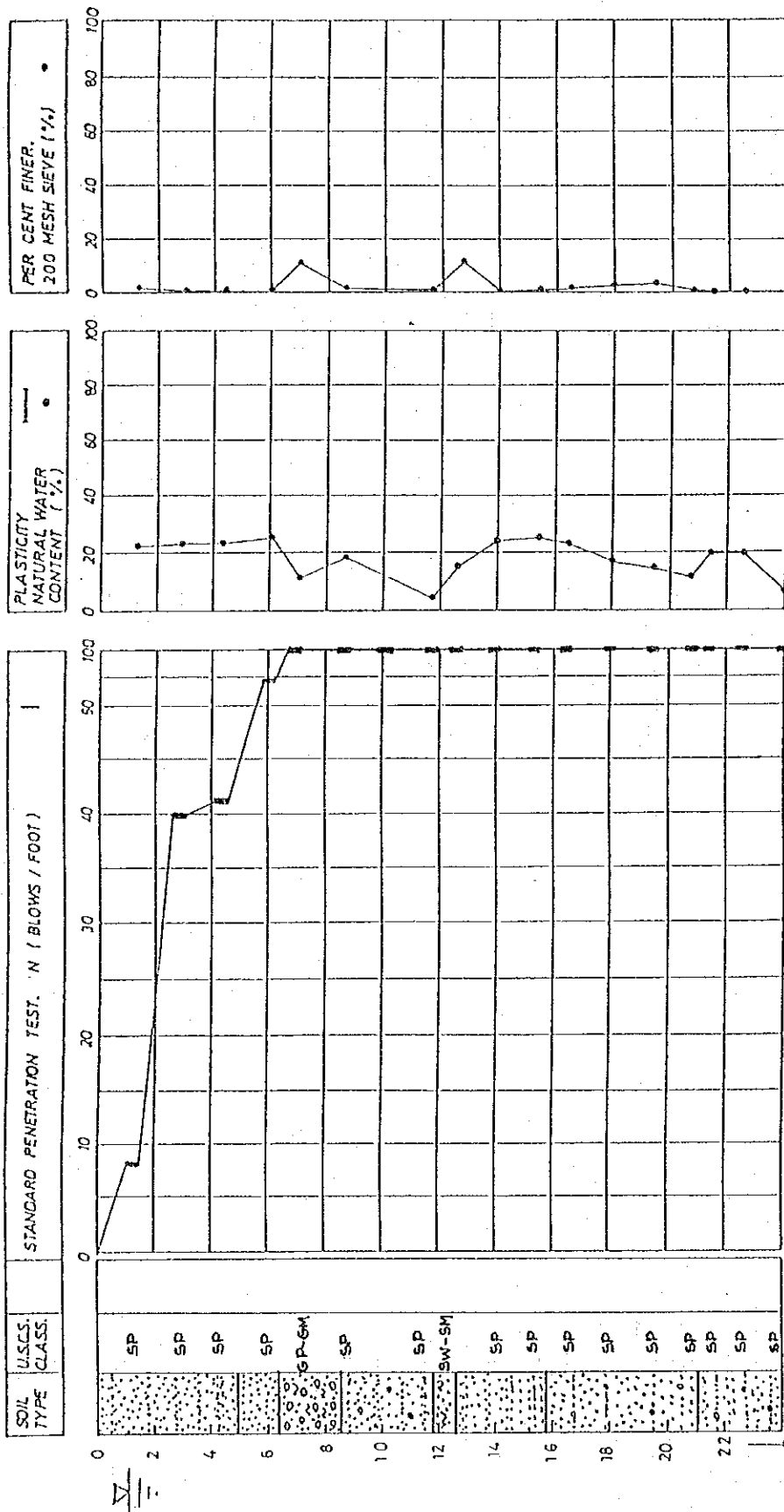
Date.	08.01.94	09.01.94	10.01.94	11.01.94	12.01.94
Ground water table.	-0.97	-0.95	-0.95	-0.95	-0.98
Observations.					

Figura A.7-4 Fecha de las Pruebas de Perforación(7)

Asistecsa
INGENIEROS CONSULTORES

WORK : B10-B10 BRIDGE
BORING : # S-7

Nº
TEST BY ASISTECSA



Date.	13.01.94	14.01.94	15.01.94
Ground water table.	-0.98	-0.96	-0.98
Observations.			

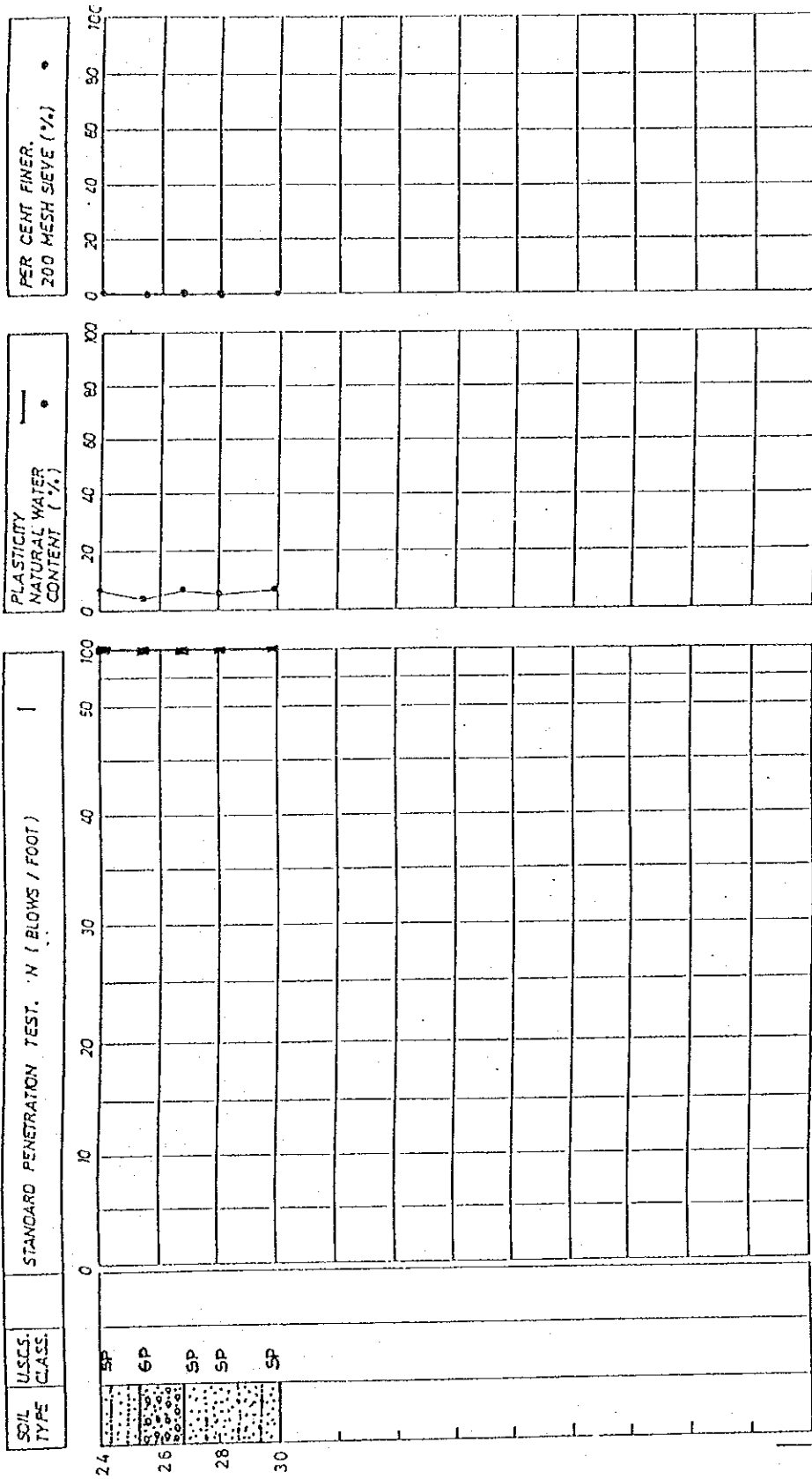
Figura A.7-4 Fecha de las Pruebas de Perforación(9)

