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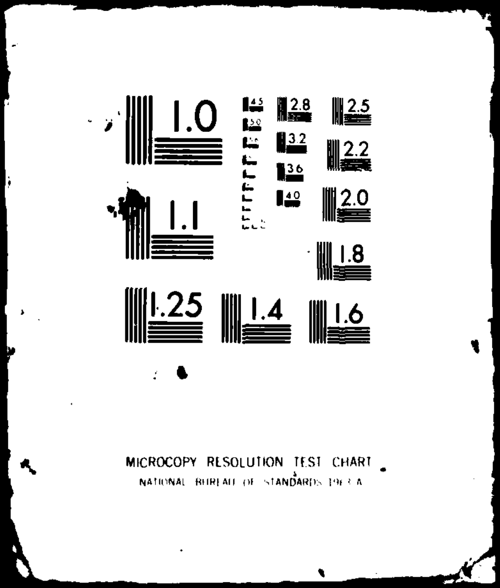

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MX SITING INVESTIGATION
GEOTECHNICAL EVALUATION

VERIFICATION STUDY
LAKE VALLEY, NEVADA
VOLUME II - GEOTECHNICAL DATA

PREPARED FOR
BALLISTIC MISSILE OFFICE (BMO)
NORTON AIR FORCE BASE, CALIFORNIA

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cone penetrometer

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report contains field data & lab test results from Verification investigation of Lake Valley. Includes basic data consisting of depth to water, depth to rock, seismic refraction & electrical resistivity, boring and trench logs, and soil profiles.

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MX SITING INVESTIGATION
GEOTECHNICAL EVALUATION

VERIFICATION STUDY - LAKE VALLEY
NEVADA

VOLUME II - GEOTECHNICAL DATA

Prepared for:

U.S. Department of the Air Force
Ballistic Missile Office (BMO)
Norton Air Force Base, California 92409

Prepared by:

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31 July 1981

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FOREWORD

This volume of geotechnical data was compiled for the Department of the Air Force, Ballistic Missile Office (BMO), in compliance with Contract No. F04704-80-C-0006, CDRL Item 004A6. It contains the field data and laboratory test results from the Verification investigation of Lake Valley. A synthesis of these data are available in Volume I (E-TR-27-LV-I).

The data in each section of this volume are preceded by an explanation of the format and terms used in the compilation.

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1.0 ACTIVITY MAP AND GEOGRAPHIC COORDINATES

Explanation: Locations of all field activities are shown in Drawing II-1-1, Activity Location Map (in pocket). The geodetic and Universal Transverse Mercator (UTM) coordinates of all activities are listed in Table II-1-1.

LAKE VALLEY ACTIVITY LOCATIONS

ACT	GEODETIC COORD.				UTM COORD.	
ID.	LAT.		LONG.		ZONE 11	
	DEG	MIN	DEG	MIN	N(KM)	E(KM)
BORING SITES						
LV-B1	38	3.04	114	24.34	4214.41	727.64
LV-B2	38	6.65	114	30.65	4220.83	718.23
LV-B3	38	14.37	114	34.44	4234.97	712.32
LV-B4	38	20.70	114	28.21	4246.92	721.09
LV-B5	38	26.02	114	32.55	4256.58	714.51
LV-B6	38	34.07	114	31.58	4271.52	715.51
LV-B7	38	42.75	114	35.23	4287.43	709.79
CPT SITES						
LV-C001	38	5.70	114	22.37	4219.40	730.39
LV-C002	38	5.29	114	23.02	4218.63	729.46
LV-C003	38	4.69	114	23.30	4217.51	729.07
LV-C004	38	3.96	114	23.77	4216.14	728.44
LV-C005	38	3.04	114	24.34	4214.41	727.64
LV-C006	38	2.32	114	24.81	4213.05	727.00
LV-C007	38	1.58	114	25.23	4211.66	726.42
LV-C008	38	1.02	114	25.73	4210.61	725.71
LV-C010	37	59.70	114	27.16	4208.13	723.69
LV-C011	37	58.30	114	28.74	4205.46	721.45
LV-C012	37	59.16	114	28.01	4207.08	722.47
LV-C013	37	57.55	114	32.16	4203.95	716.47
LV-C014	37	57.48	114	31.40	4203.84	717.59
LV-C015	37	57.45	114	30.71	4203.81	718.60
LV-C016	37	58.05	114	29.63	4204.97	720.15
LV-C017	38	6.55	114	35.65	4220.46	710.94
LV-C018	38	7.15	114	36.97	4221.51	708.98
LV-C019	38	6.40	114	34.79	4220.21	712.20
LV-C020	38	6.41	114	33.84	4220.26	713.59
LV-C021	38	6.38	114	32.84	4220.26	715.05
LV-C022	38	6.38	114	31.42	4220.30	717.13
LV-C023	38	6.65	114	30.65	4220.83	718.23
LV-C024	38	7.06	114	29.84	4221.63	719.40
LV-C025	38	7.25	114	28.90	4222.00	720.76
LV-C026	38	9.68	114	24.99	4226.66	726.35

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GEODETIC AND UTM COORDINATES
OF ACTIVITY LOCATIONS
LAKE VALLEY, NEVADA
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TABLE II-1-1

LAKE VALLEY ACTIVITY LOCATIONS

ACT ID.	GEODETIC COORD. LAT. DEG	MIN	LONG. DEG	MIN	UTM COORD. ZONE 11 N(KM)	E(KM)
LV-C027	38	9.15	114	25.40	4225.67	725.78
LV-C028	38	8.50	114	25.71	4224.46	725.36
LV-C029	38	8.00	114	26.18	4223.51	724.70
LV-C030	38	7.60	114	26.73	4222.75	723.91
LV-C031	38	7.50	114	27.55	4222.52	722.72
LV-C032	38	10.99	114	29.86	4228.88	719.17
LV-C033	38	10.53	114	31.00	4228.00	717.53
LV-C034	38	10.34	114	31.92	4227.60	716.19
LV-C035	38	9.72	114	33.00	4226.42	714.66
LV-C036	38	8.87	114	34.18	4224.80	712.96
LV-C037	38	10.76	114	36.93	4228.19	708.87
LV-C038	38	10.07	114	36.45	4226.94	709.60
LV-C039	38	9.46	114	35.87	4225.84	710.48
LV-C040	38	9.03	114	35.22	4225.06	711.44
LV-C041	38	14.39	114	35.22	4234.98	711.18
LV-C042	38	14.37	114	34.44	4234.97	712.32
LV-C043	38	14.68	114	33.48	4235.57	713.71
LV-C044	38	14.73	114	32.24	4235.72	715.51
LV-C045	38	15.25	114	27.60	4236.86	722.26
LV-C046	38	15.35	114	28.52	4237.01	720.91
LV-C047	38	15.31	114	29.42	4236.91	719.59
LV-C048	38	15.13	114	30.27	4236.53	718.36
LV-C049	38	14.84	114	31.24	4235.96	716.97
LV-C050	38	19.62	114	37.42	4244.57	707.72
LV-C051	38	19.83	114	36.61	4244.98	708.89
LV-C052	38	19.22	114	36.30	4243.86	709.38
LV-C053	38	19.28	114	35.21	4244.02	710.97
LV-C054	38	19.51	114	33.93	4244.50	712.82
LV-C055	38	19.79	114	32.46	4245.07	714.95
LV-C056	38	20.02	114	31.21	4245.55	716.75
LV-C057	38	20.26	114	29.89	4246.04	718.67
LV-C058	38	21.96	114	23.27	4249.45	728.22
LV-C059	38	21.70	114	24.11	4248.93	727.02
LV-C060	38	21.49	114	25.36	4248.49	725.20
LV-C061	38	20.88	114	26.60	4247.32	723.42
LV-C062	38	20.77	114	27.27	4247.08	722.45
LV-C063	38	20.70	114	28.21	4246.92	721.09
LV-C064	38	20.54	114	29.17	4246.57	719.70

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GEODETIC AND UTM COORDINATES OF ACTIVITY LOCATIONS LAKE VALLEY, NEVADA

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TABLE II-1-1

LAKE VALLEY ACTIVITY LOCATIONS

ACT	GEODETIC COORD.				UTM COORD.	
ID.	LAT.		LONG.		ZONE 11	
	DEG	MIN	DEG	MIN	N(KM)	E(KM)
LV-C065	38	25.59	114	25.23	4256.08	725.18
LV-C066	38	25.47	114	25.91	4255.83	724.20
LV-C067	38	25.41	114	26.69	4255.69	723.07
LV-C068	38	25.53	114	27.66	4255.88	721.64
LV-C069	38	25.01	114	28.62	4254.88	720.27
LV-C070	38	24.46	114	29.94	4253.81	718.38
LV-C071	38	24.46	114	30.94	4253.76	716.93
LV-C072	38	25.28	114	31.59	4255.26	715.94
LV-C073	38	26.02	114	32.55	4256.58	714.51
LV-C074	38	26.83	114	33.42	4258.06	713.20
LV-C075	38	27.58	114	34.19	4259.41	712.05
LV-C076	38	28.72	114	35.59	4261.47	709.95
LV-C077	38	30.22	114	37.43	4264.18	707.20
LV-C078	38	29.38	114	41.10	4262.48	701.91
LV-C079	38	29.36	114	40.02	4262.48	703.49
LV-C080	38	29.98	114	39.72	4263.65	703.89
LV-C081	38	30.11	114	38.97	4263.92	704.97
LV-C082	38	35.84	114	41.28	4274.42	701.35
LV-C083	38	35.52	114	39.43	4273.90	704.04
LV-C084	38	35.31	114	38.95	4273.52	704.75
LV-C085	38	34.09	114	37.37	4271.33	707.10
LV-C086	38	33.16	114	35.79	4269.66	709.45
LV-C087	38	34.14	114	33.57	4271.57	712.63
LV-C088	38	34.12	114	32.77	4271.56	713.79
LV-C089	38	34.07	114	31.58	4271.52	715.51
LV-C090	38	34.93	114	31.00	4273.12	716.31
LV-C091	38	37.88	114	32.12	4278.55	714.54
LV-C092	38	38.16	114	32.99	4279.02	713.27
LV-C093	38	38.49	114	34.04	4279.60	711.73
LV-C094	38	38.88	114	35.28	4280.27	709.91
LV-C095	38	42.62	114	33.06	4287.27	712.95
LV-C096	38	42.54	114	34.30	4287.07	711.15
LV-C097	38	42.75	114	35.23	4287.43	709.79
LV-C098	38	43.05	114	36.43	4287.93	708.04
LV-C009	38	0.47	114	26.22	4209.58	725.02
LV-C099	38	44.74	114	40.99	4290.90	701.35
LV-C101	38	43.54	114	38.94	4288.76	704.37
LV-C102	38	42.93	114	38.10	4287.66	705.63

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LAKE VALLEY ACTIVITY LOCATIONS

ACT ID.	GEODETIC COORD. LAT. DEG	MIN	LONG. DEG	MIN	UTM COORD. ZONE 11 N(KM)	E(KM)
LV-C120	38	44.31	114	39.88	4290.14	702.98
SURFICIAL SOIL SAMPLES						
LV-CS002	38	5.29	114	23.02	4218.63	729.46
LV-CS004	38	3.96	114	23.77	4216.14	728.44
LV-CS006	38	2.32	114	24.81	4213.05	727.00
LV-CS008	38	1.02	114	25.73	4210.61	725.71
LV-CS010	37	59.70	114	27.16	4208.13	723.69
LV-CS011	37	58.30	114	28.74	4205.46	721.45
LV-CS013	37	57.55	114	32.16	4203.95	716.47
LV-CS015	37	57.45	114	30.71	4203.81	718.60
LV-CS018	38	7.15	114	36.97	4221.51	708.98
LV-CS020	38	6.41	114	33.84	4220.26	713.59
LV-CS022	38	6.38	114	31.42	4220.30	717.13
LV-CS025	38	7.25	114	28.90	4222.00	720.76
LV-CS026	38	9.68	114	24.99	4226.66	726.35
LV-CS028	38	8.50	114	25.71	4224.46	725.36
LV-CS030	38	7.60	114	26.73	4222.75	723.91
LV-CS033	38	10.53	114	31.00	4228.00	717.53
LV-CS035	38	9.72	114	33.00	4226.42	714.66
LV-CS038	38	10.07	114	36.45	4226.94	709.60
LV-CS040	38	9.03	114	35.22	4225.06	711.44
LV-CS041	38	14.39	114	35.22	4234.98	711.18
LV-CS043	38	14.68	114	33.48	4235.57	713.71
LV-CS045	38	15.25	114	27.60	4236.86	722.26
LV-CS047	38	15.31	114	29.42	4236.91	719.59
LV-CS049	38	14.84	114	31.24	4235.96	716.97
LV-CS050	38	19.62	114	37.42	4244.57	707.72
LV-CS052	38	19.22	114	36.30	4243.86	709.38
LV-CS054	38	19.51	114	33.93	4244.50	712.82
LV-CS056	38	20.02	114	31.21	4245.55	716.75
LV-CS058	38	21.96	114	23.27	4249.45	728.22
LV-CS060	38	21.49	114	25.36	4248.49	725.20
LV-CS062	38	20.77	114	27.27	4247.08	722.45
LV-CS064	38	20.54	114	29.17	4246.57	719.70
LV-CS066	38	25.47	114	25.91	4255.83	724.20
LV-CS068	38	25.53	114	27.66	4255.88	721.64

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GEODETIC AND UTM COORDINATES
OF ACTIVITY LOCATIONS
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LAKE VALLEY ACTIVITY LOCATIONS

ACT ID.	GEODETIC COORD. LAT. DEG	MIN	LONG. DEG	MIN	UTM COORD. ZONE 11 N(KM)	E(KM)
LV-CS070	38	24.46	114	29.94	4253.81	718.38
LV-CS072	38	25.28	114	31.59	4255.26	715.94
LV-CS074	38	26.83	114	33.42	4258.06	713.20
LV-CS076	38	28.72	114	35.59	4261.47	709.95
LV-CS079	38	29.36	114	40.02	4262.48	703.49
LV-CS081	38	30.11	114	38.97	4263.92	704.97
LV-CS084	38	35.31	114	38.95	4273.52	704.75
LV-CS086	38	33.16	114	35.79	4269.66	709.45
LV-CS088	38	34.12	114	32.77	4271.56	713.79
LV-CS090	38	34.93	114	31.00	4273.12	716.31
LV-CS092	38	38.16	114	32.99	4279.02	713.27
LV-CS094	38	38.88	114	35.28	4280.27	709.91
LV-CS096	38	42.54	114	34.30	4287.07	711.15
LV-CS100	38	44.31	114	39.88	4290.14	702.98
LV-CS102	38	42.93	114	38.10	4287.66	705.63
LV-CS103	38	30.17	114	41.75	4263.93	700.92
LV-CS104	38	35.68	114	40.56	4274.15	702.41

FIELD CBR TESTS

LV-F001	38	37.88	114	32.12	4278.55	714.54
LV-F002	38	30.22	114	37.43	4264.18	707.20

GEOLOGICAL STATIONS

LV-GS001	38	45.01	114	35.31	4291.61	709.57
LV-GS002	38	42.30	114	37.27	4286.52	706.85
LV-GS003	38	43.20	114	38.59	4288.13	704.90
LV-GS004	38	41.88	114	38.53	4285.70	705.06
LV-GS005	38	41.61	114	41.44	4285.10	700.84
LV-GS006	38	38.85	114	38.22	4280.11	705.65
LV-GS007	38	36.99	114	39.83	4276.60	703.40
LV-GS008	38	35.56	114	39.59	4273.97	703.81
LV-GS009	38	32.47	114	38.51	4268.28	705.53
LV-GS010	38	30.32	114	40.79	4264.23	702.32
LV-GS011	38	27.86	114	38.82	4259.75	705.30
LV-GS012	38	29.64	114	39.00	4263.04	704.96
LV-GS013	38	43.29	114	33.37	4288.49	712.47

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GEODETIC AND UTM COORDINATES
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TABLE II-1-1

LAKE VALLEY ACTIVITY LOCATIONS

ACT ID.	GEODETIC COORD. LAT. DEG	MIN	LONG. DEG	MIN	UTM COORD. ZONE 11 N(KM)	E(KM)
LV-GS014	38	40.75	114	32.86	4283.83	713.33
LV-GS015	38	36.86	114	32.18	4276.65	714.50
LV-GS016	38	38.92	114	33.61	4280.40	712.33
LV-GS017	38	34.13	114	31.50	4271.63	715.63
LV-GS018	38	32.65	114	33.81	4268.80	712.35
LV-GS019	38	29.28	114	29.38	4262.73	718.96
LV-GS020	38	28.43	114	25.80	4261.32	724.21
LV-GS021	38	24.96	114	28.79	4254.77	720.03
LV-GS022	38	20.24	114	30.03	4246.00	718.46
LV-GS023	38	21.11	114	26.01	4247.77	724.28
LV-GS024	38	21.19	114	25.55	4247.93	724.94
LV-GS025	38	17.47	114	29.63	4240.89	719.18
LV-GS026	38	19.76	114	36.82	4244.85	708.59
LV-GS027	38	21.01	114	37.35	4247.14	707.77
LV-GS028	38	24.62	114	38.21	4253.78	706.33
LV-GS029	38	24.97	114	36.72	4254.49	708.50
LV-GS030	38	20.04	114	31.82	4245.55	715.86
LV-GS031	38	16.69	114	32.72	4239.33	714.72
LV-GS032	38	15.07	114	32.03	4236.36	715.81
LV-GS033	38	15.38	114	29.82	4237.01	719.02
LV-GS034	38	13.71	114	27.88	4234.00	721.93
LV-GS035	38	11.80	114	27.80	4230.48	722.15
LV-GS036	38	9.22	114	27.62	4225.70	722.54
LV-GS037	38	7.10	114	28.89	4221.74	720.78
LV-GS038	38	8.04	114	36.80	4223.17	709.18
LV-GS039	38	10.30	114	36.40	4227.36	709.65
LV-GS040	38	16.06	114	36.22	4238.02	709.64
LV-GS041	38	0.70	114	30.57	4209.82	718.64
LV-GS042	38	1.92	114	28.59	4212.16	721.48
LV-GS043	38	1.41	114	25.48	4211.36	726.06
LV-GS044	38	4.08	114	23.69	4216.36	728.54
LV-GS045	38	6.61	114	22.74	4221.08	729.79
LV-GS046	38	6.87	114	30.65	4221.23	718.22
LV-GS047	38	12.37	114	32.84	4231.33	714.75
LV-GS048	38	4.27	114	34.30	4216.29	713.01
LV-GS049	38	1.24	114	32.52	4210.76	715.77
LV-GS050	38	11.69	114	11.35	4230.96	746.16
LV-GS051	38	13.45	114	16.69	4233.98	738.27

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ACT ID.	GEODETIC COORD. LAT. DEG	MIN	LONG. DEG	MIN	UTM COORD. ZONE 11 N(KM)	E(KM)
LV-GS052	38	9.15	114	11.57	4226.26	745.98
LV-GS053	37	57.70	114	32.28	4204.21	716.29
LV-GS054	37	58.10	114	30.20	4205.03	719.32
LV-GS055	37	57.21	114	24.17	4203.63	728.19
LV-GS056	37	59.21	114	22.64	4207.39	730.32
LV-GS057	38	1.02	114	20.25	4210.85	733.74
LV-GS058	38	2.07	114	18.55	4212.86	736.16
LV-GS059	38	19.54	114	38.26	4244.39	706.51
LV-GS060	38	20.81	114	27.65	4247.14	721.91
LV-GS061	38	21.67	114	24.97	4248.85	725.77
LV-GS062	38	20.11	114	34.46	4245.58	712.01
LV-GS063	38	20.27	114	34.38	4245.89	712.13
LV-GS064	38	18.81	114	33.81	4243.20	713.02
LV-GS065	38	21.52	114	38.82	4248.03	705.60
LV-GS066	38	22.31	114	37.91	4249.52	706.88
LV-GS067	38	23.32	114	35.90	4251.47	709.77
LV-GS068	38	23.99	114	34.07	4252.77	712.39
LV-GS069	38	22.68	114	33.18	4250.39	713.75
LV-GS070	38	22.67	114	30.16	4250.48	718.15
LV-GS071	38	23.44	114	29.42	4251.94	719.19
LV-GS072	38	20.31	114	25.88	4246.29	724.50
LV-GS073	38	23.69	114	39.65	4252.01	704.29
LV-GS074	38	19.17	114	39.69	4243.65	704.44
LV-GS075	38	23.30	114	38.19	4251.34	706.43
LV-GS076	38	15.10	114	32.61	4236.39	714.96
LV-GS077	38	15.43	114	27.14	4237.21	722.92
LV-GS078	38	14.23	114	35.09	4234.67	711.39
LV-GS079	38	15.09	114	35.43	4236.26	710.84
LV-GS080	37	56.85	114	25.62	4202.91	726.08
LV-GS081	37	56.78	114	21.33	4202.96	732.38
LV-GS082	37	57.31	114	21.55	4203.92	732.03
LV-GS083	37	57.58	114	25.11	4204.28	726.79
LV-GS084	37	59.26	114	26.22	4207.35	725.09
LV-GS085	38	4.41	114	23.18	4216.98	729.27
LV-GS086	38	5.82	114	22.14	4219.65	730.72
LV-GS087	38	7.35	114	25.46	4222.33	725.79
LV-GS088	38	3.28	114	28.70	4214.68	721.25
LV-GS089	38	3.19	114	28.38	4214.53	721.73

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ACT ID.	GEODETIC COORD. LAT. DEG	GEODETIC COORD. LAT. MIN	GEODETIC COORD. LONG. DEG	GEODETIC COORD. LONG. MIN	UTM COORD. ZONE 11 N(KM)	UTM COORD. ZONE 11 E(KM)
LV-GS090	38	3.89	114	29.33	4215.78	720.30
LV-GS091	38	4.89	114	31.75	4217.54	716.71
LV-GS092	38	6.54	114	33.86	4220.51	713.55
LV-GS093	38	5.60	114	34.95	4218.72	712.01
LV-GS094	37	57.70	114	33.25	4204.17	714.86
LV-GS095	37	59.70	114	31.92	4207.92	716.72
LV-GS096	38	9.68	114	24.85	4226.66	726.55
LV-GS097	38	7.06	114	37.21	4221.35	708.63
LV-GS098	38	10.57	114	36.86	4227.84	708.97
LV-GS099	38	13.94	114	35.77	4234.13	710.40
LV-GS100	38	16.01	114	35.90	4237.94	710.11
LV-GS101	38	25.24	114	33.04	4255.12	713.83
LV-GS102	38	25.87	114	30.40	4256.39	717.64
LV-GS103	38	26.45	114	29.61	4257.49	718.76
LV-GS104	38	21.80	114	23.55	4249.13	727.82
LV-GS105	38	45.04	114	41.54	4291.43	700.54
LV-GS106	38	44.92	114	38.61	4291.32	704.80
LV-GS107	38	45.79	114	36.54	4293.01	707.75
LV-GS108	38	44.03	114	36.00	4289.76	708.61
LV-GS109	38	42.65	114	32.66	4287.34	713.53
LV-GS110	38	37.90	114	31.66	4278.60	715.21
LV-GS111	38	40.23	114	36.20	4282.74	708.51
LV-GS112	38	38.97	114	38.81	4280.30	704.78
LV-GS113	38	35.31	114	30.95	4273.83	716.37
LV-GS114	38	27.14	114	33.59	4258.62	712.94
LV-GS115	38	23.05	114	27.04	4251.32	722.67
LV-GS116	38	23.44	114	27.64	4252.02	721.78
LV-GS117	38	25.27	114	25.27	4255.49	725.13
LV-GS118	38	36.24	114	40.98	4275.18	701.76
LV-GS119	38	36.05	114	41.42	4274.81	701.13
LV-GS120	38	29.51	114	29.82	4263.15	718.30
LV-GS121	38	32.46	114	40.74	4268.19	702.29
LV-GS122	38	29.42	114	39.92	4262.60	703.62
LV-GS123	38	30.36	114	42.03	4264.26	700.51

WATER WELLS SITES

LV-001	38	40.77	114	33.34	4283.85	712.63

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ACT	GEODETIC COORD.				UTM COORD.	
ID.	LAT.		LONG.		ZONE 11	
	DEG	MIN	DEG	MIN	N(KM)	E(KM)
LV-002	38	34.12	114	32.77	4271.56	713.79
LV-003	38	30.29	114	31.42	4264.53	715.94
LV-004	38	27.56	114	34.38	4259.37	711.76
LV-005	38	6.42	114	33.56	4220.30	714.00
LV-006	38	2.07	114	31.04	4212.35	717.89
LV-007	38	2.38	114	25.66	4213.14	725.75
LV-008	37	59.38	114	26.62	4207.54	724.50
LV-009	37	58.05	114	29.63	4204.97	720.15
LV-010	38	1.87	114	31.75	4211.95	716.86
LV-011	38	21.49	114	37.26	4248.03	707.88
LV-012	38	41.33	114	38.43	4284.69	705.23
LV-013	38	40.70	114	32.96	4283.72	713.19

TEST PITS

LV-P001	38	43.05	114	36.43	4287.93	708.04
LV-P002	38	42.62	114	33.06	4287.27	712.95
LV-P003	38	38.49	114	34.04	4279.60	711.73
LV-P004	38	37.88	114	32.12	4278.55	714.54
LV-P005	38	43.54	114	38.94	4288.76	704.37
LV-P006	37	57.48	114	31.40	4203.84	717.59
LV-P007	37	59.16	114	28.01	4207.08	722.47
LV-P008	38	0.47	114	26.22	4209.58	725.02
LV-P009	38	1.58	114	25.23	4211.66	726.42
LV-P010	38	3.04	114	24.34	4214.41	727.64
LV-P011	38	5.70	114	22.37	4219.40	730.39
LV-P012	38	9.15	114	25.40	4225.67	725.78
LV-P013	38	8.00	114	26.18	4223.51	724.70
LV-P014	38	7.50	114	27.55	4222.52	722.72
LV-P015	38	7.06	114	29.84	4221.63	719.40
LV-P016	38	6.38	114	32.84	4220.26	715.05
LV-P017	38	6.40	114	34.79	4220.21	712.20
LV-P018	38	10.76	114	36.93	4228.19	708.87
LV-P019	38	8.87	114	34.18	4224.80	712.96
LV-P020	38	10.34	114	31.92	4227.60	716.19
LV-P021	38	10.99	114	29.86	4228.88	719.17
LV-P022	38	15.13	114	30.27	4236.53	718.36
LV-P023	38	15.35	114	28.52	4237.01	720.91

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ACT ID.	GEODETIC COORD. LAT. DEG	GEODETIC COORD. LAT. MIN	GEODETIC COORD. LONG. DEG	GEODETIC COORD. LONG. MIN	UTM COORD. ZONE 11 N(KM)	UTM COORD. ZONE 11 E(KM)
LV-P024	38	14.73	114	32.24	4235.72	715.51
LV-P025	38	19.28	114	35.21	4244.02	710.97
LV-P026	38	20.26	114	29.89	4246.04	718.67
LV-P027	38	20.88	114	26.60	4247.32	723.42
LV-P028	38	21.70	114	24.11	4248.93	727.02
LV-P029	38	19.83	114	36.61	4244.98	708.89
LV-P030	38	27.58	114	34.19	4259.41	712.05
LV-P031	38	24.46	114	30.94	4253.76	716.93
LV-P032	38	25.01	114	28.62	4254.88	720.27
LV-P033	38	25.59	114	25.23	4256.08	725.18
LV-P034	38	30.22	114	37.43	4264.18	707.20
LV-P035	38	29.38	114	41.10	4262.48	701.91
LV-P036	38	39.00	114	39.16	4280.34	704.27
LV-P037	38	35.84	114	41.28	4274.42	701.35
LV-P038	38	34.14	114	33.57	4271.57	712.63
LV-P039	38	34.09	114	37.37	4271.33	707.10
LV-P040	38	44.74	114	40.99	4290.90	701.35

RESISTIVITY LINES

LV-R001	38	44.74	114	40.99	4290.90	701.35
LV-R002	38	39.00	114	39.16	4280.34	704.27
LV-R003	38	35.84	114	41.28	4274.42	701.35
LV-R004	38	29.98	114	39.72	4263.65	703.89
LV-R005	38	25.59	114	25.23	4256.08	725.18
LV-R006	38	21.96	114	23.27	4249.45	728.22
LV-R007	38	21.49	114	25.36	4248.49	725.20
LV-R008	38	19.62	114	37.42	4244.57	707.72
LV-R009	38	23.67	114	38.88	4251.99	705.40
LV-R010	38	42.62	114	33.06	4287.27	712.95
LV-R011	38	10.76	114	36.93	4228.19	708.87
LV-R012	38	34.93	114	31.00	4273.12	716.31
LV-R014	38	7.15	114	36.97	4221.51	708.98
LV-R015	38	6.40	114	34.79	4220.21	712.20
LV-R016	37	57.55	114	32.16	4203.95	716.47
LV-R017	38	3.96	114	23.77	4216.14	728.44
LV-R018	38	5.70	114	22.37	4219.40	730.39
LV-R019	38	9.68	114	24.99	4226.66	726.35

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ACT ID.	GEODETIC COORD. LAT. DEG	MIN	LONG. DEG	MIN	UTM COORD. ZONE 11 N(KM)	E(KM)
LV-R020	38	14.39	114	35.22	4234.98	711.18
LV-R021	38	15.13	114	30.27	4236.53	718.36
REFRACTION LINES						
LV-S001	38	44.74	114	40.99	4290.90	701.35
LV-S002	38	39.00	114	39.16	4280.34	704.27
LV-S003	38	35.84	114	41.28	4274.42	701.35
LV-S004	38	29.98	114	39.72	4263.65	703.89
LV-S005	38	25.59	114	25.23	4256.08	725.18
LV-S006	38	21.96	114	23.27	4249.45	728.22
LV-S007	38	21.49	114	25.36	4248.49	725.20
LV-S008	38	19.62	114	37.42	4244.57	707.72
LV-S009	38	23.67	114	38.88	4251.99	705.40
LV-S010	38	42.62	114	33.06	4287.27	712.95
LV-S011	38	10.76	114	36.93	4228.19	708.87
LV-S012	38	34.93	114	31.00	4273.12	716.31
LV-S013	38	30.17	114	41.75	4263.93	700.92
LV-S014	38	7.15	114	36.97	4221.51	708.98
LV-S015	38	6.40	114	34.79	4220.21	712.20
LV-S016	37	57.55	114	32.16	4203.95	716.47
LV-S017	38	3.96	114	23.77	4216.14	728.44
LV-S018	38	5.70	114	22.37	4219.40	730.39
LV-S019	38	9.68	114	24.99	4226.66	726.35
LV-S020	38	14.39	114	35.22	4234.98	711.18
LV-S021	38	15.13	114	30.27	4236.53	718.36
LV-S022	38	15.35	114	28.52	4237.01	720.91
TRENCH SITES						
LV-T001	38	42.75	114	35.23	4287.43	709.79
LV-T002	37	58.05	114	29.63	4204.97	720.15
LV-T003	38	4.69	114	23.30	4217.51	729.07
LV-T004	38	6.65	114	30.65	4220.83	718.23
LV-T005	38	6.55	114	35.65	4220.46	710.94
LV-T006	38	9.46	114	35.87	4225.84	710.48
LV-T007	38	14.37	114	34.44	4234.97	712.32
LV-T008	38	19.79	114	32.46	4245.07	714.95

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ACT	GEODETIC COORD.				UTM COORD.	
ID.	LAT.		LONG.		ZONE 11	
	DEG	MIN	DEG	MIN	N(KM)	E(KM)
LV-T009	38	20.70	114	28.21	4246.92	721.09
LV-T010	38	26.02	114	32.55	4256.58	714.51
LV-T011	38	25.41	114	26.69	4255.69	723.07
LV-T012	38	29.98	114	39.72	4263.65	703.89
LV-T013	38	35.52	114	39.43	4273.90	704.04
LV-T014	38	34.07	114	31.58	4271.52	715.51

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TABLE II-1-1

2.0 GEOLOGIC STATION DATA

Explanation: Geologic stations were established at selected locations throughout the valley at which detailed descriptions of surficial basin-fill deposits or rock were recorded. All data taken on surficial basin-fill units at the geologic stations are listed in Table II-2-1, and an explanation of the column headings in the table is given below. An example of the field data sheet is shown in Figure II-2-1. At stations where rock descriptions were made, only geologic unit designations are listed. A general explanation of all geologic unit symbols used in Verification studies is included at the end of this section.

Column Heading Table II-2-2	Explanation
Station Number	Geologic stations are numbered sequentially. (e.g., NLVG001; N= Nevada-Utah Study Area; LV= Valley abbreviation [Lake]; G= Geology Station).
Geol. Unit	Generalized mapped geomorphic unit (see explanation below). The grain-size designations (s, g, and f) indicate sand, gravel, and fines, respectively.
MPS (mm)	Average Maximum Particle Size in millimeters.
Grain Size (%B, %C, %G, %S, %F)	Estimated particle size distribution using the Unified Soil Classification System. Percentages of boulders (%B) and cobbles (%C) are based on the entire deposit, whereas percentages of gravel (%G), sand (%S), and fines (%F) are taken only on the fraction composed of particles less than 3 inches (76 mm) in diameter. Note: The symbol 0 (occasional) indicates between 1 and 5 percent; zero indicates 0 to 1 percent.
*	Laboratory analyses of selected soil samples using the Unified Soil Classification System.

USCS	Soil class according to the Unified Soil Classification System.
Munsell Color	Soil color based on standard Munsell Soil Color Charts.
Source Rock Types	Rock types of coarse clasts (gravel) listed in order of abundance.
Physical Properties	Data listed in columns 6 through 15 address specific soil properties. These are listed below in parentheses following the column heading number and are also listed at the bottom of Table II-2-1. Data are coded with each numerical entry referring to a specific soil condition as listed below.

6	(Grain Shape)	1) Angular, 2) Subangular, 3) Subrounded, 4) Rounded, 5) Well rounded
7	(Moisture Content)	1) Dry, 2) Slightly Moist, 3) Moist, 4) Very Moist, 5) Wet
8	(Plasticity of Fines)	1) None, 2) Low, 3) Medium, 4) High
9	(Consistency)	Coarse grained: 1) Very Loose, 2) Loose, 3) Medium Dense, 4) Dense, 5) Very Dense Fine grained: 1)Soft, 2) Firm, 3) Stiff, 4) Hard
10	(Structure)	1) Non-stratified, 2) Stratified, tabular, 3) Stratified, other (lensed, cross bedded, discontinuous beds)
11	(Cementation-Induration)	1) None, 2) Weak, 3) Moderate, 4) Strong
12	(Depth to Cemented Layer)	Depth to layer (in centimeters) exhibiting cementation-induration described in Column 11 (above)
13	(Weathering of clasts)	1) Fresh, 2) Slight, 3) Moderate, 4) Very
14	(Soil Profile Development)	1) None (A-C profile), 2) Poor (incipient B-horizon), 3) Well (prominant B-horizon)
15	(Caliche Development)	1) None, 2) Stage I, 3) Stage II, 4) Stage III, 5) Stage IV

Terrain	Terrain information at the data location is broken into the following categories:
Drainage Depth (ft)	Average depth of drainages (in feet)
Drainage Width (ft)	Average width of drainages (in feet)
Slope (%)	Average slope of ground surface (in percent grade)
Sample	Number of samples taken

GENERALIZED GEOLOGIC UNITS

Explanation

Surficial Basin-fill Units

A1 Younger Fluvial Deposits - Major recent stream channel and floodplain deposits.

A2 Older Fluvial Deposits - Older incised stream channel and floodplain deposits in elevated terraces bordering major recent drainages.

A3 Eolian Deposits - Windblown deposits of sand occurring as either thin sheets (A3s) or dunes (A3d).

A4 Playa and Lacustrine Deposits - Deposits occurring in modern, active playas (A4) or in either inactive playas or older lake beds and abandoned shorelines associated with extinct lakes (A4o).

A5 Alluvial Fan Deposits - Alluvial deposits consisting of debris flow and water-laid alluvium near mountain fronts, grading into predominantly water-laid alluvium deposited in shifting distributary channels near the basin center. Younger (A5y), intermediate (A5i), and older (A5o) alluvial fans are differentiated by surface soil development, terrain conditions, and present depositional/erosional environment.

Grain sizes of these deposits (except dune deposits, which are exclusively sandy) are indicated by a single letter (f, s, or g) following the geologic unit symbol. These letters indicate the predominant grain size and range of soil types according to the Unified Soil Classification System.

f - fine-grained clays and silts (ML, CL, MH, CH)

s - sands (SP, SW, SM, SC)

g - gravels (GP, GW, GM, GC)

ROCK UNITS

I Igneous (undifferentiated). Rocks formed by solidification of a molten or partially molten mass.

I1 Intrusive - Plutonic rocks formed by solidification of molten material beneath the surface (e.g., granite, granodiorite, diorite, gabbro).

I2 Extrusive (intermediate and acidic) - Volcanic rocks of intermediate and acidic compositon formed by solidification of molten material at or near the surface, (e.g., rhyolite, latite, dacite, andesite).

I3 Extrusive (basic) - Volcanic rocks of basic composition, generally formed by solidification of molten materials at or near the surface (e.g., basalt).

I4 Extrusive (pyroclastic) - Rocks formed by accumulation of volcanic ejecta (e.g., ash, tuff, welded tuff, agglomerate).

S Sedimentary (undifferentiated) - Rocks formed by accumulation of clastic solids, organic solids, and/or chemically precipitated minerals.

S1 Arenaceous and/or Siliceous Rocks - Composed of sand-size particles (e.g., sandstone, orthoquartzite) or of cryptocrystalline silica (e.g., opal, chert).

S2 Carbonate Rocks - Composed predominantly of calcium carbonate detritus or chemical precipitates (e.g., limestone, dolomite, chalk).

S3 Argillaceous Rocks - Composed of clay and silt-sized particles (e.g., siltstone, shale, claystone).

S4 Evaporite Rocks - Precipitated from solution as a result of evaporation (e.g., halite, gypsum, anhydrite, sylvite).

S5 Coarse Clastic Rocks - Composed of gravel sized or larger clasts (e.g., conglomerate, breccia).

M Metamorphic (undifferentiated) - Rocks formed through recrystallization in the solid state of preexisting rocks by heat and pressure (e.g., gneiss, schist, hornfels, metaquartzite).

		SOIL DESCRIPTION																				TERRAIN			
STATION NUMBER	GEOL UNIT	MPS MM	GRAIN SIZE XB	XC	XG	XS	XF		USCS	MUNSELL COLOR	SOURCE ROCK TYPES	PHYSICAL PROPERTIES 6	7	8	9	10	11	12	13	14	15	DRAINAGE(FT) DEPTH	WIDTH	SLOPE (%)	SAMPLE
LVGS001	A5IF	30	0	0	2	15	83	*	ML	10.0YR4/4	S2	2	5	2	3	1	2	45		1	1	2.0	3.0	1	1
LVGS002	A5YS	50	0	0	2	78	20		SM	10.0YR4/4	S2	2	3	3	3	2			2	1	2			2	0
LVGS003	A5IS	20	0	0	0	70	30		SM	7.5YR4/4	S2 S1	2	5	2	3	2	4	15	2	1	5				1
LVGS004	A5YS	80	0	0	5	70	25		SM	10.0YR3/4	S1 S2	2	5	3	3	1	1		2	1	1	2.0	3.0	5	0
LVGS005	A5OC	260	0	40	15	10	75		ML	7.5YR4/4	S1	2	5	3	8	1	1		2	3	1			8	0
LVGS006	A5YS	40	0	0	10	75	15		SM	10.0YR3/4	S2 S1	3	5	2	3	1	1		2	1	2	2.0	6.0	4	0
LVGS007	A5IS	200	0	0	15	75	10		SP-SM	7.5YR3/4	S1 S2	2	5	2	3	1	2	0	3	2	3	5.0	30.0	6	0
LVGS008	A5IS	60	0	0	10	80	10		SP-SM	10.0YR4/4	S2	2	5	2	3	1	4	47	2	1	4			2	0
LVGS009	A4OG	30	0	0	45	42	13	*	GM		S2 S1	2	3	1	2	1	1		2	1	2				1
LVGS010	A5IS	110	0	0	15	70	15		SM	10.0YR3/2	S2	2	5	1	3	1	3	20	2	1	4	23.0	23.0	4	0
LVGS011	A5YS	20	0	0	0	90	10		SP-SM	7.5YR5/4	S1	2	3	2	4	1	1		2	2	2				0
LVGS012	A5IS	50	0	0	7	64	29	*	SM	7.5YR4/4	S2 S1	2	3	1	3	1	2	37	3	1	3	7.0	13.0	1	1
LVGS013	A5IS	90	0	0	30	65	5		SP	10.0YR4/4	S2	3	3	1	2	1	2	44	3	1	2	1.0	7.0	5	0
LVGS014	A5IS	150	0	0	30	65	5		SP-SM	10.0YR5/4	S2	3	3	1	3	1	2	32	2	2	3	2.0	3.0	8	0
LVGS015	A5IS	45	0	0	10	85	5		SP-SM	10.0YR4/3	S2 S1	3	3	1	3	1	2	30	2	1	2	3.0	25.0	2	0
LVGS016	A5YS	1	0	0	0	50	50	*	SM-ML	10.0YR6/4		3	3	1	3	1	1			1	1	3.0		1	1
LVGS017	A5IS	20	0	0	3	72	25	*	SM	10.0YR3/3	I2	3	5	1	3	1	2	37	2	1	2				1
LVGS018	A4OF	0	0	0	0	20	80	*	CL	10.0YR6/3			1	3	9	1	1			1	1				1
LVGS019	A5IS	90	0	0	15	65	20	*	SM	10.0YR3/4	I2	3	5	1	3	1	2	50	3	1	1	1.0	3.0	4	1
LVGS020	A5IS	75	0	0	10	80	10		SP-SM	7.5YR5/4	I2	2	3	2	3	1	3	35	3	1	4	0.0	7.0		0
LVGS021	A5IS	80	0	0	5	75	20		SM-SC	7.5YR5/4	I2	3	3	3	3	1	1		2	3	2	3.0	7.0	1	0
LVGS022	A5IS	20	0	0	0	80	20		SC	7.5YR4/4	I2	2	3	3	3	1	2	35	2	2	2	13.0	520.0	2	0
LVGS023	A2 S	50	0	0	0	60	40		SM-SC	10.0YR4/3	I2	2	3	3	3	1			2	3	2	6.0	13.0		0
LVGS024	A5IS	65	0	0	5	85	10		SP-SM	7.5YR5/4	I2	2	3	1	3	1	2	35	3	2	3	13.0	13.0		0
LVGS025	A5IS	150	0	10	10	70	20		SC	7.5YR3/4	I2	2	3	3	3	1	2	40	3	3	4	8.0	20.0	2	0
LVGS026	A5YS	120	0	0	2	95	3		SP	10.0YR3/3	I2 S2	2	5	1	3	1	2	57	2	1	2	1.0	3.0	2	0
LVGS027	A5OG	200	0	10	50	45	5		GP-GM		S2	3	3	1	2	1	2	12	2	1	3			2	1
LVGS028	A5YS	90	0	0	40	45	15		SM		S2 I2	2	5	2	3	1	2	30	2	1	3	3.0	10.0	4	0
LVGS029	A4OF	1	0	0	0	1	99	*	ML	10.0YR6/3			1	3	9	1	2	0		1	1				0
LVGS030	A5IS	35	0	0	0	90	10		SP-SM	7.5YR4/4	I2	3	3	1	3	1	2	35	2	1	2	3.0	13.0		0
LVGS031	A5IS		0	0	0	85	15		SC	7.5YR4/4	I2	2	5	3	3	1	1			2	1	3.0	13.0	0	0
LVGS032	A5IS	80	0	0	3	57	40	*	SC	7.5YR4/4	I2	3	3	3	4	1	1		3	3	1	13.0	260.0		1
LVGS033	A5IS	90	0	0	15	65	20		SC	7.5YR4/4	I2	2	3	3	3	1	3	30	3	2	4	10.0	10.0	1	0
LVGS034	A5OS	130	0	0	10	75	15		SM	7.5YR3/4	I2	2	5	3	3	1	2	30	3	2	4	0.0	.	2	0
LVGS035	A5IS	50	0	0	2	88	10		SP-SC	7.5YR3/4	I2	2	5	3	3	1	1			3	1	1.0	3.0	1	0
LVGS036	A5IS	130	0	0	8	54	38	*	SM-SC	7.5YR4/4	I2	2	3	2	3	1	2	22	3	2	4	5.0	52.0	3	1
LVGS037	A5YS	60	0	0	2	83	15		SM-SC	7.5YR5/6	I2	2	3	2	3	1	2	32	2	1	2	3.0	.	1	0
LVGS038	A5IS	120	0	0	10	55	35		SM	10.0YR3/4	S1 S2	2	3	2	3	1	3	27	2	2	4	7.0	40.0	4	0
LVGS039	A5IS	200	0	0	7	63	30	*	SM	10.0YR3/3	I2	2	3	2	3	1	2	30	2	1	3			2	1
LVGS040	A5IS	30	0	0	3	67	30	*	SM	7.5YR4/4	I2	2	3	1	3	1			2	3	1			3	1
LVGS041	A5IF	50	0	0	2	38	60		ML-CL	7.5YR4/4	S2		3	2	8	1	2	28		2	2	3.0	16.0	1	0
LVGS042	A1 F		0	0	0	0	100		CL	10.0YR5/4			3	2	7	1	1			1	1			0	0
LVGS043	A4OS	140	0	0	0	65	35	*	SM	10.0YR4/4	I2	2	5	1	3	2	1			1	1	60.0	120.0	0	1
LVGS044	A5IS	100	0	0	30	55	15		SM	7.5YR4/6	I2	2	3	1	3	3	2	24	2	2	4	18.0	70.0	2	0
LVGS045	A5IS	300	0	10	22	56	22		SC	7.5YR5/4	I2	2	5	2	3	1	2	40	2	3	2	5.0	10.0	2	0
LVGS046	A4OS	70	0	0	10	75	15		SM	10.0YR5/4	I4	2	3	1	3	3	1		2	1	1	13.0	160.0		0
LVGS047	A1 S	30	0	0	2	58	40		SM	7.5YR3/4	I2	3	3	2	3	1	1		2	1	1	5.0	7.0		0
LVGS048	A5OS	135	0	0	30	55	15		SM	7.5YR3/4	S2	3	3	2	3	1	3	30	2	1	5	7.0	7.0	10	0
LVGS049	A5IG	90	0	5	45	35	20		GM		S2	3	3	2	3	1	1		2	1	2	5.0	7.0	6	0
LVGS050	A5OS	150	0	0	3	92	5		SP-SM	7.5YR5/4	I2	3	3	2	3	1	2	47	2	1	3	40.0	70.0		0
LVGS051	A5OS	60	0	0	10	75	15		SC	10.0YR3/3	I2	3	3	3	3	1	1		2	3	2				0
LVGS052	A1 F	60	0	0	1	15	84		ML	10.0YR6/2	I2		3	1	8	3	1			1	1	8.0	40.0		0
LVGS053	A5IS	80	0	0	40	40	20		SM	10.0YR4/4	S2 I2	2	3	1	2	1	3	32	3	2	5	3.0	.	4	0
LVGS054	A5IS	40	0	0	2	50	48		SC-CL	7.5YR4/4	S2 I2 M	2	3	2	2	1	4	24	2	1	5	8.0	7.0	3	0
LVGS055	A1 F		0	0	0	0	100	*	ML	7.5YR5/6			1	2	8	3	1			1	1	3.0	10.0		1
LVGS056	A4OS	90	0	0	20	55	25		SM	10.0YR4/6	I2	3	3	2	2	1	2	31	3	3	4	25.0	80.0		0
LVGS057	A5IS	110	0	5	20	30	50		SC-CL	7.5YR4/4	I2	3	3	3	2	1	2	56	2	3	3	80.0	80.0	2	0
LVGS058	A5OS	120	0	5	20	45	35		SC	7.5YR4/4	I2	3	3	4	3	1	4	35	2	3	4	70.0	30.0	3	0
LVGS059	I3																								1
LVGS060	A5IS	8	0	0	1	69	30	*	SM	10.0YR3/6		2	2	1	3	1	1				1	20.0	100.0	2	1
LVGS061	I4																								1
LVGS062	A4OS	30	0	0	20	65	15		SM	10.0YR3/6	S1	2	2	1	3	1	1		2	1	1	5.0	30.0	1	0
LVGS063	A5YS	35	0	0	9	52	39	*	SM	10.0YR3/6	S1	2	2	1	3	1	2	36	2	1	4	1.0	2.0	1	1
LVGS064	A5YF		0	0	0	3	97		ML	10.0YR3/3			2	3	7	1	1			1	1			2	0
LVGS065	S2																								1
LVGS066	A5OS	45	0	0	5	55	40		SM	10.0YR3/3	S2	2	2	2	2	1	3	9	2	1	5	15.0	45.0	10	0
LVGS067	A3DS		0	0	8	66	26	*	SM	10.0YR5/3		2	2	1	2	1	1			1	2	0.0	0.0	0	1
LVGS068	A4OS		0	0	4	60	36	*	SM	10.0YR4/4		2	2	2	3	1	4	40		1	4	0.0	0.0	0	1
LVGS069	A4OS	3	0	0	7	62	31	*	SM	10.0YR3/3		2	2	2	4	1	1			1	1	0.0	0.0	1	1
LVGS070	A5IS	15	0	0	2	51	47	*	SM	10.0YR4/6	S2	2	2	2	3	1	1		2	1	3	1.0	1.0	1	1
LVGS071	A5YF		0	0	0	5	95		ML	10.0YR3/2			2	2	7	1	1			1	1	1.0	1.0	2	1
LVGS072	A5IS		0	0	0	64	36	*	SC	10.0YR4/6		2	2	2	3	1	1			1	1	1.0	3.0	2	1
LVGS073	S2																								1
LVGS074	A5IS	50	0	0	4	81	15		SM	10.0YR3/3	S1 I2	2	2	1	3	1	3	20	2	1	4	4.0	20.0	6	0
LVGS075	A5YF	8	0	0	0	21	79	*	ML	10.0YR4/4	S1	2	2	2	4	1	1		2	1	3			2	1
LVGS076	A1 F		0	0	0	30	70		ML	10.0YR3/2			2	2	7	1	1			1	1			2	0
LVGS077	I1																								1
LVGS078	A5IS	30	0	0	12	57	31	*	SC	10.0YR3/3	I2	2	2	3	3	1	1		2	2	3	12.0	50.0		1
LVGS079	I2																								1
LVGS080	A5IG	140	0	10	50	25	25	*	GM		S1 S2	2	2	2	4	1	2	40	2	2	4	35.0	290.0	3	1

EXPLANATION:PHYSICAL PROPERTIES

6:GRAIN SHAPE
7:MOISTURE CONTENT
8:PLASTICITY OF FINES
9:CONSISTENCY
10:STRUCTURE
11:CEMENTATION-INDURATION
12:DEPTH TO CEMENTED LAYER(CM)
13:WEATHERING OF CLASTS
14:SOIL PROFILE DEVELOPMENT
15:CALICHE DEVELOPMENT
NOTE: 0=OCCASIONAL(1-5%)
NOTE: *=LAB DATA

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GEOLOGIC STATION DATA
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		SOIL DESCRIPTION																				TERRAIN			
STATION NUMBER	GEOL UNIT	MPS MM	GRAIN SIZE XB	XC	XG	XS	XF		USCS	MUNSELL COLOR	SOURCE ROCK TYPES	PHYSICAL PROPERTIES 6	7	8	9	10	11	12	13	14	15	DRAINAGE (FT) DEPTH	WIDTH	SLOPE (%)	SAMPLE
LVGS081	A5IS	40	0	0	40	53	7		SP-SM	10.0YR3/6	I2 I3	2	2	2	4	1	1		2	2	2	15.0	500.0		0
LVGS082	A1 S	50	0	0	5	90	5	*	SW-SM	10.0YR4/4	I2 I4	2	2	1	3	1	1		2	1	2	40.0	990.0	4	1
LVGS083	A5YF		0	0	0	15	85	*	ML-CL	10.0YR3/4			2	2	7	1	1			1	1	1.0	1.0	2	1
LVGS084	A5IS	55	0	0	6	61	33	*	SM	10.0YR5/4	I2 I3	2	2	2	4	1	3	13	2	1	1	30.0	300.0		1
LVGS085	I2																								1
LVGS086	I2																								1
LVGS087	A5IF		0	0	13	35	52	*	CL	10.0YR4/4	I2		2	3	4	1	1			1	1	20.0	200.0	2	1
LVGS088	A5IS	75	0	0	15	65	20		SC	10.0YR4/6	I2	2	2	3	4	1	1		2	1	1	60.0	900.0	2	0
LVGS089	A5YS	30	0	0	8	44	48	*	SM	10.0YR4/4	I2	2	2	2		1			3	1	1	1.0	3.0	4	1
LVGS090	A1 S	20	0	0	4	57	39	*	SM	10.0YR3/3	I2	2	3	2	4	2	1		2	2	1	4.0	4.0	2	1
LVGS091	A1 S	0	0	0	12	53	35	*	SM	10.0YR5/4	I2	2	2	2	3	1	1		2	1	2	7.0	8.0	3	1
LVGS092	S3																								1
LVGS093	A5YG	80	0	5	60	25	15		GM		S2	2	2	2	3	1	1		2	1	2	7.0	50.0	6	0
LVGS094	S2																								1
LVGS095	A5IS	85	0	2	45	48	7		SP-SM	10.0YR3/4	S2	2	2	2	3	1	1		2	1	3	6.0	20.0	4	0
LVGS096	I2																								1
LVGS097	I2																								1
LVGS098	I2																								1
LVGS099	A5IS	12	0	0	1	84	15		SC	10.0YR3/3	I2	2	3	3	4	1	1		2	2	1	1.0	3.0	4	1
LVGS100	A5IS		0	0	0	70	30		SM	10.0YR4/4		2	2	1	3	1	3	20		1	5	1.0	3.0	5	0
LVGS101	A40S	25	0	0	12	63	25	*	SM	10.0YR3/4	I2	2	1	3	4	1	1		2	1	2	0.0	0.0		1
LVGS102	A5YF		0	0	0	4	96	*	CL	10.0YR5/4			2	3	4	1	1			1	1	1.0	3.0	1	1
LVGS103	A5IS	51	0	0	8	56	36	*	SM	10.0YR4/4	I2	2	2	3	4	1	1		2	1	2	5.0	50.0	2	1
LVGS104	I2																								1
LVGS105	S2																								1
LVGS106	A5IG	50	0	0	60	30	10		GP-GM		S2	2	2	1	3	1	3	10	2	1	3	6.0	100.0	4	0
LVGS107	A5IG	56	0	0	60	30	10		GP-GM		S2	2	1	1	5	1	4	13	2	1	5	4.0	25.0	4	0
LVGS108	A5YG	175	0	0	80	15	5		GP-GM		S2	3	1	1	2	1	1		2	1	1	1.0	3.0	2	0
LVGS109	S2																								1
LVGS110	I2																								1
LVGS111	A40F		0	0	0	12	88	*	ML	10.0YR4/4			2	2	7	1	1			1	1	1.0	3.0		1
LVGS112	S2																								1
LVGS113	I2																								1
LVGS114	A40F		0	0	0	42	58	*	ML	10.0YR4/3			2	1	3	1	1			1	1	1.0	1.0		1
LVGS115	A5IG	105	0	7	64	12	24	*	GM		I2	2	2	3	3	1	1		2	1	1	7.0	20.0	10	1
LVGS116	A1 S		0	0	0	55	45		SM	10.0YR3/4		2	2	3	3	1	1		2	1	1	3.0	300.0	2	0
LVGS117	I2																								1
LVGS118	A50G	85	0	5	62	20	18	*	GM		S2 S1	2	2	2	3	1	4	20	2	1	4	25.0	100.0	10	1
LVGS119	S2																								1
LVGS120	A5IS	55	0	0	3	77	20		SM	10.0YR5/4	I2	2	2	1	3	1	3		2	2	3	1.0	100.0	2	0
LVGS121	A5IS	110	0	0	7	60	33		SM	10.0YR3/6	S2 S1	2	2	2	3	1	3	25	2	2	4	8.0	50.0	4	0
LVGS122	I2																								1
LVGS123	S2																								1

EXPLANATION: PHYSICAL PROPERTIES

6: GRAIN SHAPE	9: CONSISTENCY	12: DEPTH TO CEMENTED LAYER (CM)	15: CALICHE DEVELOPMENT
7: MOISTURE CONTENT	10: STRUCTURE	13: WEATHERING OF CLASTS	NOTE: 0=OCCASIONAL (1-5%)
8: PLASTICITY OF FINES	11: CEMENTATION-INDURATION	14: SOIL PROFILE DEVELOPMENT	NOTE: *=LAB DATA

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GEOLOGIC STATION DATA
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TABLE II-2-1

Station No. CSR VALLEY CLA STATION # 1 2 3 4 5 6 7 ☐☐☐☐☐☐☐

Described Geol. Unit UNIT ☐☐☐☐

Date ____________________

Complete Geol. Unit ____________________

Observers ____________________

Field Photo Nos. ____________________

Air Photo No. ____________________

Sample (No=0, Yes=1) 12 ☐ ____________________

SOIL PROPERTIES

1. Grain-Size Distribution: MPS (mm) - grain size of coarsest fraction; boulders and cobbles - percent of total; gravel, sand, and fines - percent less than 3 inches.

MPS		B		C		G		S		F		

FIELD

LAB

2. USCS Symbol ☐☐☐☐

3. Descriptive Name (one adjective only) ____________________

4. Munsell Color (not applicable to gravel) ☐☐.☐☐☐☐/☐

5. Lithology of gravel, cobbles, boulders: give rock type (I1, I2, M, etc.) in order of abundance. ☐☐☐☐☐☐☐☐☐☐

6. Grain Shape (coarse grained soil only): 1) Angular, 2) Subangular, 3) Subrounded, 4) Rounded, 5) Well-rounded. ☐

7. Moisture Content: 1) Dry, 2) Slightly moist, 3) Moist, 4) Very moist, 5) Wet ☐

8. Plasticity of Fines: 1) None, 2) Low, 3) Medium, 4) High ☐

9. Consistency:
   Coarse-grained: 1) Very Loose, 2) Loose, 3) Medium Dense, 4) Dense, 5) Very Dense
   Fine-grained: 6) Soft, 7) Firm, 8) Stiff, 9) Hard ☐

10. Structure: 1) Non-stratified (homogeneous), 2) Stratified-tabular, 3) Stratified-other; if 3) describe ____________________ ☐

11. Cementation-Induration: 1) None, 2) Weak, 3) Moderate, 4) Strong ☐

12. Depth to Cemented Layer (cm) ☐☐☐

13. Weathering of boulders, cobbles, and gravel: 1) Fresh, 2) Slight, 3) Moderate, 4) Very ☐

14. Degree of Soil Profile Development: 1) None (A-C profile), 2) Poor (incipient B-horizon), 3) Well (prominant B-horizon) ☐
    Describe ____________________

15. Degree of Caliche Development: 1) None, 2) Stage I, 3) Stage II, 4) Stage III, 5) Stage IV ☐
    Describe ____________________

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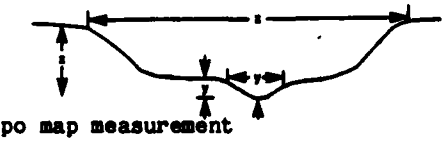
FIGURE II-2-1

TERRAIN



16. Average Drainage Depth (ft)

17. Average Drainage Width (ft)

18. Slope (percent) - field and/or topo map measurement

FIELD MAP

SURFACE FEATURES

19. Pit Depth (cm) ____________________

20. Thickness of Vesicular Silt (cm) ____________________

21. Desert Pavement Development
(None, Poor, Moderate, Well) ____________________

22. Patina Development
(None, Moderate, Well) ____________________

COMMENTS

____

____

____

____

ROCK DESCRIPTIONS

23. Rock Type/Formation ____________________

24. Color, Grain size, Hardness, Texture ____________________

____

25. Degree of Weathering ____________________

26. Structure
Bedding Characteristics ____________________

Bedding Attitude ____________________

Fracture, Joint ____________________

27. Secondary Alteration/Mineralization ____________________

____

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FIELD DATA SHEET
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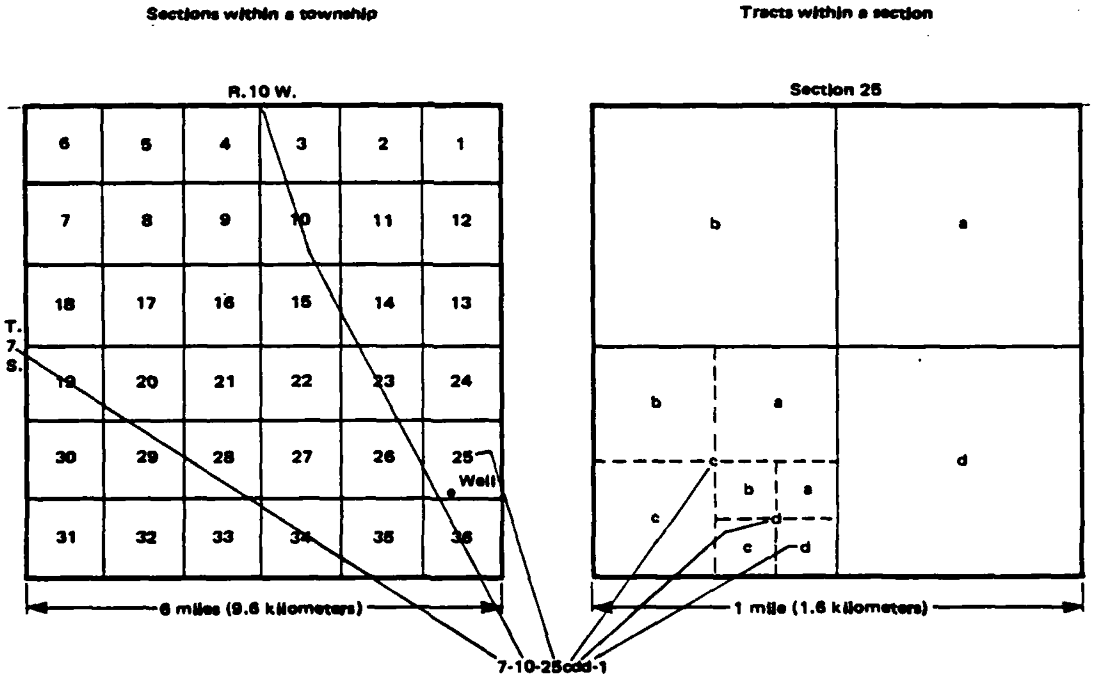
FIGURE II-2-1

3.0 GROUND-WATER DATA

Explanation: Existing ground-water data in Lake Valley were collected from all available sources. These data were updated where possible from measurements taken during Ertec field operations, and all data are shown in Table II-3-1. Locations of water wells drilled by Ertec Western Inc., are shown in Drawing II-1-1. Data from published water wells and wells drilled by Ertec Western, Inc., are shown in Drawing 3-4. Well numbers listed in the left hand column of Table II-3-1 refer to well locations shown on Drawing 3-4. Actual well numbers giving location, according to the Bureau of Land Management Land Survey System, are shown in the second column.



Water levels generally refer to the static ground-water table in the unconfined basin-fill aquifer. Perched conditions or levels in artesian aquifers are noted where known.

WELL NO.	WELL LOCATION NUMBER*	ELEVATION OF GROUND SURFACE—FEET (METERS) ABOVE M.S.L.	DEPTH OF WELL—FEET (METERS)	WATER LEVEL			REFERENCES**
				DEPTH BELOW GROUND SURFACE-FEET (METERS)	DATE MEASURED	ELEVATION-FEET (METERS) ABOVE M.S.L.	
W-1	10N-65E-13ca	6217 (1895)	130 (40)	100 (31)	11/66	6117 (1865)	1
W-2	10N-65E-36da	5945 (1812)	843 (257)	7 (2)	10/65	5938 (1810)	1
W-3	10N-66E-9a	6050 (1844)	228 (69)	181 (55)	-	5869 (1789)	4
W-4	10N-66E-17a	6010 (1832)	125 (38)	101 (31)	-	5909 (1801)	4
W-5	10N-66E-31ab	5945 (1812)	690 (210)	20 (6)	5/67	5925 (1806)	1
W-6	10N-66E-31bb	5955 (1815)	410 (125)	68 (21)	5/65	5887 (1794)	1
W-7	10N-66E-31a	5935 (1829)	46 (14)	31 (9)	-	5904 (1800)	4
W-8	9N-65E-1a	5935 (1809)	165 (50)	36 (11)	-	5899 (1798)	4
W-9	9N-65E-1ba	5995 (1827)	597 (182)	74 (23)	1/67	5921 (1805)	1
W-10	9N-65E-1bd	6000 (1829)	55 (17)	38 (12)	11/52	5962 (1817)	1
W-11	9N-65E-13ba	5940 (1811)	65 (20)	0	6/50	5940 (1811)	1
W-12	9N-65E-13b	5955 (1815)	57 (17)	18 (5)	1962	5937 (1810)	4
W-13	9N-65E-13cc	5940 (1811)	330 (101)	29 (9)	6/67	5911 (1802)	1
W-14	9N-65E-26aa	5950 (1814)	100 (31)	10 (3)	9/72	5940 (1811)	1
W-15	9N-65E-25cb	5940 (1811)	635 (194)	15 (5)	8/67	5925 (1806)	1
W-16	9N-65E-35ab	5960 (1817)	580 (177)	84 (26)	6/65	5876 (1791)	1
W-17	9N-66E-4a	5940 (1811)	53 (16)	39 (12)	-	5901 (1799)	4
W-18	9N-66E-23bd	6110 (1862)	297 (91)	202 (62)	7/67	5908 (1801)	1
W-19	9N-66E-34a	5990 (1826)	103 (31)	90 (27)	-	5900 (1798)	4
W-20	8N-65E-2ac	5945 (1812)	150 (46)	35 (11)	5/60	5910 (1801)	1
W-21	8N-65E-2d	5950 (1814)	130 (40)	37 (12)	-	5913 (1802)	4
W-22	8N-65E-12d	5930 (1807)	45 (14)	19 (6)	-	5911 (1802)	4

* Mt. Diablo Baseline and Meridian

** 1 State of Nevada Drillers Logs.

2 State of Nevada Ground-Water Resources Reconnaissance Series Report 27, Ground-Water Appraisal of the Meadow Valley Area, Lincoln and Clark Counties, Nevada, by Eugene Rush, 1964.

3 Ertec well data.

4 State of Nevada Ground-Water Resources Reconnaissance Series Report 24, Ground-Water Appraisal of Lake Valley in Lincoln and White Pine Counties, Nevada, by Rush and Eakin, 1963.

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TABLE II-3-1

WELL NO.	WELL LOCATION NUMBER*	ELEVATION OF GROUND SURFACE–FEET (METERS) ABOVE M.S.L.	DEPTH OF WELL–FEET (METERS)	WATER LEVEL			REFERENCES**
				DEPTH BELOW GROUND SURFACE-FEET (METERS)	DATE MEASURED	ELEVATION-FEET (METERS) ABOVE M.S.L.	
W-23	8N-65E-13	5920 (1804)	57 (17)	25 (8)	9/57	5895 (1797)	1
W-24	8N-65E-33da	6190 (1887)	390 (119)	200 (61)	12/65	5990 (1826)	1
W-25	8N-65E-33d	6204 (1891)	325 (99)	298 (91)	1945	5906 (1800)	4
W-26	8N-65E-35ad	5950 (1814)	200 (61)	55 (17)	1/68	5895 (1797)	1
W-27	8N-66E-10bc	5961 (1817)	217 (66)	74 (23)	6/68	5887 (1794)	1
W-28	8N-66E-27d	5930 (1807)	56 (17)	46 (14)	-	5884 (1793)	4
W-29	7N-65E-9	6200 (1890)	220 (67)	147 (45)	6/67	6053 (1845)	1
W-30	7N-65E-11cc	6050 (1844)	220 (67)	147 (45)	6/67	5903 (1799)	1
W-31	7N-65E-14d	5960 (1817)	300 (91)	45 (14)	7/59	5915 (1804)	1
W-32	7N-65E-17da	6320 (1926)	264 (80)	190 (58)	6/66	6130 (1868)	1
W-33	7N-65E-17d	6320 (1926)	229 (70)	214 (65)	-	6106 (1861)	4
W-34	7N-65E-23d	5980 (1823)	30 (9)	29 (9)	-	5951 (1814)	4
W-35	7N-65E-35	6290 (1917)	250 (76)	90 (27)	1/68	6200 (1890)	1
W-36	7N-66E-6c	5920 (1804)	71 (22)	32 (10)	1942	5888 (1795)	4
W-37	7N-66E-33db	5930 (1807)	232 (71)	61 (19)	7/68	5869 (1789)	1
W-38	7N-66E-36c	5980 (1823)	126 (38)	111 (34)	-	5869 (1789)	4
W-39	7N-67E-6bb	6095 (1858)	872 (266)	52 (16)	2/55	6043 (1842)	1
W-40	7N-67E-21a	6135 (1870)	307 (94)	293 (89)	-	5842 (1781)	4
W-41	7N-67E-20c	6040 (1841)	180 (55)	174 (53)	-	5866 (1788)	4
W-42	7N-67E-27ca	6240 (1902)	505 (154)	200 (61)	9/65	6040 (1841)	1
W-43	7N-67E-32dc	6070 (1850)	505 (154)	200 (61)	9/65	5870 (1789)	1
W-44	6N-65E-14da	6150 (1875)	155 (47)	100 (31)	3/67	6050 (1844)	1

* Mt. Diablo Baseline and Meridian.

** 1 State of Nevada Drillers Logs.

2 State of Nevada Ground-Water Resources Reconnaissance Series Report 27, Ground-Water Appraisal of the Meadow Valley Area, Lincoln and Clark Counties, Nevada, by Eugene Rush, 1964.

3 Ertec well data.

4 State of Nevada Ground-Water Resources Reconnaissance Series Report 24, Ground-Water Appraisal of Lake Valley in Lincoln and White Pine Counties, Nevada, by Rush and Eakin, 1963.

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31 JUL 81 TABLE II-3-1

WELL NO.	WELL LOCATION NUMBER*	ELEVATION OF GROUND SURFACE–FEET (METERS) ABOVE M.S.L.	DEPTH OF WELL–FEET (METERS)	WATER LEVEL			REFERENCES**
				DEPTH BELOW GROUND SURFACE-FEET (METERS)	DATE MEASURED	ELEVATION-FEET (METERS) ABOVE M.S.L.	
W-45	6N-66E-5c+	5932 (1808)	95 (29)	53 (16)	1945	5879 (1792)	4
W-46	6N-66E-10bd	5945 (1812)	500 (152)	86 (26)	8/76	5859 (1786)	1
W-47	6N-66E-19b	5960 (1817)	233 (71)	98 (30)	-	5862 (1787)	4
W-48	6N-66E-19cb	5995 (1827)	240 (73)	124 (38)	6/59	5871 (1789)	1
W-49	6N-66E-22ba	5960 (1817)	410 (125)	103 (31)	6/62	5857 (1785)	1
W-50	6N-66E-22b	5960 (1817)	450 (137)	103 (31)	6/62	5857 (1785)	4
W-51	6N-66E-27bd	5955 (1815)	541 (165)	123 (37)	3/64	5832 (1778)	1
W-52	6N-66E-29bb	5963 (1818)	450 (137)	125 (38)	3/67	5838 (1779)	1
W-53	6N-66E-29bd	5960 (1817)	421 (128)	122 (37)	1/66	5838 (1779)	1
W-54	6N-66E-30aa	5965 (1818)	242 (74)	135 (41)	11/71	5830 (1777)	1
W-55	6N-66E-30ab	5970 (1820)	420 (128)	126 (38)	12/64	5844 (1781)	1
W-56	6N-66E-30bc	6030 (1838)	320 (98)	220 (67)	8/64	5810 (1771)	1
W-57	6N-66E-32bc	6020 (1835)	175 (53)	150 (46)	4/59	5870 (1789)	1
W-58	6N-66E-34da	5965 (1818)	500 (152)	122 (37)	1/66	5843 (1781)	1
W-59	6N-66E-35d	5980 (1823)	161 (49)	130 (40)	-	5850 (1783)	4
W-60	6N-67E-5b	6050 (1844)	324 (99)	220 (67)	1/66	5830 (1777)	1
W-61	6N-67E-18ca	6085 (1855)	292 (89)	235 (72)	12/54	5850 (1783)	1
W-62	5N-66E-3ad	5961 (1817)	500 (152)	114 (35)	1/66	5847 (1782)	1
W-63	5N-66E-14ac	5990 (1826)	225 (69)	175 (53)	4/55	5815 (1772)	1
W-64	5N-66E-35	5950 (1814)	300 (91)	220 (67)	4/53	5730 (1747)	1
W-65	5N-67E-35bc	6800 (2073)	25 (8)	3 (1)	11/66	6797 (2072)	1
W-66	5N-68E-6c	6620 (2018)	35 (11)	34 (10)	-	6586 (2007)	4

* Mt. Diablo Baseline and Meridian.

** 1 State of Nevada Drillers Logs.

2 State of Nevada Ground-Water Resources Reconnaissance Series Report 27, Ground-Water Appraisal of the Meadow Valley Area, Lincoln and Clark Counties, Nevada, by Eugene Rush, 1964.

3 Ertec well data.

4 State of Nevada Ground-Water Resources Reconnaissance Series Report 24, Ground-Water Appraisal of Lake Valley in Lincoln and White Pine Counties, Nevada, by Rush and Eakin, 1963.

\+ Reported incorrectly in reference as 6N-66E-8b

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GROUND–WATER DATA
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WELL NO.	WELL LOCATION NUMBER*	ELEVATION OF GROUND SURFACE—FEET (METERS) ABOVE M.S.L.	DEPTH OF WELL—FEET (METERS)	WATER LEVEL			REFERENCES**
				DEPTH BELOW GROUND SURFACE-FEET (METERS)	DATE MEASURED	ELEVATION-FEET (METERS) ABOVE M.S.L.	
W-67	4N-66E-2a	5945 (1812)	301 (92)	198 (60)	9/37	5747 (1752)	2
W-68	6N-66E-2cc	5960 (1817)	260 (79)	230 (70)	10/37	5730 (1747)	1
W-69	4N-66E-14	5870 (1789)	303 (92)	230 (70)	7/58	5640 (1719)	1
W-70	4N-66E-35c+	5795 (1766)	144 (44)	123 (37)	-	5672 (1729)	2
W-71	3N-66E-2dd	5750 (1753)	140 (42)	112 (34)	11/37	5638 (1718)	1
W-72	3N-66E-8a	5900 (1798)	220 (67)	dry	1954	<5680 (1731)	2
W-73	3N-66E-8ac	5900 (1798)	303 (92)	228 (69)	10/53	5672 (1729)	1
W-74	3N-66E-23d	5675 (1730)	87 (27)	42 (13)	11/37	5633 (1717)	2
W-75	3N-67E-4bc	6010 (1832)	382 (116)	340 (104)	2/58	5670 (1728)	1
W-76	2N-67E-16d	5570 (1698)	48 (15)	22 (7)	-	5548 (1691)	2
W-77	2N-67E-24ba	5705 (1739)	190 (58)	54 (16)	1972	5651 (1722)	1
W-78	2N-67E-27aa	5530 (1686)	500 (152)	24 (7)	1/71	5506 (1678)	1
W-79	2N-67E-35ac	5550 (1692)	89 (27)	38 (12)	7/76	5512 (1680)	1
W-80	2N-68E-27a	5920 (1804)	40 (12)	16 (5)	12/37	5904 (1800)	2
W-81	1N-67E-15a	5730 (1747)	563 (172)	368 (172)	1/38	5362 (1634)	2

* Mt. Diablo Baseline and Meridian.

** 1 State of Nevada Drillers Logs.

2 State of Nevada Ground-Water Resources Reconnaissance Series Report 27 Ground-Water Appraisal of the Meadow Valley Area, Lincoln and Clark Counties, Nevada, by Eugene Rush, 1964.

3 Ertec well data.

4 State of Nevada Ground Water Resources Reconnaissance Series Report 24, Ground-Water Appraisal of Lake Valley in Lincoln and White Pine Counties, Nevada, by Rush and Eakin, 1963.

\+ Reported incorrectly in reference as 4N-66E-26c.

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GROUND-WATER DATA
LAKE VALLEY, NEVADA

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TABLE II-3-1

WELL NO.	WELL LOCATION NUMBER*	ELEVATION OF GROUND SURFACE—FEET (METERS) ABOVE M.S.L.	DEPTH OF WELL—FEET (METERS)	WATER LEVEL			REFERENCES**
				DEPTH BELOW GROUND SURFACE-FEET (METERS)	DATE MEASURED	ELEVATION-FEET (METERS) ABOVE M.S.L.	
B(o)-1	2N-68E-7bd	5930 (1807)	203 (62)	dry	11/80	<5727 (1746)	3
B(o)-2	3N-67E-19ba	5790 (1765)	200 (61)	147 (45)	3/81	5643 (1720)	3
B(o)-6	8N-67E-11ad	6125 (1867)	200 (61)	dry	11/80	<5925 (1806)	3
0-1	10N-66E-34cd	6050 (1844)	101 (31)	dry	3/81	<5949 (1813)	3
0-2	8N-66E-11bc	6020 (1835)	101 (31)	dry	3/81	<5919 (1804)	3
0-3	8N-66E-36cb	5950 (1814)	101 (31)	56 (17)	3/81	5882 (1793)	3
0-4	7N-66E-16dc	5920 (1804)	101 (31)	15 (5)	3/81	5908 (1801)	3
0-6	2N-67E-18bc	5760 (1756)	100 (30)	dry	3/81	<5660 (1725)	3
0-7	2N-67E-14aa	5740 (1750)	100 (30)	dry	3/81	<5640 (1719)	3
0-8	2N-67E-35bc	5520 (1683)	150 (46)	56 (17)	3/81	5464 (1665)	3
0-9	1N-67E-8bb	5820 (1774)	200 (61)	dry	3/81	5641 (1719)	3
0-10	2N-66E-13ac	5870 (1789)	200 (61)	dry	3/81	<5670 (1728)	3
0-11	6N-65E-24dd	6053 (1845)	200 (61)	dry	3/81	<5810 (1771)	3
0-12	10N-65E-35ac	6129 (1868)	60 (18)	NA	NA	NA	5
0-13	10N-66E-34dc	6140 (1871)	200 (61)	dry	3/81	<5950 (1814)	3

* Mt. Diablo Baseline and Meridian.

** 1 State of Nevada Drillers Logs.

2 State of Nevada Ground-Water Resources Reconnaissance Series Report 27, Ground-Water Appraisal of the Meadow Valley Area, Lincoln and Clark Counties, Nevada, by Eugene Rush, 1964.

3 Ertec well data.

4 State of Nevada Ground-Water Resources Reconnaissance Series Report 24, Ground-Water Appraisal of Lake Valley in Lincoln and White Pine Counties, Nevada, by Rush and Eakin, 1963.

5 Hole abandoned due to caving.

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GROUND—WATER DATA
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TABLE II-3-1

4.0 SEISMIC REFRACTION DATA

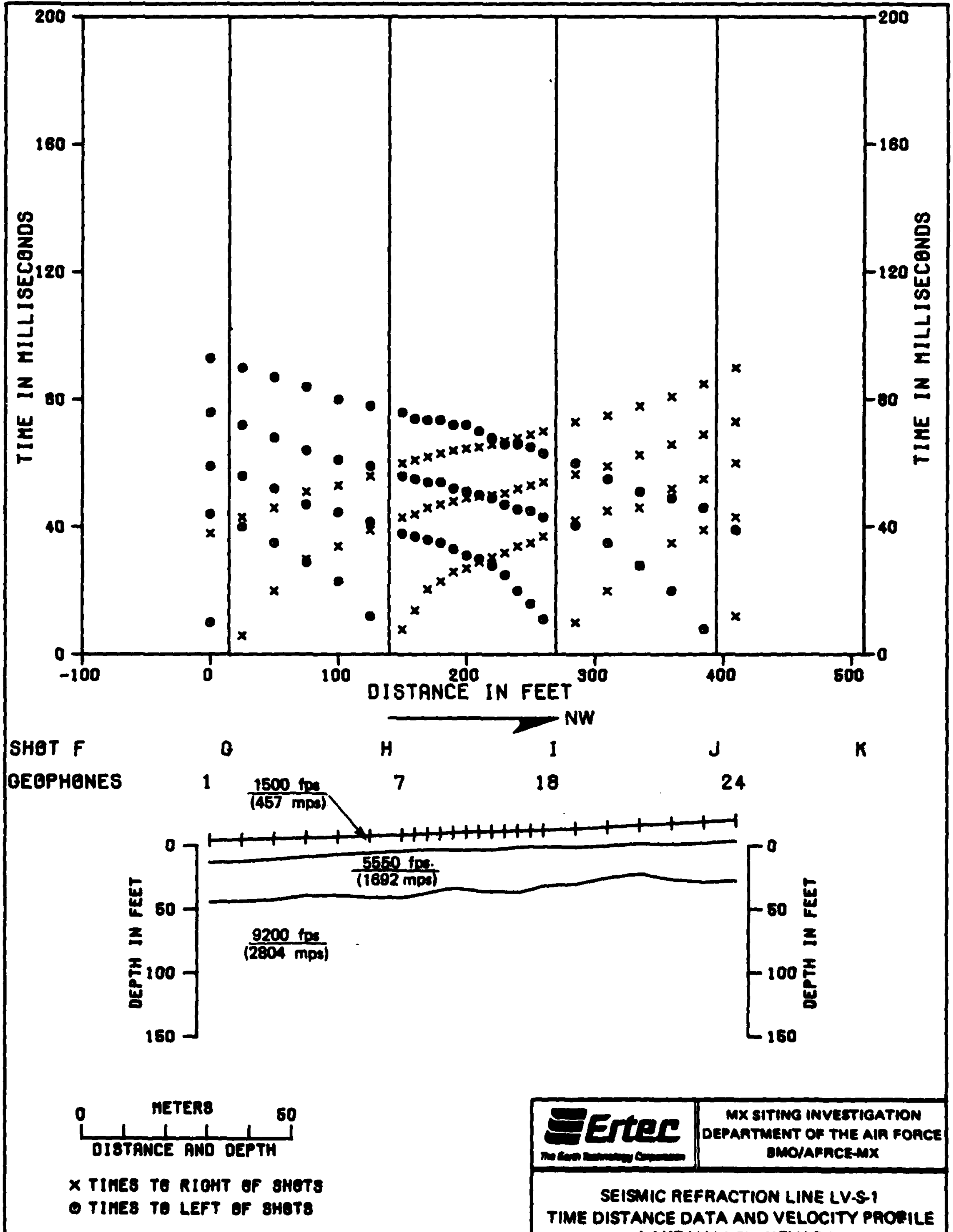
Explanation: Each figure shows seismic wave travel times plotted versus surface distance between the energy source (shot) and the detector (geophone) for a single seismic line. Distances are measured along the line from geophone number 1 which is designated as zero distance. Distances to the right (on the paper) of geophone 1 are positive. The direction arrow gives the approximate direction along the geophone array from geophone 1 to geophone 24.

Travel Time Versus Distance Graph (Upper Half of Figure)

This is a travel time versus distance graph. The abscissa represents distance; the ordinate, time. The six vertical lines represent the locations of shots (designated as F, G, H, I, J, and K). The symbol, X, denotes travel times at geophones that were located to the right of a shot. The symbol, ⊖, denotes travel times that were located to the left of shots.

Velocity Cross Section (Lower Half of Figure)

This is an interpreted velocity cross section beneath the seismic line. The top line represents the ground-surface profile. The short vertical lines crossing the top line mark the geophone positions. The depth scale is plotted relative to a point on the line which was arbitrarily chosen as "zero elevation" at the time the line was surveyed. The additional lines across the cross section represent the interpreted boundaries between layers of material with different compressional wave velocities. These boundaries are commonly called "refractors". The velocity interpreted to be representative of each layer is shown.