Asistecsa
INGENIEROS CONSULTORES

WORK : BIO-BIO BRIDGE
BORING : # S-7

Nº

TEST BY ASISTECSA



- clay
- silt
- sand
- gravel
- organic soil
- fill soil
- rock
- water table

Date: _____

Ground water table: _____

Observations: _____

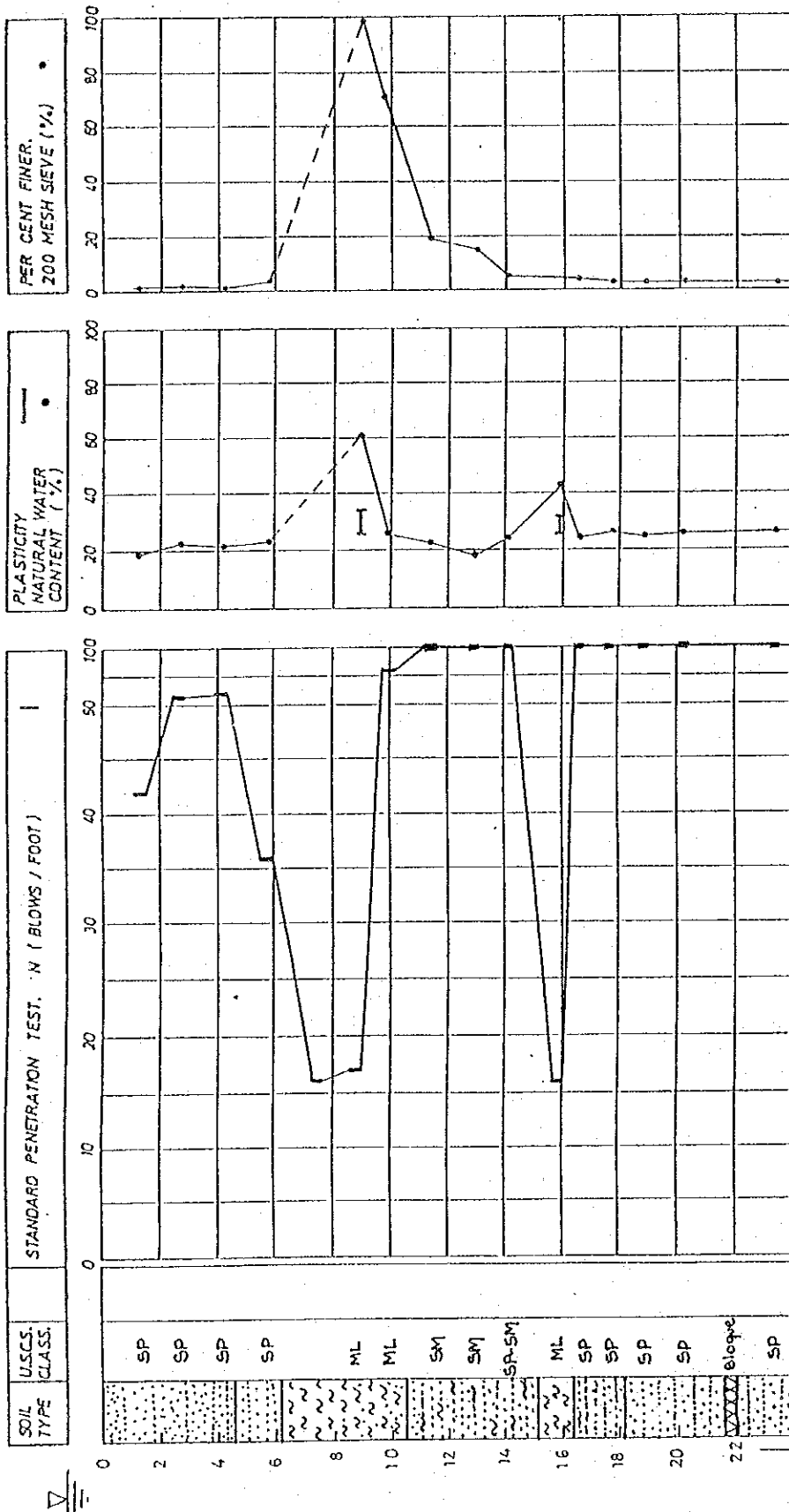
Figura A.7-4 Fecha de las Pruebas de Perforación(10)

Asistecsa
INGENIEROS CONSULTORES

WORK : BIO - BIO BRIDGE
BORING : # S-8

Nº

TEST BY ASISTECOSA



PROF (m.)

- clay
- silt
- sand
- gravel
- organic soil
- fill soil
- rock
- water table

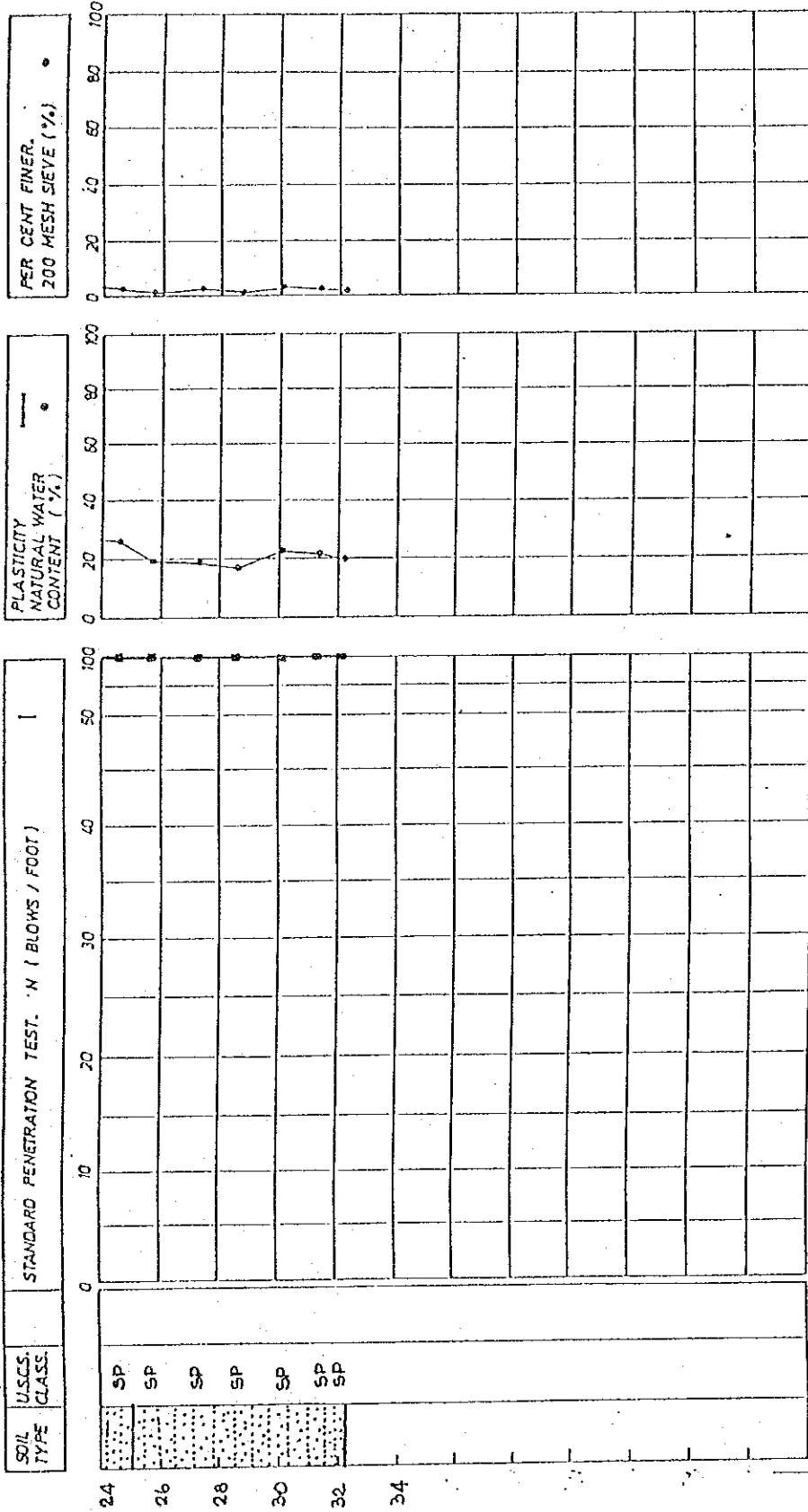
Date.	20.1.94	21.1.94	24.1.94	25.1.94
Ground water table.	+1.20	+1.20	+1.20	+1.20
Observations.				

Figura A.7-4 Fecha de las Pruebas de Perforación(11)

frutecsa
INGENIEROS CONSULTORES

WORK : BIO - BIO BRIDGE
BORING : # S-8

TEST BY ASISTECSA



PROF. (m.)

clay
 silt
 sand
 gravel
 organic soil
 fill soil
 rock
 water table

Date.	20.1.94	21.1.94	24.1.94	25.1.94
Ground water table.	+1.20	+1.20	+1.20	+1.20
Observations.				