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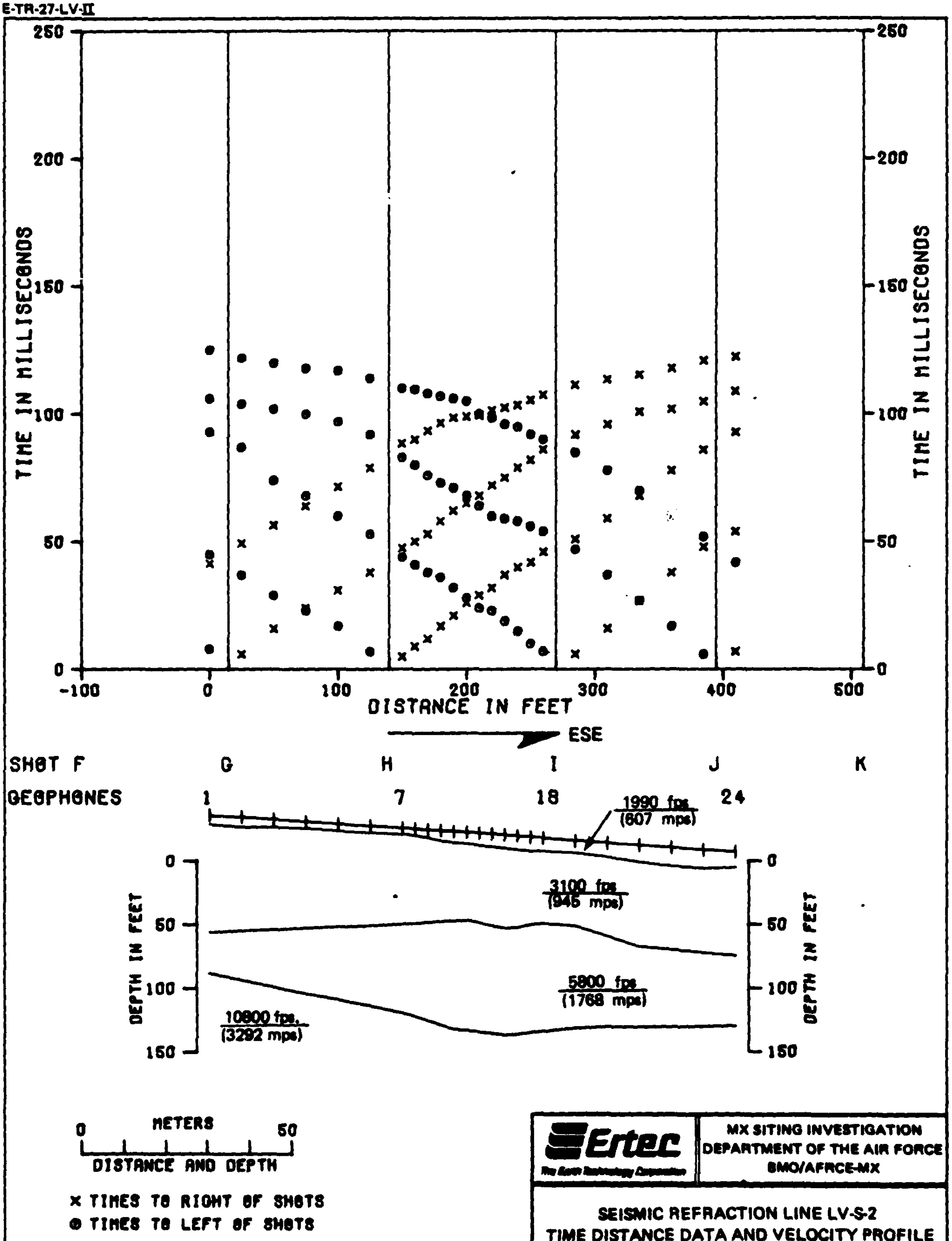
SEISMIC REFRACTION LINE LV-S-1
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-1



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SEISMIC REFRACTION LINE LV-S-2
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

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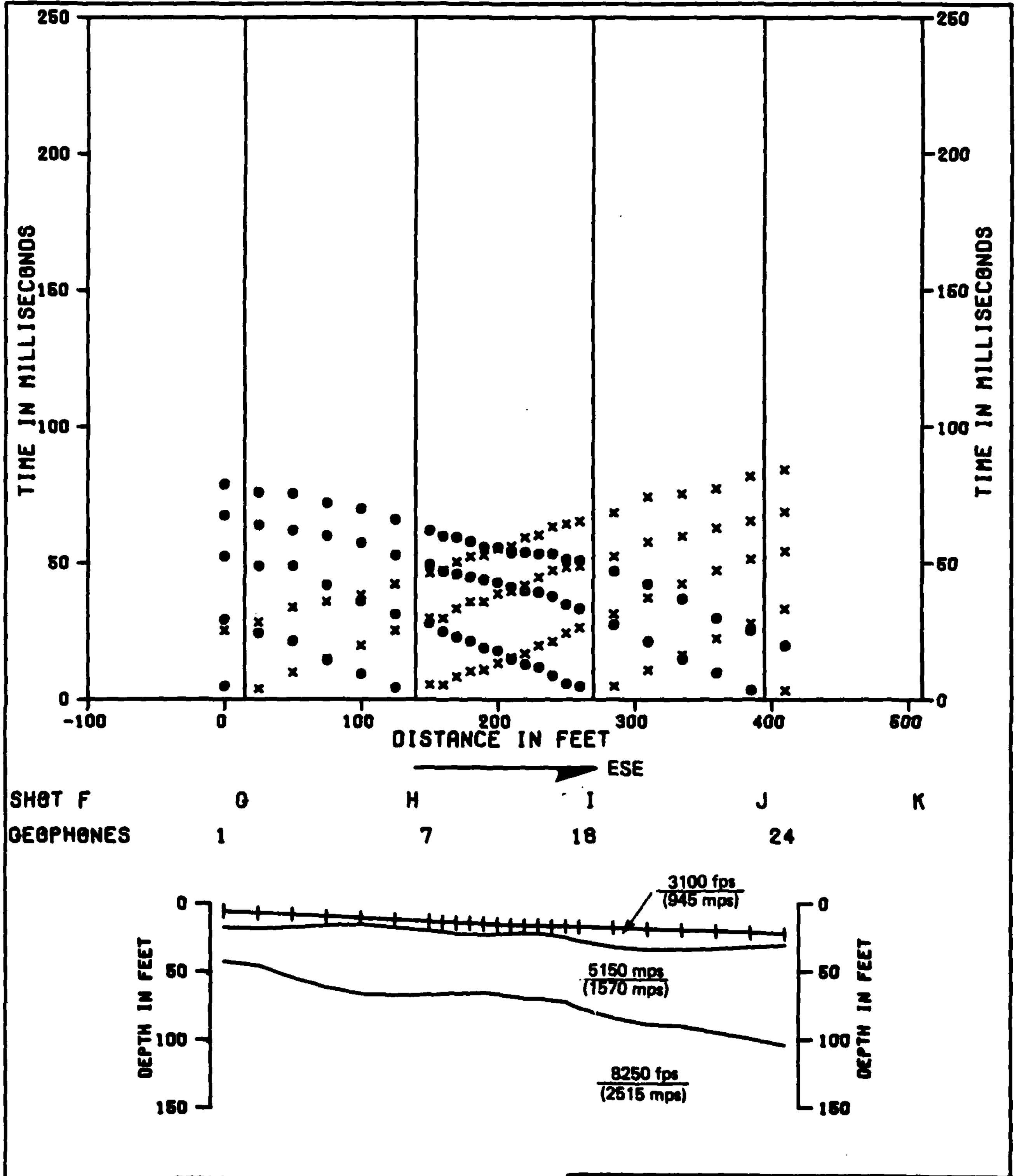
FIGURE II-4-2



0 METERS 50

DISTANCE AND DEPTH

× TIMES TO RIGHT OF SHOTS

● TIMES TO LEFT OF SHOTS

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SEISMIC REFRACTION LINE LV-S-3
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

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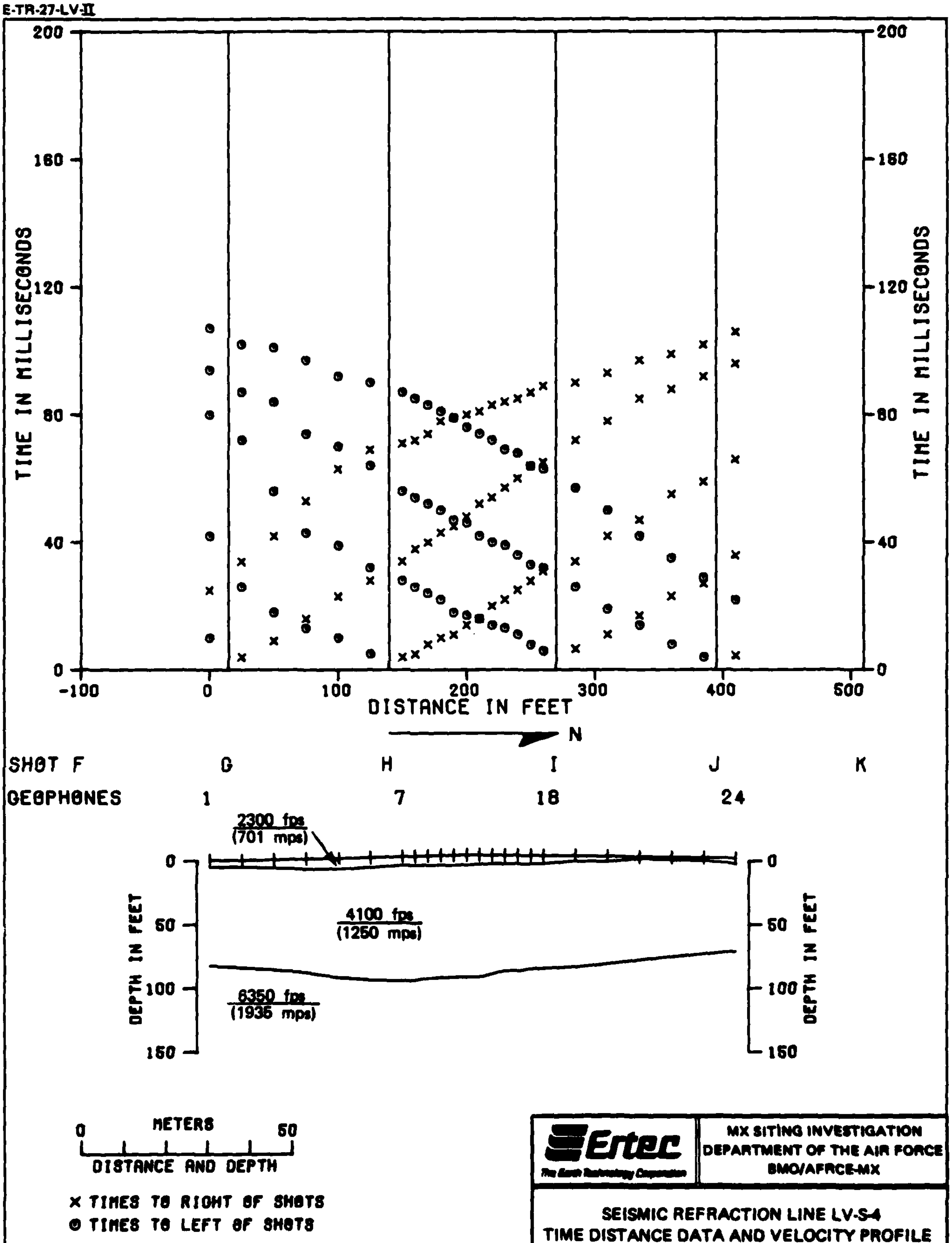
FIGURE II-4-3



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SEISMIC REFRACTION LINE LV-S-4
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

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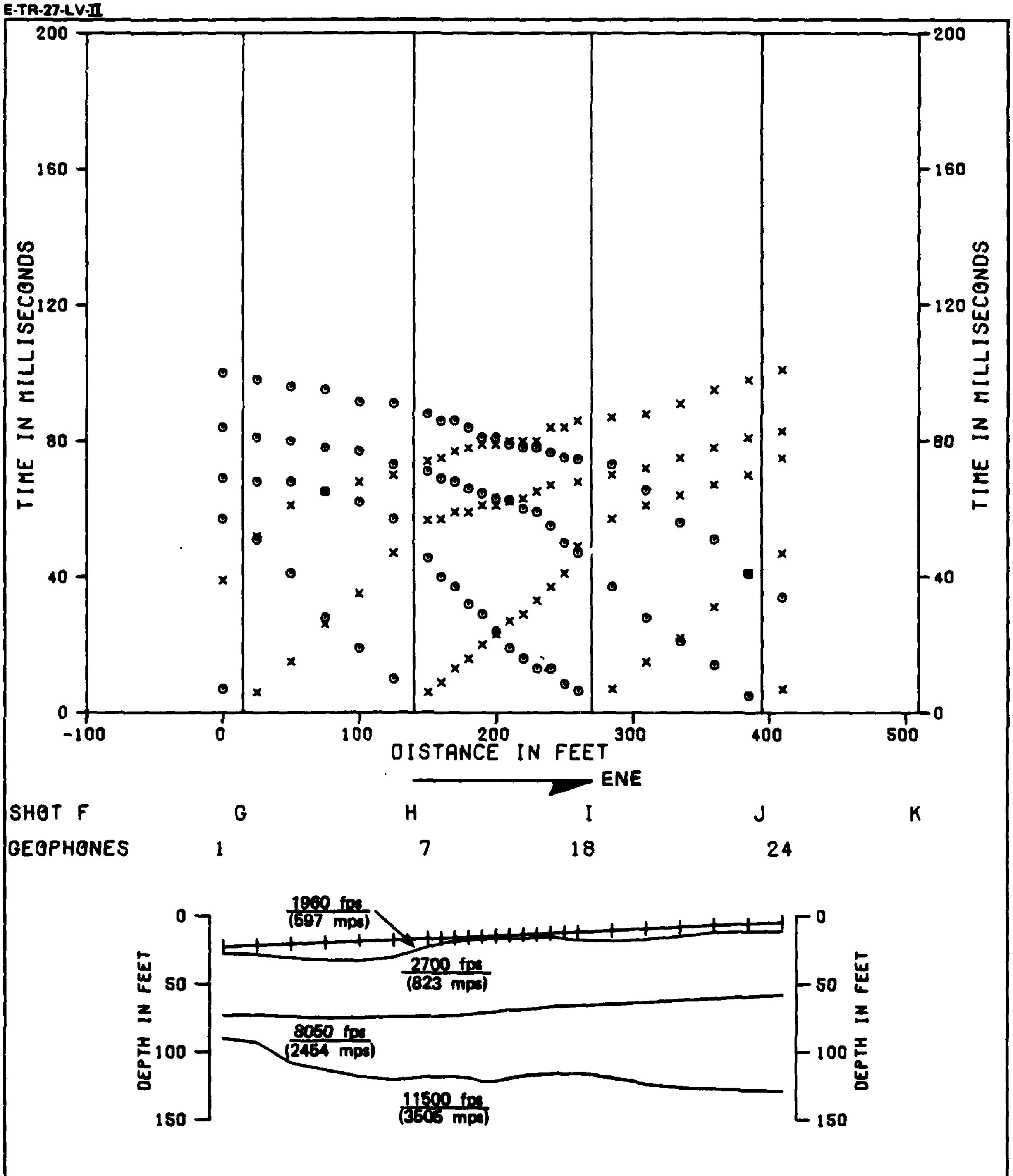
FIGURE II-4-4



METERS
0 50
DISTANCE AND DEPTH

× TIMES TO RIGHT OF SHOTS
⊙ TIMES TO LEFT OF SHOTS

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SEISMIC REFRACTION LINE LV-S-6
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

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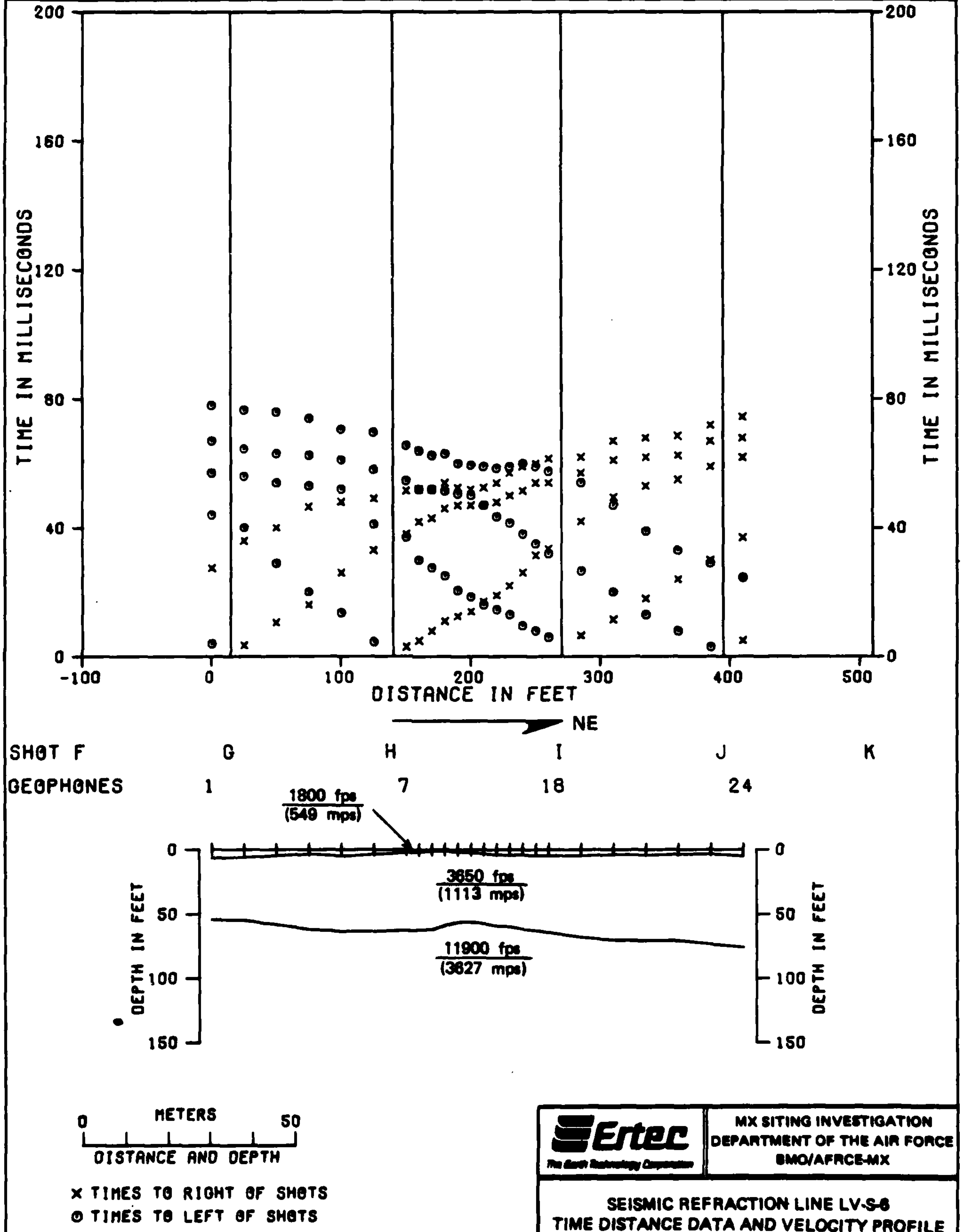
FIGURE II-4-6



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SEISMIC REFRACTION LINE LV-S-6
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

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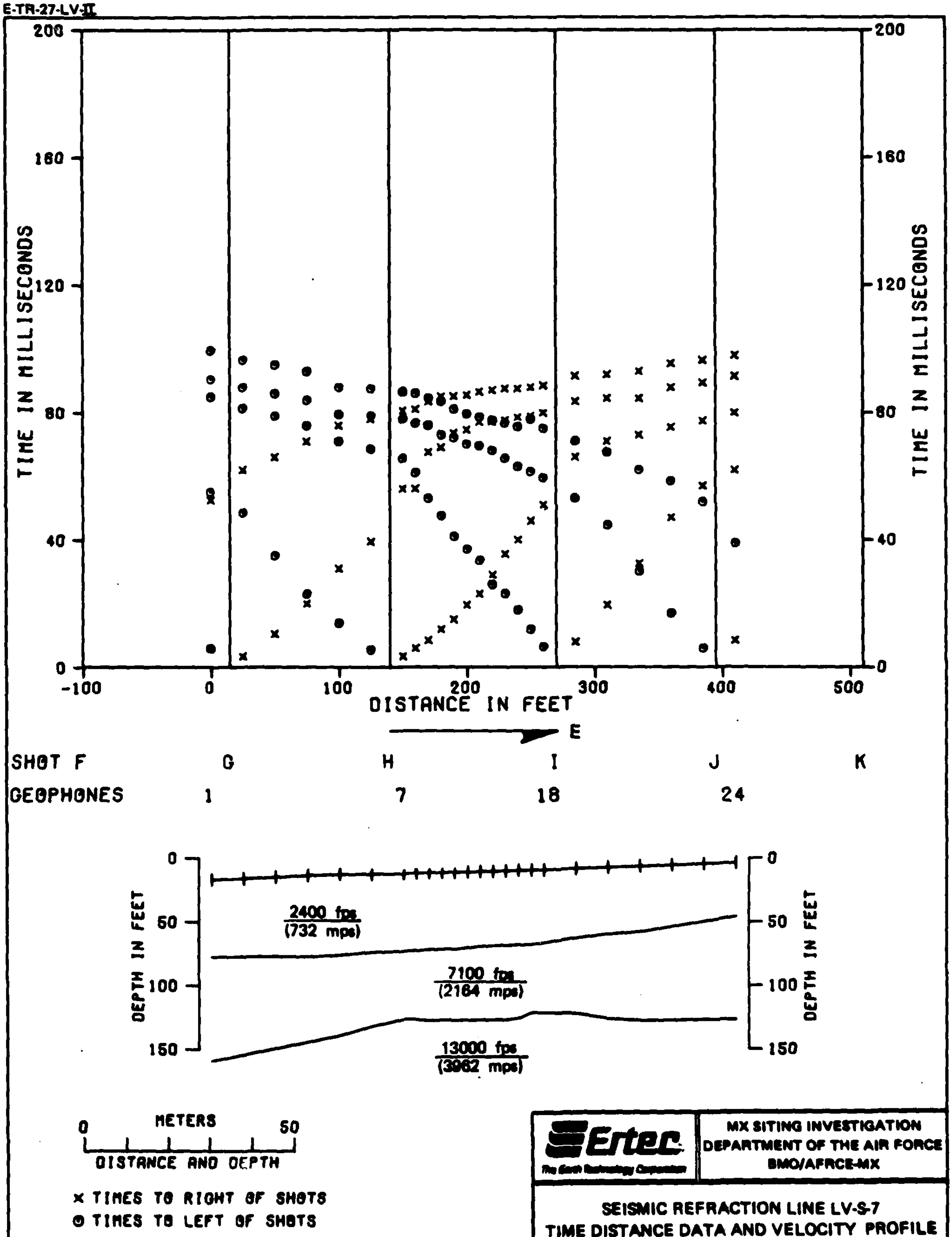
FIGURE II-4-6



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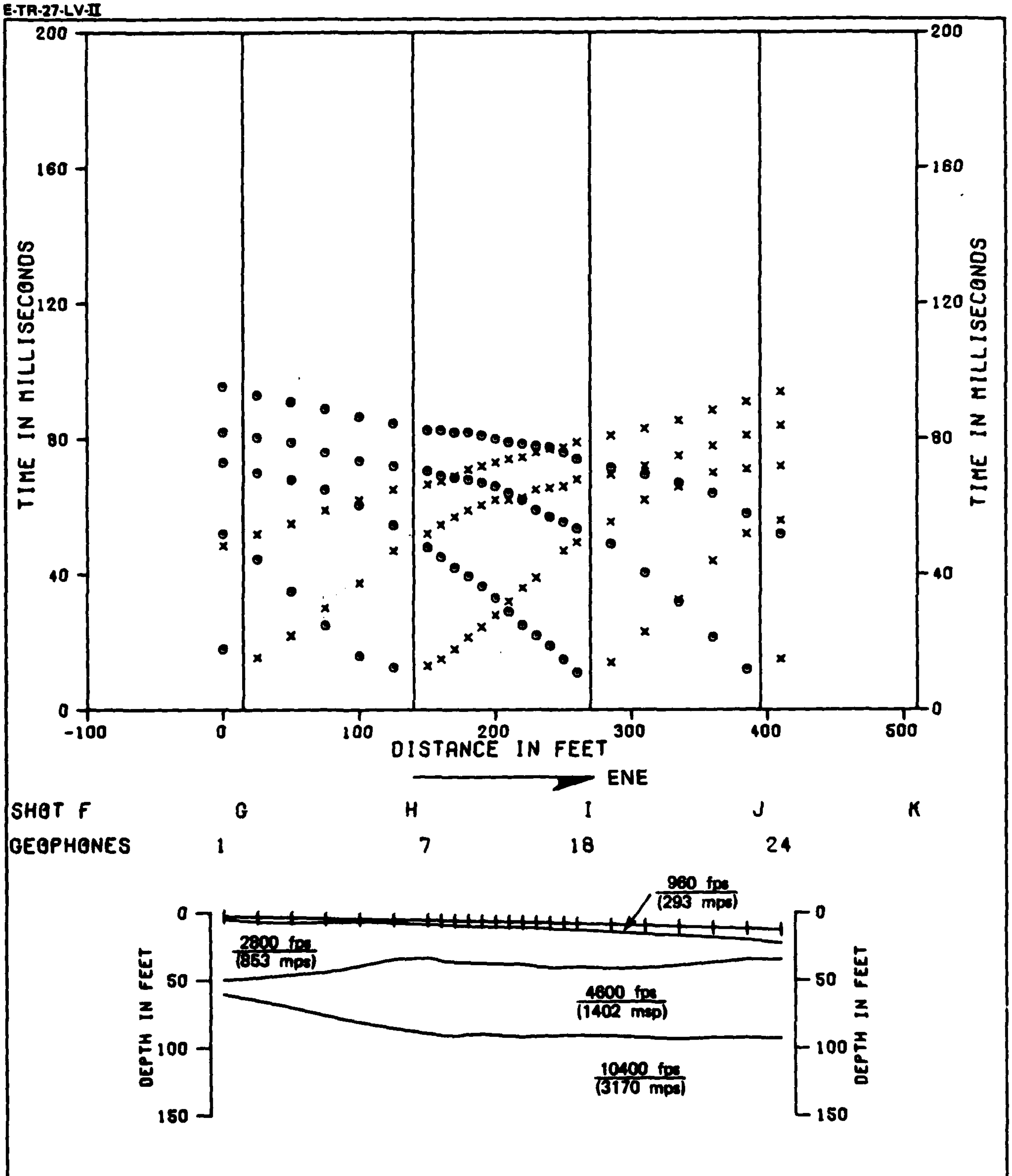
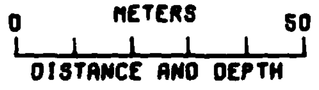
SEISMIC REFRACTION LINE LV-S-7
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-7





× TIMES TO RIGHT OF SHOTS
● TIMES TO LEFT OF SHOTS

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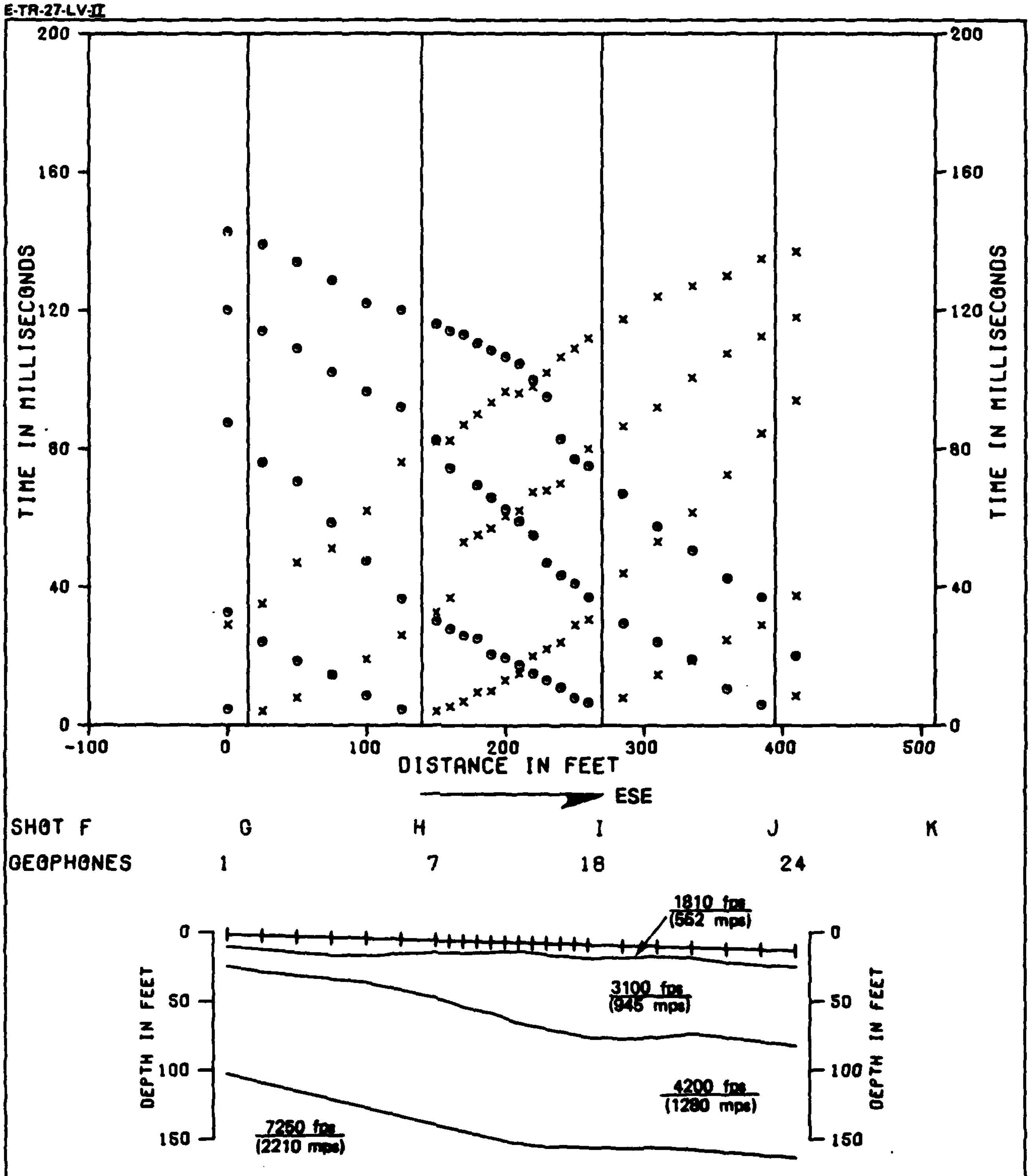
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-8
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-8



× TIMES TO RIGHT OF SHOTS

● TIMES TO LEFT OF SHOTS

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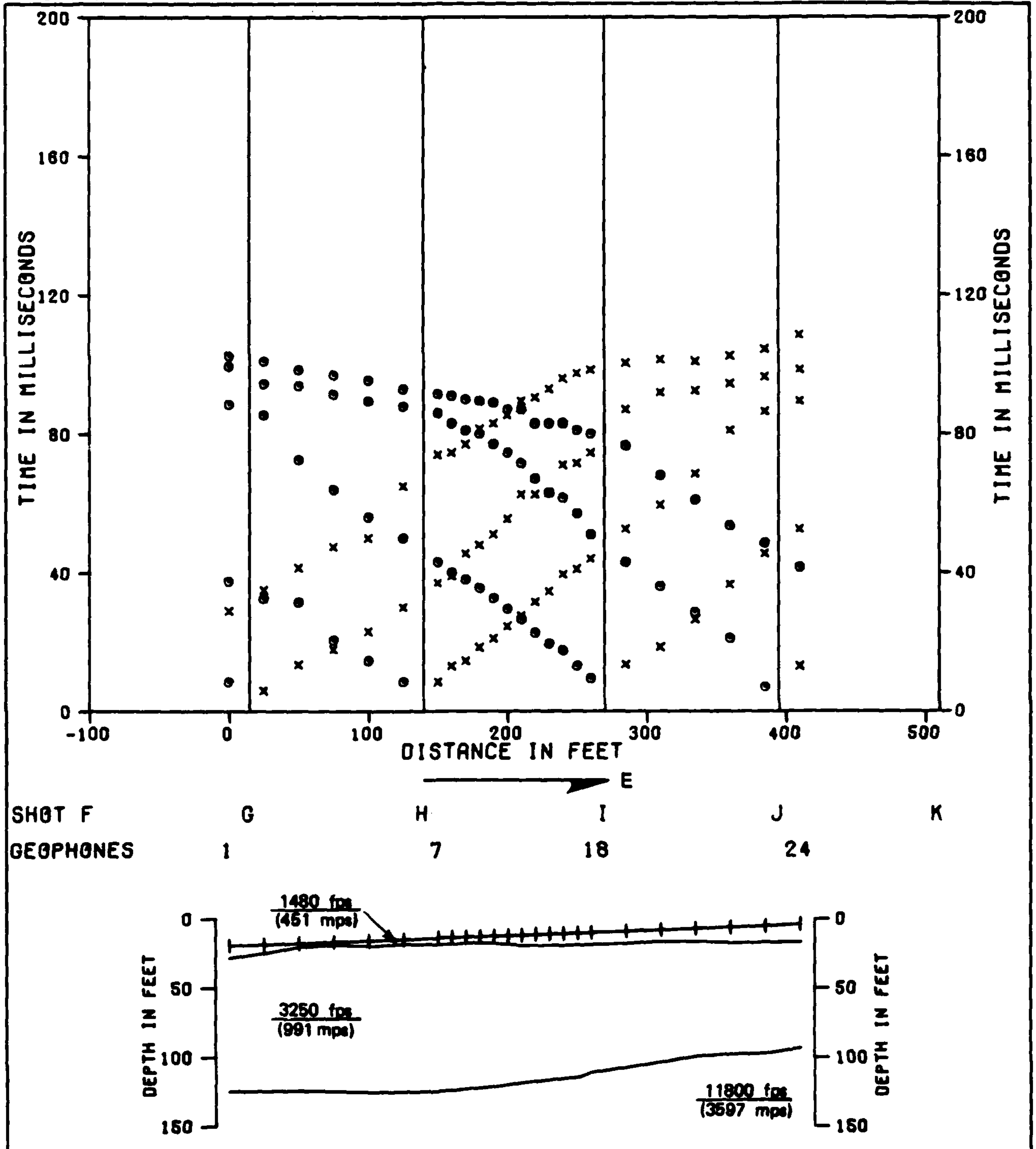
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-9
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-9



0 METERS 50

DISTANCE AND DEPTH

× TIMES TO RIGHT OF SHOTS

⊙ TIMES TO LEFT OF SHOTS

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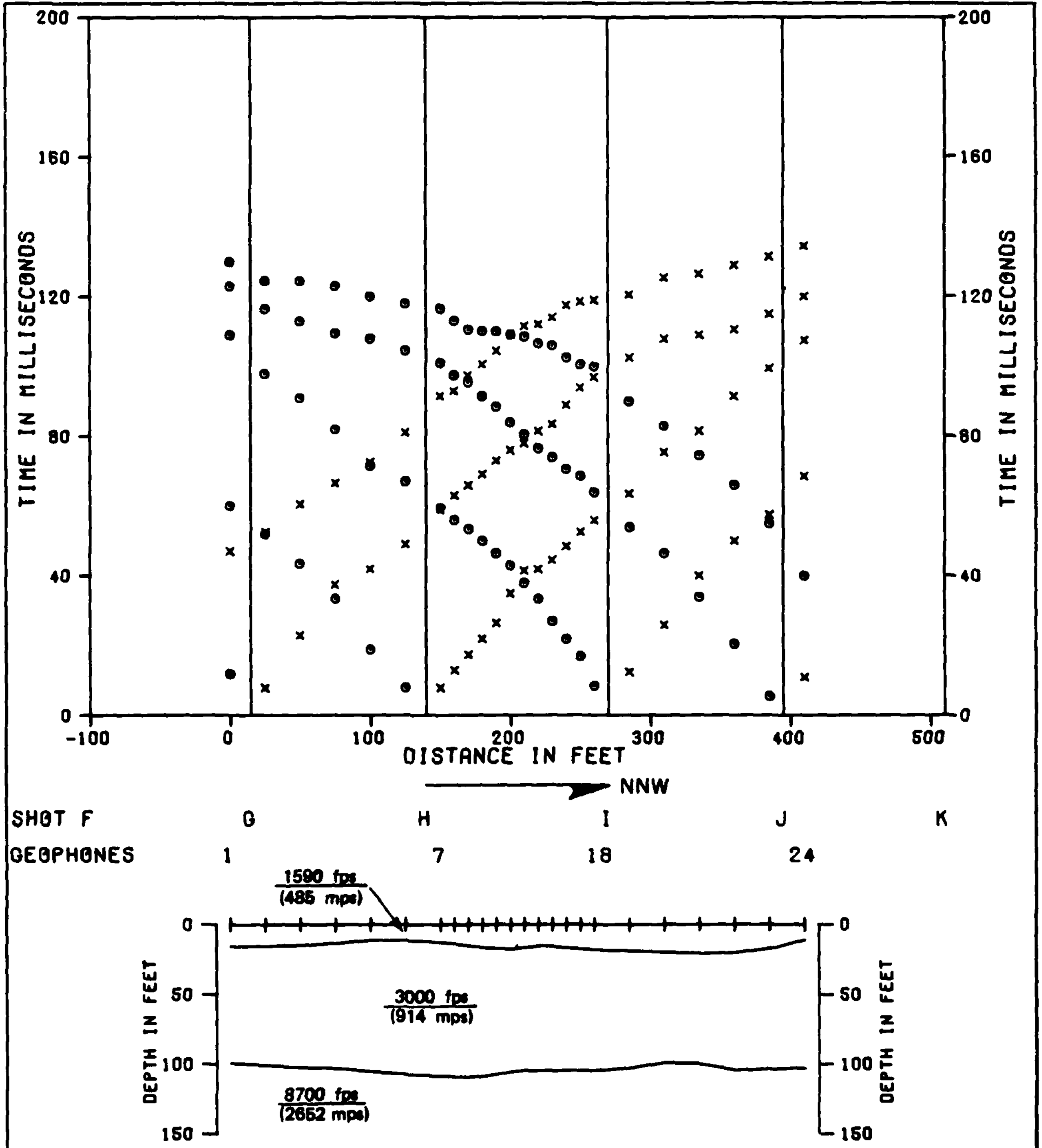
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-10
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-10



× TIMES TO RIGHT OF SHOTS

⊙ TIMES TO LEFT OF SHOTS

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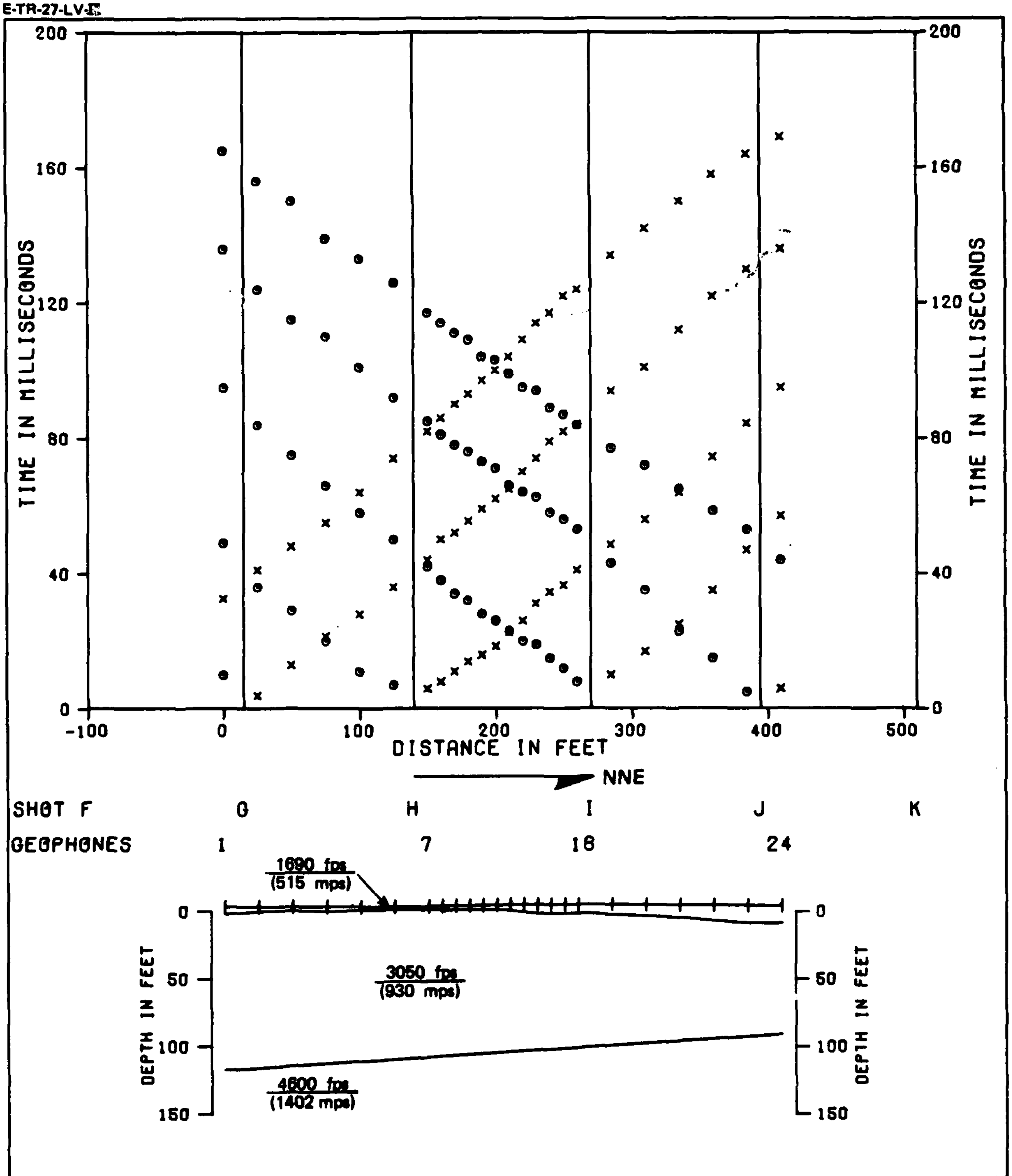
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-11
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-11



× TIMES TO RIGHT OF SHOTS
⊙ TIMES TO LEFT OF SHOTS

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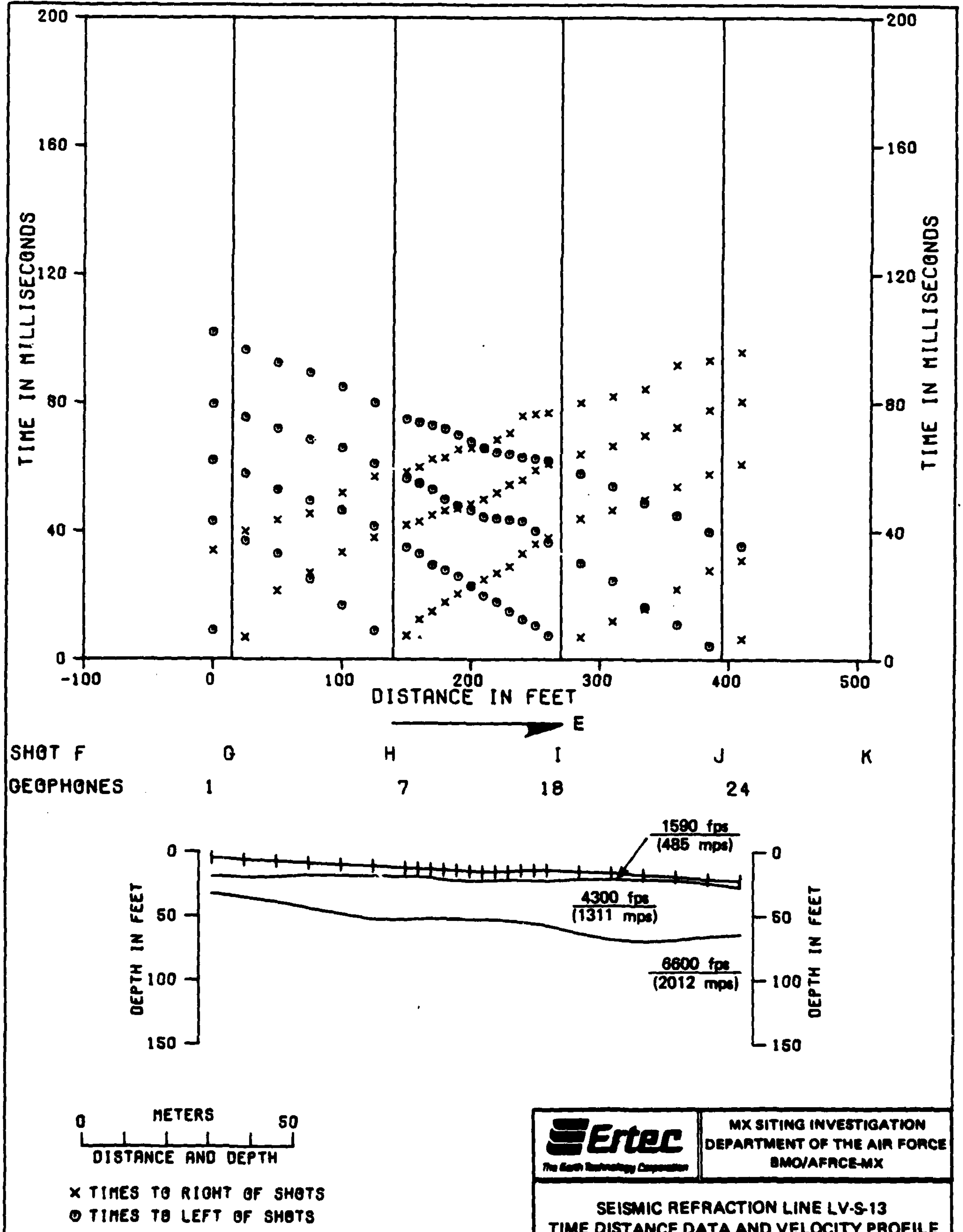
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-12
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-12



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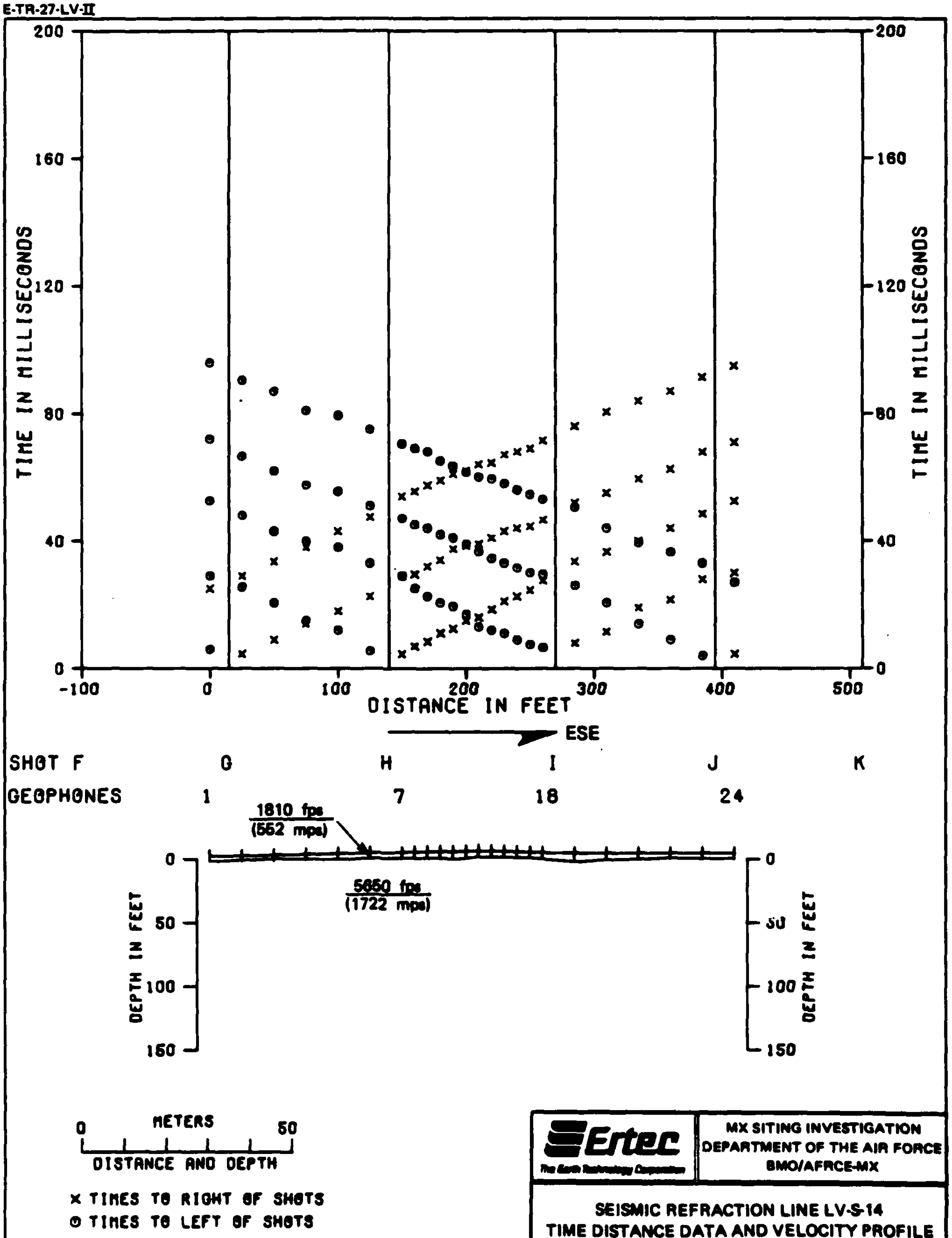
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-13
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-13



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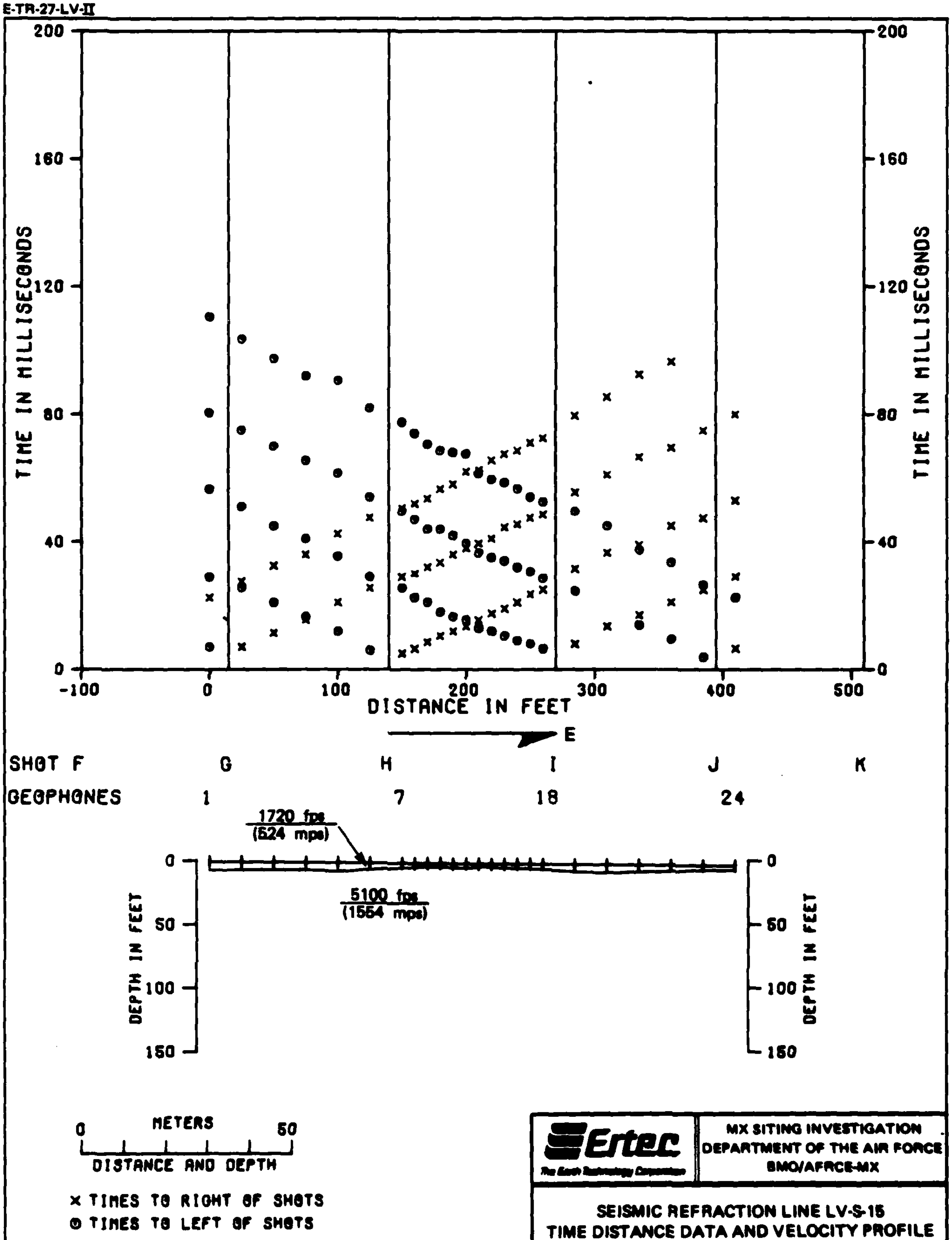
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-14
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-14



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MX SITING INVESTIGATION
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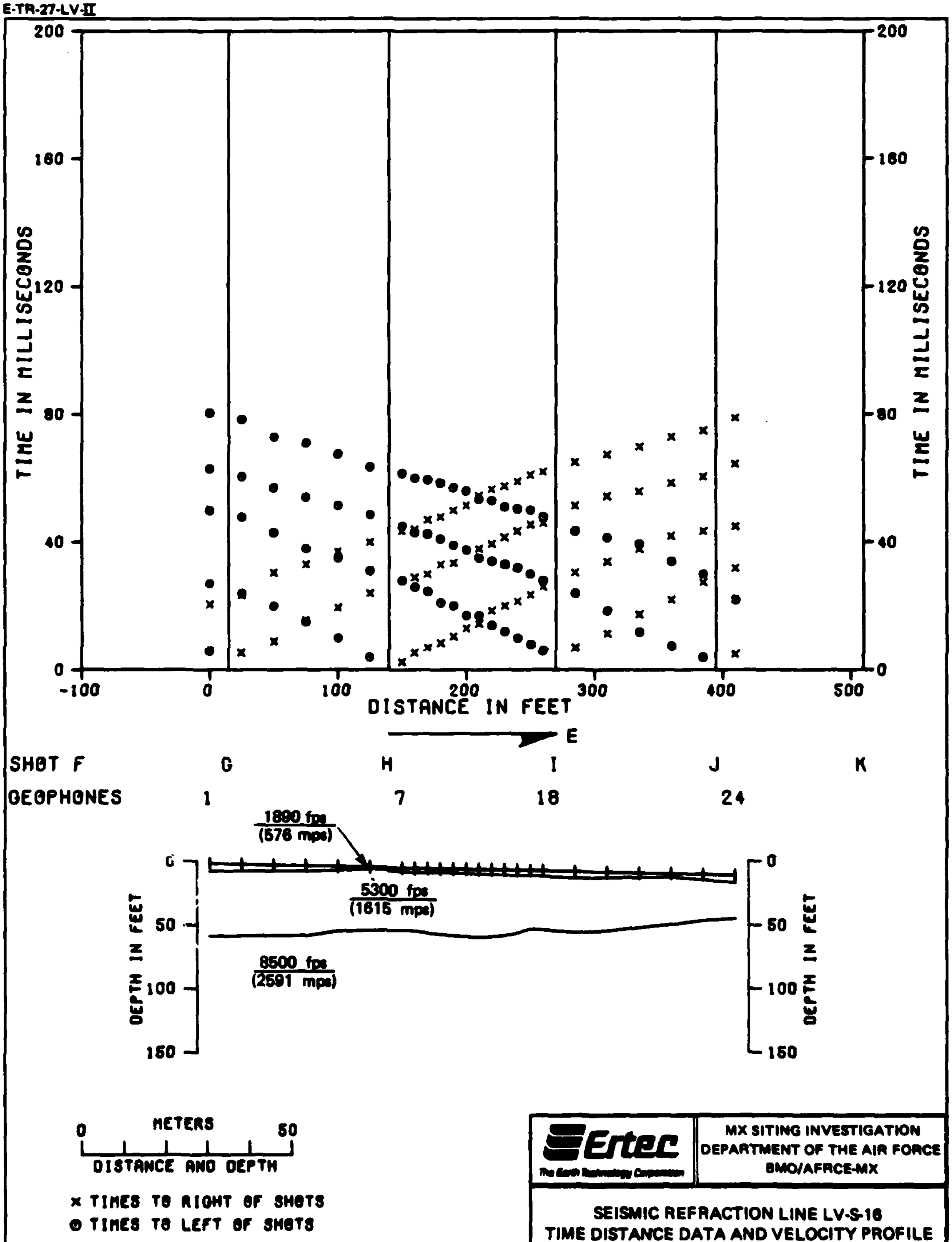
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-15
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-15



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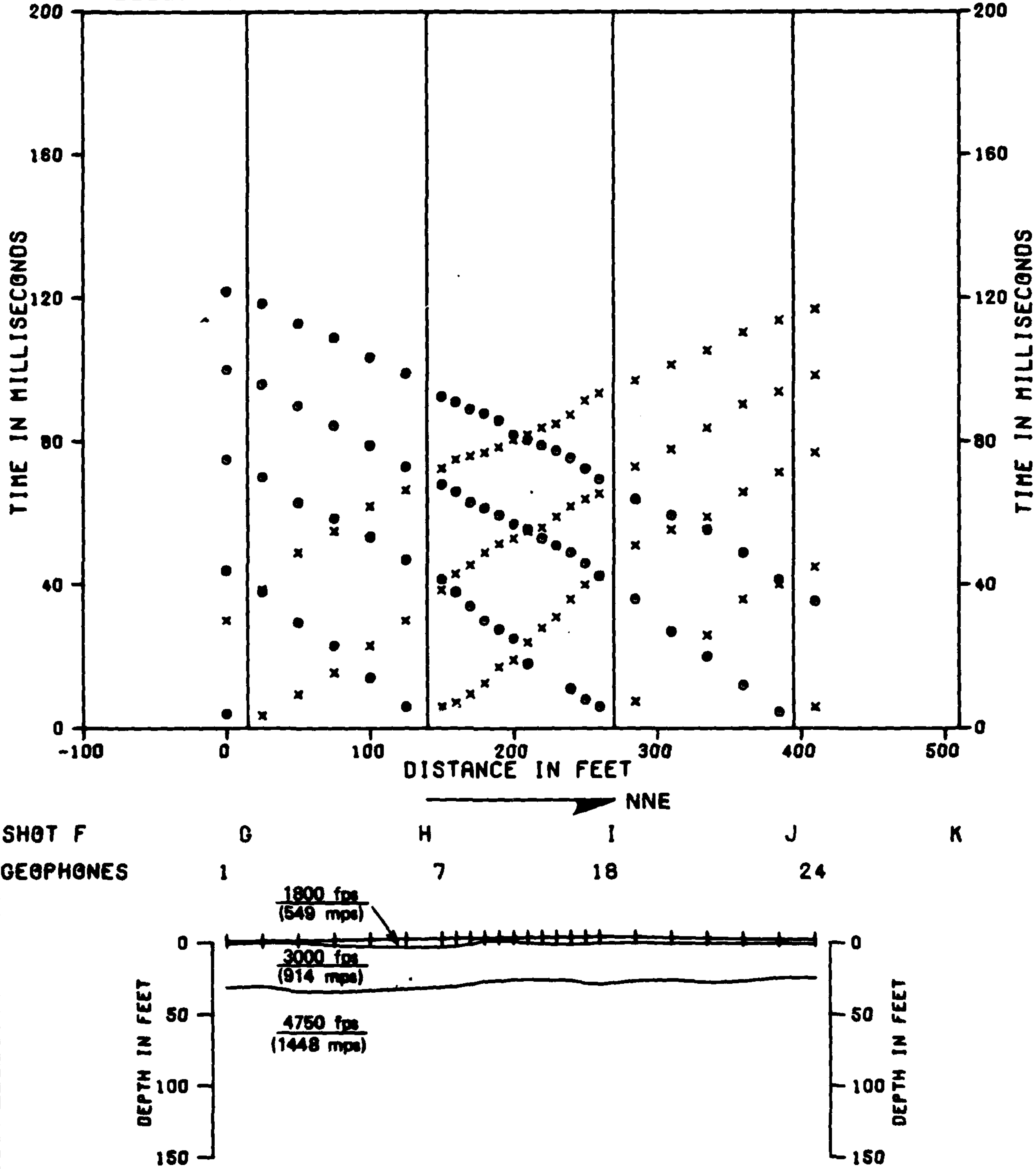
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-16
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-16



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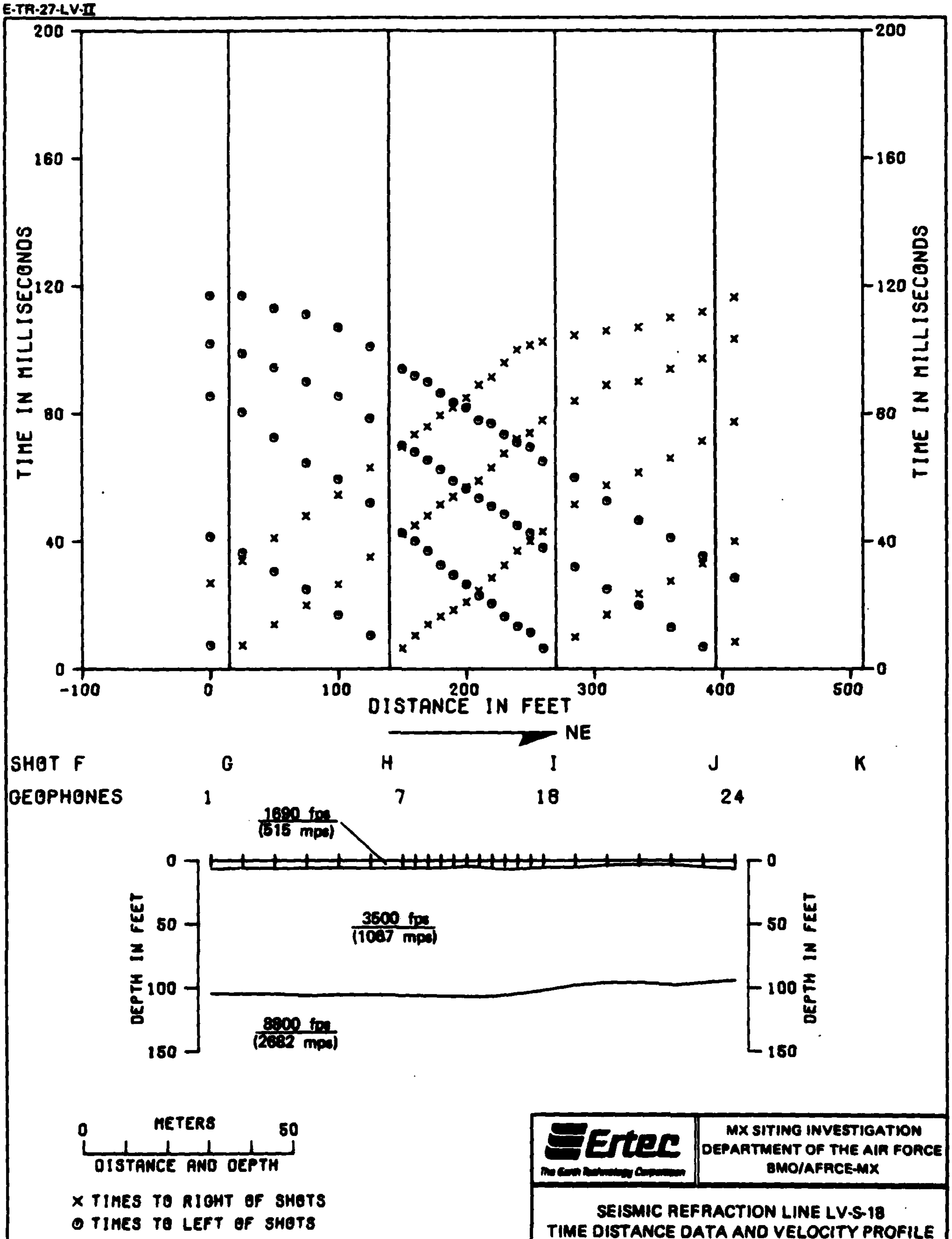
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-17
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-17



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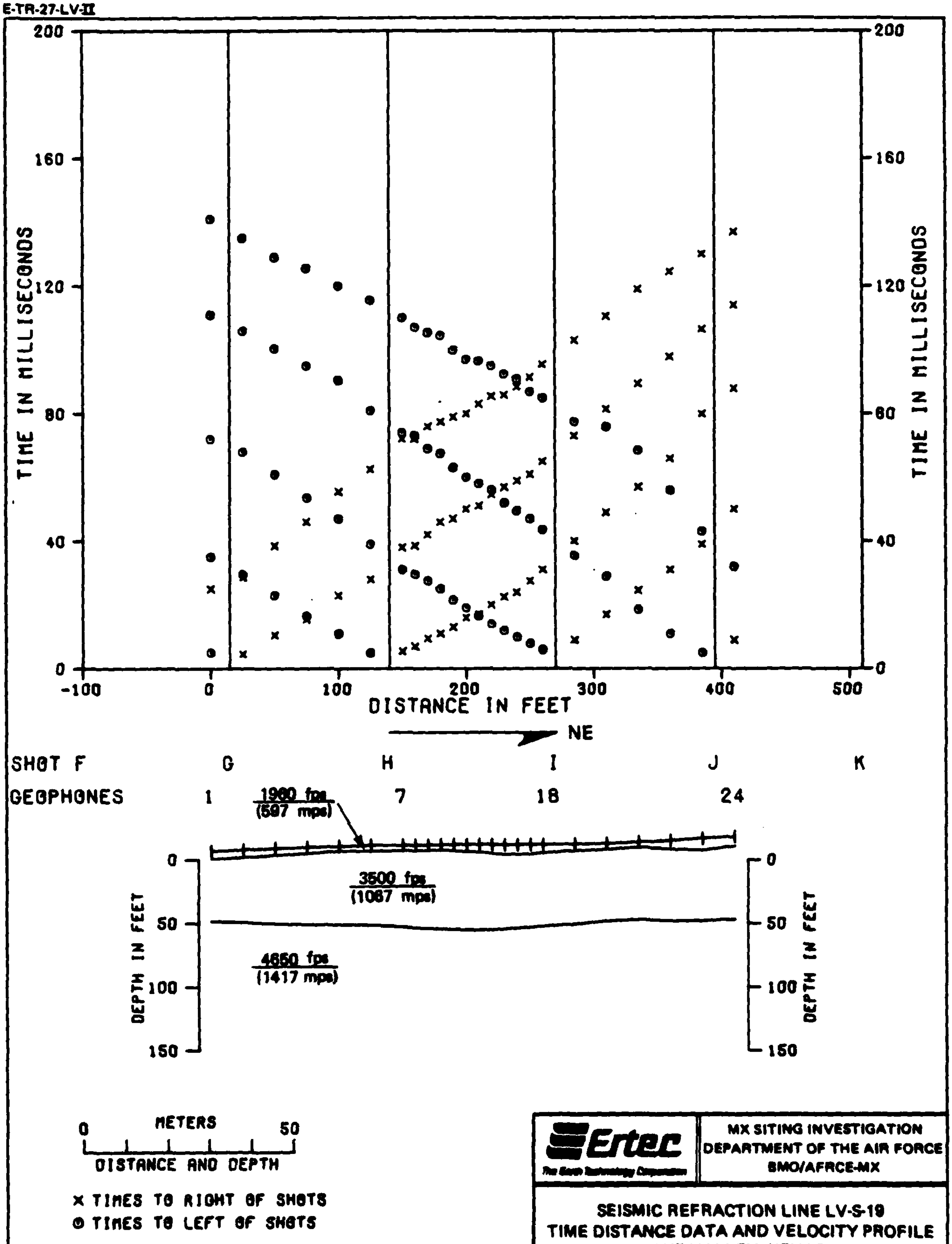
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-18
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-18



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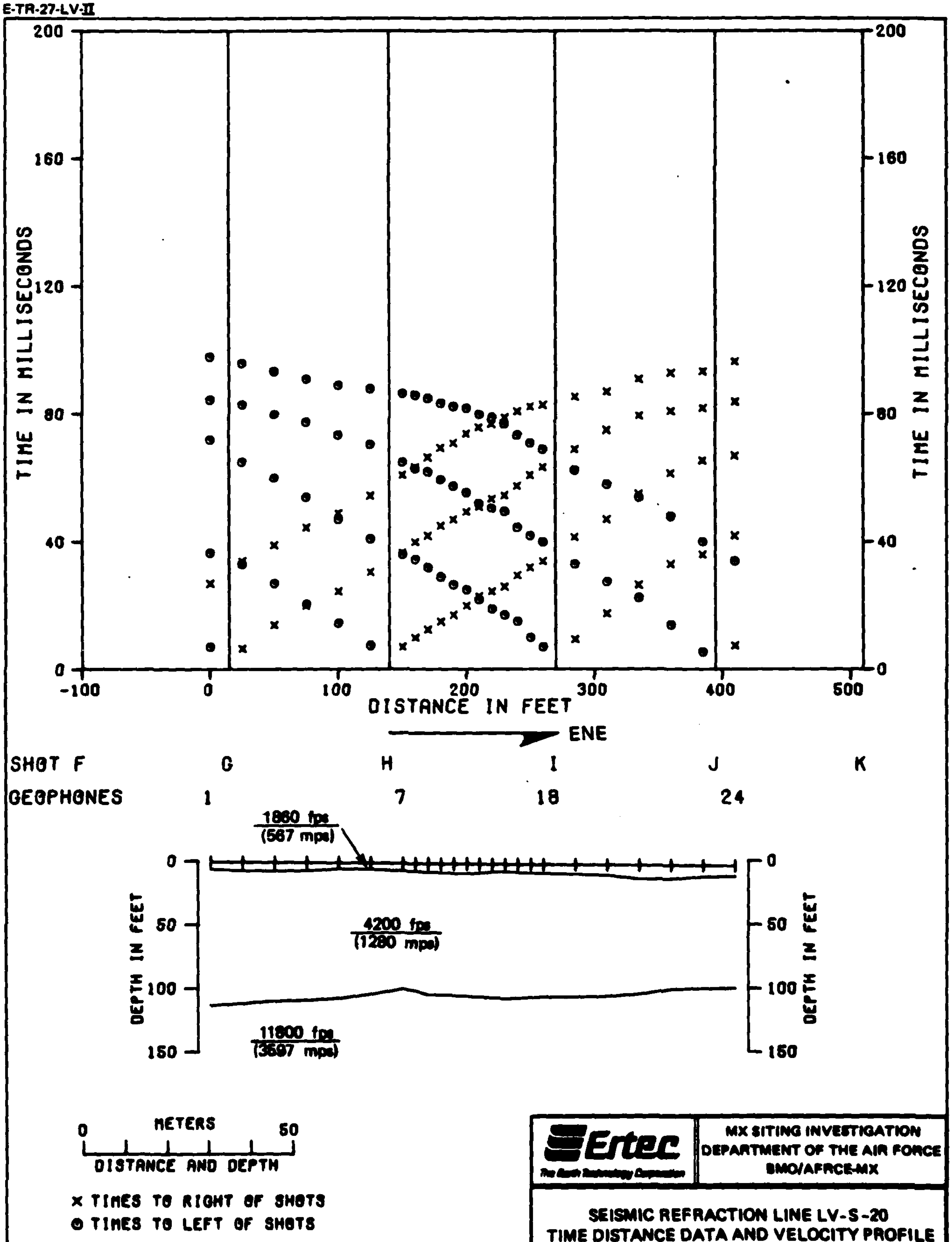
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-19
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-19



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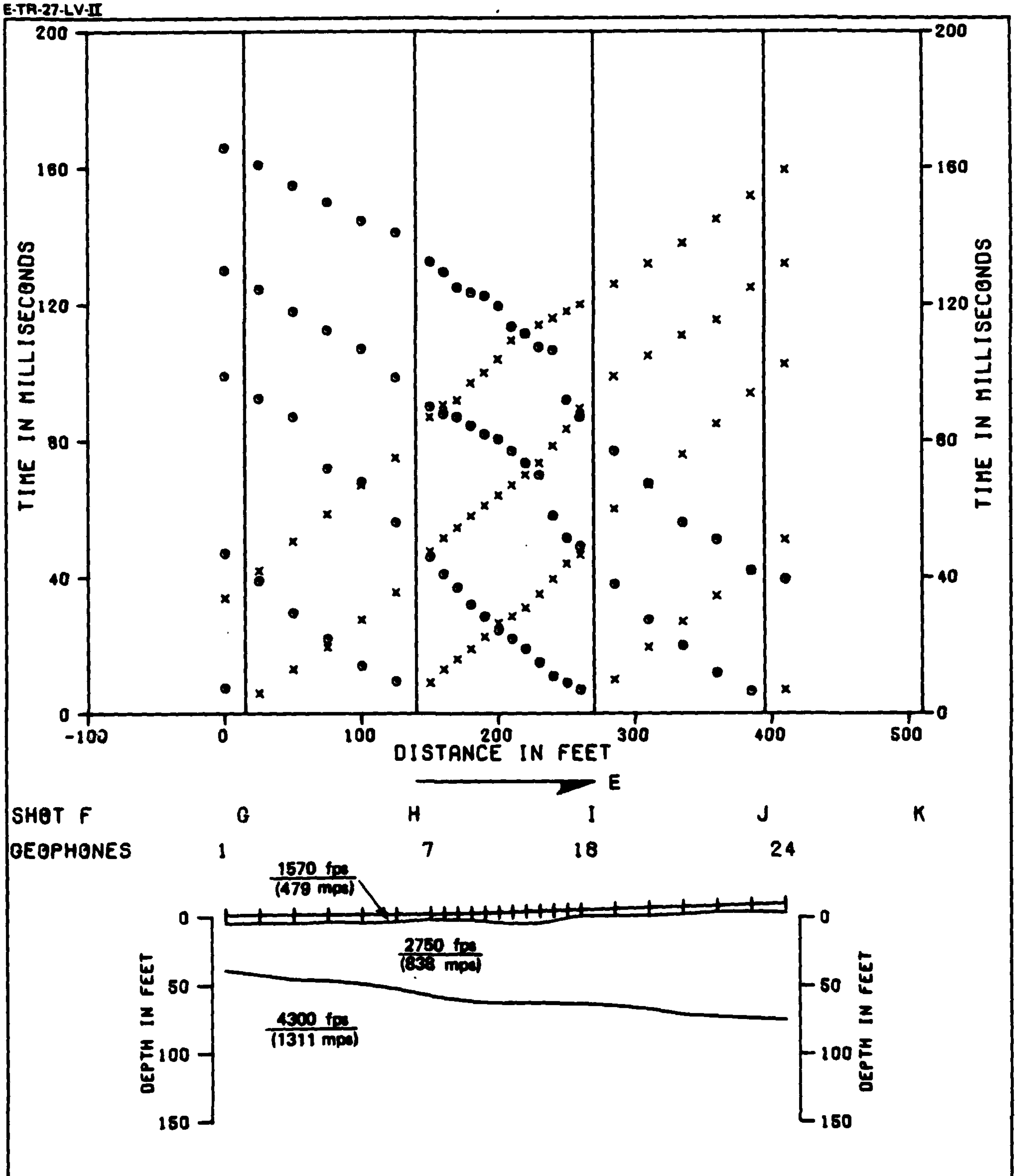
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-20
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-20



× TIMES TO RIGHT OF SHOTS

⊙ TIMES TO LEFT OF SHOTS

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MX SITING INVESTIGATION
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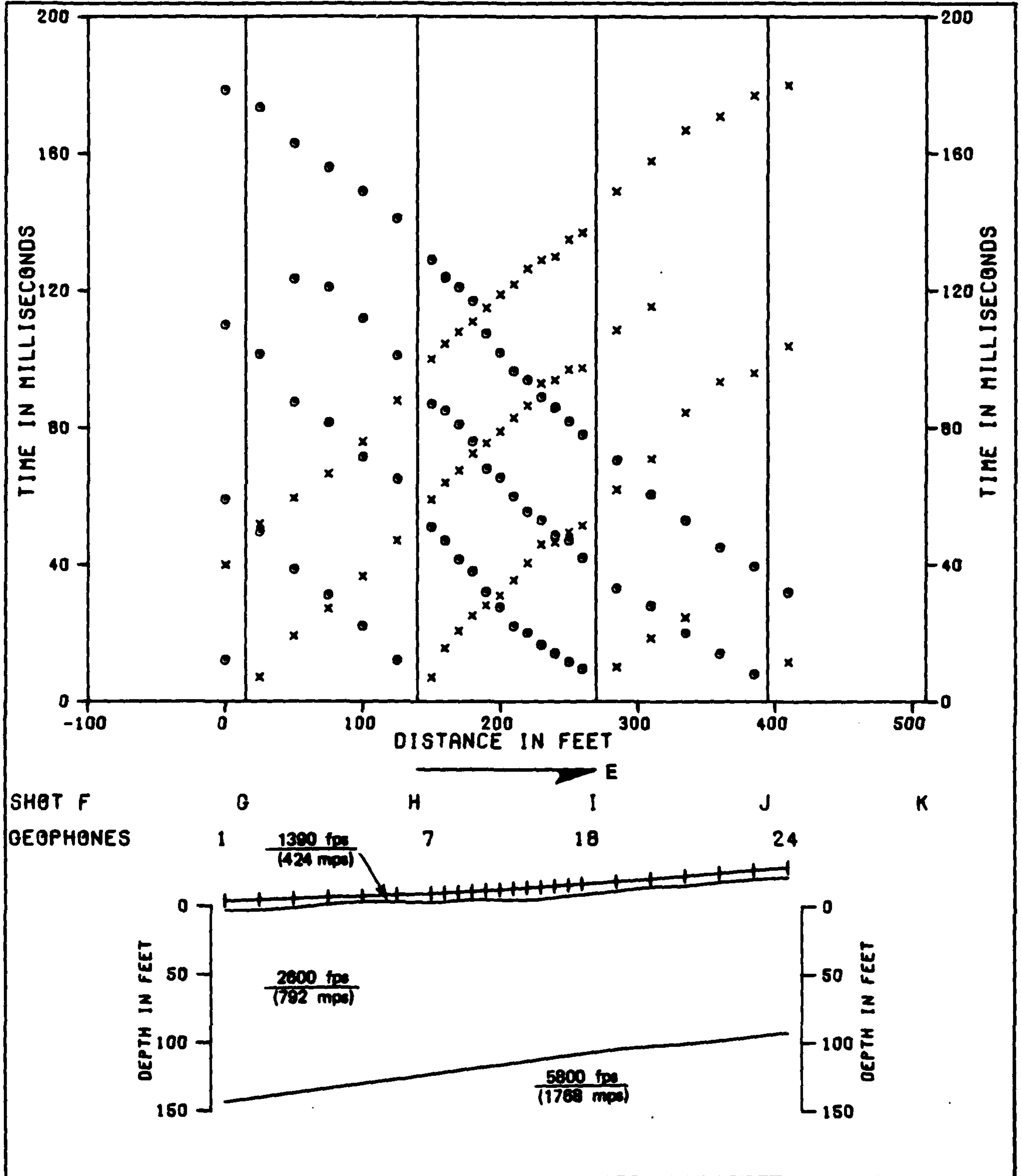
BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-21
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-4-21



0 METERS 50

DISTANCE AND DEPTH

× TIMES TO RIGHT OF SHOTS

⊚ TIMES TO LEFT OF SHOTS

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MX SITING INVESTIGATION
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BMO/AFRCE-MX

SEISMIC REFRACTION LINE LV-S-22
TIME DISTANCE DATA AND VELOCITY PROFILE
LAKE VALLEY, NEVADA

31 JUL 81

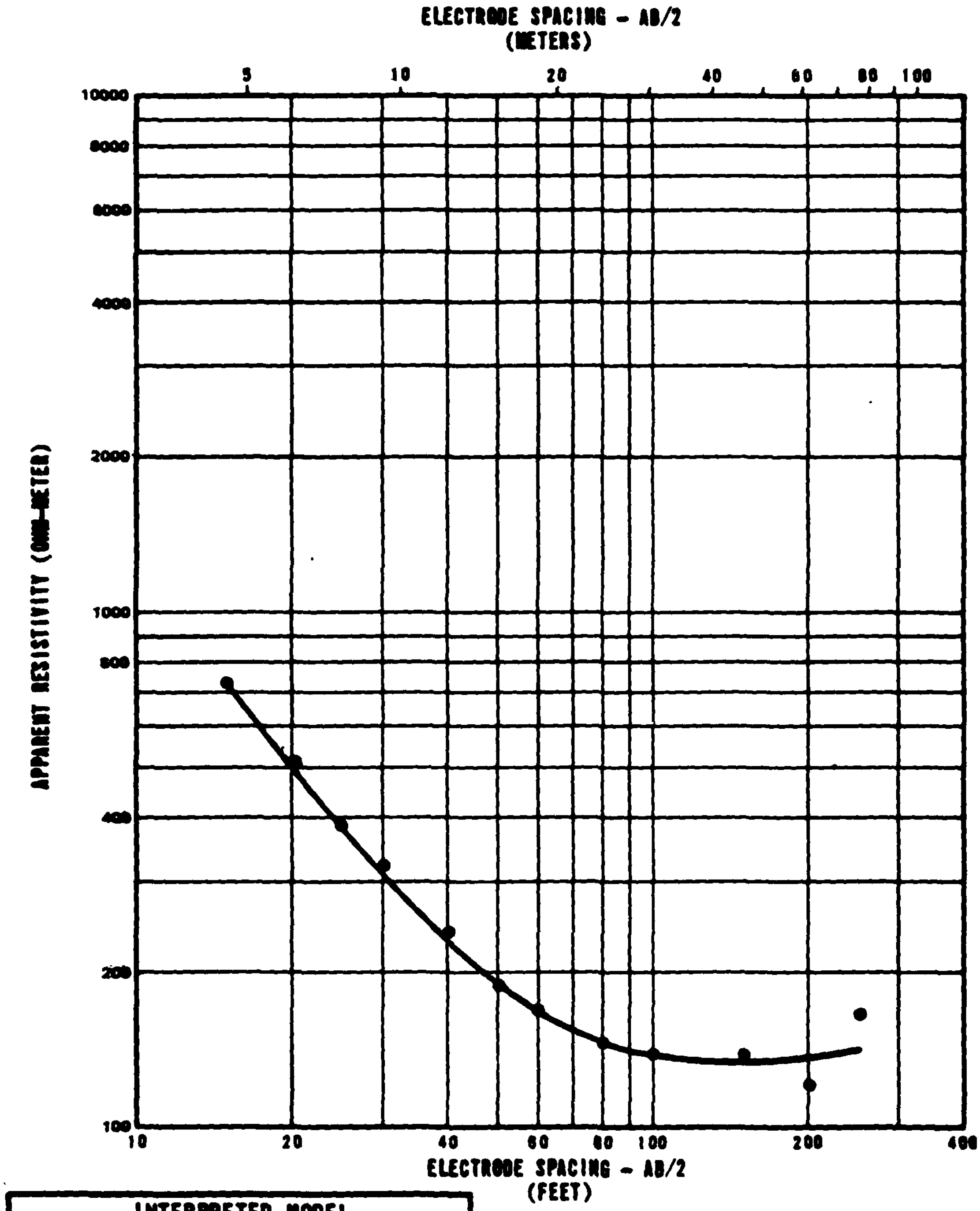
FIGURE II-4-22

5.0 ELECTRICAL RESISTIVITY DATA

Explanation: Each figure in this section presents the data obtained from a resistivity sounding and a tabulated model of resistivity layers that would produce a curve similar to the observed curve.

The upper portion of the figures is a graph in which measured apparent resistivity values in ohm-meters are plotted versus one-half the distance between the current electrodes.

The interpreted model tabulated at the bottom of the page shows a combination of true resistivity layers and thicknesses obtained by matching theoretical curves to the field curve.



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	1000
8	2	200
37	11	110
110	34	180

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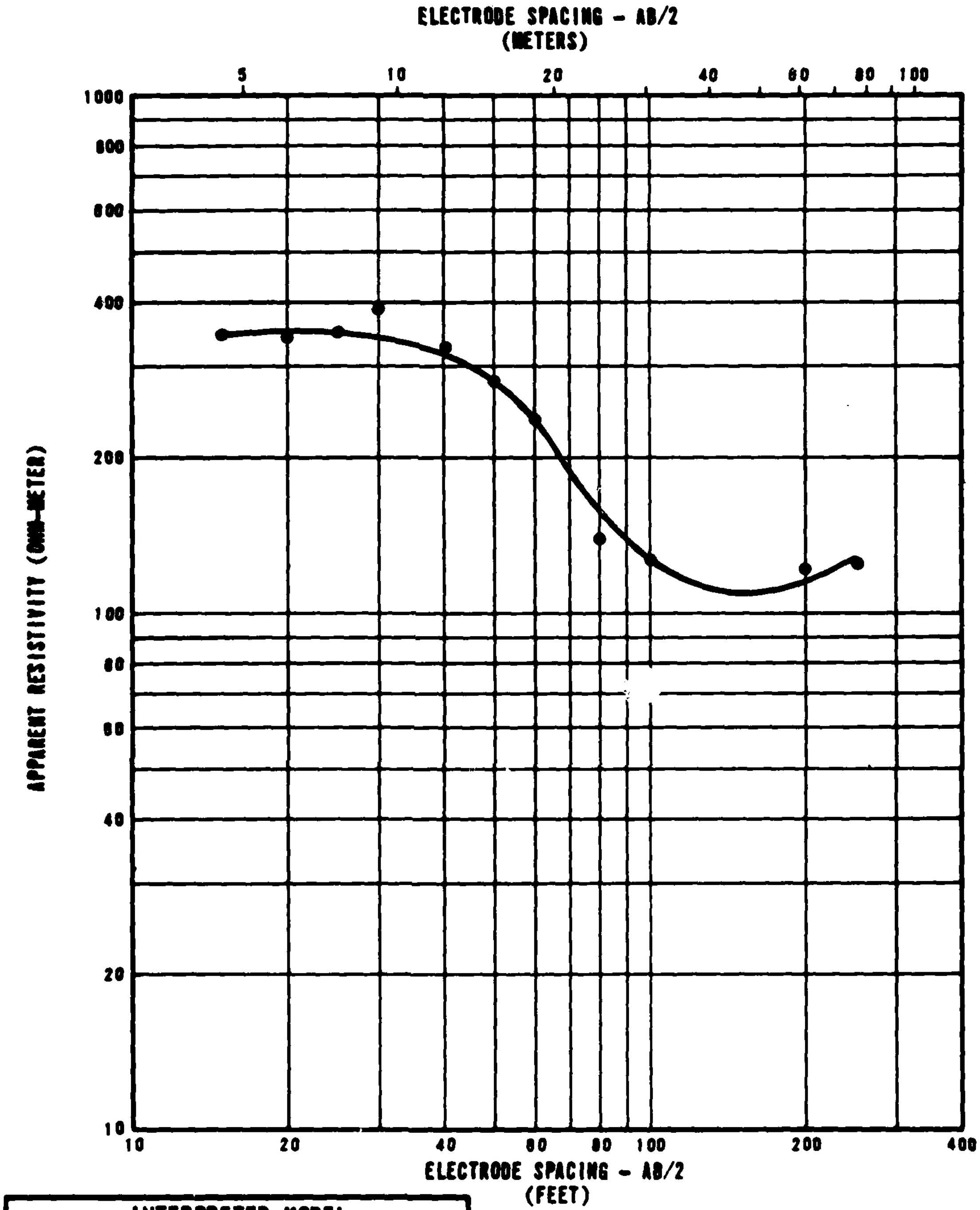
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-1
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-1



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	290
7	2	480
28	9	95
43	13	25
64	20	270

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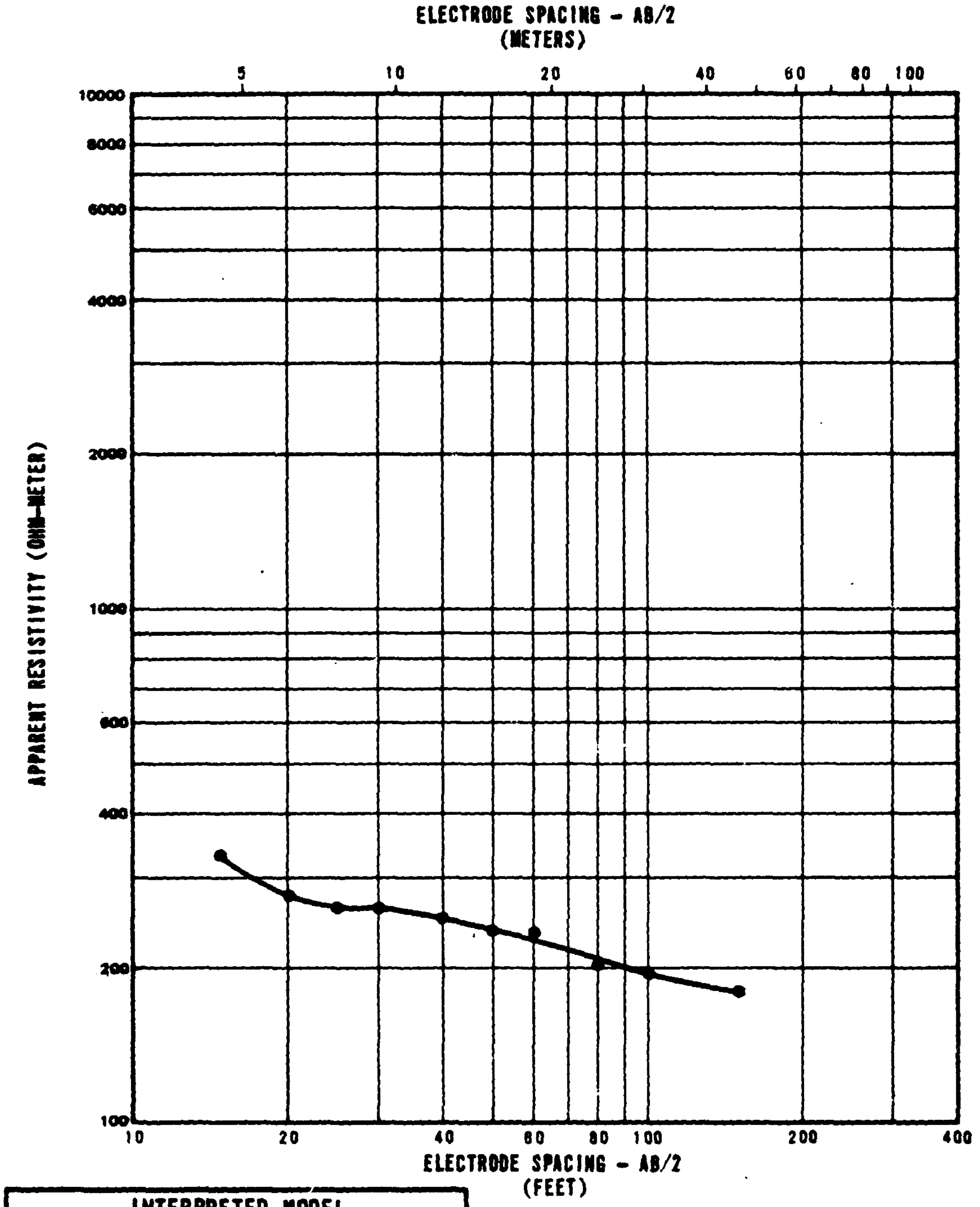
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-2
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-5-2



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	470
5	2.	250
21	6	360
27	8	180

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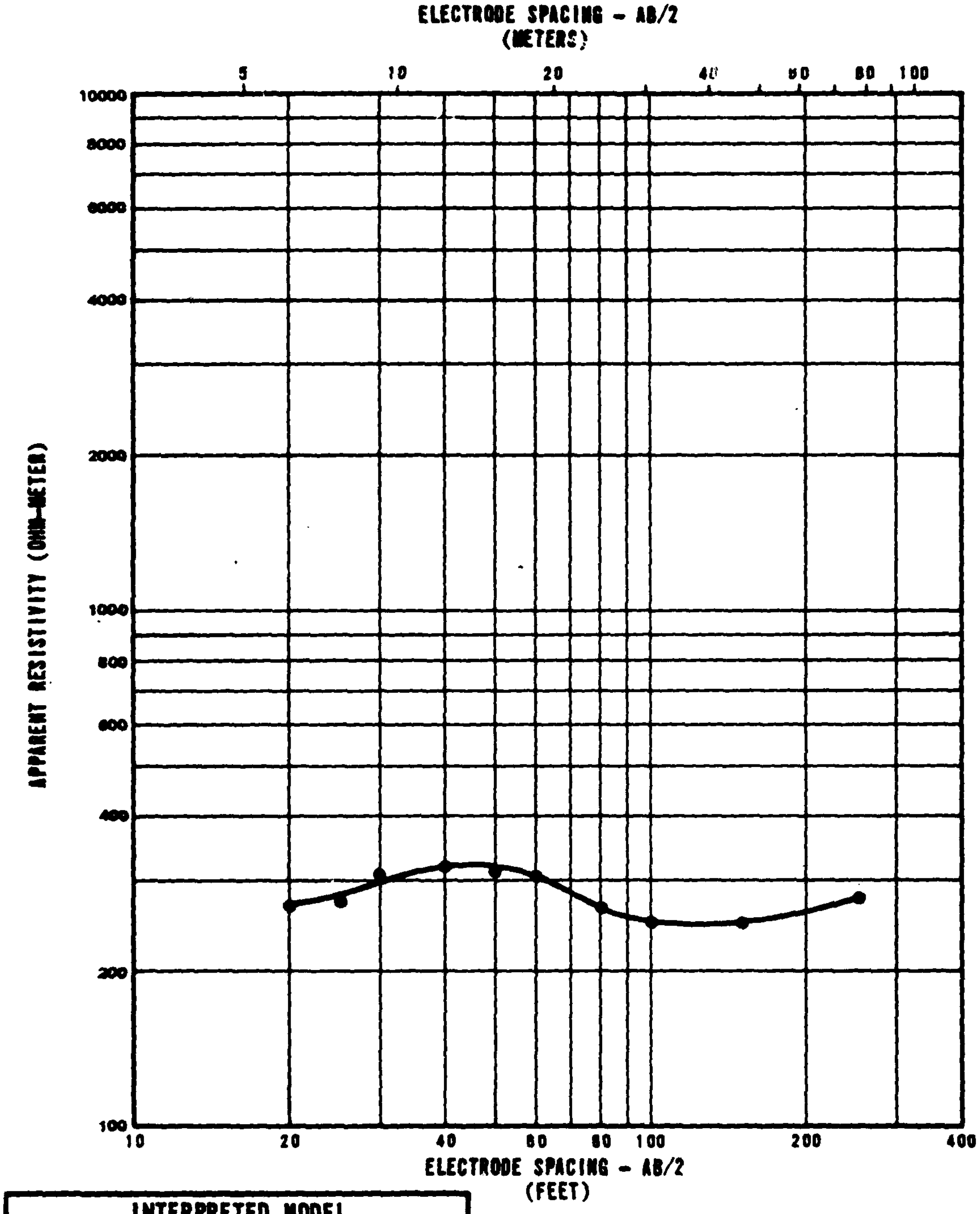
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-3
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-3



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	240
11	3	450
32	10	150
92	28	630
152	46	350

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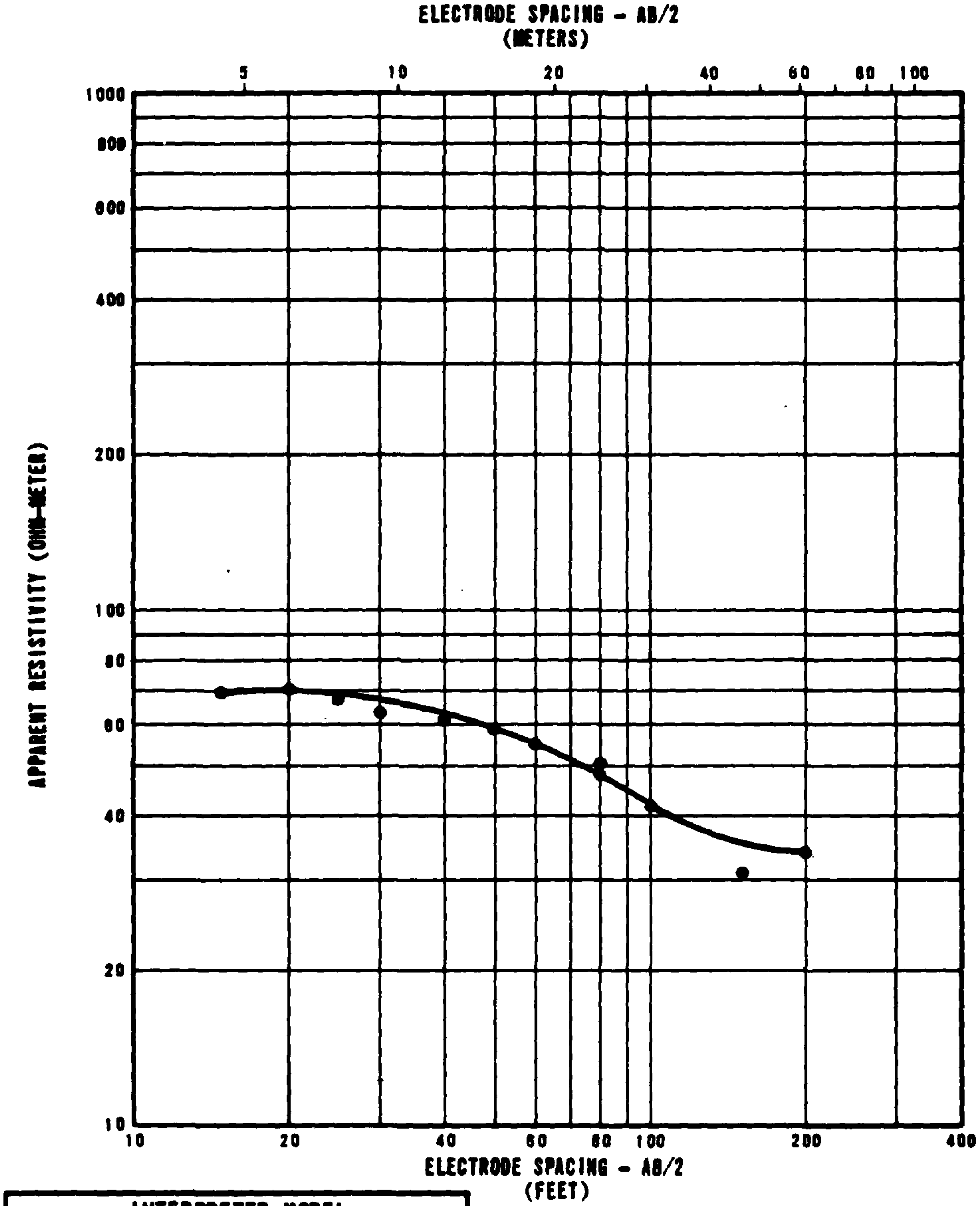
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-4
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-4



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	65
7	2	80
19	6	50
42	13	30

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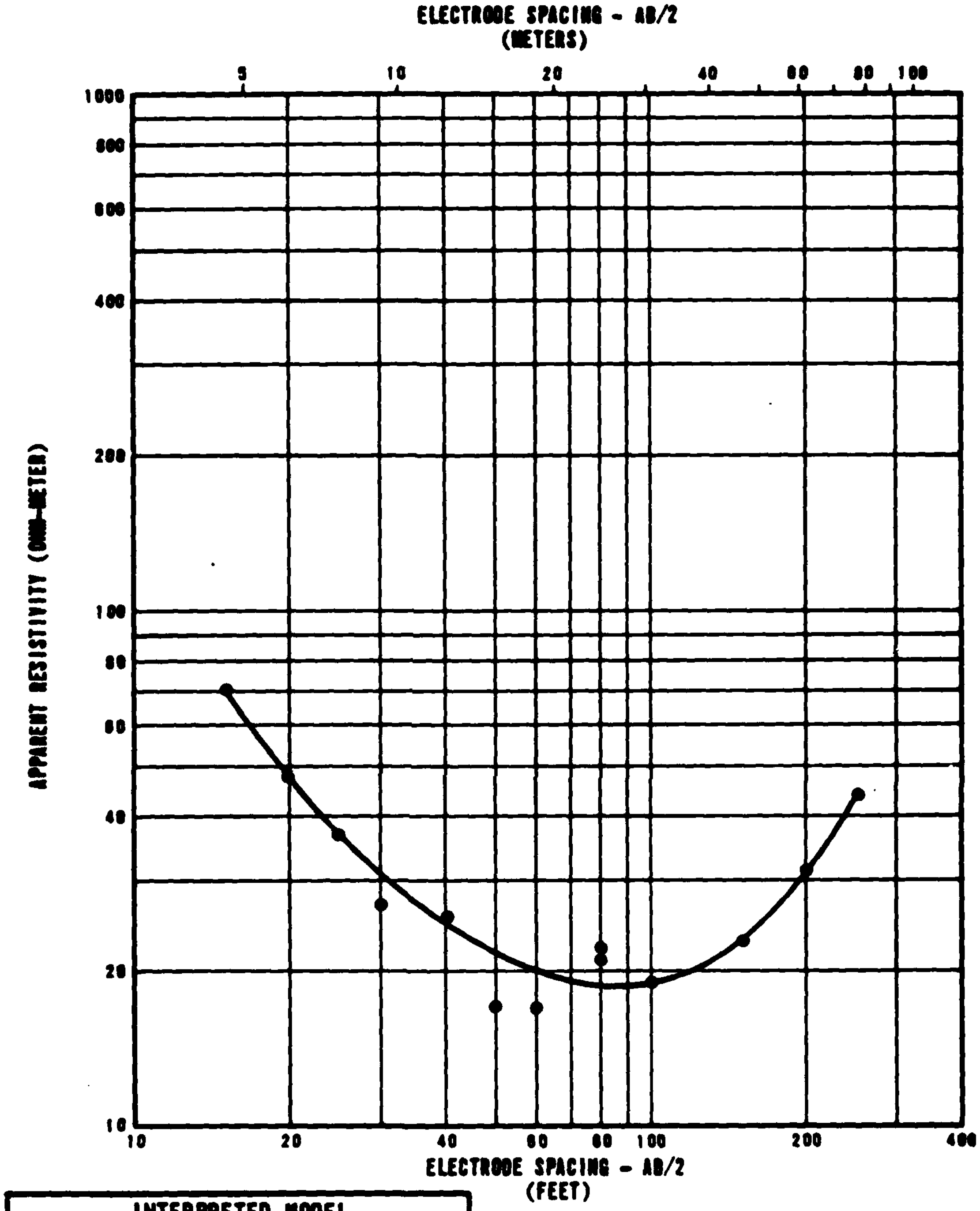
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-5
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-5-5



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	130
6	2	45
11	4	20
38	12	8
82	26	150

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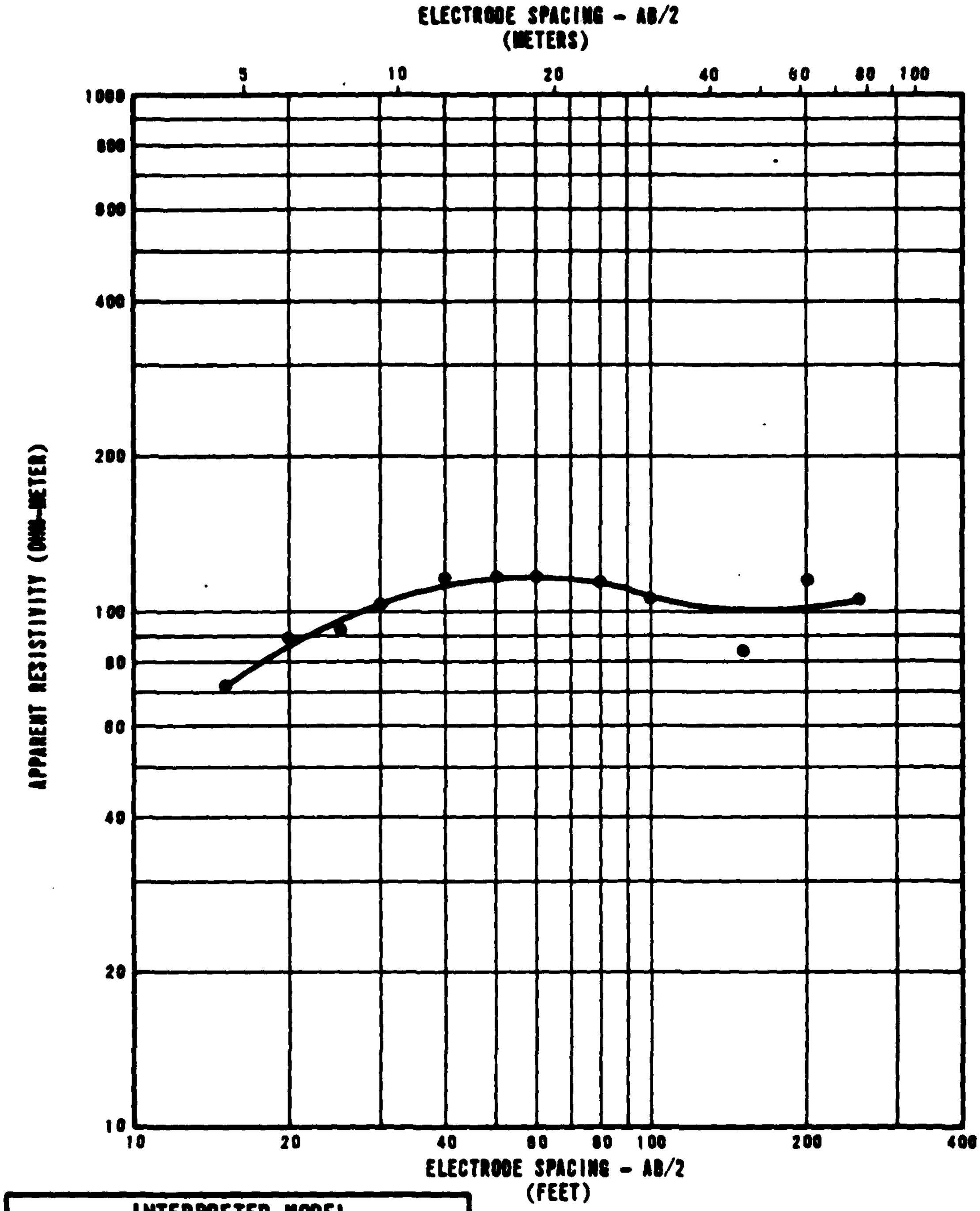
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-6
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-6

USAF-15



INTERPRETED MODEL

LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	45
5	2	140
42	13	65
110	34	170

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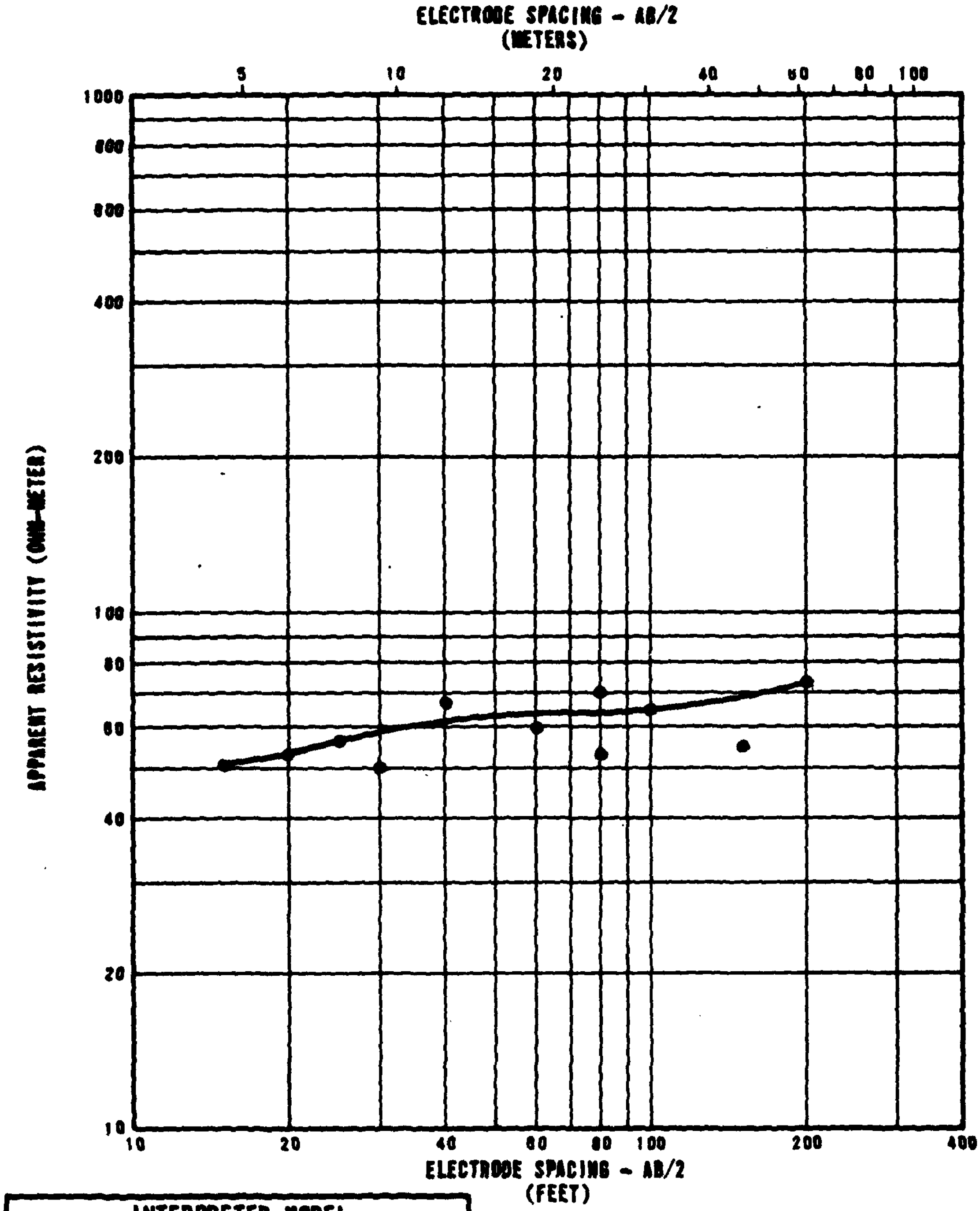
RESISTIVITY SOUNDING LV-R-7
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-7



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	50
15	5	85
38	'12	55
114	35	135

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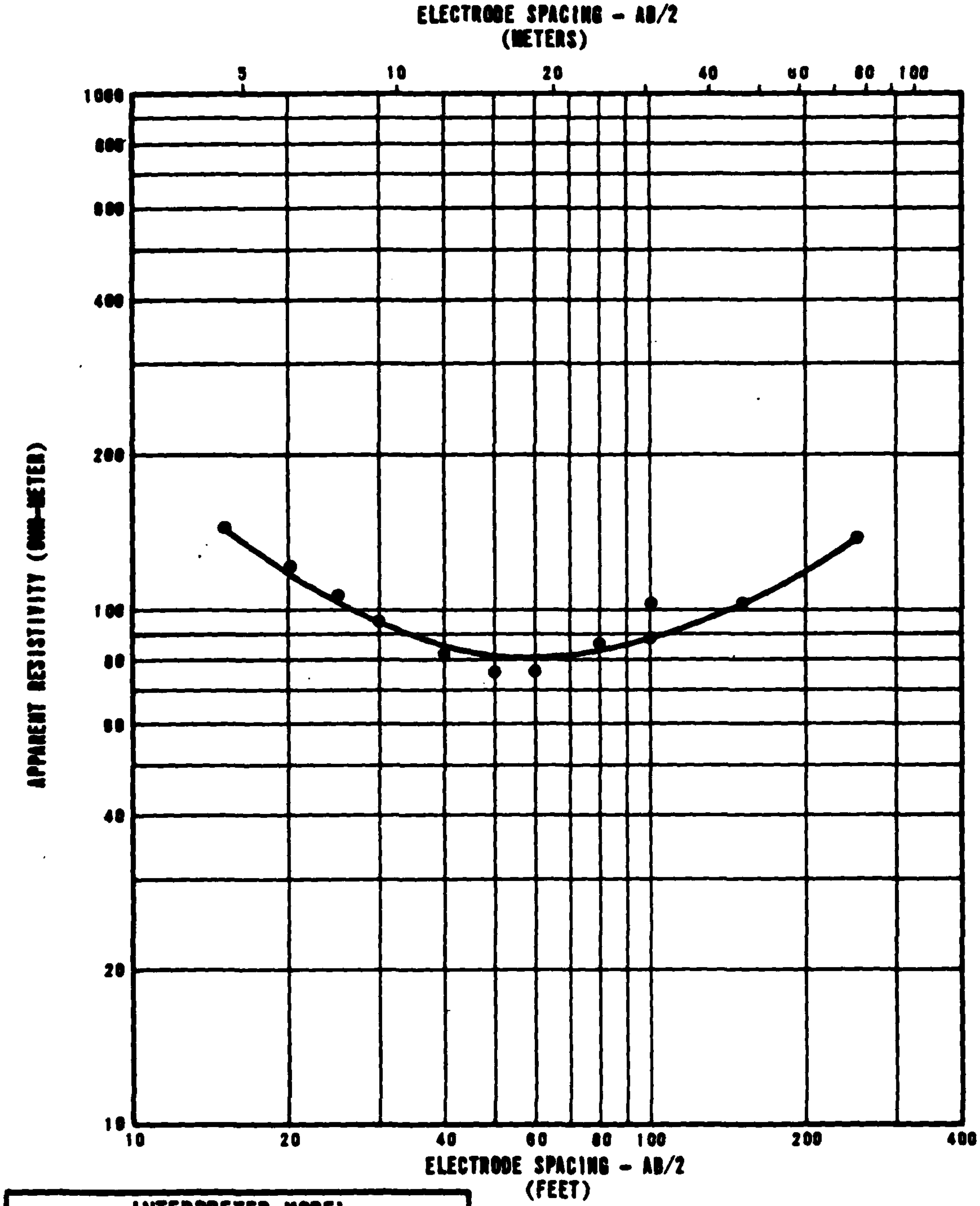
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-8
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31-JUL 81

FIGURE II-6-8



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	210
6	2	80
102	31	270

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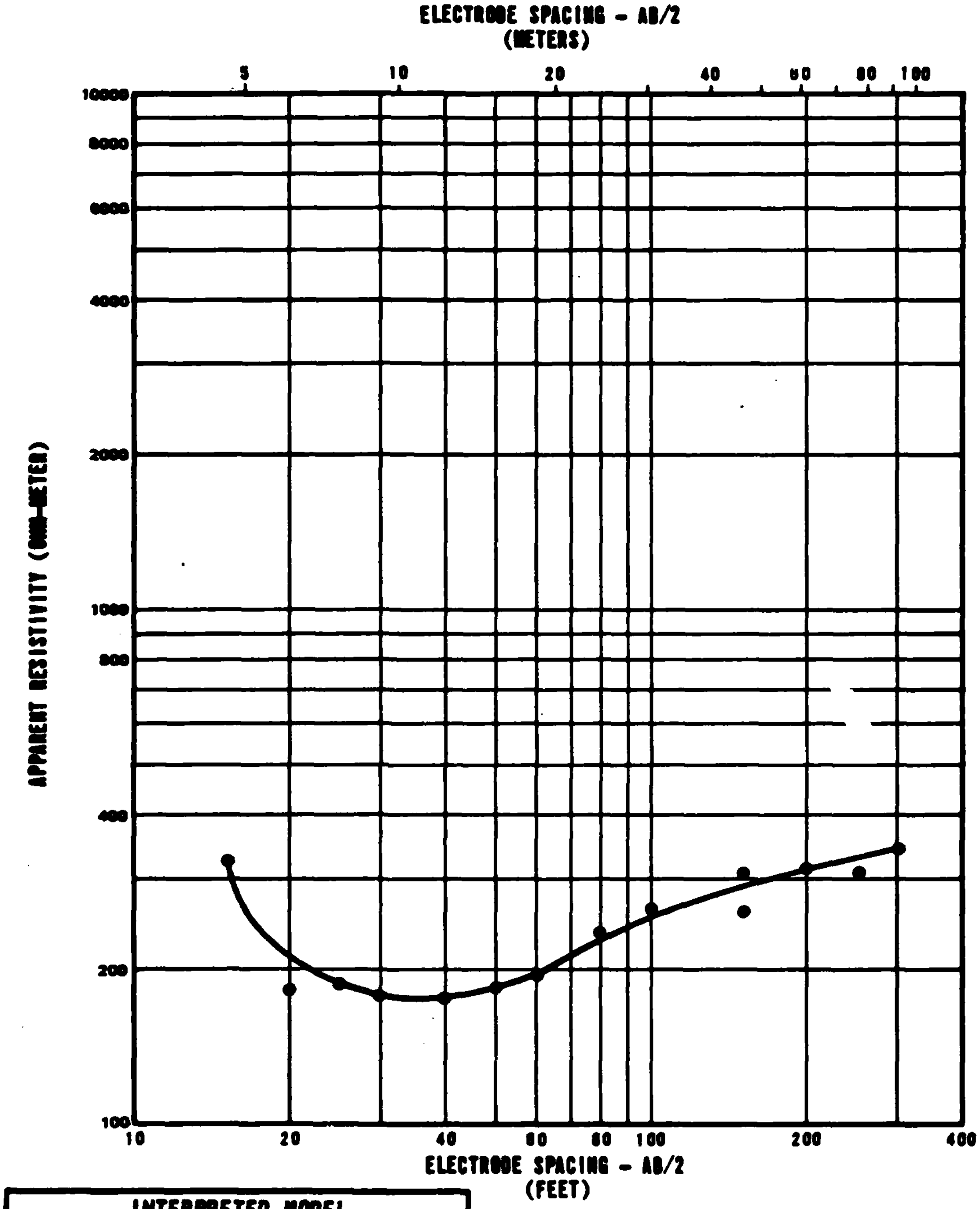
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-9
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-9



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	530
7	2	96
23	7	370

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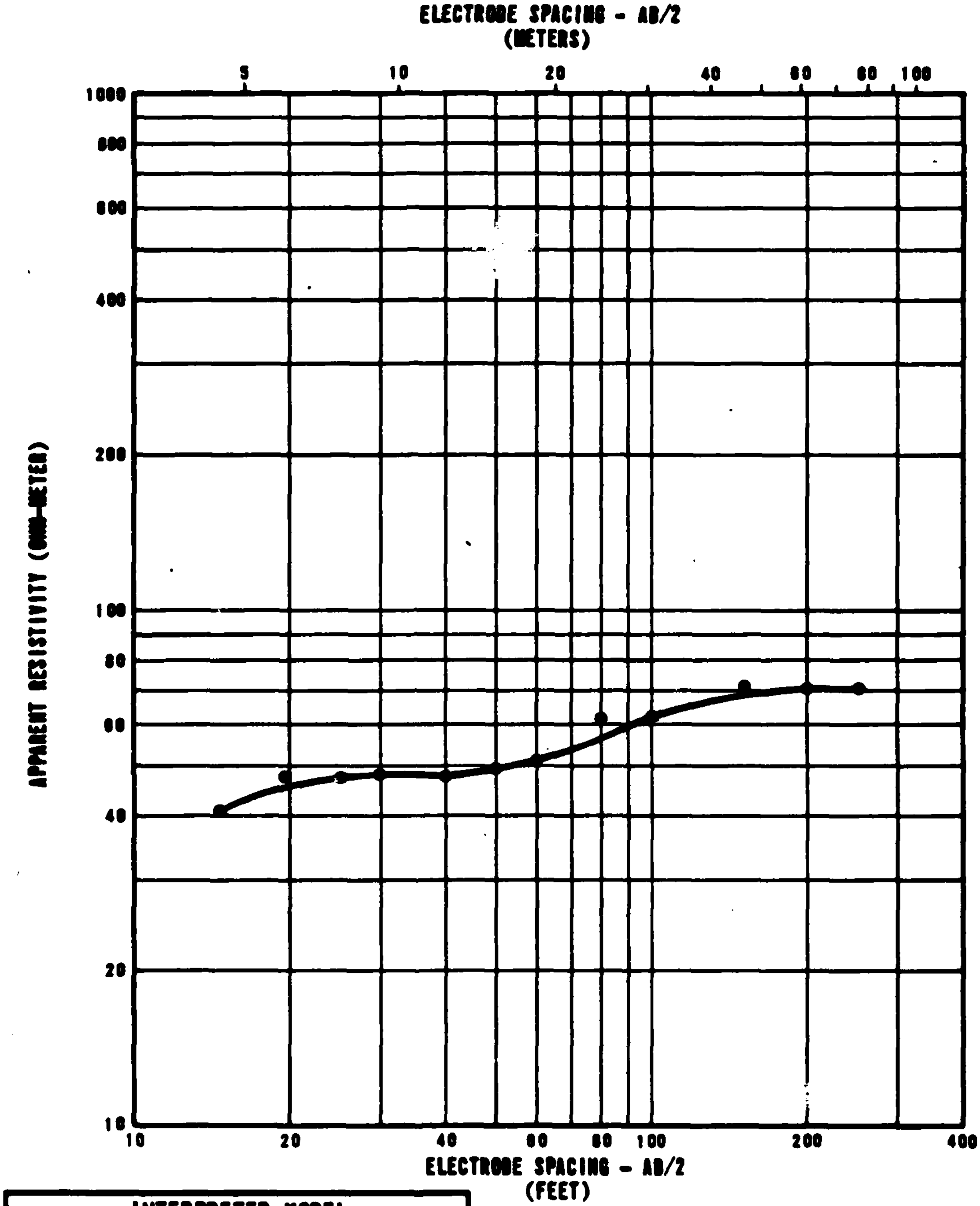
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-10
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-5-10



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	30
6	2	60
20	6	35
39	12	120
117	36	50

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MX SITING INVESTIGATION
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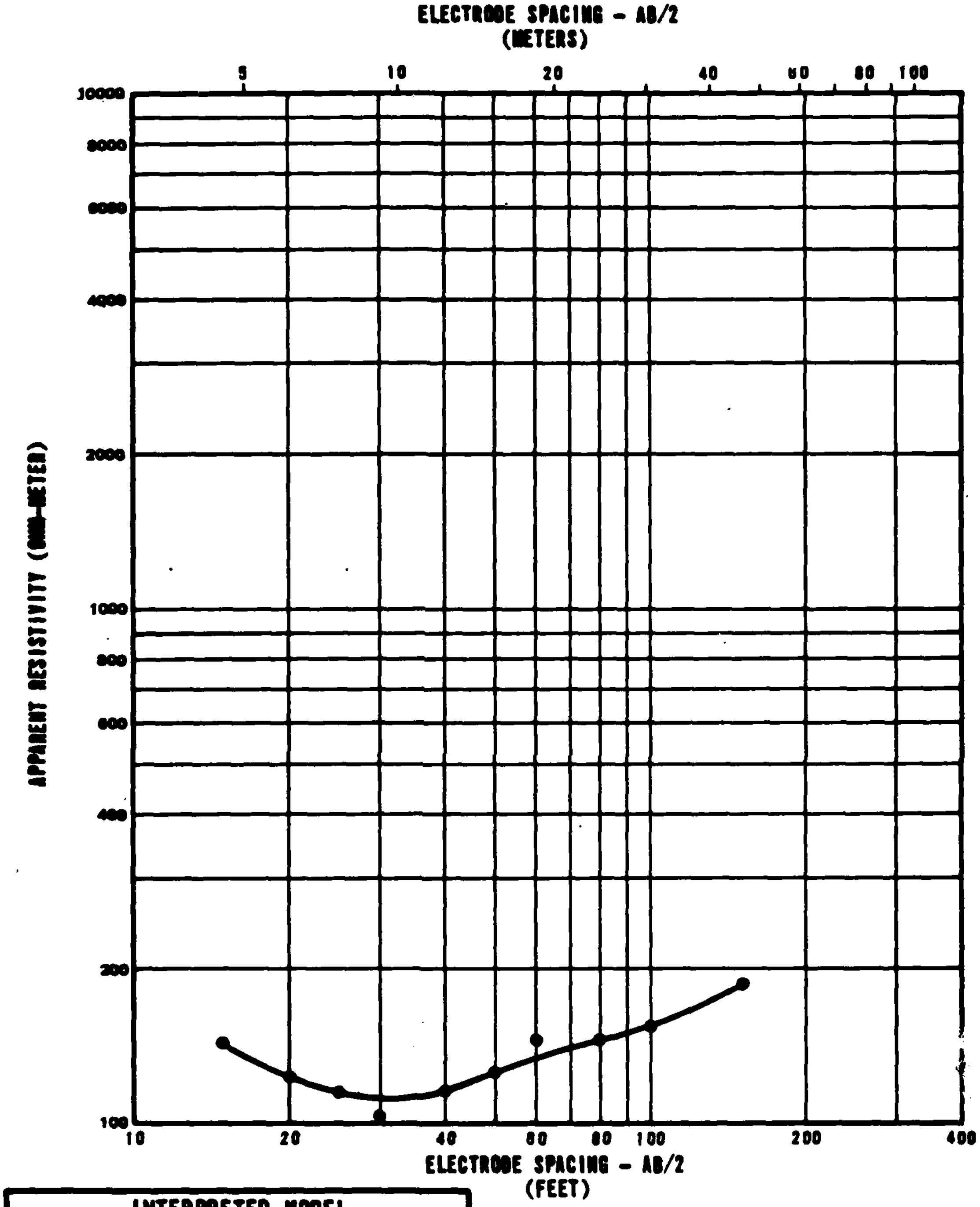
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-11
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-11



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	170
7	2	95
31	9	160
62	19	120
101	31	230

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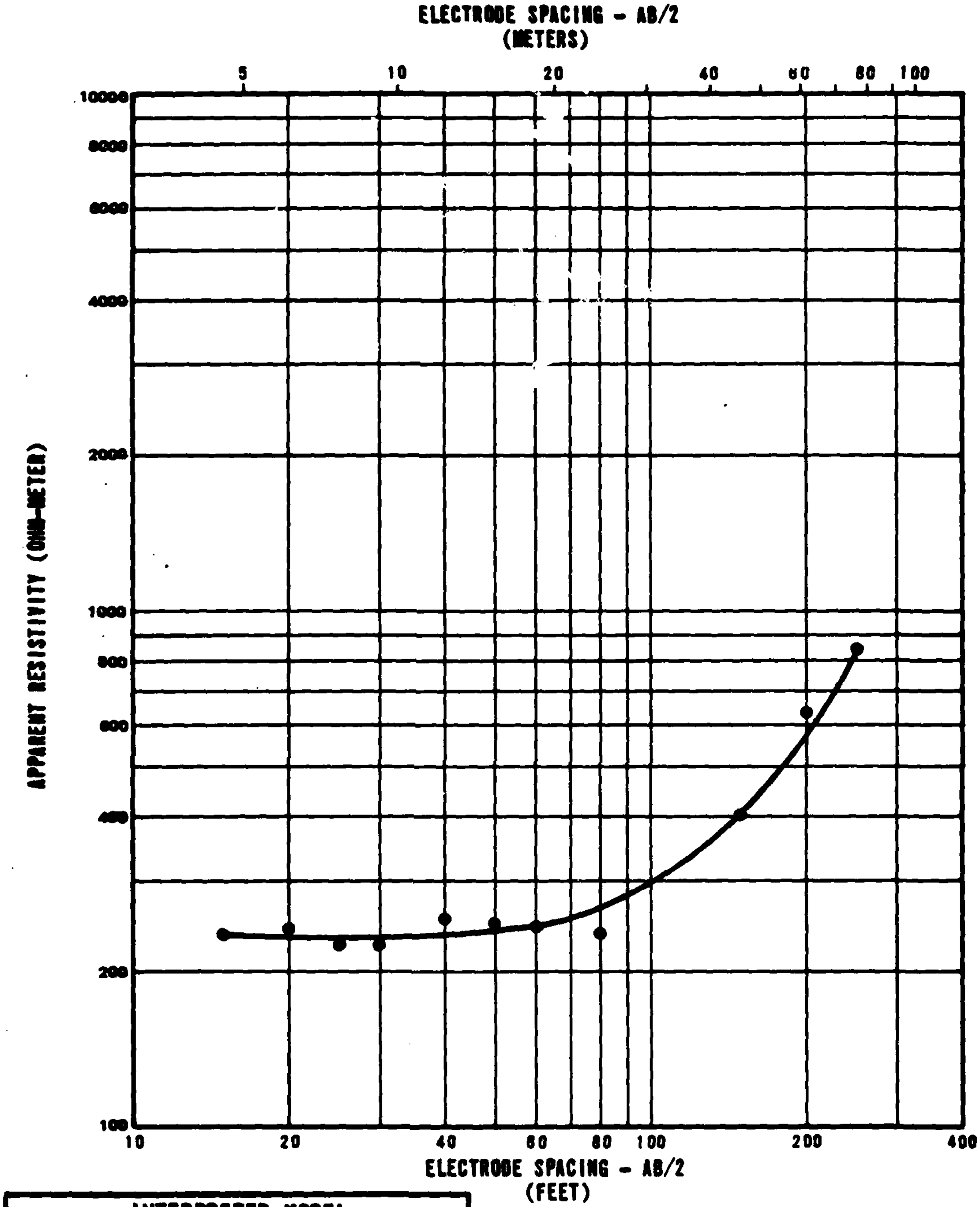
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-12
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-12



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	230
31	9	180
58	18	690

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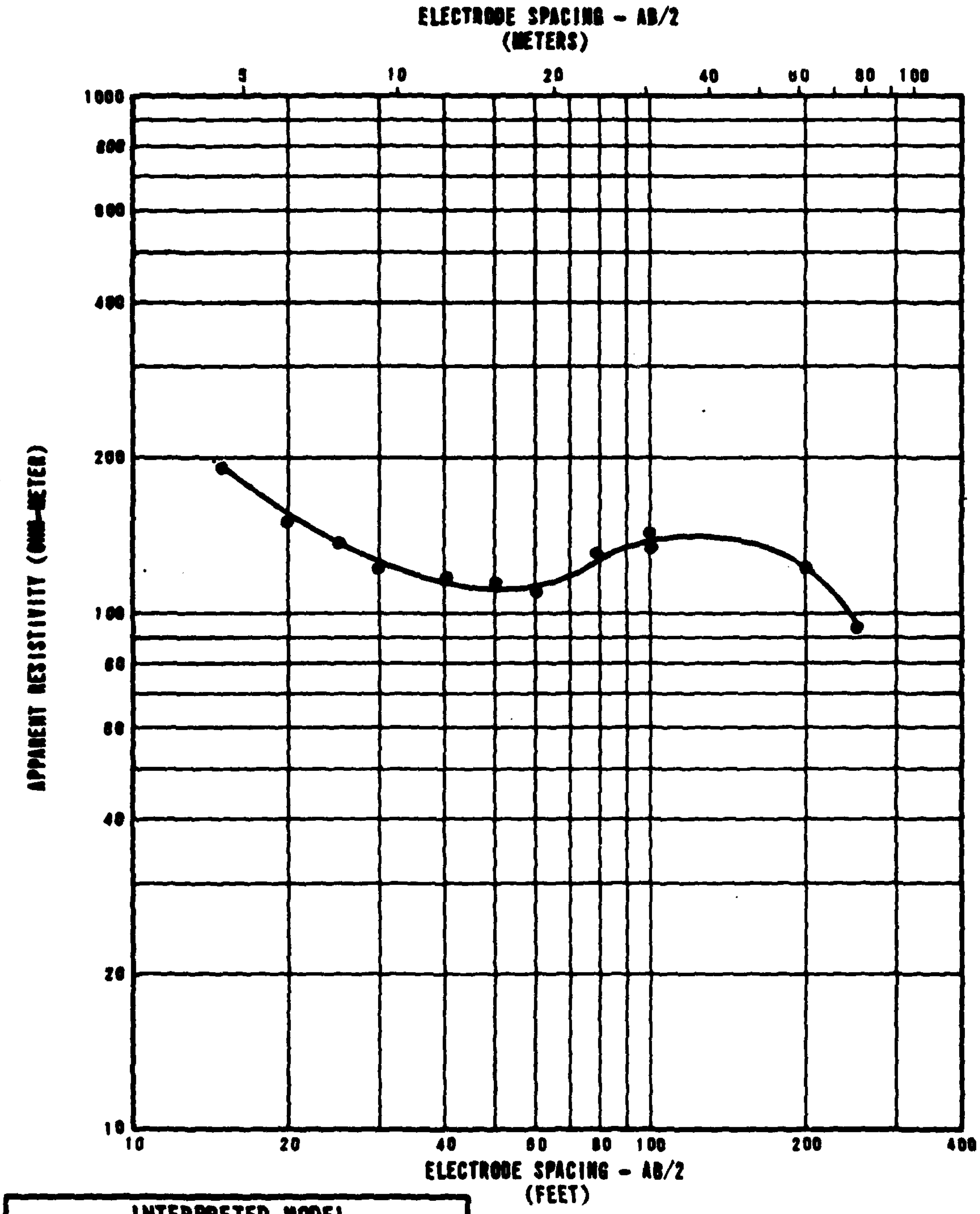
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-14
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-13

USAF-18



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	260
6	2	110
49	15	360
70	21	210
114	35	40
160	49	2

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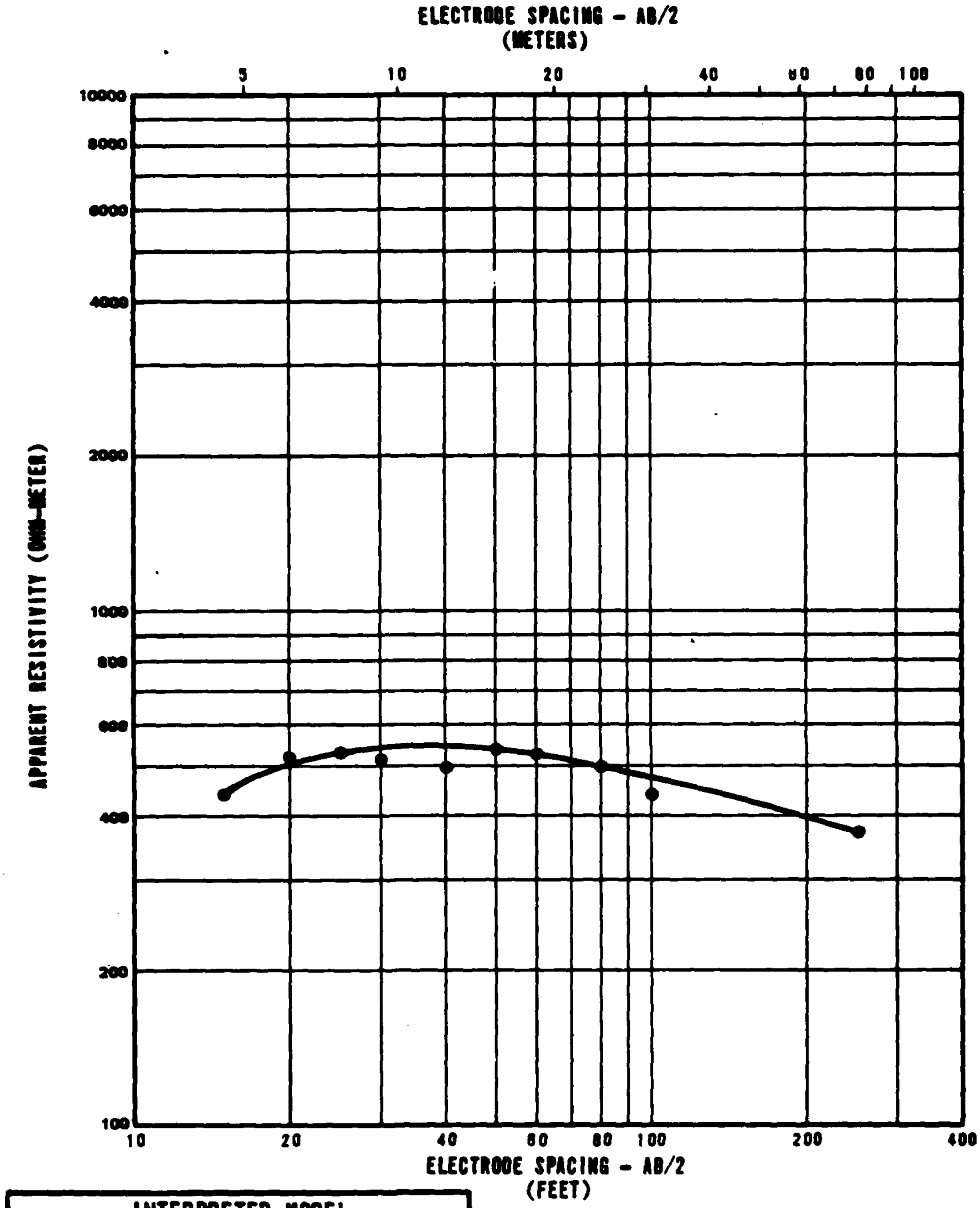
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-15
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-8-14



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	370
7	2	710
26	8	420
152	46	260

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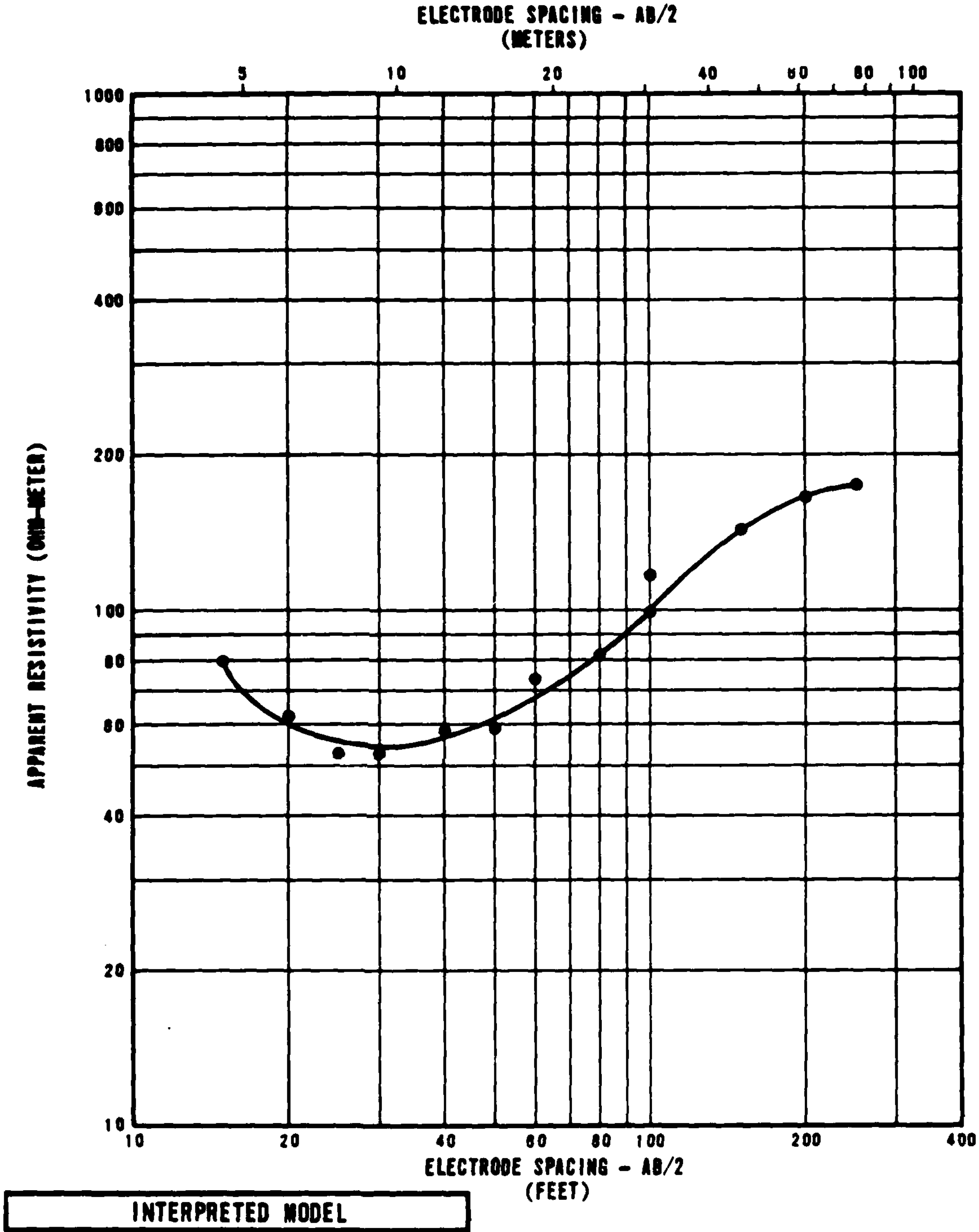
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-16
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-16

USAF-16



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	85
8	2	40
35	11	290
140	43	200

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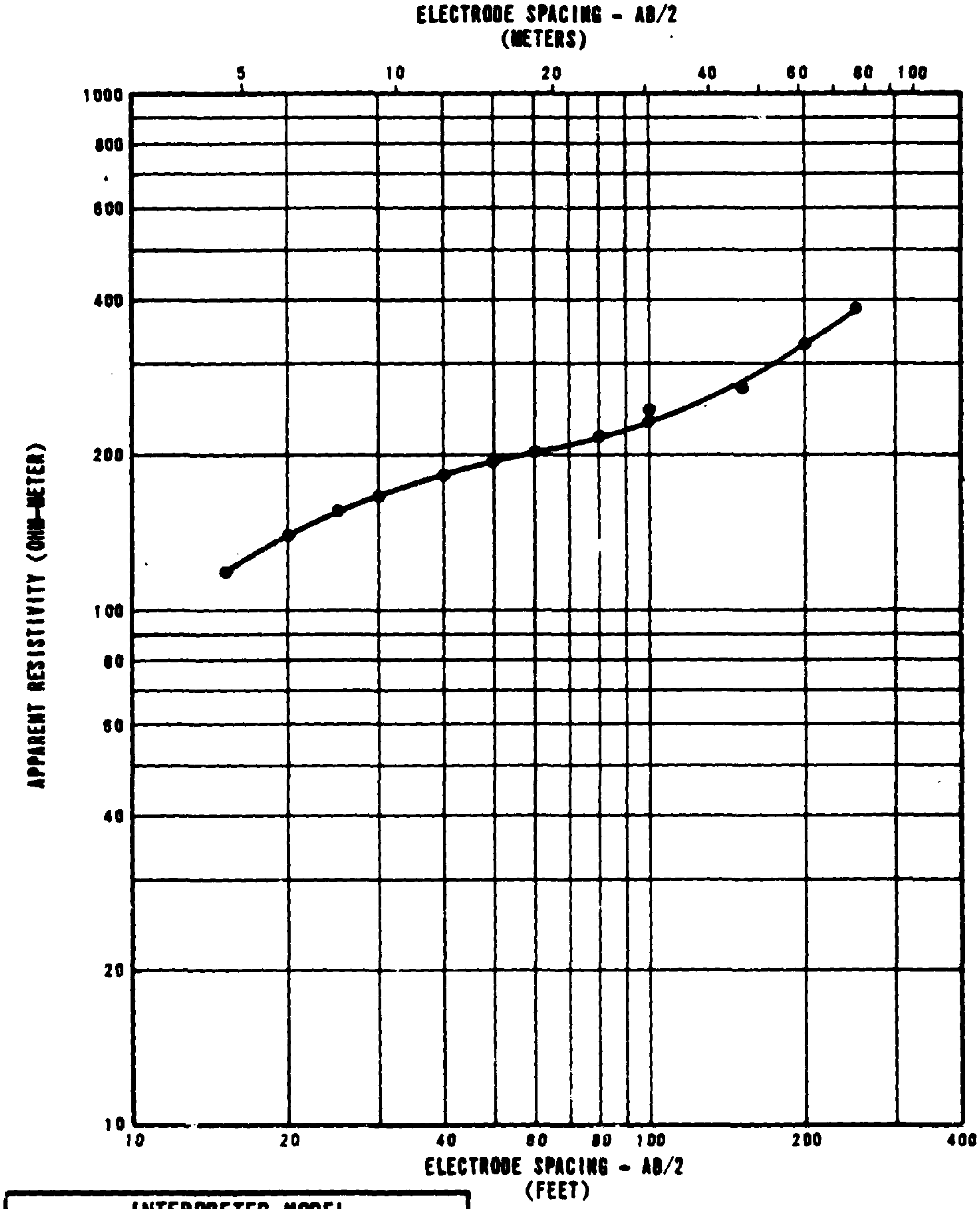
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-17
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-18



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0'	0	85
9	3	250
115	35	1310

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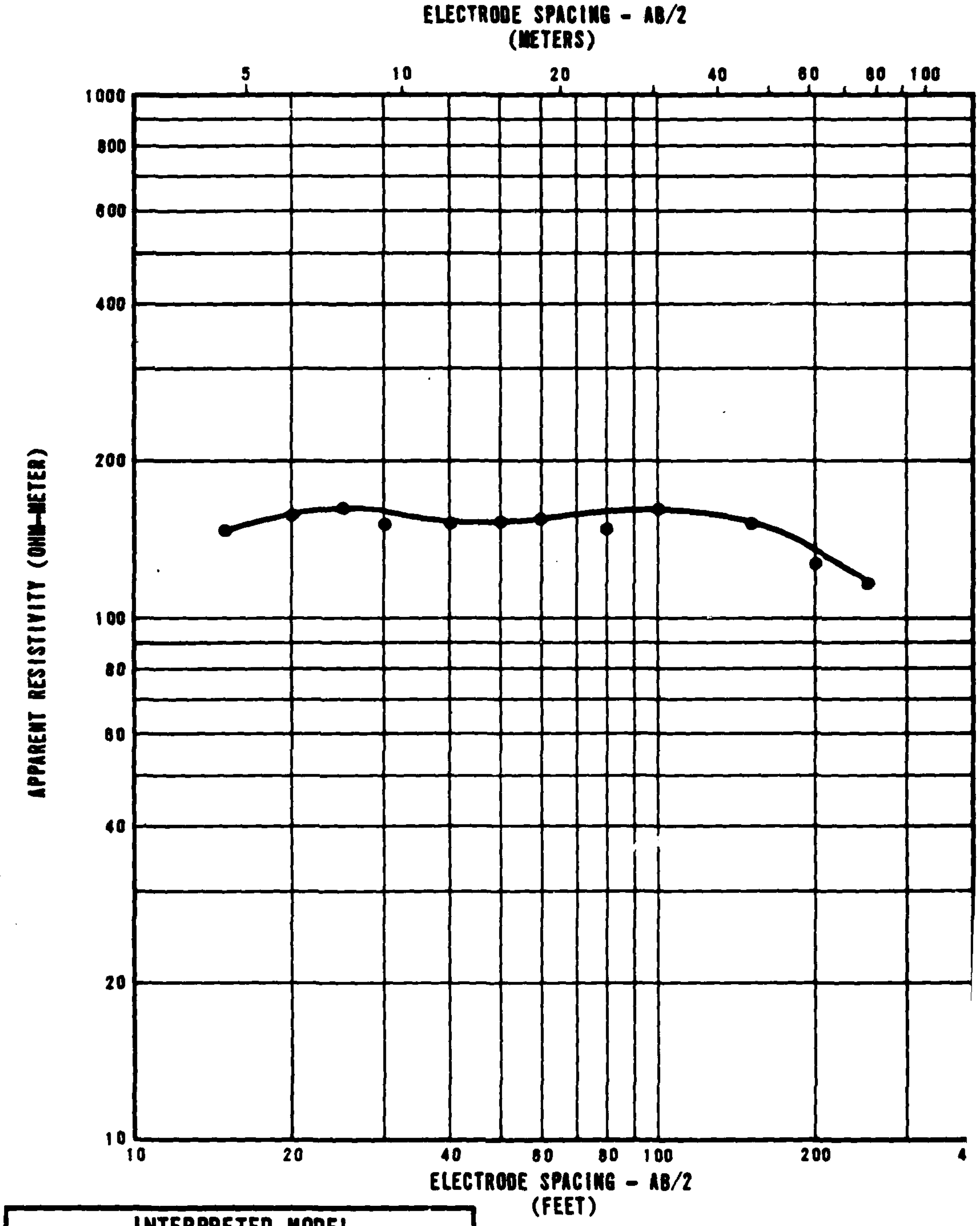
MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-18
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-8-17

USAF-



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	115
5	2	200
18	5	120
39	12	240
97	30	70

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MX SITING INVESTI
DEPARTMENT OF THE
BMO/AFRCE-

RESISTIVITY SOUNDING LV-R-
SOUNDING CURVE AND INTERPRET
LAKE VALLEY, NEVADA

31 JUL 81

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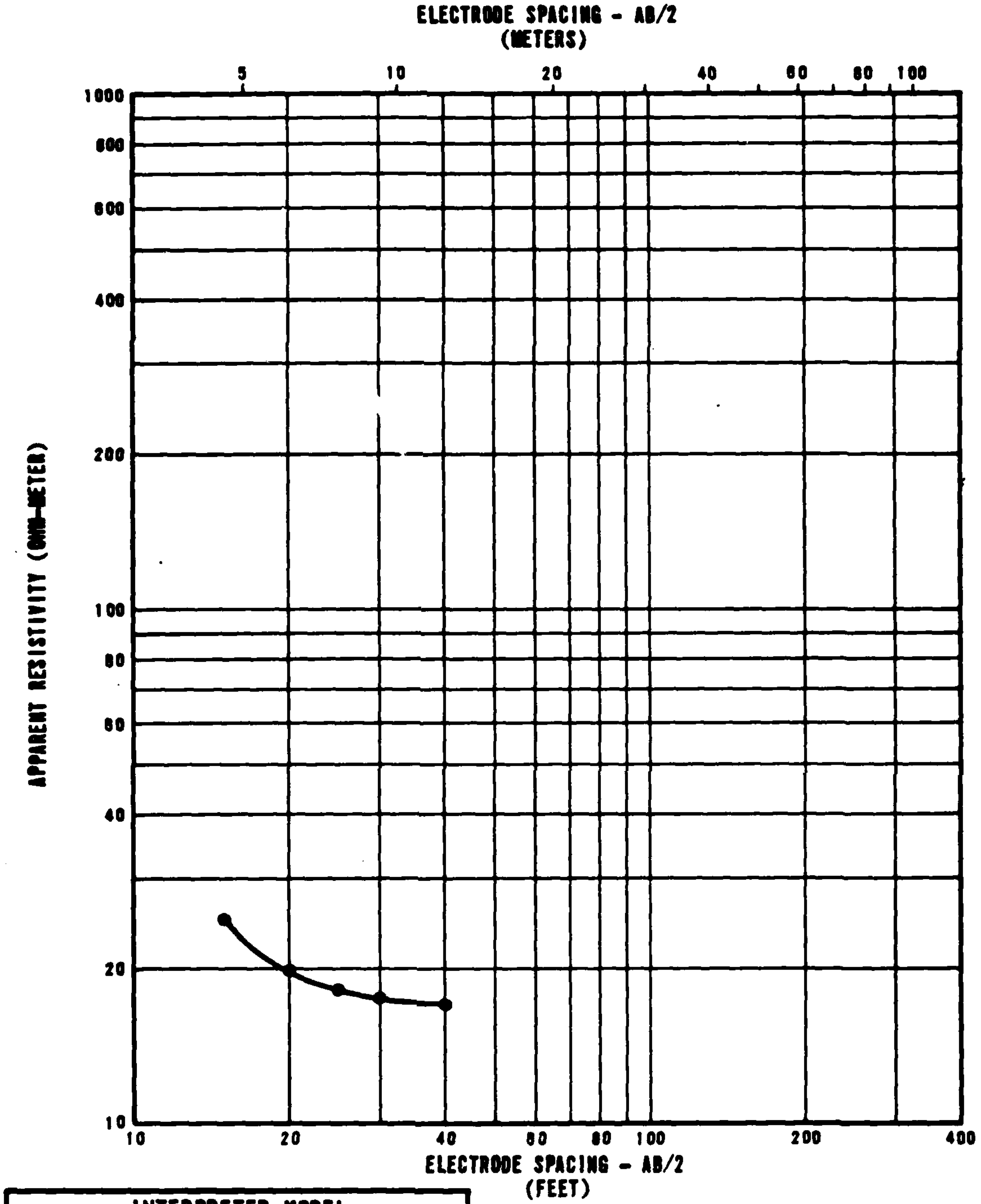

INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	35
5	2	15
28	9	25

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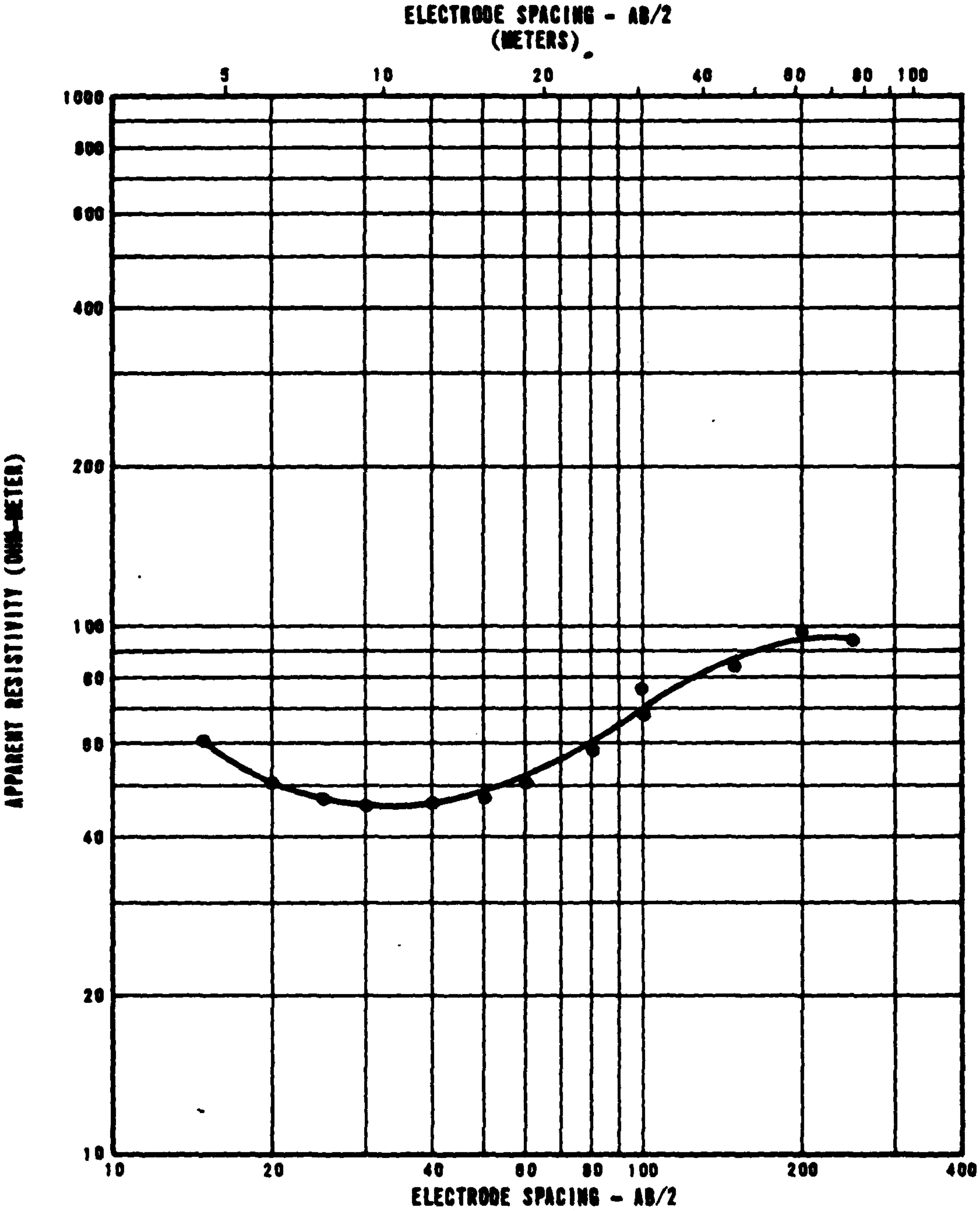
BMO/AFRCE-MX

RESISTIVITY SOUNDING LV-R-20
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-5-19



INTERPRETED MODEL		
LAYER DEPTH		RESISTIVITY VALUES
FEET	METERS	OHM-METER
0	0	60
6	2	45
39	12	95
45	14	140
173	53	65

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RESISTIVITY SOUNDING LV-R-21
SOUNDING CURVE AND INTERPRETATION
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-20

6.0 BORING LOGS

Explanation: All data from borings, trenches, and test pits are presented on standard Ertec Western logs in Sections 6.0 and 7.0. Explanations of the column headings on the logs are as follows:

A. Designations - Borings, trenches, and test pits are identified as follows:

LV-B-1
LV - abbreviation for the site (e.g., LV-Lake)
B - abbreviation for activity (e.g., B-boring, T-trench)
P-test pit)
1 - number of activity

B. Sample Type - Different sampling techniques were used and the symbols are explained at the bottom of the boring logs. For details of sampling techniques, see Section A5.0 of Appendix A in Volume I. Horizontal lines, to scale, indicate the depth where sampling was attempted.

C. Percent Recovery - The numbers shown represent the ratio (in percent) of the soil sample recovered in the sampler to the full penetration of the sampler.

D. N Value - Corresponds to standard penetration resistance, which is number of blows required to drive a standard split-spoon sampler for the second and third of three 6-inch (15 cm) increments with a 140-pound (63.5 kg) hammer falling 30 inches (76 cm) (ASTM D 1586-67).

E. Depth - Corresponds to depth below ground surface in meters and feet.

F. Lithology - Graphic representation of the soil and rock types.

G. USCS - Unified Soil Classification System (see Table II-6-1 for complete details) symbols.

H. Soil Description - Except in cases where samples were classified based on laboratory test data, the descriptions are based on visual classification. The procedures outlined in ASTM D 2487-69, Classification of Soils for Engineering Purposes, and D 2488-69, Description of Soils (Visual-Manual Procedure) were followed. Solid lines across the column indicate known change in strata at the depth shown.

Definitions of some of the terms and criteria to describe soils and conditions encountered during the exploration follow.

Gradation : A coarse-grained soil is well graded if it has a wide range in grain size and substantial amounts of most intermediate particle sizes.

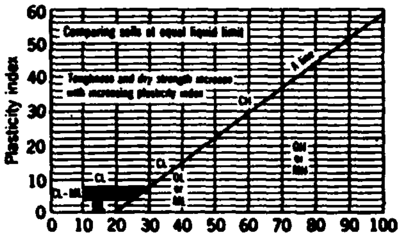
Poorly graded indicates that the soil consists predominantly of one size (uniformly graded) or has a wide range of sizes with some intermediate sizes obviously missing (gap-graded).

Moisture :
Dry (D) - no feel of moisture - dry like powder
Slightly Moist (SM) - much less than optimum moisture
Moist (M) - near optimum moisture for soil - provides apparent cohesion
Very Moist (VM) - much greater than optimum moisture
Wet (W) - for soils below the water table or near saturation

Consistency: Consistency descriptions of coarse-grained soils (GW, GP, GM, GC, SW, SP, SM, SC) are as follows.

Field Identification Procedures (Excluding particles larger than 3 in. and basing fractions on estimated weights)				Group Symbols[a]	Typical Names	Information Required for Describing Soils		Laboratory Classification Criteria		
Coarse-grained soils More than half of material is *larger* than No. 200 sieve size[b] (The No. 200 sieve size is about the smallest particle visible to naked eye)	Gravels More than half of coarse fraction is larger than No. 4 sieve size (For visual classification, the ¼ in. size may be used as equivalent to the No. 4 sieve size)	Clean gravels (little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes	*GW*	Well graded gravels, gravel-sand mixtures, little or no fines	Give typical name; indicate approximate percentages of sand and gravel; maximum size; angularity, surface condition, and hardness of the coarse grains; local or geologic name and other pertinent descriptive information; and symbols in parentheses For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics Example: *Silty sand*, gravelly; about 20% hard, angular gravel particles ½-in. maximum size; rounded and subangular sand grains coarse to fine, about 15% nonplastic fines with low dry strength; well compacted and moist in place; alluvial sand; (*SM*)	Use grain size curve in identifying the fractions as given under field identification	Determine percentages of gravel and sand from grain size curve Depending on percentage of fines (fraction smaller than No. 200 sieve size) coarse grained soils are classified as follows: Less than 5% *GW, GP, SW, SP* More than 12% *GM, GC, SM, SC* 5% to 12% *Borderline cases requiring use of dual symbols*	$C_U = \frac{D_{60}}{D_{10}}$ Greater than 4 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3	
			Predominantly one size or a range of sizes with some intermediate sizes missing	*GP*	Poorly graded gravels, gravel-sand mixtures, little or no fines				*Not meeting all gradation requirements for GW*	
		Gravels with fines (appreciable amount of fines)	Nonplastic fines (for identification procedures see *ML* below)	*GM*	Silty gravels, poorly graded gravel-sand-silt mixtures				Atterberg limits below "A" line, or *PI* less than 4	Above "A" line with *PI* between 4 and 7 are *borderline* cases *requiring use of* dual symbols
			Plastic fines (for identification procedures, see *CL* below)	*GC*	Clayey gravels, poorly graded gravel-sand-clay mixtures				Atterberg limits above "A" line, with *PI* greater than 7	
	Sands More than half of coarse fraction is smaller than No. 4 sieve size	Clean sands (little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate particle sizes	*SW*	Well graded sands, gravelly sands, little or no fines				$C_U = \frac{D_{60}}{D_{10}}$ Greater than 6 $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3	
			Predominantly one size or a range of sizes with some intermediate sizes missing	*SP*	Poorly graded sands, gravelly sands, little or no fines				*Not meeting all gradation requirements for SW*	
		Sands with fines (appreciable amount of fines)	Nonplastic fines (for identification procedures, see *ML* below)	*SM*	Silty sands, poorly graded sand-silt mixtures				Atterberg limits below "A" line or *PI* less than 5	Above "A" line with *PI* between 4 and 7 are *borderline* cases *requiring use of* dual symbols
			Plastic fines (for identification procedures, see *CL* below)	*SC*	Clayey sands, poorly graded sand-clay mixtures				Atterberg limits below "A" line with *PI* greater than 7	

Identification Procedures on Fraction Smaller than No. 40 Sieve Size							
		Dry Strength (crushing character-istics)	Dilatancy (reaction to shaking)	Toughness (consistency near plastic limit)			
Fine-grained soils More than half of material is *smaller* than No. 200 sieve size	Silts and clays liquid limit less than 50	None to slight	Quick to slow	None	*ML*	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands with slight plasticity	Give typical name; indicate degree and character of plasticity, amount and maximum size of coarse grains; colour in wet condition, odour if any, local or geologic name, and other pertinent descriptive information, and symbol in parentheses For undisturbed soils add information on structure, stratification, consistency in undisturbed and remoulded states, moisture and drainage conditions Example: *Clayey silt*, brown; slightly plastic; small percentage of fine sand; numerous vertical root holes; firm and dry in place; loess; (*ML*)
		Medium to high	None to very slow	Medium	*CL*	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
		Slight to medium	Slow	Slight	*OL*	Organic silts and organic silt-clays of low plasticity	
	Silts and clays liquid limit greater than 50	Slight to medium	Slow to none	Slight to medium	*MH*	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
		High to very high	None	High	*CH*	Inorganic clays of high plasticity, fat clays	
		Medium to high	None to very slow	Slight to medium	*OH*	Organic clays of medium to high plasticity	
Highly Organic Soils		Readily identified by colour, odour, spongy feel and frequently by fibrous texture			*Pt*	Peat and other highly organic soils	



Plasticity chart
for laboratory classification of fine grained soils

From Wagner, 1957.

[a] *Boundary classifications*. Soils possessing characteristics of two groups are designated by combinations of group symbols. For example *GW-GC*, well graded gravel-sand mixture with clay binder.

[b] All sieve sizes on this chart are U.S. standard.

Field Identification Procedure for Fine Grained Soils or Fractions

These procedures are to be performed on the minus No. 40 sieve size particles, approximately $\frac{1}{64}$ in. For field classification purposes, screening is not intended, simply remove by hand the coarse particles that interfere with the tests.

Dilatancy (Reaction to shaking):

After removing particles larger than No. 40 sieve size, prepare a pat of moist soil with a volume of about one-half cubic inch. Add enough water if necessary to make the soil soft but not sticky.

Place the pat in the open palm of one hand and shake horizontally, striking vigorously against the other hand several times. A positive reaction consists of the appearance of water on the surface of the pat which changes to a livery consistency and becomes glossy. When the sample is squeezed between the fingers, the water and gloss disappear from the surface, the pat stiffens and finally it cracks or crumbles. The rapidity of appearance of water during shaking and of its disappearance during squeezing assist in identifying the character of the fines in a soil.

Very fine clean sands give the quickest and most distinct reaction whereas a plastic clay has no reaction. Inorganic silts, such as a typical rock flour, show a moderately quick reaction.

Dry Strength (Crushing characteristics):

After removing particles larger than No. 40 sieve size, mould a pat of soil to the consistency of putty, adding water if necessary. Allow the pat to dry completely by oven, sun or air drying, and then test its strength by breaking and crumbling between the fingers. This strength is a measure of the character and quantity of the colloidal fraction contained in the soil. The dry strength increases with increasing plasticity.

High dry strength is characteristic for clays of the CH group. A typical inorganic silt possesses only very slight dry strength. Silty fine sands and silts have about the same slight dry strength, but can be distinguished by the feel when powdering the dried specimen. Fine sand feels gritty whereas a typical silt has the smooth feel of flour.

Toughness (Consistency near plastic limit):

After removing particles larger than the No. 40 sieve size, a specimen of soil about one-half inch cube in size, is moulded to the consistency of putty. If too dry, water must be added and if sticky, the specimen should be spread out in a thin layer and allowed to lose some moisture by evaporation. Then the specimen is rolled out by hand on a smooth surface or between the palms into a thread about one-eighth inch in diameter. The thread is then folded and re-rolled repeatedly. During this manipulation the moisture content is gradually reduced and the specimen stiffens, finally loses its plasticity, and crumbles when the plastic limit is reached.

After the thread crumbles, the pieces should be lumped together and a slight kneading action continued until the lump crumbles.

The tougher the thread near the plastic limit and the stiffer the lump when it finally crumbles, the more potent is the colloidal clay fraction in the soil. Weakness of the thread at the plastic limit and quick loss of coherence of the lump below the plastic limit indicate either inorganic clay of low plasticity, or materials such as kaolin-type clays and organic clays which occur below the A-line.

Highly organic clays have a very weak and spongy feel at the plastic limit.

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UNIFIED SOIL CLASSIFICATION SYSTEM

31 JUL 81

TABLE II-6-1

Consistency	N Value (ASTM D 1586-67)
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	>50

Consistency descriptions of fine-grained soils (ML, CL, MH, CH,) are as follows:

Consistency	Shear Strength (ksf)	(kN/m^2)	Field Guide
Very Soft	0.25	12	Sample with height equal to twice the diameter, sags under own weight
Soft	0.25- 0.50	12 - 24	Can be squeezed between thumb and forefinger
Firm	0.50- 1.00	24- 48	Can be molded easily with fingers
Stiff	1.00- 2.00	48- 96	Can be imprinted with slight pressure from fingers
Very Stiff	2.00- 4.00	96- 192	Can be imprinted with considerable pressure from fingers
Hard	over 4.00	over 192	Cannot be imprinted by fingers

Grain Shape: Angular - particles have sharp edges and relatively plane sides with unpolished surfaces.

Subangular - particles are similar to angular but have somewhat rounded edges.

Subrounded - particles exhibit nearly plane sides but have well-rounded corners and edges.

Rounded - particles have smoothly curved sides and no edges.

Calcareous : Containing calcium carbonate; presence of calcium carbonate is commonly identified on the basis of reaction with dilute hydrochloric acid.

Caliche : Soils cemented by calcium carbonate and/or other soluble minerals by upward-moving solutions.

Degree of Cementation: (Stages of development of caliche profile)

Stage	Gravelly Soils	Nongravelly Soils
I	Thin, discontinuous pebble coatings	Few filaments or faint coatings
II	Continuous pebble coatings, some interpebble fillings	Few to abundant nodules, flakes, filaments
III	Many interpebble fillings	Many nodules and internodular fillings
IV	Laminar horizon overlying plugged horizon	Increasing carbonate impregnation

Secondary Material : Example - Sand with trace to some silt

Trace - 5-12% (by dry weight)
Little - 13-20% (by dry weight)
Some - >20% (by dry weight)

Plasticity : Plasticity index is the range of water content, expressed as a percentage of the weight of the oven-dried soil, through which the soil is plastic. It is defined as the liquid limit minus the plastic limit. Descriptive ranges used on the logs include:

Nonplastic	(PI, 0 - 4)
Slightly Plastic	(PI, 4 - 15)
Medium Plastic	(PI, 15 - 30)
Highly Plastic	(PI, >30)

Cobbles and Boulders : A cobble is a rock fragment, usually rounded by weathering or abrasion, with an average diameter ranging between 3 and 12 inches (8 and 30 cm).

A boulder is a rock fragment, usually rounded by weathering or abrasion, with an average diameter of 12 inches (30 cm) or more.

I. Remarks - This column was provided on boring and trench logs for comments regarding drilling difficulty, number and size of cobbles or boulders encountered, loss of drilling fluid in the boring, trench wall stability, and other conditions encountered during drilling and excavations.

J. Dry Density and Moisture Content - The boring logs include a graphical display of laboratory test results for dry density (ASTM D 2937-71) in pounds per cubic foot and kilograms per cubic meter and moisture content (ASTM D 2216-71) in percent from representative samples taken during drilling. The symbols are explained at the bottom of the boring logs.

K. Sieve Analysis - The numbers represent the percentage by dry weight (ASTM D 422-63) of each of the following soil components:

GR - Gravel, rock particles that will pass a 3-inch (76 mm) sieve and are retained on No. 4 (4.75 mm) sieve.

SA - Sand, soil particles passing No. 4 sieve and retained on No. 200 (0.075 mm) sieve.

FI - Fines, silt or clay, soil particles passing No. 200 sieve.

L. Atterberg Limits (LL and PI) -

LL - Liquid Limit, the water content corresponding to the arbitrary limit between the liquid and plastic states of consistency of a soil (ASTM D 423-66).

PL - Plastic Limit, the water content corresponding to an arbitrary limit between the plastic and the semisolid state of consistency of a soil (ASTM D 424-59).

PI - Plasticity Index, numerical difference between the liquid limit (LL) and the plastic limit (PL) indicating the range of moisture content within which a soil-water mixture is plastic.

NP - Nonplastic.

M. Miscellaneous Information -

Elevations - indicated elevations on the logs are estimated from topographic maps of the study area, within an accuracy of half the contour interval.

Surficial Geologic Unit - indicates the surficial geologic unit in which the activity is located.

Date Drilled - indicates the period from beginning to completion of the activity.

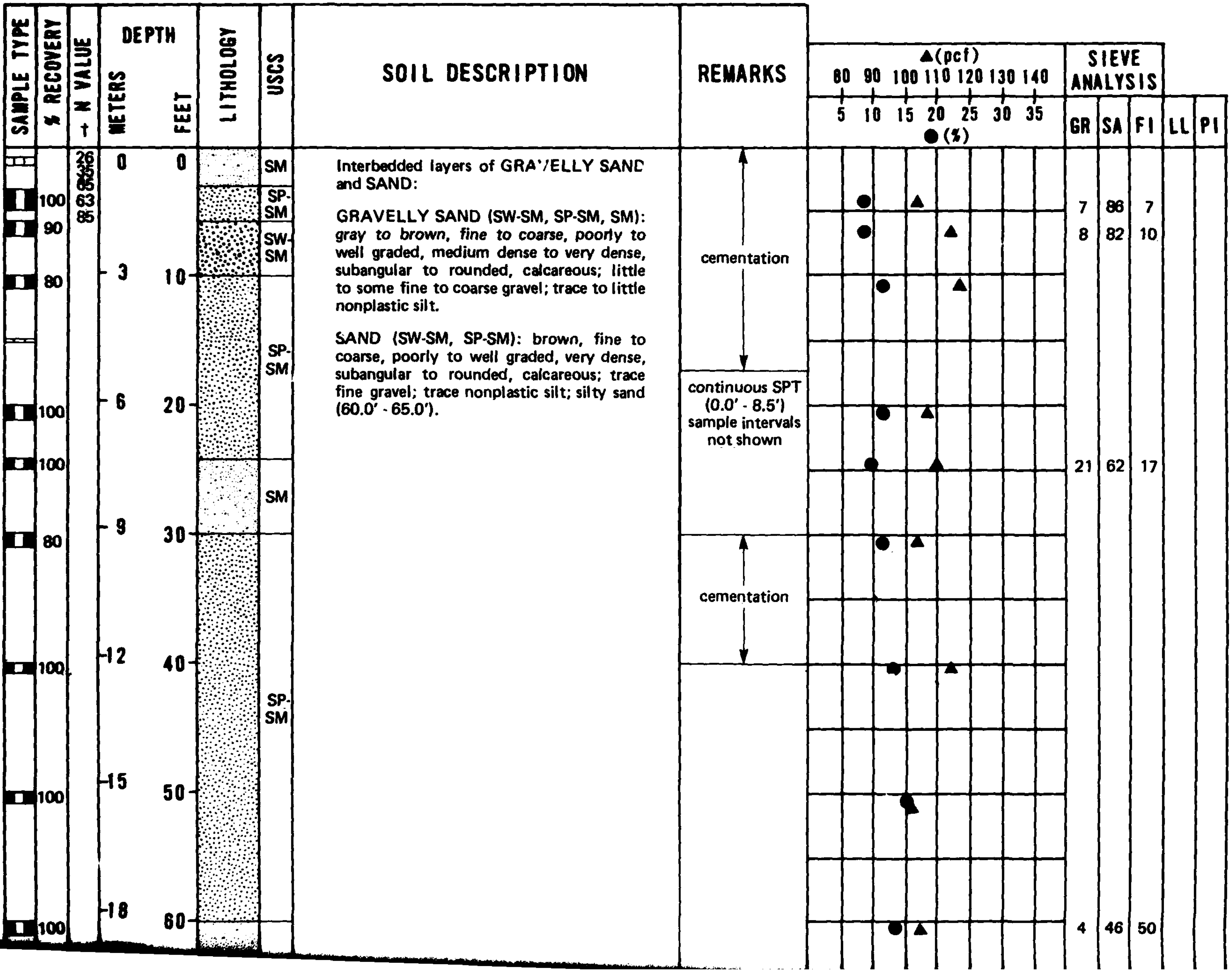
Drilling Method - signifies the type of drilling procedure used such as rotary wash.

Hole Diameter - nominal size of boring drilled.

Water Level - indicates depth from ground surface to water table where encountered.

Trench Length - length at ground surface of final trench excavation.

Trench Orientation - bearing of longitudinal trench centerline.

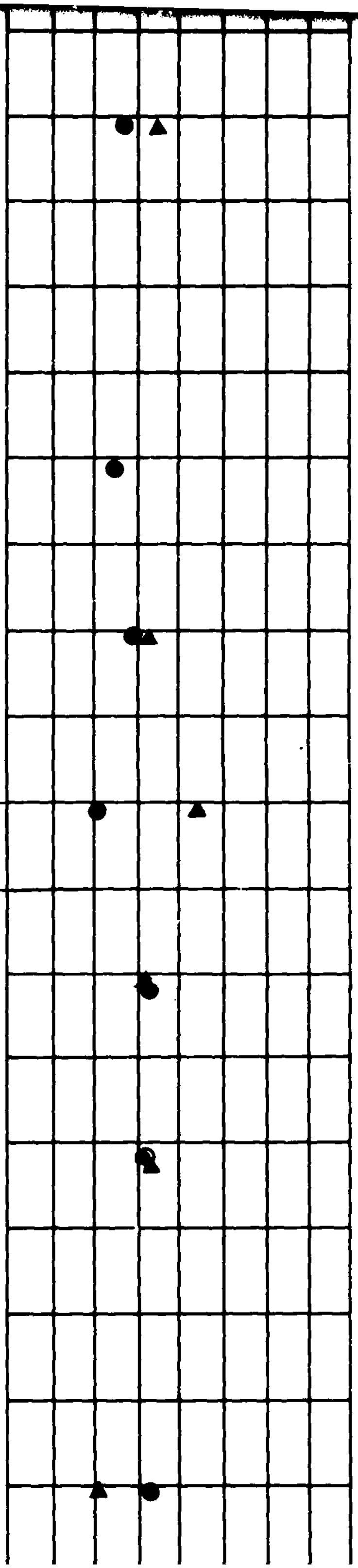


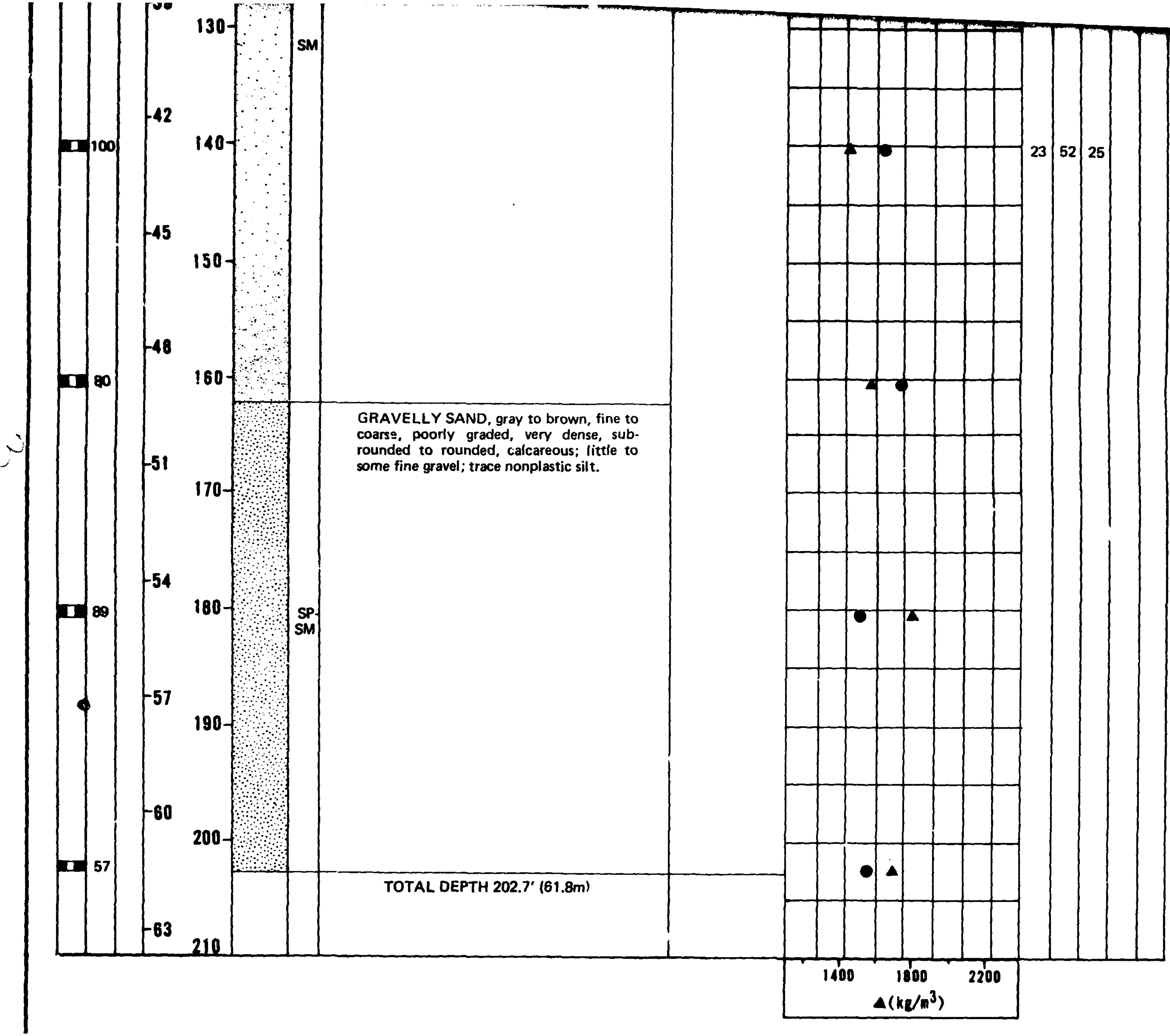
Interbedded layers of GRAVELLY SAND and SAND:

GRAVELLY SAND (SW-SM, SP-SM, SM): *gray to brown, fine to coarse,* poorly to well graded, medium dense to very dense, subangular to rounded, calcareous; little to some fine to coarse gravel; trace to little nonplastic silt.

SAND (SW-SM, SP-SM): brown, fine to coarse, poorly to well graded, very dense, subangular to rounded, calcareous; trace fine gravel; trace nonplastic silt; silty sand (60.0' - 65.0').

100	-18	60	SM			4	46	50
	-21	70						
100	-24	80	SW-SM			11	78	11
100	-27	90	SP-SM					
100	-30	100	SW SM		cementation	28	62	10
100	-33	110	SM	SILTY SAND, brown, fine to coarse, poorly graded, very dense, subrounded to rounded, calcareous; some nonplastic silt; trace to some fine gravel.		10	63	27
100	-36	120						
	-39	130						
100	-42	140				23	52	25





GRAVELLY SAND, gray to brown, fine to coarse, poorly graded, very dense, subrounded to rounded, calcareous; little to some fine gravel; trace nonplastic silt.

TOTAL DEPTH 202.7′ (61.8m)

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MX SITING INVESTIGATION. GEOTECHNICAL EVALUATION. VERIFICATION --ETC(U)
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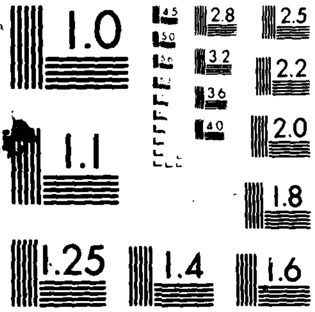
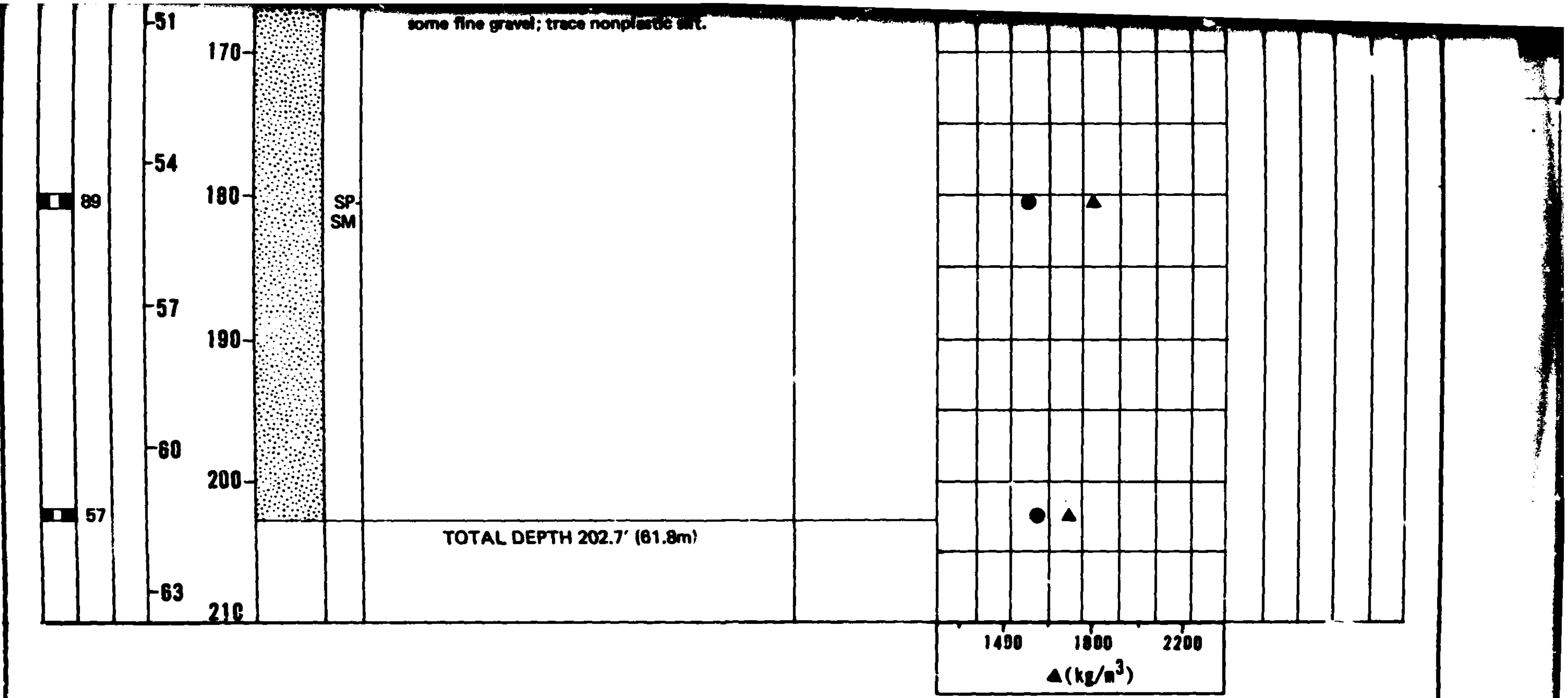


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A



some fine gravel; trace nonplastic silt.

TOTAL DEPTH 202.7′ (61.8m)

EXPLANATION

- ▮ ERTEC DRIVE SAMPLE
- ☐ BULK SAMPLE
- ■ PITCHER TUBE SAMPLE
- ▮ STANDARD PENETRATION TEST SAMPLE
- ▨ CORE SAMPLE

BORING DETAILS

ELEVATION : 5940′ (1811m)
SURFICIAL GEOLOGIC UNIT : A5i
DATE DRILLED : 16 July 1980
DRILLING METHOD : Rotary Wash
HOLE DIAMETER : 4 7/8″ (124mm)
WATER LEVEL : Not Encountered

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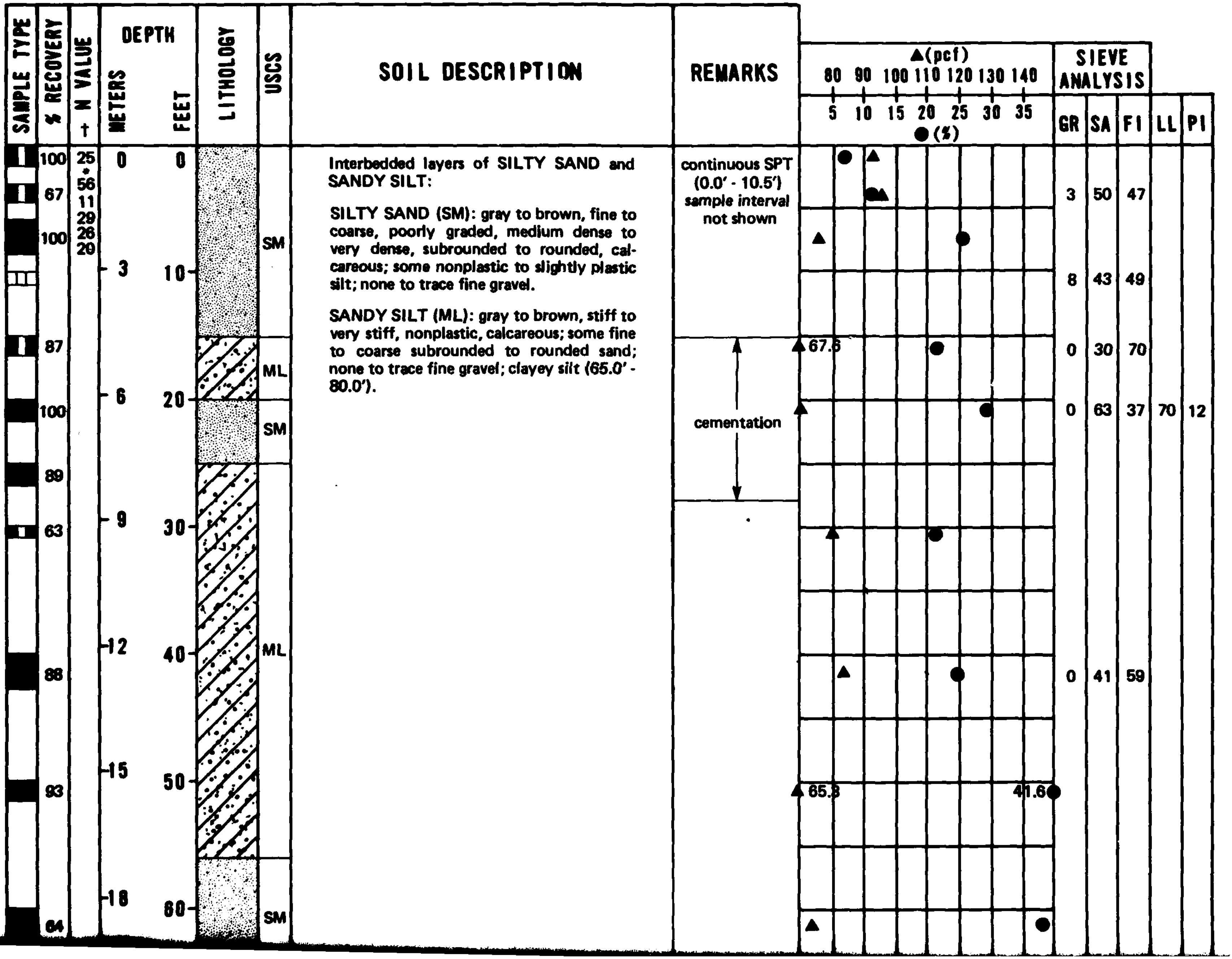
DEP

LOG OF BO
LAKE VALL

31 JUL 81



SOIL DESCRIPTION

Interbedded layers of SILTY SAND and SANDY SILT:

SILTY SAND (SM): gray to brown, fine to coarse, poorly graded, medium dense to very dense, subrounded to rounded, calcareous; some nonplastic to slightly plastic silt; none to trace fine gravel.

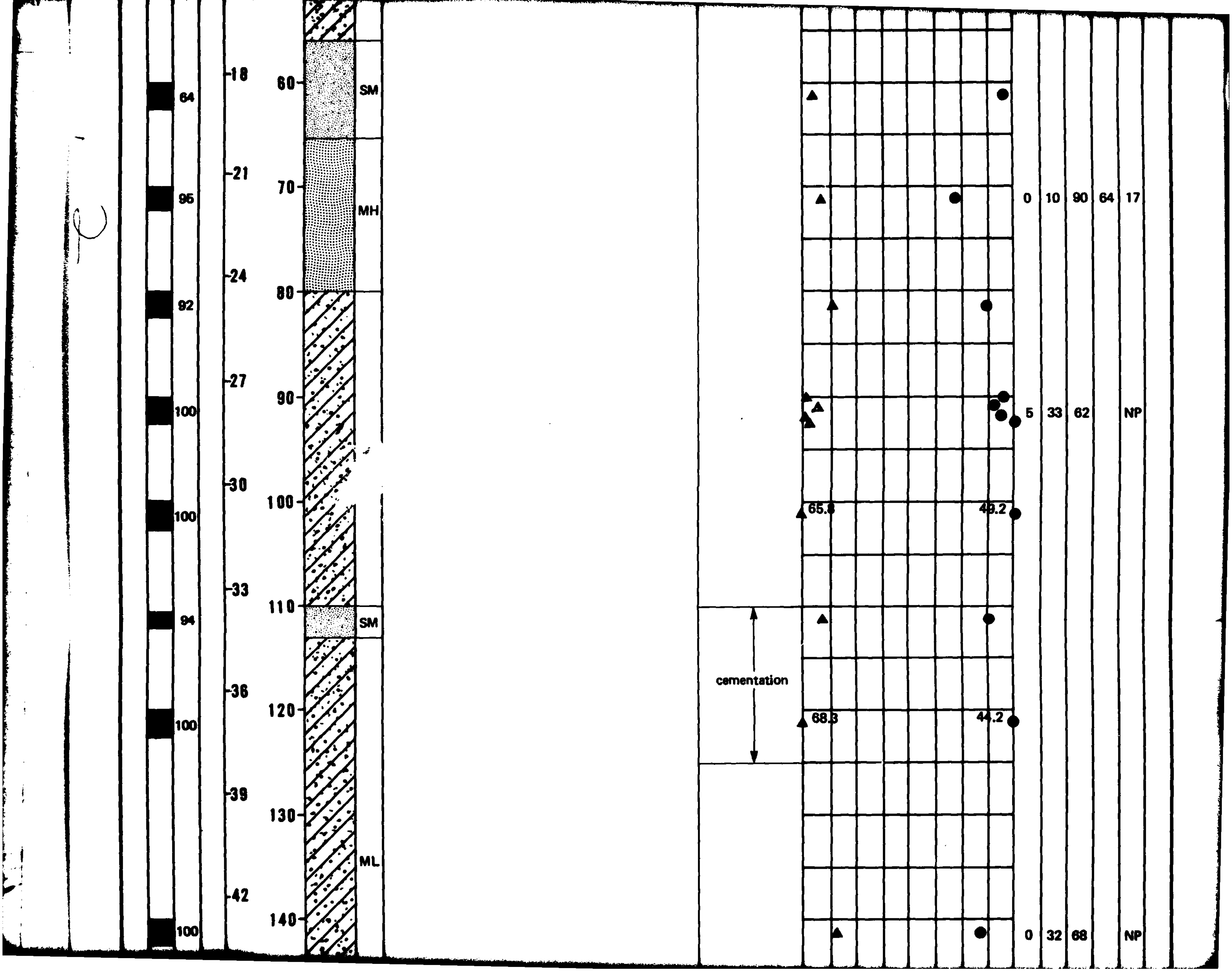
SANDY SILT (ML): gray to brown, stiff to very stiff, nonplastic, calcareous; some fine to coarse subrounded to rounded sand; none to trace fine gravel; clayey silt (65.0' - 80.0').

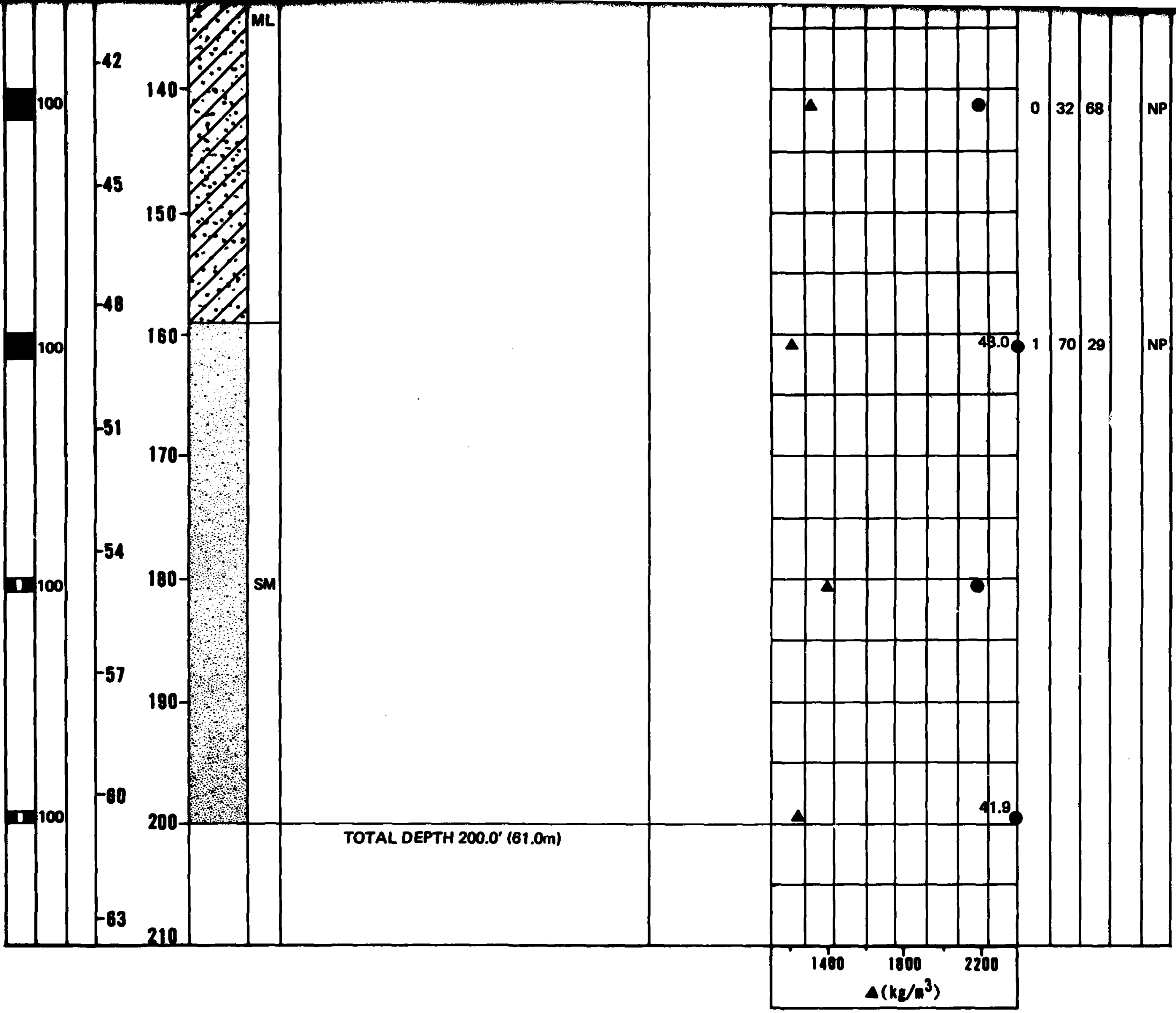
REMARKS

continuous SPT (0.0' - 10.5') sample interval not shown

cementation

SIEVE ANALYSIS				
GR	SA	FI	LL	PI
3	50	47		
8	43	49		
0	30	70		
0	63	37	70	12
0	41	59		

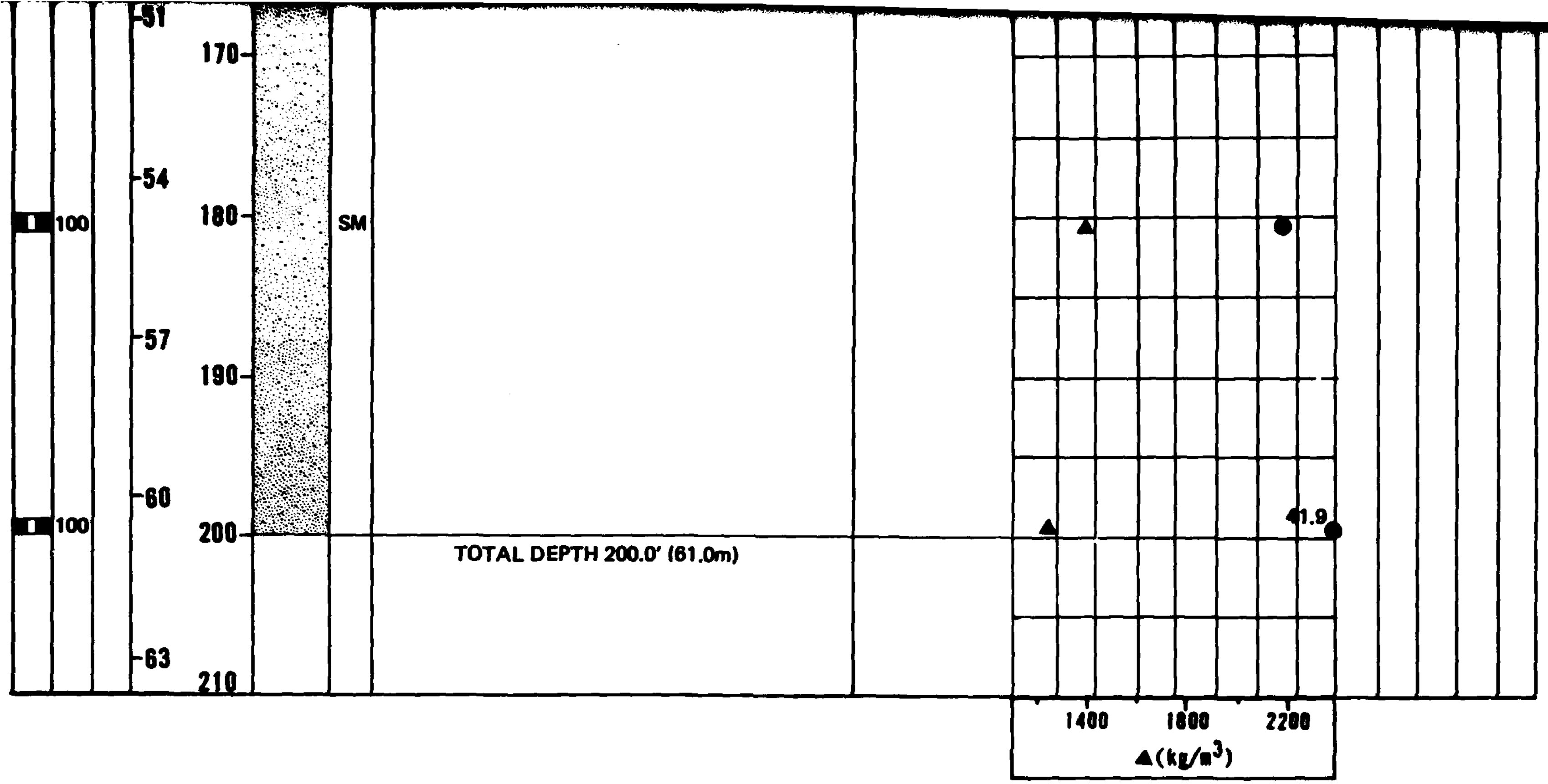

64
95
92
100
100
94
100
100
-18
-21
-24
-27
-30
-33
-36
-39
-42
60
70
80
90
100
110
120
130
140
SM
MH
SM
ML
cementation
65.8
68.3
49.2
44.2
0
10
90
64
17
5
33
62
NP
0
32
68
NP



EXPLANATION

BORING DETAILS

3



EXPLANATION

- ▮ ERTEC DRIVE SAMPLE
- ▥ BULK SAMPLE
- ■ PITCHER TUBE SAMPLE
- ▮ STANDARD PENETRATION TEST SAMPLE
- ▨ CORE SAMPLE
- N – STANDARD PENETRATION RESISTANCE
- ▲ – DRY UNIT WEIGHT (ASTM: D-2937-71)
- ● – MOISTURE CONTENT (ASTM: D-2216-71)
- NR – NO RECOVERY
- * – N VALUE > 100
- † – TEST LOCATION APPROXIMATELY 5 FEET FROM BORING

BORING DETAILS

ELEVATION	: 5790' (1765m)
SURFICIAL GEOLOGIC UNIT	: A5i
DATE DRILLED	: 17 July 1980
DRILLING METHOD	: Rotary Wash
HOLE DIAMETER	: 4 7/8" (124mm)
WATER LEVEL	: 147' (44.8m)

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LOG OF BORING LV-B-2
LAKE VALLEY, NEVADA

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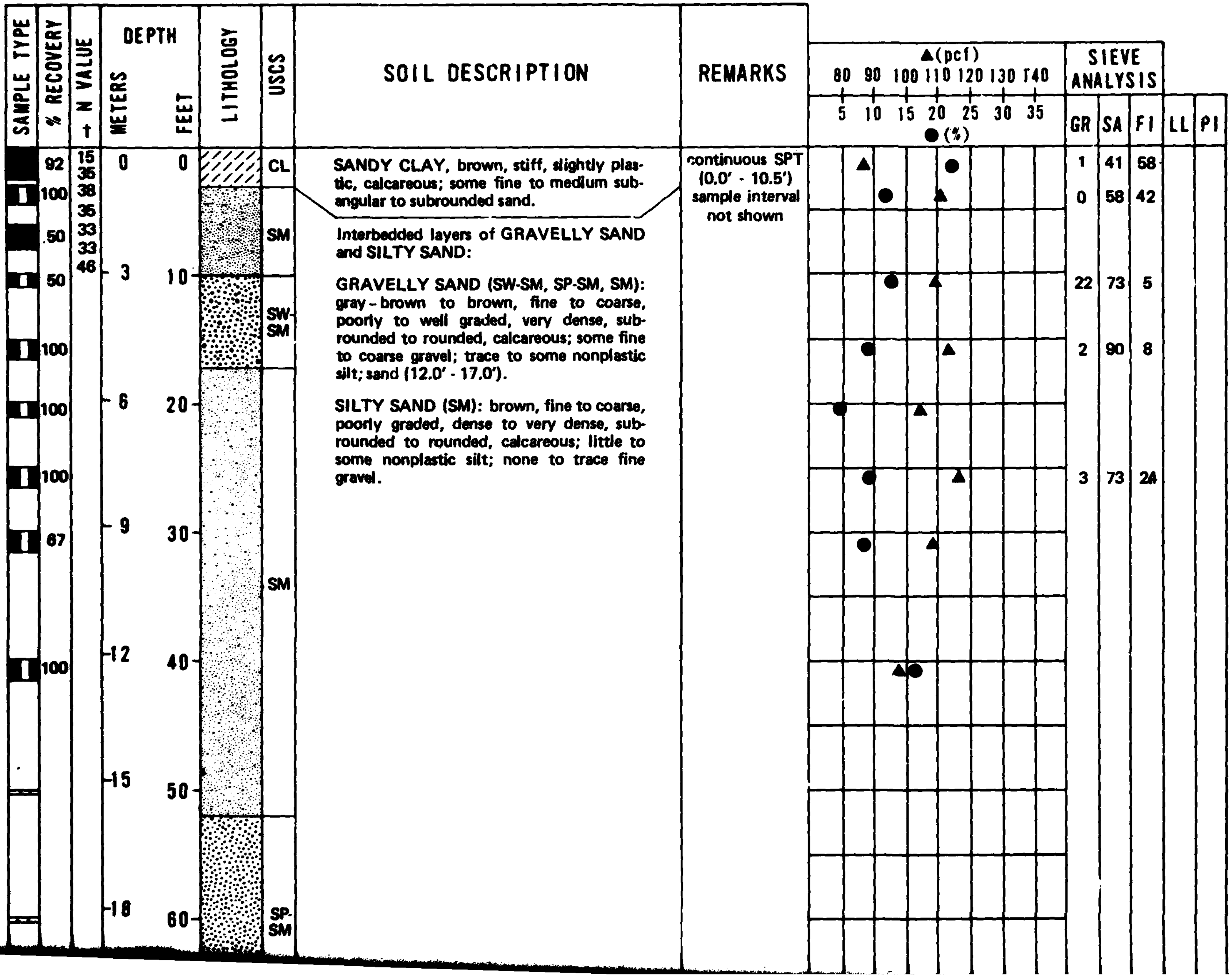
FIGURE II-6-2



SANDY CLAY, brown, stiff, slightly plastic, calcareous; some fine to medium subangular to subrounded sand.

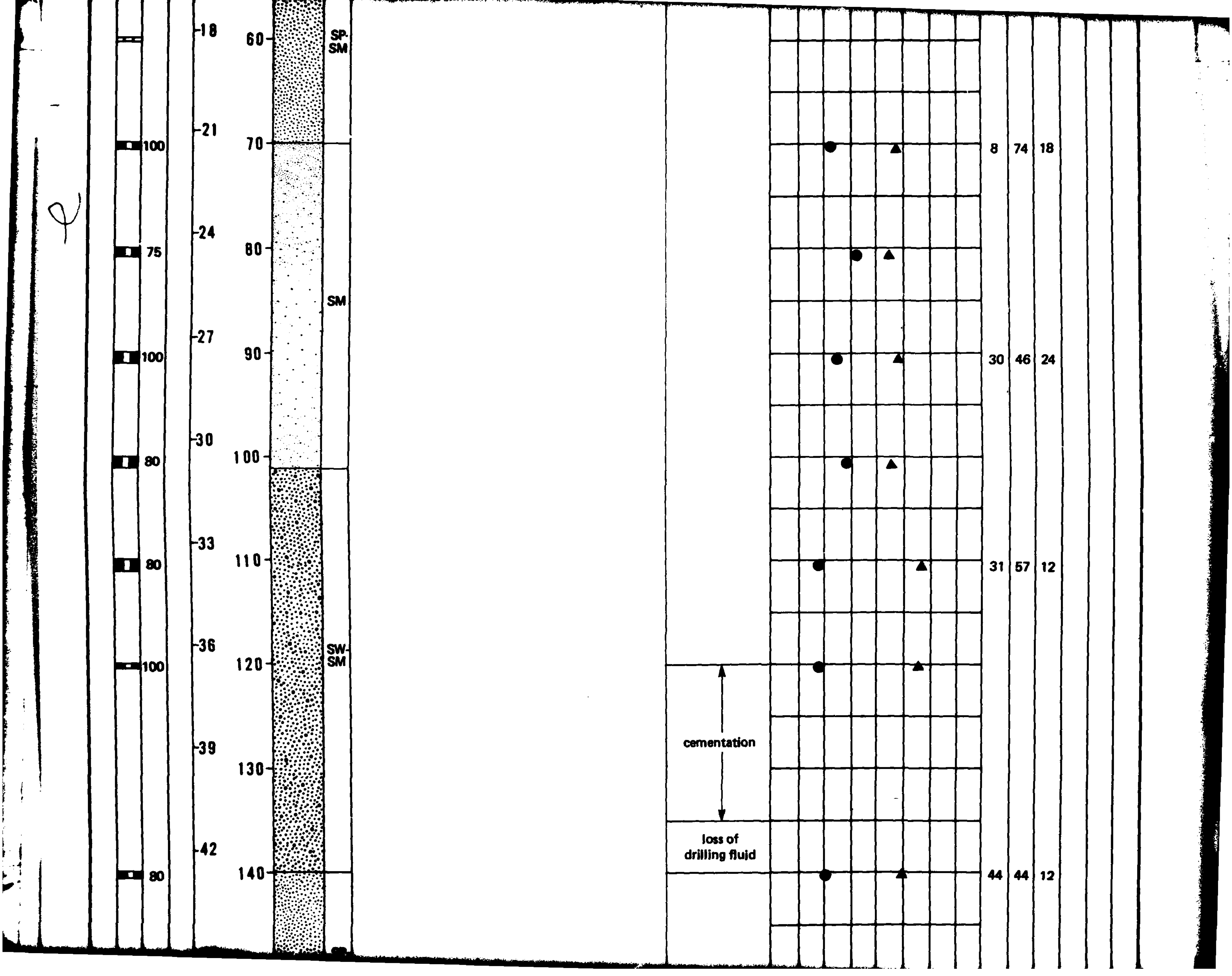
Interbedded layers of GRAVELLY SAND and SILTY SAND:

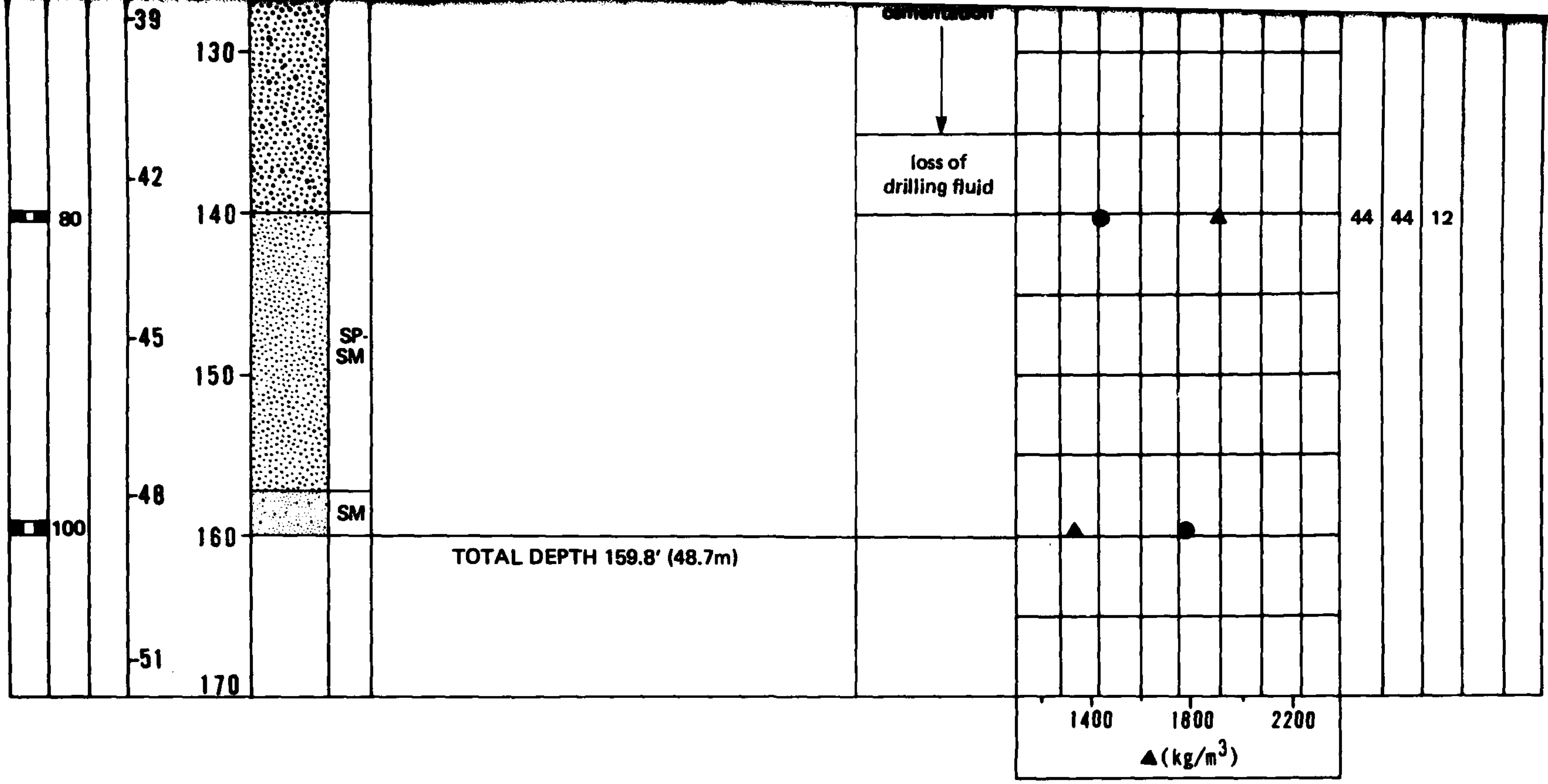
GRAVELLY SAND (SW-SM, SP-SM, SM): gray-brown to brown, fine to coarse, poorly to well graded, very dense, subrounded to rounded, calcareous; some fine to coarse gravel; trace to some nonplastic silt; sand (12.0' - 17.0').