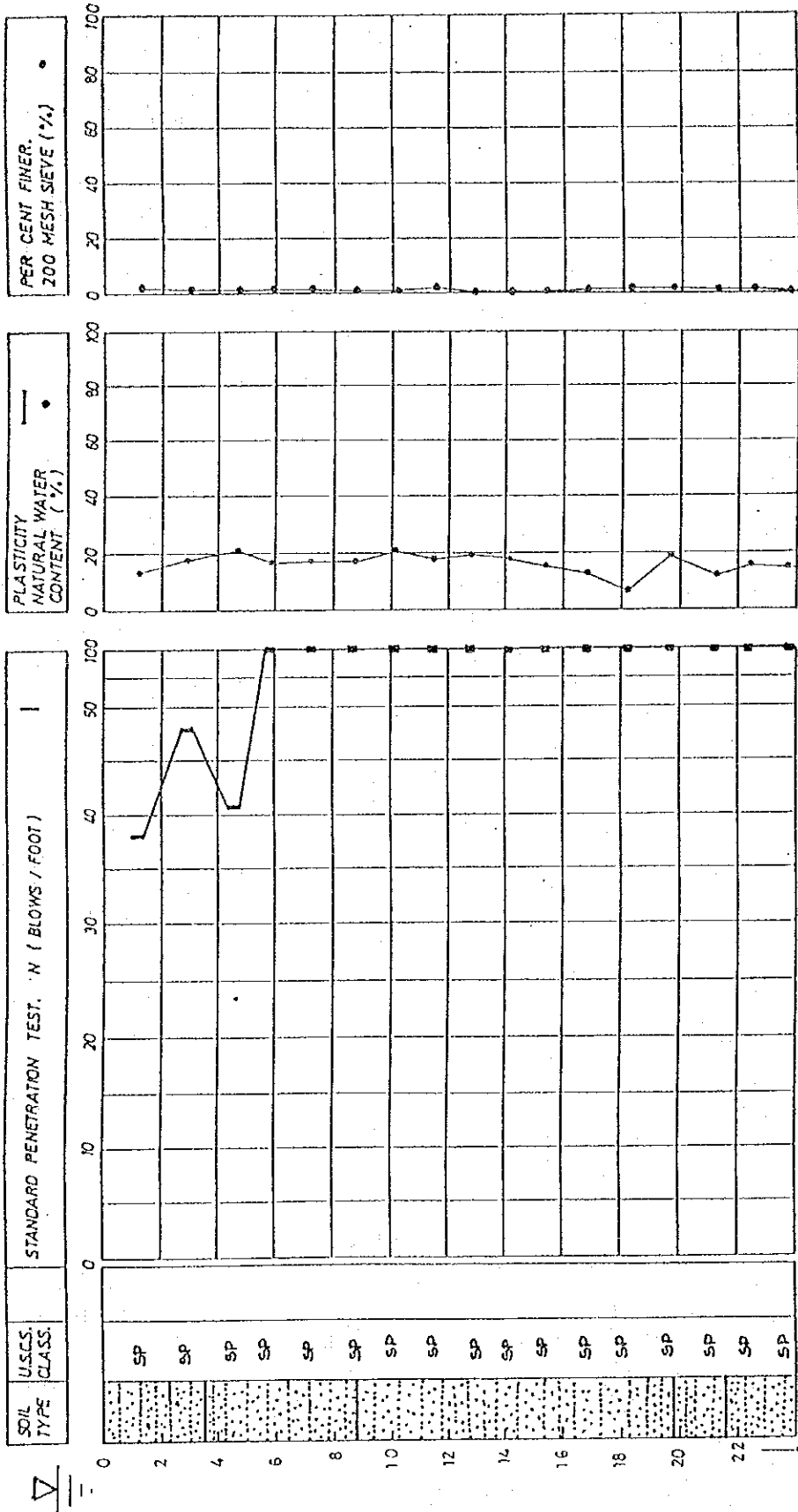
Figura A.7-4 Fecha de las Pruebas de Perforación(12)

Aristeora
INGENIEROS CONSULTORES

WORK : BIO - BIO BRIDGE
BORING : # S-9

Nº

TEST BY ASISTECSA



SOIL TYPE CLASS. | STANDARD PENETRATION TEST, N (BLOWS / FOOT) | PLASTICITY NATURAL WATER CONTENT (%) | PER CENT FINER, 200 MESH SIEVE (%)

SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP | SP

clay
silt
sand
gravel
organic soil
fill soil
rock
water table

Date.	26.1.94	27.1.94	28.1.94	29.1.94
Ground water table.	+1.52	+1.52	+1.52	+1.52
Observations.				

Figura A.7-4 Fecha de las Pruebas de Perforación(13)

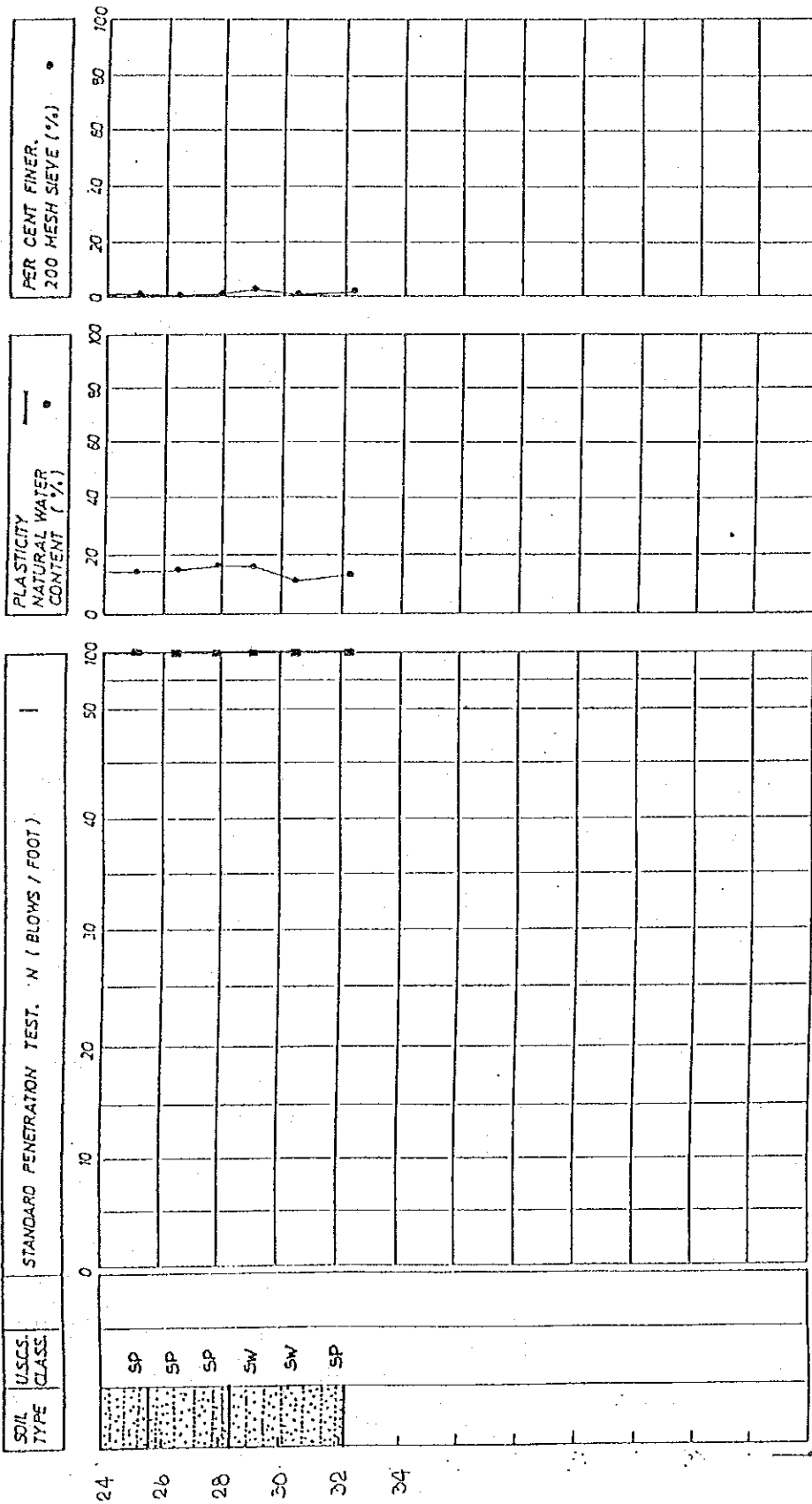
Aristeca
INGENIEROS CONSULTORES

WORK: BIO - BIO BRIDGE

BORING: # S-9

N°

TEST BY ASISTECSA



- clay
- silt
- sand
- Gravel
- organic soil
- fill soil
- rock
- water table

Date.	26.1.94	27.1.94	28.1.94	29.1.94
Ground water table.	+1.52	+1.52	+1.52	+1.52
Observations.				

Figura A.7-4 Fecha de las Pruebas de Perforación(14)

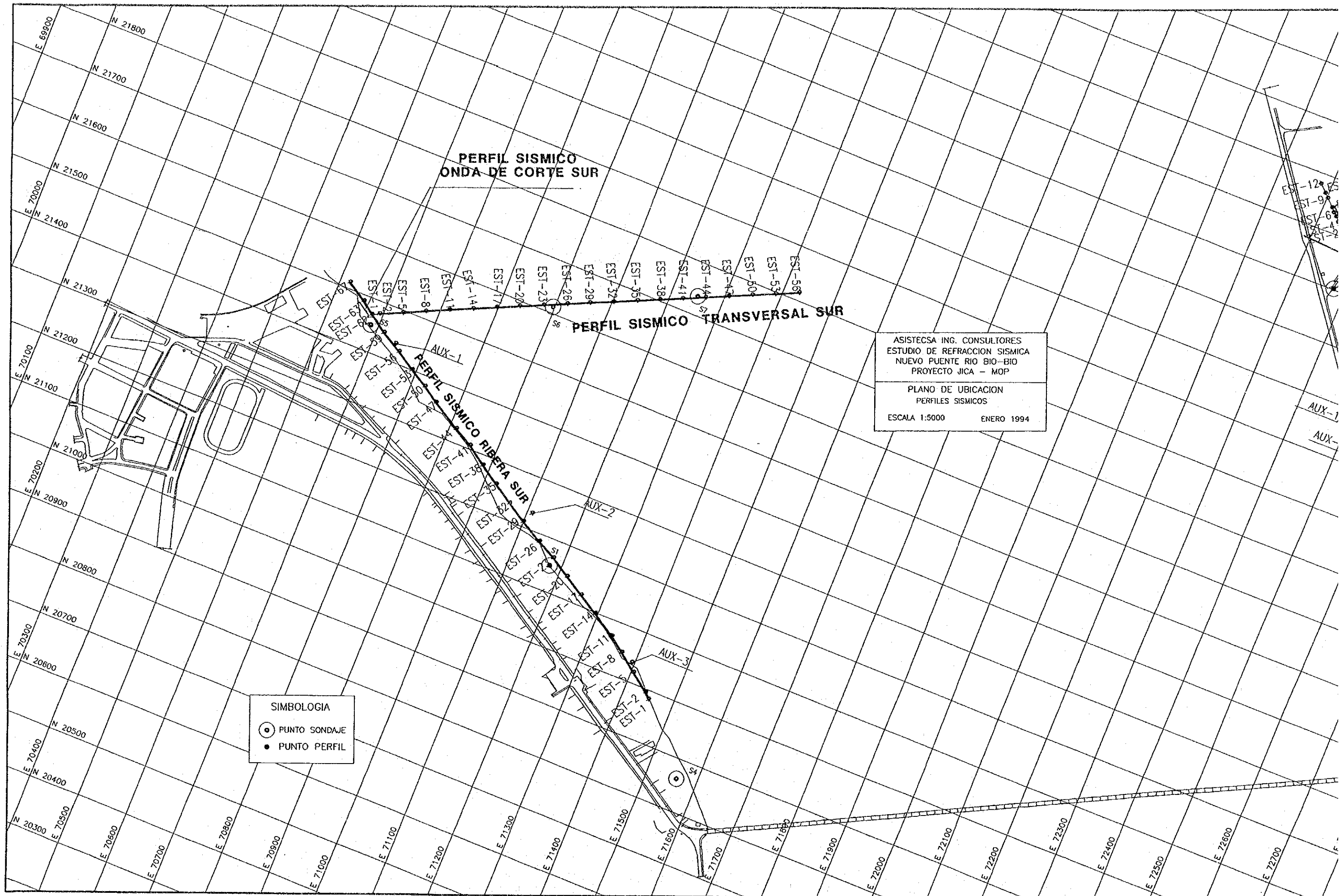


Figura A.7-5 Mapa de Localización de las Pruebas de Exploración de las Ondas Elásticas

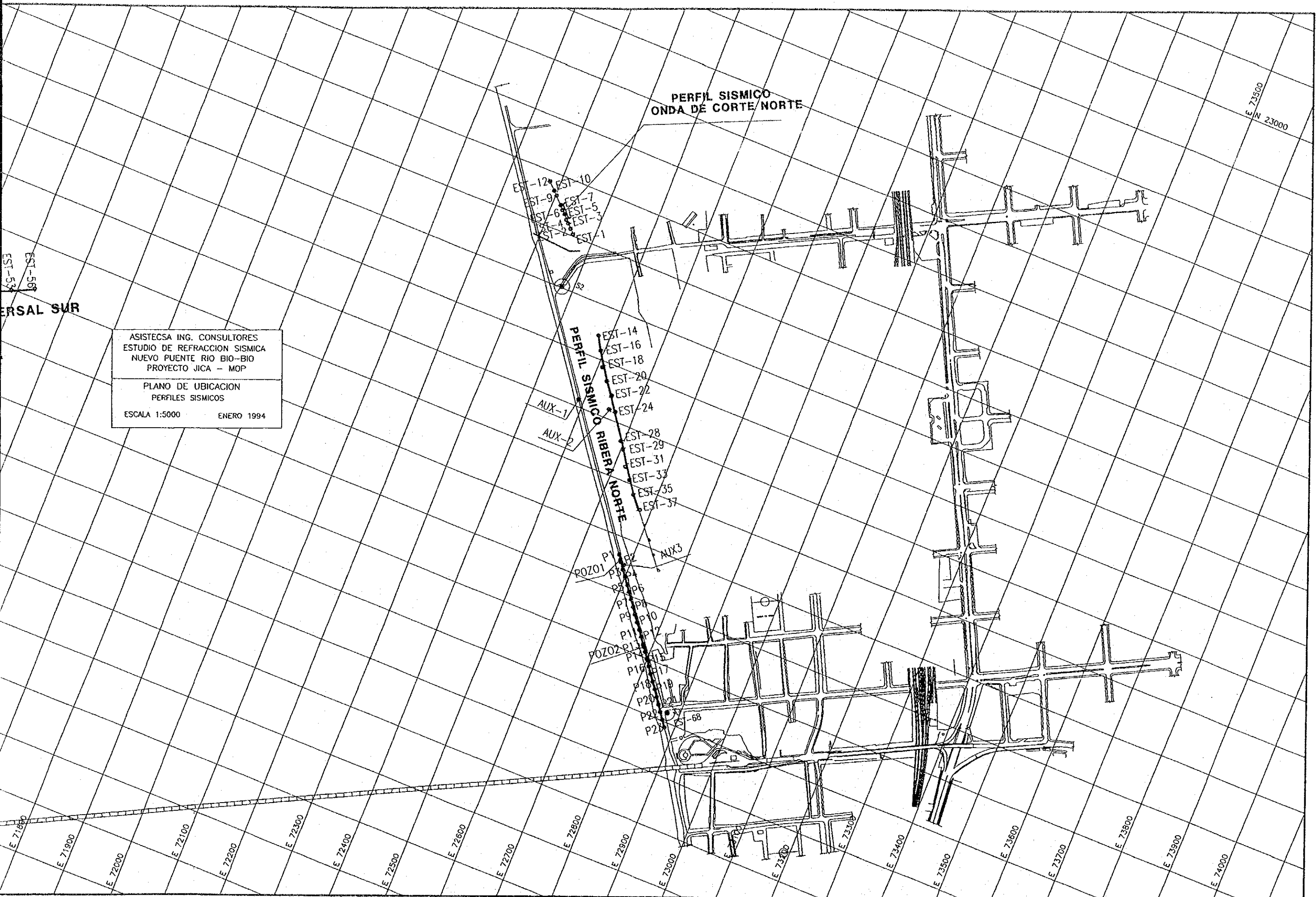


Figura A.7-5 Mapa de Localización de las Pruebas de Exploración de las Ondas Elásticas