SILTY SAND (SM): brown, fine to coarse, poorly graded, dense to very dense, subrounded to rounded, calcareous; little to some nonplastic silt; none to trace fine gravel.

continuous SPT (0.0' - 10.5') sample interval not shown

2


100
75
100
80
80
100
80
-18
-21
-24
-27
-30
-33
-36
-39
-42
60
70
80
90
100
110
120
130
140
SP-SM
SM
SW-SM
cementation
loss of drilling fluid
8 74 18
30 46 24
31 57 12
44 44 12



EXPLANATION

- ◧ ERTEC DRIVE SAMPLE
- ▥ BULK SAMPLE
- ■ PITCHER TUBE SAMPLE
- ◨ STANDARD PENETRATION TEST SAMPLE
- ▨ CORE SAMPLE

N – STANDARD PENETRATION RESISTANCE

▲ – DRY UNIT WEIGHT (ASTM: D-2937-71)

● – MOISTURE CONTENT (ASTM: D-2216-71)

NR – NO RECOVERY

* – N VALUE >100

† – TEST LOCATION APPROXIMATELY 5 FEET FROM BORING

BORING DETAILS

ELEVATION : 6080' (1853m)
SURFICIAL GEOLOGIC UNIT : A5i
DATE DRILLED : 20 July 1980
DRILLING METHOD : Rotary Wash
HOLE DIAMETER : 4 7/8" (124mm)
WATER LEVEL : Not Encountered

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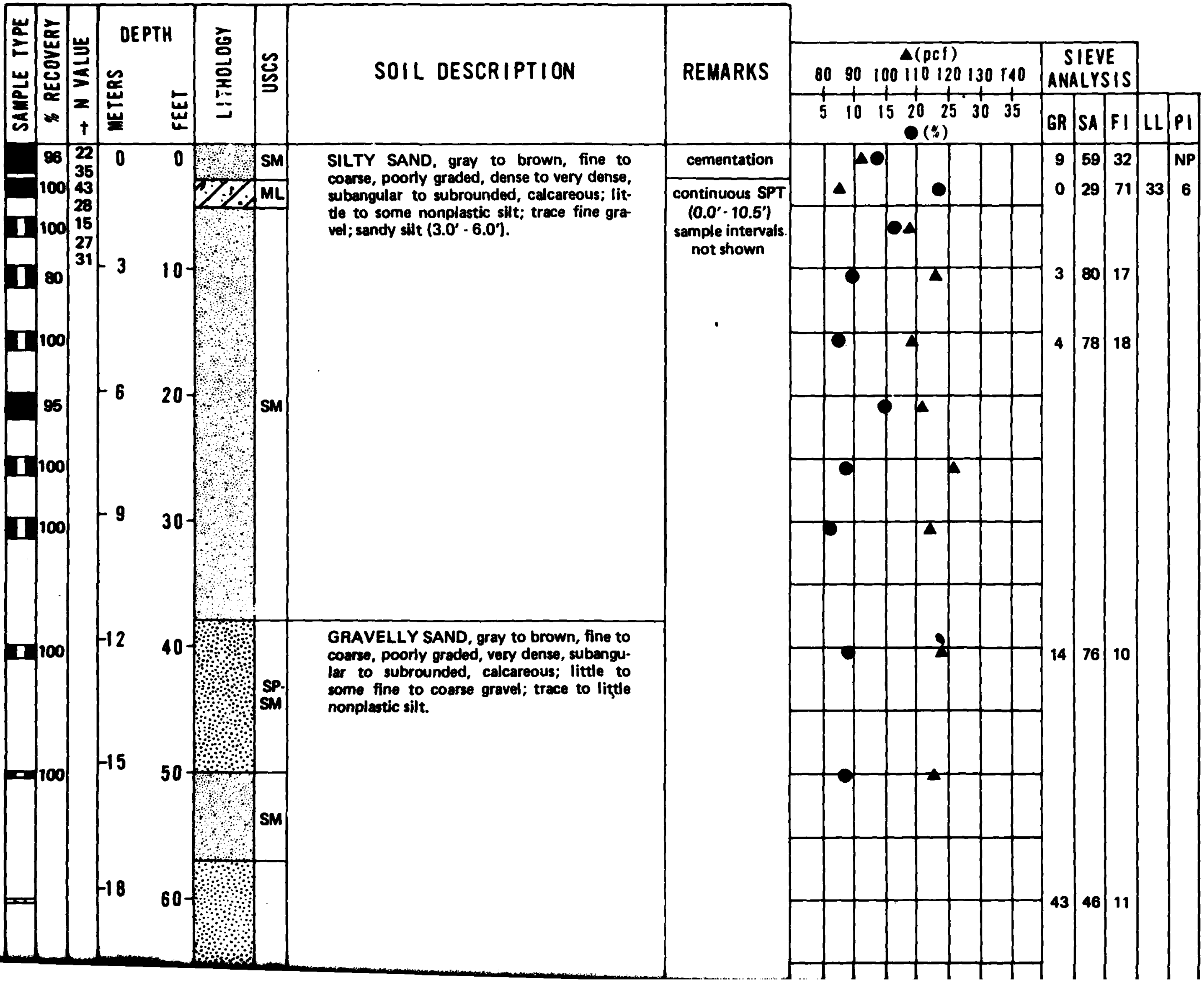
LOG OF BORING LV-B-3
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-3

3



SOIL DESCRIPTION

SILTY SAND, gray to brown, fine to coarse, poorly graded, dense to very dense, subangular to subrounded, calcareous; little to some nonplastic silt; trace fine gravel; sandy silt (3.0′ - 6.0′).

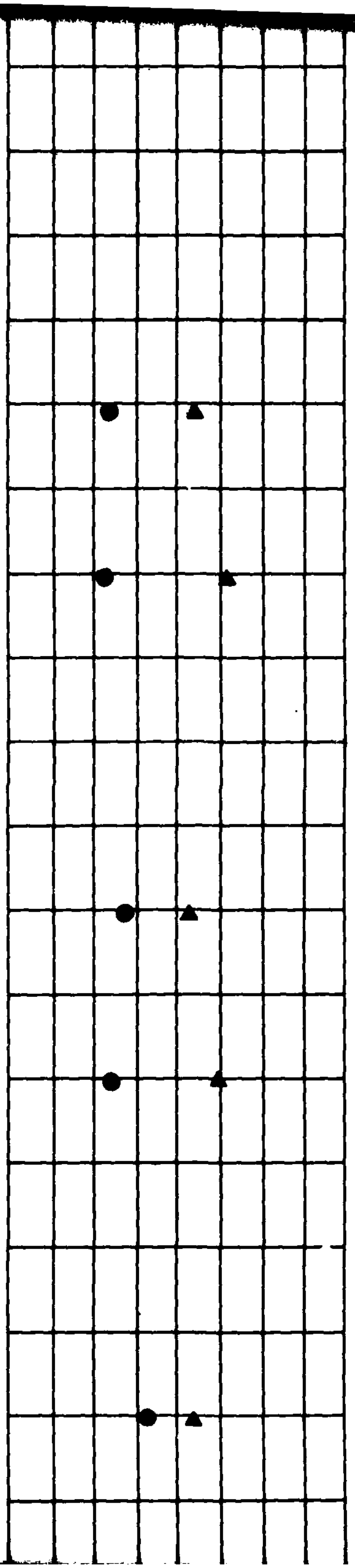
GRAVELLY SAND, gray to brown, fine to coarse, poorly graded, very dense, subangular to subrounded, calcareous; little to some fine to coarse gravel; trace to little nonplastic silt.

REMARKS

cementation

continuous SPT (0.0′ - 10.5′) sample intervals not shown

	-18	60	SP- SM		43	46	11
	-21	70					
100	-24	80	SM	SILTY SAND, brown, fine to coarse, poorly graded, very dense, subangular to rounded, calcareous; little nonplastic silt; trace fine gravel.			
100	-27	90			4	80	16
	-30	100	SP- SM	GRAVELLY SAND, brown, fine to coarse, poorly to well graded, very dense, subangular to rounded, calcareous; little to some fine gravel; trace to little nonplastic silt.			
100	-33	110	SM				
100	-36	120	SW- SM		25	63	12
	-39	130					
100	-42	140	SP-				



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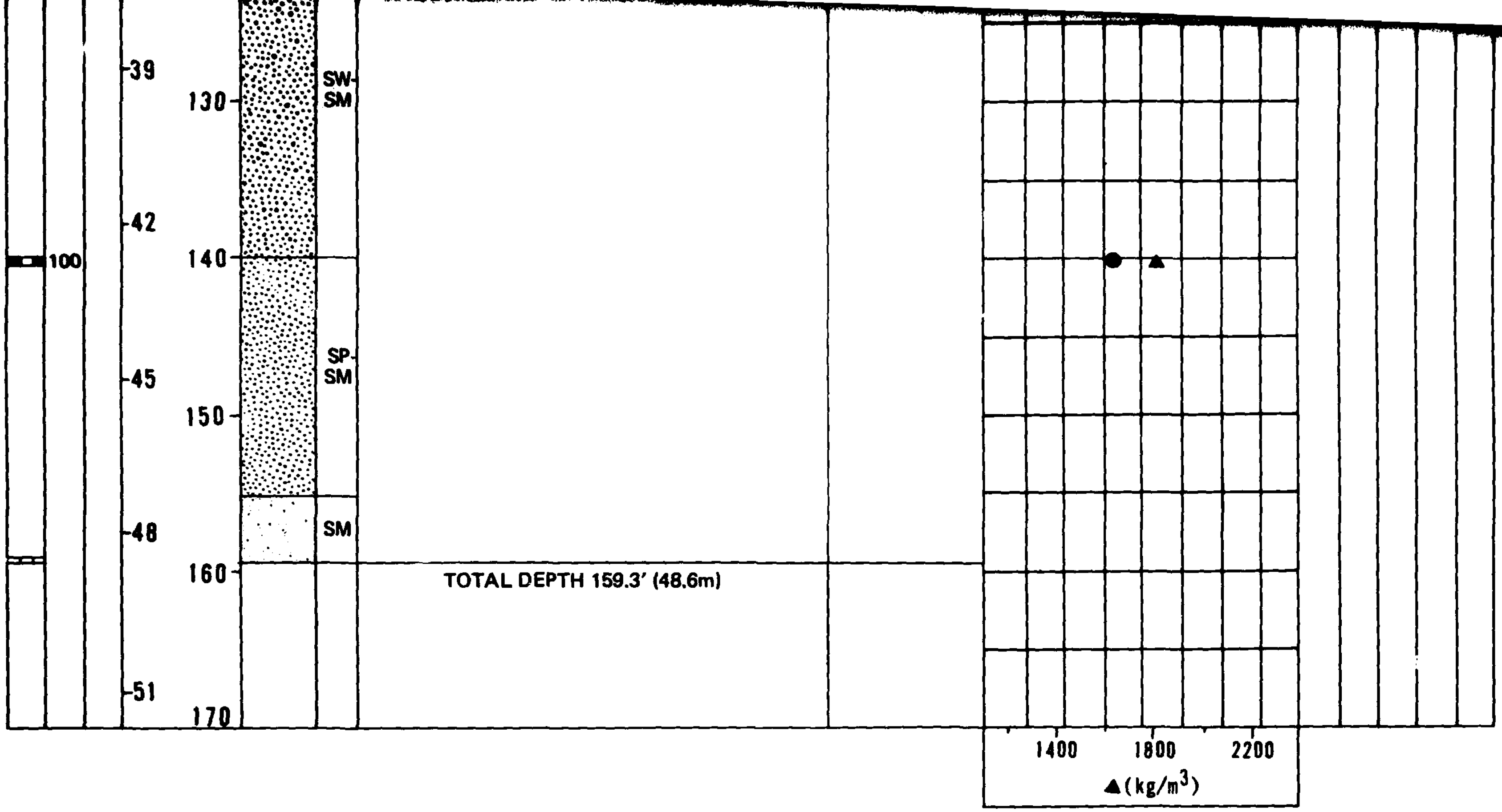

EXPLANATION

- ERTEC DRIVE SAMPLE
- BULK SAMPLE
- PITCHER TUBE SAMPLE
- STANDARD PENETRATION TEST SAMPLE
- ▨ CORE SAMPLE

N – STANDARD PENETRATION RESISTANCE

▲ – DRY UNIT WEIGHT (ASTM: D-2937-71)

● – MOISTURE CONTENT (ASTM: D-2216-71)

NR – NO RECOVERY

* – N VALUE >100

† – TEST LOCATION APPROXIMATELY 5 FEET FROM BORING

BORING DETAILS

ELEVATION	: 6200' (1890m)
SURFICIAL GEOLOGIC UNIT	: A5i
DATE DRILLED	: 21 July 1980
DRILLING METHOD	: Rotary Wash
HOLE DIAMETER	: 4 7/8" (124mm)
WATER LEVEL	: Not Encountered

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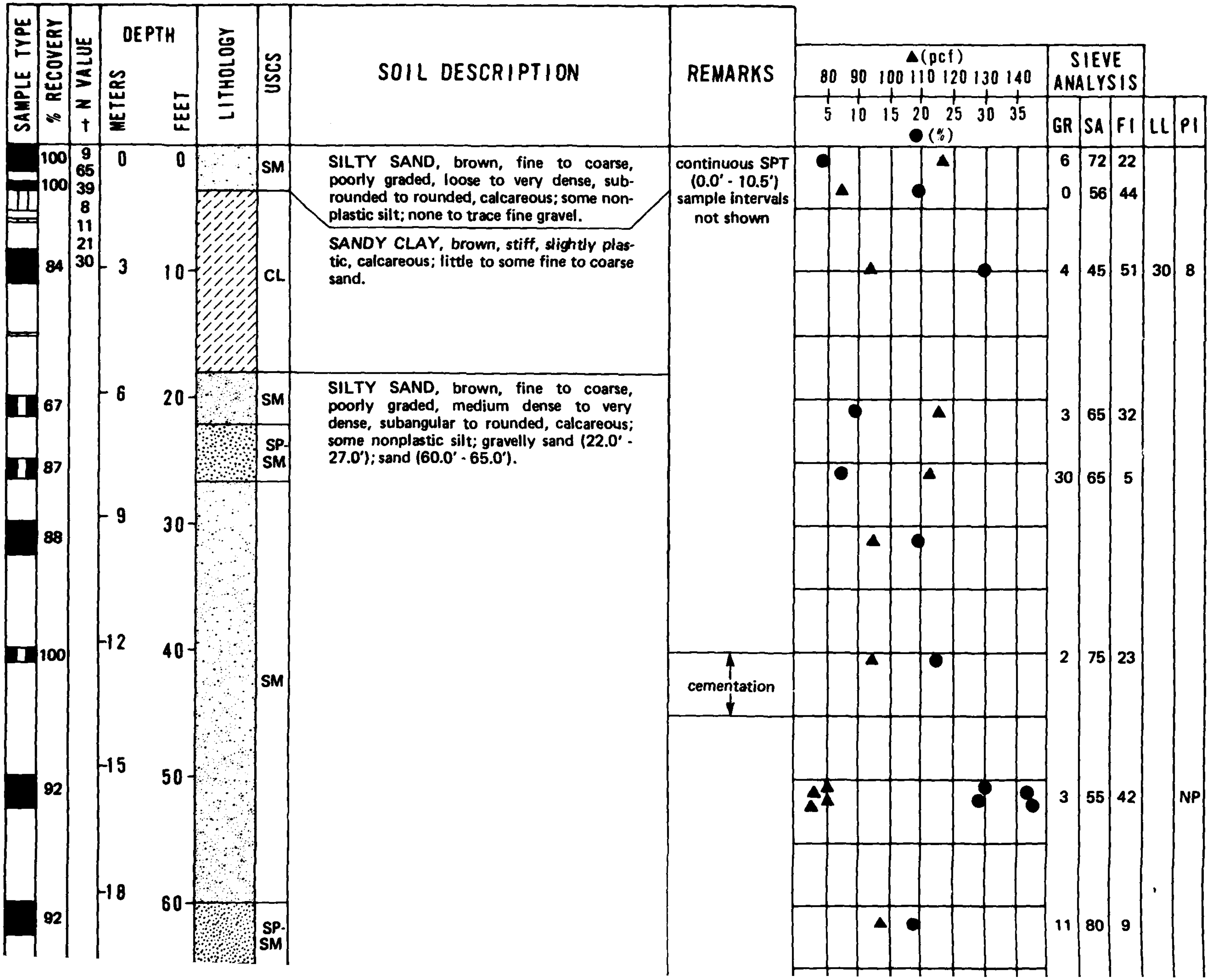
LOG OF BORING LV-B-4
LAKE VALLEY, NEVADA

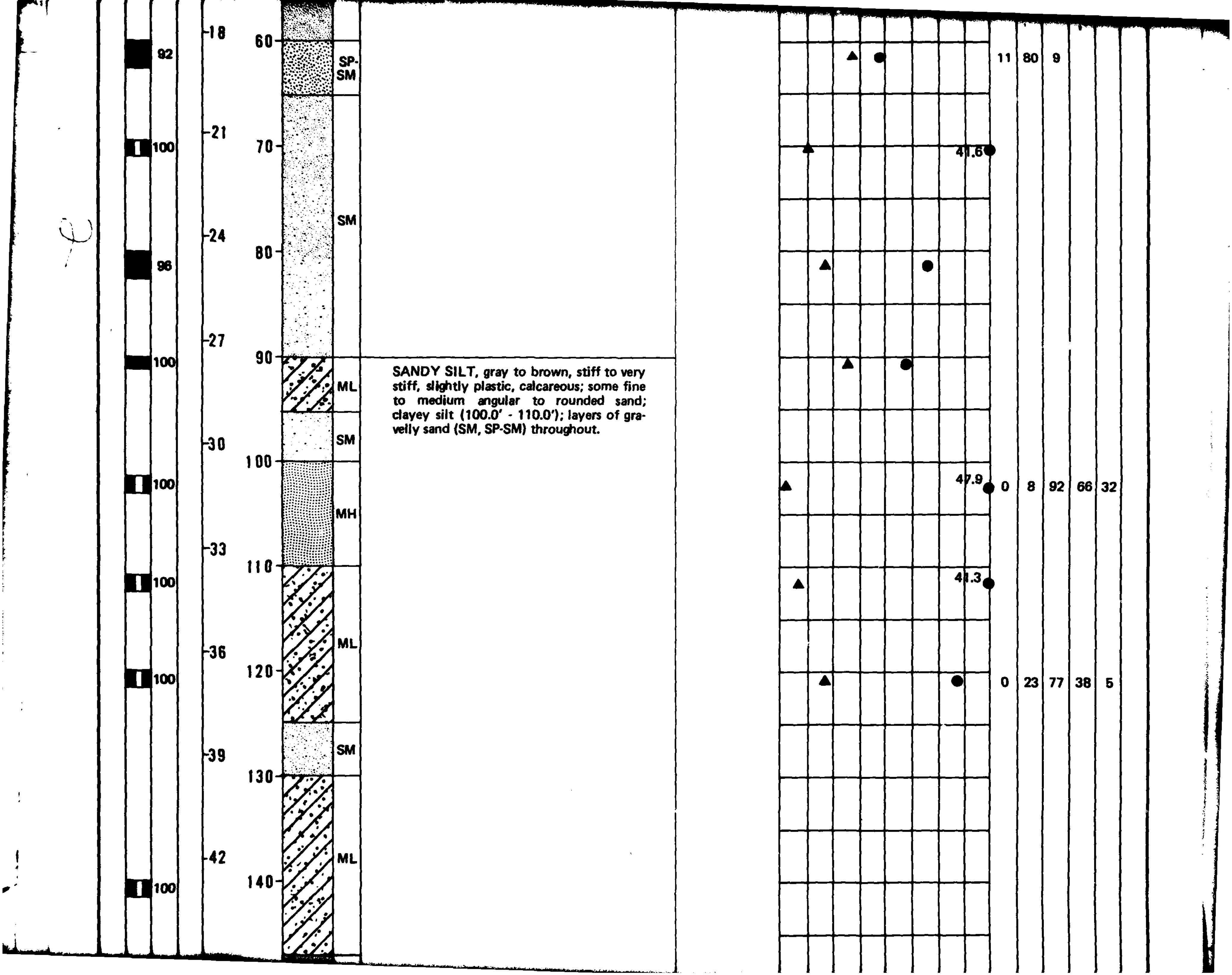
31 JUL 81

FIGURE

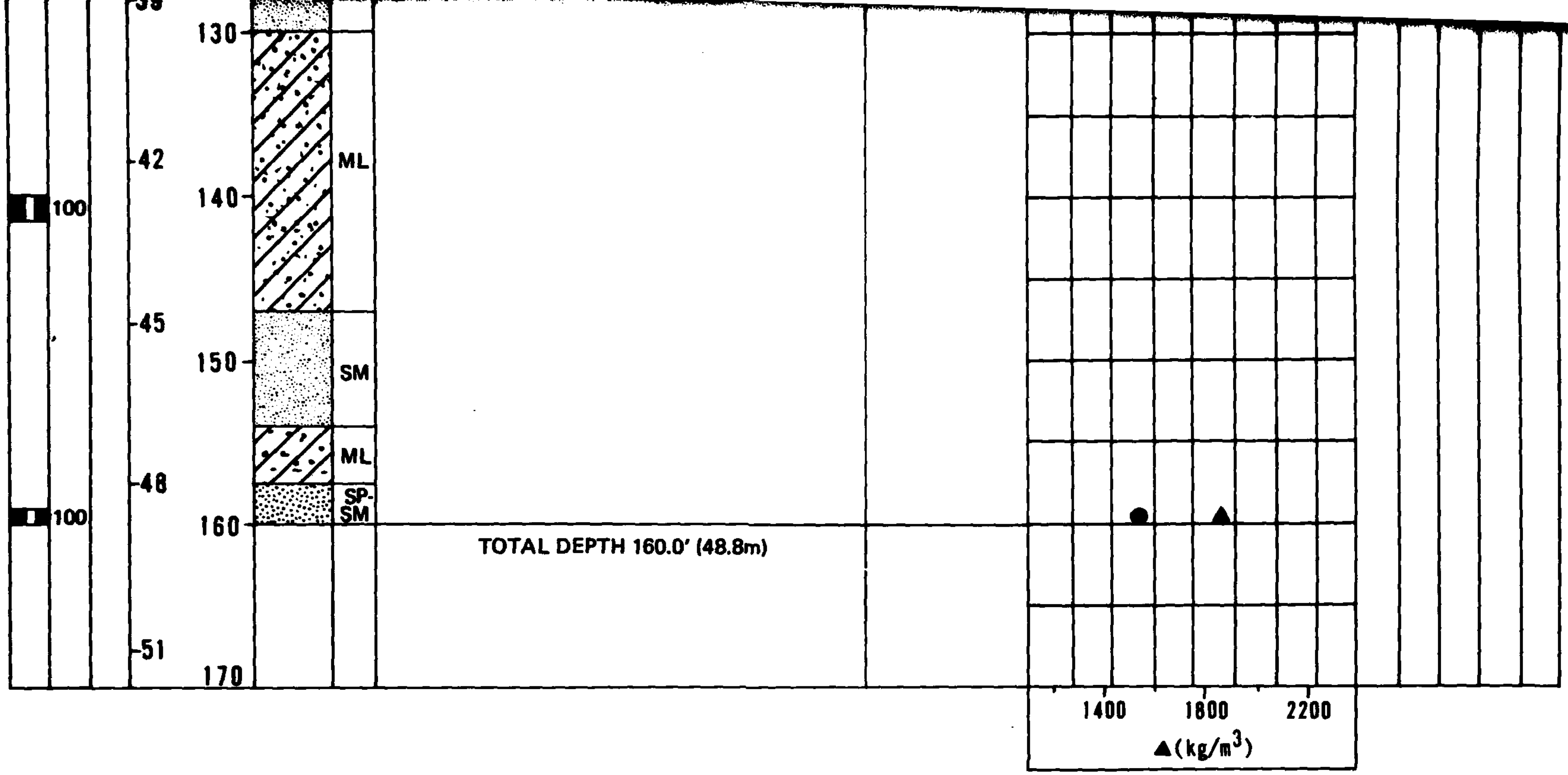


SOIL DESCRIPTION	REMARKS
SILTY SAND, brown, fine to coarse, poorly graded, loose to very dense, subrounded to rounded, calcareous; some nonplastic silt; none to trace fine gravel.	continuous SPT (0.0' - 10.5') sample intervals not shown
SANDY CLAY, *brown, stiff, slightly plastic,* calcareous; little to some fine to coarse sand.	
SILTY SAND, brown, fine to coarse, poorly graded, medium dense to very dense, subangular to rounded, calcareous; some nonplastic silt; gravelly sand (22.0' - 27.0'); sand (60.0' - 65.0').	cementation

% RECOVERY	SIEVE ANALYSIS GR	SA	FI	LL	PI
100	6	72	22		
100	0	56	44		
84	4	45	51	30	8
67	3	65	32		
87	30	65	5		
88					
100	2	75	23		
92	3	55	42		NP
92	11	80	9		



SANDY SILT, gray to brown, stiff to very stiff, slightly plastic, calcareous; some fine to medium angular to rounded sand; clayey silt (100.0' - 110.0'); layers of gravelly sand (SM, SP-SM) throughout.



EXPLANATION

- ◨ ERTEC DRIVE SAMPLE
- ▥ BULK SAMPLE
- ■ PITCHER TUBE SAMPLE
- ◧ STANDARD PENETRATION TEST SAMPLE
- ▨ CORE SAMPLE
- N – STANDARD PENETRATION RESISTANCE
- ▲ – DRY UNIT WEIGHT (ASTM: D-2937-71)
- ● – MOISTURE CONTENT (ASTM: D-2216-71)
- NR – NO RECOVERY
- * – N VALUE >100
- † – TEST LOCATION APPROXIMATELY 5 FEET FROM BORING

BORING DETAILS

ELEVATION	: 5950′ (1814m)
SURFICIAL GEOLOGIC UNIT	: A4o
DATE DRILLED	: 22 July 1980
DRILLING METHOD	: Rotary Wash
HOLE DIAMETER	: 4 7/8″ (124mm)
WATER LEVEL	: Not Encountered

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LOG OF BORING LV-B-5
LAKE VALLEY, NEVADA

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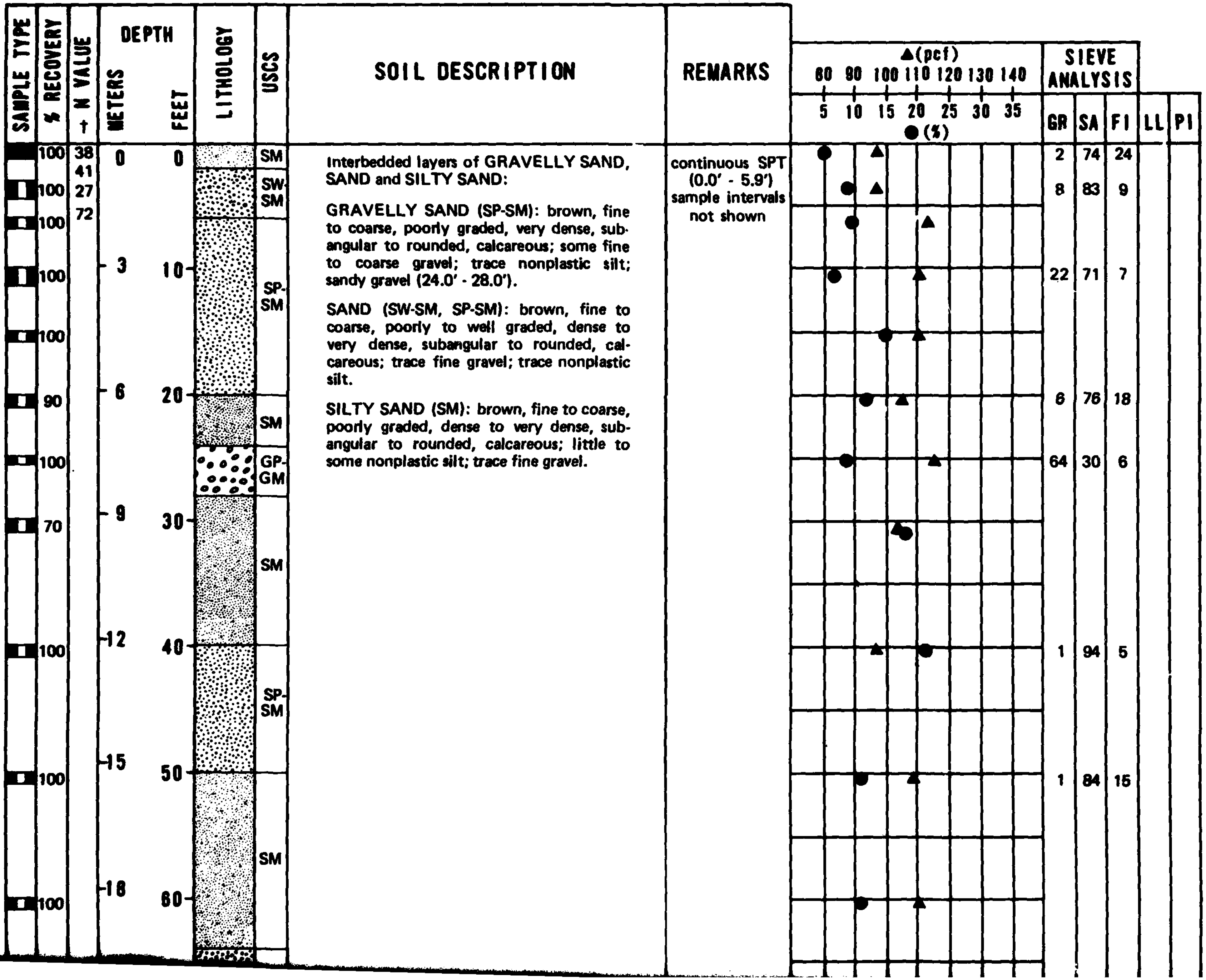
FIGURE II-6-6



% RECOVERY	N VALUE	GR	SA	FI
100	38 41	2	74	24
100	27	8	83	9
100	72			
100		22	71	7
100				
90		6	76	18
100		64	30	6
70				
100		1	94	5
100		1	84	15
100				

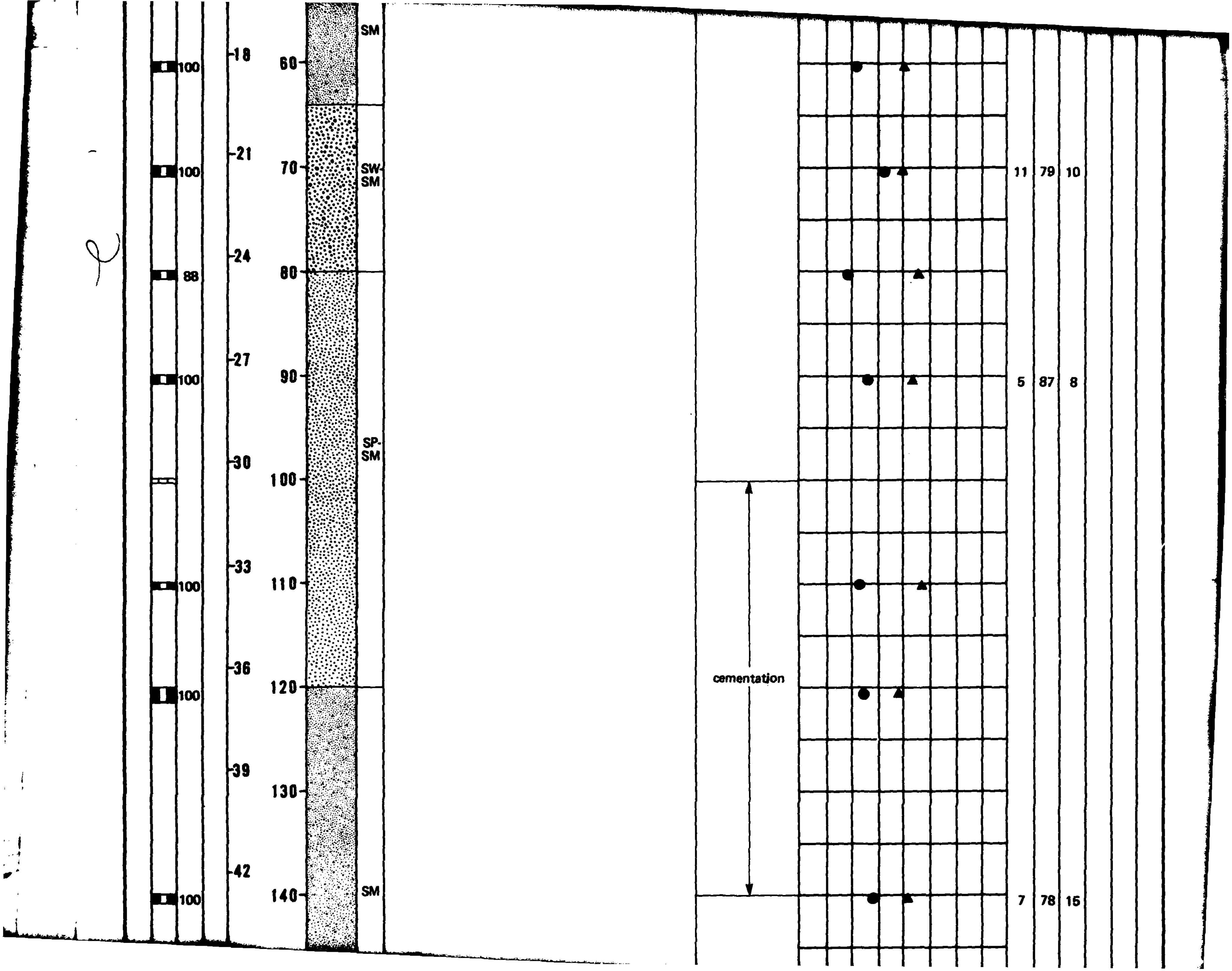
Interbedded layers of GRAVELLY SAND, SAND and SILTY SAND:

GRAVELLY SAND (SP-SM): brown, fine to coarse, poorly graded, very dense, subangular to rounded, calcareous; some fine to coarse gravel; trace nonplastic silt; sandy gravel (24.0' - 28.0').

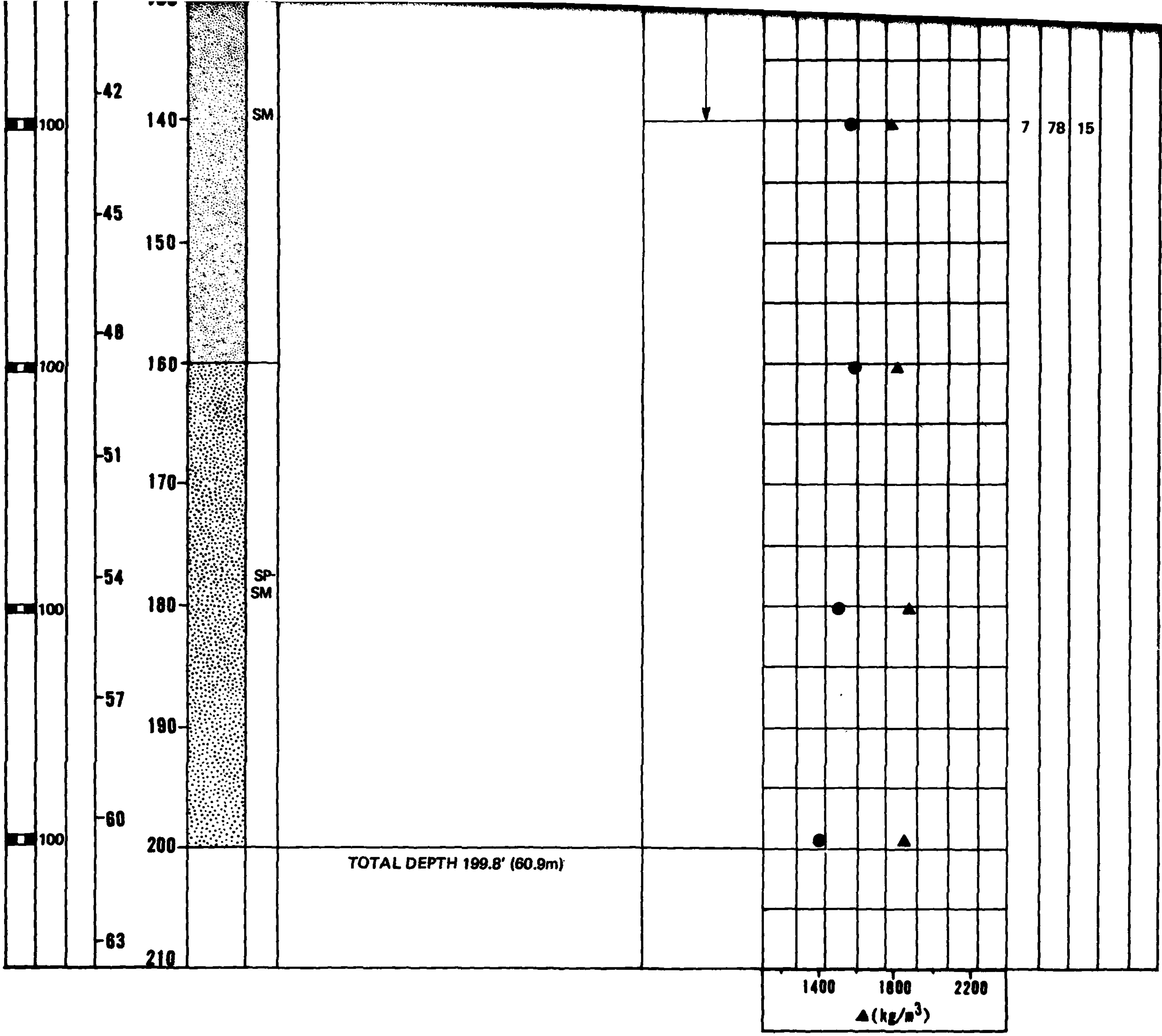
SAND (SW-SM, SP-SM): brown, fine to coarse, poorly to well graded, dense to very dense, subangular to rounded, calcareous; trace fine gravel; trace nonplastic silt.

SILTY SAND (SM): brown, fine to coarse, poorly graded, dense to very dense, subangular to rounded, calcareous; little to some nonplastic silt; trace fine gravel.

continuous SPT (0.0' - 5.9') sample intervals not shown

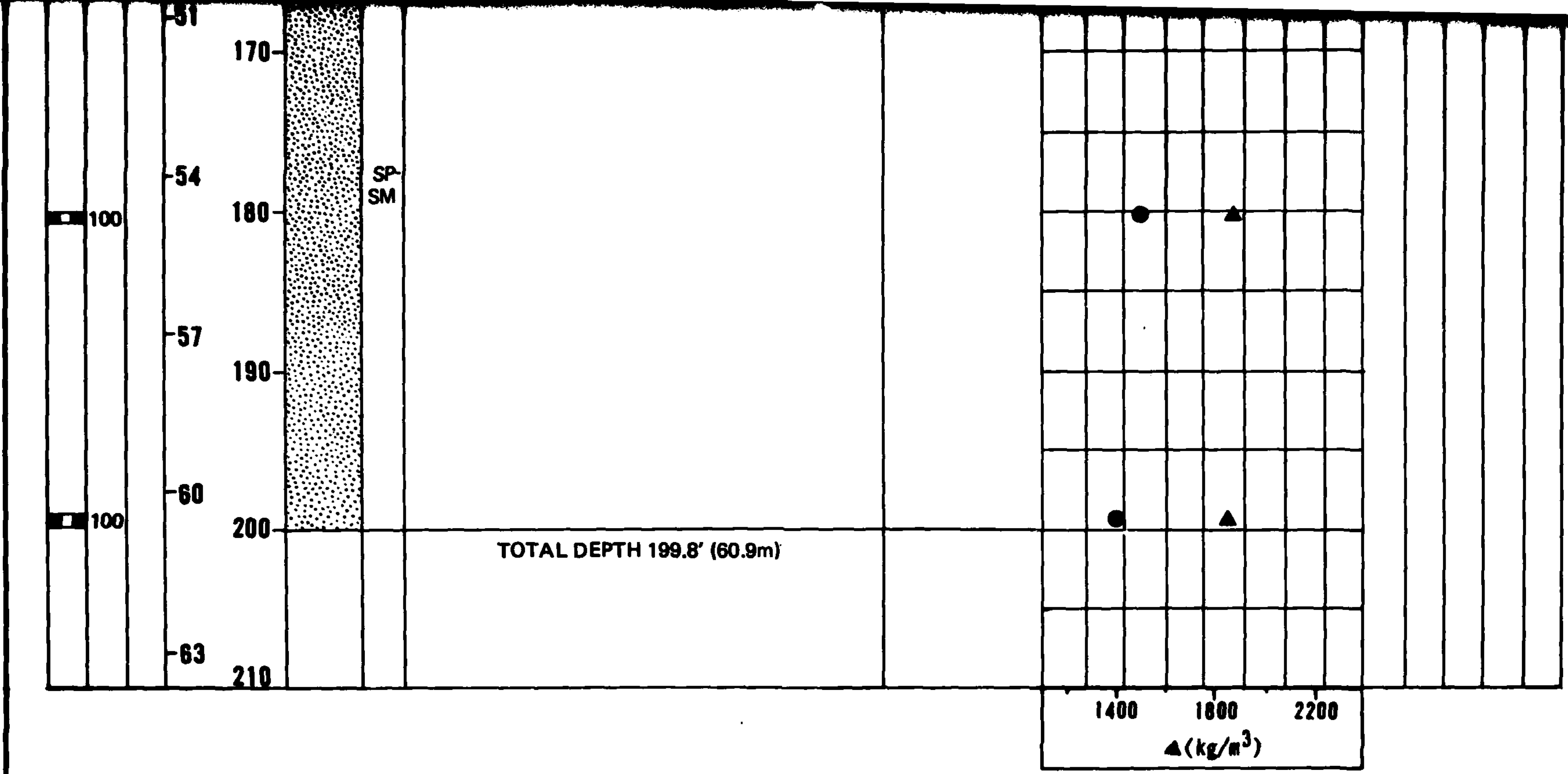

100
100
88
100
100
100
100
-18
-21
-24
-27
-30
-33
-36
-39
-42
60
70
80
90
100
110
120
130
140
SM
SW-SM
SP-SM
SM
cementation
11 79 10
5 87 8
7 78 15

2



EXPLANATION

BORING DETAILS



EXPLANATION

- ▮ ERTEC DRIVE SAMPLE
- ◫ BULK SAMPLE
- ■ PITCHER TUBE SAMPLE
- ◧ STANDARD PENETRATION TEST SAMPLE
- ▨ CORE SAMPLE

N – STANDARD PENETRATION RESISTANCE

▲ – DRY UNIT WEIGHT (ASTM: D-2937-71)

● – MOISTURE CONTENT (ASTM: D-2216-71)

NR – NO RECOVERY

* – N VALUE >100

† – TEST LOCATION APPROXIMATELY 5 FEET FROM BORING

BORING DETAILS

ELEVATION : 6120' (1865m)
SURFICIAL GEOLOGIC UNIT : A5i
DATE DRILLED : 30 July 1980
DRILLING METHOD : Rotary Wash
HOLE DIAMETER : 4 7/8" (124mm)
WATER LEVEL : Not Encountered

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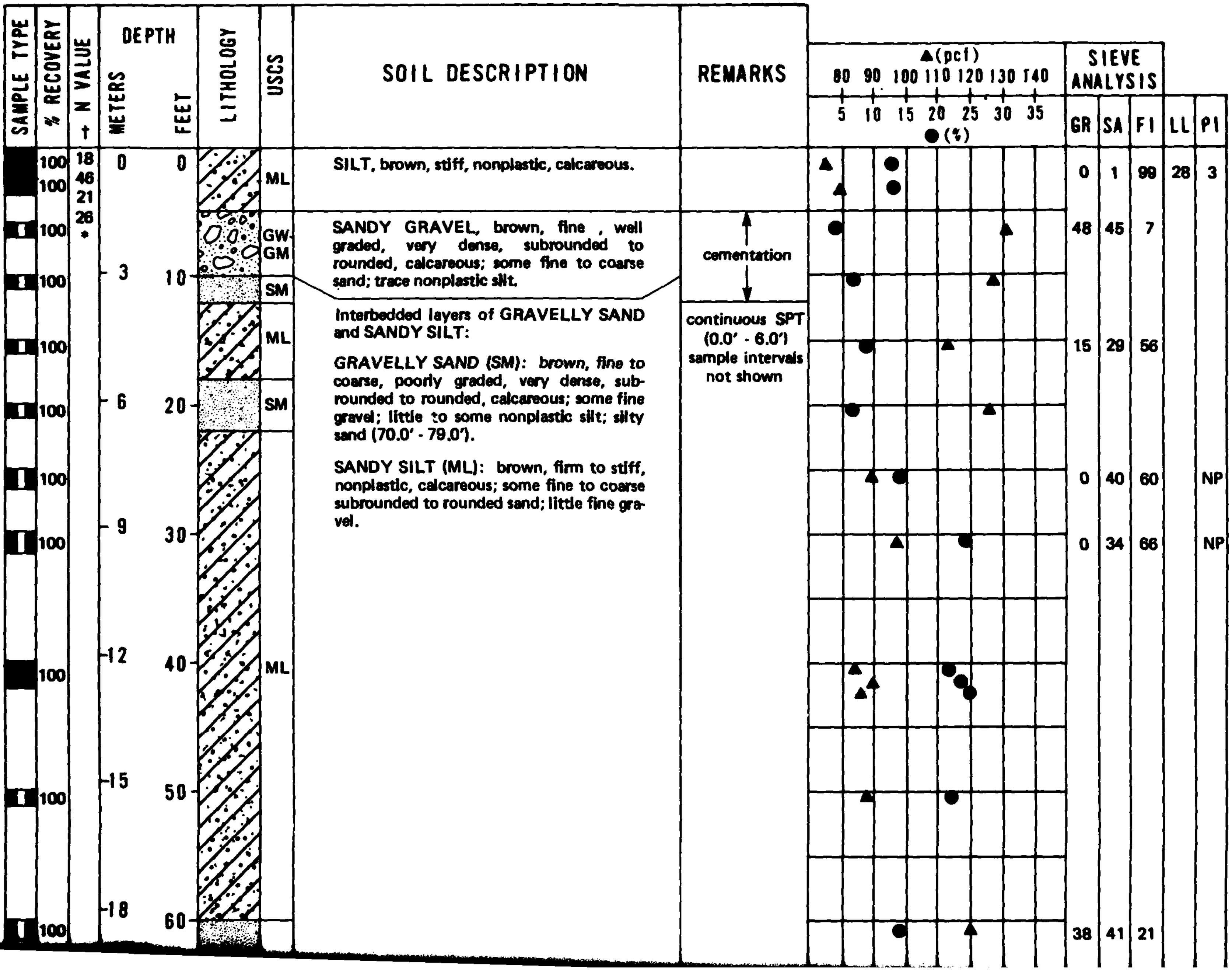
LOG OF BORING LV-B-6
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-6-6



SOIL DESCRIPTION

SILT, brown, stiff, nonplastic, calcareous.

SANDY GRAVEL, brown, fine , well graded, very dense, subrounded to rounded, calcareous; some fine to coarse sand; trace nonplastic silt.

Interbedded layers of GRAVELLY SAND and SANDY SILT:

GRAVELLY SAND (SM): brown, fine to coarse, poorly graded, very dense, subrounded to rounded, calcareous; some fine gravel; little to some nonplastic silt; silty sand (70.0' - 79.0').

SANDY SILT (ML): brown, firm to stiff, nonplastic, calcareous; some fine to coarse subrounded to rounded sand; little fine gravel.

REMARKS

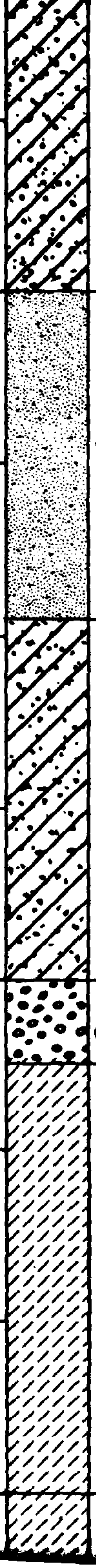
cementation

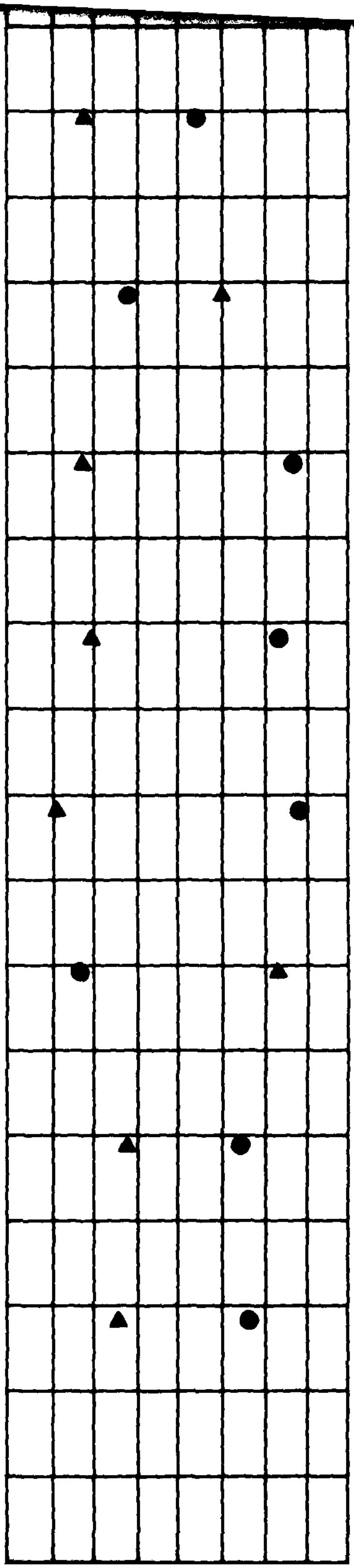
continuous SPT (0.0' - 6.0') sample intervals not shown

SIEVE ANALYSIS

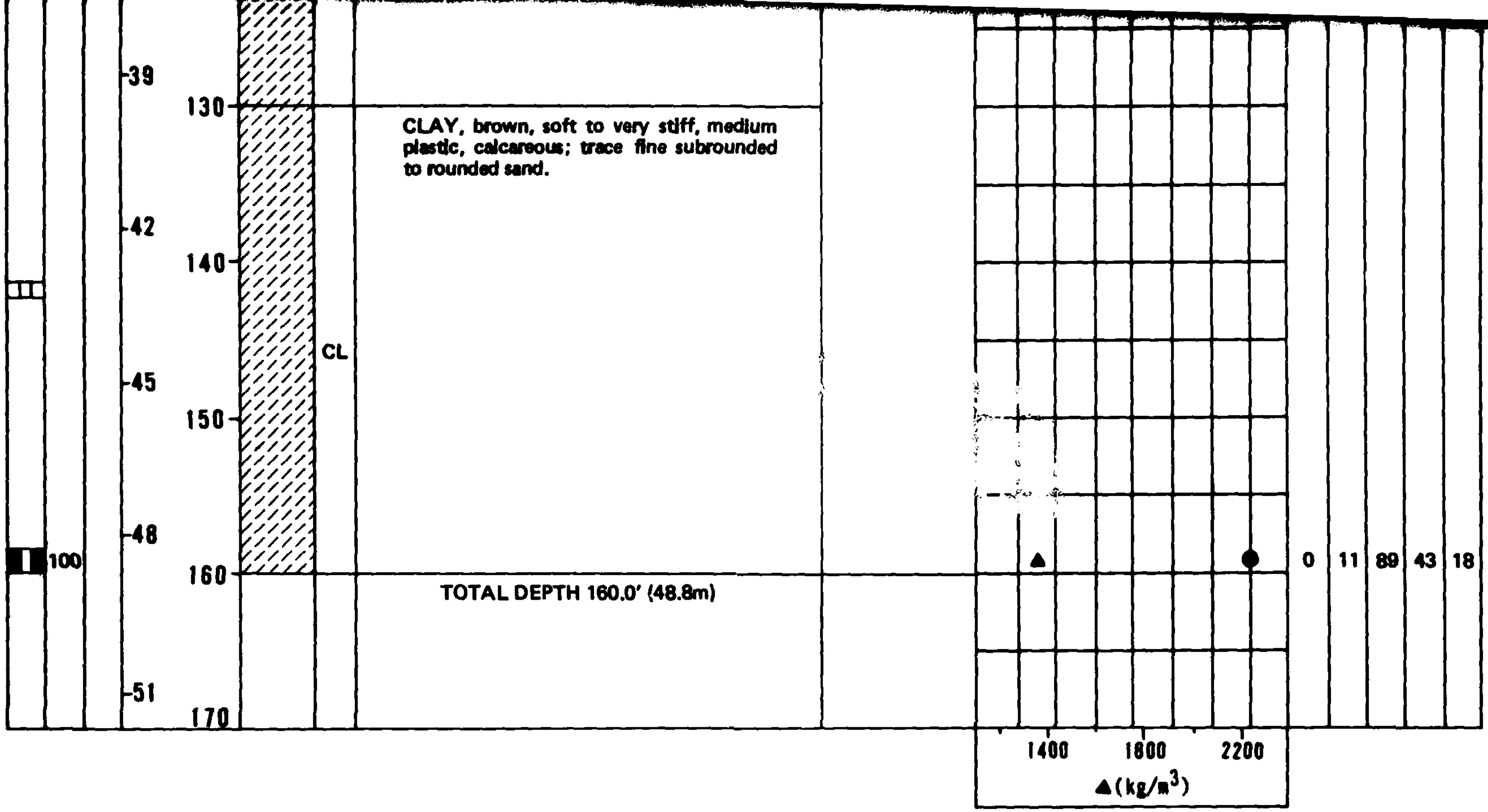
GR	SA	FI	LL	PI
0	1	99	28	3
48	45	7		
15	29	56		
0	40	60		NP
0	34	66		NP
38	41	21		

2





100	-15	50							
100	-18	60			38	41	21		
100	-21	70	SM		1	50	49		NP
100	-24	80	ML	SANDY SILT, brown, soft to very stiff, nonplastic, calcareous; little fine to coarse subrounded to rounded sand; sandy gravel (100.0' - 105.0').					
80	-27	90							
100	-30	100	GP-GM						
100	-33	110	CL	SANDY CLAY, brown, stiff, slightly plastic, calcareous; little fine subrounded to rounded sand.					
100	-36	120			1	20	79	33	13
	-39	130		CLAY, brown, soft to very stiff, medium plastic, calcareous; trace fine subrounded					



EXPLANATION

- ▮ ERTEC DRIVE SAMPLE
- ▥ BULK SAMPLE
- ■ PITCHER TUBE SAMPLE
- ◧ STANDARD PENETRATION TEST SAMPLE
- ▨ CORE SAMPLE
- N – STANDARD PENETRATION RESISTANCE
- ▲ – DRY UNIT WEIGHT (ASTM: D-2937-71)
- ● – MOISTURE CONTENT (ASTM: D-2216-71)
- NR – NO RECOVERY
- * – N VALUE >100
- ▲ – TEST LOCATION APPROXIMATELY 5 FEET FROM BORING

BORING DETAILS

ELEVATION	: 5980' (1823m)
SURFICIAL GEOLOGIC UNIT	: A4o
DATE DRILLED	: 31 July 1980
DRILLING METHOD	: Rotary Wash
HOLE DIAMETER	: 4 7/8" (124mm)
WATER LEVEL	: Not Encountered

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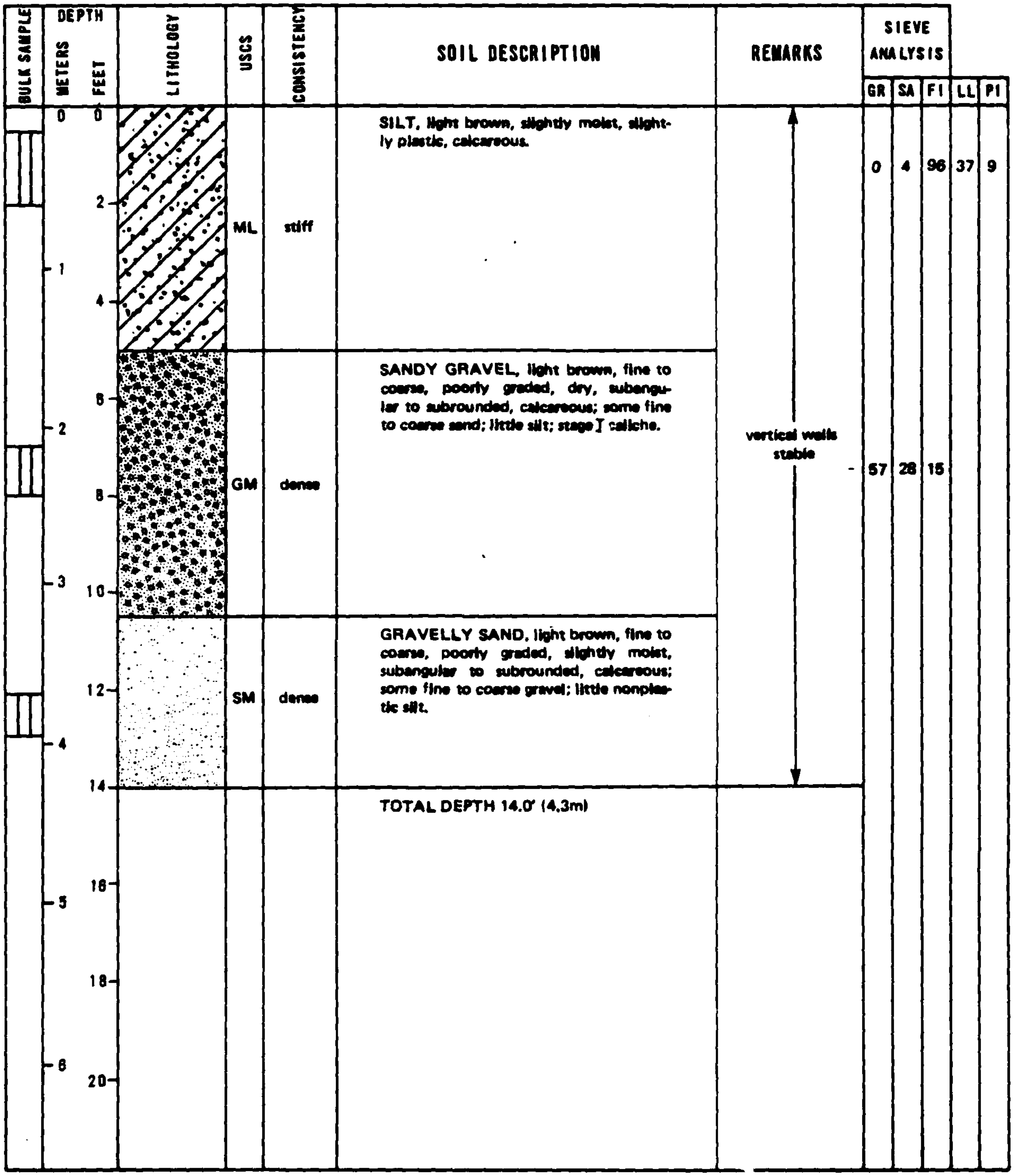
LOG OF BORING LV-B-7
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE

7.0 TRENCH AND TEST PIT LOGS

See Section 6.0, "Boring Logs", for explanation.



USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SIEVE ANALYSIS SA	SIEVE ANALYSIS FI	LL	PI
ML	stiff	SILT, light brown, slightly moist, slightly plastic, calcareous.	vertical walls stable	0	4	96	37	9
GM	dense	SANDY GRAVEL, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; little silt; stage I caliche.		57	28	15		
SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some fine to coarse gravel; little nonplastic silt.						
		TOTAL DEPTH 14.0' (4.3m)						

TRENCH DETAILS

SURFACE ELEVATION	: 5980' (1823m)
DATE EXCAVATED	: 30 June 1980
SURFICIAL GEOLOGIC UNIT	: A4o
TRENCH LENGTH	: 14.0' (4.3m)
TRENCH ORIENTATION	: N-S

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LOG OF TRENCH LV-T-1
LAKE VALLEY, NEVADA

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FIGURE II-7-1

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SIEVE ANALYSIS SA	SIEVE ANALYSIS FI	LL	PI
▥	0	0 2	▨	GC	medium dense very dense	SANDY GRAVEL, light gray to brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; little slightly plastic clay; trace cobbles to 6" size; stage III caliche (1.0' - 2.0'); stage IV caliche (2.0' - 3.0').	vertical walls stable					
	1 2 3 4 5 6	4 6 8 10 12 14 16 18 20				TOTAL DEPTH 3.0' (0.9m)	cementation at 3.0' exceeded capacity of Case 580C backhoe					

TRENCH DETAILS

SURFACE ELEVATION : 5925' (1806m)
DATE EXCAVATED : 15 July 1980
SURFICIAL GEOLOGIC UNIT : A5i
TRENCH LENGTH : 10.0' (3.0m)
TRENCH ORIENTATION : N-S

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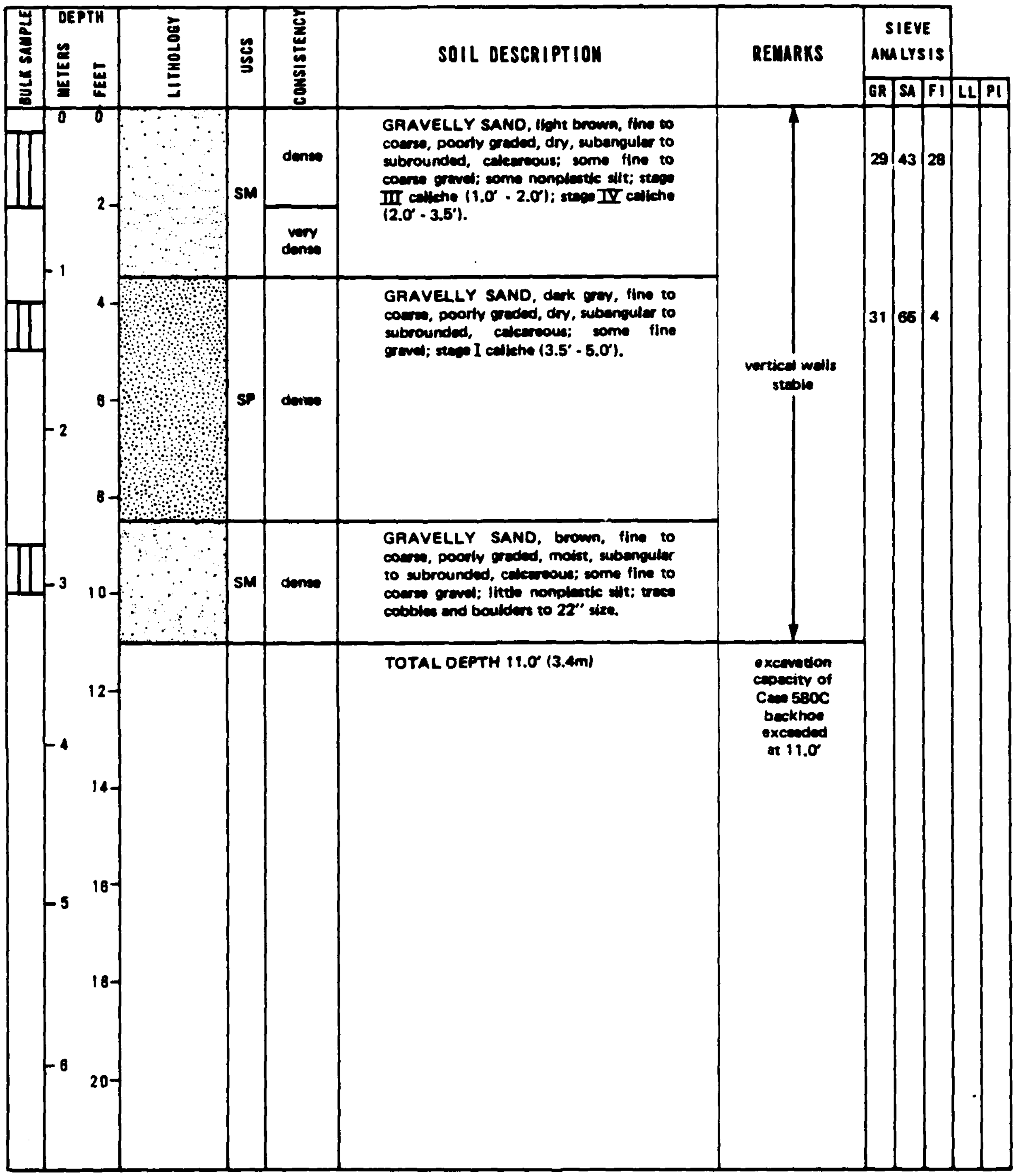
LOG OF TRENCH LV-T-2
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-7-2



USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	GR	SA	FI	LL	PI
SM	dense very dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse gravel; some nonplastic silt; stage III caliche (1.0' - 2.0'); stage IV caliche (2.0' - 3.5').	vertical walls stable	29	43	28		
SP	dense	GRAVELLY SAND, dark grey, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine gravel; stage I caliche (3.5' - 5.0').		31	65	4		
SM	dense	GRAVELLY SAND, brown, fine to coarse, poorly graded, moist, subangular to subrounded, calcareous; some fine to coarse gravel; little nonplastic silt; trace cobbles and boulders to 22" size.						
		TOTAL DEPTH 11.0' (3.4m)	excavation capacity of Case 580C backhoe exceeded at 11.0'					

TRENCH DETAILS

SURFACE ELEVATION	: 6085' (1855m)
DATE EXCAVATED	: 16 July 1980
SURFICIAL GEOLOGIC UNIT	: A5i
TRENCH LENGTH	: 10.0' (3.0m)
TRENCH ORIENTATION	: E-W

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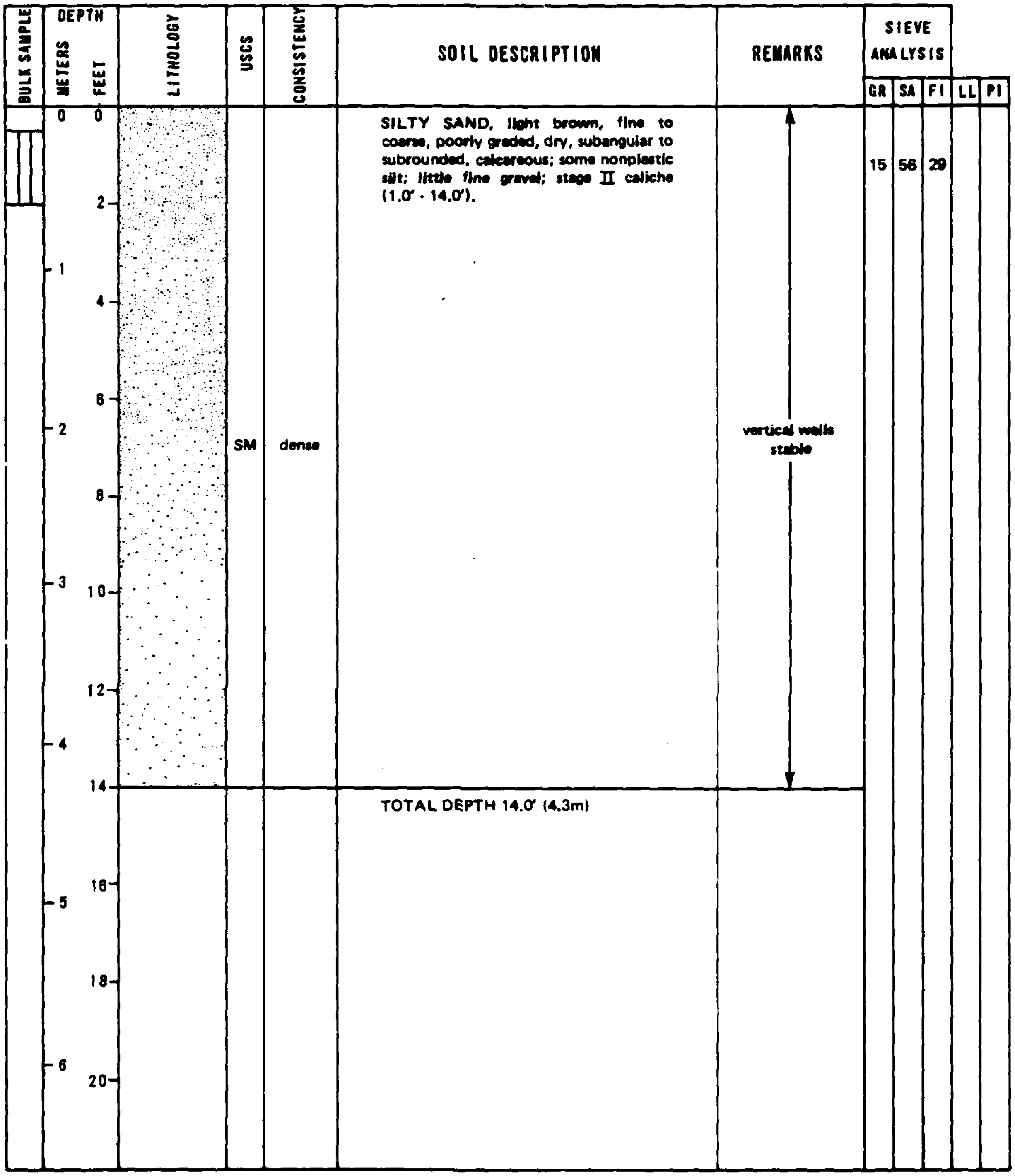
LOG OF TRENCH LV-T-3
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-7-3



SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; little fine gravel; stage II caliche (1.0' - 14.0').

TOTAL DEPTH 14.0' (4.3m)

TRENCH DETAILS

SURFACE ELEVATION : 5790' (1765m)
DATE EXCAVATED : 17 July 1980
SURFICIAL GEOLOGIC UNIT : A5i
TRENCH LENGTH : 14.0' (4.3m)
TRENCH ORIENTATION : E-W

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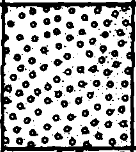
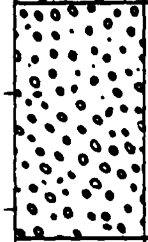
LOG OF TRENCH LV-T-4
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-7-4

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SIEVE ANALYSIS SA	SIEVE ANALYSIS FI	LL	PI
	0	0 2		GM	dense very dense	**SILTY GRAVEL**, brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; little fine to coarse sand; trace cobbles to 6" size; stage III caliche (1.0' - 2.0'); stage IV caliche (2.0' - 3.0').	vertical walls stable	65	14	21		
	1	4 6		GP-GM	very dense	**SANDY GRAVEL**, light brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; trace cobbles to 6" size; stage IV caliche (3.0' - 6.5').						
	2 3 4 5 6	8 10 12 14 16 18 20				TOTAL DEPTH 6.5' (2.0m)	cementation at 6.5' exceeded capacity of Case 580C backhoe					

TRENCH DETAILS

SURFACE ELEVATION : 6030' (1838m)
DATE EXCAVATED : 17 July 1980
SURFICIAL GEOLOGIC UNIT : A5i
TRENCH LENGTH : 12.0' (3.7m)
TRENCH ORIENTATION : N-S

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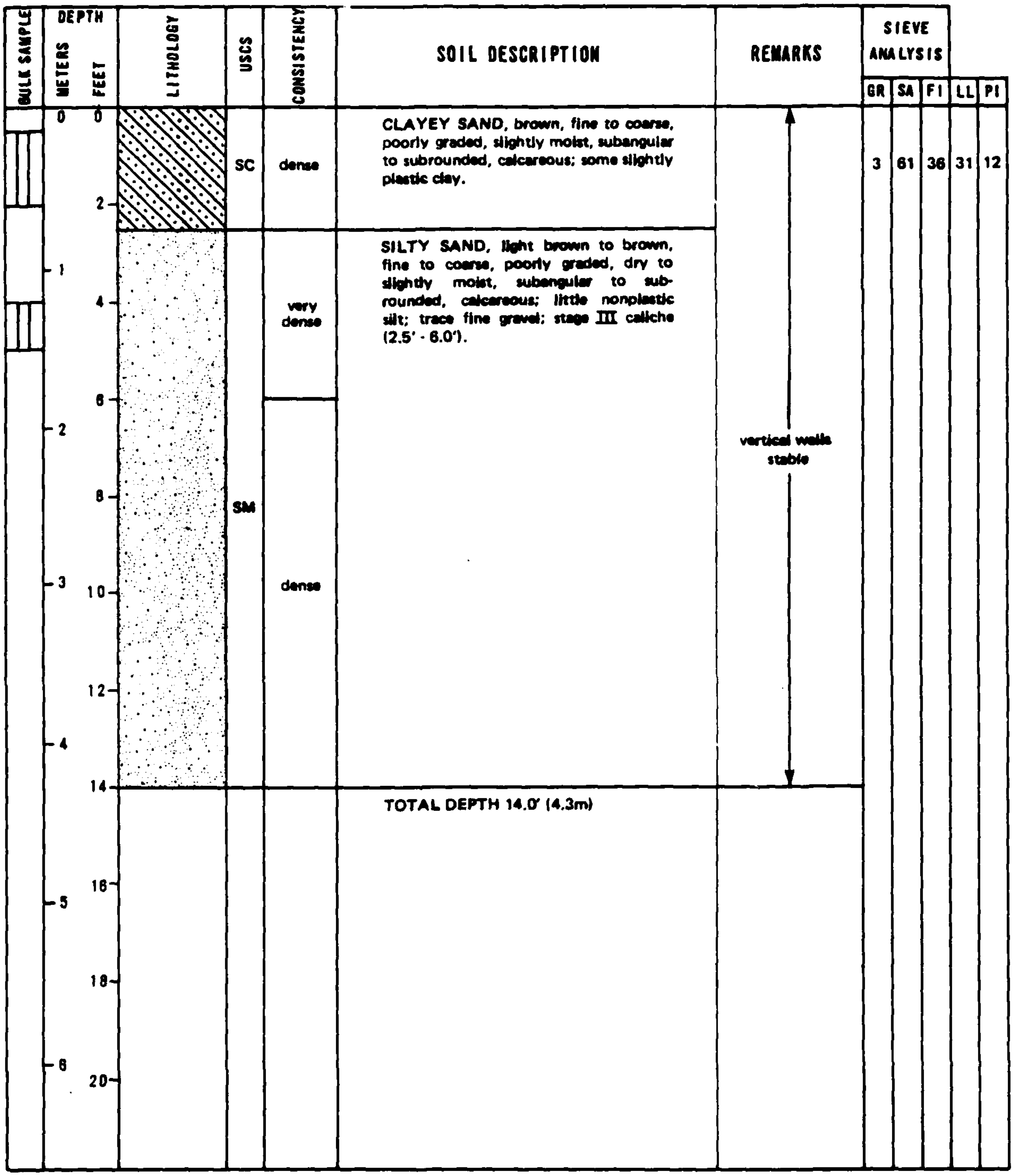
LOG OF TRENCH LV-T-5
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-7-5



CLAYEY SAND, brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some slightly plastic clay.

SILTY SAND, light brown to brown, fine to coarse, poorly graded, dry to slightly moist, subangular to subrounded, calcareous; little nonplastic silt; trace fine gravel; stage III caliche (2.5' - 6.0').

TOTAL DEPTH 14.0' (4.3m)

GR	SA	FI	LL	PI
3	61	36	31	12

TRENCH DETAILS

SURFACE ELEVATION : 5960' (1817m)
DATE EXCAVATED : 18 July 1980
SURFICIAL GEOLOGIC UNIT : A5i
TRENCH LENGTH : 14.0' (4.3m)
TRENCH ORIENTATION : N-S

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LOG OF TRENCH LV-T-6
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-7-6

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SIEVE ANALYSIS SA	SIEVE ANALYSIS FI	LL	PI
▥	0 1	0 2 4	▨	CL	stiff	SANDY CLAY, brown, moist, slightly plastic, calcareous; some fine to medium subangular to subrounded sand.	vertical walls stable	0	46	54	34	13
▥		6	░	SM	medium dense	SILTY SAND, light brown, fine to medium, poorly graded, moist, subangular to subrounded, calcareous; some nonplastic silt.						
▥	2 3 4	8 10 12 14	▓	SW-SM	medium dense	SAND, dark brown, fine to coarse, well graded, moist, subangular to subrounded, calcareous; trace fine gravel; trace nonplastic silt; occasional layers of clayey sand throughout.		12	77	11		
	5 6	16 18 20				TOTAL DEPTH 14.0' (4.3m)						

TRENCH DETAILS

SURFACE ELEVATION : 6080' (1853m)
DATE EXCAVATED : 19 July 1980
SURFICIAL GEOLOGIC UNIT : A5i
TRENCH LENGTH : 14.0' (4.3m)
TRENCH ORIENTATION : N-S

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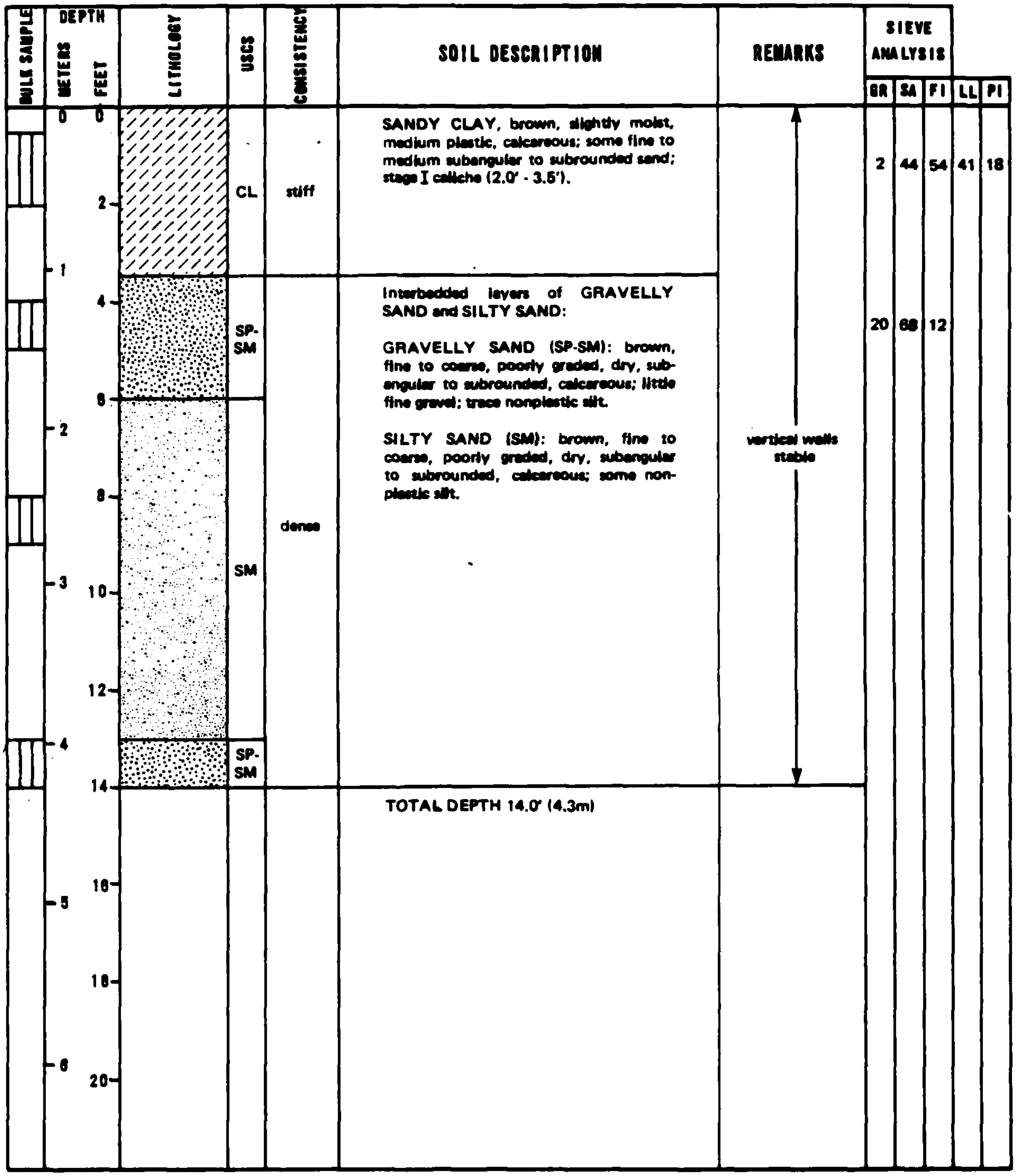
LOG OF TRENCH LV-T-7
LAKE VALLEY, NEVADA



SANDY CLAY, brown, slightly moist, medium plastic, calcareous; some fine to medium subangular to subrounded sand; stage I caliche (2.0' - 3.5').

Interbedded layers of GRAVELLY SAND and SILTY SAND:

GRAVELLY SAND (SP-SM): brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; little fine gravel; trace nonplastic silt.

SILTY SAND (SM): brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt.

TOTAL DEPTH 14.0' (4.3m)

TRENCH DETAILS

SURFACE ELEVATION : 5970' (1820m)
DATE EXCAVATED : 20 July 1980
SURFICIAL GEOLOGIC UNIT : A5i
TRENCH LENGTH : 14.0' (4.3m)
TRENCH ORIENTATION : N-S

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LOG OF TRENCH LV-T-8
LAKE VALLEY, NEVADA

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FIGURE II-7-8

E-TR-27-LV-II

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SIEVE ANALYSIS SA	SIEVE ANALYSIS FI	LL	PI
▥	0 1	0 2 4	▨	SC	dense	CLAYEY SAND, brown, fine to medium, poorly graded, moist, subangular to subrounded, calcareous; some slightly plastic clay; stage III caliche (2.5' - 3.5').	vertical walls stable	0	70	30	30	10
▥		6	▨	CL-ML	stiff	SANDY CLAY, brown, moist, slightly plastic, calcareous; some fine to medium subangular to subrounded sand.		1	42	57	29	7
▥	2 3 4	8 10 12 14	░	SP-SM	dense	SAND, brown, fine to coarse, poorly graded, moist, subangular to subrounded, calcareous; trace nonplastic silt; trace fine gravel.						
	5 6	16 18 20				TOTAL DEPTH 14.0' (4.3m)						

TRENCH DETAILS

SURFACE ELEVATION : 6200' (1890m)
DATE EXCAVATED : 20 July 1980
SURFICIAL GEOLOGIC UNIT : A5I
TRENCH LENGTH : 14.0' (4.3m)
TRENCH ORIENTATION : N-S

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LOG OF TRENCH LV-T-9
LAKE VALLEY, NEVADA

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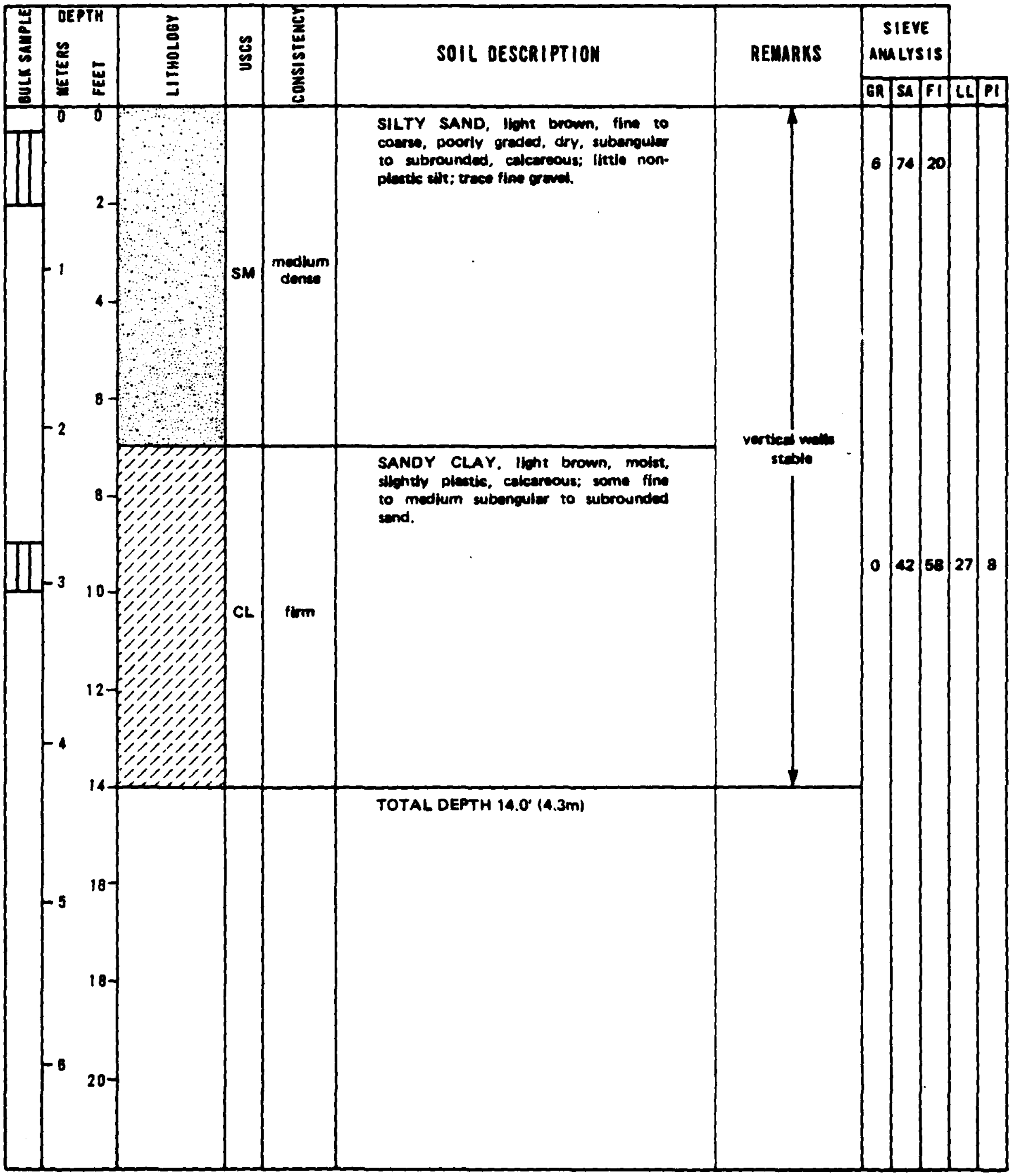
FIGURE II-7-9



SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; little non-plastic silt; trace fine gravel.

SANDY CLAY, light brown, moist, slightly plastic, calcareous; some fine to medium subangular to subrounded sand.

TOTAL DEPTH 14.0' (4.3m)

TRENCH DETAILS

SURFACE ELEVATION	: 5950' (1814m)
DATE EXCAVATED	: 21 July 1980
SURFICIAL GEOLOGIC UNIT	: A4o
TRENCH LENGTH	: 14.0' (4.3m)
TRENCH ORIENTATION	: E-W

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LOG OF TRENCH LV-T-10
LAKE VALLEY, NEVADA

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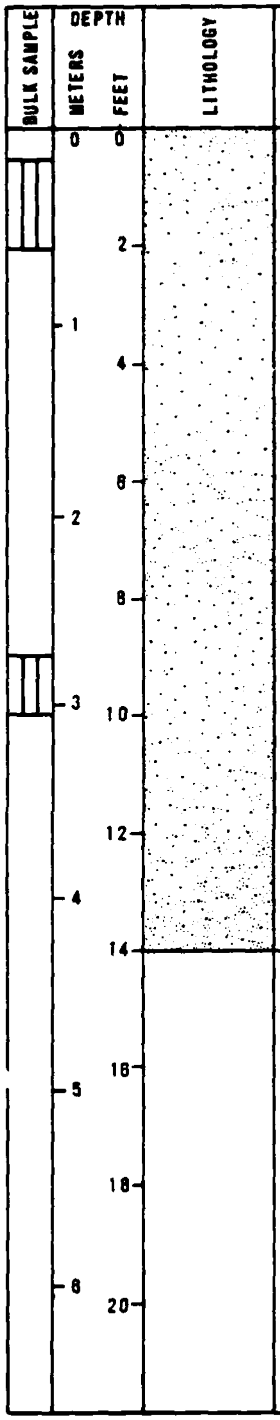
FIGURE II-7-10



USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some slightly plastic silt; trace fine gravel; stage III caliche (1.0' - 4.0'); occasional layers of gravelly sand throughout.	vertical walls stable	10	55	35		
		TOTAL DEPTH 14.0' (4.3m)						

TRENCH DETAILS

SURFACE ELEVATION : 6265' (1910m)
DATE EXCAVATED : 22 July 1980
SURFICIAL GEOLOGIC UNIT : A5i
TRENCH LENGTH : 14.0' (4.3m)
TRENCH ORIENTATION : N-S

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LOG OF TRENCH LV-T-11
LAKE VALLEY, NEVADA

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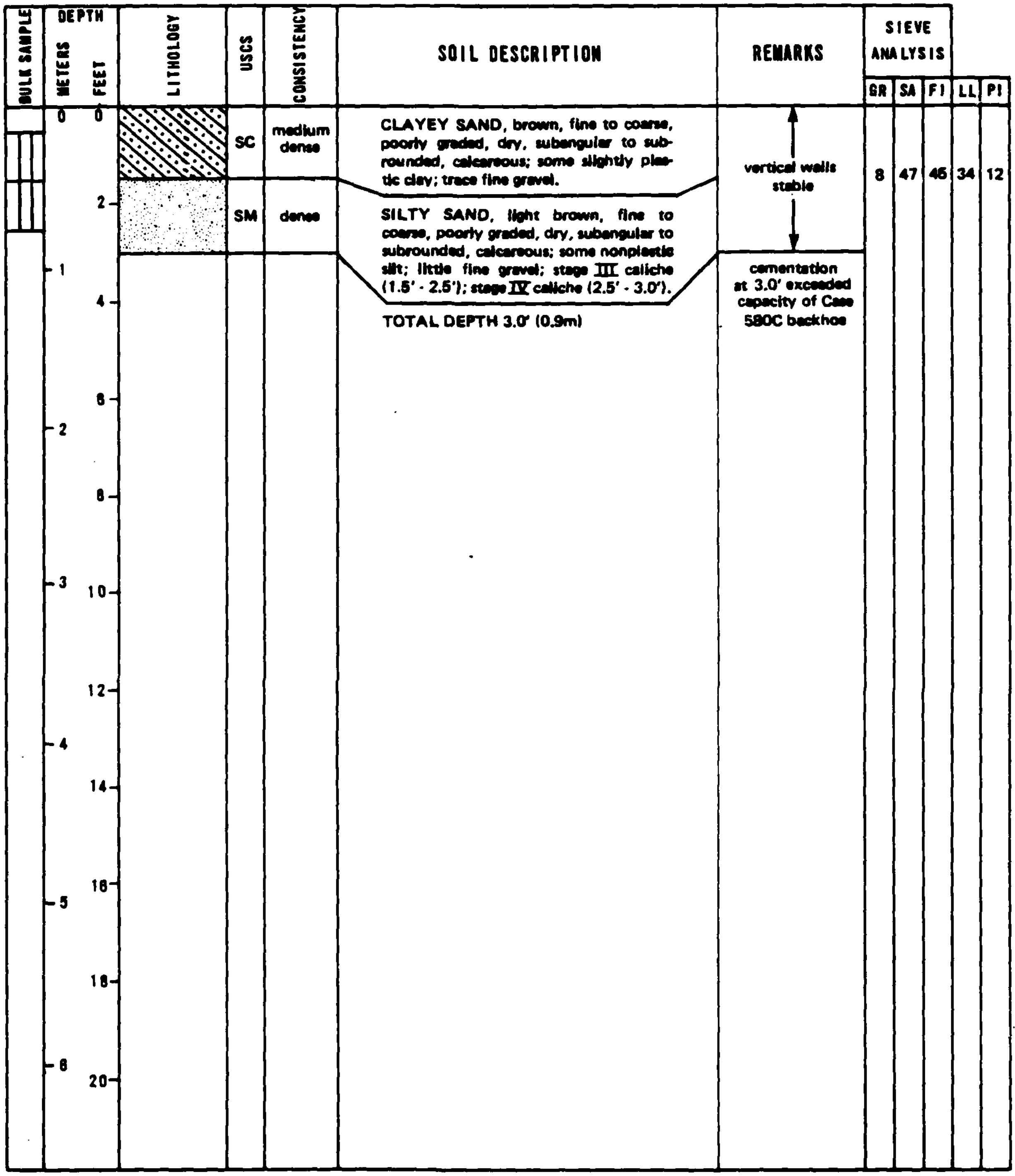
FIGURE II-7-11



USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
SC	medium dense	CLAYEY SAND, brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some slightly plastic clay; trace fine gravel.	vertical walls stable	8	47	45	34	12
SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; little fine gravel; stage III caliche (1.5' - 2.5'); stage IV caliche (2.5' - 3.0').	cementation at 3.0' exceeded capacity of Case 580C backhoe					
		TOTAL DEPTH 3.0' (0.9m)						

TRENCH DETAILS

SURFACE ELEVATION : 6060' (1847m)
DATE EXCAVATED : 22 July 1980
SURFICIAL GEOLOGIC UNIT : A5i
TRENCH LENGTH : 10.0' (3.0m)
TRENCH ORIENTATION : E-W

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LOG OF TRENCH LV-T-12
LAKE VALLEY, NEVADA

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FIGURE II-7-12

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse gravel; some nonplastic silt; occasional cobbles to 6" size; stage III caliche (1.0' - 3.5'); stage IV caliche (3.5' - 4.0').	vertical walls stable					
		2										
	1											
		4				TOTAL DEPTH 4.0' (1.2m)	cementation at 4.0' exceeded capacity of Case 580C backhoe					
		6										
	2											
		8										
	3	10										
		12										
	4											
		14										
		16										
	5											
		18										
	6											
		20										

TRENCH DETAILS

SURFACE ELEVATION	: 6080' (1853m)
DATE EXCAVATED	: 29 July 1980
SURFICIAL GEOLOGIC UNIT	: A5i
TRENCH LENGTH	: 12.0' (3.7m)
TRENCH ORIENTATION	: N-S

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LOG OF TRENCH LV-T-13
LAKE VALLEY, NEVADA

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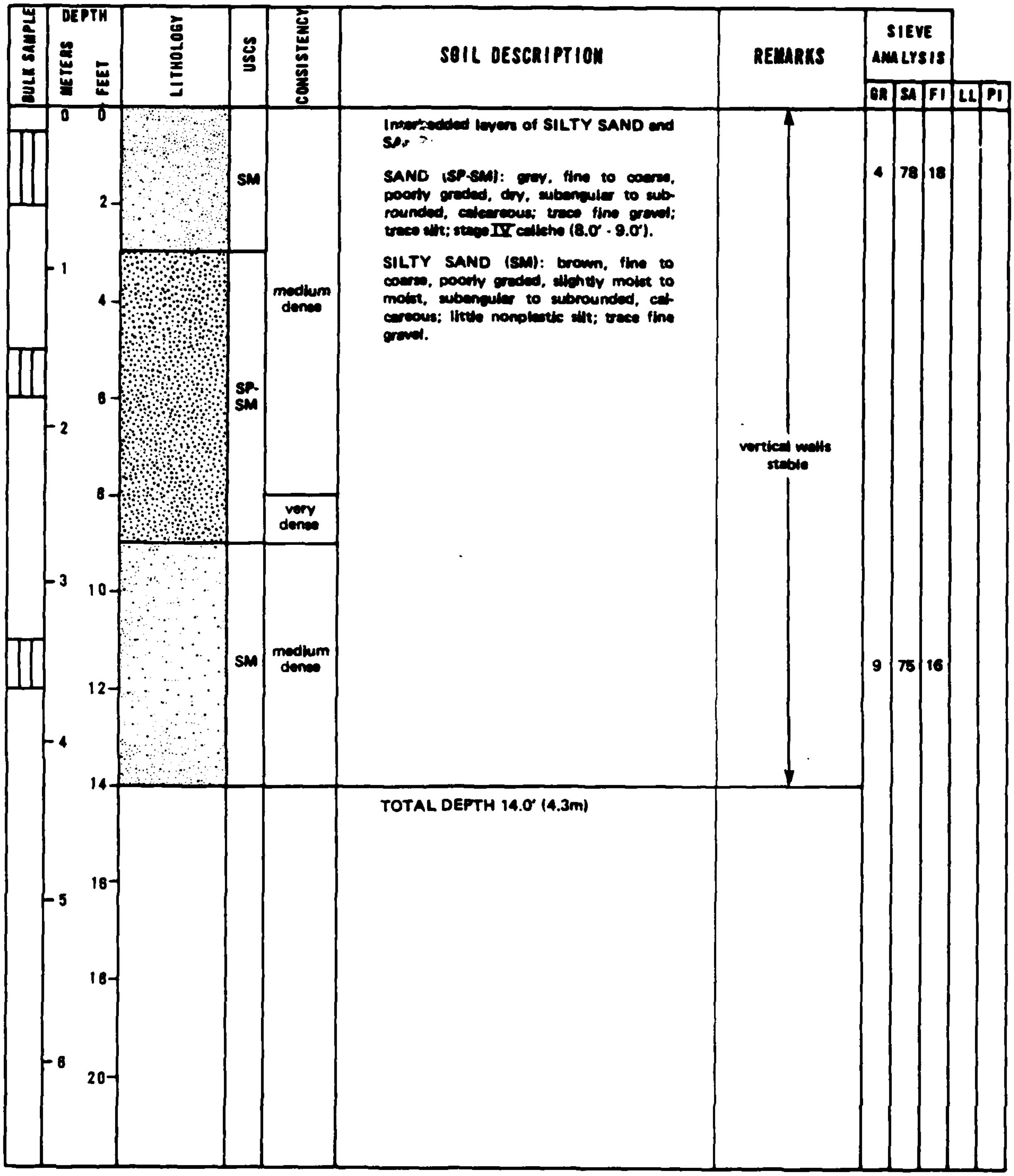
FIGURE II-7-13



Interbedded layers of SILTY SAND and SA[illegible]

SAND (SP-SM): grey, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; trace fine gravel; trace silt; stage IV caliche (8.0' - 9.0').