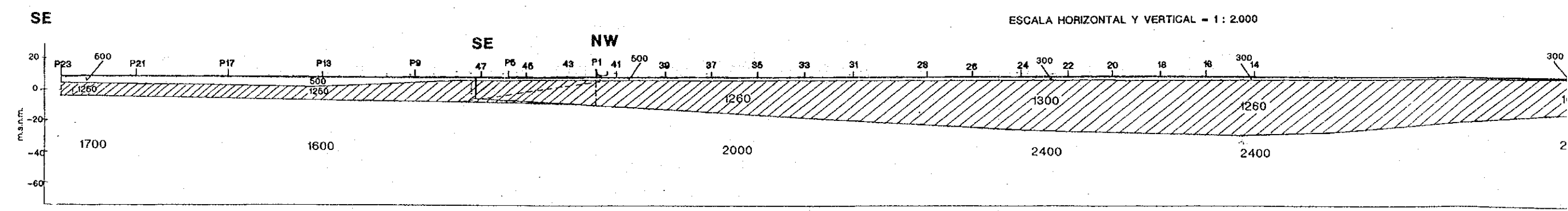
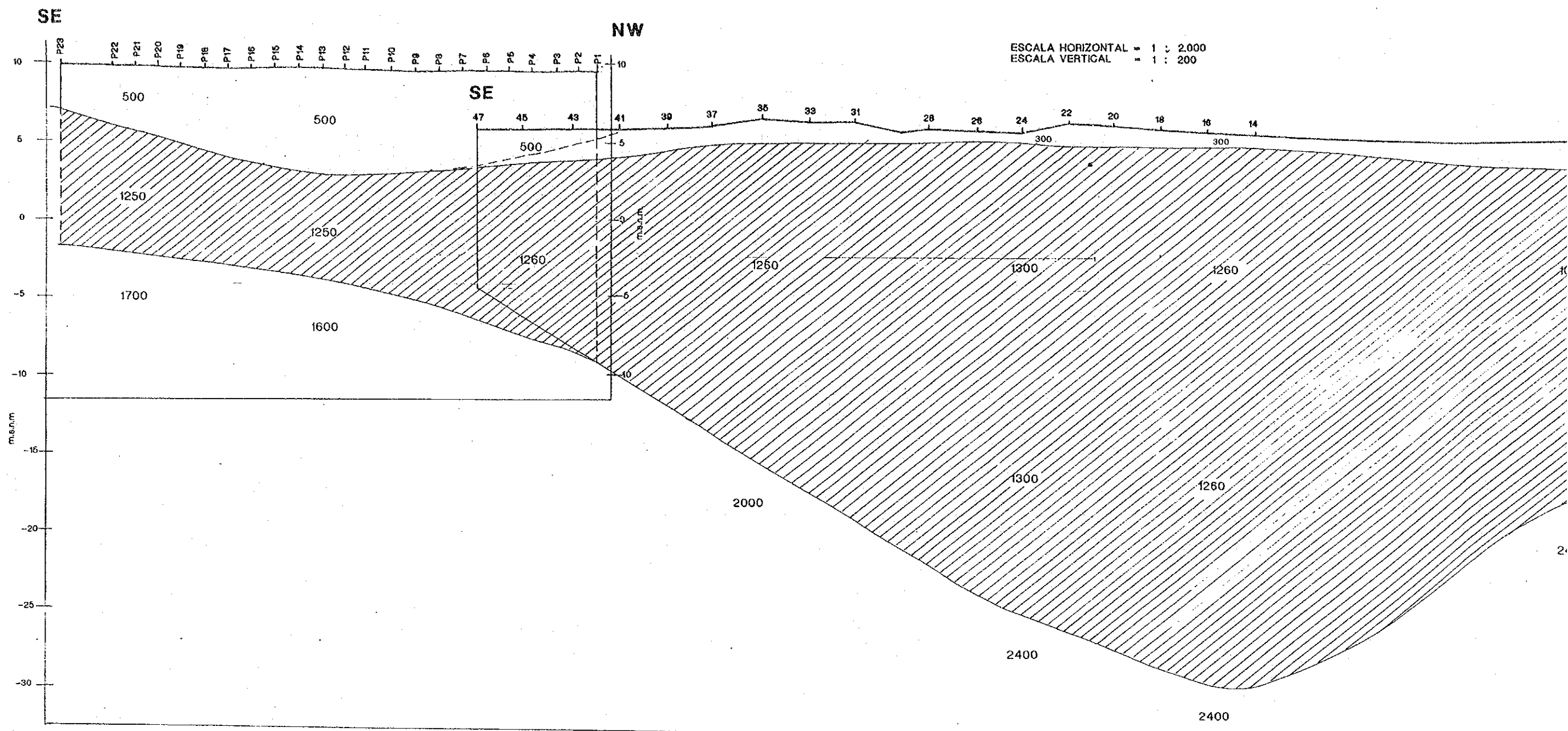


Figura A.7-6 Fecha de las Pruebas de Exploración de las Ondas Elásticas (1)

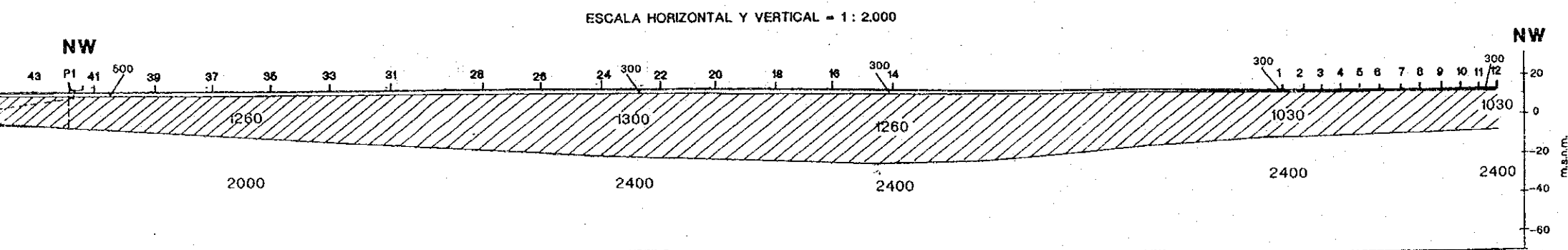
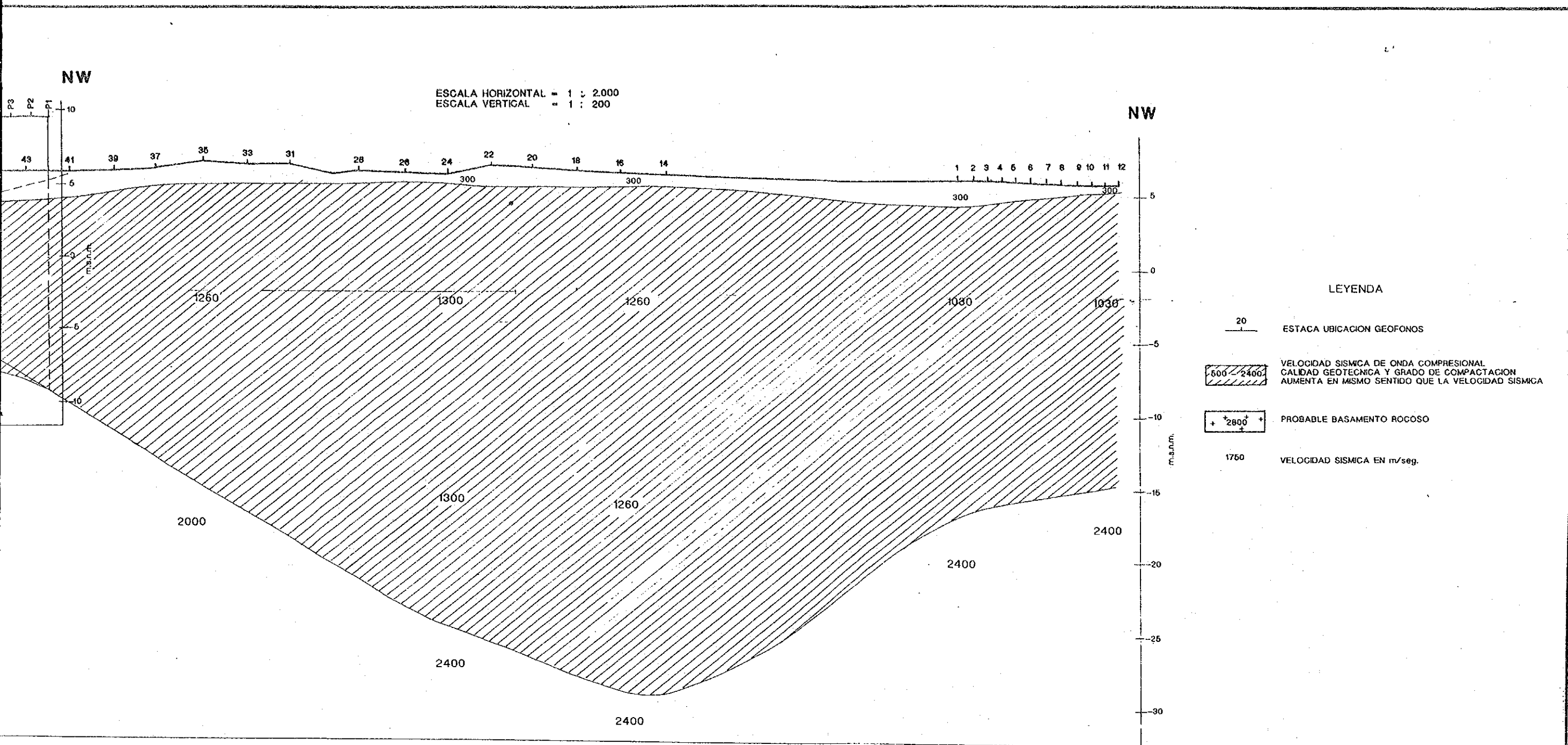


Figura A.7-6 Fecha de las Pruebas de Exploración de las Ondas Elásticas (1)