SILTY SAND (SM): brown, fine to coarse, poorly graded, slightly moist to moist, subangular to subrounded, calcareous; little nonplastic silt; trace fine gravel.

TOTAL DEPTH 14.0' (4.3m)

TRENCH DETAILS

SURFACE ELEVATION : 6120' (1865m)
DATE EXCAVATED : 29 July 1980
SURFICIAL GEOLOGIC UNIT : A5i
TRENCH LENGTH : 14.0' (4.3m)
TRENCH ORIENTATION : N-S

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LOG OF TRENCH LV-T-14
LAKE VALLEY, NEVADA

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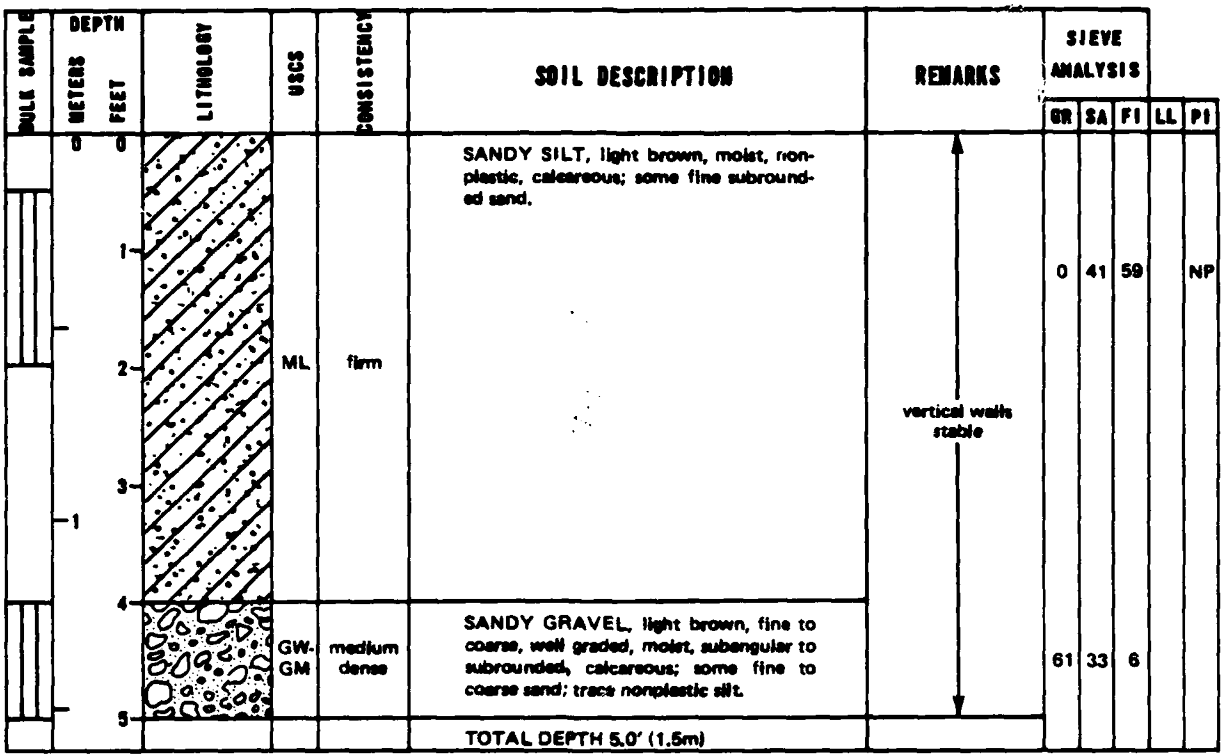
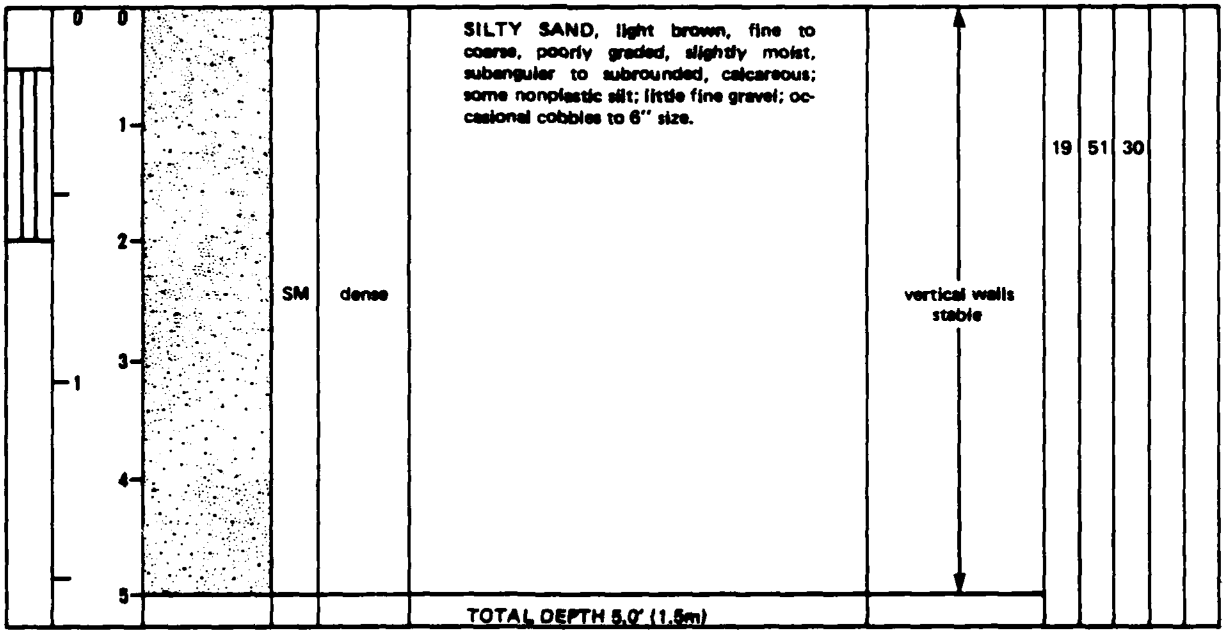
FIGURE II-7-14



USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
				GR	SA	FI	LL	PI
ML	firm	SANDY SILT, light brown, moist, nonplastic, calcareous; some fine subrounded sand.	vertical walls stable	0	41	59		NP
GW-GM	medium dense	SANDY GRAVEL, light brown, fine to coarse, well graded, moist, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt.		61	33	6		
		TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6045' (1843m)
SURFICIAL GEOLOGIC UNIT: A5y

LOG OF TEST PIT LV-P-1



USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	GR	SA	FI	LL	PI
SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some nonplastic silt; little fine gravel; occasional cobbles to 6" size.	vertical walls stable	19	51	30		
		TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6160' (1878m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-2

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LOGS OF TEST PITS LV-P-1 AND LV-P-2
LAKE VALLEY, NEVADA

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FIGURE II-7-15

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0		CL	stiff	SILTY CLAY, light brown, slightly moist, slightly plastic, calcareous: trace fine subrounded sand.	vertical walls stable					
	1	4		SP	dense	SAND, gray, fine, poorly graded, slightly moist, subrounded, calcareous.						
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 5935' (1809m)
SURFICIAL GEOLOGIC UNIT: A4o/A3

LOG OF TEST PIT LV-P-3

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0		SM	medium dense	SILTY SAND, gray, fine to medium, poorly graded, slightly moist, subrounded, calcareous; some nonplastic silt.	vertical walls stable	3	52	45		NP
	1	5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6110' (1862m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-4

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LOGS OF TEST PITS LV-P-3 AND LV-P-4
LAKE VALLEY, NEVADA

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FIGURE II-7-16

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0		GM	dense	SANDY GRAVEL, light brown, fine, poorly graded, slightly moist, subangular to subrounded, calcareous; some fine to coarse sand; little nonplastic silt; trace cobbles to 6" size; stage II caliche (1.0' - 5.0').	vertical walls stable	41	40	19		
	1	5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6320' (1926m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-5

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0		GM	medium dense	SANDY GRAVEL, light gray to light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; little nonplastic silt; trace cobbles to 6" size; stage III caliche (0.5' - 2.0'); stage IV caliche (2.0' - 3.5').	vertical walls stable	54	32	14		
					dense							
					very dense							
	1					TOTAL DEPTH 3.5' (1.1m)	cementation at 3.5' exceeded capacity of Case 580 C backhoe					

SURFACE ELEVATION: 6170' (1881m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-6

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LOGS OF TEST PITS LV-P-5 AND LV-P-6
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-7-17

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SIEVE ANALYSIS SA	SIEVE ANALYSIS FI	LL	PI
	0	0	▨	ML	firm	SANDY SILT, light brown, dry, slightly plastic, calcareous; some fine to medium subangular to subrounded sand; trace fine gravel.	vertical walls stable	5	35	60	28	4
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 5640' (1719m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-7

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SIEVE ANALYSIS SA	SIEVE ANALYSIS FI	LL	PI
	0	0	░	SM	medium dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some fine gravel; little nonplastic silt.	vertical walls stable	22	62	16		
	1	3	○	GW	medium dense	SANDY GRAVEL, brown, fine to coarse, well graded, slightly moist, subangular to subrounded, calcareous; some medium to coarse sand.		70	28	2		
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 5580' (1701m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-8

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LOGS OF TEST PITS LV-P-7 AND LV-P-8
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-7-18

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0 1	0 1 2 3		SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some nonplastic silt; trace fine gravel; stage III caliche (0.5' - 2.0'); stage II caliche (2.0' - 4.0').	vertical walls stable					
		4		SP	medium dense	GRAVELLY SAND, grey, medium to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine gravel.						
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 5755' (1754m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-9

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	GR	SA	FI	LL	PI
	0	0 1 2		SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse gravel; little nonplastic silt; stage II caliche (1.0' - 5.0').	vertical walls stable	28	59	13		
	1	3 4		SP	dense	SAND, grey, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous.		3	95	2		
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 5940' (1811m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-10

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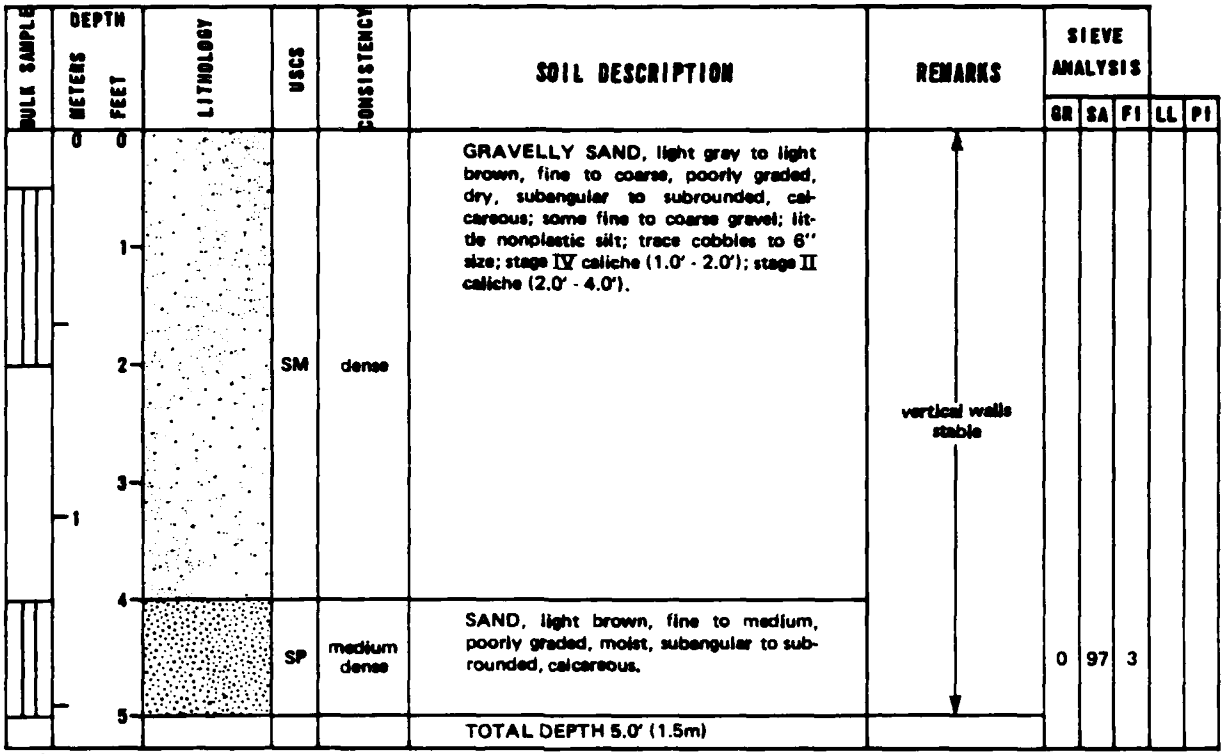
LOGS OF TEST PITS LV-P-9 AND LV-P-10
LAKE VALLEY, NEVADA

31 JUL 81

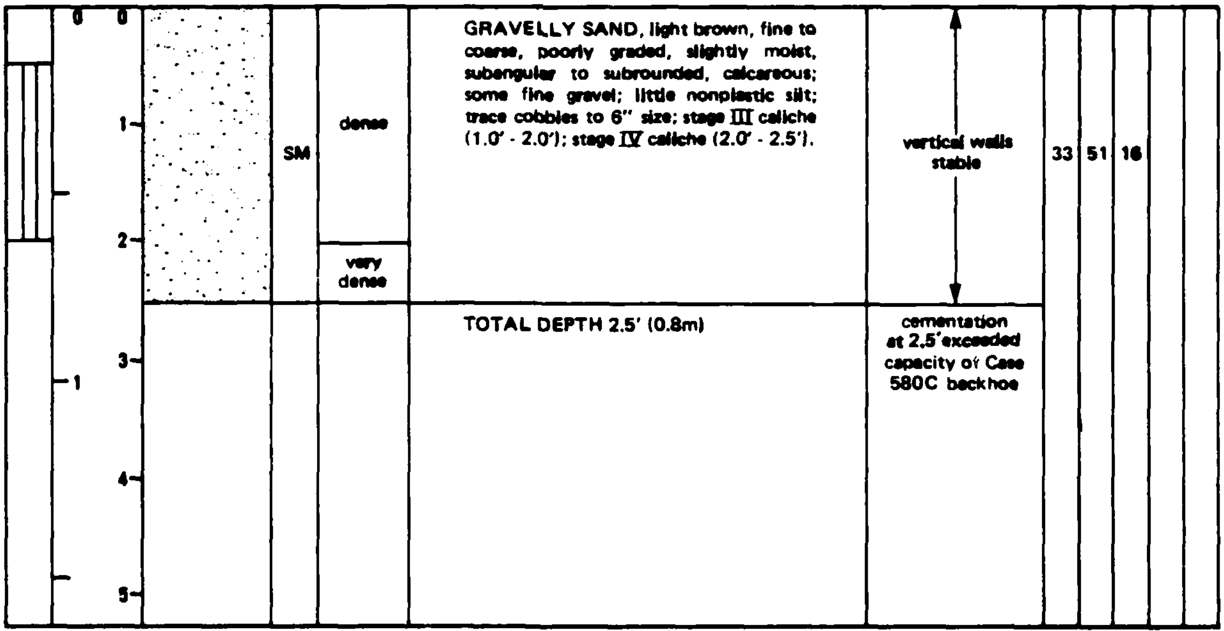
FIGURE II-7-19



USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
SM	dense	GRAVELLY SAND, light gray to light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse gravel; little nonplastic silt; trace cobbles to 6" size; stage IV caliche (1.0' - 2.0'); stage II caliche (2.0' - 4.0').	vertical walls stable					
SP	medium dense	SAND, light brown, fine to medium, poorly graded, moist, subangular to subrounded, calcareous.		0	97	3		
		TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6265' (1910m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-11



USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	GR	SA	FI	LL	PI
SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some fine gravel; little nonplastic silt; trace cobbles to 6" size; stage III caliche (1.0' - 2.0'); stage IV caliche (2.0' - 2.5').	vertical walls stable	33	51	16		
	very dense							
		TOTAL DEPTH 2.5' (0.8m)	cementation at 2.5' exceeded capacity of Case 580C backhoe					

SURFACE ELEVATION: 6285' (1916m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-12

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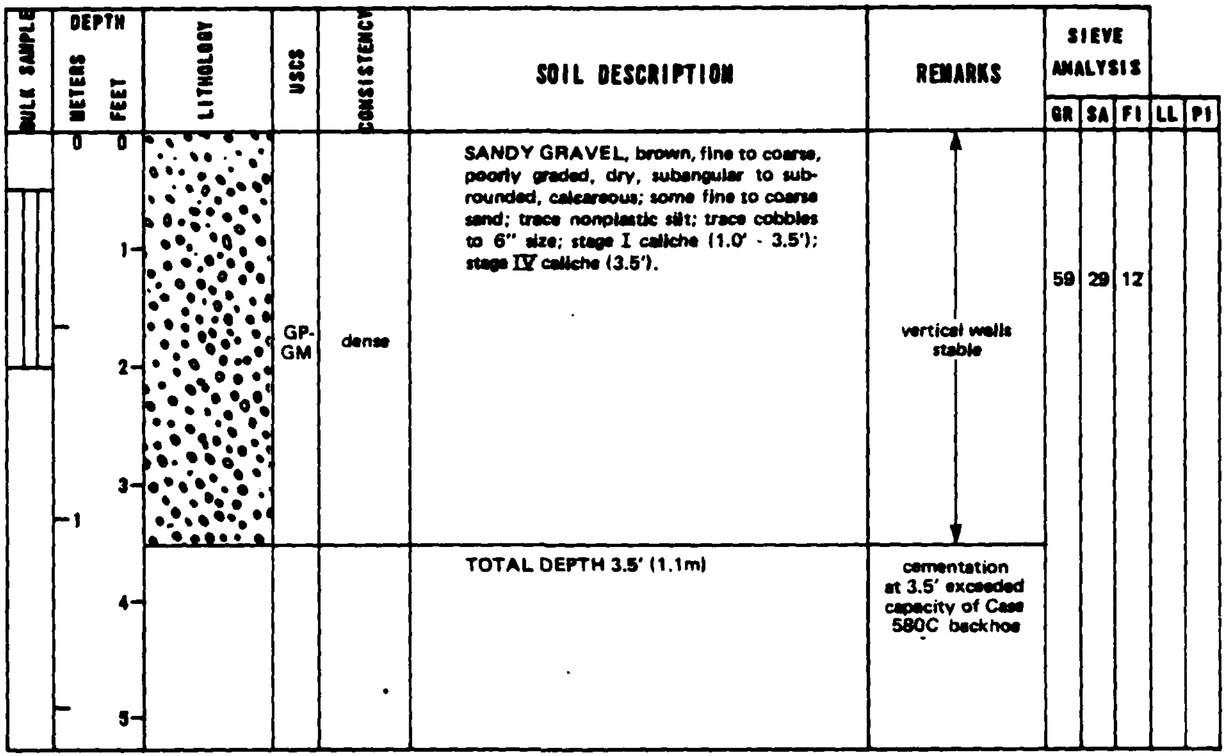
LOGS OF TEST PITS LV-P-11 AND LV-P-12
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-7-20



SANDY GRAVEL, brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; trace cobbles to 6" size; stage I caliche (1.0' - 3.5'); stage IV caliche (3.5').

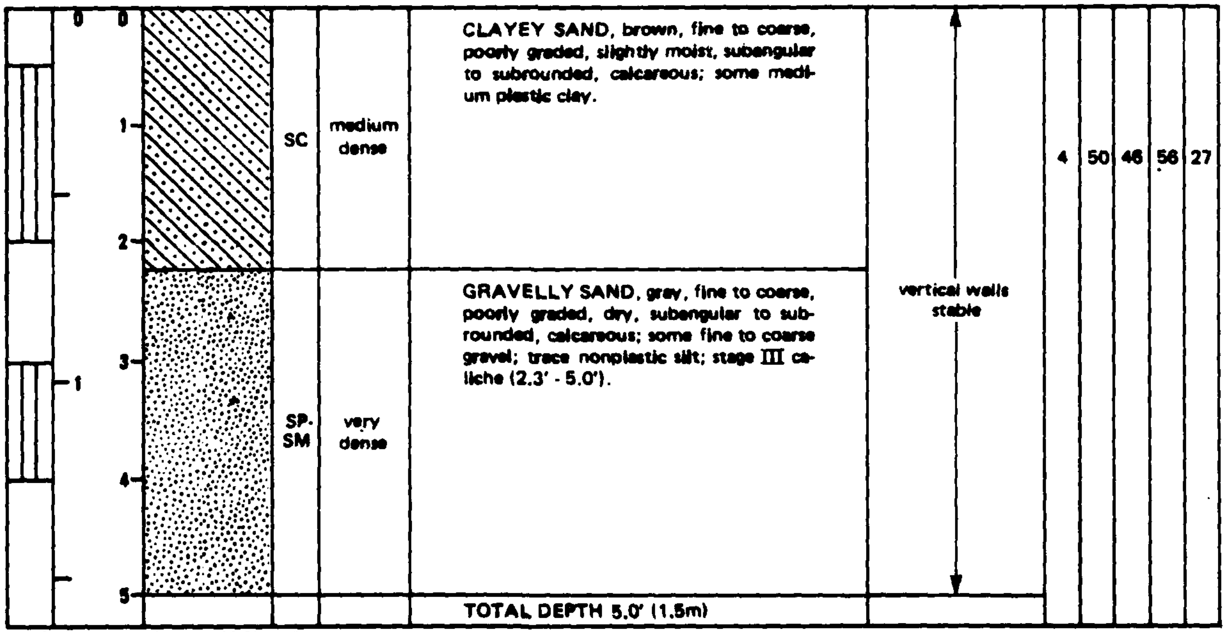
vertical walls stable

TOTAL DEPTH 3.5' (1.1m)

cementation at 3.5' exceeded capacity of Case 580C backhoe

SURFACE ELEVATION: 6085' (1855m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-13



CLAYEY SAND, brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some medium plastic clay.

GRAVELLY SAND, gray, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse gravel; trace nonplastic silt; stage III caliche (2.3' - 5.0').

vertical walls stable

TOTAL DEPTH 5.0' (1.5m)

SURFACE ELEVATION: 5975' (1821m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-14

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LOGS OF TEST PITS LV-P-13 AND LV-P-14
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-7-21

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0–2		SM	dense	SILTY SAND, brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some highly plastic silt; trace fine gravel.	vertical walls stable	10	45	45	67	33
		2–3		SP-SM	very dense	SAND, light gray, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; trace nonplastic silt; trace fine gravel; stage IV caliche.						
	1	3				TOTAL DEPTH 3.0' (0.9m)	cementation at 3.0' exceeded capacity of Case 580C backhoe					

SURFACE ELEVATION: 5850' (1783m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-15

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0–5		ML	firm	SILT, light brown, dry, nonplastic, calcareous.	vertical walls stable	0	2	98	27	3
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 5690' (1734m)
SURFICIAL GEOLOGIC UNIT: A1/A5y

LOG OF TEST PIT LV-P-16

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LOGS OF TEST PITS LV-P-15 AND LV-P-16
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-7-22

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0		CL	stiff	SANDY CLAY, brown, dry, slightly plastic, calcareous; some fine to coarse subangular to subrounded sand; trace fine gravel; stage II caliche (1.0' - 2.5')	vertical walls stable					
	1	3		GM	dense	SANDY GRAVEL, light brown, fine, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; some nonplastic silt.		36	33	31		
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 5850' (1783m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-17

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0		SM	dense	SILTY SAND, brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some nonplastic silt; trace fine gravel.	vertical walls stable	8	64	28		
	1	3										
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6090' (1856m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-18

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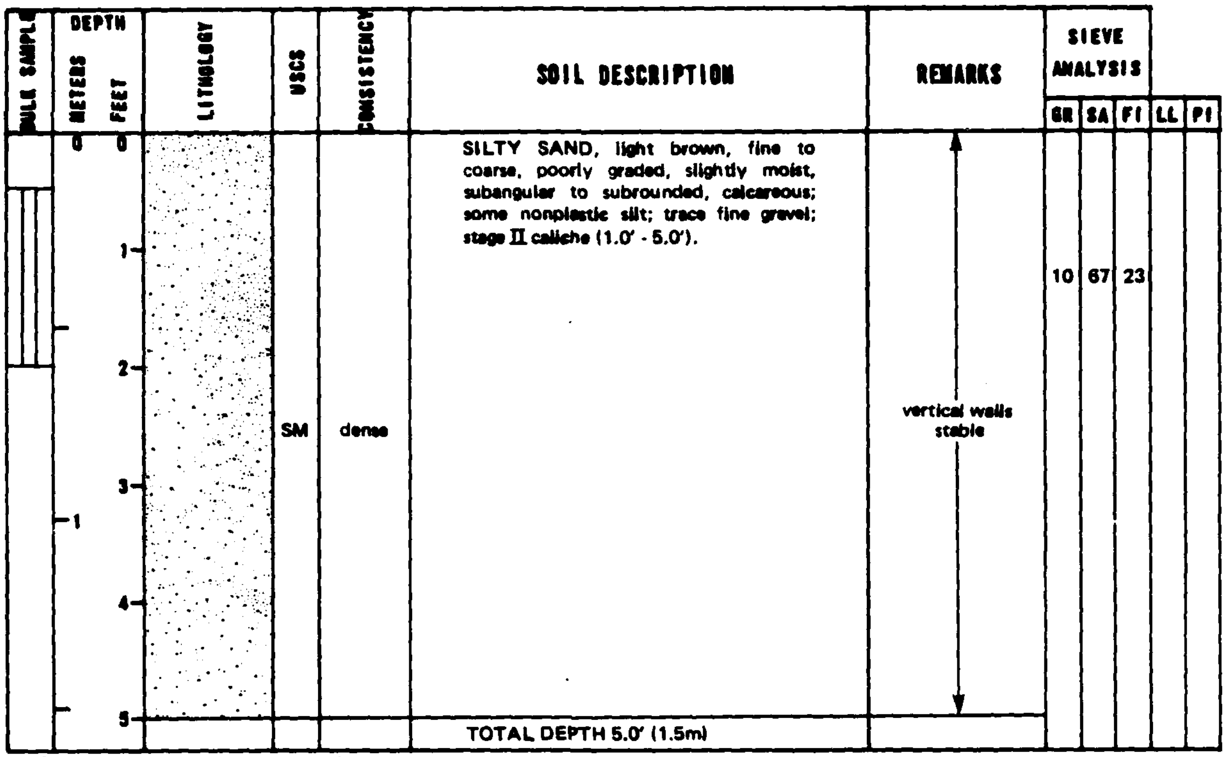
LOGS OF TEST PITS LV-P-17 AND LV-P-18
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-7-23



SILTY SAND, light brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some nonplastic silt; trace fine gravel; stage II caliche (1.0' - 5.0').

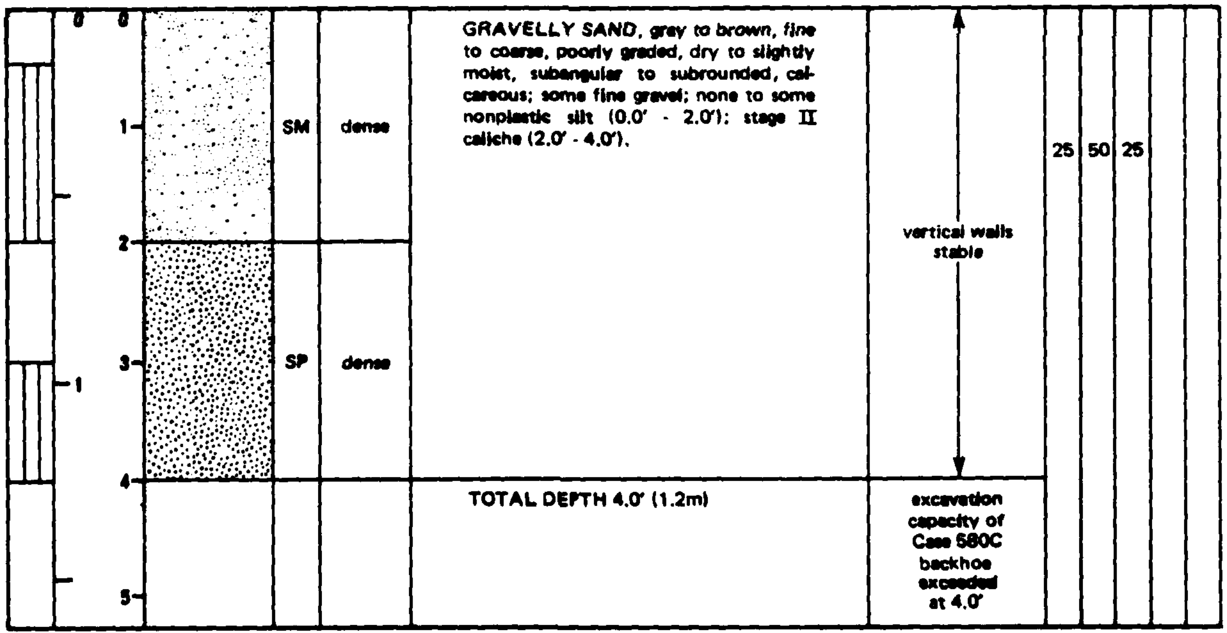
TOTAL DEPTH 5.0' (1.5m)

vertical walls stable

GR	SA	FI	LL	PI
10	67	23		

SURFACE ELEVATION: 5845' (1782m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-19



GRAVELLY SAND, grey to brown, fine to coarse, poorly graded, dry to slightly moist, subangular to subrounded, calcareous; some fine gravel; none to some nonplastic silt (0.0' - 2.0'); stage II caliche (2.0' - 4.0').

TOTAL DEPTH 4.0' (1.2m)

vertical walls stable

excavation capacity of Case 580C backhoe exceeded at 4.0'

GR	SA	FI	LL	PI
25	50	25		

SURFACE ELEVATION: 5870' (1789m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-20

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LOGS OF TEST PITS LV-P-19 AND LV-P-20
LAKE VALLEY, NEVADA

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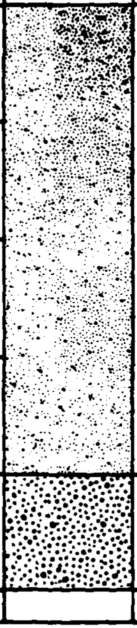
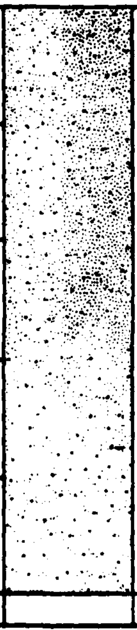
FIGURE II-7-24

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0 1	0 1 2 3 4		SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; trace fine gravel; stage II caliche (1.0' - 2.0').	vertical walls stable	9	66	25		
		4 5		SW-SM	dense	SAND, gray, fine to coarse, well graded, dry, subangular to subrounded, calcareous; trace fine gravel; trace silt.		6	88	6		
						TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 5990' (1826m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-21

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0 1	0 1 2 3 4 5		SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; little fine gravel; little nonplastic silt; stage IV caliche (0.5' - 2.5'); stage II caliche (2.5' - 5.0').	vertical walls stable					
						TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6170' (1881m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-22

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LOGS OF TEST PITS LV-P-21 AND LV-P-22
LAKE VALLEY, NEVADA

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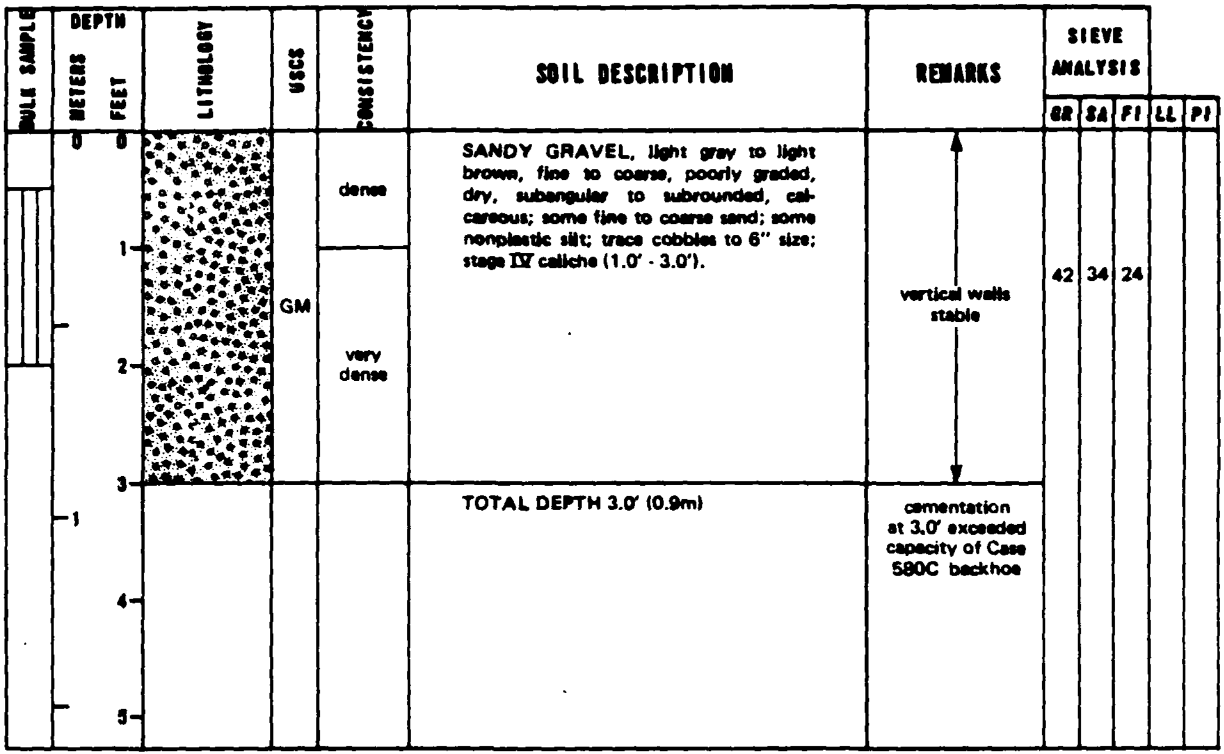
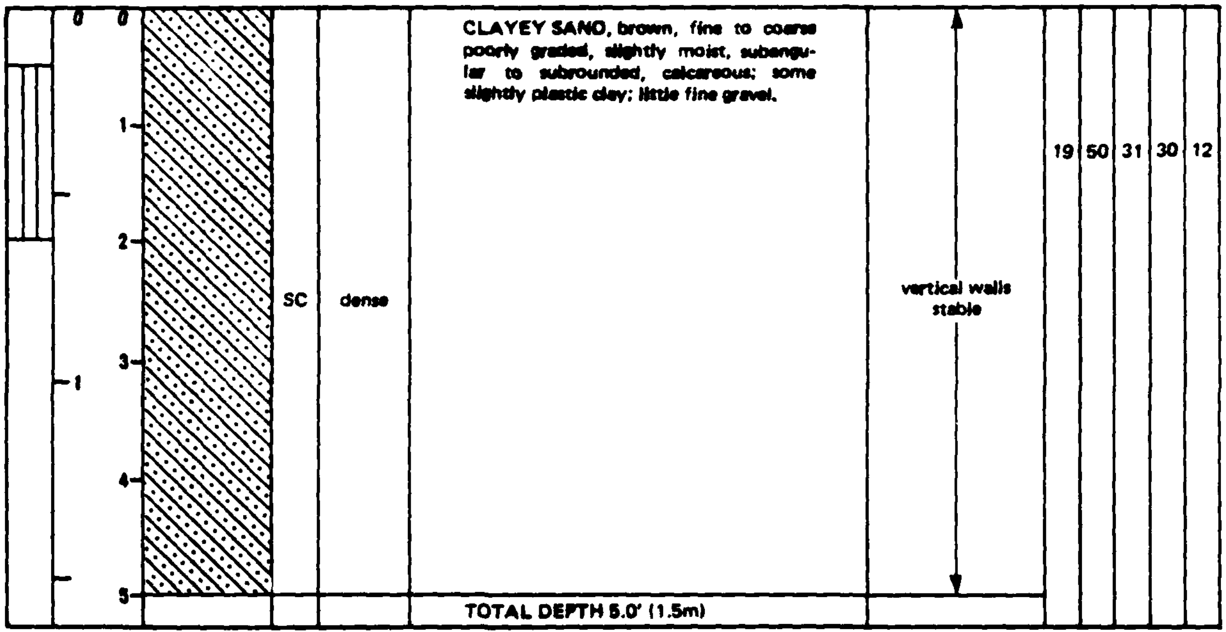
FIGURE II-7-25



BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SIEVE ANALYSIS SA	SIEVE ANALYSIS FI	LL	PI
	0	0		GM	dense very dense	SANDY GRAVEL, light gray to light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; some nonplastic silt; trace cobbles to 6" size; stage IV caliche (1.0' - 3.0').	vertical walls stable	42	34	24		
		3				TOTAL DEPTH 3.0' (0.9m)	cementation at 3.0' exceeded capacity of Case 580C backhoe					

SURFACE ELEVATION: 6390' (1948m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-23



BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SIEVE ANALYSIS SA	SIEVE ANALYSIS FI	LL	PI
	0	0		SC	dense	CLAYEY SAND, brown, fine to coarse poorly graded, slightly moist, subangular to subrounded, calcareous; some slightly plastic clay; little fine gravel.	vertical walls stable	19	50	31	30	12
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 5960' (1817m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-24

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LOGS OF TEST PITS LV-P-23 AND LV-P-24
LAKE VALLEY, NEVADA

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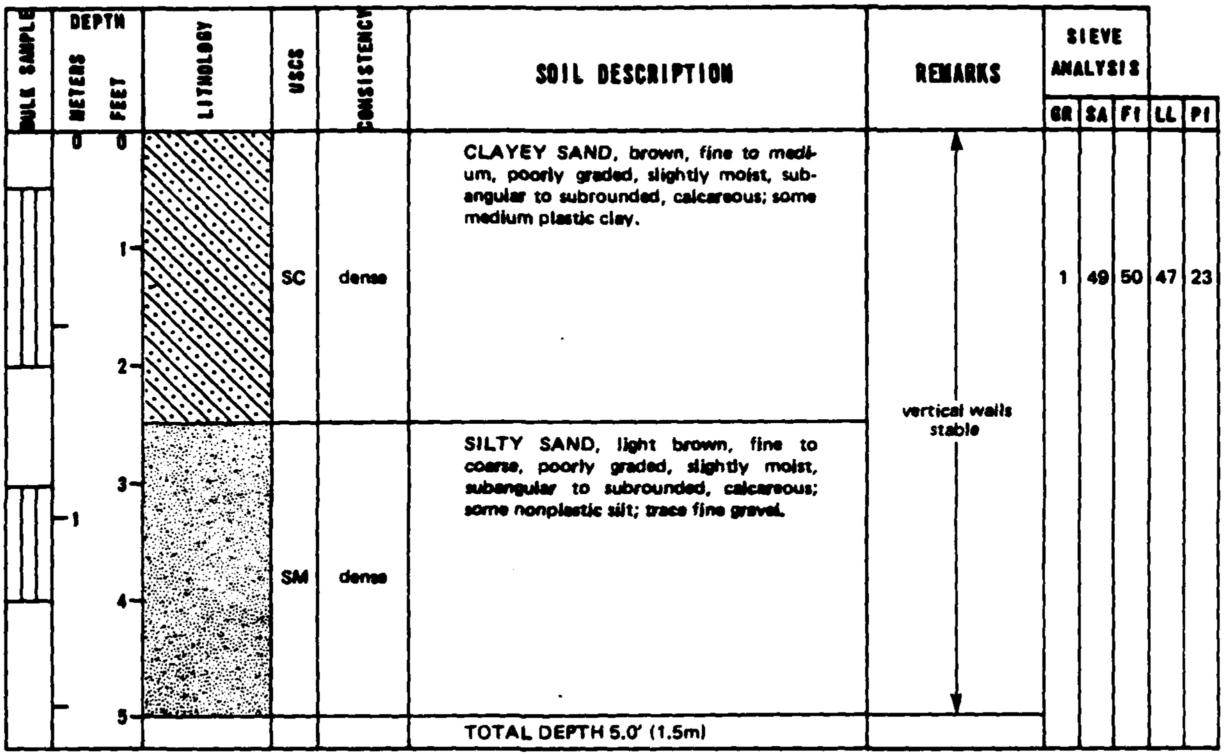
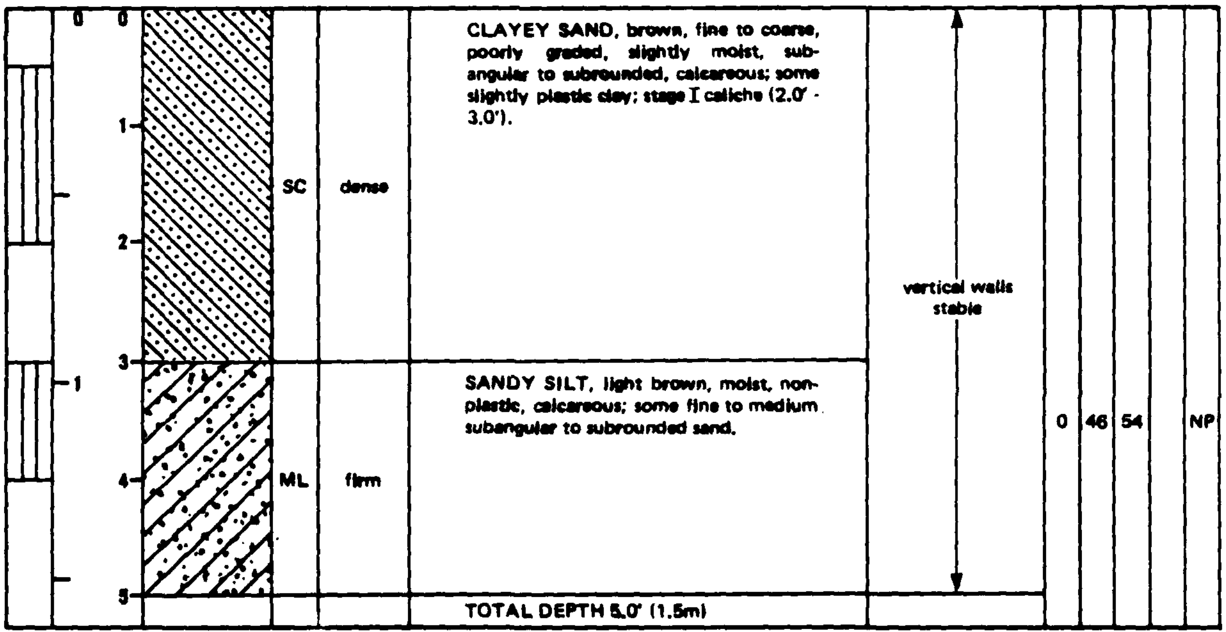
FIGURE II-7-26



USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
SC	dense	CLAYEY SAND, brown, fine to medium, poorly graded, slightly moist, subangular to subrounded, calcareous; some medium plastic clay.	vertical walls stable	1	49	50	47	23
SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some nonplastic silt; trace fine gravel.						
		TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6010' (1832m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-25



USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
SC	dense	CLAYEY SAND, brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some slightly plastic clay; stage I caliche (2.0' - 3.0').	vertical walls stable					
ML	firm	SANDY SILT, light brown, moist, nonplastic, calcareous; some fine to medium subangular to subrounded sand.		0	46	54		NP
		TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6080' (1853m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-26

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LOGS OF TEST PITS LV-P-25 AND LV-P-26
LAKE VALLEY, NEVADA

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FIGURE II-7-27

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		SM	dense	GRAVELLY SAND, light gray to light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse gravel; some nonplastic silt; stage III caliche (0.5' - 2.5'); stage IV caliche (2.5' - 3.0').	vertical walls stable					
					very dense							
		3				TOTAL DEPTH 3.0' (0.9m)	cementation at 3.0' exceeded capacity of Case 580C backhoe					
	1	4										
		5										

SURFACE ELEVATION: 6330' (1929m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-27

BULK SAMPLE	DEPTH		LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS				
	METERS	FEET						GR	SA	FI	LL	PI
	0	0		SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; some fine gravel; stage III caliche (1.0' - 4.0').	vertical walls stable	22	53	25		
	1	3										
		4		SP	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse gravel; stage II caliche.						
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6555' (1998m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-28

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LOGS OF TEST PITS LV-P-27 AND LV-P-28
LAKE VALLEY, NEVADA

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FIGURE II-7-28

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SIEVE ANALYSIS SA	SIEVE ANALYSIS FI	LL	PI
	0	0	▨	CL	stiff	SANDY CLAY, brown, slightly moist, slightly plastic, calcareous; some fine to medium subangular to subrounded sand.	vertical walls stable	0	30	70	30	10
		4	▨	SC	medium dense	CLAYEY SAND, brown, fine to coarse, poorly graded, slightly moist, subangular to subrounded, calcareous; some slightly plastic clay; trace fine gravel.		8	55	37	27	10
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6110' (1862m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-29

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SIEVE ANALYSIS SA	SIEVE ANALYSIS FI	LL	PI
	0	0	▨	CH	firm	CLAY, green-gray, moist, highly plastic, calcareous; trace fine sand.	vertical walls stable	0	6	94	67	42
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 5915' (1803m)
SURFICIAL GEOLOGIC UNIT: A4o

LOG OF TEST PIT LV-P-30

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LOGS OF TEST PITS LV-P-29 AND LV-P-30
LAKE VALLEY, NEVADA

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FIGURE II-7-29

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0 1 2 3	░	SM	dense	SILTY SAND, dark brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; trace fine gravel.	vertical walls stable	5	72	23		
	1	4 5	○	GW	medium dense	SANDY GRAVEL, dark brown, fine to coarse, well graded, dry, subangular to subrounded, calcareous; some fine to coarse sand; trace cobbles to 6" size.	vertical walls sloughing	70	29	1		
						TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6000' (1829m)
SURFICIAL GEOLOGIC UNIT: A5y

LOG OF TEST PIT LV-P-31

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0 1 2 3	▨	SC	dense	*CLAYEY SAND, light brown,* fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some slightly plastic clay.	vertical walls stable	4	56	40	26	8
	1	4 5	░	SM	very dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; little fine gravel; stage IV caliche (3.0' - 4.0').						
						TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6080' (1853m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-32

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LOGS OF TEST PITS LV-P-31 AND LV-P-32
LAKE VALLEY, NEVADA

31 JUL 81

FIGURE II-7-30

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0 1	0 1 2 3 4 5		SM	dense	SILTY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some slightly plastic silt; little fine gravel; stage III caliche (0.5' - 5.0').	vertical walls stable	16	55	29		
						TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6525' (1989m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-33

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0 1	0 1 2 3 4 5		CL	firm	CLAY, green-gray, moist, medium plastic, calcareous.	vertical walls stable					
						TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 5920' (1804m)
SURFICIAL GEOLOGIC UNIT: A4o

LOG OF TEST PIT LV-P-34

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LOGS OF TEST PITS LV-P-33 AND LV-P-34
LAKE VALLEY, NEVADA

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FIGURE II-7-31

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0	▨			SANDY CLAY, brown, slightly moist to moist, medium plastic, calcareous; some fine to medium sand; little fine subangular gravel.		16	30	54	37	18
		1	▨									
		2	▨	CL	stiff		vertical walls stable					
	1	3	▨									
		4	▨									
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6220' (1896m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-35

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0	●			SANDY GRAVEL, brown, fine to poorly graded, dry, subangular, calcareous; little fine subangular to subrounded sand; trace nonplastic silt; little cobbles to 10" size.		82	13	5		
		1	●									
		2	●	GP-GM	medium dense		vertical walls stable					
	1	3	●									
		4	●									
		5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6250' (1905m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-36

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LOGS OF TEST PITS LV-P-35 AND LV-P-36
LAKE VALLEY, NEVADA

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FIGURE II-7-32

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0		SM	dense	GRAVELLY SAND, light brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some fine to coarse gravel; some nonplastic silt; stage III caliche (1.0' - 2.0'); stage IV caliche (2.0' - 3.0').	vertical walls stable					
		1			very dense							
	1	3				TOTAL DEPTH 3.0' (0.9m)	cementation at 3.0' exceeded capacity of Case 580C backhoe					

SURFACE ELEVATION: 6520' (1987m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-37

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0		SM	medium dense	SILTY SAND, brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; trace fine gravel.	vertical walls stable	7	69	24		
	1					SILTY SAND, gray, fine, poorly graded, moist, subrounded, calcareous; some nonplastic silt.		0	60	40		
		5				TOTAL DEPTH 5.0' (1.5)						

SURFACE ELEVATION: 5960' (1817m)
SURFICIAL GEOLOGIC UNIT: A4o

LOG OF TEST PIT LV-P-38

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LOGS OF TEST PITS LV-P-37 AND LV-P-38
LAKE VALLEY, NEVADA

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FIGURE II-7-33

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0		CH	firm	CLAY, green-gray, moist, highly plastic, calcareous.	vertical walls stable	0	1	99	56	34
	1	5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 5920' (1804m)
SURFICIAL GEOLOGIC UNIT: A4o

LOG OF TEST PIT LV-P-39

BULK SAMPLE	DEPTH METERS	DEPTH FEET	LITHOLOGY	USCS	CONSISTENCY	SOIL DESCRIPTION	REMARKS	SIEVE ANALYSIS GR	SA	FI	LL	PI
	0	0		SM	medium dense	SILTY SAND, brown, fine to coarse, poorly graded, dry, subangular to subrounded, calcareous; some nonplastic silt; some fine to coarse gravel; occasional cobbles to 10" size.	vertical walls stable	26	43	31		
	1	5				TOTAL DEPTH 5.0' (1.5m)						

SURFACE ELEVATION: 6680' (2036m)
SURFICIAL GEOLOGIC UNIT: A5i

LOG OF TEST PIT LV-P-40

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LOGS OF TEST PITS LV-P-39 AND LV-P-40
LAKE VALLEY, NEVADA

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FIGURE II-7-34

8.0 SURFICIAL SOIL SAMPLE LOGS

Explanation: Finalized logs of the surficial soil samples are presented in this section. Explanations of the column headings on the logs are as follows:

A. Designations - Surficial samples are identified as follows:

LV-CS-1
LV - abbreviation for the valley (e.g., LV - Lake)
CS - abbreviation for surficial sample
1 - number of activity

B. Ground Surface Elevation - Indicated elevations on the logs are estimated from topographic maps of the study area within an accuracy of half the contour interval.

C. Surficial Geologic Unit - Indicates the surficial geologic unit in which the activity is located.

D. Depth - Indicates depth interval for which soil description is given.

E. USCS - Unified Soil Classification Symbol; see Table II-6-1 of Section 6.0, "Boring Logs", for details of USCS.

F. Soil Description - Soil is described based on field visual descriptions and/or laboratory test results. See Section 6.0, "Boring Logs", for procedures of soil description.

G. Sieve Analysis, LL and PI - These are from results of laboratory tests. See Section 6.0, "Boring Logs", for explanation.

ACTIVITY NUMBER	GROUND SURFACE ELEVATION, FEET (METERS)	SURFICIAL GEOLOGIC UNIT	DEPTH, FEET (METERS)	USCS	SOIL DESCRIPTION	SIEVE ANALYSIS				
						GR	SA	FI	LL	PI
LV-CS-2	6180 (1884)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	GRAVELLY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine to coarse gravel; little nonplastic silt; trace cobbles to 6" size; stage II caliche (1.0' - 3.0').					
LV-CS-4	6010 (1832)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	GRAVELLY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine gravel; little nonplastic silt; trace cobbles to 10" size; stage II caliche (1.0' - 3.0').	32	53	15		
LV-CS-6	5820 (1774)	A5i	0.0 - 3.0 (0.0 - 0.9)	SP-SM	GRAVELLY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; little fine gravel; trace nonplastic silt; stage II caliche (1.0' - 3.0').	19	69	12		
LV-CS-8	5640 (1719)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some nonplastic silt; trace fine gravel.	5	72	23		
LV-CS-10	5535 (1687)	A1/A5y	0.0 - 3.0 (0.0 - 0.9)	ML	SANDY SILT, light brown, slightly plastic, calcareous; some fine to coarse subangular to subrounded sand.					
LV-CS-11	5800 (1768)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some slightly plastic silt; some fine to coarse gravel; stage II caliche (1.0' - 3.0').	21	36	43		
LV-CS-13	6300 (1920)	A5i	0.0 - 2.0 (0.0 - 0.6)	GM	SANDY GRAVEL, light gray to brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine to coarse sand; little nonplastic silt; trace cobbles to 6" size; stage III caliche (0.5' - 1.0'); stage IV (1.0' - 2.0').					
LV-CS-15	6040 (1841)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, light gray to brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some slightly plastic silt; little fine to coarse gravel; trace cobbles to 6" size; stage III caliche (1.0' - 3.0').					
LV-CS-18	6140 (1871)	A5i	0.0 - 3.0 (0.0 - 0.9)	ML	SANDY SILT, brown, slightly plastic, calcareous; some fine to coarse subangular to subrounded sand; trace fine gravel.					
LV-CS-20	5750 (1753)	A5i	0.0 - 3.0 (0.0 - 0.9)	CL	SANDY CLAY, light brown, slightly plastic, calcareous; some fine to coarse subangular to subrounded sand; trace fine gravel.	6	41	53	28	8

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LOGS OF SURFICIAL SOIL SAMPLES
LAKE VALLEY, NEVADA
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FIGURE II-8-1

ACTIVITY NUMBER	GROUND SURFACE ELEVATION, FEET (METERS)	SURFICIAL GEOLOGIC UNIT	DEPTH, FEET (METERS)	USCS	SOIL DESCRIPTION	SIEVE ANALYSIS				
						GR	SA	FI	LL	PI
LV-CS-22	5740 (1750)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some nonplastic silt; trace fine gravel; stage II caliche (1.0' - 2.0').	12	61	27		
LV-CS-25	5900 (1798)	A5i	0.0 - 2.0 (0.0 - 0.6)	SM	SILTY SAND, brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some slightly plastic silt; some fine to coarse gravel; stage III caliche (1.0' - 2.0'); stage IV caliche (2.0').					
LV-CS-26	6400 (1951)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	GRAVELLY SAND, brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine to coarse gravel; little nonplastic silt; trace cobbles to 6" size.					
LV-CS-28	6180 (1884)	A5i	0.0 - 2.0 (0.0 - 0.6)	SM	SILTY SAND, light gray to brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some nonplastic silt; some fine to coarse gravel; stage III caliche (1.5' - 2.0').	28	39	33		
LV-CS-30	6029 (1838)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	GRAVELLY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine to coarse gravel; little nonplastic silt; trace cobbles to 6" size; stage III caliche (0.5' - 1.0'); stage II caliche (1.0' - 3.0').					
LV-CS-33	5920 (1804)	A5i	0.0 - 2.0 (0.0 - 0.6)	SM	GRAVELLY SAND, light gray to brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine gravel; little nonplastic silt; stage IV caliche (1.0' - 2.0').					
LV-CS-36	5820 (1774)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some nonplastic silt.					
LV-CS-38	6010 (1832)	A5i	0.0 - 2.0 (0.0 - 0.6)	SM	GRAVELLY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine gravel; little nonplastic silt; stage IV caliche (1.0' - 2.0').					
LV-CS-40	5880 (1792)	A1	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, brown, fine to medium, poorly graded, subangular to subrounded, calcareous; some nonplastic silt.					
LV-CS-41	6150 (1875)	A5i	0.0 - 3.0 (0.0 - 0.9)	SC	CLAYEY SAND, brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some medium plastic clay; stage II caliche (2.0' - 3.0').					

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FIGURE II-8-1

ACTIVITY NUMBER	GROUND SURFACE ELEVATION, FEET (METERS)	SURFICIAL GEOLOGIC UNIT	DEPTH, FEET (METERS)	USCS	SOIL DESCRIPTION	SIEVE ANALYSIS				
						GR	SA	FI	LL	PI
LV-CS-43	6000 (1829)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some nonplastic silt; stage II caliche (1.5' - 3.0').	4	74	22		
LV-CS-45	6540 (1993)	A5i	0.0 - 2.5 (0.0 - 0.8)	SM	GRAVELLY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine to coarse gravel; little nonplastic silt; trace cobbles to 6" size; stage IV caliche (1.0' - 2.5').					
LV-CS-47	6280 (1914)	A5i	0.0 - 2.5 (0.0 - 0.8)	SM	GRAVELLY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine gravel; little nonplastic silt; stage IV caliche (1.0' - 2.5').					
LV-CS-49	6050 (1844)	A5i	0.0 - 1.5 (0.0 - 0.5)	SC	CLAYEY SAND, brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some slightly plastic clay; some fine to coarse gravel.					
			1.5 - 2.5 (0.5 - 0.8)	SM	GRAVELLY SAND, light gray, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine subangular gravel; some nonplastic silt; stage IV caliche (1.5' - 2.5').					
LV-CS-50	6195 (1888)	A5i/A5y	0.0 - 3.0 (0.0 - 0.9)	CL	SANDY CLAY, brown, slightly plastic, calcareous; some fine to coarse subangular to subrounded sand.					
LV-CS-52	6130 (1868)	A5i/A5y	0.0 - 3.0 (0.0 - 0.9)	SC	CLAYEY SAND, light brown to brown, poorly graded, subangular to subrounded, calcareous; some medium plastic clay; little fine to coarse gravel; trace cobbles to 12" size; stage III caliche (2.0' - 3.0').	20	50	30		
LV-CS-54	5970 (1820)	A5y	0.0 - 2.0 (0.0 - 0.6)	CL	CLAY, dark brown, medium plastic, calcareous; trace sand.					
LV-CS-56	6020 (1835)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some nonplastic silt; trace fine gravel.					
LV-CS-58	6680 (2036)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some nonplastic silt; trace fine gravel; stage II caliche (0.5' - 3.0').					
LV-CS-60	6405 (1952)	A5i	0.0 - 3.0 (0.0 - 0.9)	SC	CLAYEY SAND, light brown to brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; little medium plastic clay; trace fine gravel; stage III caliche (1.0' - 3.0').	9	72	19	49	23

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FIGURE II-8-1

ACTIVITY NUMBER	GROUND SURFACE ELEVATION, FEET (METERS)	SURFICIAL GEOLOGIC UNIT	DEPTH, FEET (METERS)	USCS	SOIL DESCRIPTION	SIEVE ANALYSIS				
						GR	SA	FI	LL	PI
LV-CS-62	6280 (1914)	A5i	0.0 - 3.0 (0.0 - 0.9)	SC	CLAYEY SAND, light gray to brown, fine to coarse, poorly graded, calcareous; some medium plastic clay; stage III caliche (2.0' - 3.0').					
LV-CS-64	6130 (1868)	A5i	0.0 - 3.0 (0.0 - 0.9)	SC	CLAYEY SAND, brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some medium plastic clay; stage I caliche (2.5' - 3.0').					
LV-CS-66	6385 (1946)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, light gray to brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some nonplastic silt; stage III caliche (1.0' - 3.0').					
LV-CS-68	6137 (1871)	A5i	0.0 - 2.0 (0.0 - 0.6)	SM	GRAVELLY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine to coarse gravel; little nonplastic silt; stage III caliche (0.5' - 1.0'); stage IV caliche (1.0' - 2.0').					
LV-CS-70	6030 (1838)	A5i	0.0 - 2.5 (0.0 - 0.8)	CL	CLAY, dark brown, medium plastic, calcareous.					
			2.5 - 3.0 (0.8 - 0.9)	CL	SANDY CLAY, light brown, slightly plastic, calcareous; some fine to medium subangular to subrounded sand.					
LV-CS-72	5970 (1820)	A4o	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some nonplastic silt; some fine gravel.	21	52	27		
LV-CS-74	5930 (1807)	A4o	0.0 - 3.0 (0.0 - 0.9)	CL	SILTY CLAY, green-gray, slightly plastic, calcareous; trace fine subrounded sand.					
LV-CS-76	5914 (1803)	A4o	0.0 - 3.0 (0.0 - 0.9)	CL	CLAY, green-gray, medium plastic, calcareous.					
LV-CS-79	6100 (1859)	A5i	0.0 - 3.0 (0.0 - 0.9)	CL-ML	SANDY CLAY, brown, slightly plastic, calcareous; some fine subangular to subrounded sand.			73	27	6
LV-CS-81	5990 (1826)	A5i	0.0 - 1.5 (0.0 - 0.5)	SC	CLAYEY SAND, brown, fine to medium, poorly graded, subangular to subrounded, calcareous; some slightly plastic clay.	2	64	34	29	12
			1.5 - 3.0 (0.5 - 0.9)	SM	SILTY SAND, light brown, fine to medium, poorly graded, subangular to subrounded, calcareous; some nonplastic silt; stage III caliche (1.5' - 3.0').					

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FIGURE II-6-1

ACTIVITY NUMBER	GROUND SURFACE ELEVATION, FEET (METERS)	SURFICIAL GEOLOGIC UNIT	DEPTH, FEET (METERS)	USCS	SOIL DESCRIPTION	SIEVE ANALYSIS				
						GR	SA	FI	LL	PI
LV-CS-84	5960 (1817)	A5i	0.0 - 3.0 (0.0 - 0.9)	GW-GM	SANDY GRAVEL, light brown, fine, well graded, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt.	45	44	11		
LV-CS-86	5915 (1803)	A4o	0.0 - 0.3 (0.0 - 0.9)	CL	CLAY, green-gray, medium plastic, calcareous.					
LV-CS-88	6010 (1832)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, brown, fine to medium, poorly graded, subangular to subrounded, calcareous; some nonplastic silt.	1	64	35		
LV-CS-90	6200 (1890)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, light brown, fine to medium, poorly graded, subangular to subrounded, calcareous; some nonplastic silt; stage III caliche (1.0' - 3.0').					
LV-CS-92	6000 (1829)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	GRAVELLY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine gravel; little nonplastic silt; occasional cobbles to 6 " size, stage III caliche (1.0' - 3.0').	33	48	19		
LV-CS-94	5920 (1804)	A4o/A3	0.0 - 3.0 (0.0 - 0.9)	CL	SANDY CLAY, green-gray, slightly plastic, calcareous; some fine to medium subrounded sand.					
LV-CS-96	5985 (1824)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	SILTY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some nonplastic silt; trace fine gravel.					
LV-CS-100	6480 (1975)	A5i	0.0 - 3.0 (0.0 - 0.9)	GP-GM	SANDY GRAVEL, light gray, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine to coarse sand; trace nonplastic silt; stage III caliche (0.5' - 3.0').					
LV-CS-102	6175 (1882)	A5i	0.0 - 1.0 (0.0 - 0.3)	SM	GRAVELLY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine to coarse gravel; some nonplastic silt; trace cobbles to 6" size; stage III caliche (0.5' - 1.0'); stage IV caliche (1.0').					
LV-CS-103	6380 (1945)	A5i	0.0 - 3.0 (0.0 - 0.9)	GM	SANDY GRAVEL, brown, fine to coarse, poorly graded, subangular; some fine to coarse sand; little nonplastic silt; trace cobbles to 10" size.	63	21	16		
LV-CS-104	6320 (1926)	A5i	0.0 - 3.0 (0.0 - 0.9)	SM	GRAVELLY SAND, light brown, fine to coarse, poorly graded, subangular to subrounded, calcareous; some fine to coarse gravel; little nonplastic silt; trace cobbles to 10" size; stage I caliche (1.0' - 3.0').					

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FIGURE II-8-1

9.0 LABORATORY TEST RESULTS

Explanation: Table II-9-1 contains a summary of laboratory test results. This table contains results of sieve analysis; plasticity data; in-situ dry unit weight, moisture content, degree of saturation, and void ratio for drive and Pitcher samples; results of compaction tests; and specific gravity of solids. Other tests such as triaxial compression, unconfined compression, direct shear, consolidation, chemical, and California Bearing Ratio (CBR) are indicated on the table. Tables II-9-2 through II-9-6 and Figures II-9-1 and II-9-3 present results of triaxial compression, unconfined compression, direct shear, consolidation, chemical, and CBR tests.

All tests were performed in general accordance with the American Society for Testing and Materials (ASTM) procedures. The following list presents the ASTM designations for the tests performed during the investigation.

Type of Test	ASTM Designations
Particle Size Analysis	D 422-63
Liquid Limit	D 423-66
Plastic Limit	D 424-59
Unit Weight	D 2937-71
Moisture Content	D 2216-71
Compaction	D 1557-70
Specific Gravity of Solids	D 854-58
Triaxial	D 2850-70
Unconfined Compression	D 2166-66
Direct Shear	D 3080-72
Consolidation	D 2435-70
Test for Alkalinity (pH)	D 1067-70
Water Soluble Sodium	D 1428-64
Water Soluble Chloride	D 512-67
Water Soluble Sulphate	D 516-68
Water Soluble Calcium	D 511-72
Calcium Carbonate	D 1126-67
California Bearing Ratio (CBR)	D 1883-73

Explanation for the tables and figures presented in this section are as follows:

A. Activity Number - Boring, trench, test pit, or surficial sample designation.

B. Sample Number - Prefix indicates the type of sample; explanation is at the bottom of the table.

C. Sample Interval - This is the depth range measured from ground surface over which the sample was obtained.

D. Percent Finer by Weight - Presents the results of laboratory particle size analysis (ASTM D 422-63) performed on representative soil samples at the depth indicated. The numbers represent the percent (by dry weight) of the total sample weight passing through each sieve size indicated.

E. Atterberg Limits (ASTM D 423-66 and D 424-59)

LL - Liquid Limit, the water content (as percent of soil dry weight) corresponding to the arbitrary limit between the liquid and plastic states of consistency of a soil (ASTM D 423-66).

PL - Plastic Limit, the water content corresponding to an arbitrary limit between the plastic and the semisolid state of consistency of a soil (ASTM D 424-59).

PI - Plasticity Index, numerical difference between the liquid limit (LL) and the plastic limit (PL) indicating the range of moisture content within which a soil-water mixture is plastic.

NP - Nonplastic.

F. USCS - Unified Soil Classification Symbols are given here; see Table II-6-1 in Section 6.0, "Boring Logs", for complete details of USCS system.

G. In Situ - Presents results of tests on drive and Pitcher samples.

Dry Unit Weight - indicates dry unit weight of soil determined as per ASTM D 2937-71.

Moisture Content - weight of water reported in percent of dry weight of soil sample (ASTM D 2216-71).

Saturation - the degree of saturation in a soil sample is defined as the ratio (in percent) of the volume of water to the volume of all voids in the soil.

Void Ratio - the numerical ratio of the volume of voids to the volume of solids in a soil specimen.

H. Compacted - Indicates results of laboratory maximum dry density and optimum moisture content test as per ASTM D 1557-70.

I. Specific Gravity of Solids (ASTM D 854-58) - Indicates the ratio of 1) the weight in air of a given volume of soil solids at a stated temperature, to 2) the weight in air of an equal volume of distilled water at a stated temperature.

J. Triaxial - The triaxial compression tests were performed in accordance with the procedures of ASTM D 2850-70. The following explanations and definitions apply.

Triaxial Compression Test - a cylindrical specimen of soil is surrounded by a fluid in a pressure chamber and subjected to an isotropic pressure. An additional compressive load is then applied, directed along the axis of the specimen called the axial load.

Consolidated-Drained (CD) Test - a triaxial compression test in which the soil was first consolidated under an all-around confining stress (test chamber pressure) and was then compressed (and hence sheared) by increasing the vertical stress. "Drained" indicates that excess pore water pressure generated by strains are permitted to dissipate by the free movement of pore water during consolidation and compression.

Consolidated-Undrained (CU) Test - a triaxial compression test in which essentially complete consolidation under the confining (chamber) pressure is followed by a shear test at constant water content.

Confining Pressure (σ_3) - the isotropic chamber pressure applied to the soil specimen during consolidation and compression.

Maximum Deviator Stress (σ_1-σ_3) - the difference between the major and minor principal stresses in the specimen at failure. The major principal stress on the specimen is equal to the unit axial load plus the chamber pressure, and the minor principal stress on the specimen is equal to the chamber pressure.

Strain Rate - axial strain, ε, at a given stress level is defined as the ratio of the change in length (ΔL) of the specimen to the original length of the specimen (L_o). The rate of strain was controlled during the test so that this ratio increased at equal increments for each minute of testing.

Back Pressure - pressure in excess of atmospheric applied to the pore water of a soil sample. Back pressure is usually applied to 1) increase saturation of the sample, or 2) simulate the actual in-situ pressure regime.

K. Unconfined Compression - Test procedures were as described in ASTM D 2166-66. Unconfined compressive strength is defined as the load per unit area at which an unconfined prismatic or cylindrical specimen of soil will fail in a simple compression test. In these methods, unconfined compressive strength is taken as the maximum load attained per unit area or the load per unit area at 20 percent axial strain, whichever occurred first during the performance of a test.

L. Direct Shear - The procedures of ASTM D 3080-72 were followed for direct shear testing. In this test, soil under an applied normal load is stressed to failure by moving one section of the soil container (shear box) relative to the other section. Normal stress is the value of load per unit area acting perpendicular to the plane of shearing. Maximum shear strength is defined as the maximum resistance (ksf) of a soil to shearing (tangential) stresses.

M. Consolidation (ASTM D 2435-70) - A consolidation test is a test in which a cylindrical soil specimen is laterally confined in a ring and compressed between porous plates. The term "consolidation", as used here, indicates the gradual reduction in volume of the soil mass resulting from an increase in compressive stress (axial load per unit area).

N. Chemical - The chemical tests performed on soil samples included: pH; water soluble sodium, chloride, sulphate, calcium; and calcium carbonate content. pH is an index of the acidity or alkalinity of a soil in terms of the logarithm of the reciprocal of the hydrogen ion concentration. ASTM test procedure designations for these chemical tests are included in the list on the first page of these Explanations.

O. CBR - California Bearing Ratio (CBR) is the ratio (in percent) of the resistance to penetration developed by a subgrade soil to that developed by a standard crushed-rock base material. The procedures for conducting a CBR test were as outlined in ASTM D 1883-73. The materials tested for CBR were also analyzed for particle-size distribution (ASTM D 422-63) and compaction characteristics (ASTM D 1557-70). The term "percentage of maximum density" indicates the ratio (as a percentage) of the compacted sample dry unit weight to maximum dry density obtained in the laboratory from ASTM D 1557-70, "Moisture-Density Relations of Soils Using 10-pound (4.5-kg) Hammer and 18-inch (457-mm) Drop."

ACTIVITY NUMBER	SAMPLE NUMBER (a)	SAMPLE INTERVAL		PERCENT FINER BY WEIGHT										
				STANDARD SIEVE OPENING							U S STANDARD SIEVE			
				BLDRS.	COBBLES		GRAVEL				SAND			
		FEET	METERS	24"	12"	6"	3"	1½"	3/4"	3/8"	4	10	40	10
LV-B-1	D-2	4.3 - 5.0	1.31 - 1.52						100	97	93	89	68	16
	D-3	6.1 - 7.3	1.86 - 2.23						100	97	92	86	58	24
	D-4	10.0 - 10.7	3.05 - 3.26											
	D-6	20.1 - 20.8	6.13 - 6.34											
	D-7	24.0 - 24.7	7.32 - 7.53						100	91	79	71	56	31
	D-8	30.0 - 30.7	9.14 - 9.36											
	D-9	40.0 - 40.4	12.19 - 12.31											
	D-10	50.0 - 50.7	15.24 - 15.45											
	D-11	60.2 - 60.9	18.35 - 18.56						100	99	96	89	78	63
	D-13	80.0 - 80.6	24.38 - 24.57						100	96	89	78	43	16
	D-14	90.2 - 90.9	27.49 - 27.71											
	D-15	100.0 - 100.5	30.48 - 30.63					100	85	80	72	59	27	13
	D-16	110.2 - 110.9	33.59 - 33.80						100	99	90	78	56	37
	D-17	120.2 - 120.9	36.64 - 36.85											
	D-18	140.0 - 140.5	42.67 - 42.82						100	86	77	68	53	35
	D-19	160.0 - 160.7	48.77 - 48.98											
	D-20	180.0 - 180.7	54.86 - 55.08											
	D-21	202.0 - 202.4	61.57 - 61.69											
LV-B-2	D-1	0.6 - 1.3	0.18 - 0.40											
	D-2	3.2 - 3.9	0.98 - 1.19							100	97	90	72	5
	P-3	6.1 - 7.1	1.86 - 2.16											
	b-4	10.0 - 11.0	3.05 - 3.35						100	98	92	84	68	5
	D-5	15.5 - 16.2	4.72 - 4.94								100	99	90	7
	P-6	20.1 - 20.6	6.13 - 6.28								100	97	70	4
	D-8	30.0 - 30.5	9.14 - 9.30											
	P-9	40.0 - 40.8	12.19 - 12.44								100	98	84	6
	P-10	50.0 - 50.7	15.24 - 15.45											
	P-11	60.0 - 60.8	18.29 - 18.53											
	P-12	70.0 - 70.6	21.34 - 21.52									100	96	9
	P-12	71.2 - 71.9	21.70 - 21.92											
	P-13	80.0 - 80.8	24.38 - 24.63											
	P-14	90.0 - 90.8	27.43 - 27.68											
	P-14	90.8 - 91.6	27.68 - 27.92							100	95	89	78	6
	P-14	91.6 - 92.5	27.92 - 28.19											
	P-14	91.6 - 92.5	27.92 - 28.19											
	P-15	101.2 - 101.6	30.85 - 30.97											
	P-16	111.3 - 112.0	33.92 - 34.14											
	P-17	120.8 - 121.5	36.82 - 37.03											
	P-18	140.8 - 141.6	42.92 - 43.16									100	98	9
	P-19	160.8 - 161.4	49.01 - 49.19							100	99	97	69	3
	D-20	180.2 - 180.9	54.92 - 55.14											
	D-21	199.2 - 199.9	60.72 - 60.93											

NOTES:

(a) Sample types

SS - Standard split spoon

P - Pitcher

D - Fugro Drive

B,b - Bulk

(b) NP - Not Plastic

(c) USCS - Unified Soil Classification System

(d) * Indicates that test has been performed and results are included in this report

CENT FINER BY WEIGHT									ATTERBERG LIMITS (b)			USCS (c)	IN-SITU					COMPACTED		
		U S STANDARD SIEVE NO.					PARTICLE SIZE (mm)						DRY UNIT WEIGHT		MOISTURE CONTENT (%)	SATURATION (%)	VOID RATIO	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)
		SAND				SILT OR CLAY														
/4"	3/8"	4	10	40	100	200	.005	.001	LL	PL	PI		(pcf)	(kg/m³)				(pcf)	(kg/m³)	
0	97	93	89	68	16	7						SP-SM	103.1	1652	8.3	35.3	0.63			
0	97	92	86	58	24	10						SW-SM	113.2	1813	8.1	44.9	0.49			
												SP-SM	116.4	1862	11.7	70.6	0.45			
												SP-SM	106.2	1701	11.2	51.7	0.59			
0	91	79	71	56	31	17						SM	109.1	1748	9.6	47.7	0.54			
												SP-SM	102.7	1645	11.1	46.9	0.64			
												SP-SM	113.2	1813	12.9	71.1	0.49			
												SP-SM	100.7	1613	14.9	59.9	0.67			
00	99	96	89	78	63	50						SM	104.8	1679	13.2	58.6	0.61			
00	96	89	78	43	16	11						SW-SM	106.1	1700	12.3	56.6	0.59			
												SP-SM	102.5	1642	14.4	60.5	0.64			
5	80	72	59	27	13	10						SW-SM	114.9	1841	10.4	60.5	0.47			
00	99	90	78	56	37	27						SM	100.3	1607	15.2	60.3	0.68			
												SM	101.6	1628	16.0	65.6	0.66			
00	86	77	68	53	35	25						SM	90.6	1451	16.0	50.4	0.86			
												SM	98.1	1572	19.3	72.8	0.72			
												SP-SM	111.5	1786	12.4	65.6	0.51			
												SP-SM	102.7	1645	13.2	55.8	0.64			
												SM	93.3	1495	7.1	23.9	0.81			
	100	97	90	72	55	47						SM	94.7	1517	12.3	42.7	0.78			
												SM	78.3	1254	25.2	59.2	1.15			
00	98	92	84	68	55	49						SM								
		100	99	90	78	70						ML	67.6	1083	21.4	38.8	1.49			
		100	97	70	45	37			70	58	12	SM	71.1	1139	29.0	57.2	1.37			
												ML	80.0	1282	20.9	51.0	1.11			
		100	98	84	69	59						ML	83.9.	1344	24.8	66.4	1.01			
												ML	65.3	1046	41.6	71.2	1.58			
												SM	74.9	1200	37.7	81.5	1.25			
			100	96	93	90			64	47	17	MH								
												MH	77.3	1238	28.6	65.5	1.18			
												ML	80.7	1293	34.9	86.5	1.09			
												ML	72.0	1153	38.6	81.9	1.19			
	100	95	89	78	69	62					NP	ML	75.8	1214	35.9	83.9	1.08			
												ML	71.8	1150	36.6	77.2	1.20			
												ML	72.9	1168	40.0	86.8	1.67			
												ML	65.8	1054	49.2	85.1	1.56			
												SM	78.2	1253	35.0	81.9	1.16			
												ML	68.3	1094	44.2	81.5	1.47			
			100	98	84	68					NP	ML	82.4	1320	33.9	87.8	1.04			
	100	99	97	69	33	29					NP	SM	76.9	1232	43.0	97.5	1.19			
												SM	87.7	1405	32.8	96.2	0.92			
												SM	78.5	1258	41.9	98.9	1.15			

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ERBERG TS (b)		USCS (c)	IN-SITU					COMPACTED			SPECIFIC GRAVITY OF SOLIDS	TRIAXIAL (d)	UNCONFINED COMPRESSION	DIRECT SHEAR	CONSOLIDATION	CHEMICAL	CBR
			DRY UNIT WEIGHT		MOISTURE CONTENT (%)	SATURATION (%)	VOID RATIO	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)							
PL	PI		(pcf)	(kg/m^3)				(pcf)	(kg/m^3)								
		SP-SM	103.1	1652	8.3	35.3	0.63							•			
		SW-SM	113.2	1813	8.1	44.9	0.49										
		SP-SM	116.4	1862	11.7	70.6	0.45										
		SP-SM	106.2	1701	11.2	51.7	0.59										
		SM	109.1	1748	9.6	47.7	0.54										
		SP-SM	102.7	1645	11.1	46.9	0.64										
		SP-SM	113.2	1813	12.9	71.1	0.49										
		SP-SM	100.7	1613	14.9	59.9	0.67										
		SM	104.8	1679	13.2	58.6	0.61										
		SW-SM	106.1	1700	12.3	56.6	0.59							•			
		SP-SM	102.5	1642	14.4	60.5	0.64										
		SW-SM	114.9	1841	10.4	60.5	0.47										
		SM	100.3	1607	15.2	60.3	0.68									•	
		SM	101.6	1628	16.0	65.6	0.66										
		SM	90.6	1451	16.0	50.4	0.86										
		SM	98.1	1572	19.3	72.8	0.72										
		SP-SM	111.5	1786	12.4	65.6	0.51										
		SP-SM	102.7	1645	13.2	55.8	0.64										
		SM	93.3	1495	7.1	23.9	0.81										
		SM	94.7	1517	12.3	42.7	0.78										
		SM	78.3	1254	25.2	59.2	1.15										
		SM															
		ML	67.6	1083	21.4	38.8	1.49							•			
58	12	SM	71.1	1139	29.0	57.2	1.37								•		
		ML	80.0	1282	20.9	51.0	1.11										
		ML	83.9	1344	24.8	66.4	1.01									•	
		ML	65.3	1046	41.6	71.2	1.58										
		SM	74.9	1200	37.7	81.5	1.25										
47	17	MH															
		MH	77.3	1238	28.6	65.5	1.18						•				
		ML	80.7	1293	34.9	86.5	1.09										
		ML	72.0	1153	38.6	81.9	1.19					•					
	NP	ML	75.8	1214	35.9	83.9	1.08				2.53	•					
		ML	71.8	1150	36.6	77.2	1.20					•					
		ML	72.9	1168	40.0	86.8	1.67										
		ML	65.8	1054	49.2	85.1	1.56										
		SM	78.2	1253	35.0	81.9	1.16										
		ML	68.3	1094	44.2	81.5	1.47										
	NP	ML	82.4	1320	33.9	87.8	1.04										
	NP	SM	76.9	1232	43.0	97.5	1.19										
		SM	87.7	1405	32.8	96.2	0.92										
		SM	78.5	1258	41.9	98.9	1.16										

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DEPARTMENT OF THE AIR FORCE
BMO/AFRCE-MX

SUMMARY OF LABORATORY TEST RESULTS LAKE VALLEY, NEVADA

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TABLE II-9-1

ACTIVITY NUMBER	SAMPLE NUMBER (a)	SAMPLE INTERVAL		PERCENT FINER BY WEIGHT										
				STANDARD SIEVE OPENING							U S STANDARD SIEVE			
				BLDRS.	COBBLES		GRAVEL				SAND			
		FEET	METERS	24"	12"	6"	3"	1½"	3/4"	3/8"	4	10	40	100
LV-B-3	P-1	0.8 - 1.5	0.24 - 0.46							100	99	96	79	67
	D-2	3.7 - 4.4	1.13 - 1.34								100	98	85	58
	D-4	10.0 - 10.5	3.05 - 3.20					100	96	84	78	58	16	7
	D-5	15.7 - 16.4	4.79 - 5.00							100	98	86	33	13
	D-6	20.7 - 21.4	6.31 - 6.52											
	D-7	25.7 - 26.4	7.83 - 8.05						100	98	97	91	60	33
	D-8	30.2 - 30.9	9.20 - 9.42											
	D-9	40.7 - 41.4	12.41 - 12.62											
	D-12	70.0 - 70.4	21.34 - 21.46						100	97	92	82	42	25
	D-13	80.0 - 80.6	24.38 - 24.57											
	D-14	90.2 - 90.9	27.49 - 27.71					100	86	76	70	58	38	28
	D-15	100.0 - 100.7	30.48 - 30.69											
	D-16	110.0 - 110.7	33.53 - 33.74					100	90	78	69	55	25	15
	D-17	120.0 - 120.3	36.58 - 36.67											
	D-18	140.0 - 140.4	42.67 - 42.79					100	88	70	56	46	27	17
	D-19	159.0 - 159.7	48.46 - 48.68											
LV-B-4	P-1	1.0 - 1.7	0.30 - 0.52						100	99	91	82	63	42
	P-2	3.7 - 4.3	1.13 - 1.31								100	99	92	79
	D-3	6.7 - 7.4	2.04 - 2.26											
	D-4	10.4 - 11.1	3.17 - 3.38							100	97	83	44	25
	D-5	15.7 - 16.4	4.79 - 5.00							100	96	88	52	26
	P-6	20.9 - 21.9	6.37 - 6.68											
	D-7	25.7 - 26.4	7.83 - 8.05											
	D-8	30.7 - 31.4	9.36 - 9.57											
	D-9	40.2 - 40.9	12.25 - 12.47						100	96	86	70	35	16
	D-10	50.0 - 50.4	15.24 - 15.36											
	b-11	60.0 - 60.3	18.29 - 18.38					100	80	69	57	48	30	19
	D-13	80.2 - 80.9	24.44 - 24.66											
	D-14	90.0 - 90.4	27.43 - 27.55						100	99	96	87	48	27
	D-16	110.0 - 110.7	33.53 - 33.74											
	D-17	120.0 - 120.7	36.58 - 36.79					100	96	86	75	63	34	18
	D-18	140.0 - 140.4	42.67 - 42.79											
LV-B-5	P-1	0.1 - 0.8	0.03 - 0.24						100	99	94	88	61	32
	P-2	3.0 - 3.8	0.91 - 1.16								100	96	75	54
	P-5	8.6 - 9.1	2.62 - 2.77						100	98	96	93	74	58
	D-7	20.2 - 20.9	6.16 - 6.37							100	97	89	53	37
	D-8	25.5 - 26.2	7.77 - 7.99					100	90	81	70	61	22	7
	P-9	30.0 - 30.8	9.14 - 9.39											
	D-10	40.2 - 40.9	12.25 - 12.47							100	98	88	56	33
	P-11	50.0 - 50.8	15.24 - 15.48											
	P-11	50.0 - 50.8	15.24 - 15.48							100	97	91	69	49

NOTES:

(a) Sample types

SS – Standard split spoon

P – Pitcher

D – Fugro Drive

B, b – Bulk

(b) NP – Not Plastic

(c) USCS – Unified Soil Classification System

(d) * Indicates that test has been performed and results are included in this report

BY WEIGHT							ATTERBERG LIMITS (b)			USCS (c)	IN-SITU					COMPACTED			SPECIFIC GRAVITY OF SOLIDS
U S STANDARD SIEVE NO.					PARTICLE SIZE (mm)						DRY UNIT WEIGHT		MOISTURE CONTENT (%)	SATURATION (%)	VOID RATIO	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)	
SAND				SILT OR CLAY															
4	10	40	100	200	.005	.001	LL	PL	PI		(pcf)	(kg/m³)				(pcf)	(kg/m³)		
99	96	79	67	58						CL	87.4	1400	22.3	64.8	0.93				
100	98	85	58	42						SM	111.6	1788	12.2	64.8	0.51				
78	58	16	7	5						SW-SM	109.6	1756	12.4	64.6	0.51				2.65
98	86	33	13	8						SW-SM	113.6	1820	9.1	50.8	0.48				
										SM	104.4	1672	4.7	20.8	0.61				
97	91	60	33	24						SM	115.6	1852	9.6	56.9	0.46				
										SM	108.6	1740	8.0	39.4	0.55				
										SM	97.9	1568	16.7	62.5	0.72				
92	82	42	25	18						SM	118.4	1897	11.2	71.5	0.42				
										SM	115.2	1846	16.3	94.9	0.46				
70	58	38	28	24						SM	118.6	1900	12.5	80.3	0.42				
										SM	115.9	1857	14.4	85.8	0.45				
69	55	25	15	12						SW-SM	127.4	2041	9.5	79.8	0.32				
										SW-SM	126.3	2023	9.3	75.0	0.33				
56	46	27	17	12						SP-SM	120.1	1924	10.4	69.9	0.40				
										SM	85.1	1363	21.3	58.6	0.98				
91	82	63	42	32					NP	SM	91.2	1461	13.5	43.0	0.85				
100	99	92	79	71			33	27	6	ML	84.3	1350	22.9	62.0	1.00				
										SM	107.6	1724	15.9	75.6	0.57				
97	83	44	25	17						SM	114.9	1841	9.0	52.4	0.47				
96	88	52	25	18						SM	108.1	1732	7.1	34.3	0.56				
										SM	110.4	1769	14.2	72.9	0.53				
										SM	120.6	1932	8.1	55.1	0.40				
										SM	113.4	1817	5.3	29.5	0.49				
86	70	35	16	10						SP-SM	116.5	1866	8.5	50.2	0.46				2.73
										SM	114.2	1829	8.0	45.3	0.48				
57	48	30	19	11						SP-SM									
										SM	112.7	1805	11.3	61.6	0.50				
96	87	48	27	16						SM	120.1	1924	10.8	72.5	0.40				
										SM	112.0	1794	13.0	69.6	0.50				
75	63	34	18	12						SW-SM	118.9	1905	12.1	78.4	0.42				
										SM	113.3	1815	15.6	86.4	0.49				
94	88	61	32	22						SM	115.4	1849	3.6	20.9	0.46				
100	96	75	54	44						SM	82.7	1325	18.8	48.9	1.04				
96	93	74	58	51			30	22	8	CL	92.9	1488	29.9	99.3	0.81				
97	89	53	37	32						SM	114.7	1837	9.1	52.4	0.47				
70	61	22	7	5						SP-SM	111.6	1788	7.2	37.9	0.51				
										SM	93.7	1501	19.1	64.5	0.80				
98	88	56	33	23						SM	92.9	1488	21.9	72.8	0.81				
										SM	75.9	1216	35.8	79.2	1.22				
97	91	69	49	42					NP	SM	79.1	1287	29.5	70.5	1.13				

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ATTERBERG LIMITS (b)			USCS (c)	IN-SITU					COMPACTED			SPECIFIC GRAVITY OF SOLIDS	TRIAXIAL (d)	UNCONFINED COMPRESSION	DIRECT SHEAR	CONSOLIDATION	CHEMICAL	CBR
				DRY UNIT WEIGHT		MOISTURE CONTENT (%)	SATURATION (%)	VOID RATIO	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)							
LL	PL	PI		(pcf)	(kg/m^3)				(pcf)	(kg/m^3)								
			CL	87.4	1400	22.3	64.8	0.93										
			SM	111.6	1788	12.2	64.8	0.51										
			SW-SM	109.6	1756	12.4	64.6	0.51				2.65			•			
			SW-SM	113.6	1820	9.1	50.8	0.48									•	
			SM	104.4	1672	4.7	20.8	0.61										
			SM	115.6	1852	9.6	56.9	0.46										
			SM	108.6	1740	8.0	39.4	0.55										
			SM	97.9	1568	16.7	62.5	0.72										
			SM	118.4	1897	11.2	71.5	0.42										
			SM	115.2	1846	16.3	94.9	0.46										
			SM	118.6	1900	12.5	80.3	0.42							•			
			SM	115.9	1857	14.4	85.8	0.45										
			SW-SM	127.4	2041	9.5	79.8	0.32										
			SW-SM	126.3	2023	9.3	75.0	0.33										
			SP-SM	120.1	1924	10.4	69.9	0.40										
			SM	85.1	1363	21.3	58.6	0.98										
		NP	SM	91.2	1461	13.5	43.0	0.85										
33	27	6	ML	84.3	1350	22.9	62.0	1.00										
			SM	107.6	1724	15.9	75.6	0.57										
			SM	114.9	1841	9.0	52.4	0.47							•			
			SM	108.1	1732	7.1	34.3	0.56										
			SM	110.4	1769	14.2	72.9	0.53										
			SM	120.6	1932	8.1	55.1	0.40										
			SM	113.4	1817	5.3	29.5	0.49										
			SP-SM	116.5	1866	8.5	50.2	0.46				2.73			•			
			SM	114.2	1829	8.0	45.3	0.48										
			SP-SM															
			SM	112.7	1805	11.3	61.6	0.50										
			SM	120.1	1924	10.8	72.5	0.40									•	
			SM	112.0	1794	13.0	69.6	0.50										
			SW-SM	118.9	1906	12.1	78.4	0.42										
			SM	113.3	1815	15.6	86.4	0.49										
			SM	115.4	1849	3.6	20.9	0.46										
			SM	82.7	1325	18.8	48.9	1.04										
30	22	8	CL	92.9	1488	29.9	99.3	0.81								•		
			SM	114.7	1837	9.1	52.4	0.47										
			SP-SM	111.6	1788	7.2	37.9	0.51										
			SM	93.7	1501	19.1	64.5	0.80										
			SM	92.9	1488	21.9	72.8	0.81										
			SM	75.9	1216	35.8	79.2	1.22					•					
		NP	SM	79.1	1267	29.5	70.6	1.13										

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MX SITING INVESTIGATION
DEPARTMENT OF THE AIR FORC
BMO/AFRCE-MX

SUMMARY OF LABORATORY
TEST RESULTS
LAKE VALLEY, NEVADA
PAGE 2 OF 7

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TABLE II-6

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ACTIVITY NUMBER	SAMPLE NUMBER (a)	SAMPLE INTERVAL		PERCENT FINER BY WEIGHT								
				STANDARD SIEVE OPENING							U S STANDA	
				BLDRS.	COBBLES		GRAVEL				SAND	
		FEET	METERS	24"	12"	6"	3"	1½"	3/4"	3/8"	4	10
LV-B-5	P-11	50.8 - 51.6	15.48 - 15.73									
	P-11	51.6 - 52.3	15.73 - 15.94									
	P-12	60.0 - 60.8	18.29 - 18.53						100	95	89	84
	D-13	70.2 - 70.9	21.40 - 21.61									
	P-14	80.0 - 80.8	24.38 - 24.63									
	P-15	90.0 - 91.0	27.43 - 27.74									
	D-16	102.7 - 103.4	31.30 - 31.52									100
	D-17	111.7 - 112.4	34.05 - 34.26									
	D-18	120.7 - 121.4	36.79 - 37.00								100	99
	D-20	159.2 - 159.9	48.52 - 48.74									
LV-B-6	P-1	0.1 - 1.0	0.03 - 0.30						100	99	98	96
	D-2	3.7 - 4.4	1.13 - 1.34						100	98	92	79
	D-3	6.0 - 6.6	1.83 - 2.01									
	D-4	10.7 - 11.4	3.26 - 3.47						100	91	78	61
	D-5	15.0 - 15.5	4.57 - 6.31									
	D-6	20.0 - 20.7	6.10 - 6.31						100	98	94	91
	D-7	25.0 - 25.5	7.62 - 7.77				100	86	67	42	36	31
	D-8	30.0 - 30.7	9.14 - 9.36									
	D-9	40.1 - 40.8	12.22 - 12.44							100	99	98
	D-10	50.0 - 50.7	15.24 - 15.45							100	99	96
	D-11	60.0 - 60.7	18.29 - 18.50									
	D-12	70.0 - 70.6	21.34 - 21.52						100	98	89	72
	D-13	80.0 - 80.6	24.38 - 24.57									
	D-14	90.0 - 90.6	27.43 - 27.61							100	95	80
	D-16	110.0 - 110.4	33.53 - 33.65									
	D-17	120.6 - 121.3	36.76 - 36.97									
	D-18	140.0 - 140.7	42.67 - 42.89							100	93	84
	D-19	160.0 - 160.7	48.77 - 48.98									
	D-20	180.0 - 180.4	54.86 - 54.99									
	D-21	199.0 - 199.7	60.66 - 60.87									
LV-B-7	P-1	1.0 - 1.7	0.30 - 0.52									
	P-2	3.1 - 3.8	0.94 - 1.16									
	D-3	6.2 - 6.7	1.89 - 2.04					100	96	76	52	33
	D-4	10.2 - 10.9	3.11 - 3.32									
	D-5	15.2 - 15.9	4.63 - 4.85					100	95	90	85	82
	D-6	20.2 - 20.9	6.16 - 6.37									
	D-7	25.7 - 26.4	7.83 - 8.05								100	99
	D-8	30.7 - 31.4	9.36 - 9.57									100
	P-9	40.0 - 40.6	12.19 - 12.37									
	P-9	40.6 - 41.3	12.37 - 12.59									
	P-9	41.4 - 41.9	12.62 - 12.77									

NOTES:

(a) Sample types
SS - Standard split spoon
P - Pitcher
D - Fugro Drive
B,b - Bulk

(b) NP - Not Plastic

(c) USCS - Unified Soil Classification System

(d) * Indicates that test has been performed and results are included in this report

BY WEIGHT							ATTERBERG LIMITS (b)			USCS (c)	IN-SITU					COMPACTED			SPECIFIC GRAVITY OF SOLIDS
U S STANDARD SIEVE NO.					PARTICLE SIZE (mm)						DRY UNIT WEIGHT		MOISTURE CONTENT (%)	SATURATION (%)	VOID RATIO	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)	
SAND				SILT OR CLAY															
4	10	40	100	200	.005	.001	LL	PL	PI		(pcf)	(kg/m³)				(pcf)	(kg/m³)		
										SM	76.0	1218	36.3	80.5	1.22				
										SM	78.6	1259	28.5	67.4	1.14				
89	84	68	26	9						SP-SM	96.1	1540	18.6	66.6	0.75				
										SM	79.1	1267	41.6	99.3	1.13				
										SM	86.9	1392	27.6	79.6	0.94				
										ML	94.9	1520	23.5	81.7	0.78				
	100	98	95	92	52	17	66	34	32	MH	71.9	1152	47.9	96.3	1.34				
										ML	75.6	1211	41.3	90.8	1.23				
100	99	92	82	77			38	33	5	ML	85.7	1373	33.0	92.3	0.97				
										SP-SM	115.9	1857	12.6	75.1	0.45				
98	96	82	42	24						SM	96.0	1538	4.8	17.1	0.75				
92	79	42	13	9						SW-SM	95.9	1536	8.4	30.1	0.76				
										SP-SM	112.4	1801	9.1	49.4	0.50				
78	61	31	12	7						SP-SM	110.1	1764	5.9	30.0	0.53				
										SP-SM	110.0	1762	14.8	75.1	0.53				
94	91	72	35	18						SM	104.7	1677	11.8	52.2	0.61				
36	31	23	9	6						GP-GM	114.3	1831	8.2	46.7	0.47				
										SM	102.8	1647	16.6	70.1	0.64				
99	98	71	8	5						SP-SM	95.8	1535	22.0	78.5	0.76				
99	96	70	25	15						SM	107.9	1729	10.5	50.5	0.56				
										SM	109.8	1759	10.4	52.7	0.53				
89	72	40	14	10						SW-SM	109.3	1751	15.8	78.8	0.54				
										SP-SM	114.8	1839	8.8	51.1	0.47				
95	80	37	13	8						SP-SM	112.4	1801	13.1	71.2	0.52				
										SP-SM	116.5	1866	11.3	68.4	0.45				
										SM	108.2	1733	12.2	59.1	0.56				
93	84	52	25	15						SM	110.8	1775	13.9	72.4	0.52				
										SP-SM	112.5	1802	14.3	77.7	0.50				
										SP-SM	116.1	1860	12.0	71.9	0.45				
										SP-SM	114.9	1841	8.3	47.8	0.47				

ERBERG TS (b)		USCS (c)	IN-SITU					COMPACTED			SPECIFIC GRAVITY OF SOLIDS	TRIAXIAL (d)	UNCONFINED COMPRESSION	DIRECT SHEAR	CONSOLIDATION	CHEMICAL	CBR
			DRY UNIT WEIGHT		MOISTURE CONTENT (%)	SATURATION (%)	VOID RATIO	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)							
PL	PI		(pcf)	(kg/m^3)				(pcf)	(kg/m^3)								
		SM	76.0	1218	36.3	80.5	1.22					•					
		SM	78.6	1259	28.5	67.4	1.14					•					
		SP-SM	96.1	1540	18.6	66.6	0.75							•			
		SM	79.1	1267	41.6	99.3	1.13										
		SM	86.9	1392	27.6	79.6	0.94										
		ML	94.9	1520	23.5	81.7	0.78										
34	32	MH	71.9	1152	47.9	96.3	1.34						•				
		ML	75.6	1211	41.3	90.8	1.23										
33	5	ML	85.7	1373	33.0	92.3	0.97										
		SP-SM	115.9	1857	12.6	75.1	0.45										
		SM	96.0	1538	4.8	17.1	0.75										
		SW-SM	95.9	1536	8.4	30.1	0.76										
		SP-SM	112.4	1801	9.1	49.4	0.50										
		SP-SM	110.1	1764	5.9	30.0	0.53										
		SP-SM	110.0	1762	14.8	75.1	0.53										
		SM	104.7	1677	11.8	52.2	0.61										
		GP-GM	114.3	1831	8.2	46.7	0.47										
		SM	102.8	1647	16.6	70.1	0.64										
		SP-SM	95.8	1535	22.0	78.5	0.76										
		SM	107.9	1729	10.5	50.5	0.56										
		SM	109.8	1759	10.4	52.7	0.53										
		SW-SM	109.3	1751	15.8	78.8	0.54										
		SP-SM	114.8	1839	8.8	51.1	0.47										
		SP-SM	112.4	1801	13.1	71.2	0.52							•			
		SP-SM	116.5	1866	11.3	68.4	0.45										
		SM	108.2	1733	12.2	59.1	0.56										
		SM	110.8	1775	13.9	72.4	0.52										
		SP-SM	112.5	1802	14.3	77.7	0.50										
		SP-SM	116.1	1860	12.0	71.9	0.45										
		SP-SM	114.9	1841	8.3	47.8	0.47										
		ML	75.0	1202	12.6	27.3	1.25										
25	3	ML	79.0	1266	12.6	30.1	1.13										
		GW-GM	130.7	2094	4.1	38.3	0.29										
		SM	126.7	2030	7.0	57.7	0.33										
		ML	112.4	1801	8.3	44.8	0.50										
		SM	125.2	2006	6.3	49.6	0.35										
	NP	ML	89.0	1426	13.9	42.0	0.89										
	NP	ML	96.6	1548	24.3	87.3	0.76				2.72				•		
		ML	84.7	1357	26.9	73.5	0.99					•					
		ML	89.7	1437	28.0	86.1	0.88										
		ML	85.9	1376	30.0	84.4	0.96					•					

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MX SITING INVESTIGATION
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SUMMARY OF LABORATORY TEST RESULTS LAKE VALLEY, NEVADA

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TABLE II-9-1

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ACTIVITY NUMBER	SAMPLE NUMBER (a)	SAMPLE INTERVAL		PERCENT FINER BY WEIGHT									
				STANDARD SIEVE OPENING							U S STANDARD SIE		
				BLDRS.	COBBLES		GRAVEL				SAND		
		FEET	METERS	24"	12"	6"	3"	1½"	3/4"	3/8"	4	10	40
LV-B-7	D-10	50.4 - 51.1	15.36 - 15.58										
	D-11	60.7 - 61.4	18.50 - 18.71						100	82	62	48	37
	D-12	70.7 - 71.4	21.55 - 21.76							100	99	93	78
	D-13	80.7 - 81.4	24.60 - 24.81										
	D-14	90.4 - 91.1	27.55 - 27.77										
	D-15	100.2 - 100.9	30.54 - 30.75										
	P-16	110.2 - 110.7	33.59 - 33.74										
	D-17	120.7 - 121.4	36.79 - 37.00							100	99	99	97
	D-19	159.2 - 159.9	48.52 - 48.74									100	99
LV-T-1	B-1	0.5 - 2.0	0.15 - 0.61										100
	b-2	7.0 - 8.0	2.13 - 2.44					100	91	68	43	32	28
LV-T-3	B-1	0.5 - 2.0	0.15 - 0.61					100	95	86	71	60	47
	b-2	4.0 - 5.0	1.22 - 1.52						100	85	69	50	20
LV-T-4	B-1	0.5 - 2.0	0.15 - 0.61						100	94	85	77	58
LV-T-5	B-1	0.5 - 2.0	0.15 - 0.61				100	93	57	41	35	31	27
LV-T-6	B-1	0.5 - 2.0	0.15 - 0.61						100	98	97	94	74
LV-T-7	B-1	0.5 - 2.0	0.15 - 0.61								100	98	86
	b-3	10.0 - 11.0	3.05 - 3.35						100	95	88	73	31
LV-T-8	B-1	0.5 - 2.0	0.15 - 0.61							100	98	95	79
	b-2	4.0 - 5.0	1.22 - 1.52					100	96	90	80	70	52
LV-T-9	B-1	0.5 - 2.0	0.15 - 0.61								100	98	80
	b-2	4.0 - 5.0	1.22 - 1.52							100	99	95	83
LV-T-10	B-1	0.5 - 2.0	0.15 - 0.61						100	98	94	87	62
	b-2	9.0 - 10.0	2.74 - 3.05									100	90
LV-T-11	B-1	0.5 - 2.0	0.15 - 0.61						100	97	90	81	59
LV-T-12	B-1	0.5 - 1.5	0.15 - 0.46						100	96	92	86	75
LV-T-14	B-1	0.5 - 2.0	0.15 - 0.61							100	96	89	65
	b-3	11.0 - 12.0	3.35 - 3.66						100	96	91	81	53
LV-P-1	B-1	0.5 - 2.0	0.15 - 0.61								100	99	95
	b-2	4.0 - 5.0	1.22 - 1.52					100	72	51	39	29	18

NOTES:

(a) Sample types
- SS - Standard split spoon
- P - Pitcher
- D - Fugro Drive
- B,b - Bulk

(b) NP - Not Plastic

(c) USCS - Unified Soil Classification System

(d) * Indicates that test has been performed and results are included in this report

WEIGHT							ATTERBERG LIMITS (b)			USCS (c)	IN-SITU					COMPACTED			SPECIFIC GRAVITY OF SOLIDS	TRIAXIAL (d)
S STANDARD SIEVE NO.					PARTICLE SIZE (mm)						DRY UNIT WEIGHT		MOISTURE CONTENT (%)	SATURATION (%)	VOID RATIO	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)		
SAND				SILT OR CLAY																
	10	40	100	200	.005	.001	LL	PL	PI		(pcf)	(kg/m³)				(pcf)	(kg/m³)			
										ML	87.3	1399	21.7	62.9	0.93					
	48	37	28	21						SM	119.7	1918	14.1	93.7	0.41					
	93	78	68	49					NP	SM	86.7	1389	33.1	94.6	0.94					
										ML	88.9	1424	31.3	94.6	0.89					
										ML	80.8	1294	34.1	84.7	1.09					
										GP-GM	132.5	2123	8.2	82.0	0.27					
										ML	97.2	1557	27.1	99.7	0.73					
	99	97	92	79			33	20	13	CL	94.7	1517	27.8	96.5	0.78					
	100	99	96	89			43	25	18	CL	84.8	1358	34.7	95.1	0.99					
		100	98	96	34	12	37	28	9	ML						106.0	1698	20.3	2.69	
3	32	28	19	15						GM										
1	60	47	35	28						SM						108.5	1738	17.0		
9	50	20	6	4						SP										
5	77	58	39	29						SM						117.0	1874	13.0		
6	31	27	24	21						GM										
7	94	74	48	36			31	19	12	SC										
00	98	86	65	54			34	21	13	CL						114.0	1826	15.5	2.65	
8	73	31	14	11						SW-SM										
8	95	79	62	54			41	23	18	CL										
0	70	52	24	12						SP-SM										
00	98	80	44	30			30	20	10	SC						121.0	1938	12.3	2.65	
99	95	83	68	57			29	22	7	CL-ML										
4	87	62	31	20						SM						119.5	1914	11.5		
	100	90	67	58			27	19	8	CL										
0	81	59	44	35						SM										
2	86	75	60	45			34	22	12	SC										
8	89	65	28	18						SM										
91	81	53	25	16						SM										
00	99	95	79	59					NP	ML										
39	29	18	9	6						GW-GM										

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RBERG TS (b)		USCS (c)	IN-SITU					COMPACTED			SPECIFIC GRAVITY OF SOLIDS	TRIAXIAL (d)	UNCONFINED COMPRESSION	DIRECT SHEAR	CONSOLIDATION	CHEMICAL	CBR
			DRY UNIT WEIGHT		MOISTURE CONTENT (%)	SATURATION (%)	VOID RATIO	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)							
PL	PI		(pcf)	(kg/m³)				(pcf)	(kg/m³)								
		ML	87.3	1399	21.7	62.9	0.93										
		SM	119.7	1918	14.1	93.7	0.41										
	NP	SM	86.7	1389	33.1	94.6	0.94										
		ML	88.9	1424	31.3	94.6	0.89						•				
		ML	80.8	1294	34.1	84.7	1.09										
		GP-GM	132.5	2123	8.2	82.0	0.27										
		ML	97.2	1557	27.1	99.7	0.73						•				
20	13	CL	94.7	1517	27.8	96.5	0.78										
25	18	CL	84.8	1358	34.7	95.1	0.99										
28	9	ML						106.0	1698	20.3	2.69					•	•
		GM															
		SM						108.5	1738	17.0							•
		SP															
		SM						117.0	1874	13.0							•
		GM															
19	12	SC															
21	13	CL						114.0	1826	15.5	2.65					•	•
		SW-SM															
23	18	CL															
		SP-SM															
20	10	SC						121.0	1938	12.3	2.65						•
22	7	CL-ML															
		SM						119.5	1914	11.5							•
19	8	CL															
		SM															
22	12	SC															
		SM															
		SM															
	NP	ML															
		GW-GM															

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MX SITING INVESTIGATION
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BMO/AFRCE-MX

SUMMARY OF LABORATORY
TEST RESULTS
LAKE VALLEY, NEVADA
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TABLE [illegible]

ACTIVITY NUMBER	SAMPLE NUMBER (a)	SAMPLE INTERVAL		PERCENT FINER BY WEIGHT									
				STANDARD SIEVE OPENING							U S STANDARD		
				BLDRS.	COBBLES		GRAVEL				SAND		
		FEET	METERS	24"	12"	6"	3"	1½"	3/4"	3/8"	4	10	40
LV-P-2	B-1	0.5 - 2.0	0.15 - 0.61						100	89	81	73	64
LV-P-4	B-1	0.5 - 2.0	0.15 - 0.61							100	97	96	88
LV-P-5	b-1	0.5 - 2.0	0.15 - 0.61						100	76	59	43	31
LV-P-6	B-1	0.5 - 2.0	0.15 - 0.61				100	90	70	57	46	38	28
LV-P-7	B-1	0.5 - 2.0	0.15 - 0.61							100	95	91	82
LV-P-8	b-1	0.5 - 2.0	0.15 - 0.61						100	89	78	69	58
	B-2	3.0 - 4.0	0.91 - 1.22					100	82	52	30	13	6
LV-P-10	b-1	0.5 - 2.0	0.15 - 0.61					100	95	82	72	59	36
	b-2	3.0 - 4.0	0.91 - 1.22							100	97	92	57
LV-P-11	b-2	4.0 - 5.0	1.22 - 1.52								100	99	56
LV-P-12	b-1	0.5 - 2.0	0.15 - 0.61						100	84	67	54	36
LV-P-13	B-1	0.5 - 2.0	0.15 - 0.61				100	90	78	56	41	31	19
LV-P-14	b-1	0.5 - 2.0	0.15 - 0.61							100	96	90	75
LV-P-15	B-1	0.5 - 2.0	0.15 - 0.61						100	98	90	82	67
LV-P-16	B-1	0.5 - 2.0	0.15 - 0.61										100
LV-P-17	b-2	3.0 - 4.0	0.91 - 1.22						100	80	64	53	43
LV-P-18	B-1	0.5 - 2.0	0.15 - 0.61						100	96	92	87	62
LV-P-19	b-1	0.5 - 2.0	0.15 - 0.61						100	95	90	85	62
LV-P-20	b-1	0.5 - 2.0	0.15 - 0.61						100	91	75	59	41
LV-P-21	b-1	0.5 - 2.0	0.15 - 0.61						100	99	91	82	57
	b-2	4.0 - 5.0	1.22 - 1.52							100	94	82	30
LV-P-23	B-1	0.5 - 2.0	0.15 - 0.61					100	90	69	58	49	37
LV-P-24	B-1	0.5 - 2.0	0.15 - 0.61						100	91	81	70	5

NOTES:

(a) Sample types
- SS - Standard split spoon
- P - Pitcher
- D - Fugro Drive
- B,b - Bulk

(b) NP - Not Plastic

(c) USCS - Unified Soil Classification System

(d) * Indicates that test has been performed and results are included in this report

ARD SIEVE NO.			PARTICLE SIZE (mm)		ATTERBERG LIMITS (b)			USCS (c)	IN-SITU					COMPACTED			SPECIFIC GRAVITY OF SOLIDS	TRIAXIAL (d)	UNCONFINED COMPRESSION
			SILT OR CLAY						DRY UNIT WEIGHT		MOISTURE CONTENT (%)	SATURATION (%)	VOID RATIO	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)			
40	100	200	.005	.001	LL	PL	PI		(pcf)	(kg/m³)				(pcf)	(kg/m³)				
64	41	30						SM											
88	64	45					NP	SM						119.3	1911	11.5			
31	24	19						GM											
28	19	14						GM											
82	74	60			28	24	4	ML						120.4	1929	12.4			
58	30	16						SM											
6	3	2						GW											
36	18	13						SM											
57	8	2						SP											
56	18	3						SP											
36	23	16						SM											
19	14	12						GP-GM											
75	57	46			56	29	27	SC											
67	53	45			67	34	33	SM											
100	99	98			27	24	3	ML											
43	37	31						GM											
62	38	28						SM						120.0	1922	12.0	2.70		
62	35	23						SM											
41	29	25						SM											
57	35	25						SM											
30	9	6						SW-SM											
37	28	24						GM											
55	40	31			30	18	12	SC						121.0	1938	11.0			

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ERG (b)		USCS (c)	IN-SITU					COMPACTED			SPECIFIC GRAVITY OF SOLIDS	TRIAXIAL (d)	UNCONFINED COMPRESSION	DIRECT SHEAR	CONSOLIDATION	CHEMICAL	
			DRY UNIT WEIGHT		MOISTURE CONTENT (%)	SATURATION (%)	VOID RATIO	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)							
	PI		(pcf)	(kg/m³)				(pcf)	(kg/m³)								
		SM															
	NP	SM						119.3	1911	11.5							*
		GM															
		GM														*	
	4	ML						120.4	1929	12.4							*
		SM															
		GW															
		SM															
		SP															
		SP															
		SM															
		GP-GM															
9	27	SC															
4	33	SM															
4	3	ML															
		GM															
		SM						120.0	1922	12.0	2.70						
		SM															
		SM														*	
		SM															
		SW-SM															
		GM															
18	12	SC						121.0	1938	11.0							

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SUMMARY OF LABORATOI
TEST RESULTS
LAKE VALLEY, NEVADA
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ACTIVITY NUMBER	SAMPLE NUMBER (a)	SAMPLE INTERVAL		PERCENT FINER BY WEIGHT									
				STANDARD SIEVE OPENING							U S ˙ STANDARD		
				BLDRS.	COBBLES		GRAVEL					SAND	
		FEET	METERS	24"	12"	6"	3"	1½"	3/4"	3/8"	4	10	40
LV-P-25	B-1	0.5 - 2.0	0.15 - 0.61							100	99	95	71
LV-P-26	b-2	3.0 - 4.0	0.91 - 1.22								100	98	83
LV-P-28	b-1	0.5 - 2.0	0.15 - 0.61						100	88	78	66	39
LV-P-29	b-1	0.5 - 2.0	0.15 - 0.61								100	99	91
	b-2	4.0 - 5.0	1.22 - 1.52						100	95	92	86	66
LV-P-30	B-1	0.5 - 2.0	0.15 - 0.61									100	98
LV-P-31	b-1	0.5 - 2.0	0.15 - 0.61						100	99	95	85	49
	B-2	4.0 - 5.0	1.22 - 1.52				100	76	58	41	30	22	6
LV-P-32	b-1	0.5 - 2.0	0.15 - 0.61							100	96	91	76
LV-P-33	b-1	0.5 - 2.0	0.15 - 0.61					100	96	94	84	70	47
LV-P-35	b-1	0.5 - 2.0	0.15 - 0.61						100	93	84	80	73
LV-P-36	B-1	0.5 - 2.0	0.15 - 0.61				100	82	42	24	18	15	11
LV-P-38	B-1	0.5 - 2.0	0.15 - 0.61						100	98	93	79	55
	b-2	4.0 - 5.0	1.22 - 1.52									100	99
LV-P-39	B-1	0.5 - 2.0	0.15 - 0.61										100
LV-P-40	b-1	0.5 - 2.0	0.15 - 0.61					100	94	86	74	67	59
LV-CS-4	-1	0.5 - 2.0	0.15 - 0.61						100	80	68	57	40
LV-CS-6	b-1	0.5 - 2.0	0.15 - 0.61						100	93	81	66	43
LV-CS-8	b-1	0.5 - 2.0	0.15 - 0.61							100	95	89	69
LV-CS-11	B-1	0.5 - 2.0	0.15 - 0.61					100	95	88	79	70	61
LV-CS-20	B-1	0.5 - 2.0	0.15 - 0.61						100	96	94	89	75
LV-CS-22	b-1	0.5 - 2.0	0.15 - 0.61						100	97	88	78	50
LV-CS-28	b-1	0.5 - 2.0	0.15 - 0.61					100	87	83	72	61	49

NOTES:

(a) Sample types
SS – Standard split spoon
P – Pitcher
D – Fugro Drive
B,b – Bulk

(b) NP – Not Plastic

(c) USCS – Unified Soil Classification System

(d) * Indicates that test has been performed and results are included in this report

			67	25	42	CH					
						SM					
						GW					
			26	18	8	SC					
9						SM					
4			37	19	18	CL					
						GP-GM					
4						SM					
						SM					
9			56	22	34	CH					
1						SM					
5						SM					
2						SP-SM					
3						SM					

24	23	SC										
	NP	ML										
		SM										
20	10	CL										
17	10	SC										
25	42	CH										
		SM										
		GW										
18	8	SC										
		SM										
19	18	CL										
		GP-GM										
		SM										
		SM										
22	34	CH										
		SM										
		SM										
		SP-SM										
		SM										
		SM										
20	8	CL										

ACTIVITY NUMBER	SAMPLE NUMBER (a)	SAMPLE INTERVAL		PERCENT FINER BY WEIGHT								
				STANDARD SIEVE OPENING							U S STANDAR	
				BLDRS.	COBBLES		GRAVEL				SAND	
		FEET	METERS	24"	12"	6"	3"	1½"	3/4"	3/8"	4	10
LV-CS-43	b-1	0.5 - 2.0	0.15 - 0.61						100	98	96	89
LV-CS-52	b-1	0.5 - 2.0	0.15 - 0.61					100	95	86	80	70
LV-CS-60	b-1	0.5 - 2.0	0.15 - 0.61						100	98	91	80
LV-CS-72	b-1	0.5 - 2.0	0.15 - 0.61						100	87	79	70
LV-CS-79	b-1	0.5 - 2.0	0.15 - 0.61									
LV-CS-81	b-1	0.5 - 1.5	0.15 - 0.61						100	99	98	96
LV-CS-84	b-1	0.5 - 2.0	0.15 - 0.61					100	96	77	55	36
LV-CS-88	b-1	0.5 - 2.0	0.15 - 0.61						100	99	99	98
LV-CS-92	b-1	0.5 - 2.0	0.15 - 0.61						100	81	67	59
LV-CS-103	B-1	0.5 - 2.0	0.15 - 0.61					100	81	57	37	27
LV-F-1	b-1	1.0 - 1.5	0.30 - 0.46						100	98	96	92
	b-2	2.0 - 2.5	0.61 - 0.76							100	97	92
	b-3	3.0 - 3.5	0.91 - 1.07						100	97	95	92
LV-F-2	B-1	1.0 - 1.5	0.30 - 0.46							100	99	96
	b-2	2.0 - 2.5	0.61 - 0.76									
	B-3	3.0 - 3.5	0.91 - 1.07									100
	b-4	4.0 - 4.5	1.22 - 1.37									

NOTES:

(a) Sample types
SS - Standard split spoon
P - Pitcher
D - Fugro Drive
B,b - Bulk

(b) NP - Not Plastic

(c) USCS - Unified Soil Classification System

(d) * Indicates that test has been performed and results are included in this report

WEIGHT						ATTERBERG LIMITS (b)			USCS (c)	IN-SITU					COMPACTED			SPECIFIC GRAVITY OF SOLIDS	TRIAXIAL (d)
S STANDARD SIEVE NO.				PARTICLE SIZE (mm)						DRY UNIT WEIGHT		MOISTURE CONTENT (%)	SATURATION (%)	VOID RATIO	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)		
SAND			SILT OR CLAY																
10	40	100	200	.005	.001	LL	PL	PI		(pcf)	(kg/m³)				(pcf)	(kg/m³)			
89	55	30	22						SM										
70	47	34	30						SC										
80	39	23	19			49	26	23	SC										
70	50	33	27						SM										
			73			27	21	6	CL-ML										
96	83	47	34			29	17	12	SC										
36	25	14	11						GW-GM										
98	86	50	35						SM										
59	45	24	19						SM										
27	20	18	16						GM										
92	82	57	41					NP	SM			4.3							
92	78	53	38					NP	SM			4.3							
92	81	54	39					NP	SM			4.3							
96	93	90	86			39	26	13	ML			15.4			106.3	1703	19.3		
									ML			19.2							
100	97	91	90			65	17	48	CH			24.4			104.8	1679	20.3		
									CH			28.2							

2

TTERBERG IMITS (b)			USCS (c)	IN-SITU					COMPACTED			SPECIFIC GRAVITY OF SOLIDS	TRIAXIAL (d)	UNCONFINED COMPRESSION	DIRECT SHEAR	CONSOLIDATION	CHEMICAL	CBR
				DRY UNIT WEIGHT		MOISTURE CONTENT (%)	SATURATION (%)	VOID RATIO	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)							
	PL	PI		(pcf)	(kg/m³)				(pcf)	(kg/m³)								
			SM															
			SC															
	26	23	SC															
			SM															
7	21	6	CL-ML															
9	17	12	SC															
			GW-GM															
			SM															
			SM															
			GM															
		NP	SM			4.3												
		NP	SM			4.3												
		NP	SM			4.3												
39	26	13	ML			15.4			106.3	1703	19.3							*
			ML			19.2												
65	17	48	CH			24.4			104.8	1679	20.3							*
			CH			28.2												

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BMO/AFRCE-MX

SUMMARY OF LABORATORY TEST RESULTS
LAKE VALLEY, NEVADA
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TABLE II-6-1

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BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	TYPE OF TEST	DRY DENSITY		MOISTURE CONTENT (%)	CONFINING PRESSURE (σ_3)		MAXIMUM DEVIATOR STRESS ($\sigma_1-\sigma_3$)		STRAIN RATE (%/min)	BACK PRESSURE	
		FEET	METERS			pcf	kg/m^3		ksf	kN/m^2	ksf	kN/m^2		ksf	kN/m^2
LV-B-2	P-14	90.0 - 90.8	27.43 - 27.68	ML	CD	72.0	1153	38.6	9.0	431	24.4	1168	0.07	0	0
		90.8 - 91.6	27.68 - 27.92	ML	CD	75.8	1214	35.9	10.5	503	26.9	1288	0.07	0	0
		91.6 - 92.5	27.92 - 28.19	ML	CD	71.8	1150	36.6	12.5	599	30,4	1456	0.07	0	0
LV-B-5	P-11	50.0 - 50.8	15.24 - 15.48	SM	CD	75.9	1216	35.8	5.0	239	18.6	891	0.07	0	0
		50.8 - 51.6	15.48 - 15.73	SM	CD	76.0	1218	36.3	7.5	359	22.6	1082	0.07	0	0
		51.6 - 52.3	15.73 - 15.94	SM	CD	78.6	1259	28.5	10.0	479	28.0	1341	0.07	0	0
LV-B-7	P-9	40.0 - 40.6	12.19 - 12.37	ML	CD	84.7	1357	26.9	4.0	192	10.9	522	0.05	0	0
		41.4 - 41.9	12.62 - 12.77	ML	CD	85.9	1376	30.0	8.0	383	18.3	876	0.07	0	0

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SUMMARY OF TRIAXIAL COMPRESSION TEST RESULTS
LAKE VALLEY, NEVADA

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TABLE II-9-2

BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	UNCONFINED COMP. STRENGTH		DRY DENSITY		MOISTURE CONTENT (%)	DEGREE OF SATURATION (%)	HEIGHT/ DIAMETER
		FEET	METERS		ksf	kN/m^2	pcf	kg/m^3			
LV-B-2	P-12	71.2 - 71.9	21.70 - 21.92	MH	3.1	148	77.3	1238	28.6	65.5	2.08
LV-B-5	D-16	102.7 - 103.4	31.30 - 31.52	MH	4.5	215	71.9	1152	47.9	96.3	2.40
LV-B-7	D-13	80.7 - 81.4	24.60 - 24.81	ML	1.5	72	88.9	1424	31.3	94.6	2.00
LV-B-7	P-16	110.2 - 110.7	33.59 - 33.74	ML	2.3	110	97.2	1557	27.1	99.7	2.08

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SUMMARY OF UNCONFINED COMPRESSION TEST RESULTS LAKE VALLEY, NEVADA

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TABLE II-9-3

BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	NORMAL STRESS		MAXIMUM SHEAR STRENGTH	
		FEET	METERS		ksf	kN/m 2	ksf	kN/m 2
LV-B-1	D-2	4.3 - 5.0	1.31 - 1.52	SP-SM	0.5	24	0.45	22
					0.8	38	1.00	48
					1.0	48	1.34	64
LV-B-1	D-13	80.0 - 80.6	24.38 - 24.57	SW-SM	8.0	383	7.88	377
					10.0	479	10.80	517
LV-B-2	D-5	15.5 - 16.2	4.72 - 4.94	ML	1.6	77	1.79	86
					2.4	115	2.77	133
					3.2	153	3.14	150
LV-B-3	D-4	10.0 - 10.5	3.05 - 3.20	SW-SM	1.0	48	1.34	64
					2.0	96	3.20	153
LV-B-3	D-14	90.2 - 90.9	27.49 - 27.71	SM	9.0	431	7.65	366
					12.0	575	9.00	431
LV-B-4	D-4	10.4 - 11.1	3.17 - 3.38	SM	1.0	48	1.98	95
					1.5	72	2.36	113
					2.0	96	2.75	132
LV-B-4	D-9	40.2 - 40.9	12.25 - 12.47	SP-SM	4.0	1[illegible]	5.06	242
					6.0	287	7.69	368
					8.0	383	10.18	487
LV-B-5	P-12	60.0 - 62.3	18.29 - 18.99	SP-SM	6.0	287	4.44	213
					9.0	431	6.99	335
					12.0	575	8.68	416

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SUMMARY OF DIRECT SHEAR TEST RESULTS
LAKE VALLEY, NEVADA

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TABLE II-9-4

BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	NORMAL STRESS		MAXIMUM SHEAR STRENGTH	
		FEET	METERS		ksf	kN/m^2	ksf	kN/m^2
LV-B-6	D-14	90.0 - 90.6	27.43 - 27.61	SP-SM	9.0	431	10.32	494

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SUMMARY OF DIRECT SHEAR
TEST RESULTS
LAKE VALLEY, NEVADA
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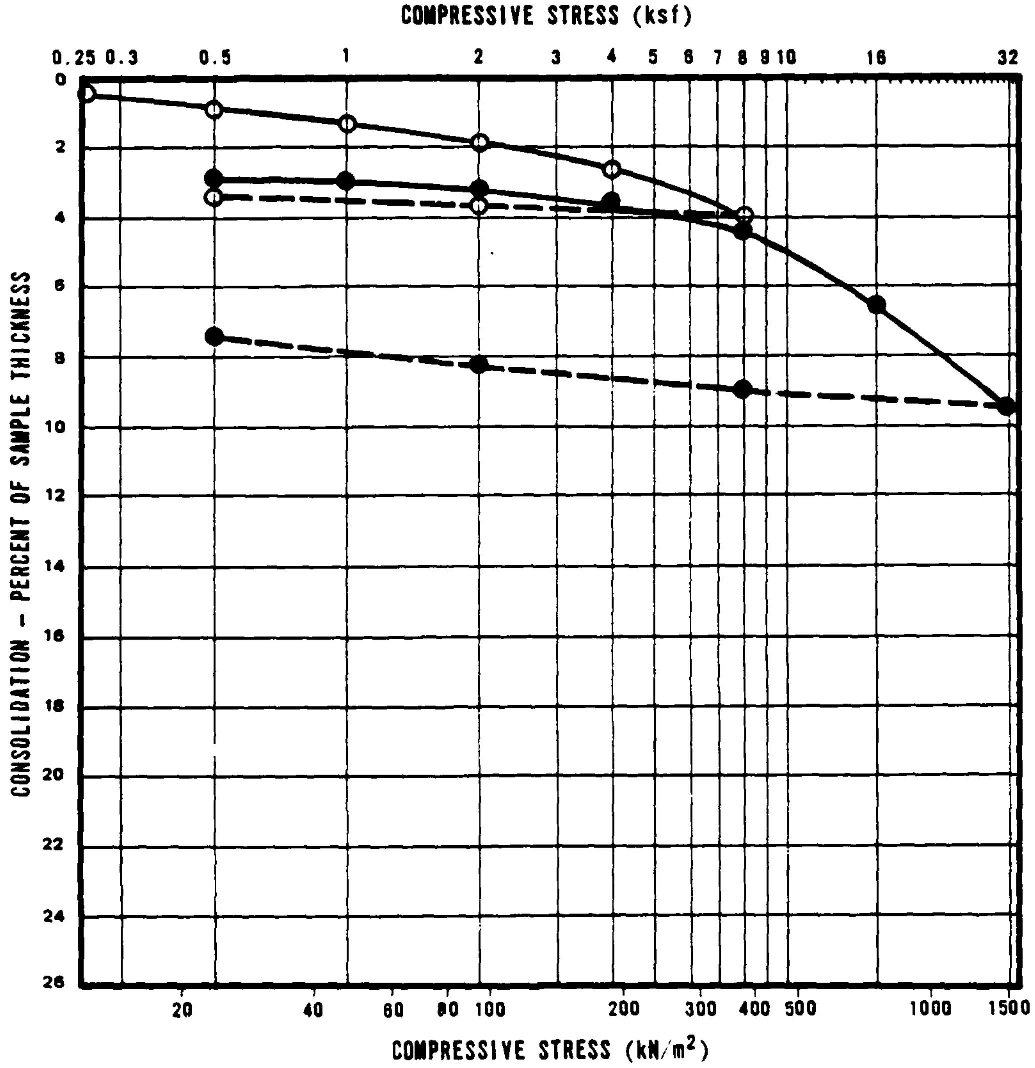
TABLE II-9-4



SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	INITIAL DRY DENSITY		INITIAL MOISTURE CONTENT (%)	INITIAL VOID RATIO	INITIAL DEGREE OF SATURATION (%)
			FEET	METERS		pcf	kg/m³			
○	LV-B-2	P-6	20.1 - 20.6	6.13 - 6.28	SM	71.1	1139	29.0	1.37	57.2

○ AT FIELD MOISTURE

● AFTER ADDITION OF WATER

——— COMPRESSION

— — — REBOUND

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CONSOLIDATION TEST RESULTS
LAKE VALLEY, NEVADA
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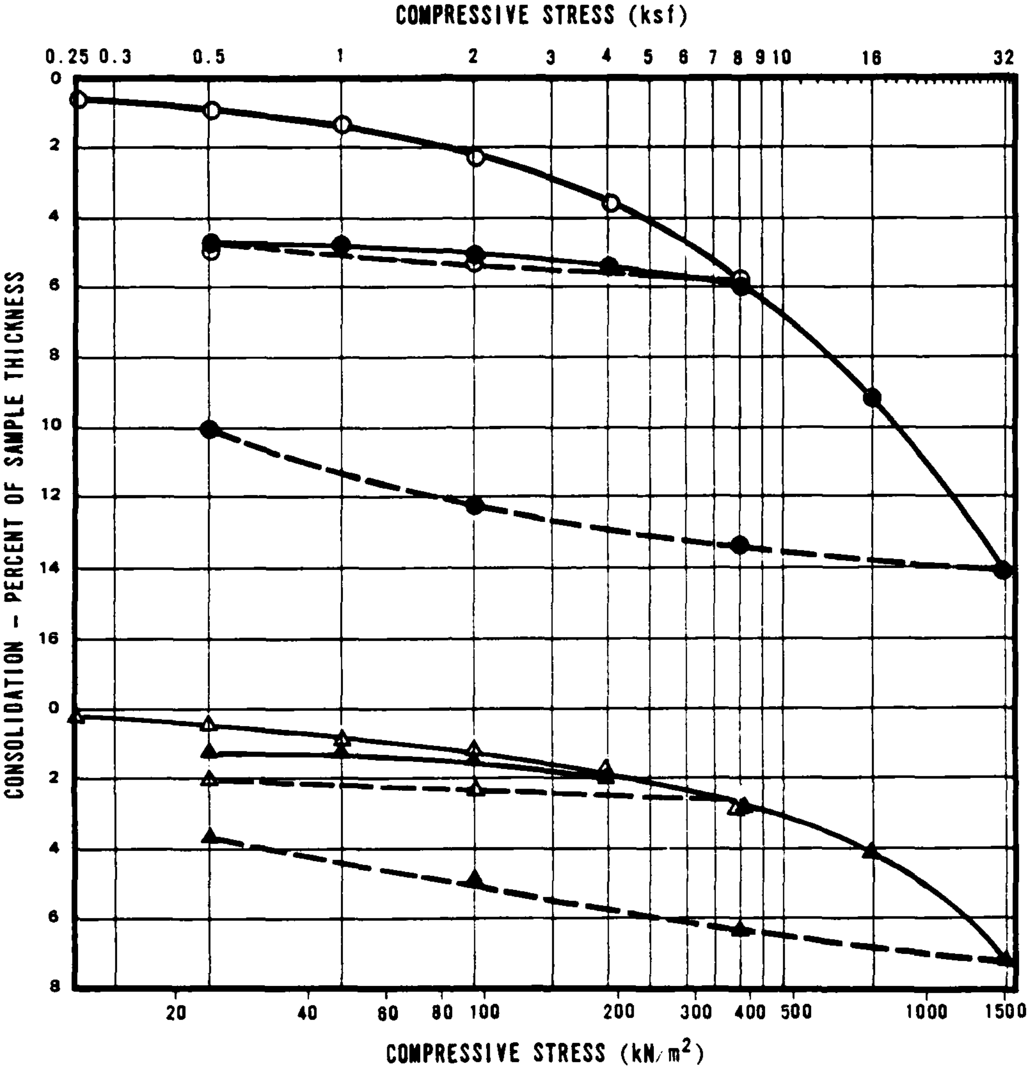
FIGURE II-9-1



SYMBOL	BORING NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	INITIAL DRY DENSITY		INITIAL MOISTURE CONTENT (%)	INITIAL VOID RATIO	INITIAL DEGREE OF SATURATION (%)
			FEET	METERS		pcf	kg/m³			
○	LV-B-5	P-5	8.6 - 9.1	2.62 - 2.77	CL	92.9	1488	29.9	0.81	99.3
△	LV-B-7	D-8	30.7 - 31.4	9.36 - 9.57	ML	96.6	1548	24.3	0.76	87.3

○ AT FIELD MOISTURE

● AFTER ADDITION OF WATER

—— COMPRESSION

— — REBOUND

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CONSOLIDATION TEST RESULTS
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FIGURE II-9-1

ACTIVITY NO.	SAMPLE NO.	SAMPLE INTERVAL		SOIL TYPE	pH	WATER SOLUBLE				CALCIUM CARBONATE
						SODIUM	CHLORIDE	SULPHATE	CALCIUM	
		FEET	METERS			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LV-B-1	D-16	110.2 - 110.9	33.59 - 33.80	SM	8.6	55	22	16	55	341
LV-B-2	P-9	40.0 - 40.8	12.19 - 12.44	ML	8.3	18	58	6	72	608
LV-B-3	D-5	15.7 - 16.4	4.79 - 5.00	SW-SM	8.8	82	8	5	158	3080
LV-B-4	D-14	90.0 - 90.4	27.43 - 27.55	SM	8.6	30	60	283	116	462
LV-T-1	B-1	0.5 - 2.0	0.15 - 0.61	ML	7.4	804	1120	292	375	1210
LV-T-7	B-1	0.5 - 2.0	0.15 - 0.61	CL	8.1	28	10	6	222	978
LV-P-6	B-1	0.5 - 2.0	0.15 - 0.61	GM	7.9	8	23	5	379	1100
LV-P-20	b-1	0.5 - 2.0	0.15 - 0.61	SM	7.7	11	55	11	181	599
LV-P-25	B-1	0.5 - 2.0	0.15 - 0.61	SC	7.6	17	36	6	292	1070
LV-P-31	b-1	0.5 - 2.0	0.15 - 0.61	SM	8.0	22	25	5	269	909
LV-CS-20	B-1	0.5 - 2.0	0.15 - 0.61	CL	8.3	5	11	25	115	655

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SUMMARY OF CHEMICAL TEST RESULTS
LAKE VALLEY, NEVADA

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TABLE II-9-5

AD-A113 002 ERTEC WESTERN INC LONG BEACH CA F/G 8/13
MX SITING INVESTIGATION. GEOTECHNICAL EVALUATION. VERIFICATION --ETC(U)
JUL 81 F04704-80-C-0006
UNCLASSIFIED E-TR-27-LV-2 NL

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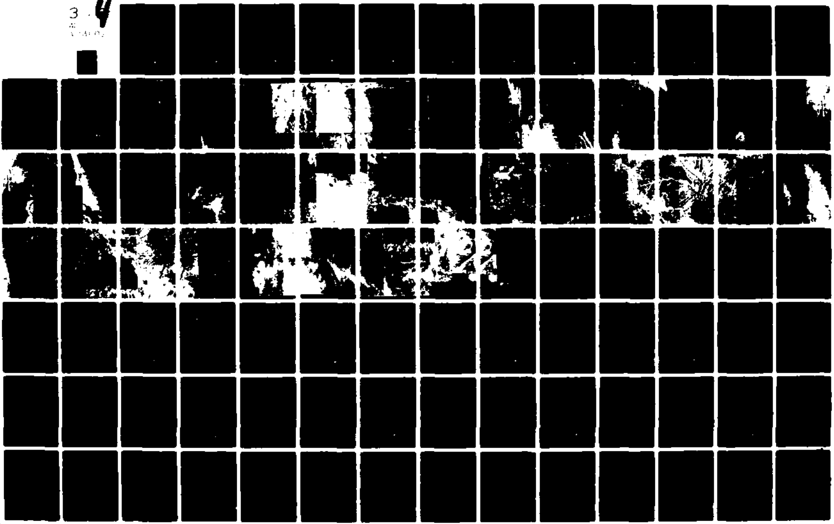
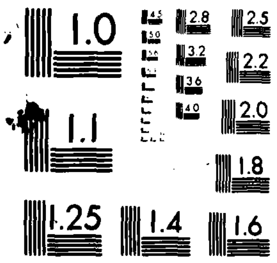
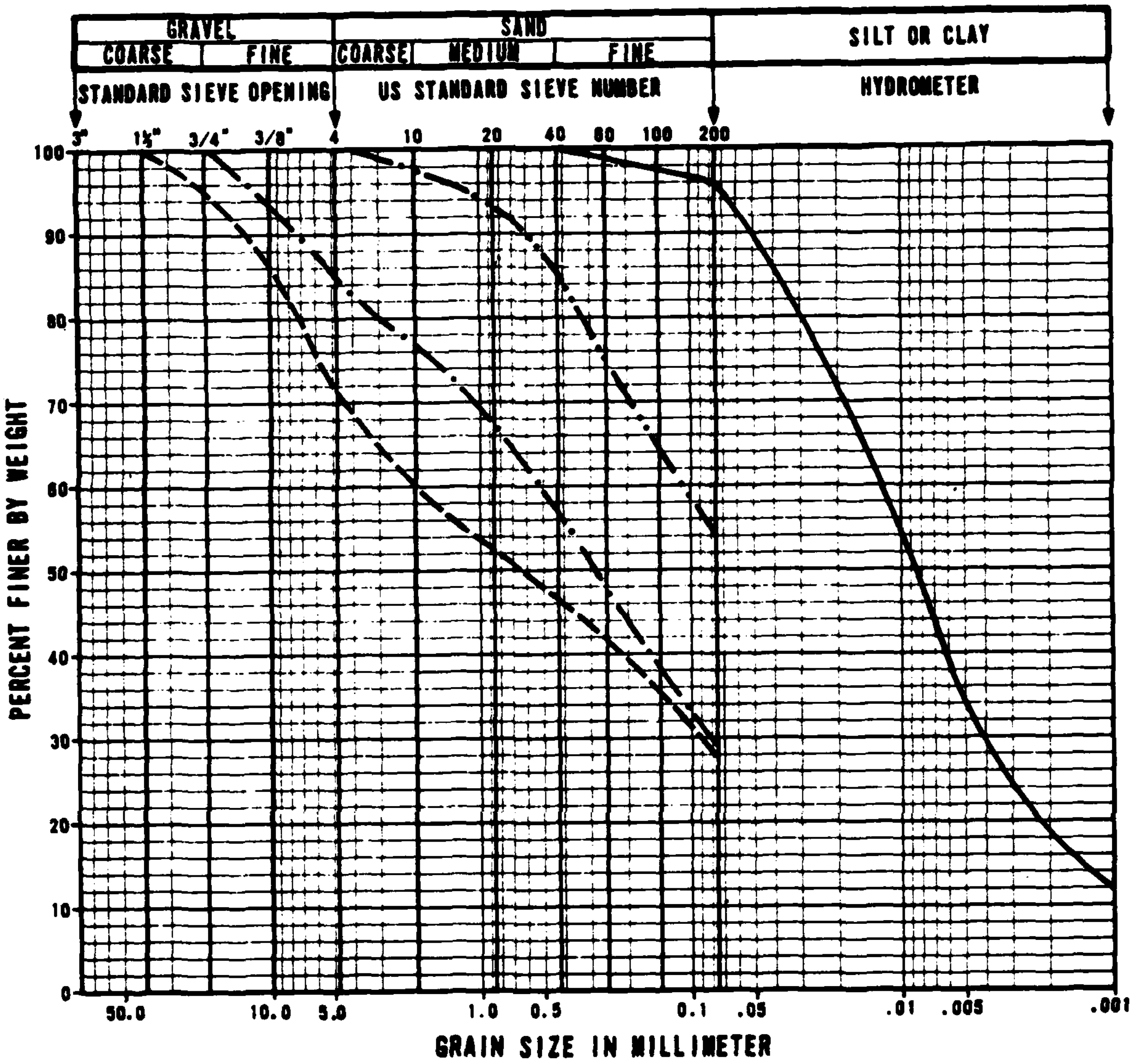


3 OF 4

AD-A113002



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A



<table>
<tr><th rowspan="2">SYMBOL</th><th rowspan="2">COMPOSITE SAMPLE NUMBER</th><th rowspan="2">ACTIVITY NUMBER</th><th colspan="2">SAMPLE INTERVAL</th><th rowspan="2">SOIL TYPE</th></tr>
<tr><th>FEET</th><th>METERS</th></tr>
<tr><td>———</td><td>A</td><td>LV-T-1</td><td>0.5 - 2.0</td><td>0.15 - 0.61</td><td>ML</td></tr>
<tr><td>— —</td><td>B</td><td>LV-T-3</td><td>0.5 - 2.0</td><td>0.15 - 0.61</td><td>SM</td></tr>
<tr><td>— · —</td><td>C</td><td>LV-T-4</td><td>0.5 - 2.0</td><td>0.15 - 0.61</td><td>SM</td></tr>
<tr><td>— ·· —</td><td>D</td><td>LV-T-7</td><td>0.5 - 2.0</td><td>0.15 - 0.61</td><td>CL</td></tr>
</table>

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GRAIN SIZE CURVES, CBR TESTS
LAKE VALLEY, NEVADA
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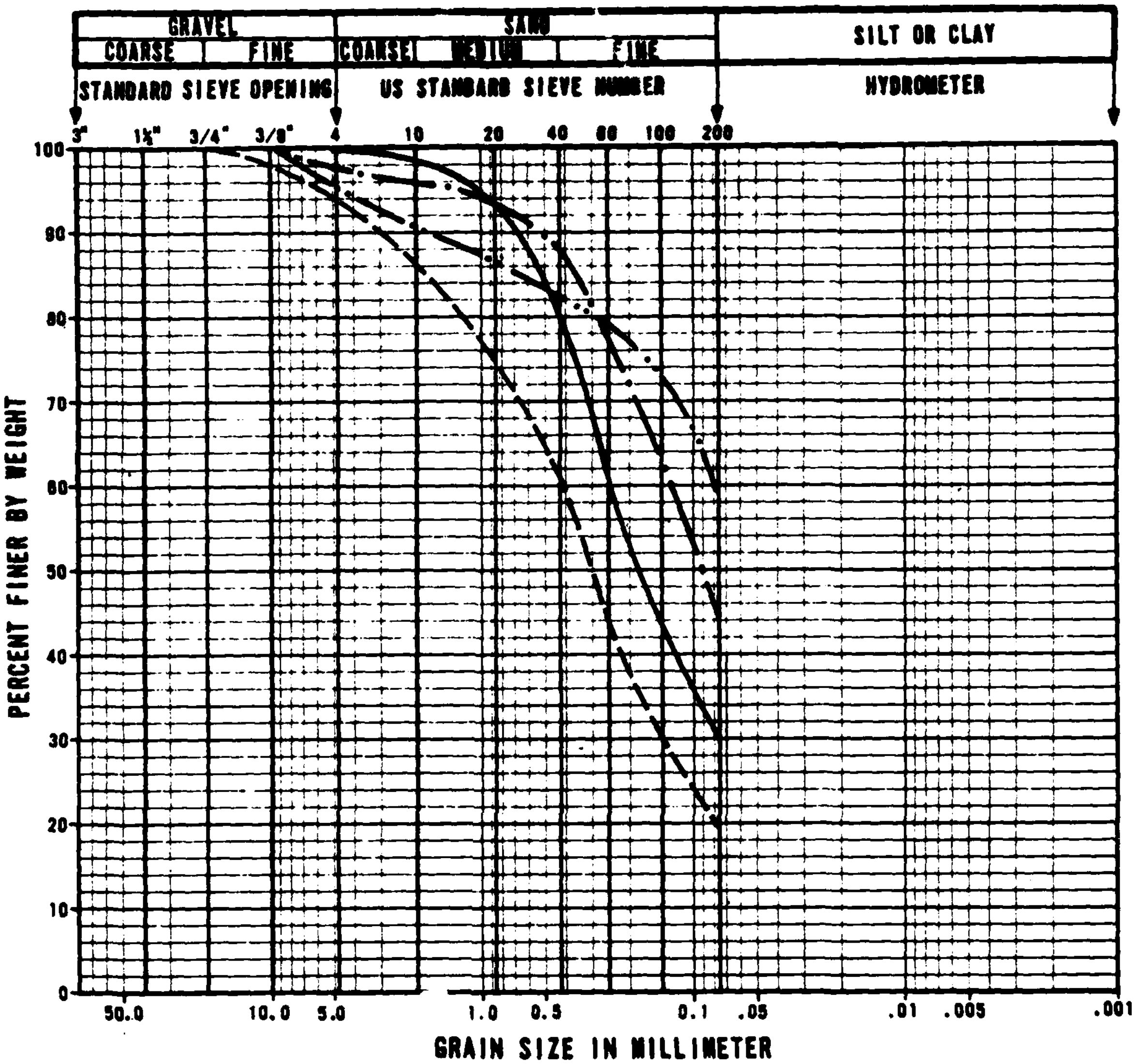
FIGURE II-9-2



SYMBOL	COMPOSITE SAMPLE NUMBER	ACTIVITY NUMBER	SAMPLE INTERVAL		SOIL TYPE
			FEET	METERS	
———	E	LV-T-9	0.5 - 2.0	0.15 - 0.61	SC
— —	F	LV-T-10	0.5 - 2.0	0.15 - 0.61	SM
—·—	G	LV-P-4	0.5 - 2.0	0.15 - 0.61	SM
—··—	H	LV-P-7	0.5 - 2.0	0.15 - 0.61	ML

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GRAIN SIZE CURVES, CBR TESTS
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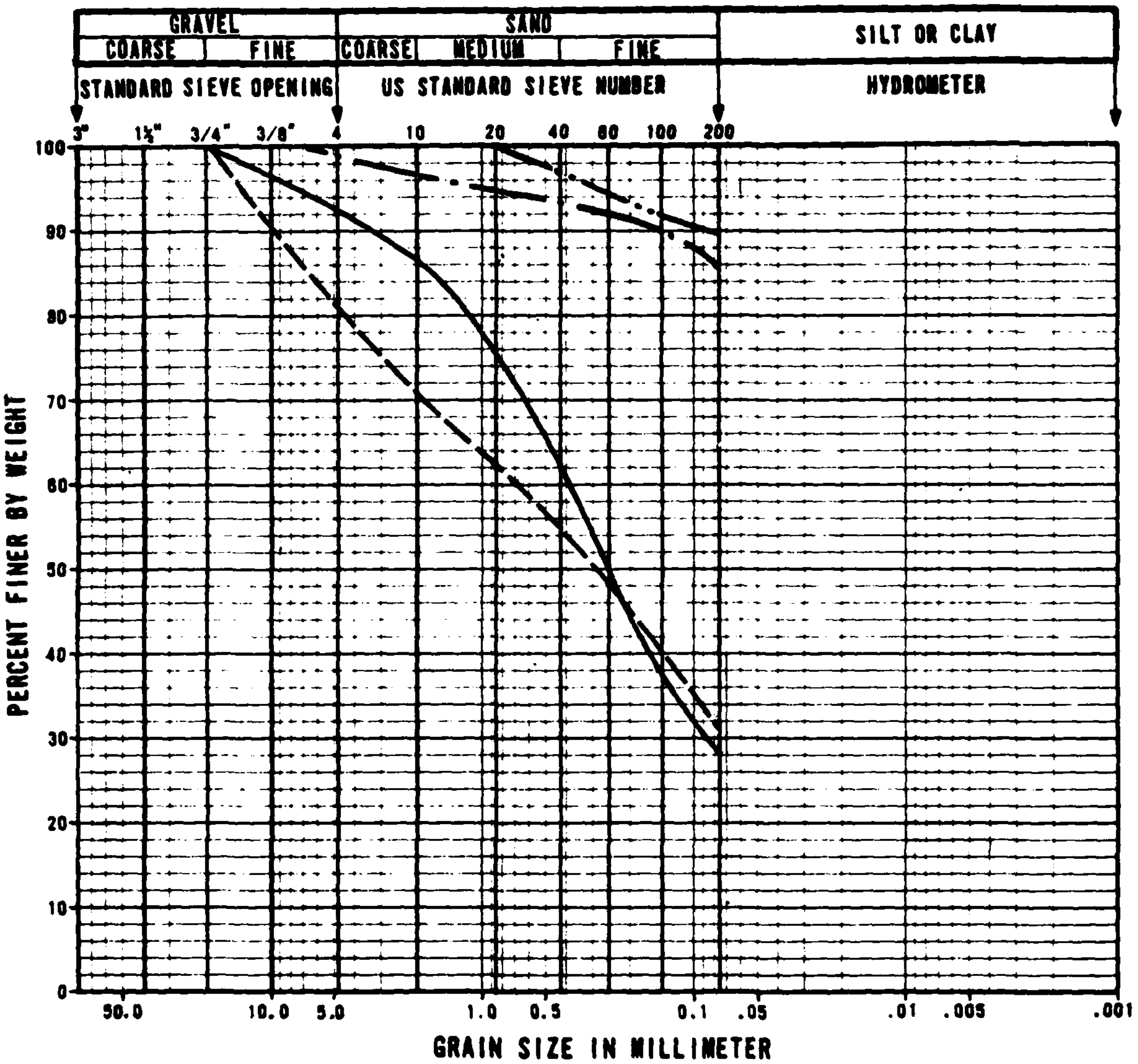
FIGURE II-9-2



SYMBOL	COMPOSITE SAMPLE NUMBER	ACTIVITY NUMBER	SAMPLE INTERVAL		SOIL TYPE
			FEET	METERS	
———	I	LV-P-18	0.5 - 2.0	0.15 - 0.61	SM
———	J	LV-P-24	0.5 [illegible]	0.15 - 0.61	SC
—·—	K	LV-F-2	1.0 - [illegible]	0.30 - 0.46	ML
—··—	L	LV-F-2	3.0 - 3.5	0.91 - 1.07	CH

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GRAIN SIZE CURVES, CBR TESTS
LAKE VALLEY, NEVADA
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FIGURE II-9-2

COMPOSITE SAMPLE NUMBER	SOIL TYPE	PERCENT PASSING #200	ATTERBERG LIMITS		SPECIFIC GRAVITY	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)	COMPACTED DRY DENSITY		COMPACTED MOISTURE (%)	PERCENT OF MAXIMUM DRY DENSITY	CBR (%)
			LL	PI		pcf	kg/m³		pcf	kg/m³			
A	ML	96	37	9	2.69	106.0	1698	20.3	92.5	1482	19.8	98.0	9
									94.0	1506	19.9	88.6	6
									85.4	1368	19.8	80.5	3
B	SM	28				108.5	1738	17.0	100.6	1612	16.7	92.7	26
									95.0	1522	16.7	87.5	10
									90.3	1447	17.8	83.2	5
C	SM	29				117.0	1874	13.0	109.9	1761	13.3	94.0	27
									104.2	1669	13.2	89.0	10
									99.5	1594	13.1	85.0	4
D	CL	54	34	13	2.65	114.0	1826	15.5	106.1	1700	15.4	93.1	6
									99.6	1596	15.6	87.3	3
									88.5	1418	16.0	77.6	1

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CALIFORNIA BEARING RATIO (CBR)
TEST RESULTS
LAKE VALLEY, NEVADA
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TABLE II-8-6

COMPOSITE SAMPLE NUMBER	SOIL TYPE	PERCENT PASSING #200	ATTERBERG LIMITS		SPECIFIC GRAVITY	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)	COMPACTED DRY DENSITY		COMPACTED MOISTURE (%)	PERCENT OF MAXIMUM DRY DENSITY	CBR (%)
			LL	PI		pcf	kg/m³		pcf	kg/m³			
E	SC	30	30	10	2.65	121.0	1938	12.3	112.3	1799	12.3	92.8	12
									105.9	1697	12.2	87.5	6
									102.1	1636	11.9	84.4	5
F	SM	20				119.5	1914	11.5	111.2	1781	11.6	93.0	33
									105.3	1687	11.8	88.1	13
									100.1	1604	11.3	83.8	4
G	SM	45		NP		119.5	1914	11.5	109.2	1749	11.6	91.5	24
									104.5	1674	11.5	87.6	12
									98.0	1570	11.6	82.2	4
H	ML	60	28	4		120.4	1929	12.4	111.9	1793	12.9	92.9	10
									104.7	1677	12.8	87.0	4
									95.9	1536	12.8	79.6	1

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CALIFORNIA BEARING RATIO (CBR)
TEST RESULTS
LAKE VALLEY, NEVADA
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TABLE II-9-6

COMPOSITE SAMPLE NUMBER	SOIL TYPE	PERCENT PASSING #200	ATTERBERG LIMITS		SPECIFIC GRAVITY	MAXIMUM DRY DENSITY		OPTIMUM MOISTURE (%)	COMPACTED DRY DENSITY		COMPACTED MOISTURE (%)	PERCENT OF MAXIMUM DRY DENSITY	CBR (%)
			LL	PI		pcf	kg/m³		pcf	kg/m³			
I	SM	28			2.70	120.0	1922	12.0	110.8	1775	11.9	92.3	23
									105.6	1692	11.5	88.0	11
									99.9	1600	11.9	83.2	4
J	SC	31	30	12		121.0	1938	11.0	114.6	1836	11.4	94.7	31
									107.4	1721	10.9	88.8	9
									102.3	1639	10.6	84.6	5
K	ML	86	39	13		106.3	1703	19.3	100.2	1605	19.7	94.3	4
									95.6	1532	19.2	90.0	3
									97.6	1564	20.1	82.6	1
L	CH	90	65	48		104.8	1679	20.3	96.7	1549	19.0	92.3	1
									89.6	1435	20.9	85.5	1

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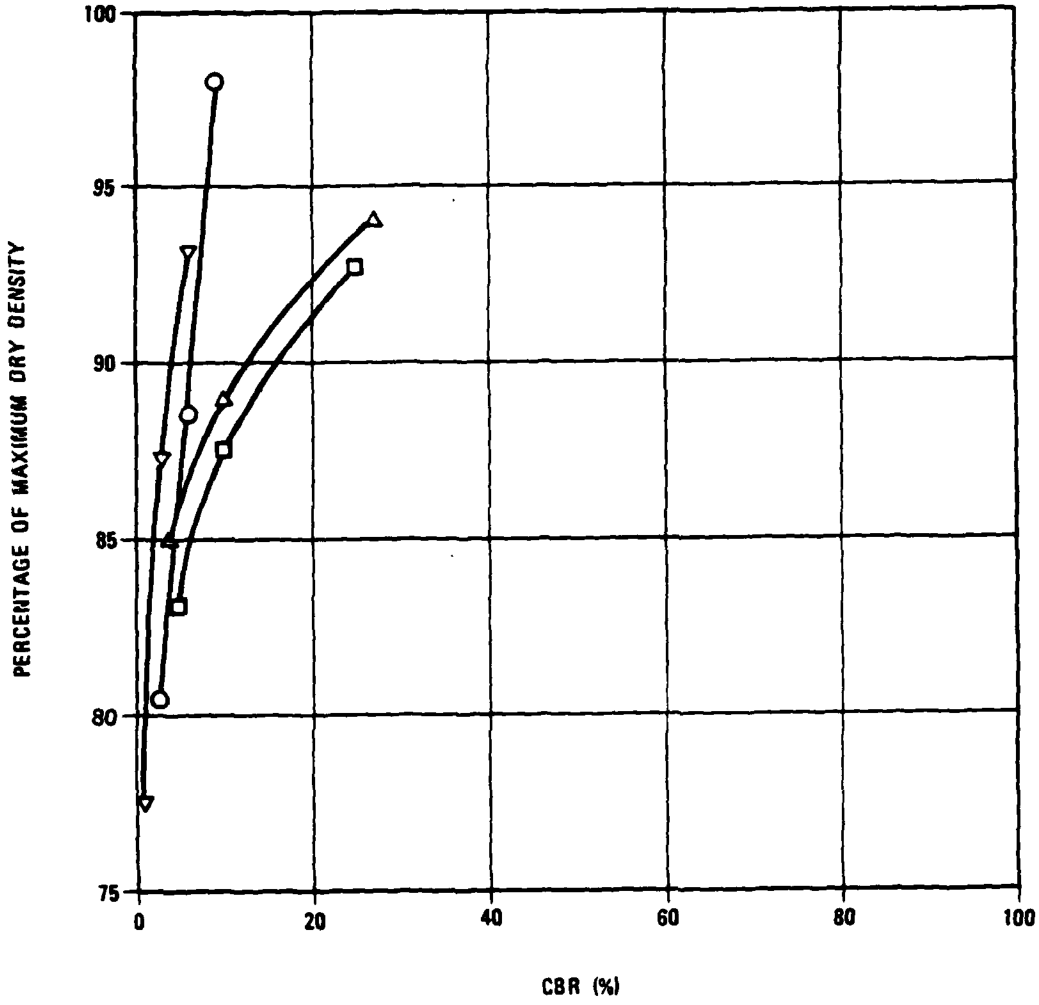
CALIFORNIA BEARING RAT!O (CBR)
TEST RESULTS
LAKE VALLEY, NEVADA
PAGE 3 OF 3

31 JUL 81
TABLE II-6-6



SYMBOL	COMPOSITE SAMPLE NUMBER	SOIL TYPE
○	A	ML
□	B	SM
△	C	SM
▽	D	CL

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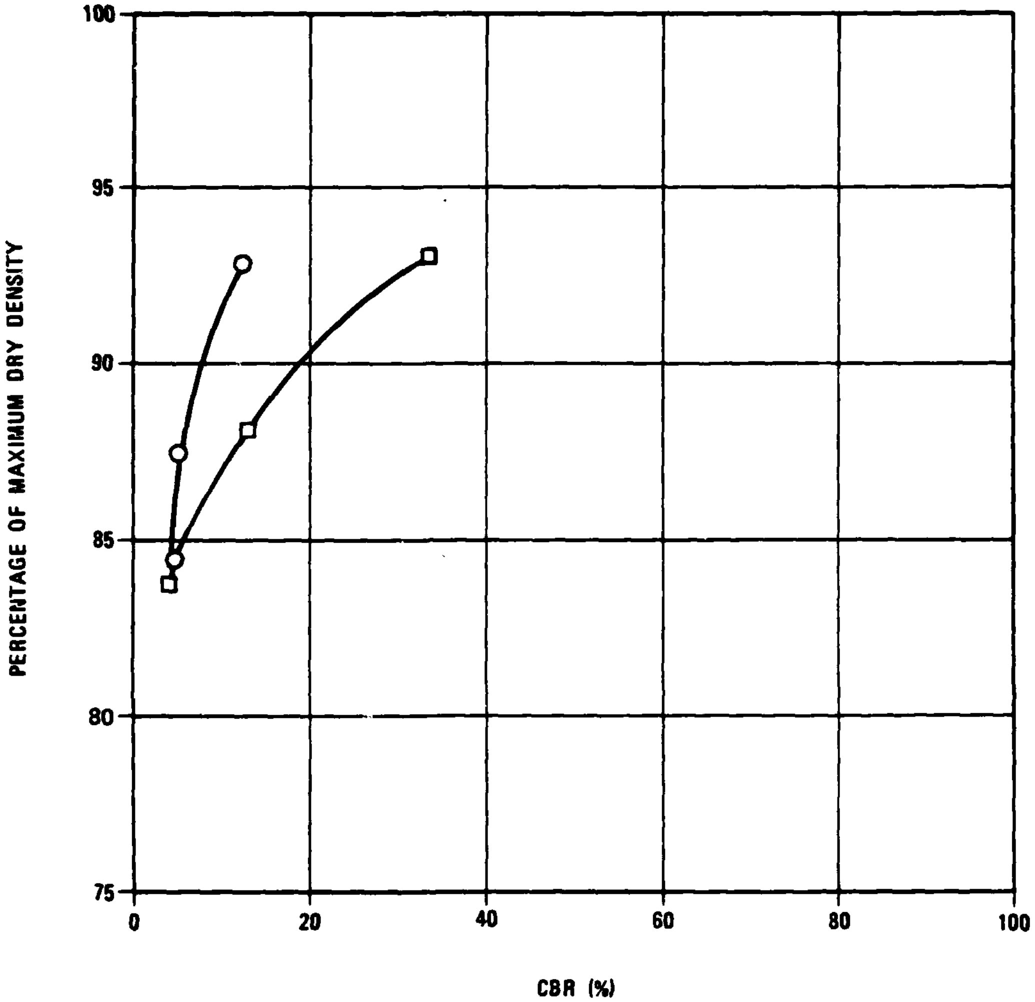
CALIFORNIA BEARING RATIO
(CBR) CURVES
LAKE VALLEY, NEVADA

31 JUL 81
PAGE 1 OF 4
FIGURE II-6-3



SYMBOL	COMPOSITE SAMPLE NUMBER	SOIL TYPE
○	E	SC
□	F	SM

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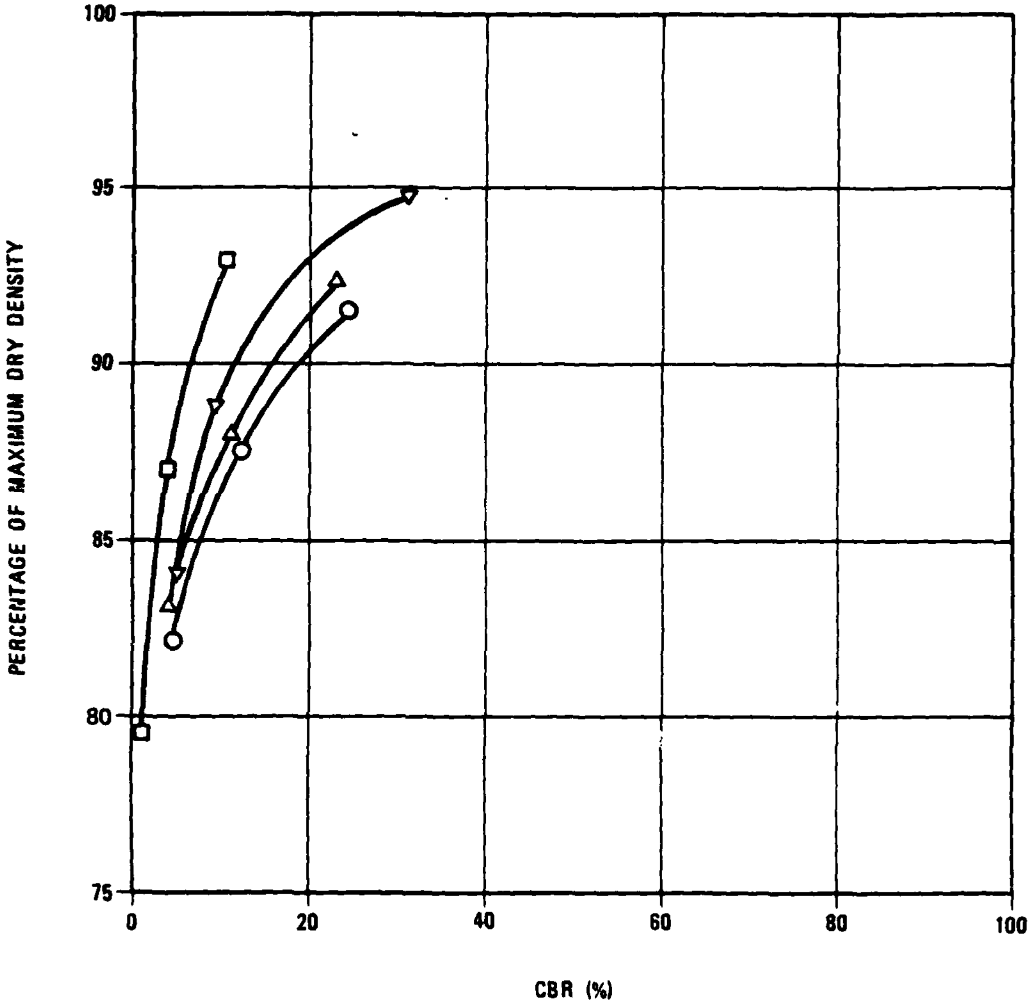
CALIFORNIA BEARING RATIO
(CBR) CURVES
LAKE VALLEY, NEVADA
PAGE 2 OF 4

31 JUL 81

FIGURE II-6-3



SYMBOL	COMPOSITE SAMPLE NUMBER	SOIL TYPE
○	G	SM
□	H	ML
△	I	SM
▽	J	SC

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CALIFORNIA BEARING RATIO
(CBR) CURVES
LAKE VALLEY, NEVADA

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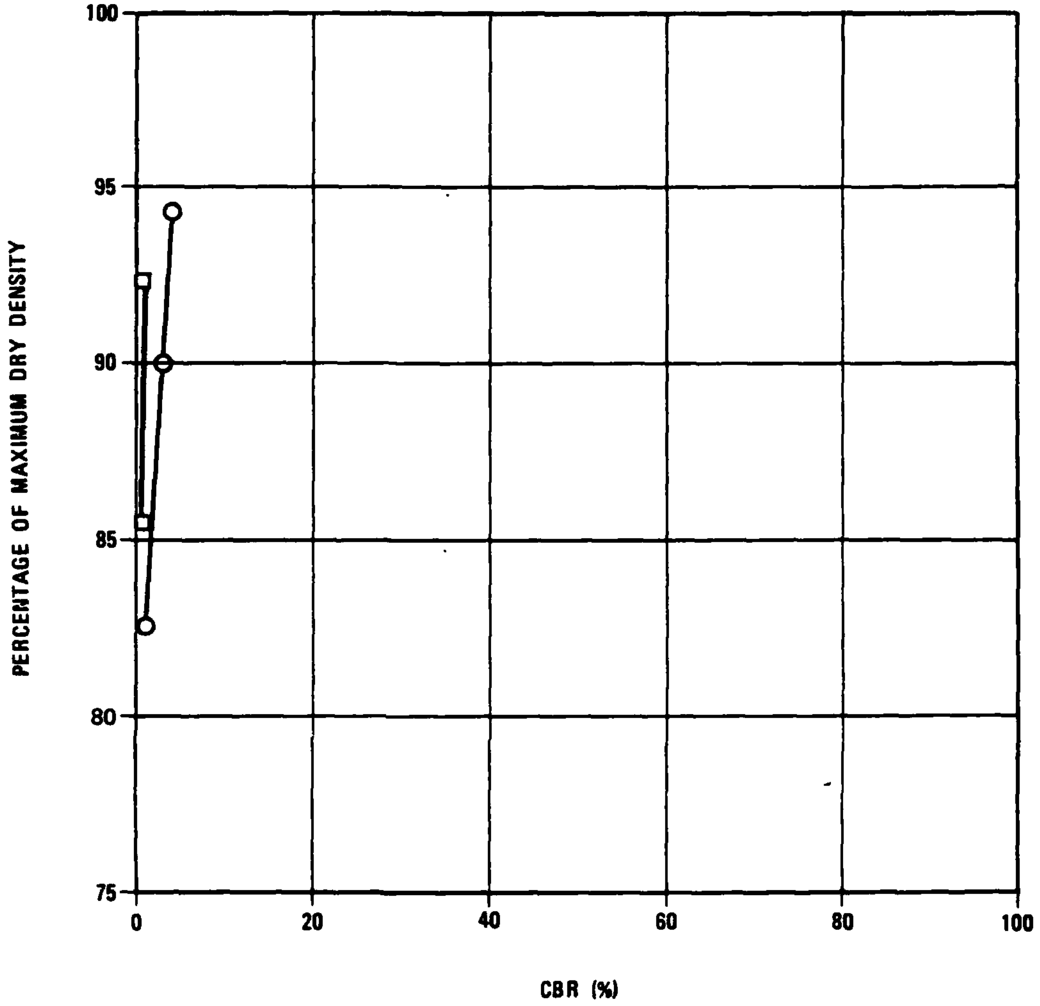
PAGE 3 OF 4
FIGURE II-9-3



SYMBOL	COMPOSITE SAMPLE NUMBER	SOIL TYPE
○	K	ML
□	L	CH

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CALIFORNIA BEARING RATIO (CBR) CURVES
LAKE VALLEY, NEVADA

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PAGE 4 OF 4

FIGURE II-6-3

10.0 FIELD CALIFORNIA BEARING RATIO (CBR) TEST RESULTS

Explanation: The results of the field CBR tests are tabulated in this section. Explanations of the column headings in Table II-10-1 follow:

A. Designations - Field CBR tests are identified as follows:

LV - F-1
LV - abbreviation for the valley (e.g., LV-Lake)
F - abbreviation for field CBR
1 - number of activity

B. Ground Surface Elevation - Indicated elevations on the logs are estimated from topographic maps of the study area within an accuracy of half the contour interval.

C. Surficial Geologic Unit - Indicates the surficial geologic unit in which the activity is located.

D. Depth - Indicates depth interval for which soil description is given.

E. USCS - Unified Soil Classification Symbol; see Table II-6-1 of Section 6.0, "Boring Logs". for details of USCS.

F. Grain Size Distribution and Plasticity - These are from results of laboratory tests. See Section 6.0, "Boring Logs", for explanation.

G. In Situ Dry Unit Weight - These are from results of field tests performed in accordance with the American Society for

Testing and Materials (ASTM) procedure D 1556-64, "Test for Density of Soil in Place by the Sand-Cone Method."

H. Moisture Content - These are from results of laboratory tests performed in accordance with ASTM procedure D 2216-71, "Laboratory Determination of Moisture Content of Soil."

I. Estimated Percent of Maximum Dry Density - This indicates the ratio (as a percentage) of the in situ dry unit weight obtained in the laboratory from ASTM D 1557-70, "Moisture-Density Relations of Soils Using 10-pound (4.5 kg) Hammer and 18-inch (457 mm) Drop" at that site or from a compatible site with matching grain size distribution.

J. Average Field CBR - The CBR is the ratio of the resistance to penetration developed by a soil to that developed by a standard crushed-rock base material. The procedures used for calculating the field CBR values are as outlined in the U.S. Army Corps of Engineers Technical Manual (TM) 5-30, pp. 2-86 to 2-96.

ACTIVITY NUMBER	GROUND SURFACE ELEVATION		SURFICIAL GEOLOGIC UNIT	DEPTH		USCS	GRAIN SIZE DISTRIBUTION AND PLASTICITY					IN SITU DRY UNIT WEIGHT		MOISTURE CONTENT (%)	ESTIMATED PERCENT OF MAXIMUM DRY DENSITY
	FEET	METERS		FEET	METERS		GR	SA	FI	LL	PI	(pcf)	(kg/m³)		
LV-F-1	6110	1862	A5i	1.0	0.30	SM	4	55	41		NP	78.0	1250	4.3	65
				2.0	0.61	SM	3	59	38		NP	81.7	1309	4.3	69
				3.0	0.91	SM	5	56	39		NP	80.3	1286	4.3	62
LV-F-2	5920	1804	A4o	1.0	0.30	ML	1	13	86	39	13	92.8	1487	15.4	87
				2.0	0.61	ML						83.0	1330	19.2	78
				3.0	0.91	CH	0	10	90	65	48	76.7	1229	24.4	73
				4.0	1.22	CH						72.8	1166	28.2	69

ESTIMATED PERCENT OF MAXIMUM DRY DENSITY	AVERAGE FIELD CBR (%)	REMARKS
65	3	Maximum dry density from (LV-P-4)
69	3	
62	3	
87	8	Soil consistency loose
78	8	Soil consistency loose
73	9	
69	3	

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FIELD CBR TEST RESULTS
LAKE VALLEY, NEVADA

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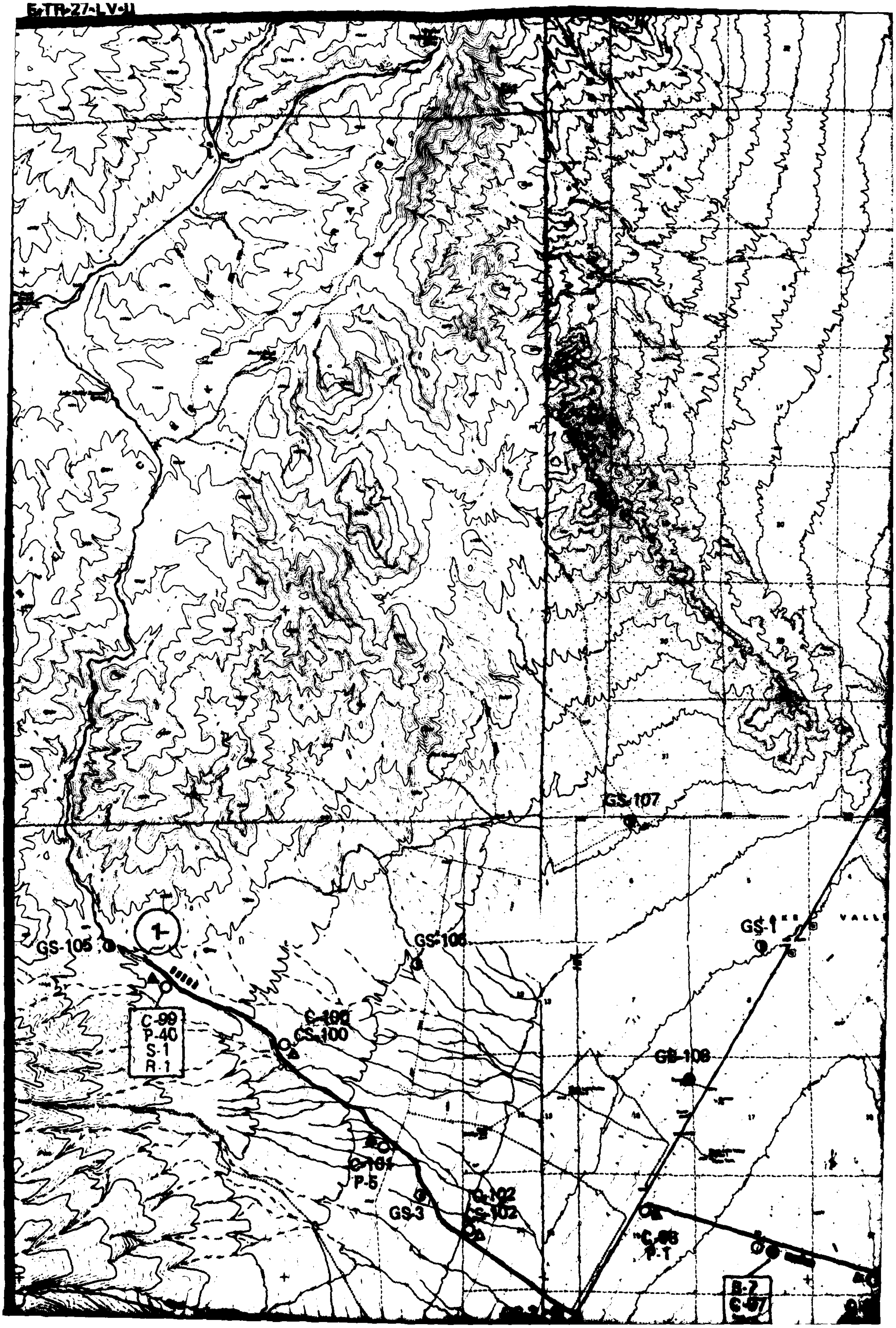
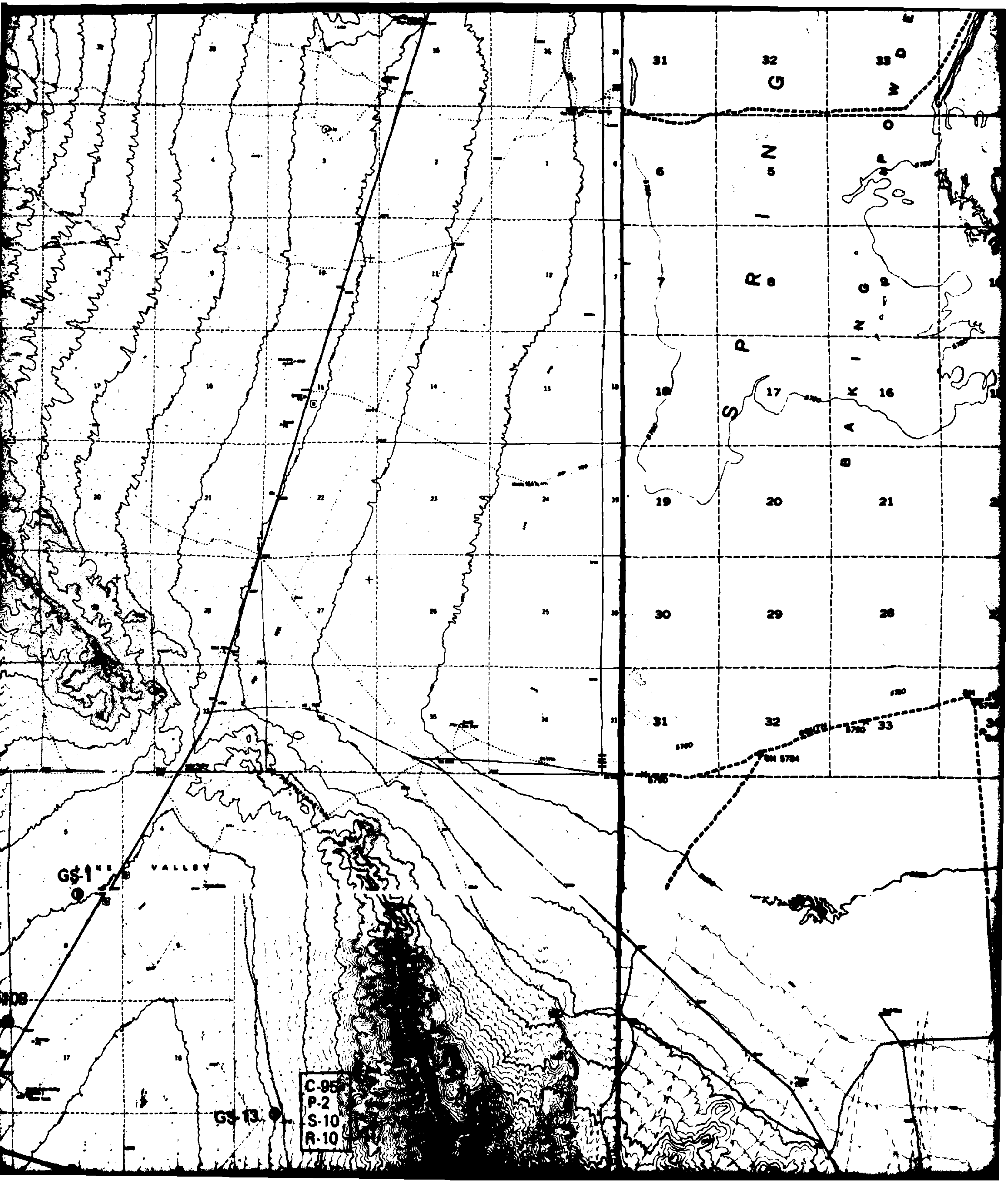
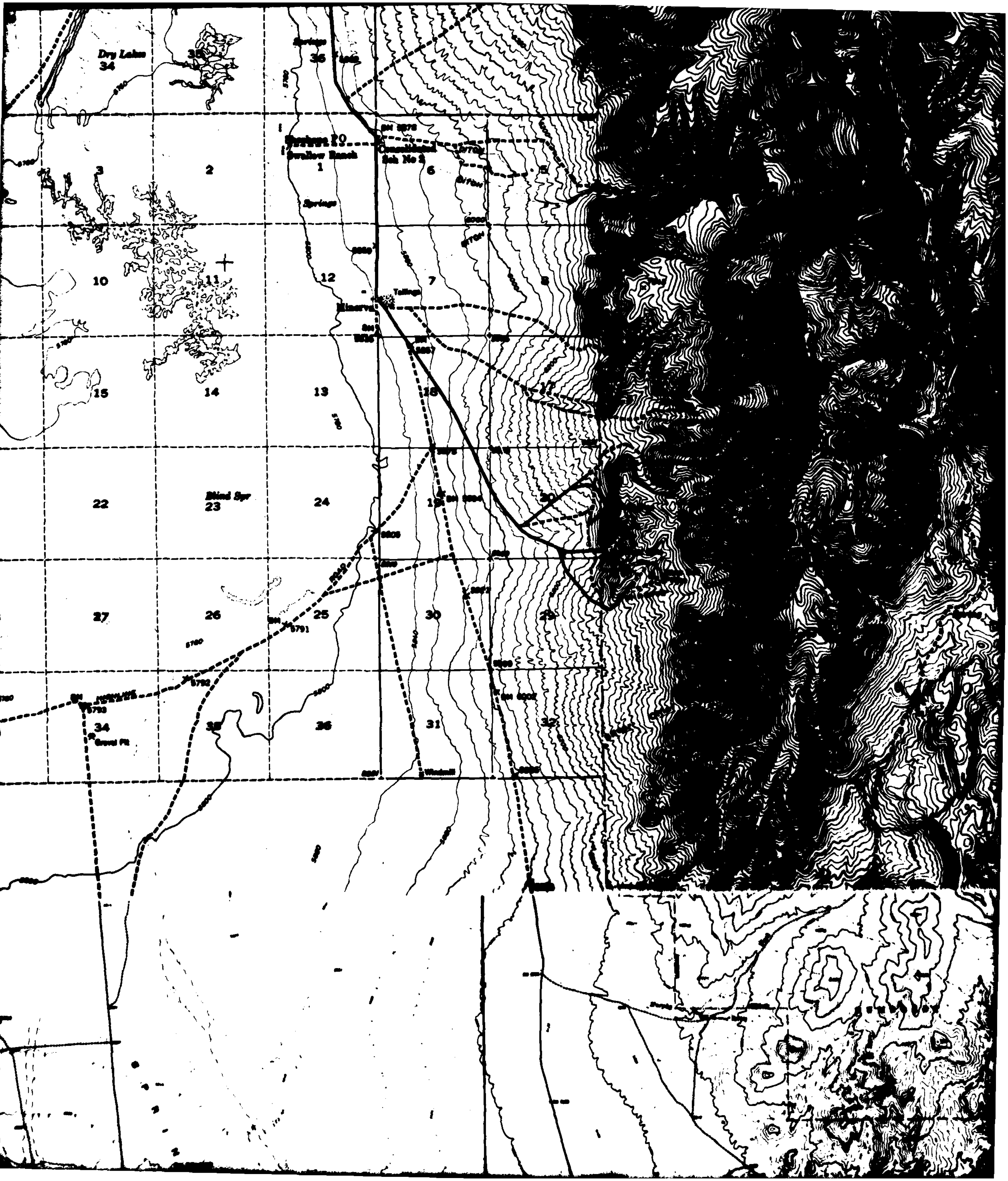
TABLE II-10-1


GS-107
GS-1
2
GS-105
1
GS-106
C-99
P-40
S-1
R-1
C-100
CS-100
GS-108
C-101
P-5
GS-3
C-102
CS-102
C-98
P-1
R-2
C-97



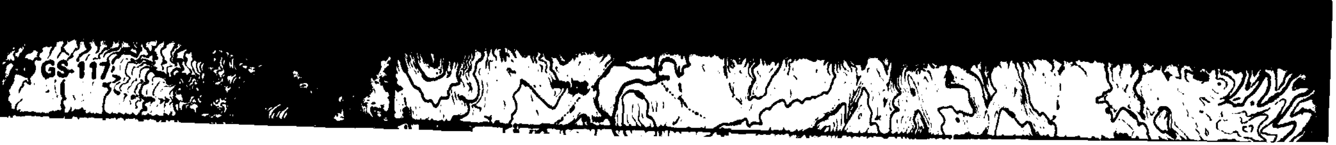
31
32
33
6
5
7
8
9
18
17
16
19
20
21
30
29
28
31
32
33
S P R I N G
B A K I N G P O W D E
5700
BM 5704
LAKE VALLEY
GS-1
108
GS-13
C-95
P-2
S-10
R-10

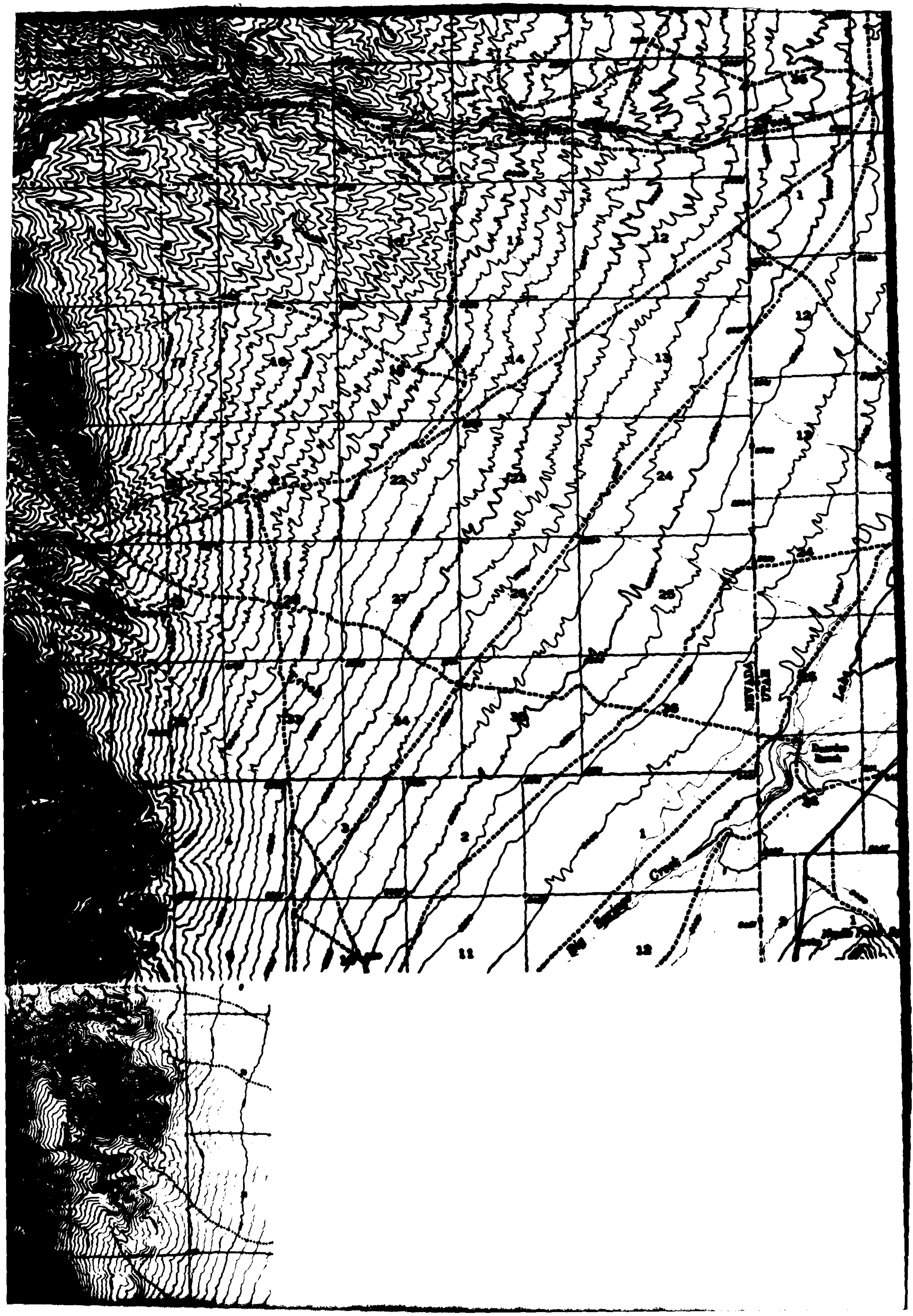

Dry Lakes
34
35
Springs
36
Shoshone P O
Swallow Ranch
Consolidated
Sch No 2
BM 5878
1
2
3
6
5
Springs
5700
10
11
12
7
8
Tailings
Minerva
15
14
13
18
17
22
Blind Spr
23
24
19
20
27
26
25
30
29
BM
5791
5780
5792
5793
Gravel Pit
34
35
36
31
32
Windmill