ASISTECSA INGENIEROS CONSULTORES

SECCION SISMICA
 PERFIL LONGITUDINAL
 RIBERA NORTE RIO BIO BIO

GEOEXPLORACIONES S.A. FEB/94 FIG.2

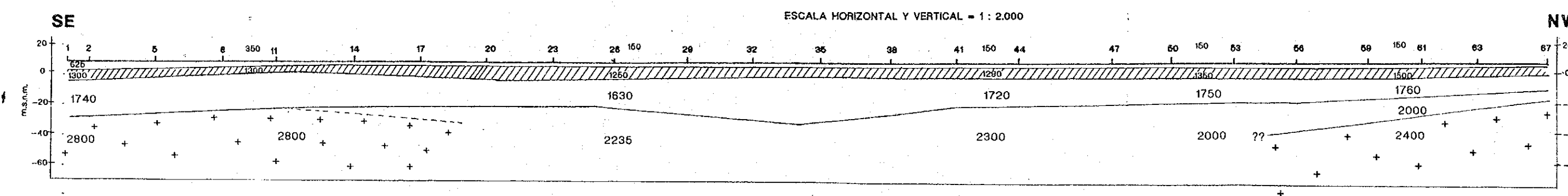
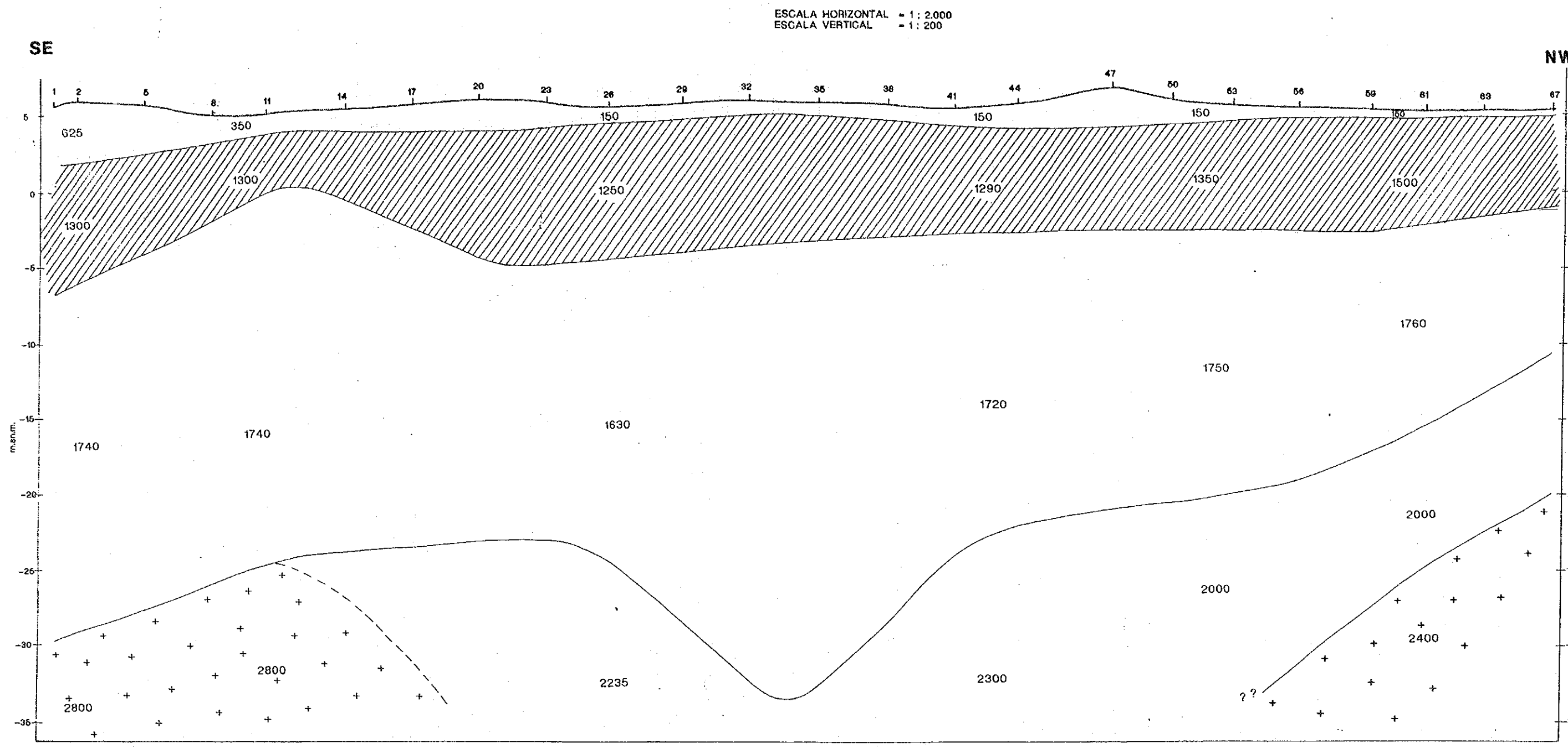
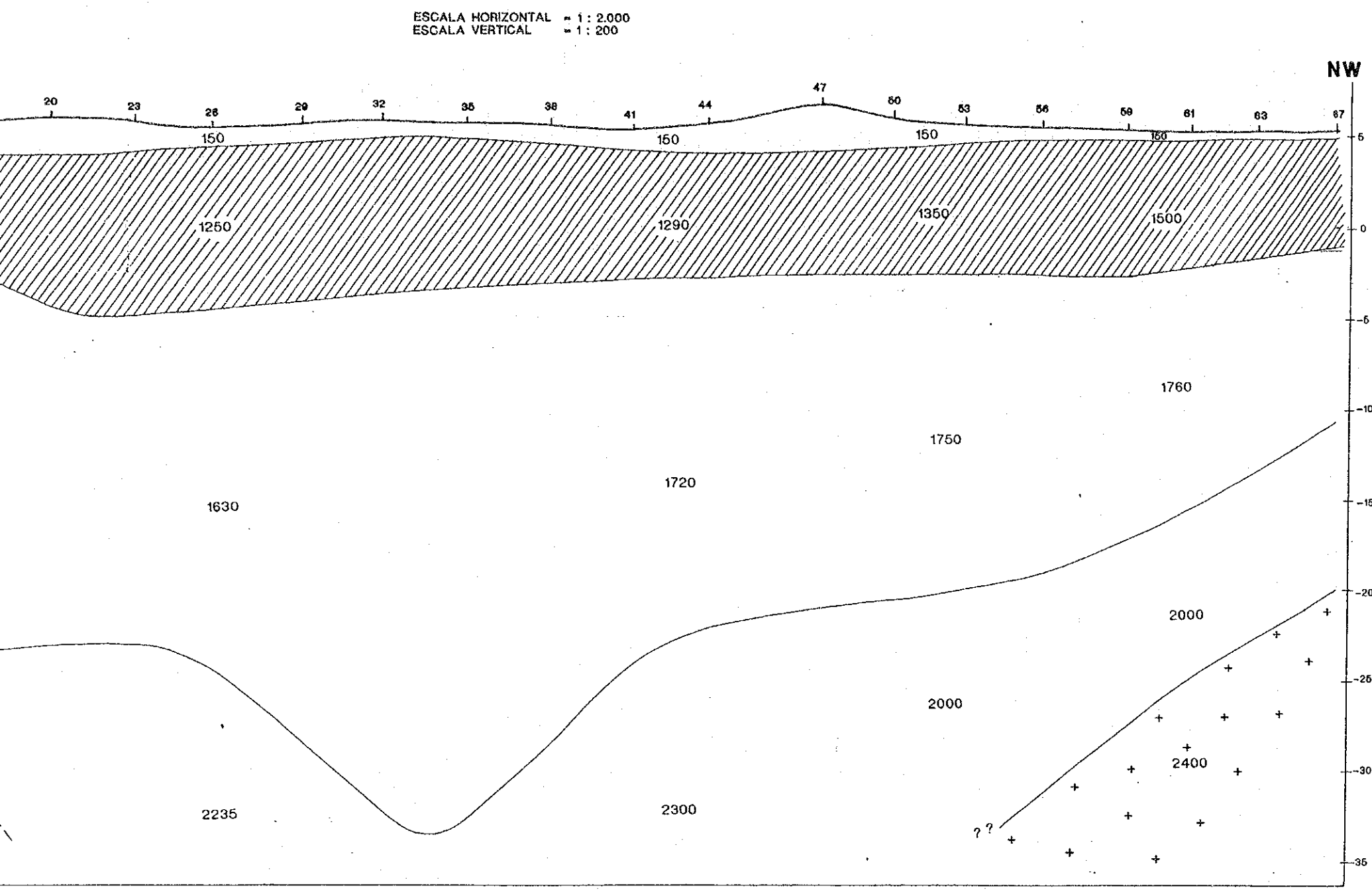
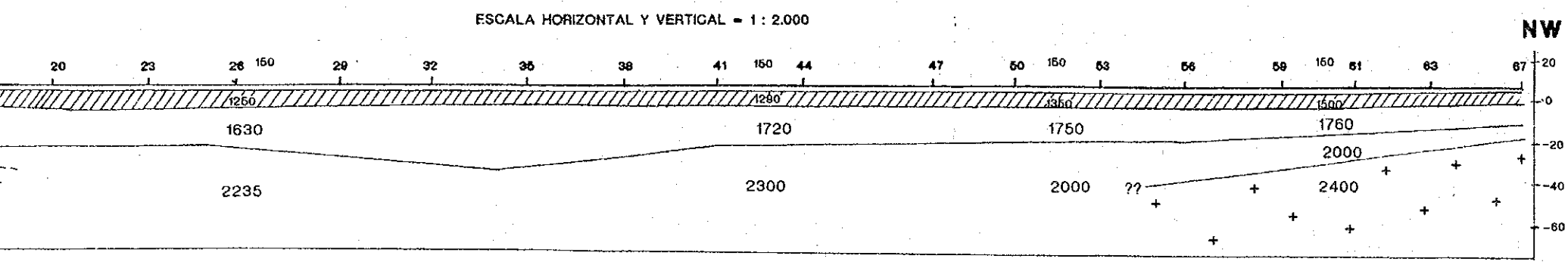


Figura A.7-6 Fecha de las Pruebas de Exploración de las Ondas Elásticas (2)



- LEYENDA
- ESTACA UBICACION GEOFONOS
 - VELOCIDAD SISMICA DE ONDA COMPRESIONAL
CALIDAD GEOTECNICA Y GRADO DE COMPACTACION
AUMENTA EN MISMO SENTIDO QUE LA VELOCIDAD SISMICA
 - PROBABLE BASAMENTO ROCOSO
 - 1750 VELOCIDAD SISMICA EN m/seg.