31 JUL 81

3

[illegible] E





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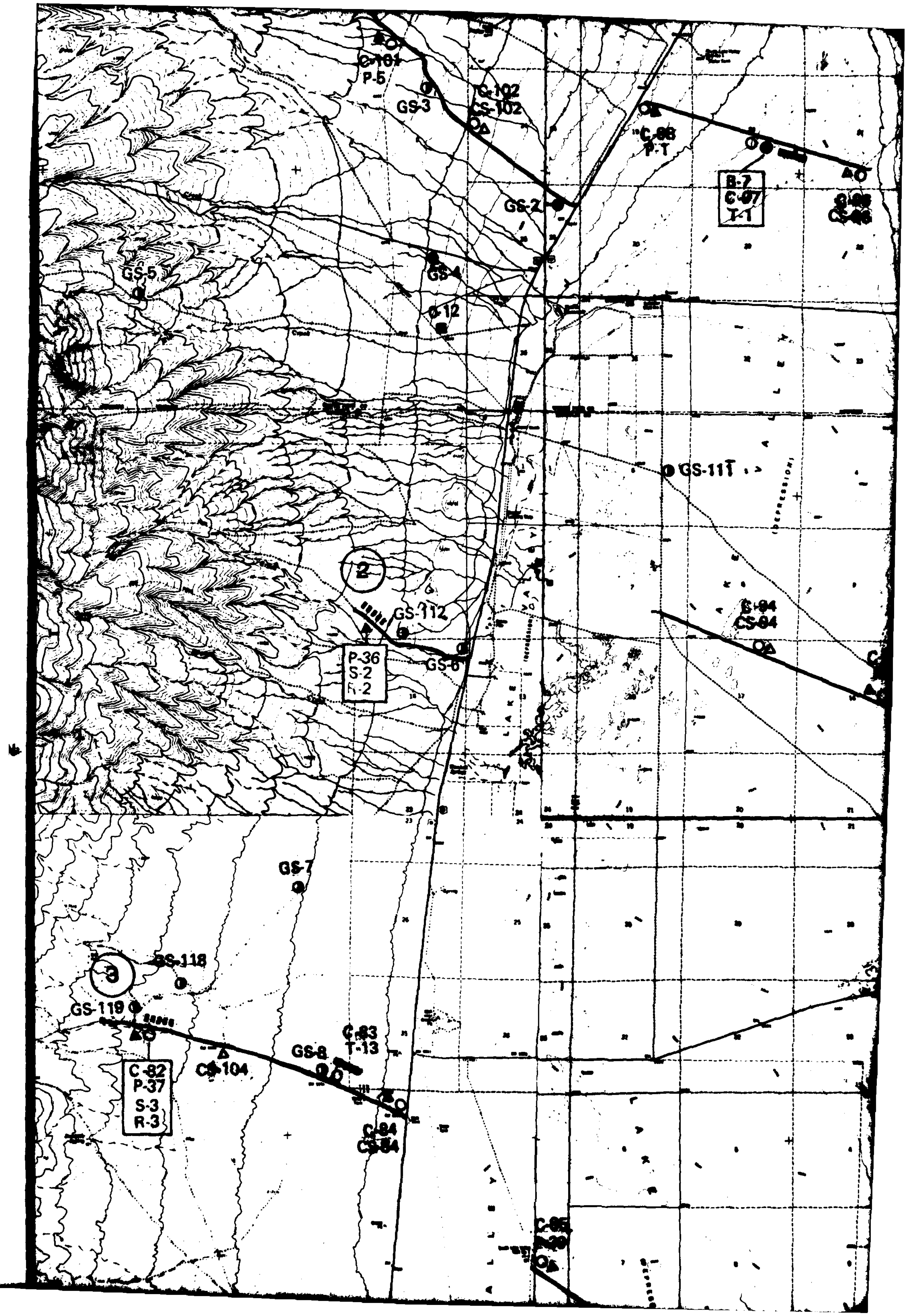
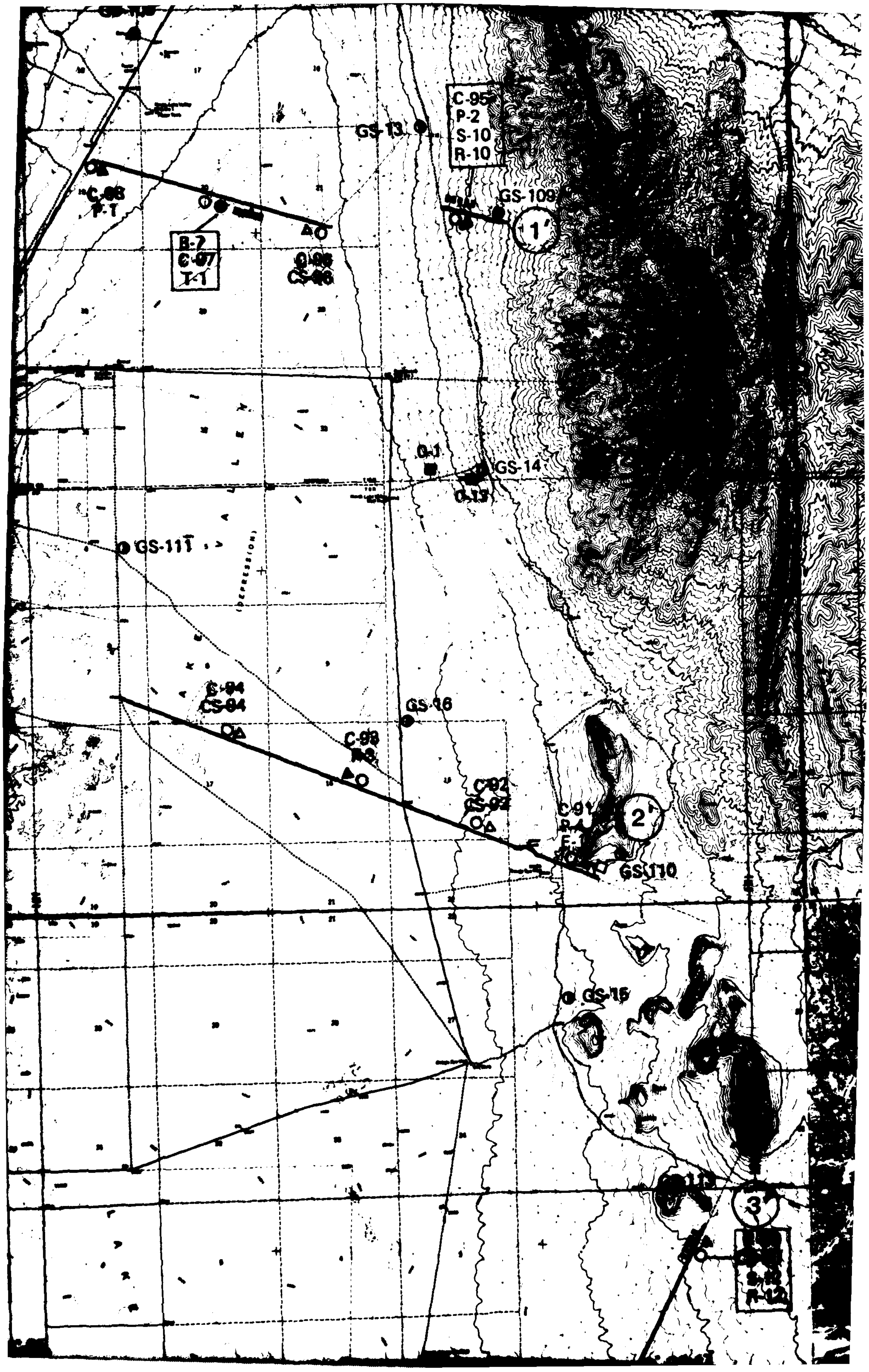
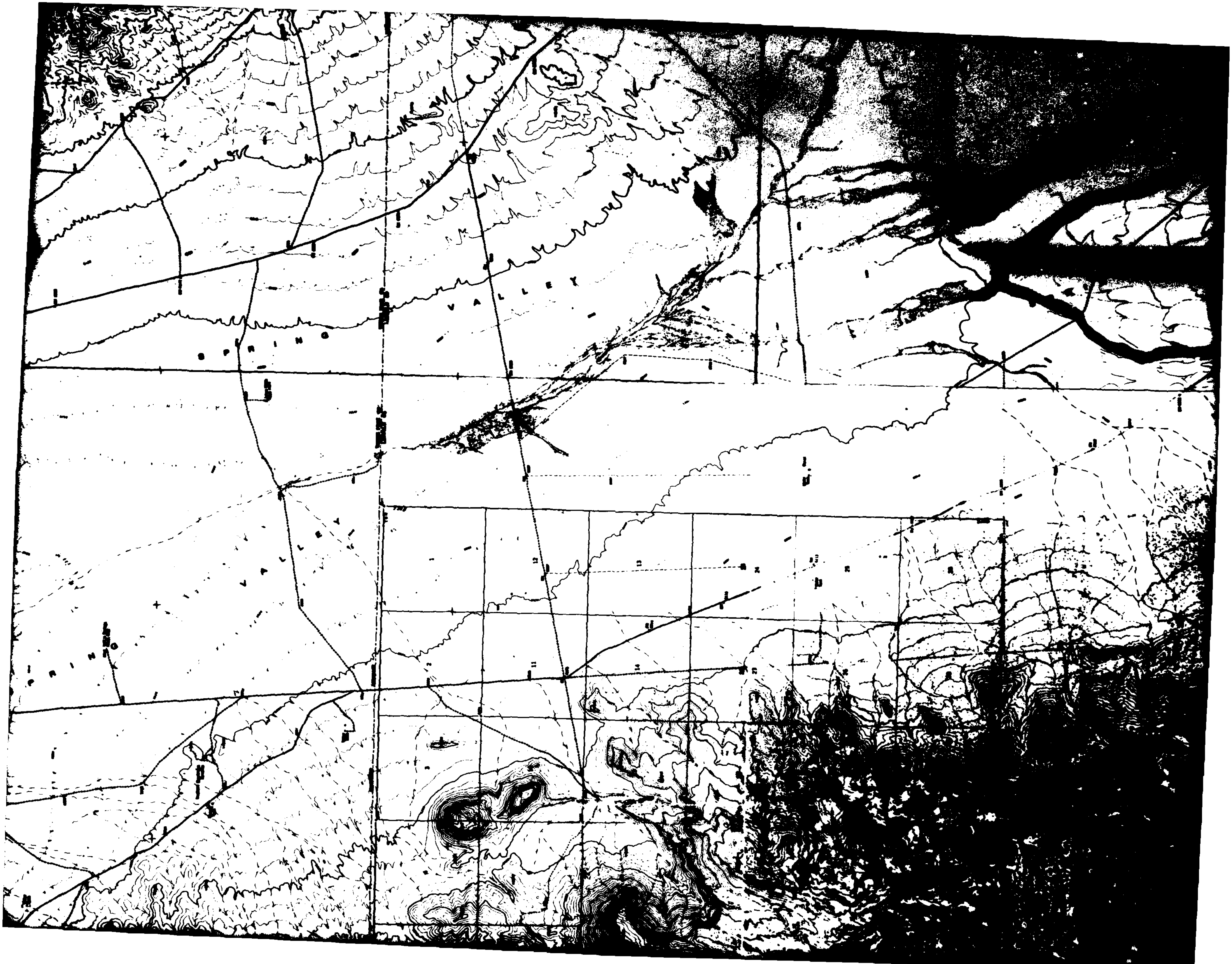
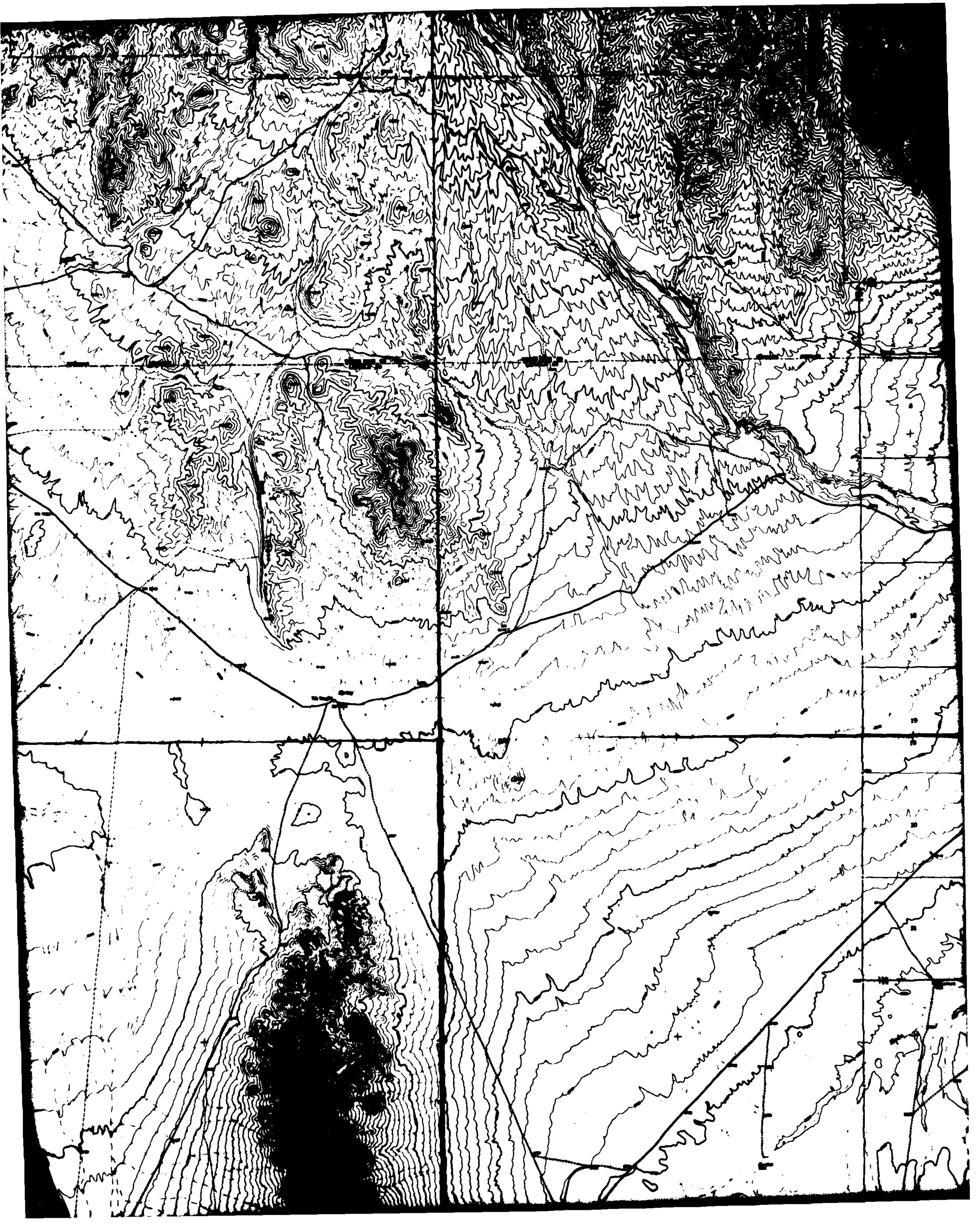
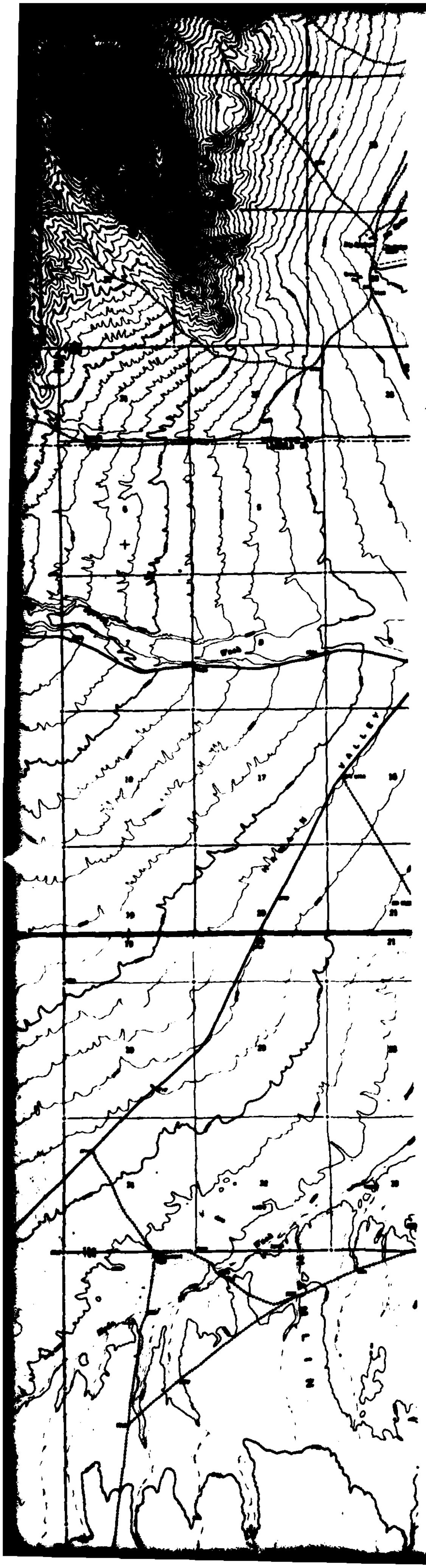

C-101
P-5
GS-3
C-102
CS-102
GS-2
C-98
P-T
B-7
C-97
T-1
GS-4
GS-5
C-12
GS-11T
DEPRESSION
2
GS-112
P-36
S-2
R-2
GS-6
C-94
CS-94
LAKE
VALLEY
GS-7
3
GS-118
GS-119
C-82
P-37
S-3
R-3
CS-104
GS-8
C-83
T-13
C-84
CS-84

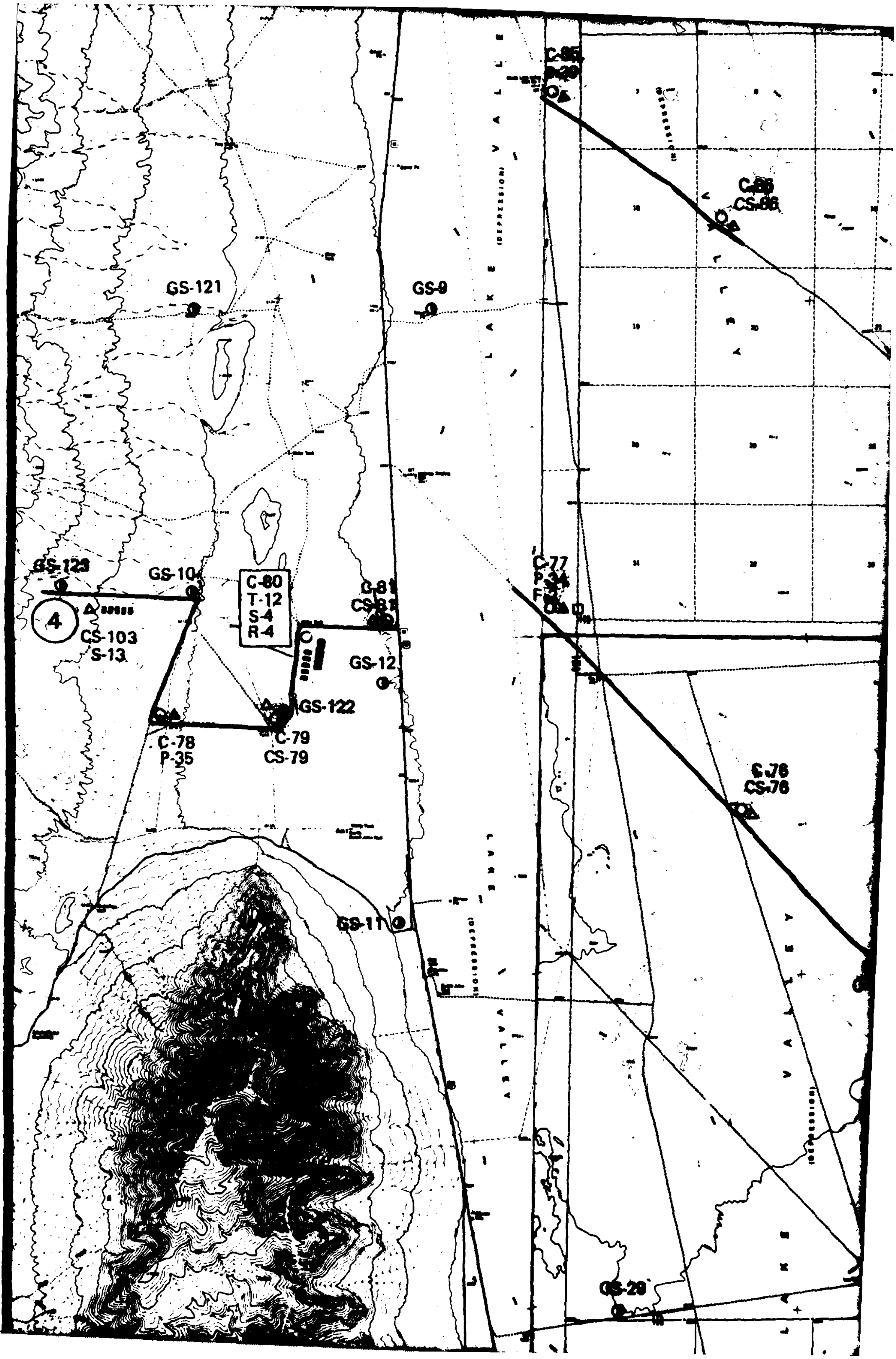

C-95
P-2
S-10
R-10
GS-13
GS-109
1'
C-88
P-1
B-2
C-97
T-1
C-96
CS-96
O-1
GS-14
O-13
GS-111
(DEPRESSION)
C-94
CS-94
GS-16
C-93
R-3
C-92
GS-92
C-91
P-1
F-1
2'
GS-110
GS-15
3'
R-12

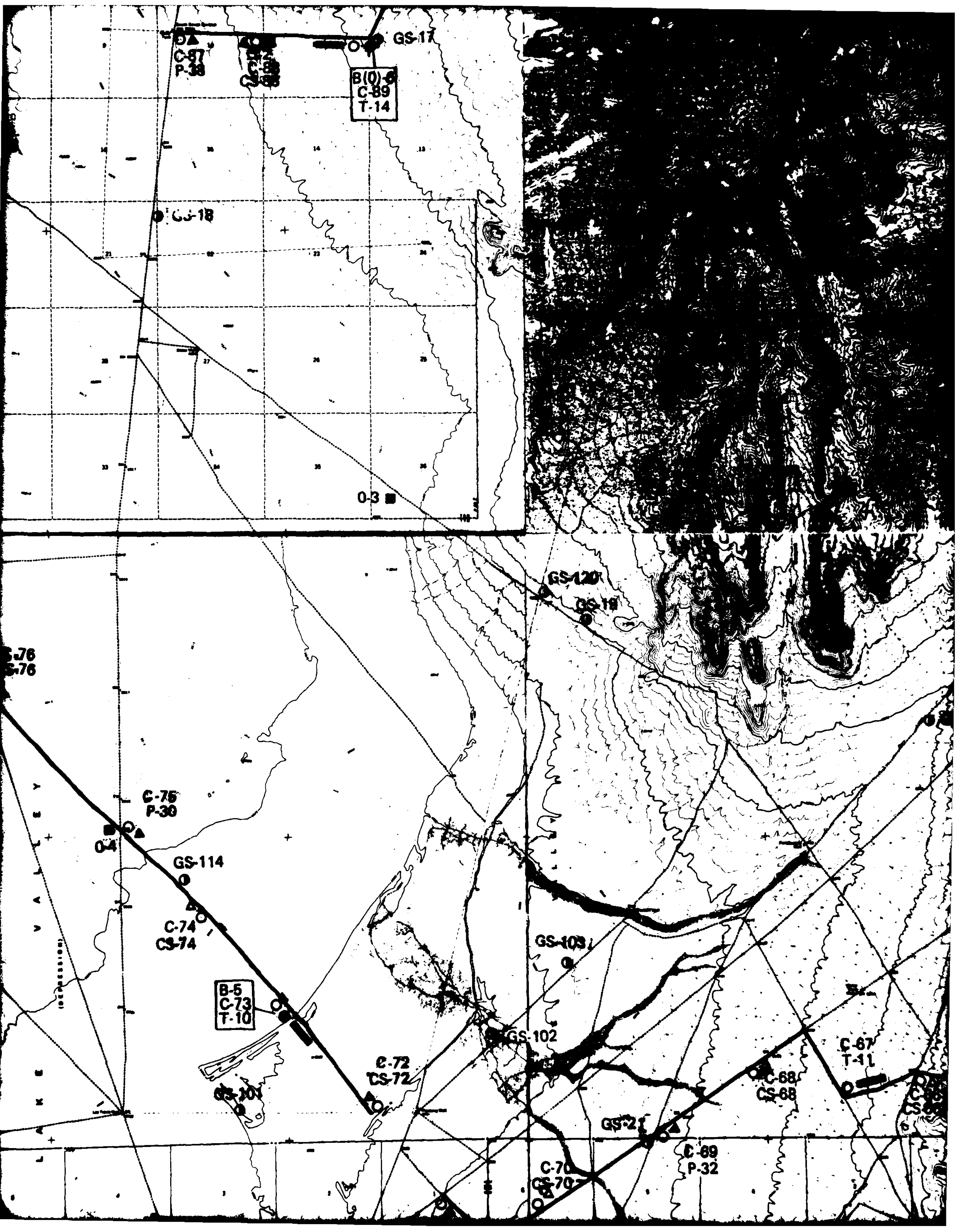


SPRING VALLEY
SPRING VALLEY

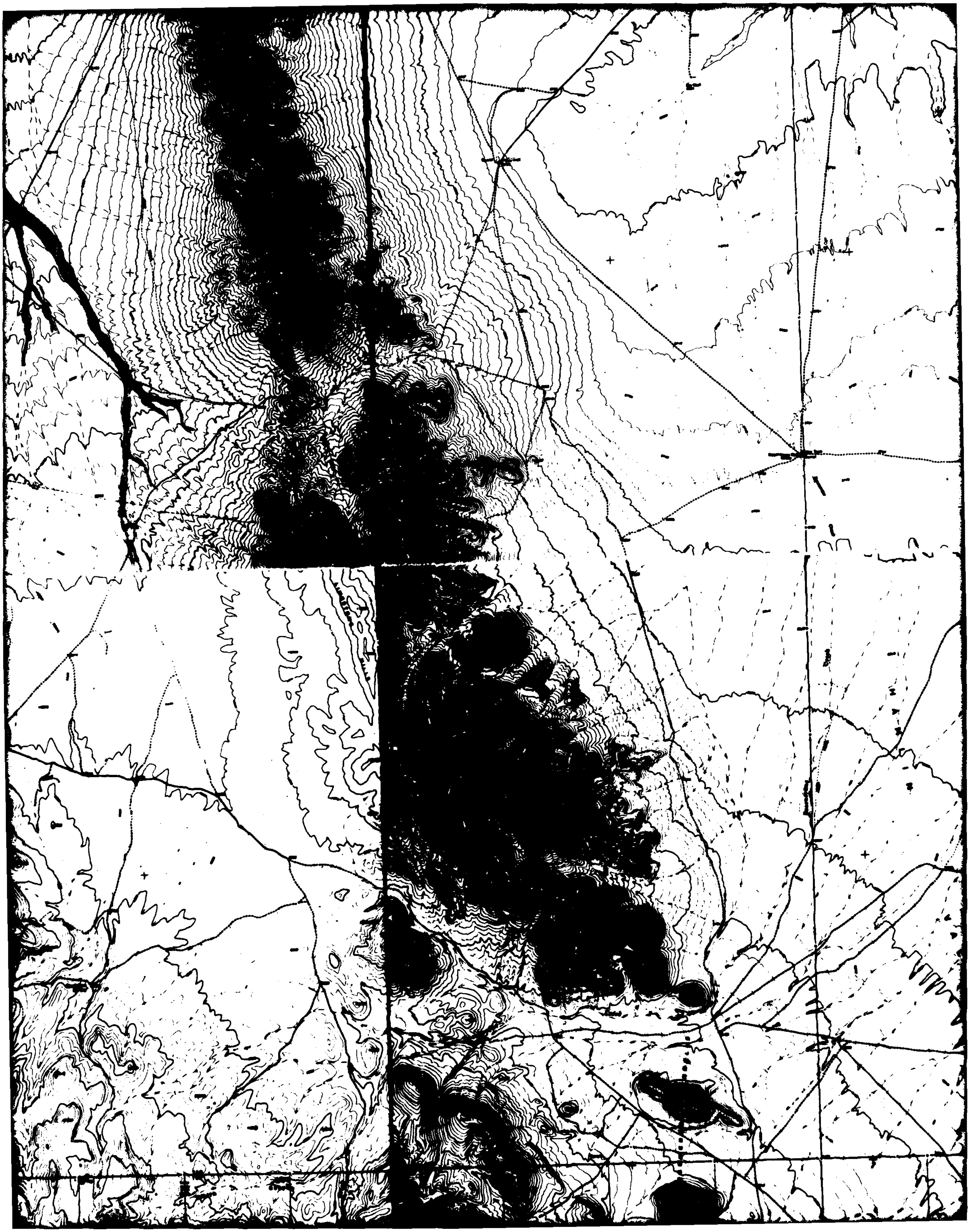


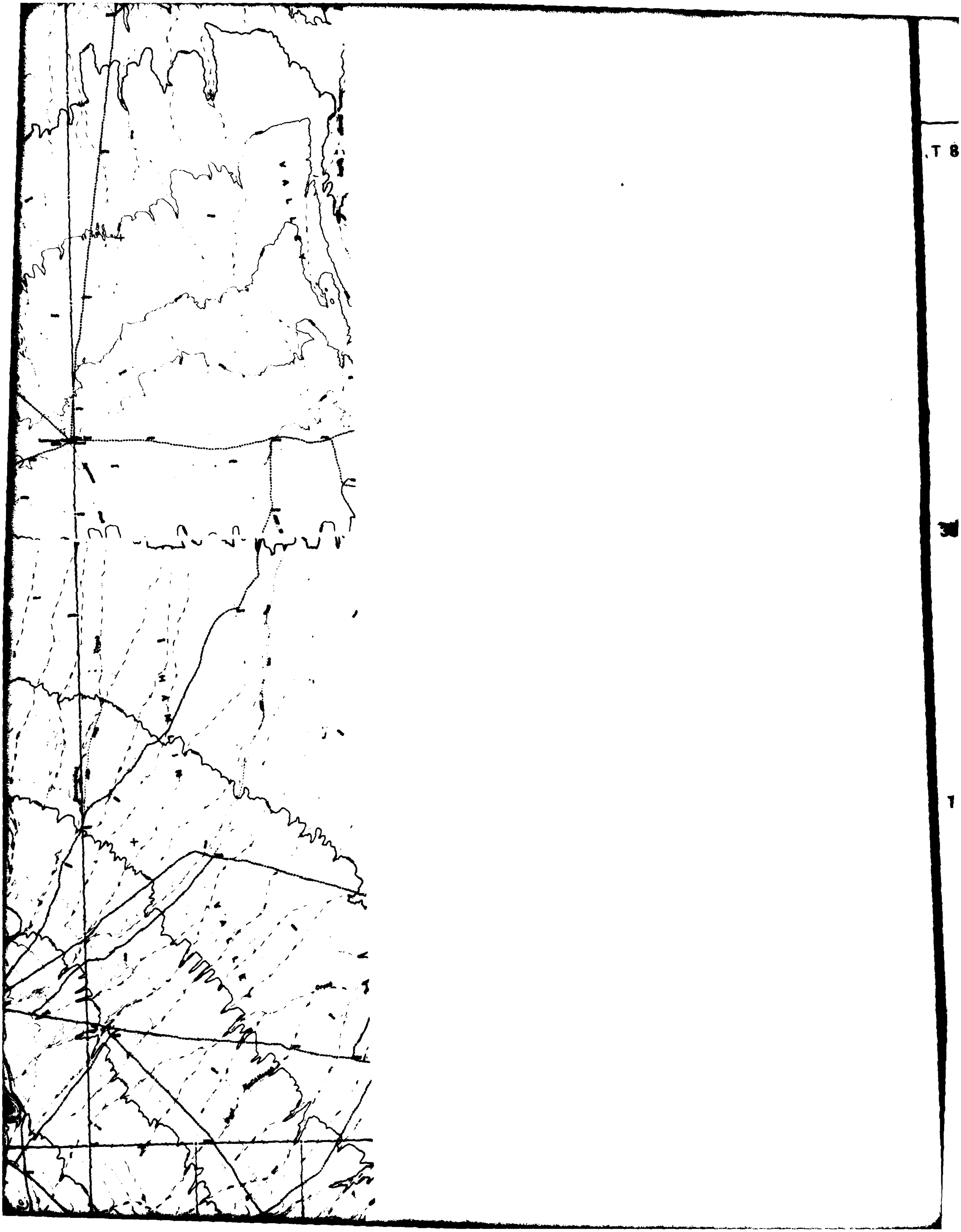

Fork
17
VALLEY
16
20
21

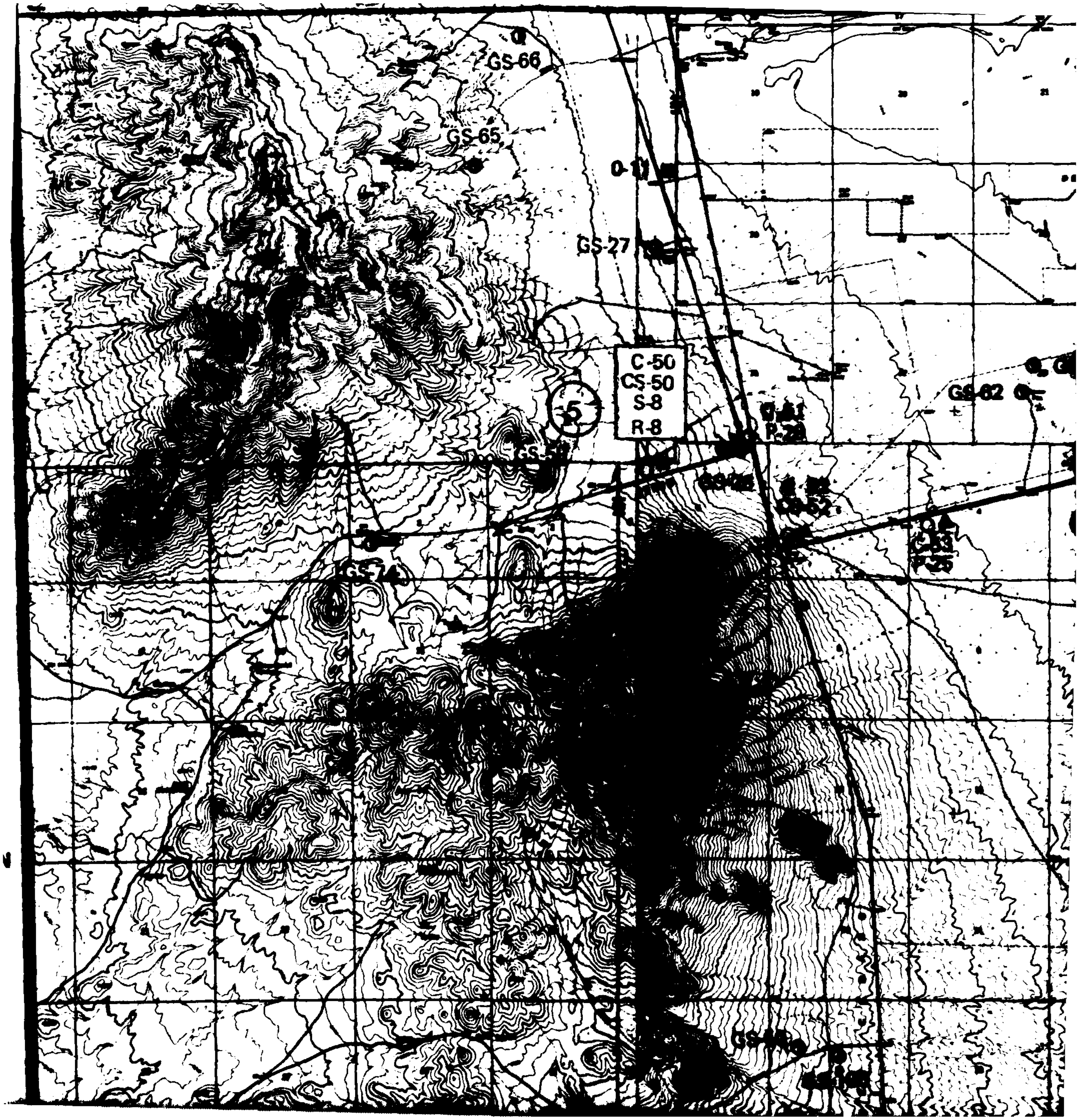

C-85
P-29
C-86
CS-86
GS-121
GS-9
LAKE VALLEY
(DEPRESSION)
GS-123
GS-10
C-80
T-12
S-4
R-4
C-81
CS-81
④
CS-103
S-13
GS-12
GS-122
C-78
P-35
C-79
CS-79
C-77
P-34
F
C-76
CS-76
GS-11
LAKE VALLEY
(DEPRESSION)
VALLEY
(DEPRESSION)
GS-29

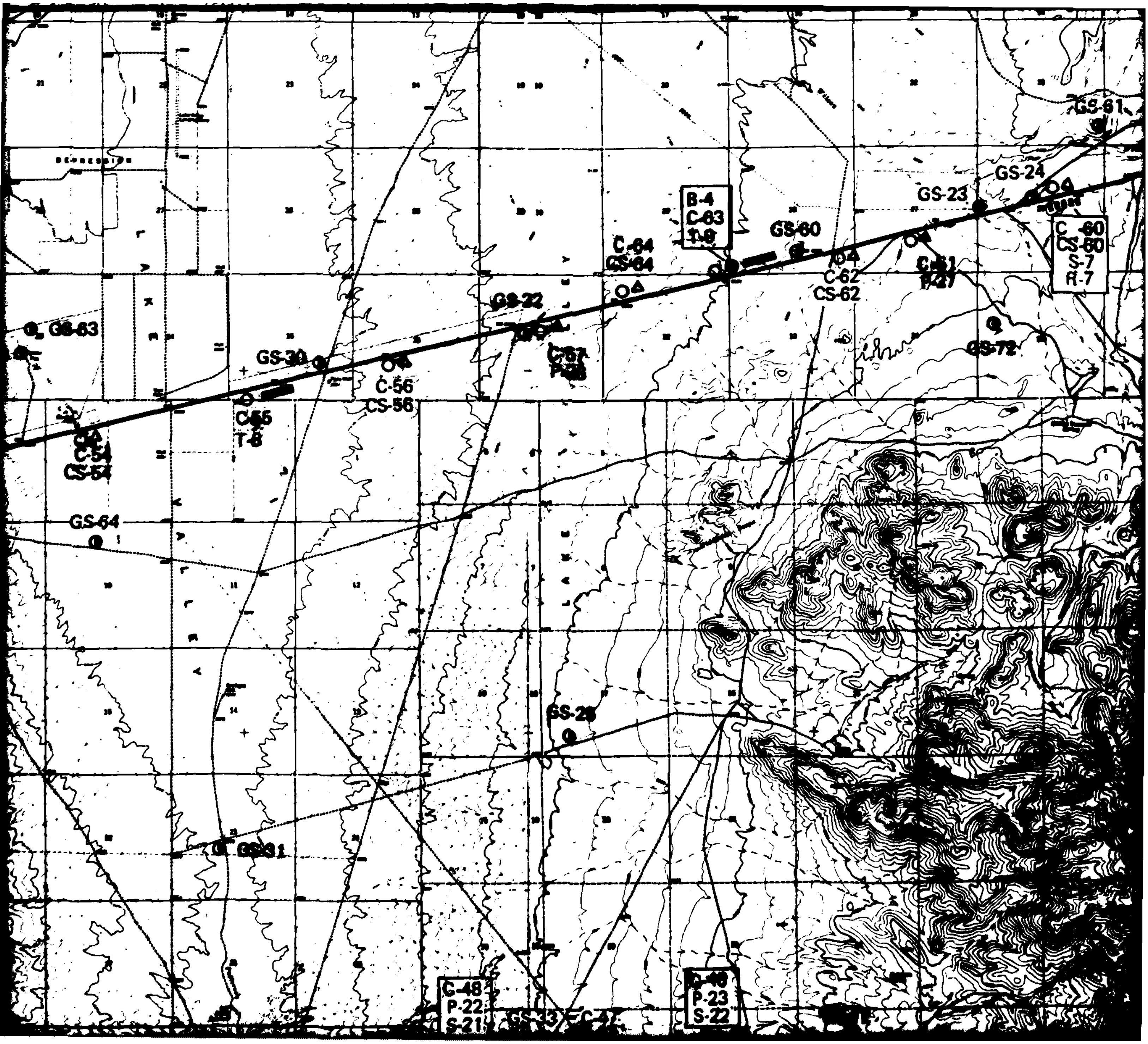

GS-17
C-87
P-38
C-88
CS-88
B(0)-6
C-89
T-14
GS-18
O-3
GS-120
GS-19
C-75
P-30
O-4
GS-114
C-74
CS-74
B-5
C-73
T-10
GS-103
GS-102
C-72
CS-72
GS-101
C-67
T-11
C-68
CS-68
GS-21
C-69
P-32
C-70
CS-70
VALLEY
(DEPRESSION)

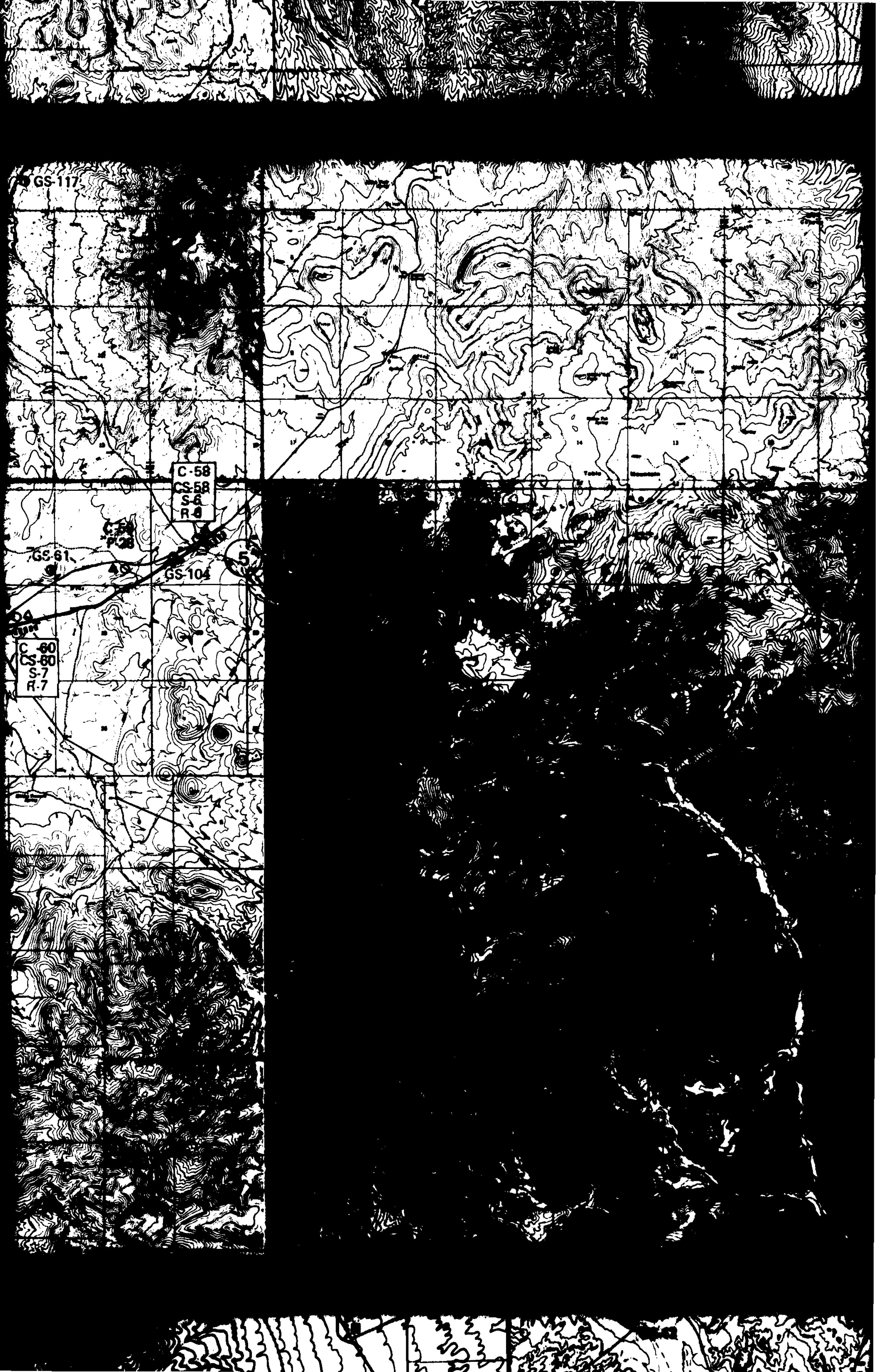

GS-20
C-65
P-33
S-5
R-5
4
C-67
T-11
C-68
CS-68
C-66
CS-66
GS-117

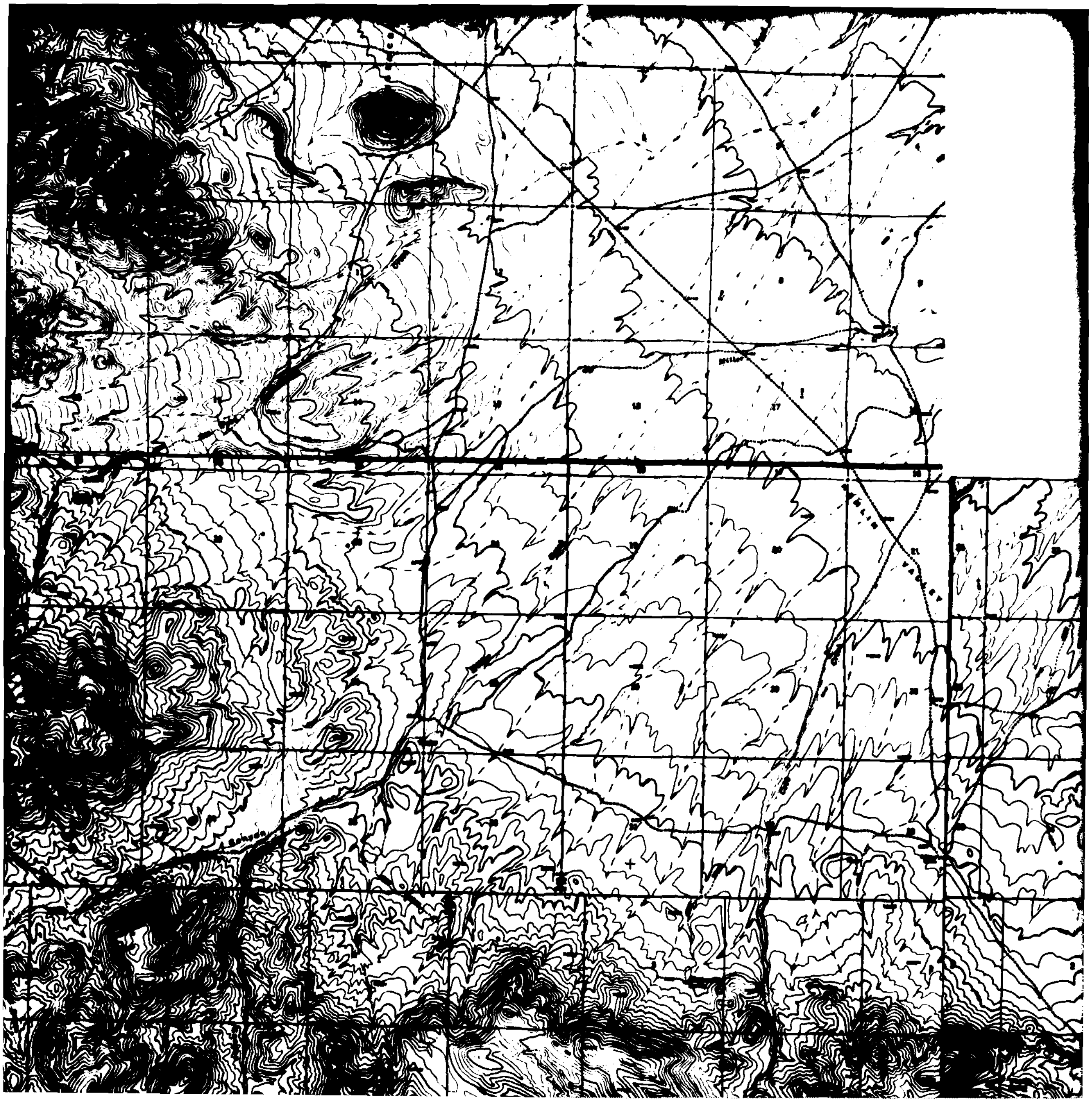


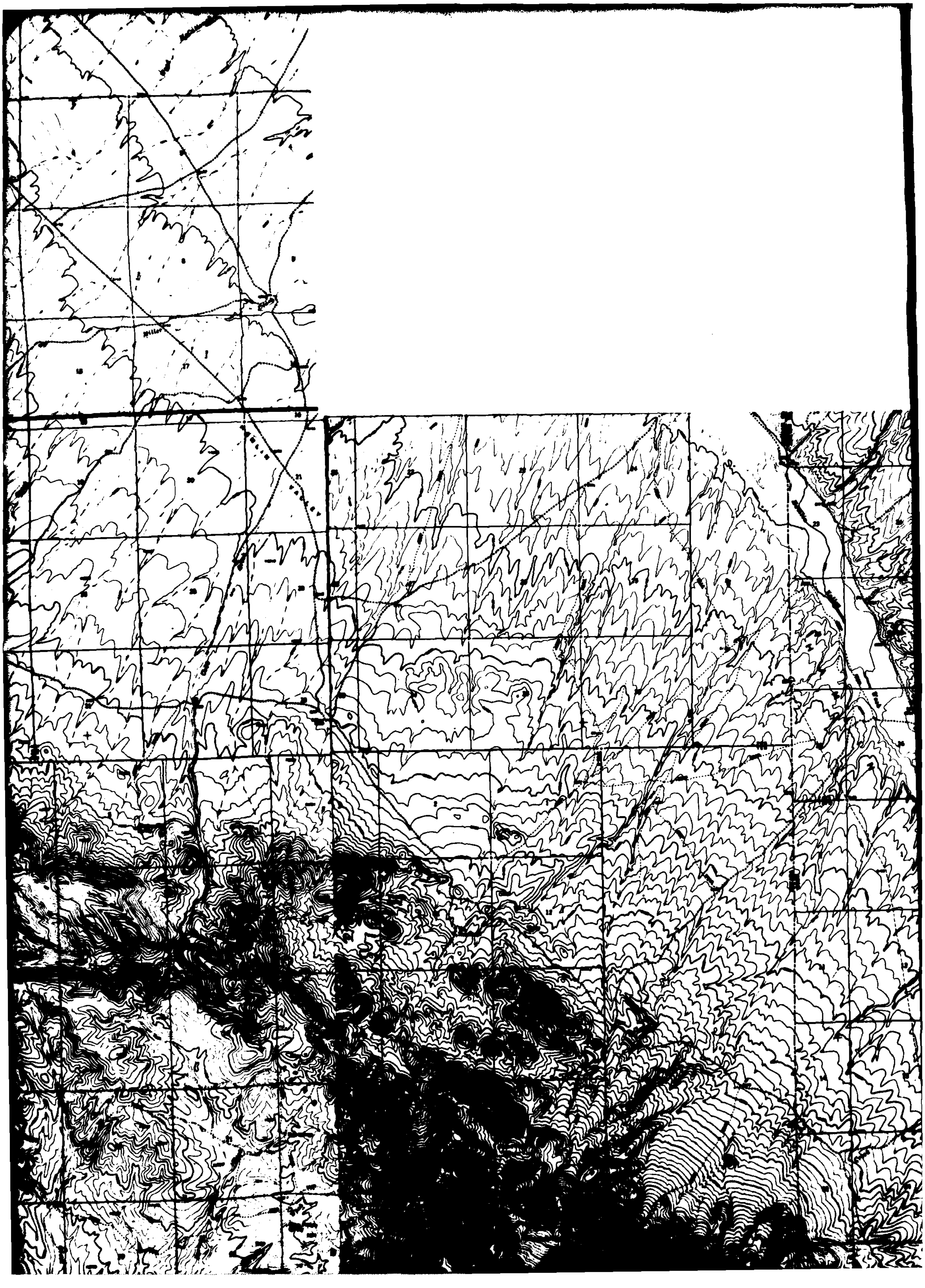

.T 8
30
1

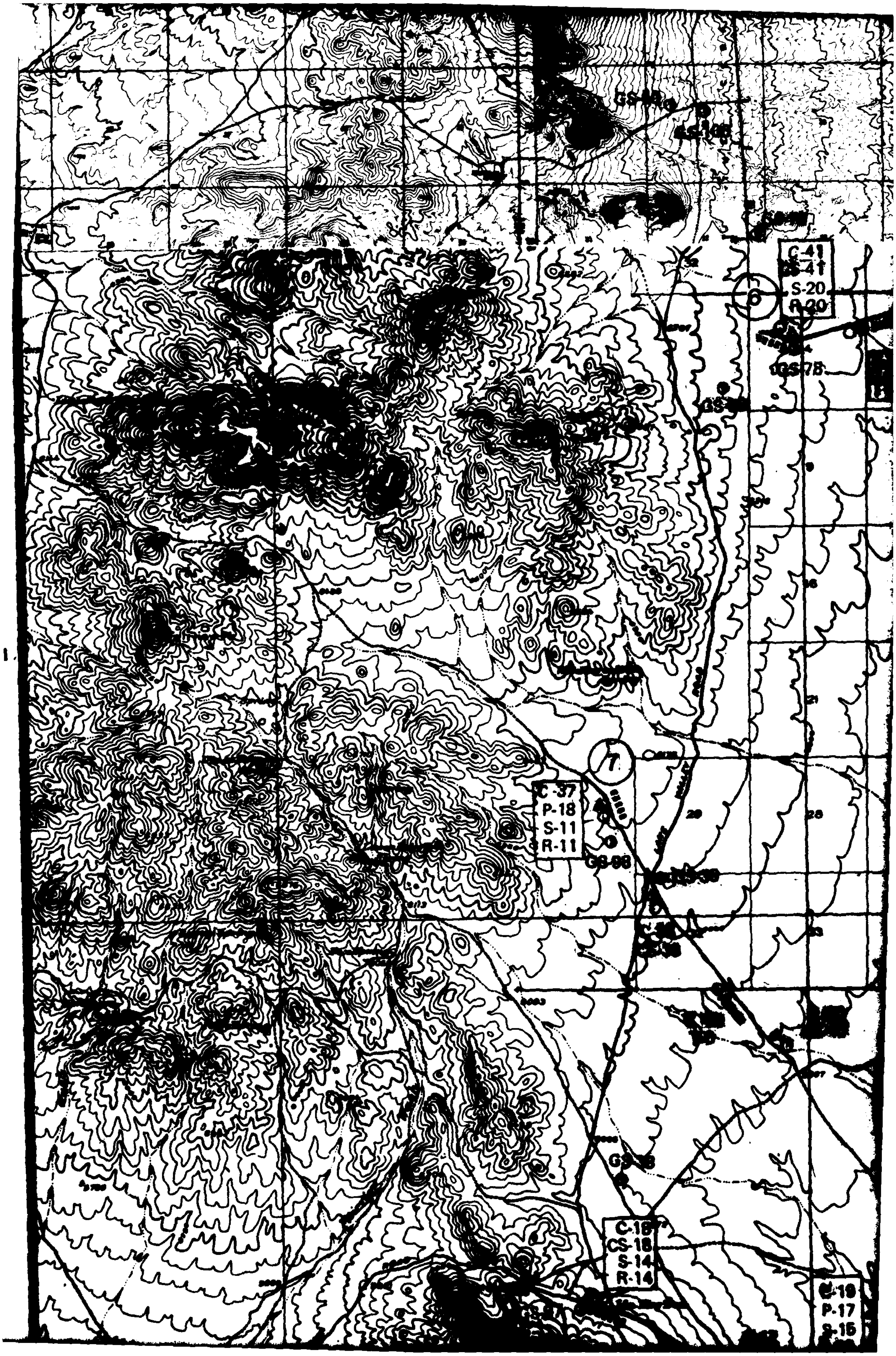

GS-66
GS-65
0-1
GS-27
C-50
CS-50
S-8
R-8
5
GS-62
GS-74

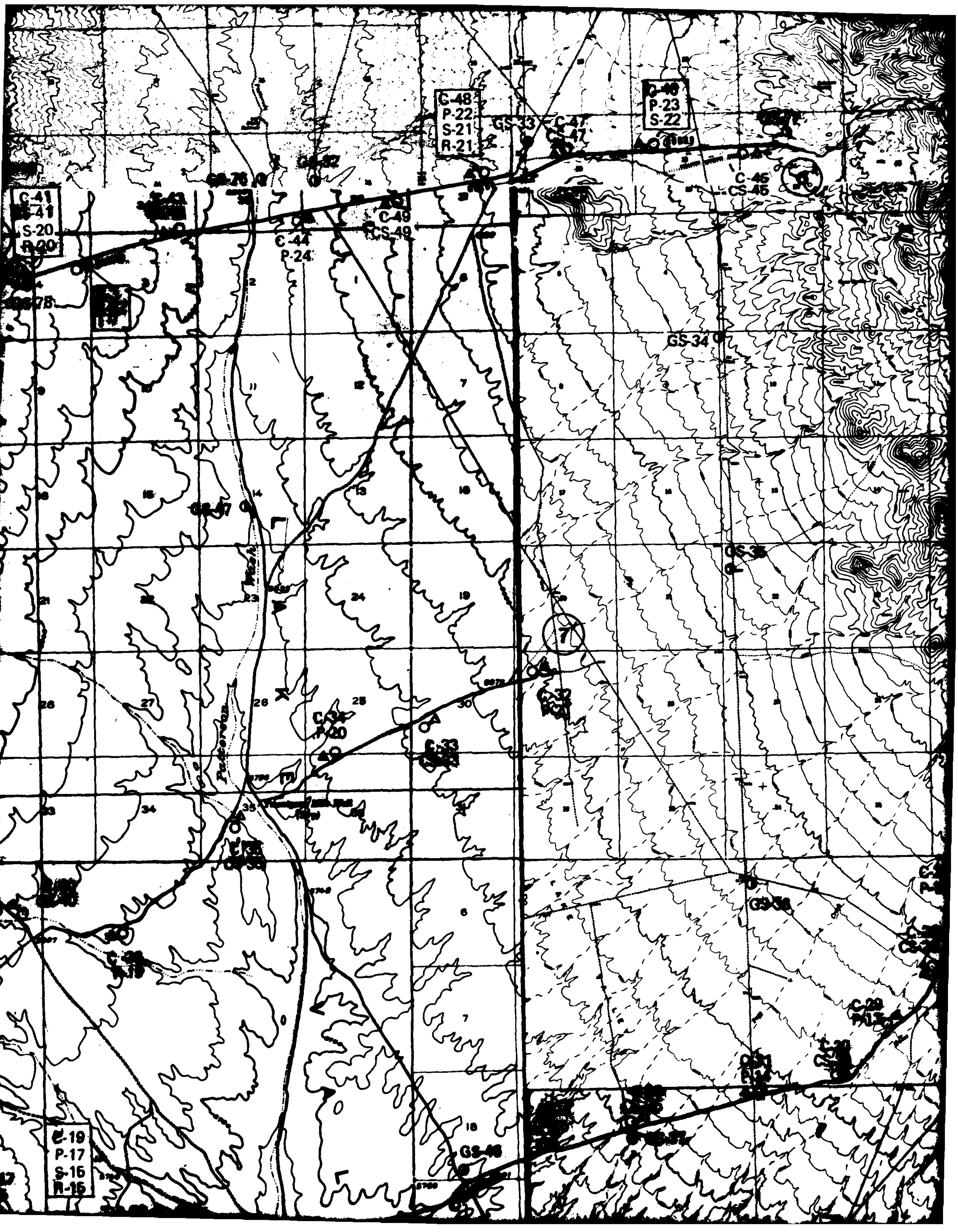

GS-61
GS-24
GS-23
B-4
C-63
T-9
GS-60
C-64
CS-64
C-60
CS-60
S-7
R-7
C-62
CS-62
C-61
P-21
GS-22
GS-72
GS-63
GS-30
C-56
CS-56
C-57
C-55
T-8
C-54
CS-54
DEPRESSION
GS-64
GS-31
C-48
P-22
S-21
GS-33
C-47
C-49
P-23
S-22

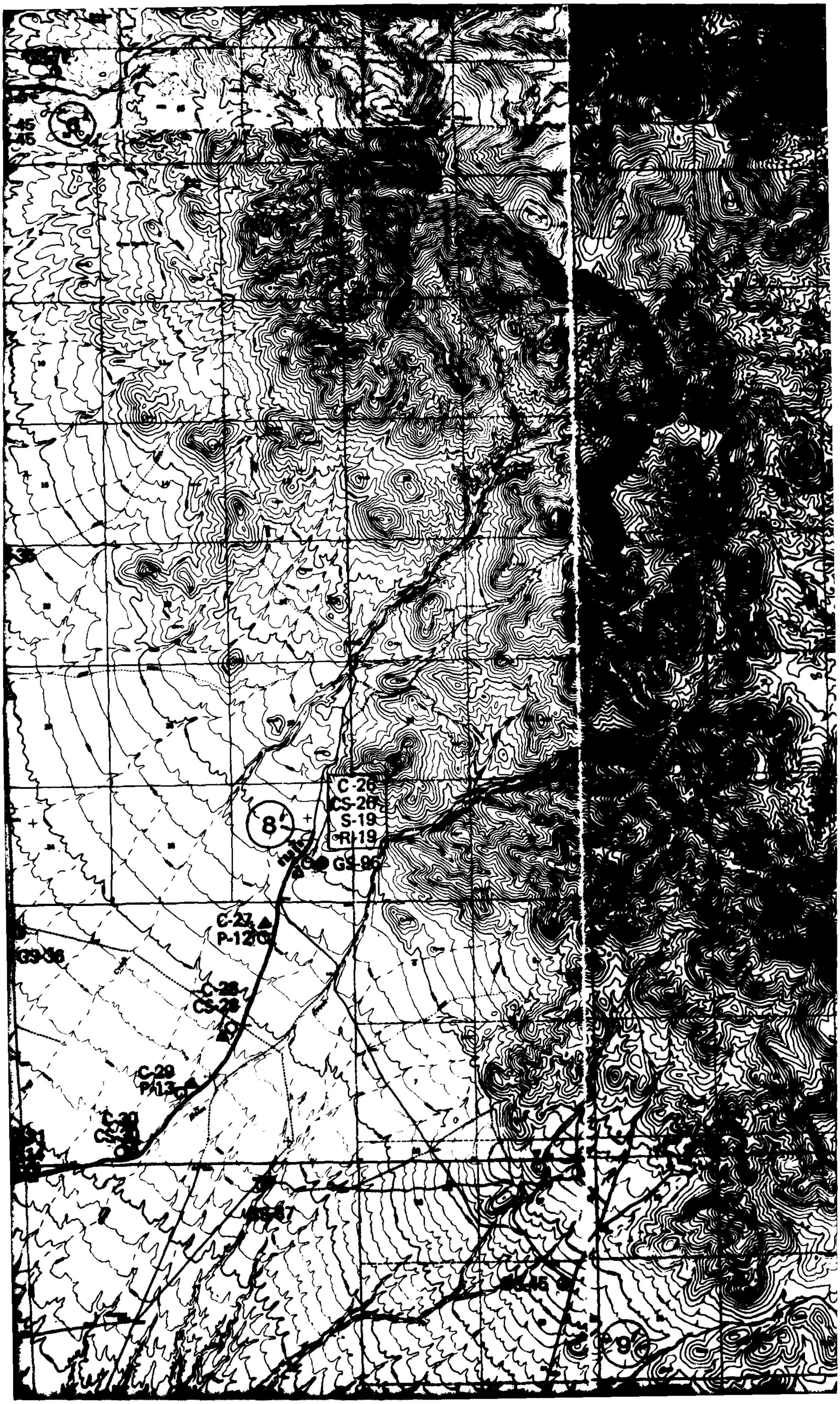

GS-117
C-58
CS-58
S-6
R-6
C-59
P-28
GS-61
GS-104
5
C-60
CS-60
S-7
R-7

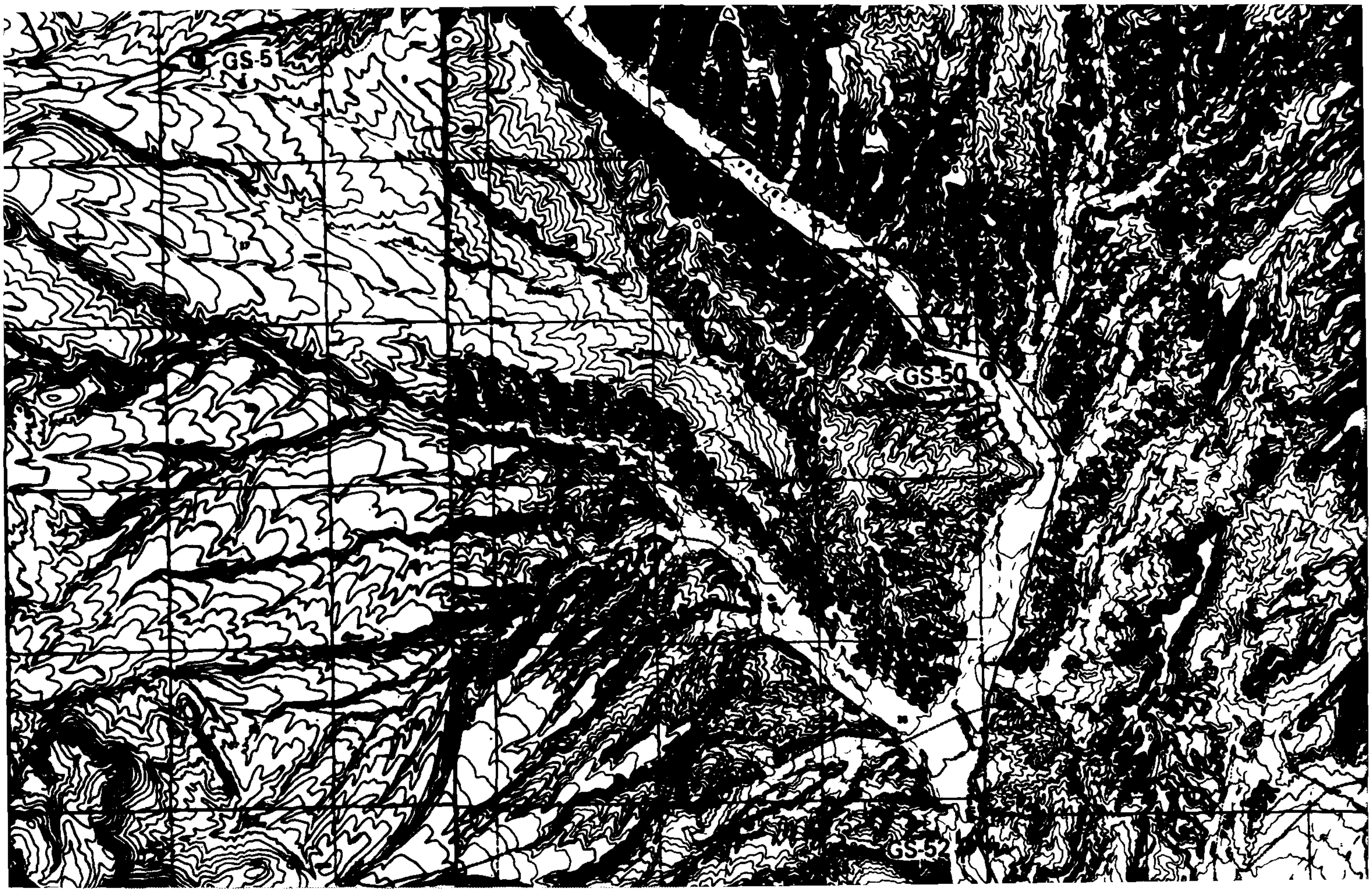


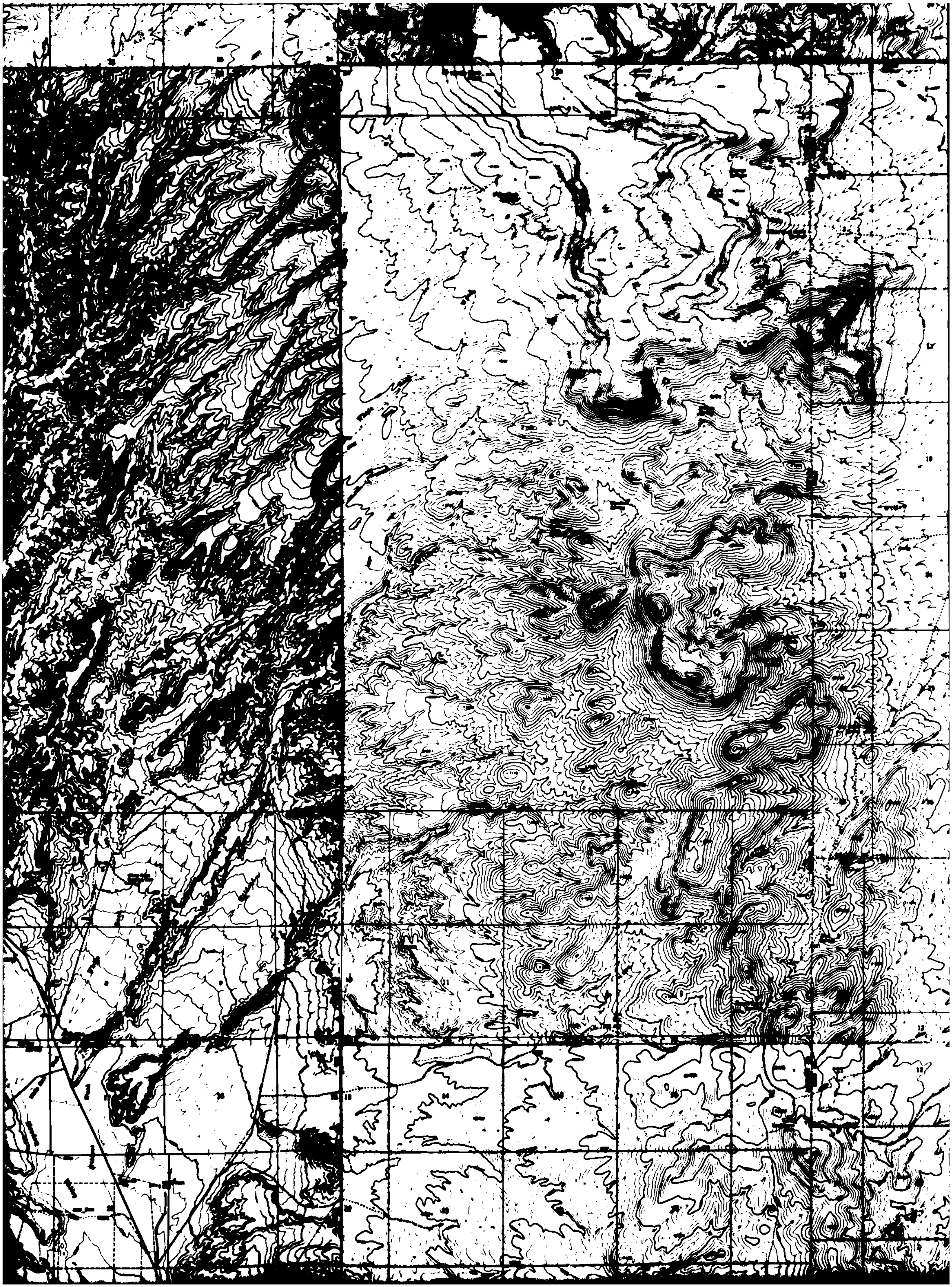


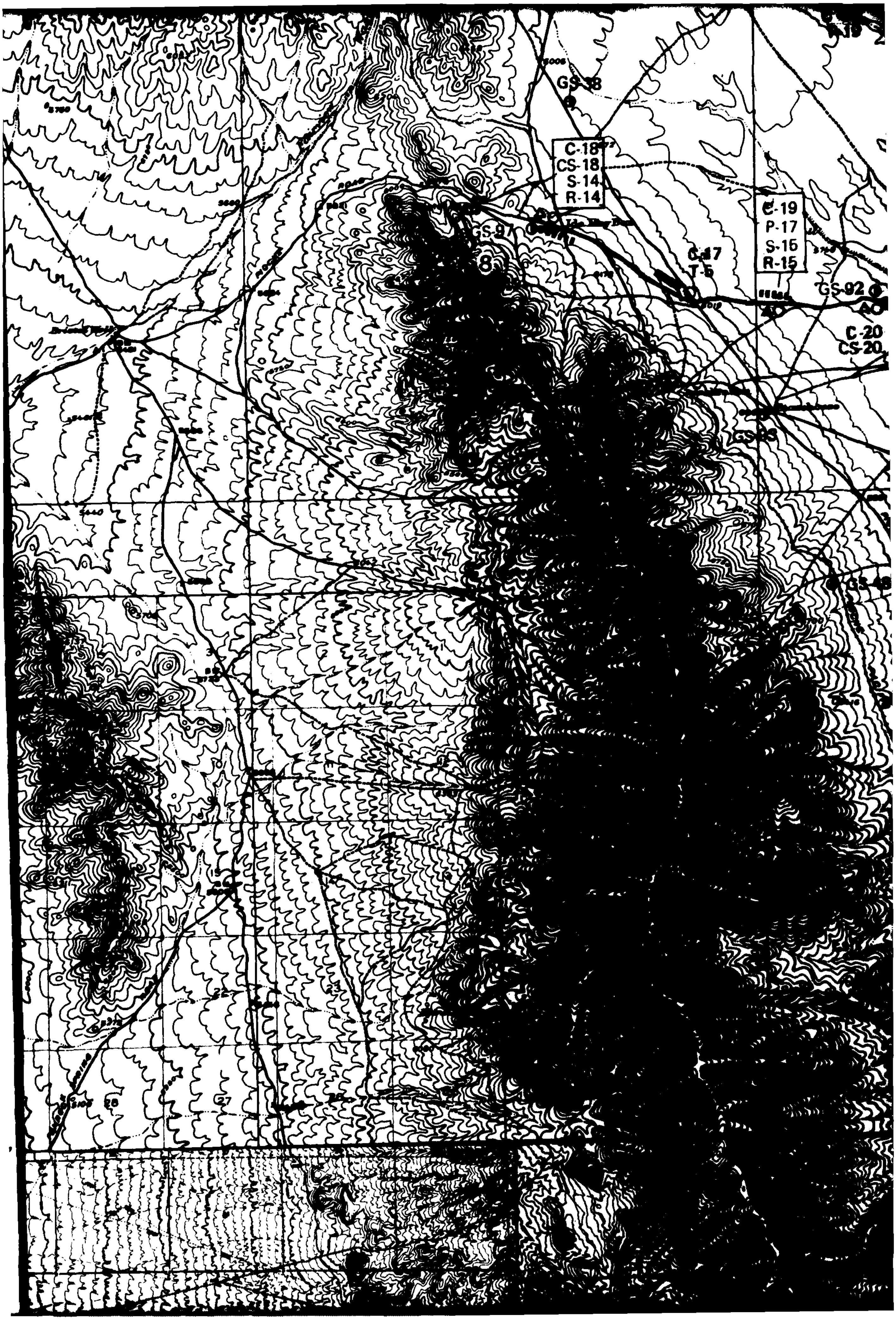

C-41
CS-41
S-20
R-20
GS-78
7
C-37
P-18
S-11
R-11
GS-98
20
28
C-18
CS-18
S-14
R-14
C-19
P-17
S-16


C-48
P-22
S-21
R-21
C-46
P-23
S-22
GS-33
C-47
CS-47
C-41
CS-41
S-20
R-20
C-44
P-24
C-49
CS-49
C-45
CS-45
GS-34
GS-35
GS-36
GS-46
GS-47
C-34
P-20
C-33
C-29
P-13
C-19
P-17
S-15
R-15
7
Patterson
Wash


45
45
C-26
CS-26
S-19
R-19
8
GS-96
C-27
P-12
GS-36
C-28
CS-28
C-29
P-13
C-30
9


GS-51
GS-50
GS-52




GS-38
C-18
CS-18
S-14
R-14
C-19
P-17
S-15
R-15
GS-97
C-17
T-5
GS-92
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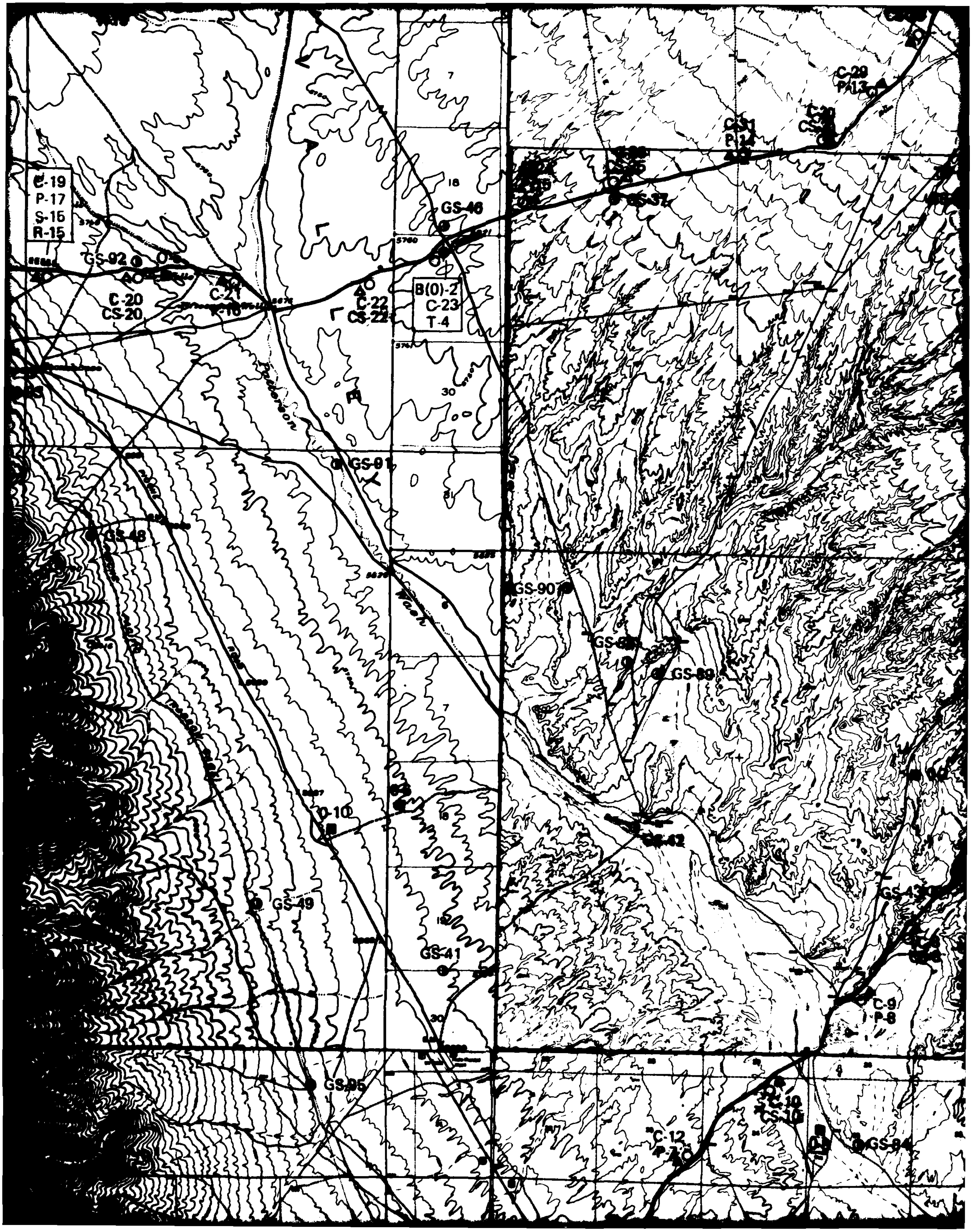
CS-20
22
21
26
27


C-19
P-17
S-15
R-15
GS-92
C-20
CS-20
C-21
C-22
CS-22
B(0)-2
C-23
T-4
GS-46
GS-37
C-29
P-13
CS-31
P-14
18
7
30
Patterson
Wash
GS-91
GS-48
GS-90
GS-88
GS-89
D-10
GS-42
GS-49
GS-41
GS-43
C-9
P-8
18
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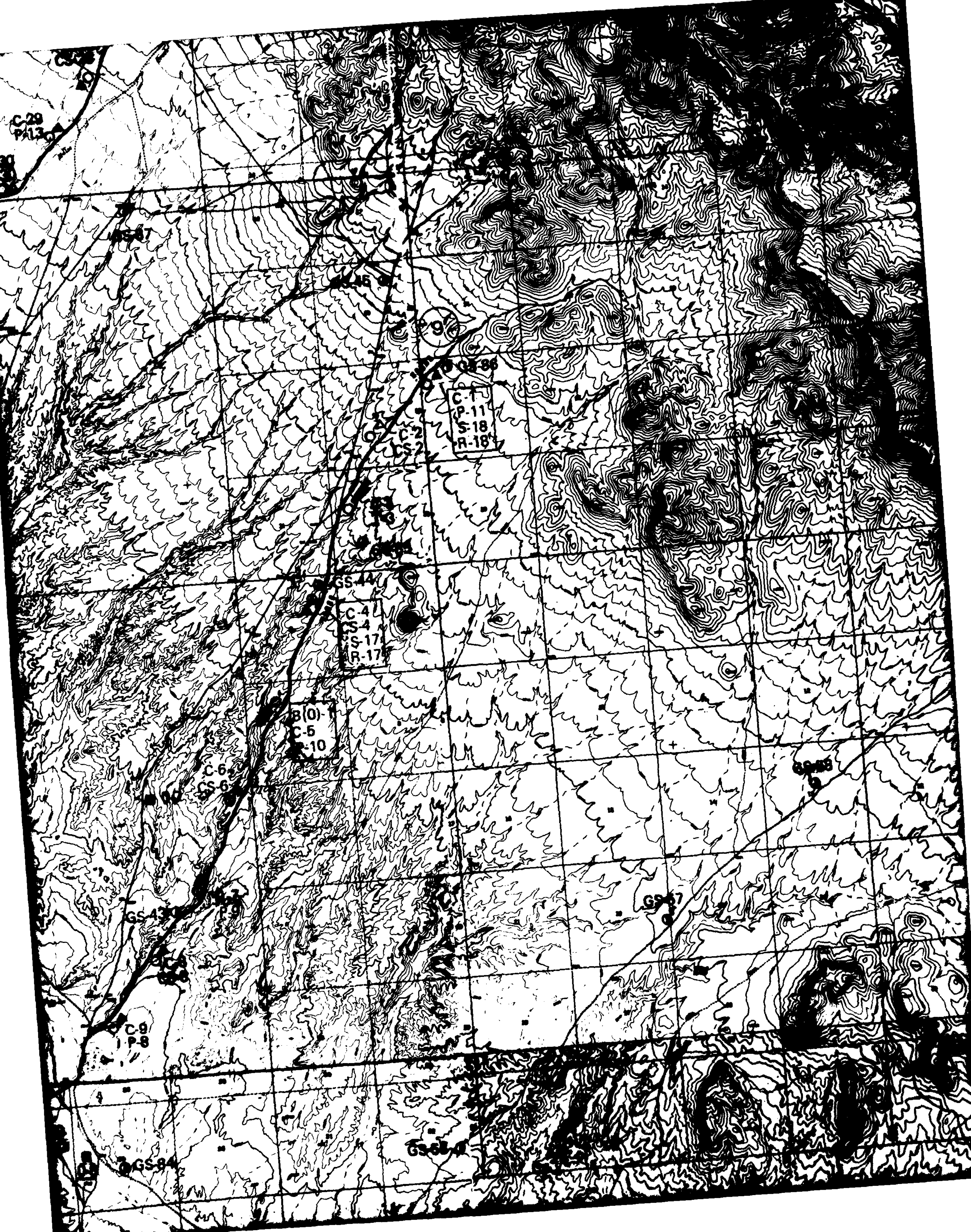
GS-95
C-10
CS-10
C-12
GS-94


C-29
P-13
GS-86
C-1
P-11
S-18
R-18
C-2
CS-2
GS-44
C-4
CS-4
S-17
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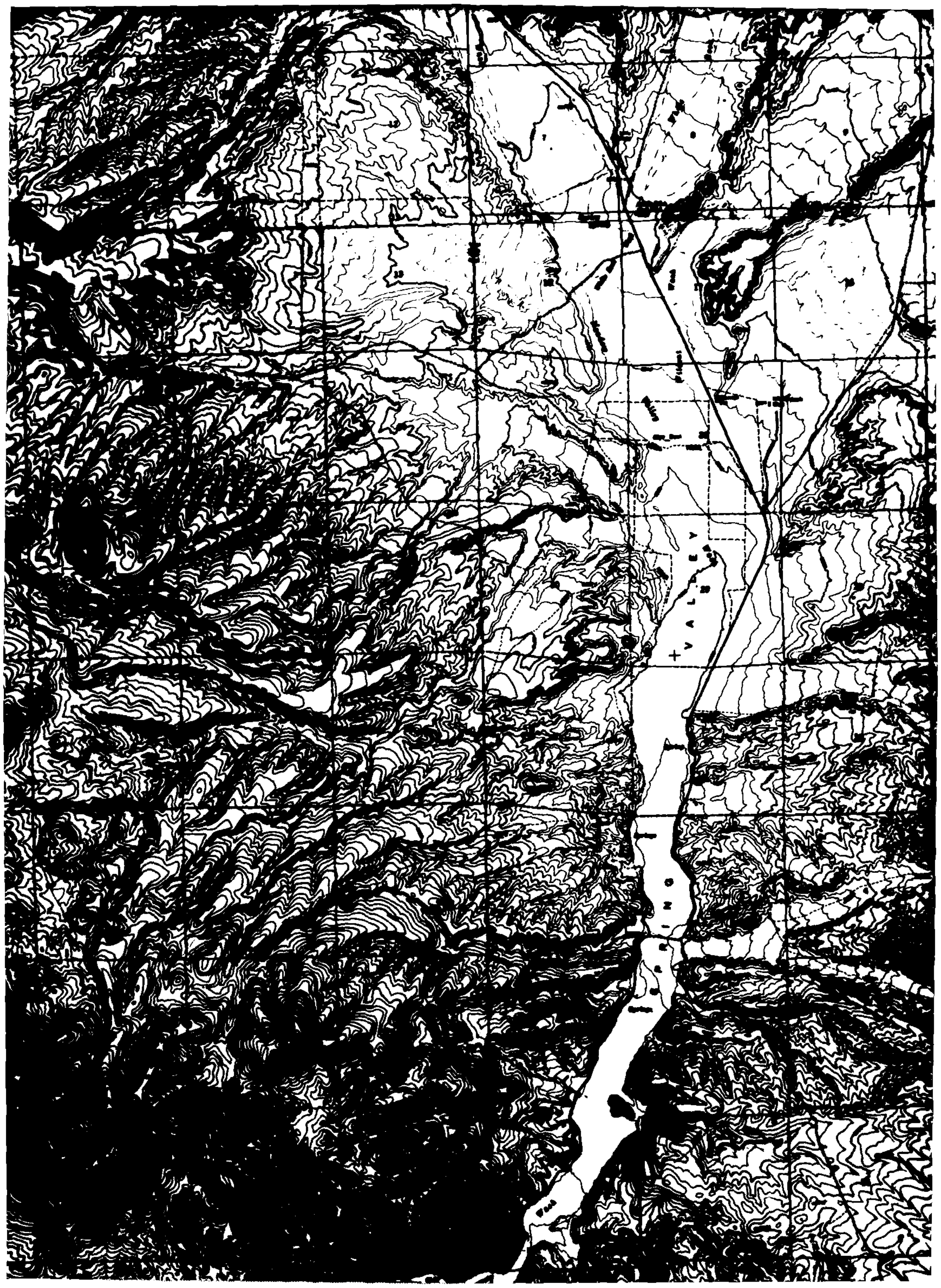
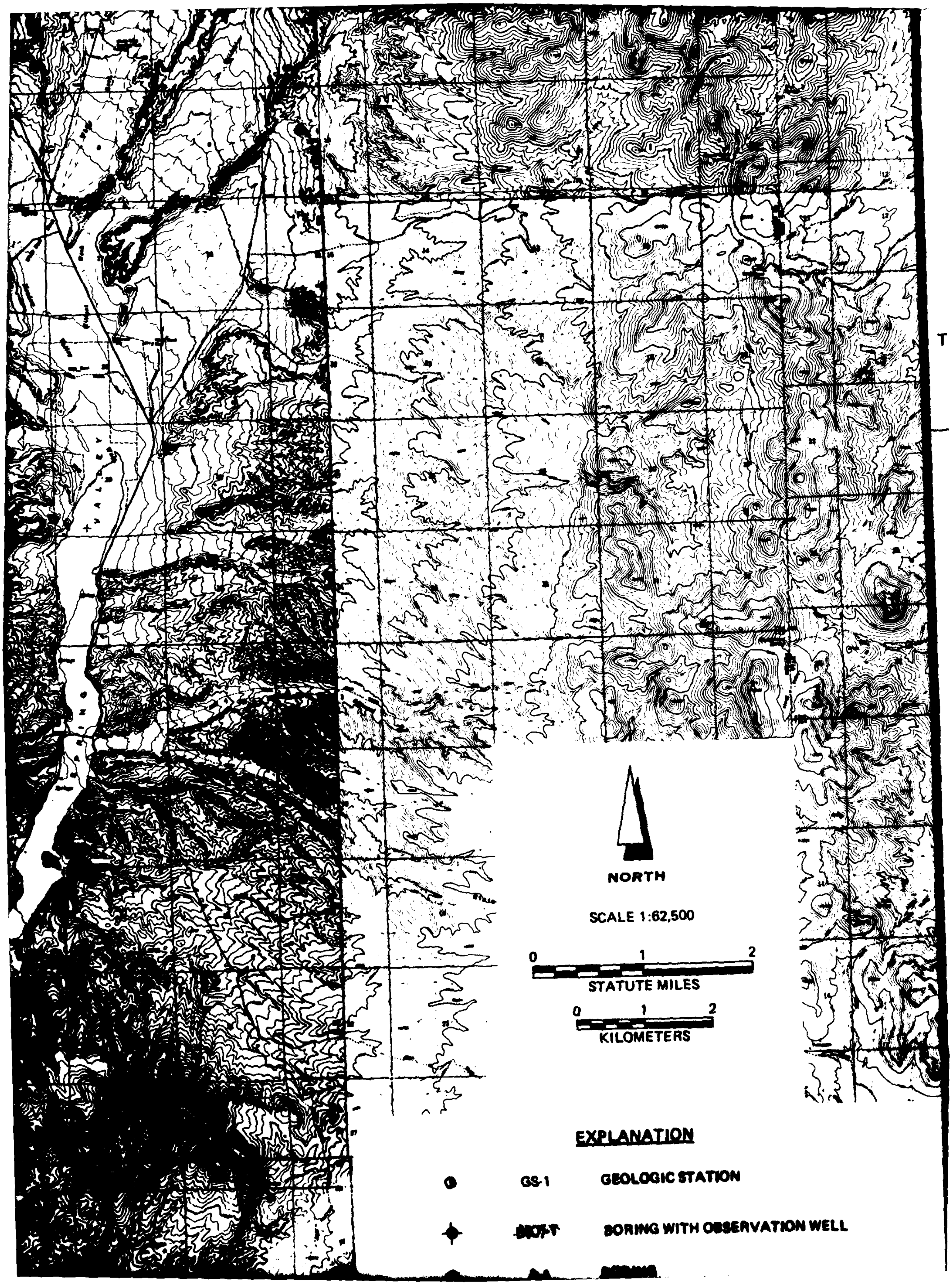
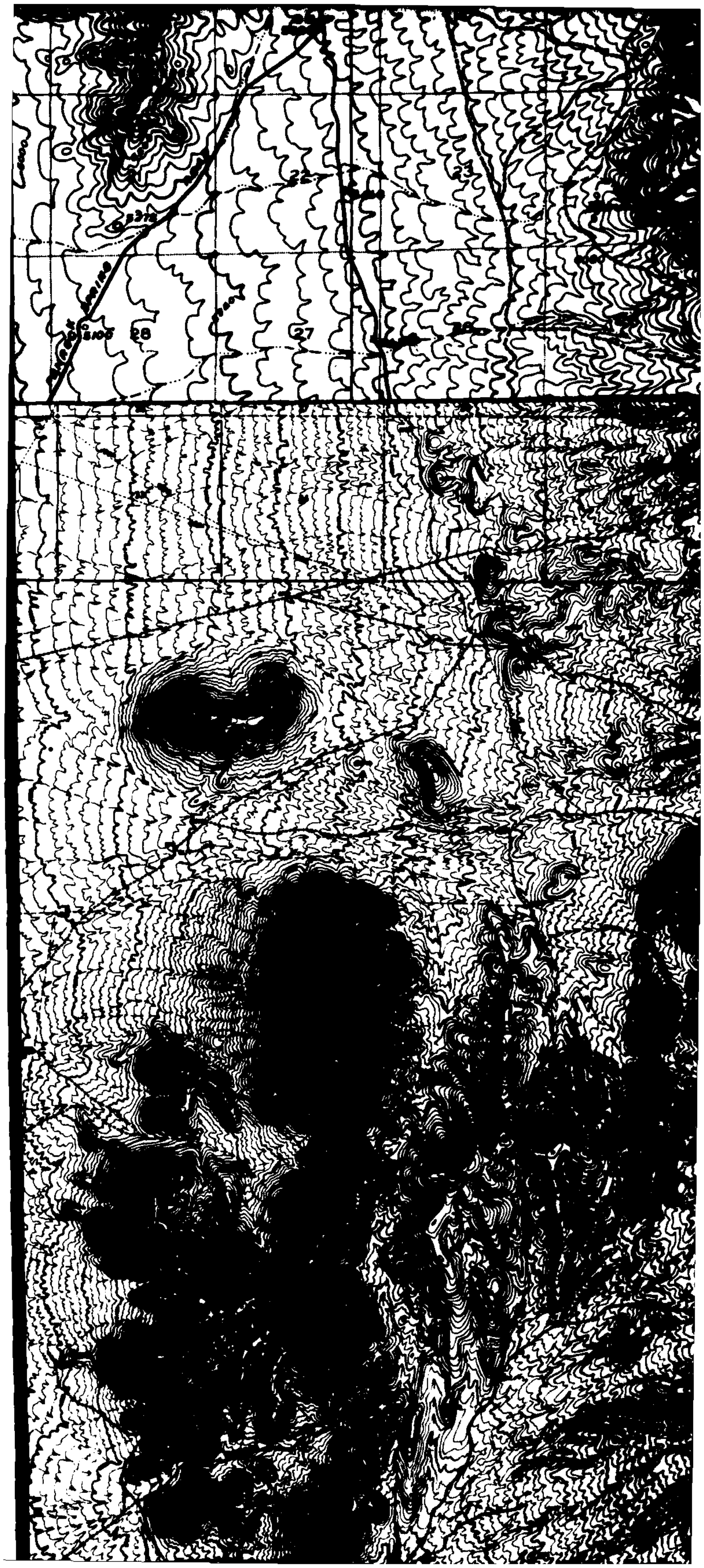
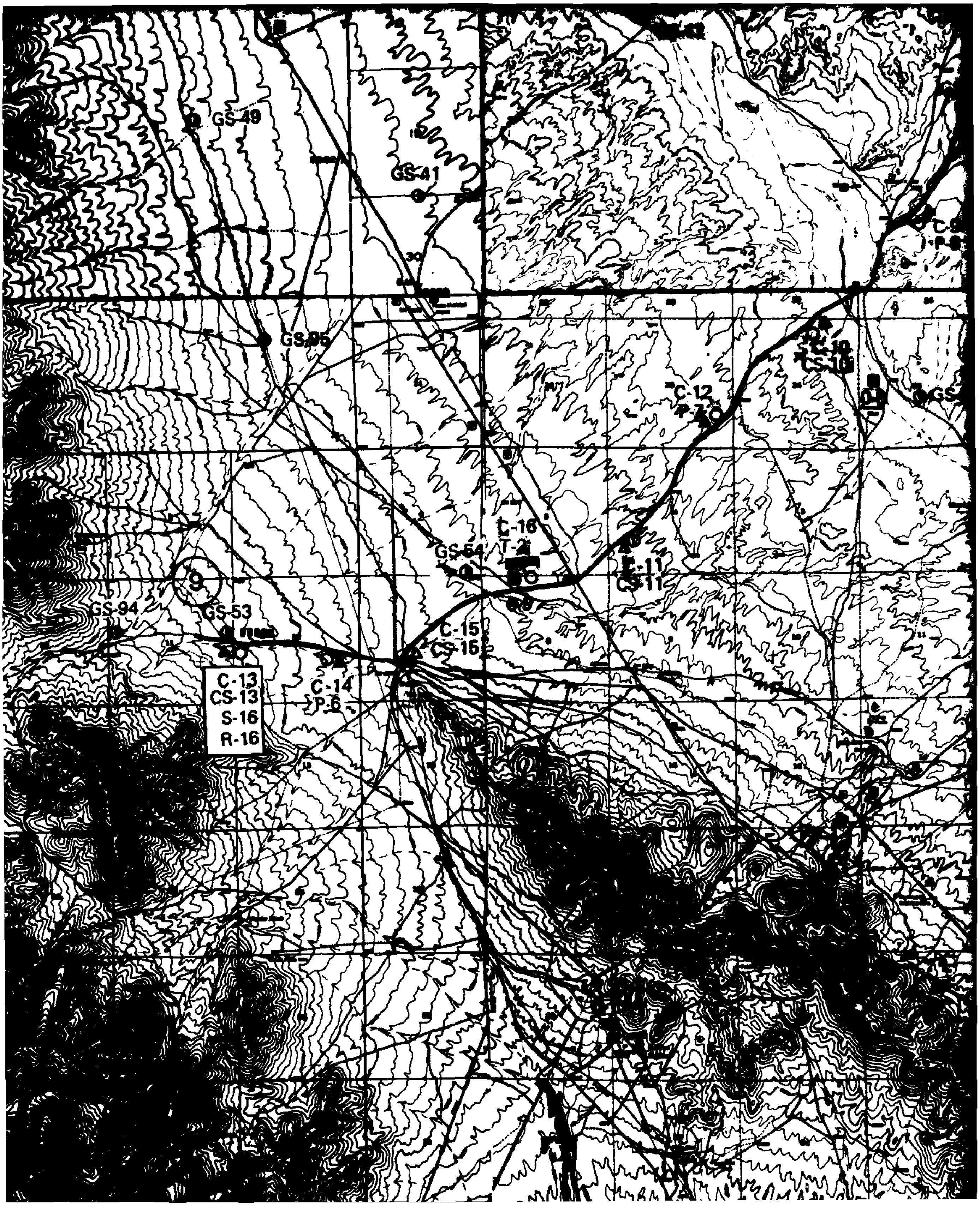
P-8
GS-87
GS-84

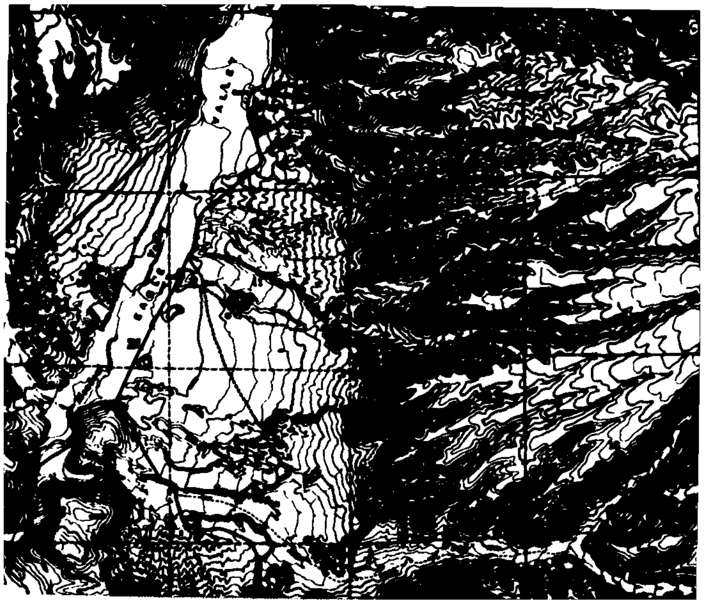

VALLEY
SPRING

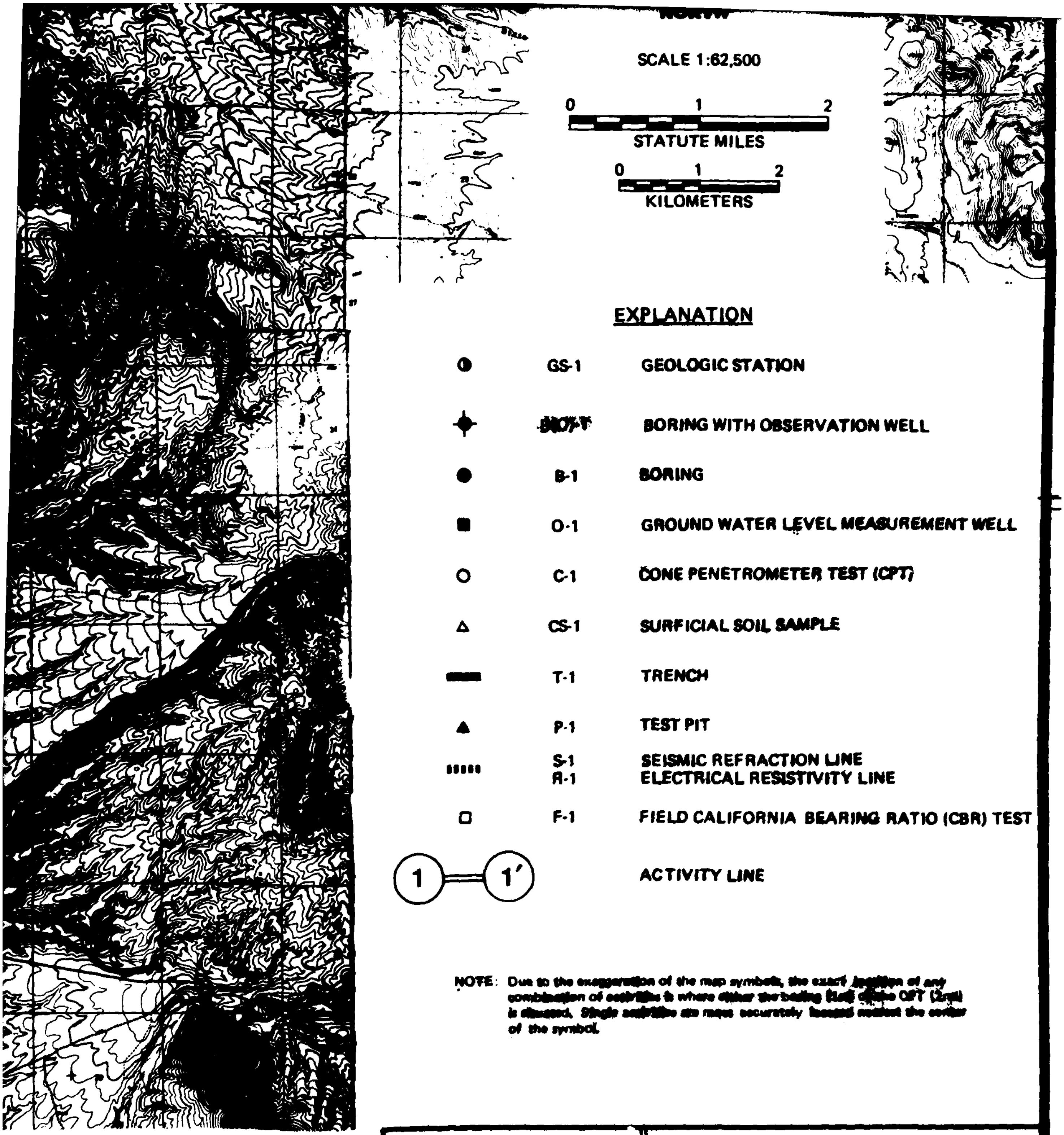

T
VALLEY
NORTH
SCALE 1:62,500
0
1
2
STATUTE MILES
0
1
2
KILOMETERS
EXPLANATION
GS-1
GEOLOGIC STATION
BORING WITH OBSERVATION WELL


22
23
5312
28
27
26
5100
5200


GS-49
GS-41
GS-95
C-12
C-10
CS-10
GS
C-16
T-2
GS-54
C-11
CS-11
9
GS-94
GS-53
C-15
CS-15
C-13
CS-13
S-16
R-16
C-14
P-6


GS-43
P-9
GS-87
C-9
P-8
GS-68-4
GS-84
GS-83
GS-55
GS-82
GS-80
GS-81





SCALE 1:62,500

EXPLANATION

◐	GS-1	GEOLOGIC STATION
✦	BO-1	BORING WITH OBSERVATION WELL
●	B-1	BORING
■	O-1	GROUND WATER LEVEL MEASUREMENT WELL
○	C-1	CONE PENETROMETER TEST (CPT)
△	CS-1	SURFICIAL SOIL SAMPLE
▬	T-1	TRENCH
▲	P-1	TEST PIT
▮▮▮▮▮	S-1 R-1	SEISMIC REFRACTION LINE ELECTRICAL RESISTIVITY LINE
□	F-1	FIELD CALIFORNIA BEARING RATIO (CBR) TEST
(1)—(1′)		ACTIVITY LINE

NOTE: Due to the exaggeration of the map symbols, the exact location of any combination of activities is where either the boring (1st) or the CPT (2nd) is situated. Single activities are more accurately located nearest the center of the symbol.