ASISTECSA INGENIEROS CONSULTORES

SECCION SISMICA
PERFIL LONGITUDINAL
RIBERA SUR RIO BIO BIO

GEOEXPLORACIONES S.A. FEB/94 FIG.3

Figura A.7-6 Fecha de las Pruebas de Exploración de las Ondas Elásticas (2)

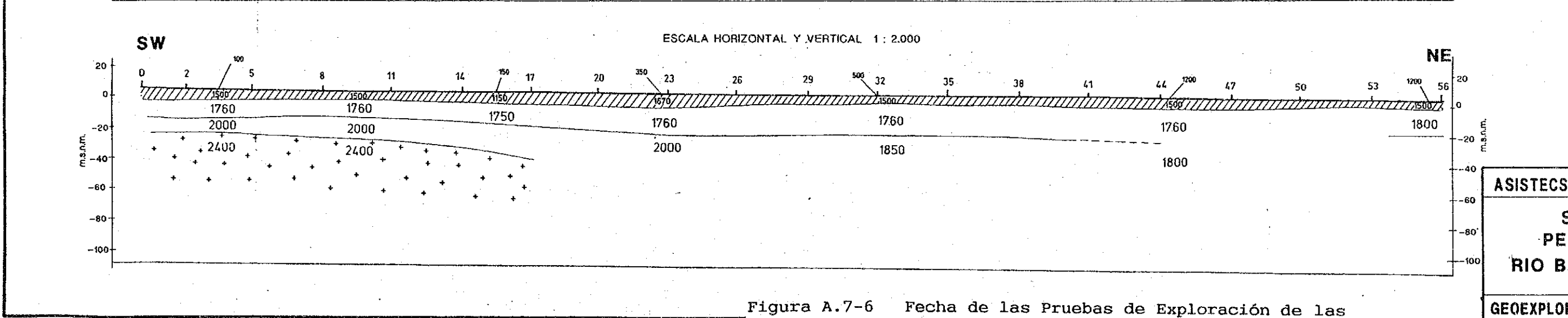
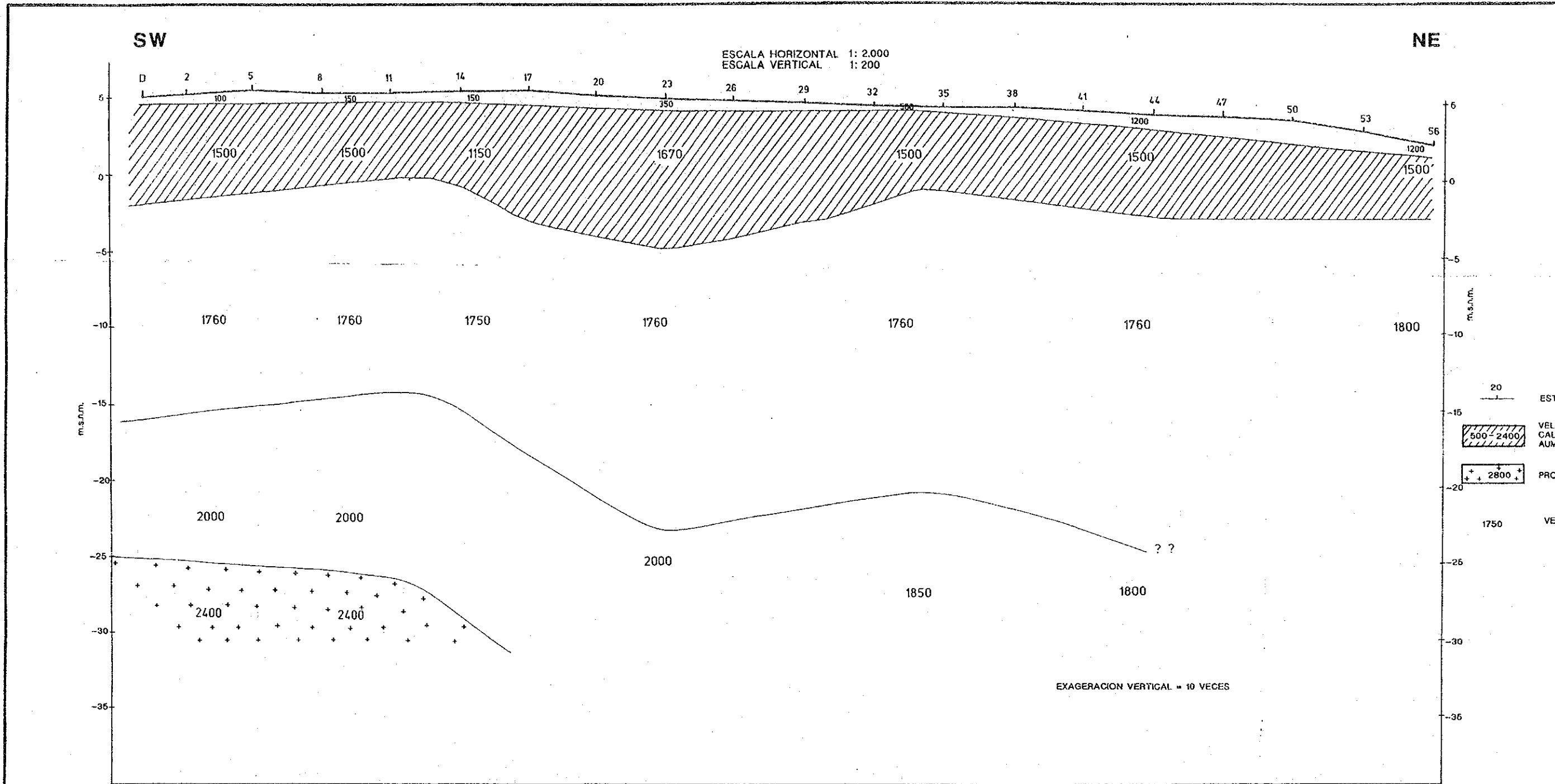


Figura A.7-6 Fecha de las Pruebas de Exploración de las Ondas Elásticas (3)

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GEOEXPLOF

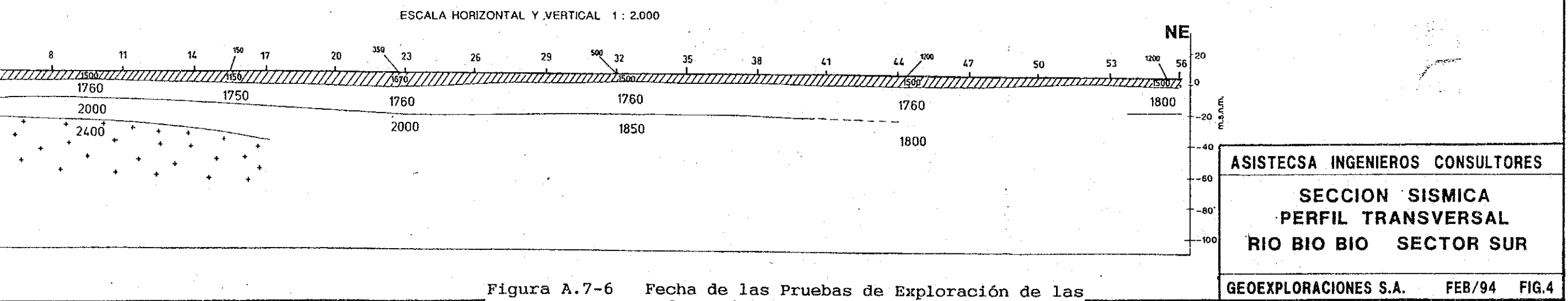
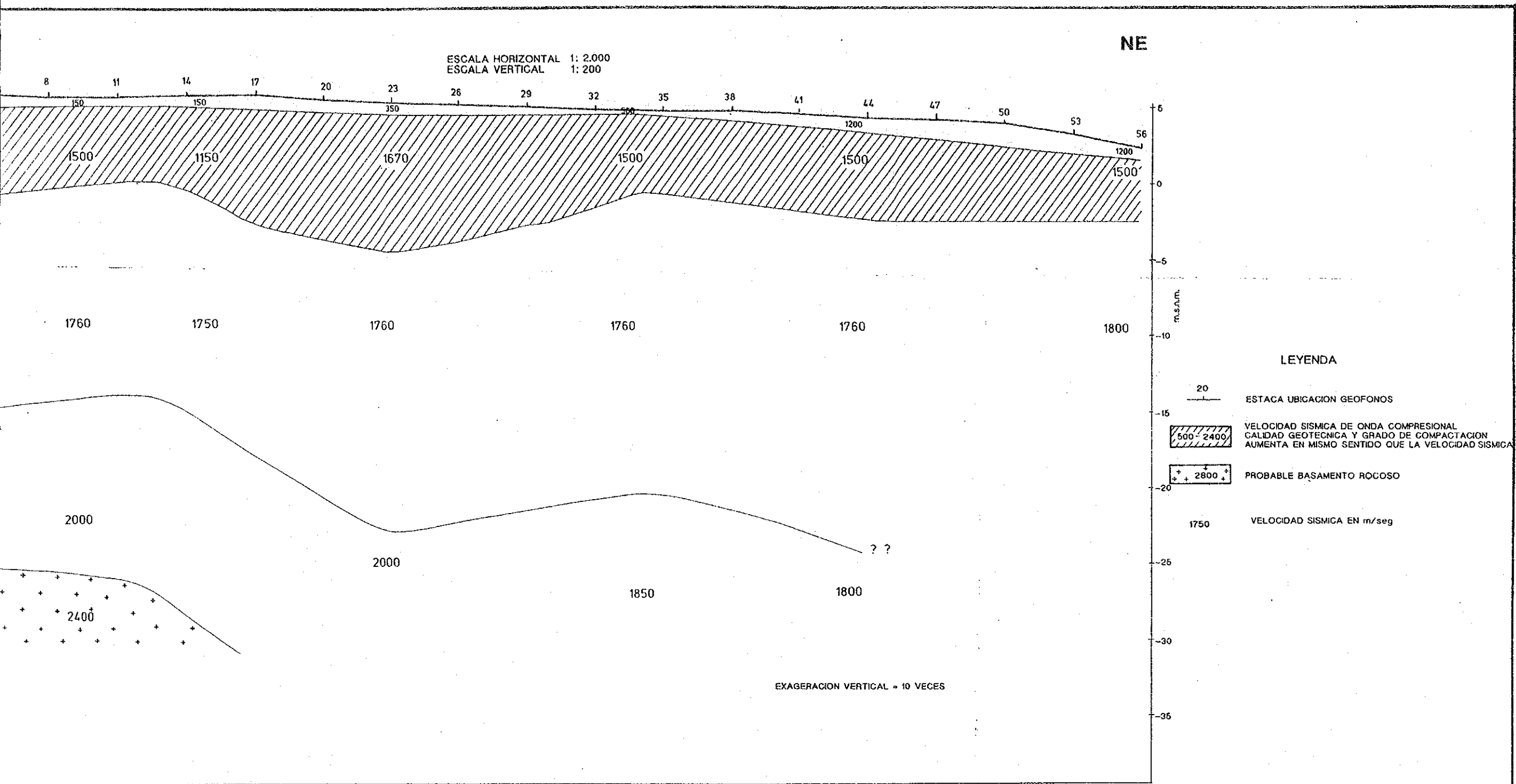


Figura A.7-6 Fecha de las Pruebas de Exploración de las Ondas Elásticas (3)

SECCION DE AFOROS BIO BIO EN DESEMBOLADURA

FECHA : 29 · 07 · 93

HORA : 10:50

HLn : 1.83 mt

Q () : 2.021 m³/seg

LOSA PTE. J.P. 2

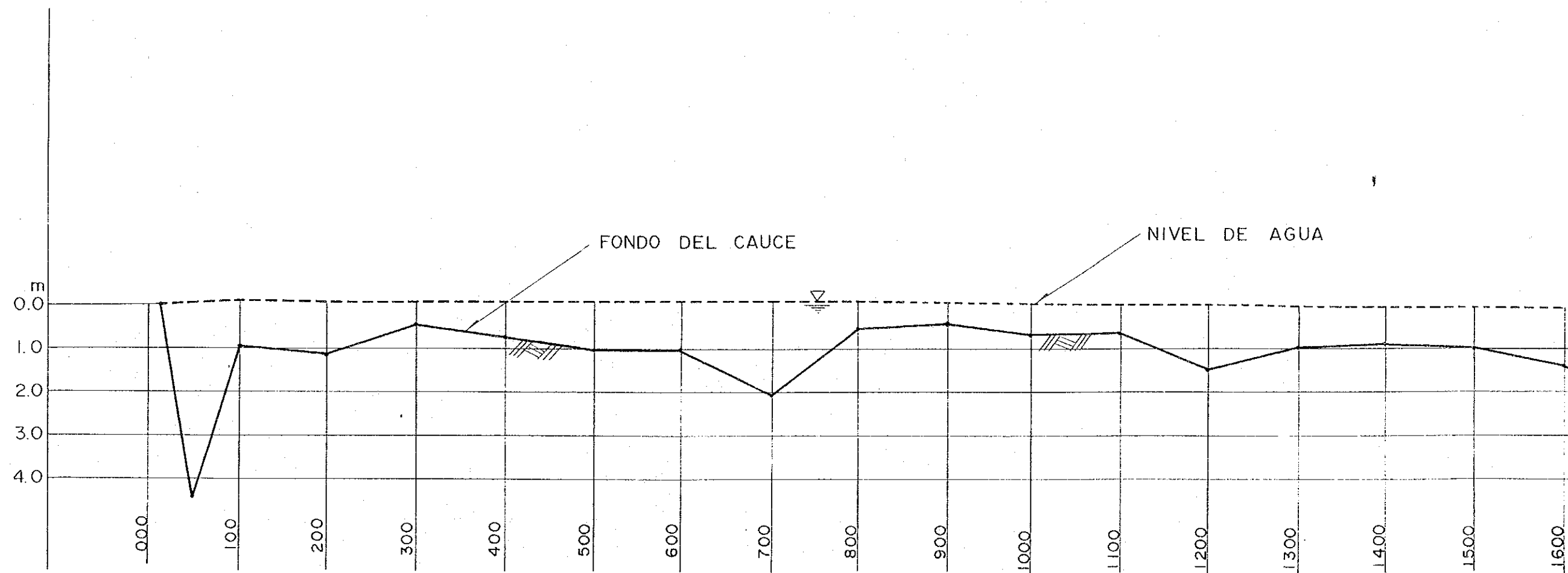


Figura A.7-7 Condición del Lecho del Río Bio

SECCION DE AFOROS BIO BIO EN DESEMBOLADURA

FECHA : 29 · 07 · 93
 HORA : 10:50
 HLn : 1.83 mt
 Q () : 2.021 m³ / seg

LOSA PTE. J.P. 2

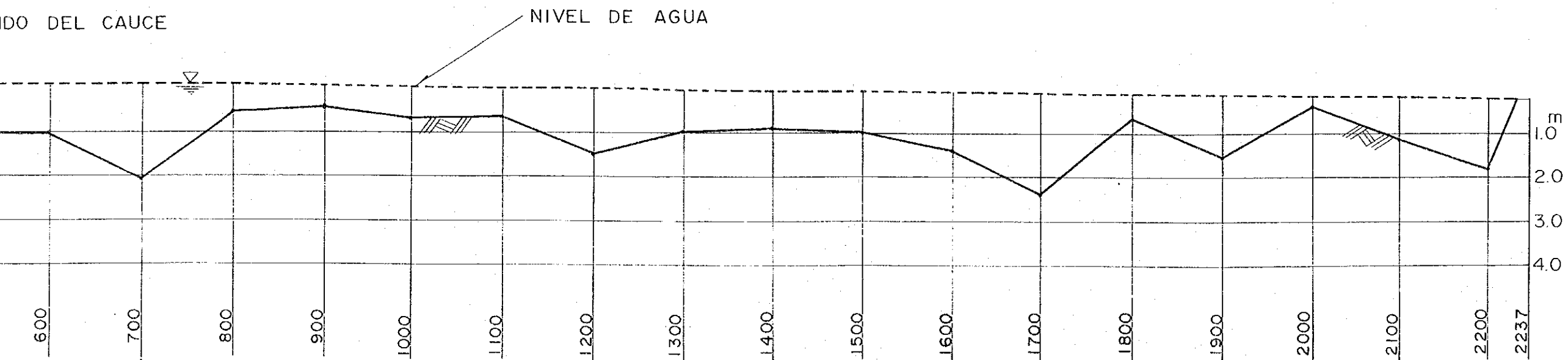


Figura A.7-7 Condición del Lecho del Río Biobío