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ACTIVITY LOCATION MAP
LAKE VALLEY, NEVADA

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DRAWING II-4-1

11.0 CONE PENETROMETER TEST RESULTS

Explanation: The figures in this section show the results of the cone penetrometer tests. The terms used in the figures are defined below.

A. Depth - Corresponds to depth below ground surface.

B. Friction Resistance - The resistance to penetration developed by the friction sleeve, equal to the vertical force applied to the sleeve divided by its surface area. This resistance is the sum of friction and adhesion.

C. Cone Resistance - The resistance to penetration developed by the cone, equal to the vertical force applied to the cone divided by its horizontally projected area.

D. Friction Ratio - The ratio of friction resistance to cone resistance.

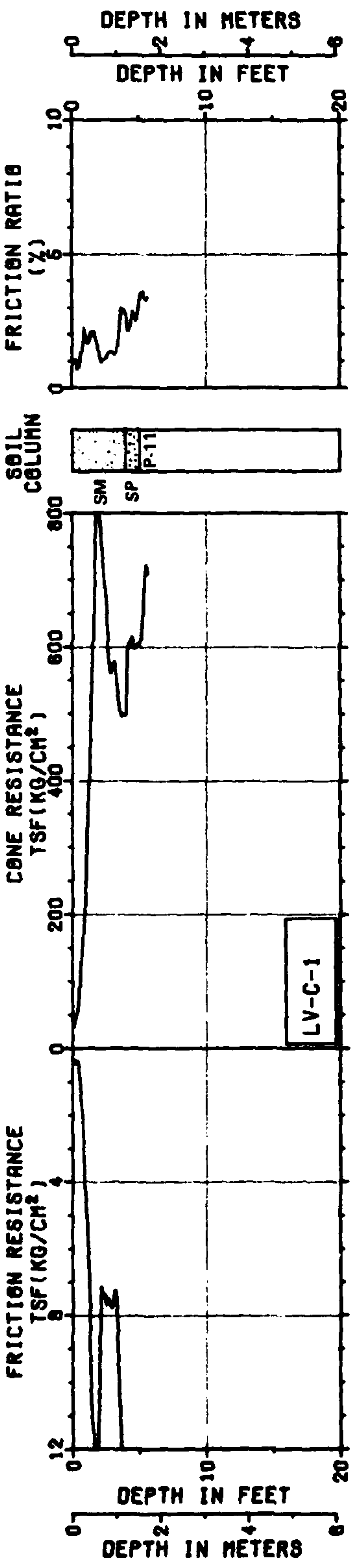
E. Designation - Each cone penetrometer test is identified by a number: for example C-1.

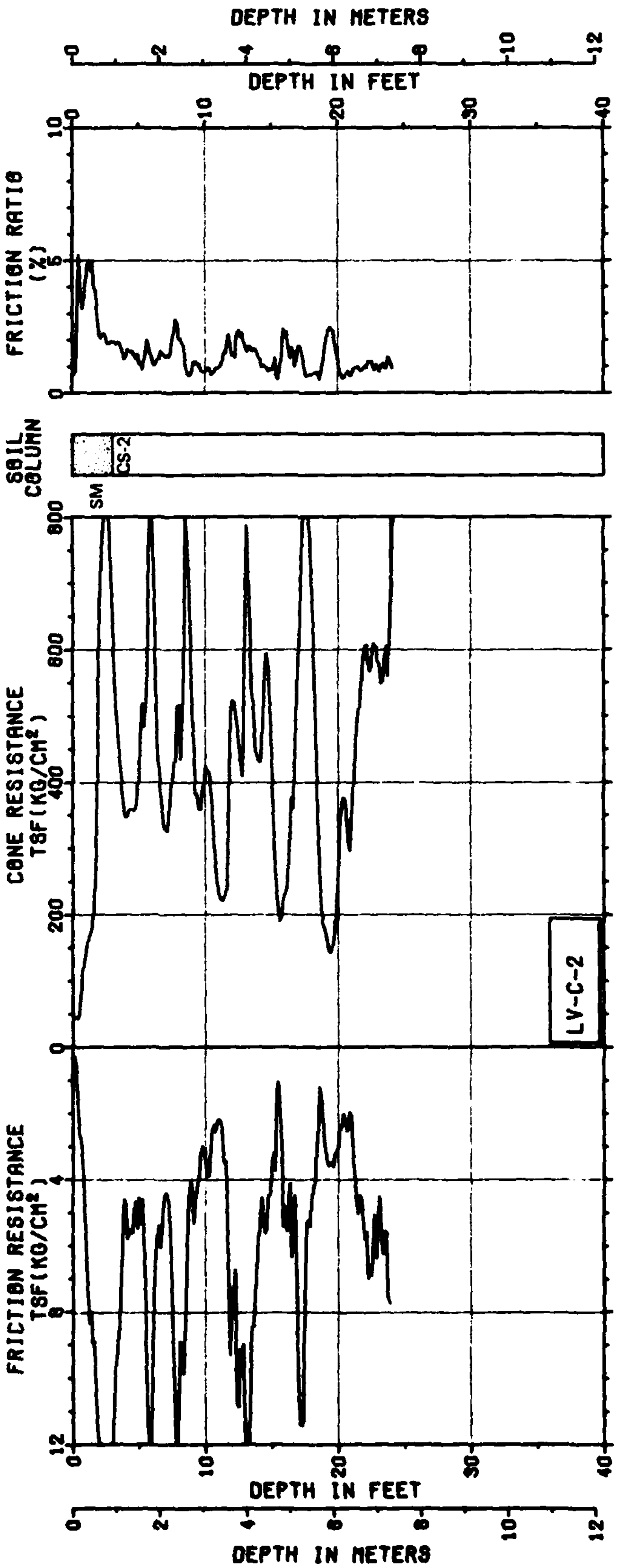
C - abbreviation for the CPT
1 - number of the test

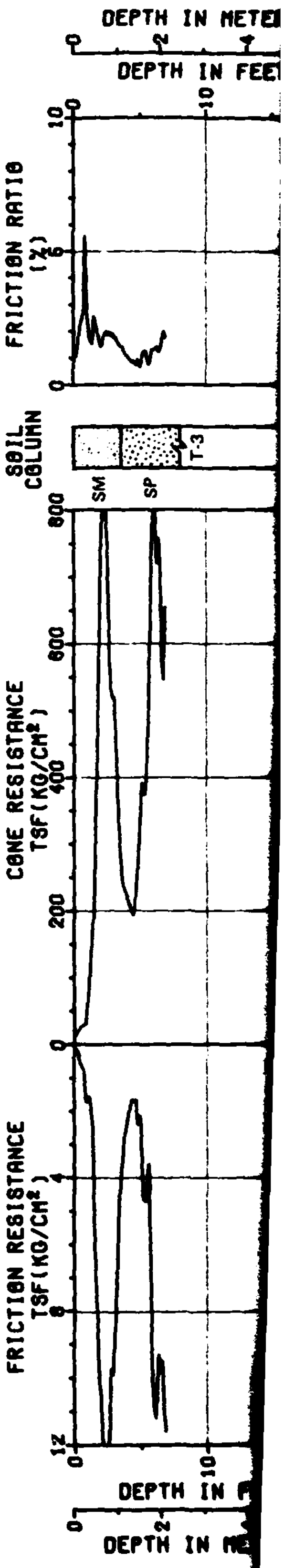
F. Surface Elevation - Indicated elevations on the figures are estimated from topographic maps of the study area and are accurate within one-half the contour interval.

G. Surficial Geologic Unit - Indicates the surficial geologic unit in which the test was located.

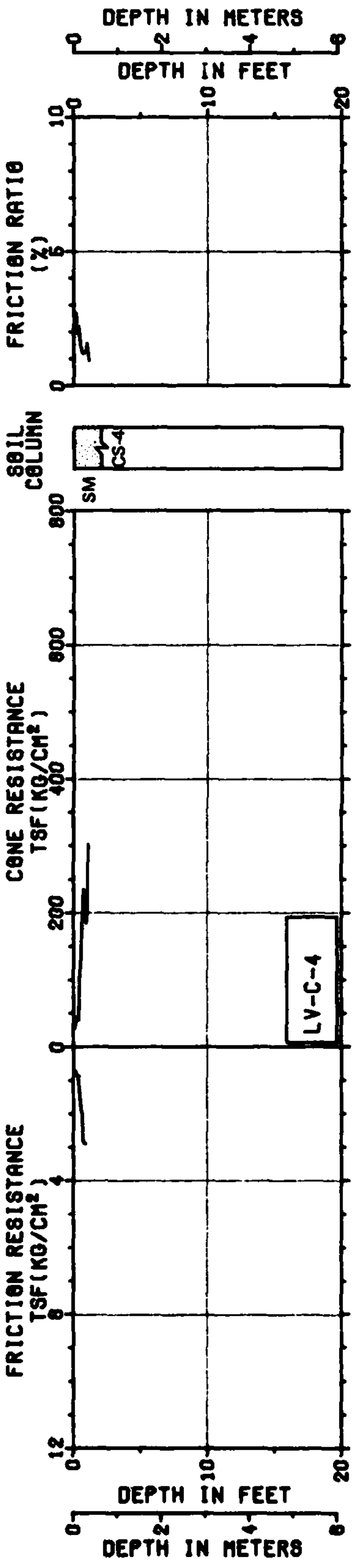
H. Soil Column - A graphical presentation of the soil type versus depth at each cone penetrometer test location. The Unified Soil Classification Symbol for each different soil type is listed immediately to the left of the soil column. Immediately below the soil column, the activity number for the corresponding boring, trench, or test pit, or surficial soil sample at each CPT location is given.

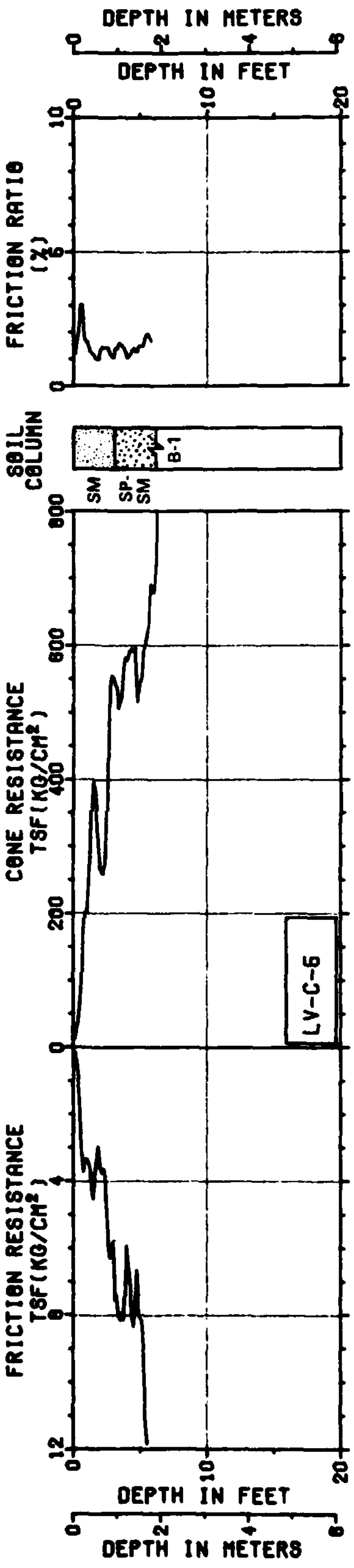

DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
SM
SP
P-11
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
LV-C-1
0
2
4
6
10
20
0
5
10
0
200
400
600
800
0
4
8
12

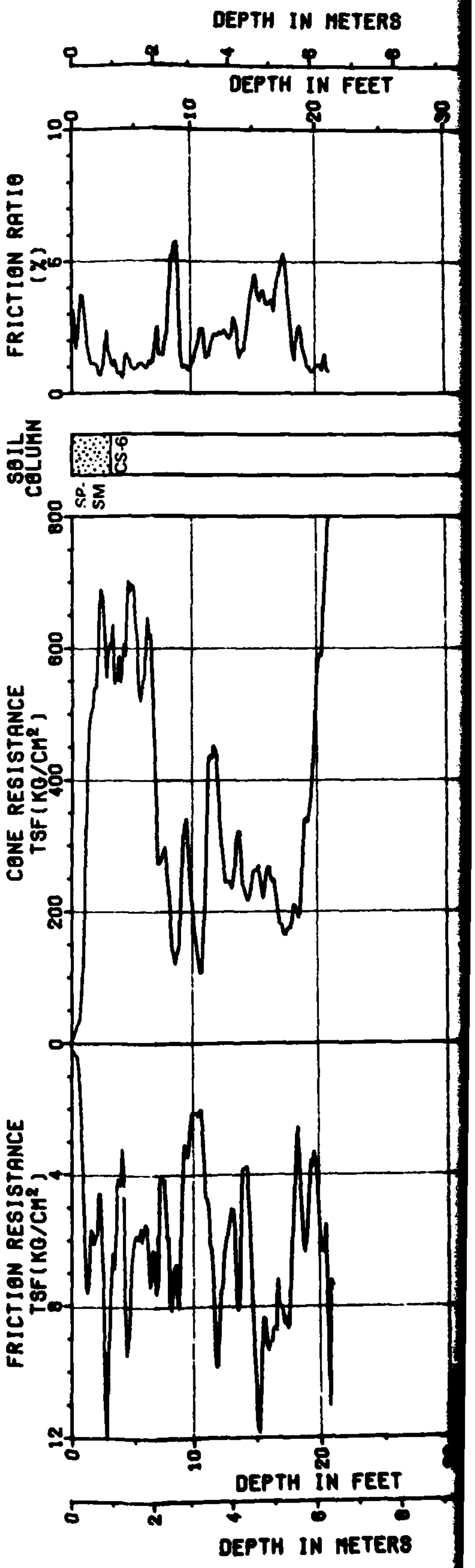

DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
SM
CS-2
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
LV-C-2
0
2
4
6
8
10
12
10
20
30
40
0
5
10
0
200
400
600
800
0
4
8
12


DEPTH IN METE
DEPTH IN FEE
FRICTION RATIO (%)
SOIL COLUMN
SM
SP
T-3
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
DEPTH IN F
DEPTH IN ME
0
2
4
10
0
5
10
0
200
400
600
800
0
4
8
12

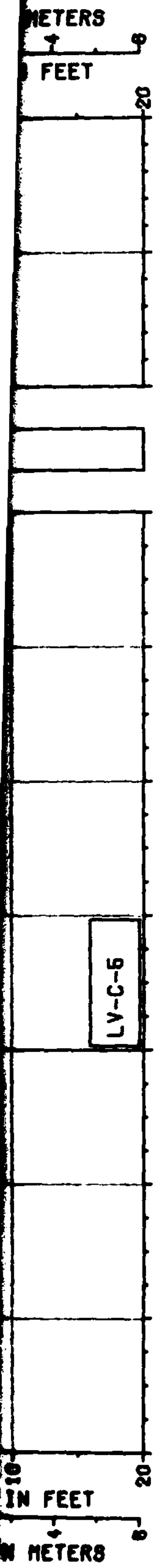

DEPTH IN METERS
2
4
6
DEPTH IN FEET
10
20
T-3
SP
LV-C-3
10
20
DEPTH IN FEET
2
4
6
DEPTH IN METERS

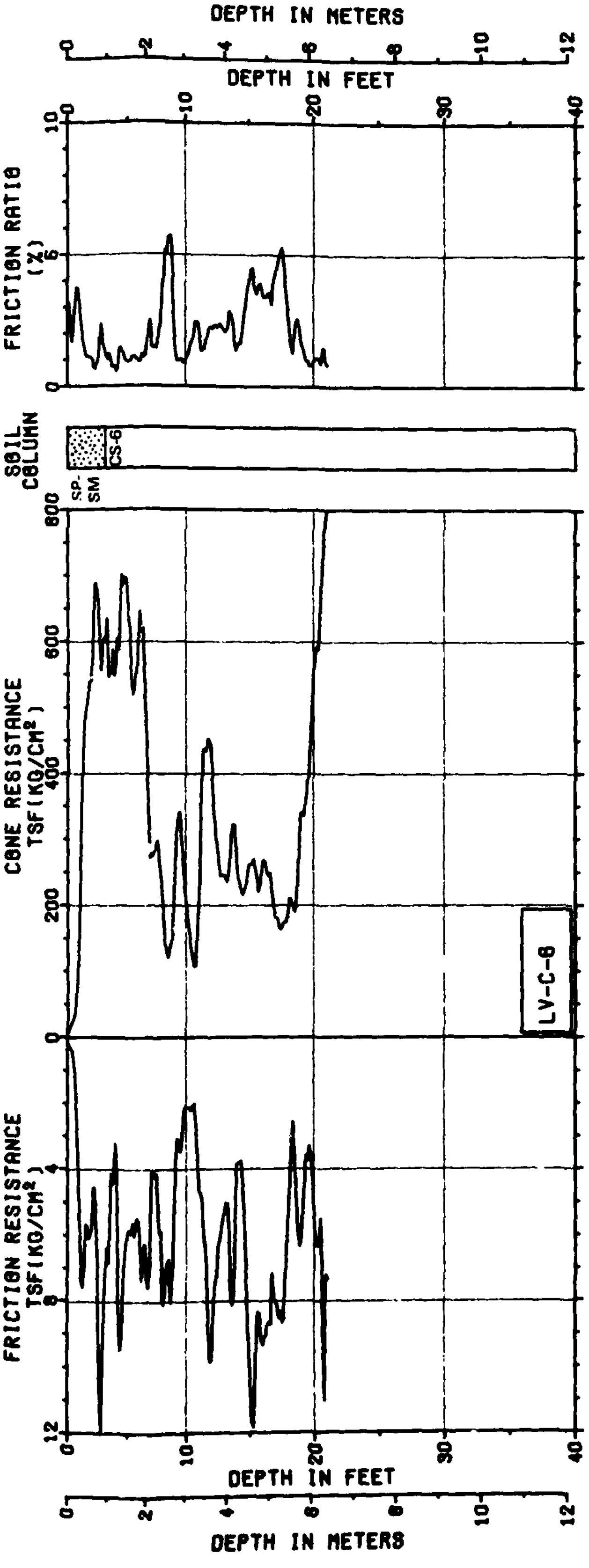

DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
CS-4
SM
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
LV-C-4
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
0
10
20
DEPTH IN FEET
0
2
4
6
DEPTH IN METERS


DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
B-1
SM
SP-SM
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
LV-C-5
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
0
10
20
DEPTH IN FEET
0
2
4
6
DEPTH IN METERS


DEPTH IN METERS
0
2
4
6
8
DEPTH IN FEET
0
10
20
30
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
CS-6
SP-SM
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
0
10
20
DEPTH IN FEET
0
2
4
6
8
DEPTH IN METERS

2





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CONE PENETROMETER TEST RESULTS
LAKE VALLEY, NEVADA
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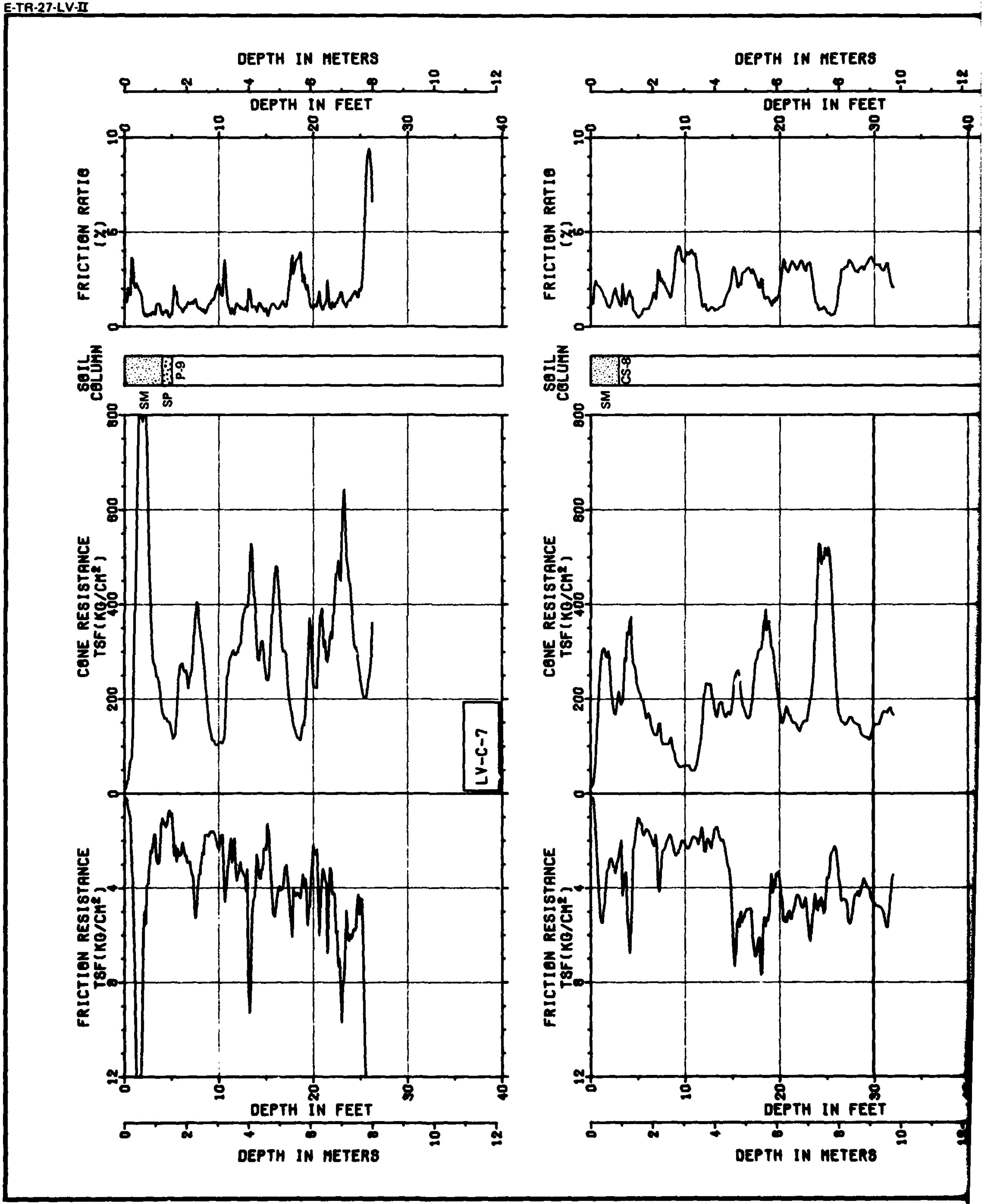
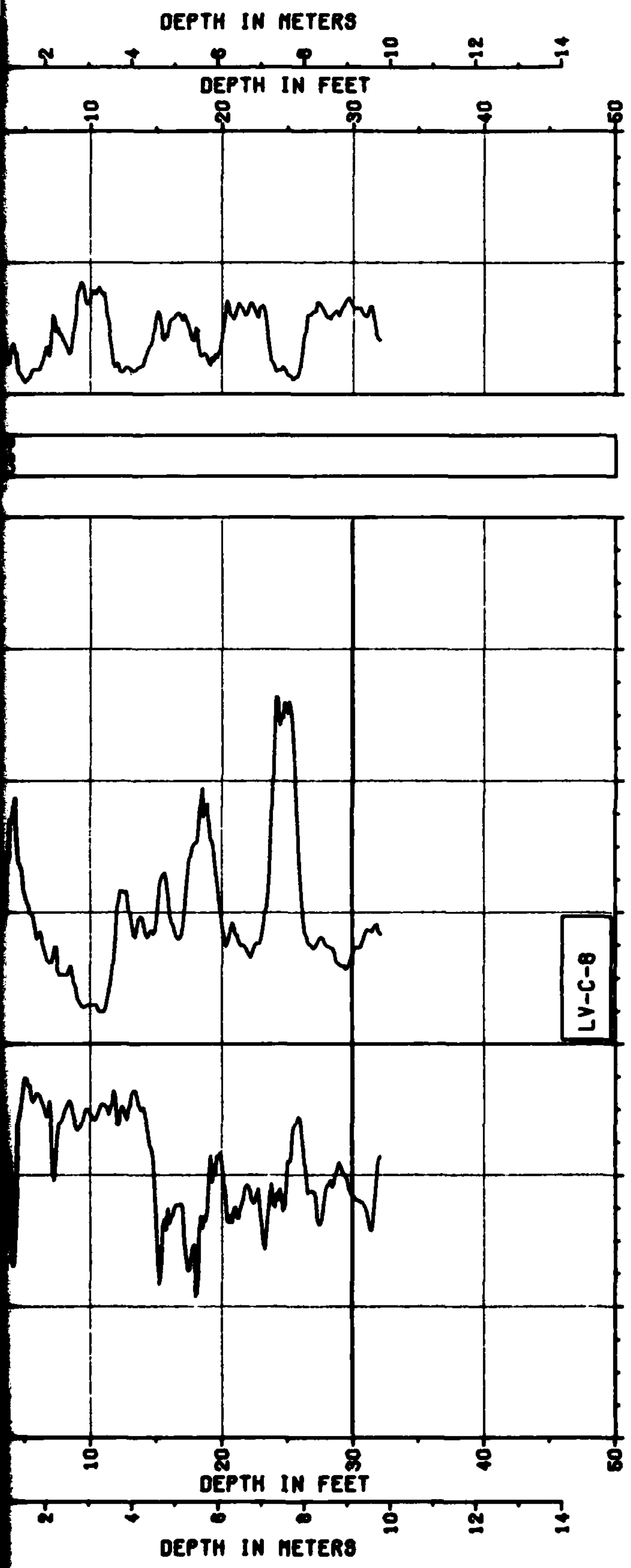
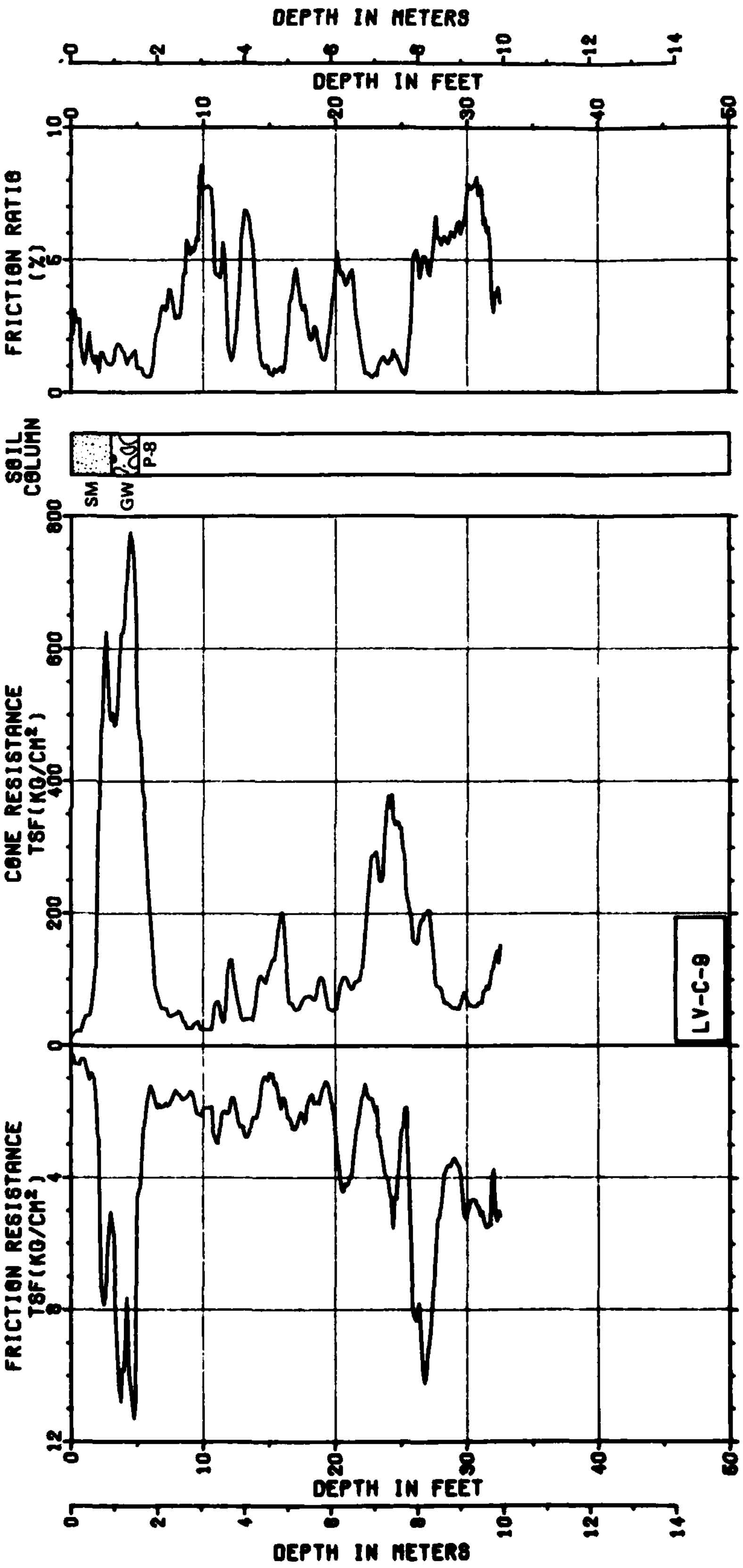
FIGURE II-11-1



DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
SM
SP
P-9
CS-8
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
LV-C-7
0
2
4
6
8
10
12
0
10
20
30
40
0
5
10
0
200
400
600
800
0
4
8
12


DEPTH IN METERS
2
4
6
8
10
12
14
DEPTH IN FEET
10
20
30
40
50
LV-C-8


DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
GW
P-8
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-9

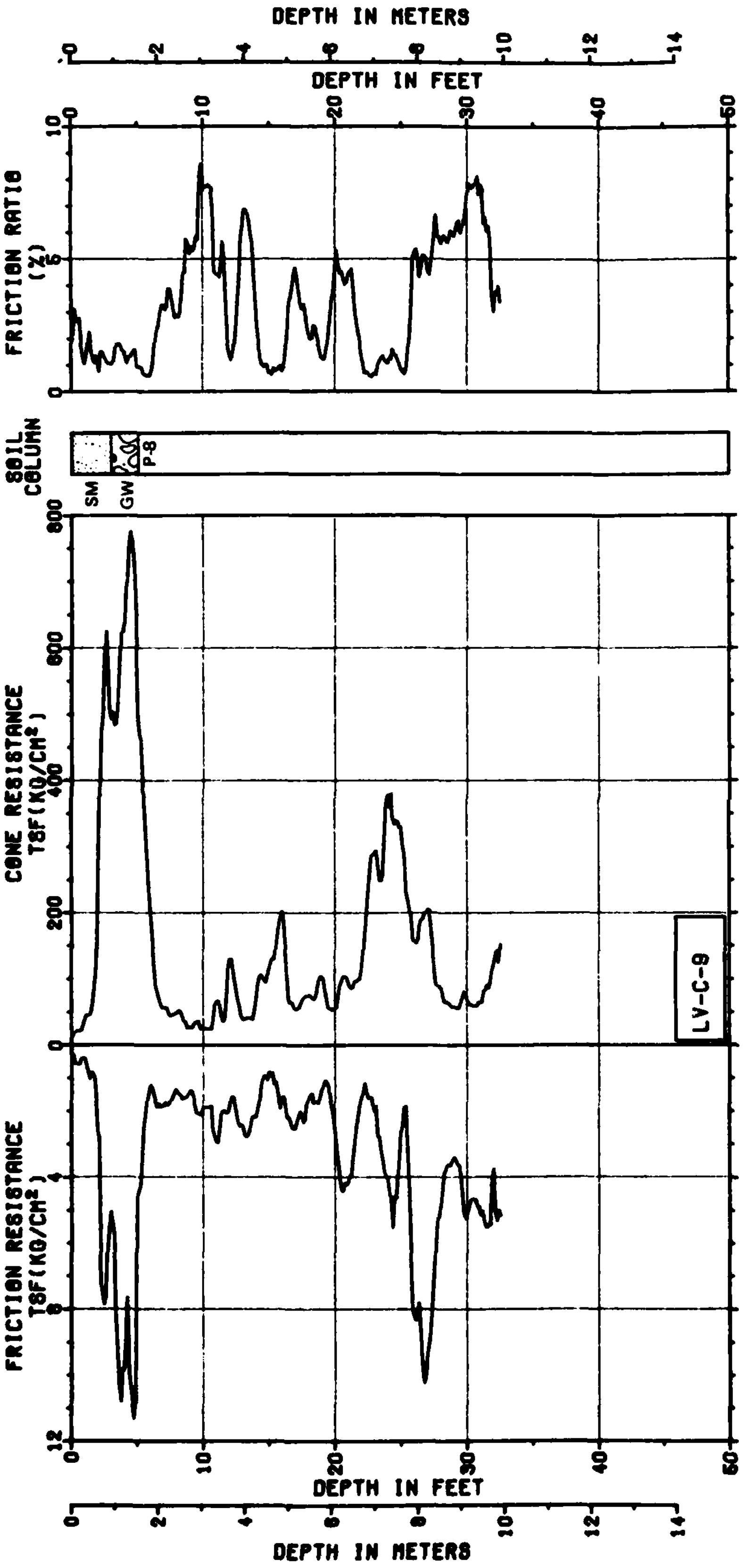


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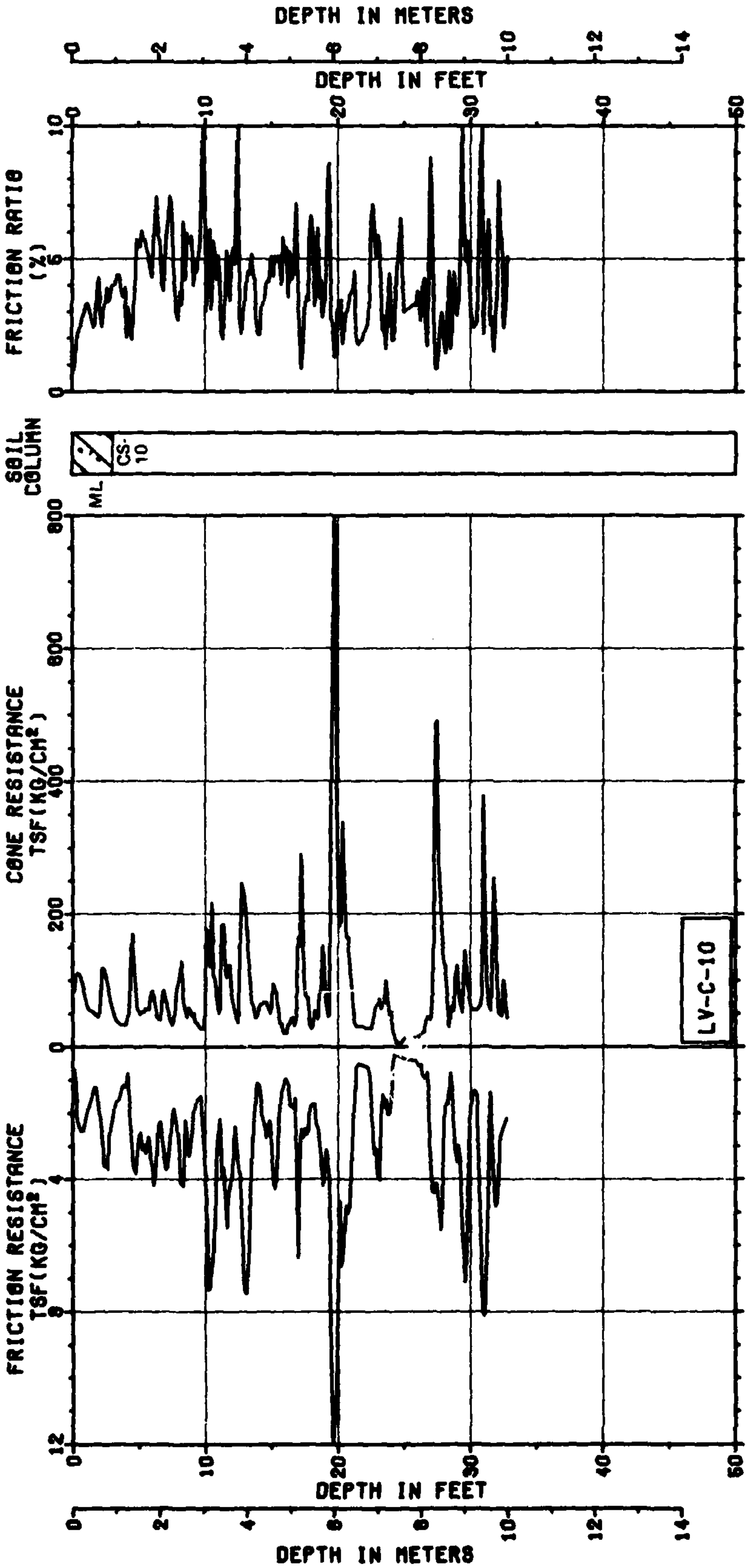
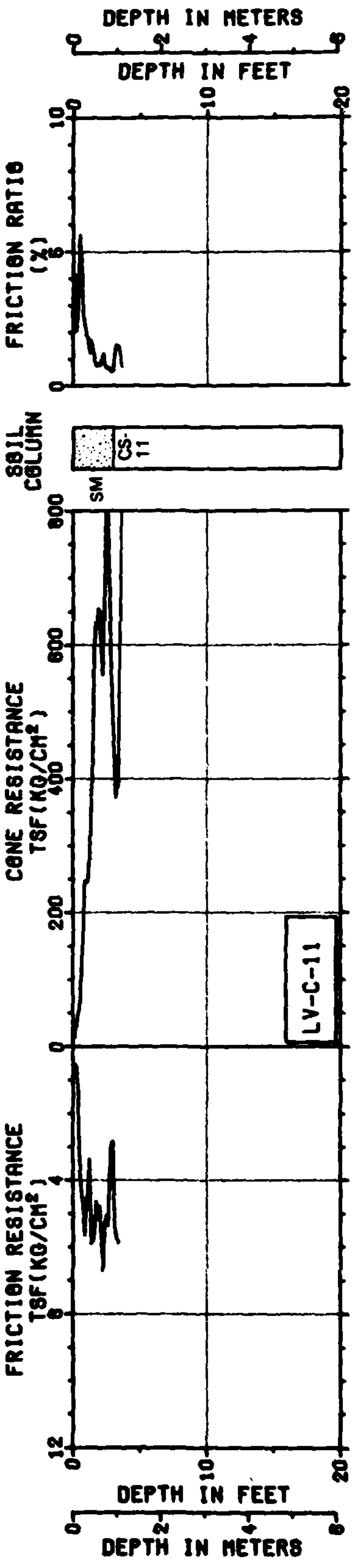
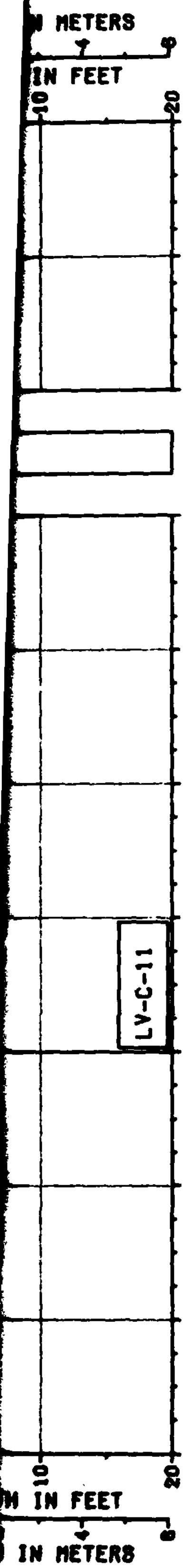
FIGURE II-11-1

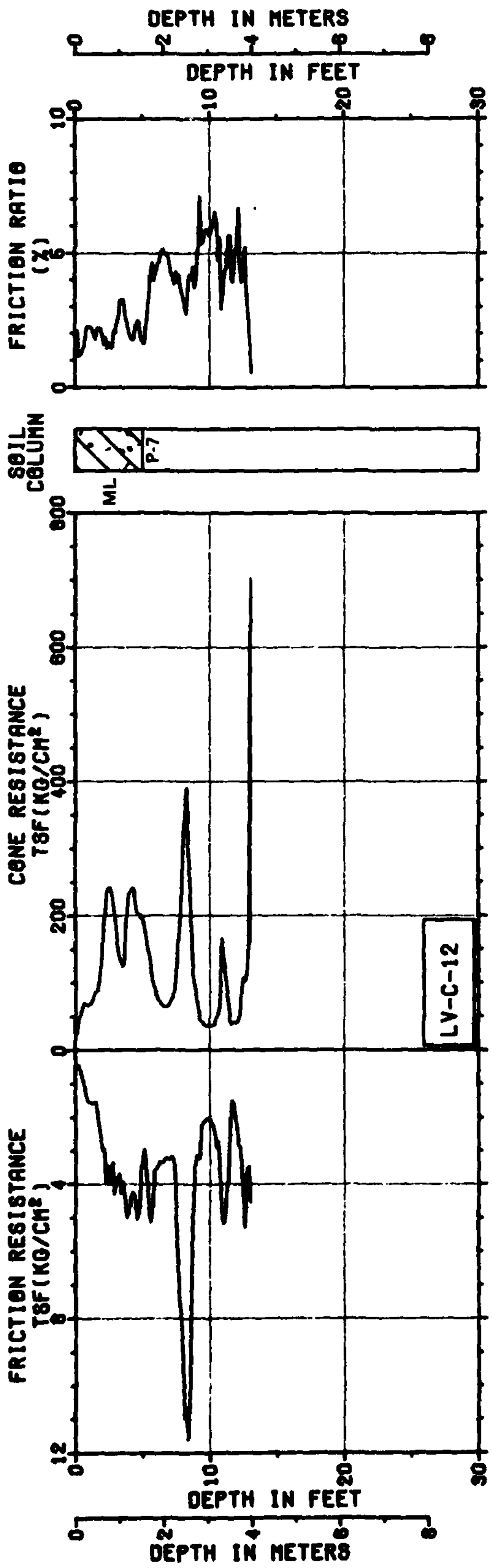

DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
ML
CS-10
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-10


DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SM
CS-11
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-11

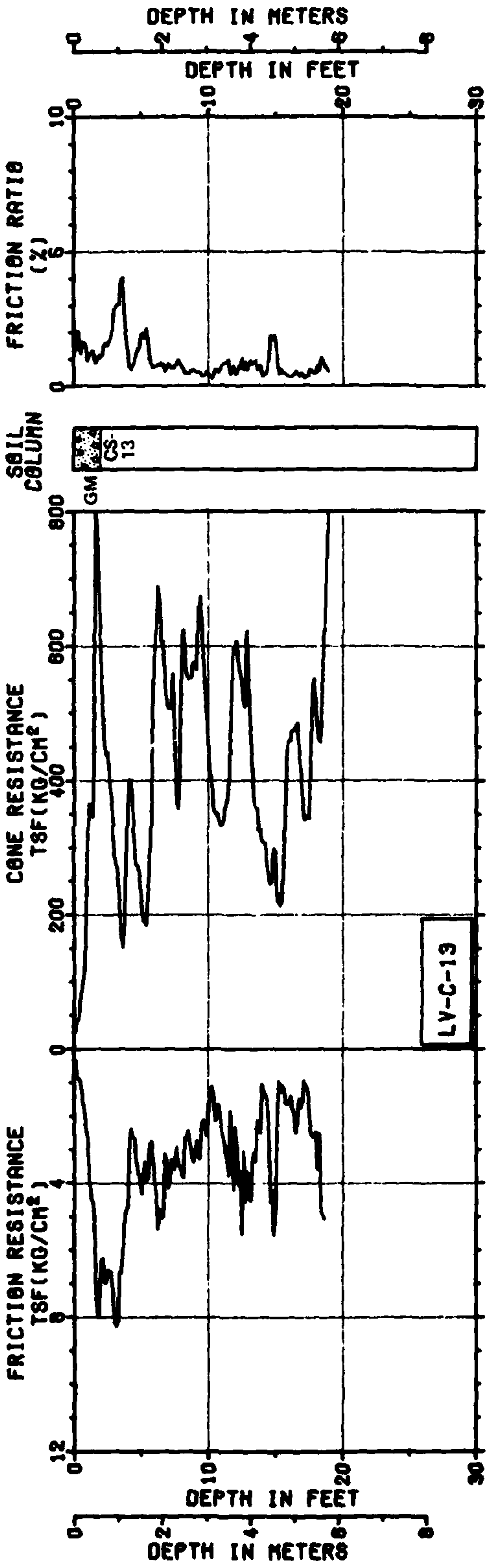

0
10
FRICTION RATIO (%)
0
5
SOIL COLUMN
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12



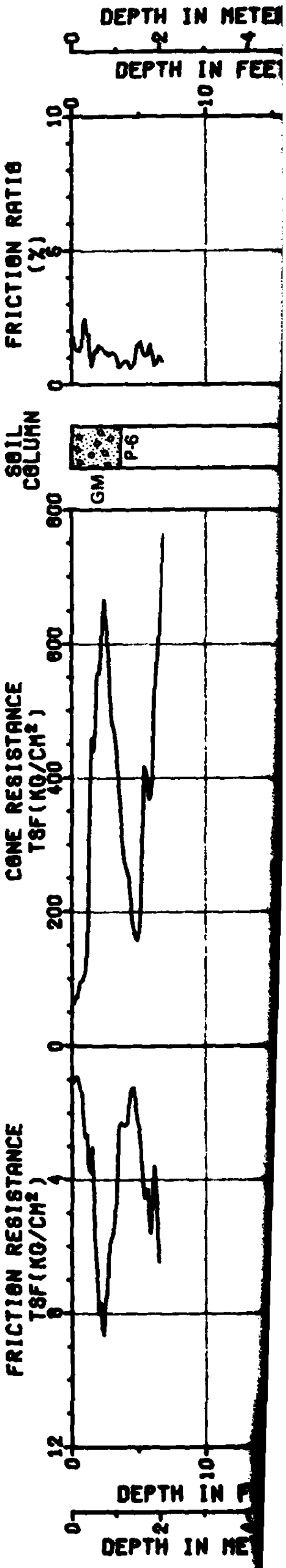
METERS
IN FEET
10
20
LV-C-11
IN FEET
IN METERS



DEPTH IN METERS
0
2
4
6
8
DEPTH IN FEET
0
10
20
30
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
ML
P-7
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
LV-C-12
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
DEPTH IN FEET
DEPTH IN METERS



DEPTH IN METERS
0
2
4
6
8
DEPTH IN FEET
0
10
20
30
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
GM
CS-13
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
LV-C-13
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
DEPTH IN FEET
DEPTH IN METERS



DEPTH IN METE
0
2
4
DEPTH IN FEE
0
10
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
GM
P-6
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
DEPTH IN F
DEPTH IN ME

2

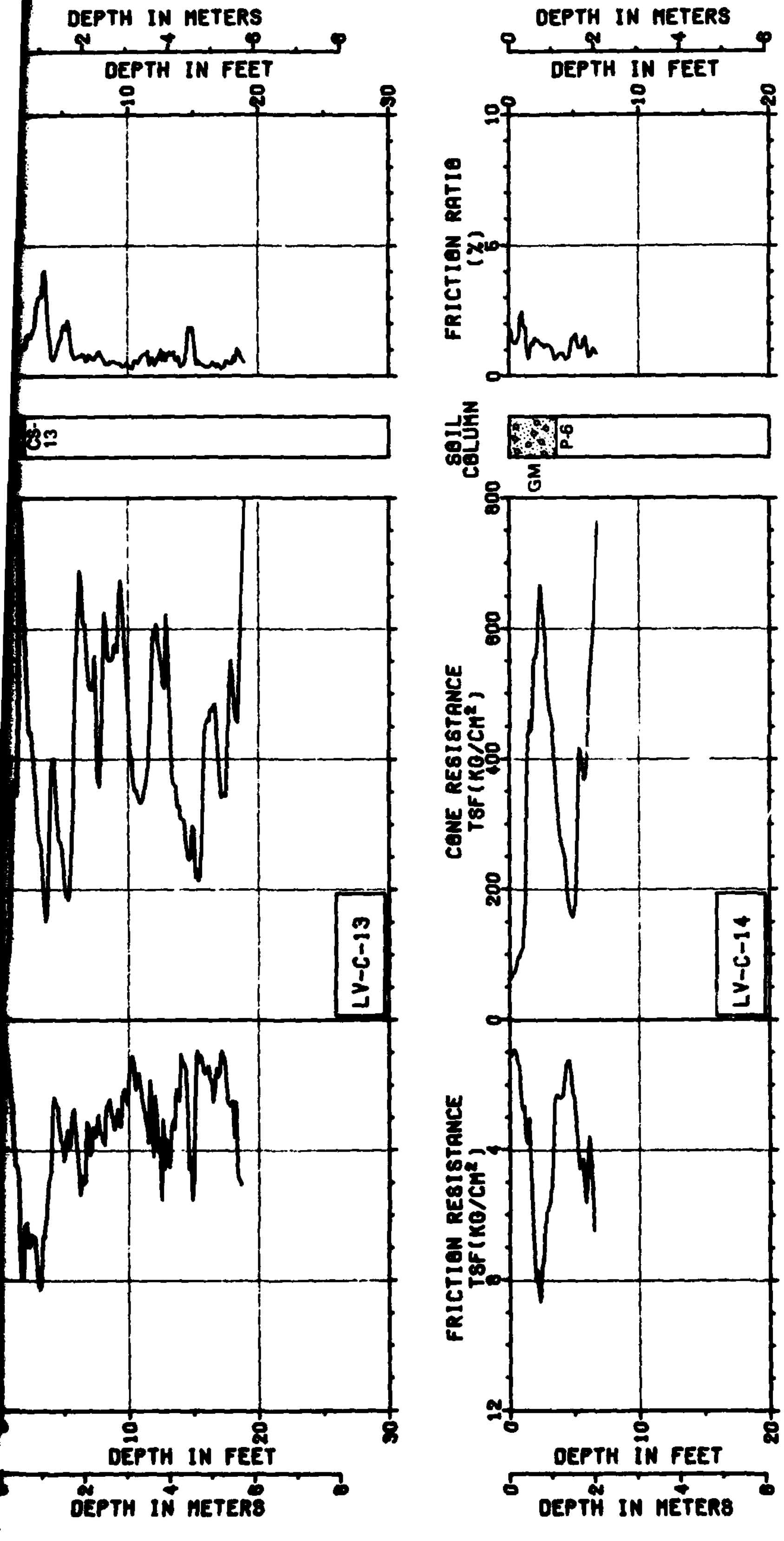


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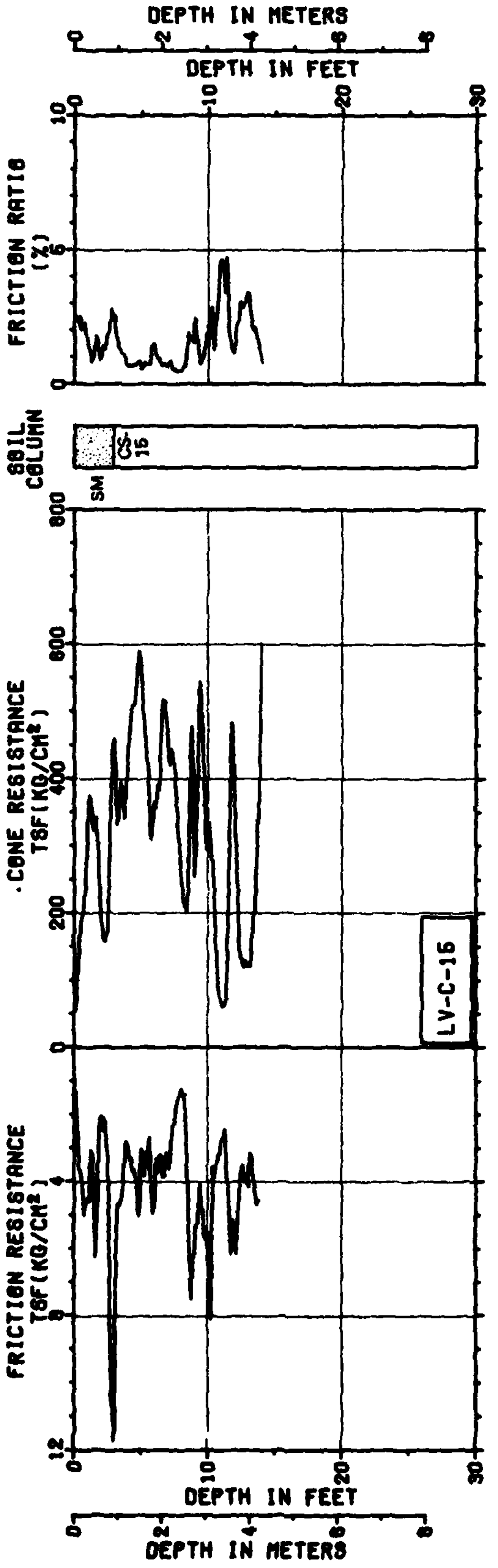
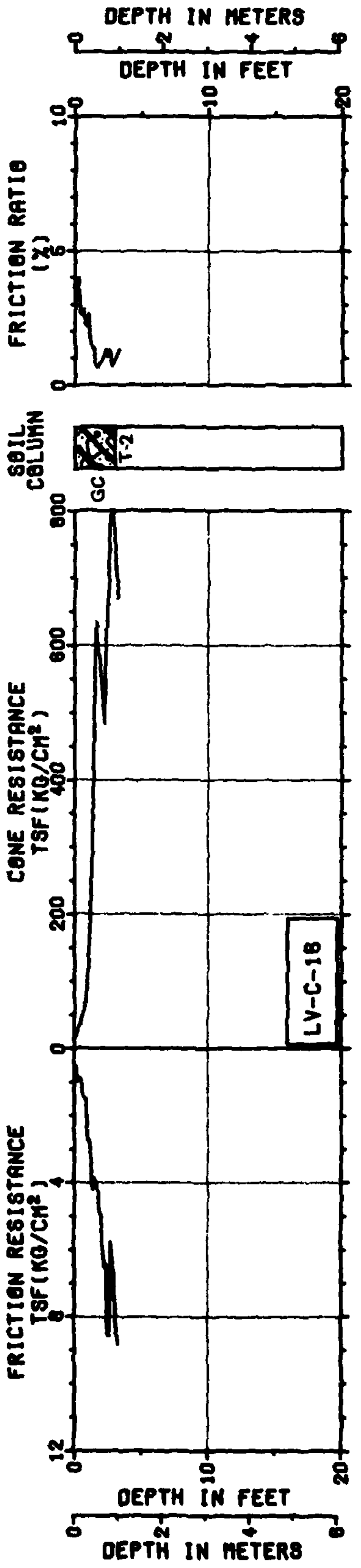
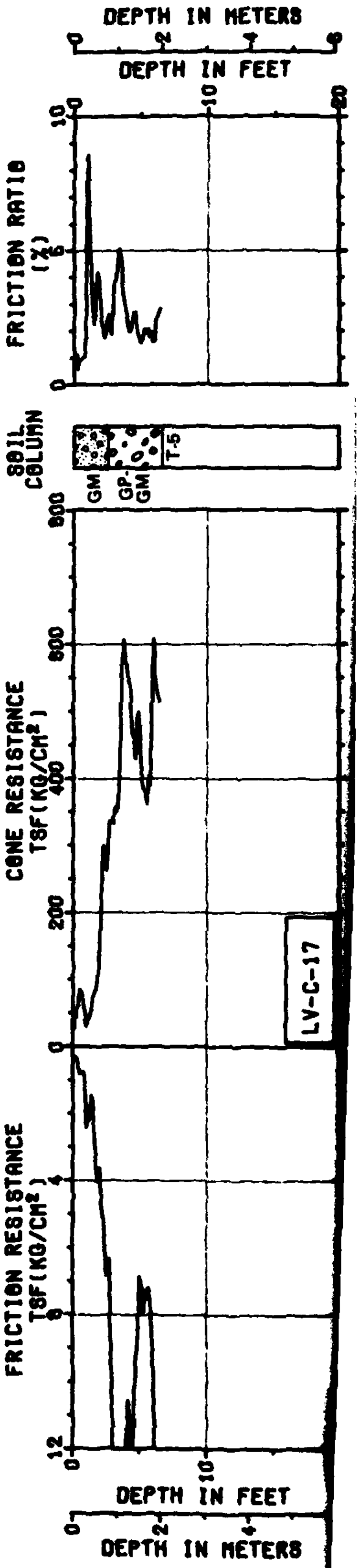
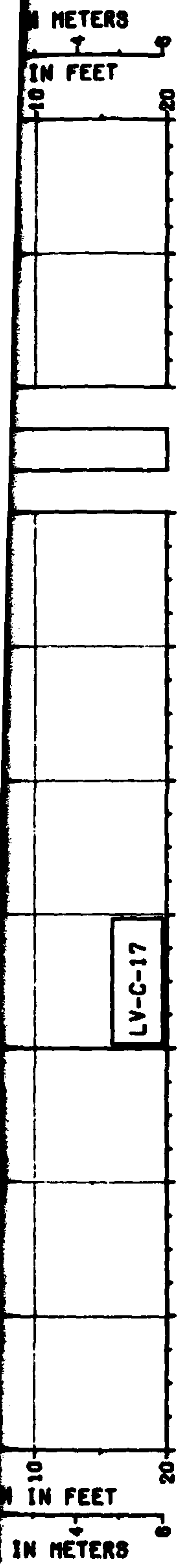
FIGURE II-11-1

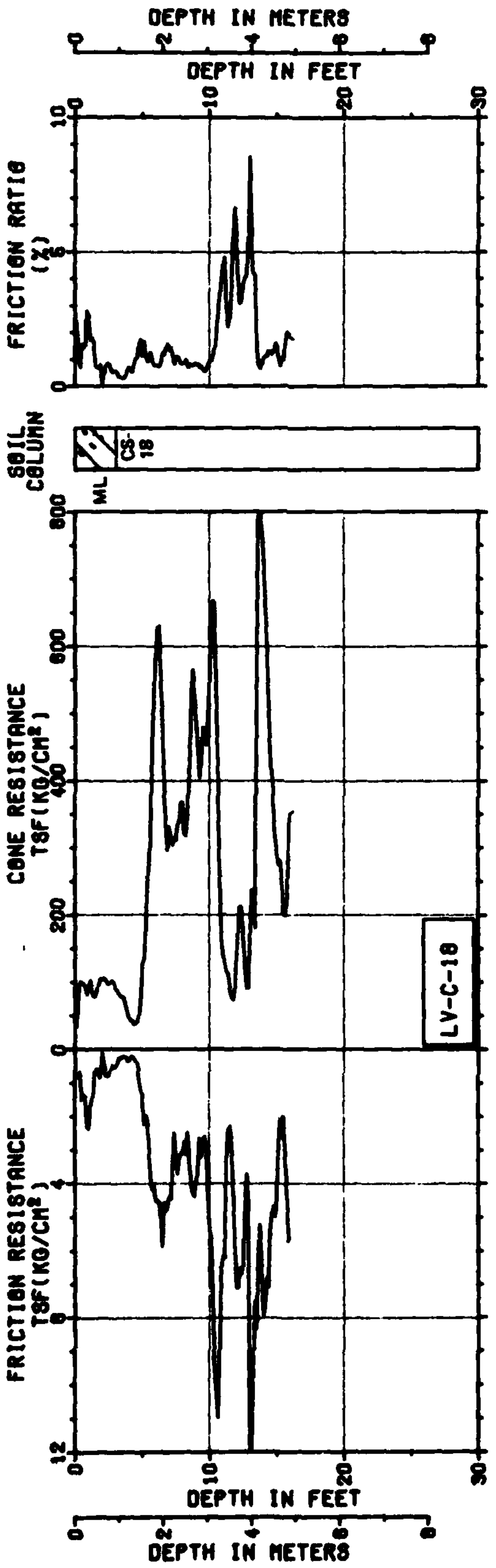
2

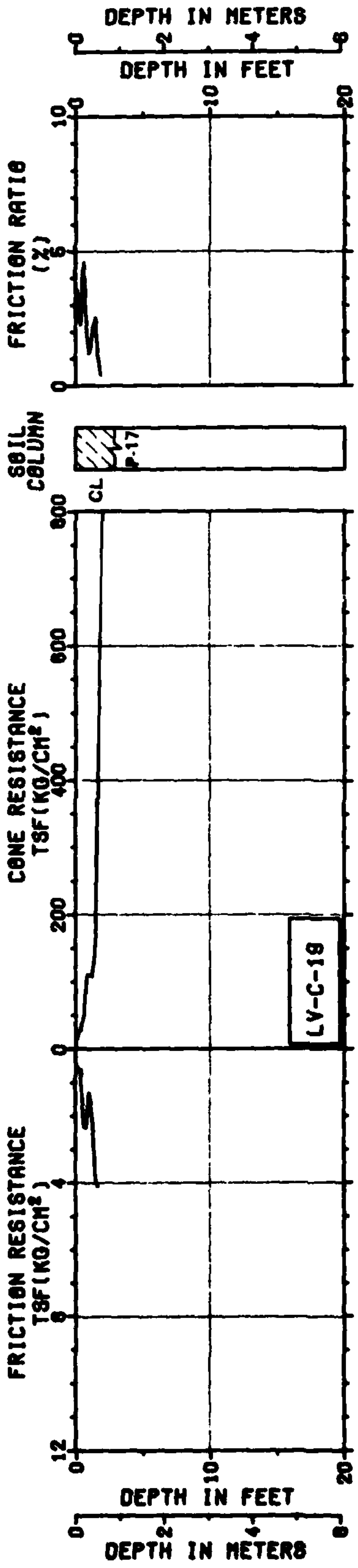

LV-C-15

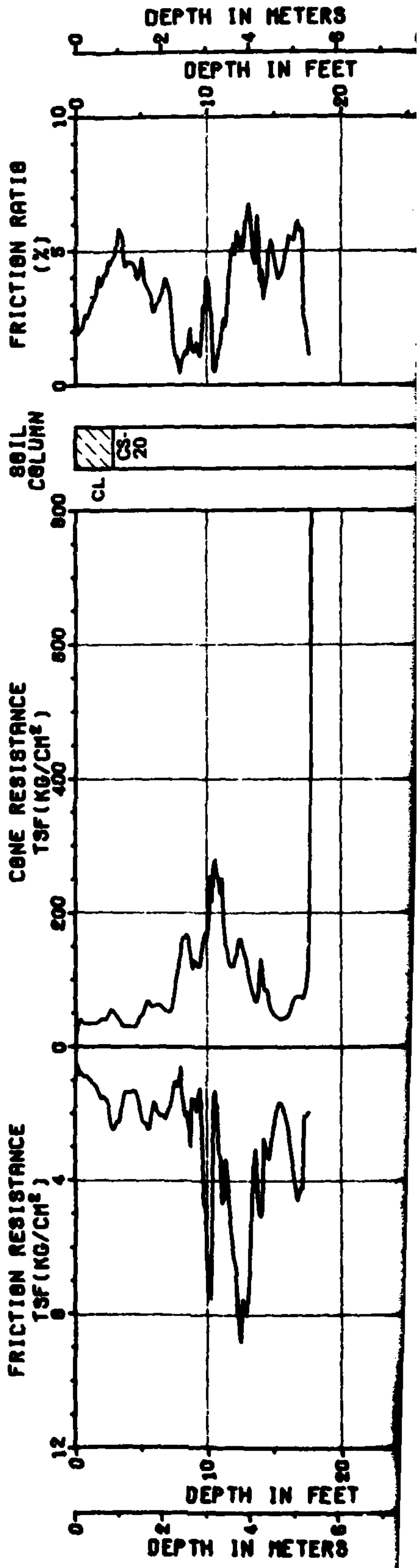

LV-C-16


LV-C-17


DEPTH IN METERS
DEPTH IN FEET
10
20
4
6
LV-C-17


DEPTH IN METERS
0
2
4
6
8
DEPTH IN FEET
0
10
20
30
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
ML
CS-18
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-18


DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
CL
P-17
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-19


DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
CL
CS-20
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12

2

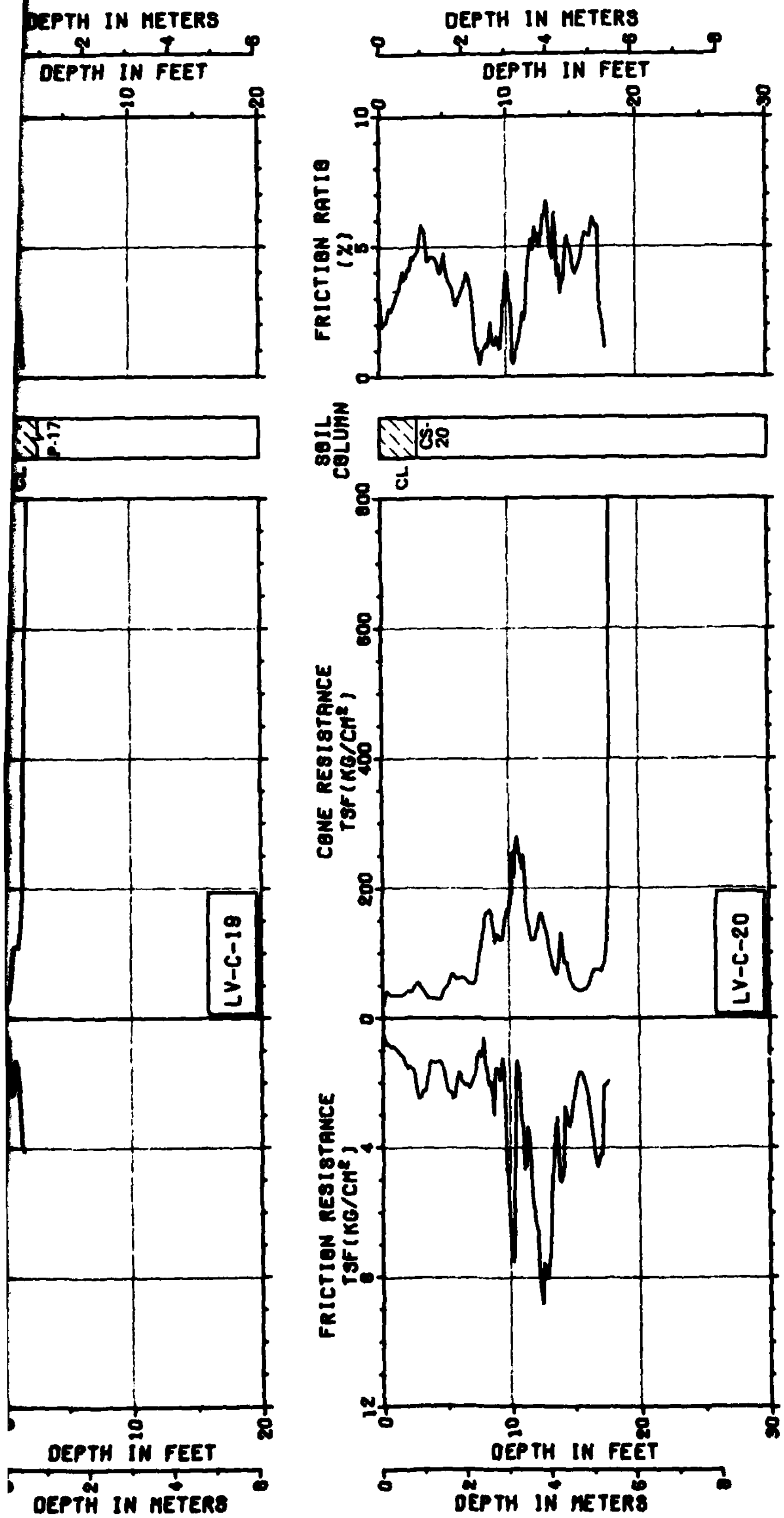


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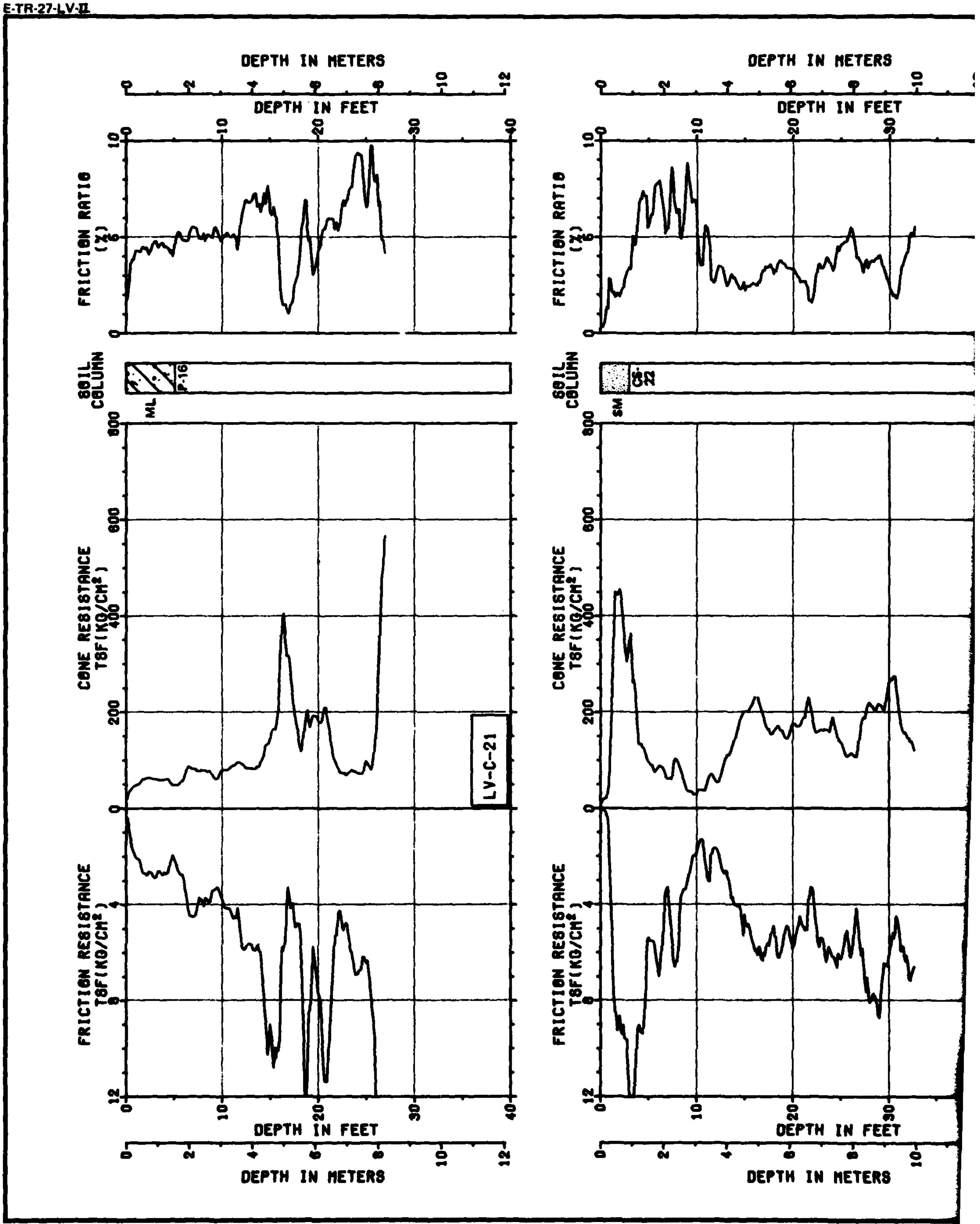
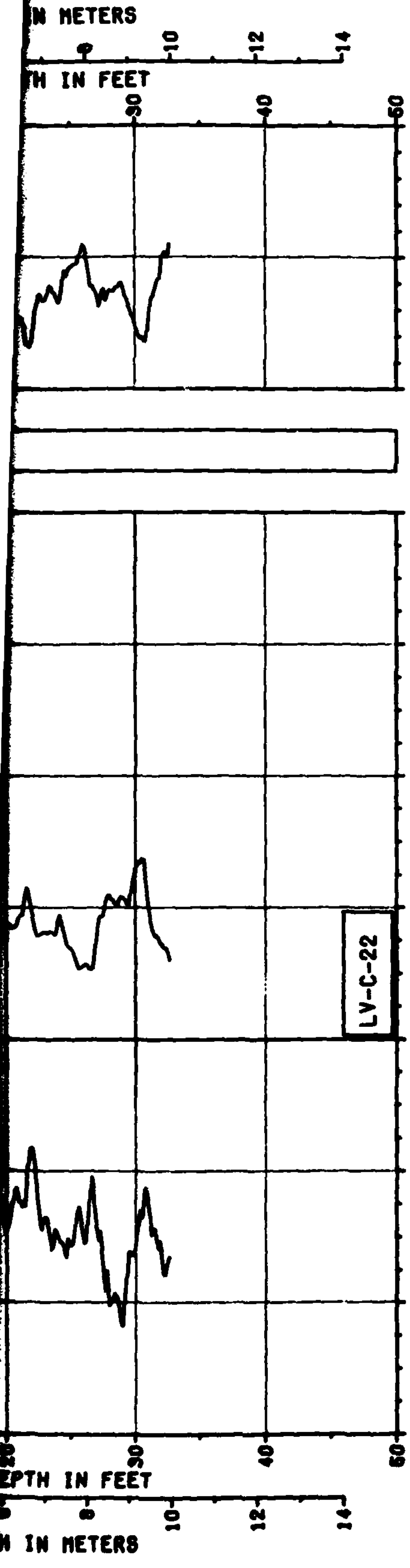
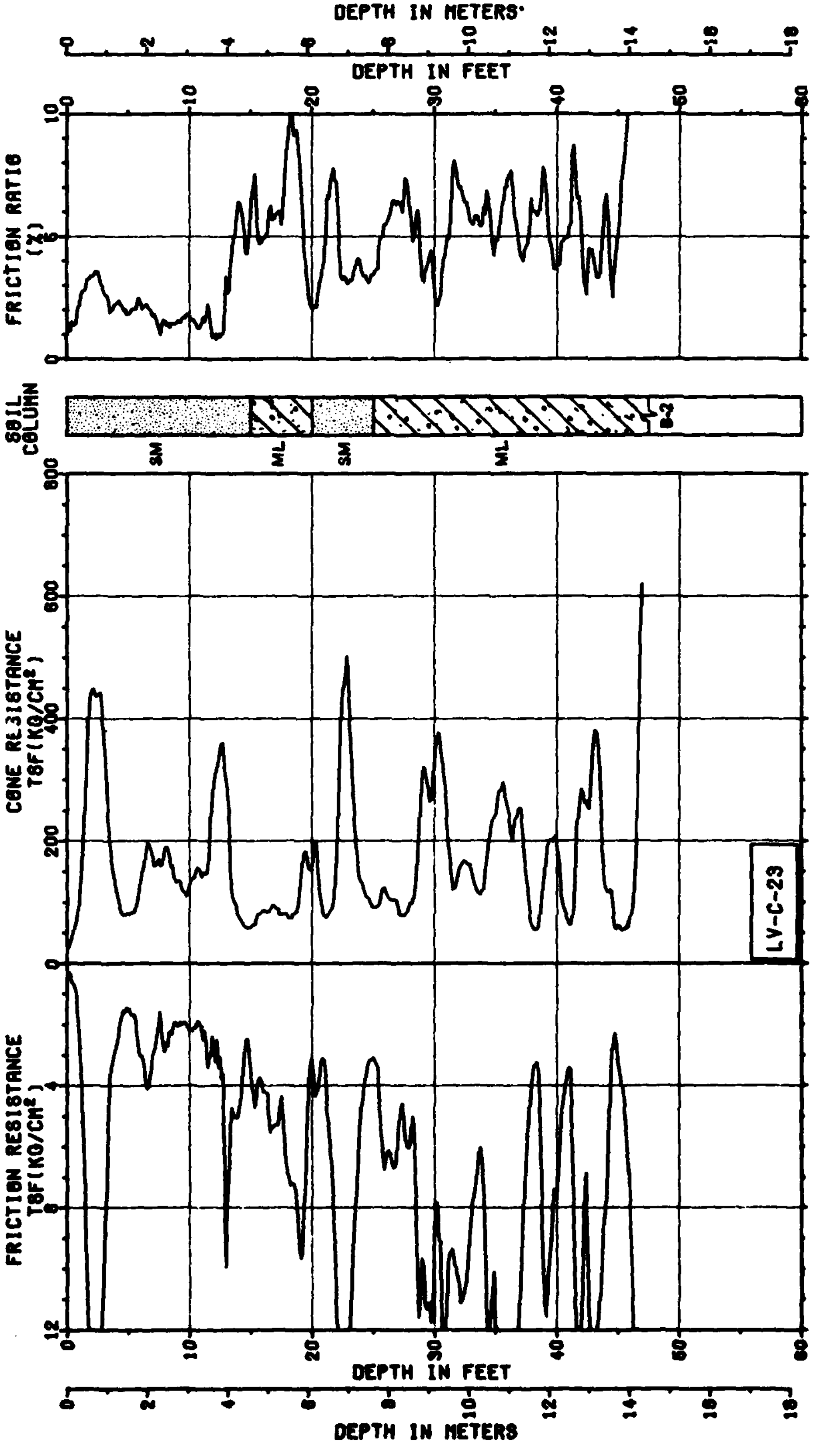
FIGURE II-11-1

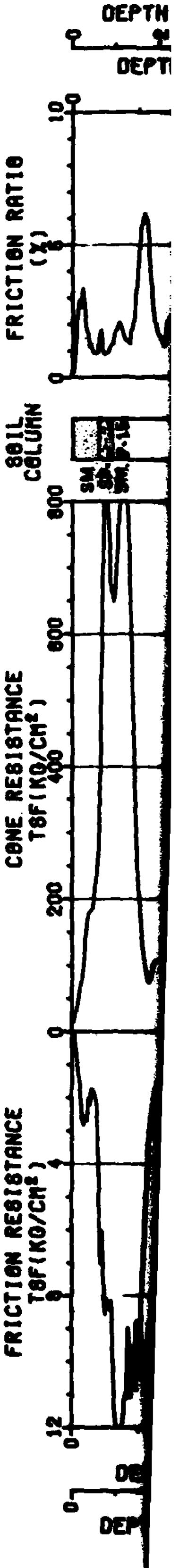

DEPTH IN METERS
0
2
4
6
8
10
12
DEPTH IN FEET
0
10
20
30
40
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
ML
P-16
SM
CS-22
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-21



DEPTH IN METERS
6
10
12
14
DEPTH IN FEET
30
40
50
LV-C-22
20
30
40
50
DEPTH IN FEET
6
8
10
12
14
DEPTH IN METERS

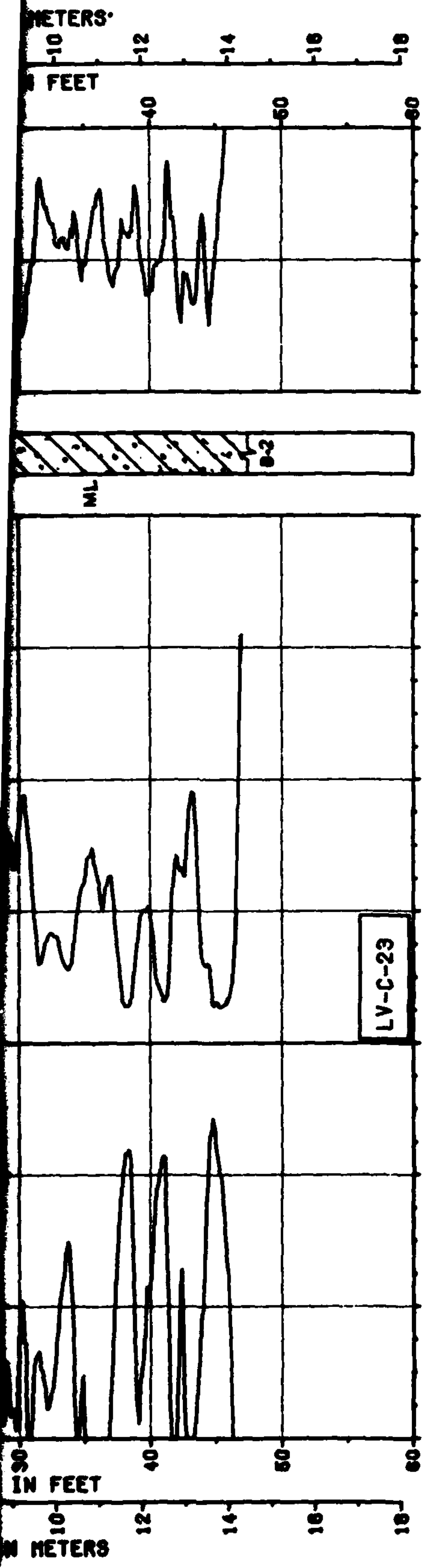


DEPTH IN METERS
0
2
4
6
8
10
12
14
16
18
DEPTH IN FEET
0
10
20
30
40
50
60
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
ML
SM
ML
B-2
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
LV-C-23
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
0
10
20
30
40
50
60
DEPTH IN FEET
0
2
4
6
8
10
12
14
16
18
DEPTH IN METERS



DEPTH
DEPTH
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
0
DE
0
DEP

2



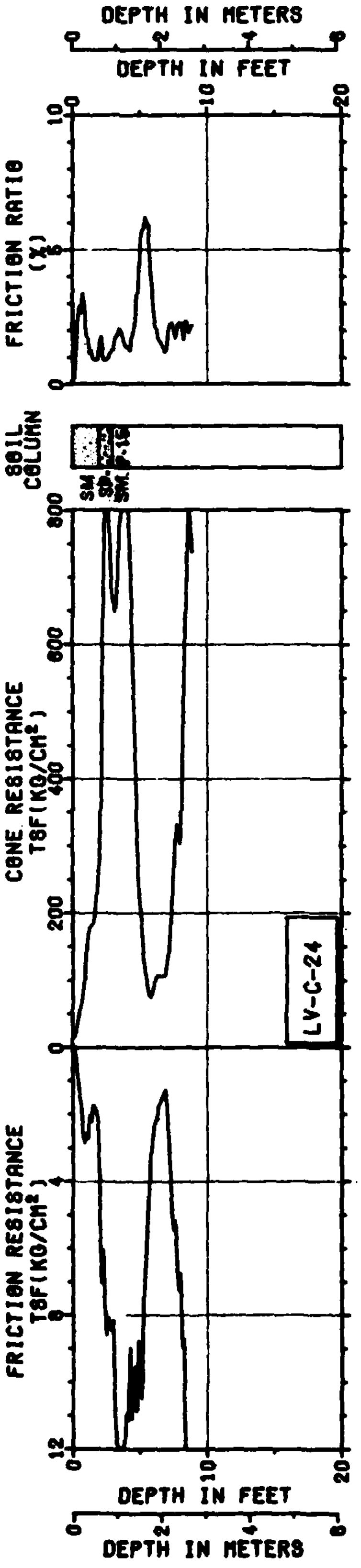


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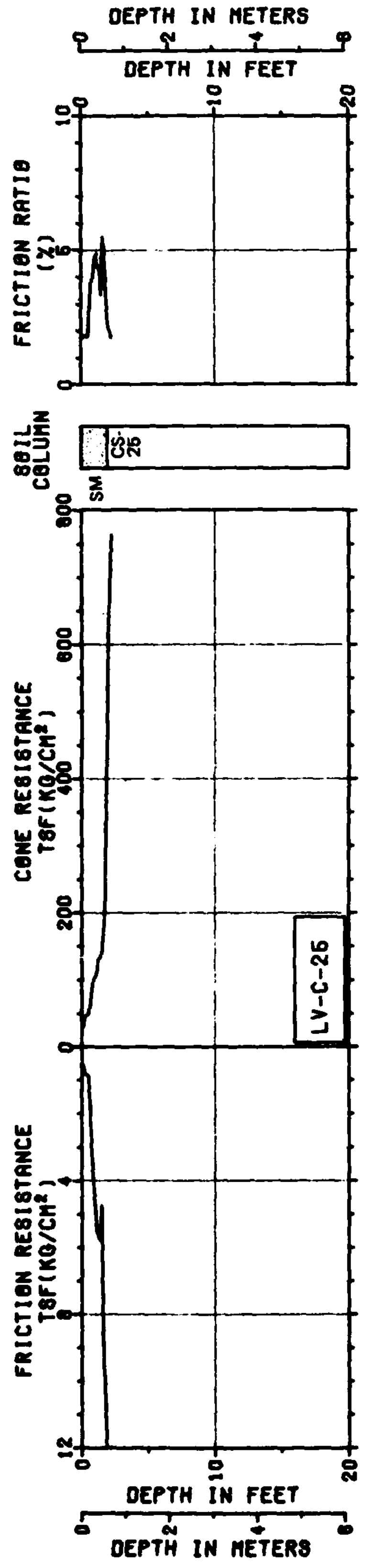
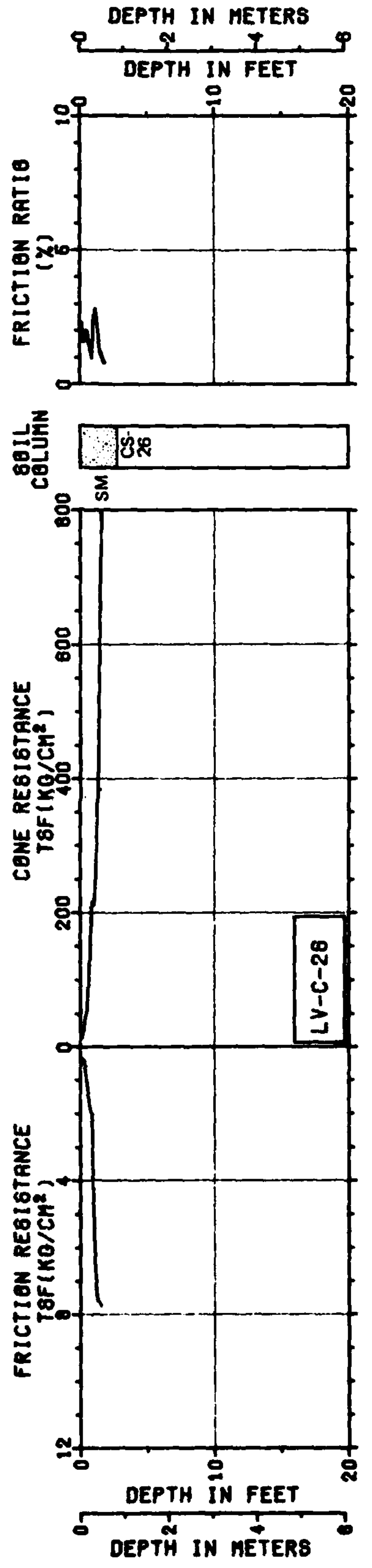
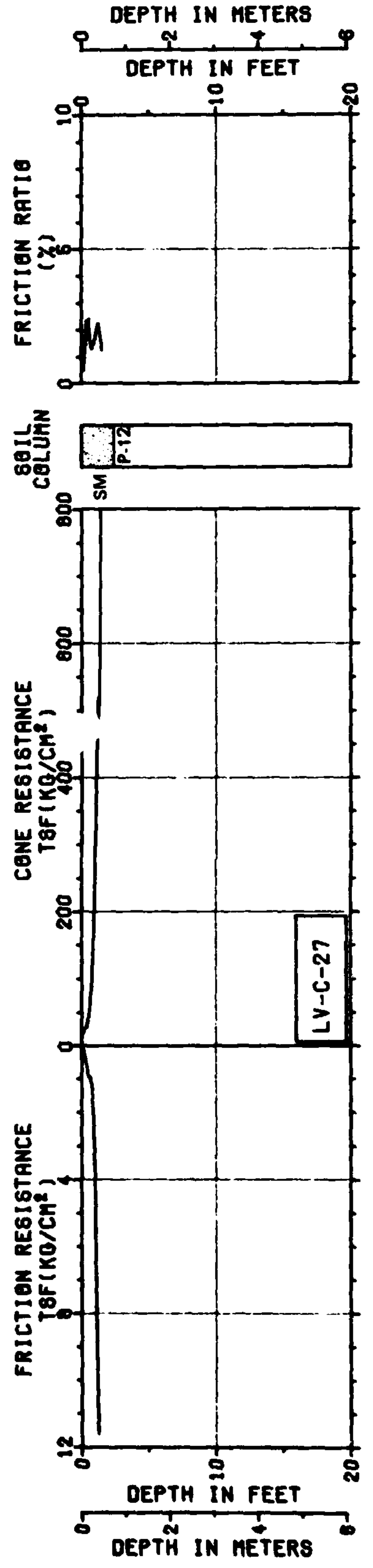
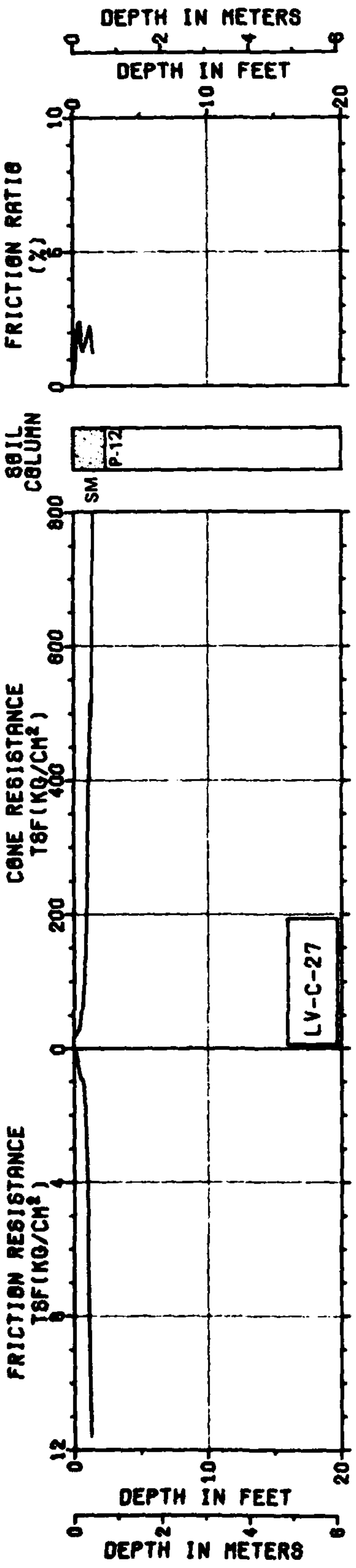
FIGURE II-11-1

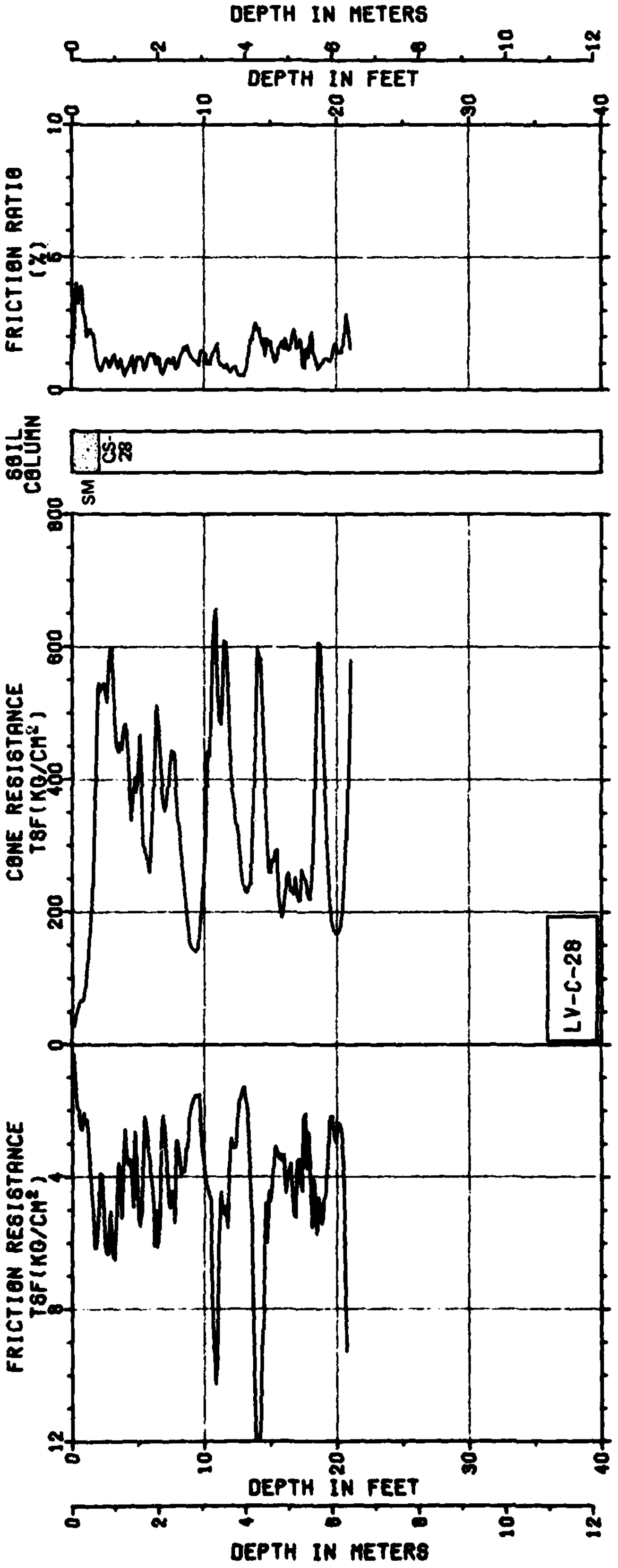

DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
CS-25
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-25

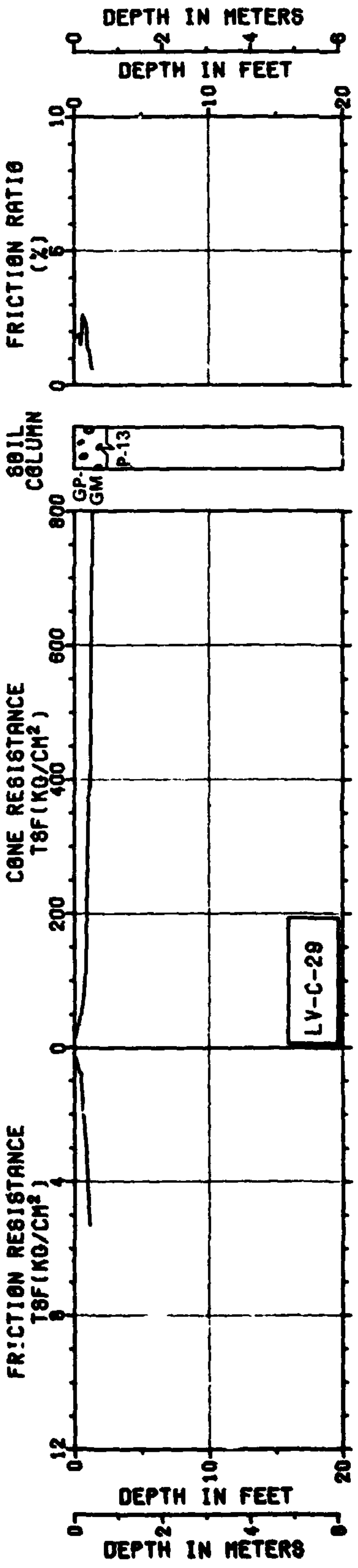

DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
CS-26
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-26


DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
P-12
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-27

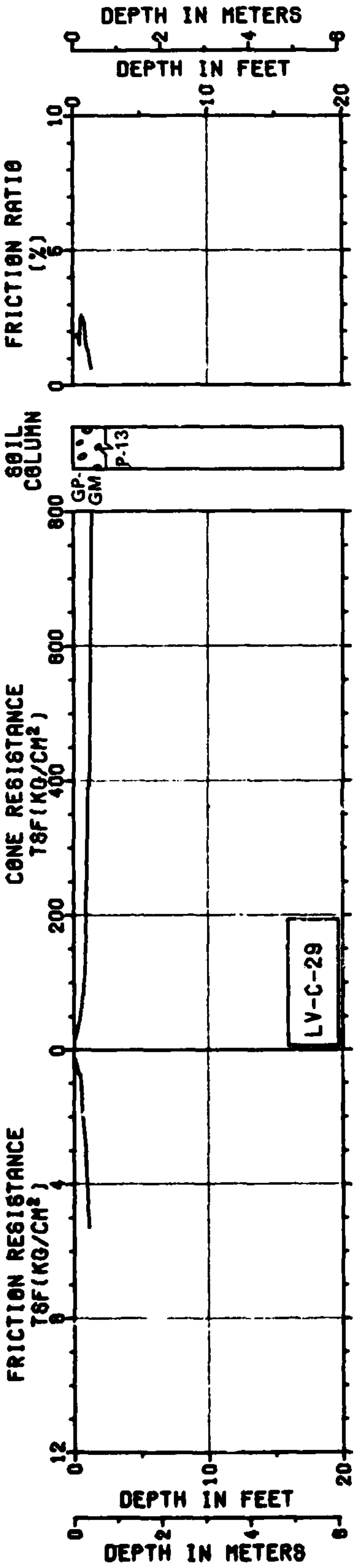

FRICTION RATIO
SOIL COLUMN
CONE RESISTANCE
FRICTION RESISTANCE


DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SM
P-12
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-27


DEPTH IN METERS
0
2
4
6
8
10
12
DEPTH IN FEET
0
10
20
30
40
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SM
CS-28
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-28


DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
GP-GM
P-13
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-29

2



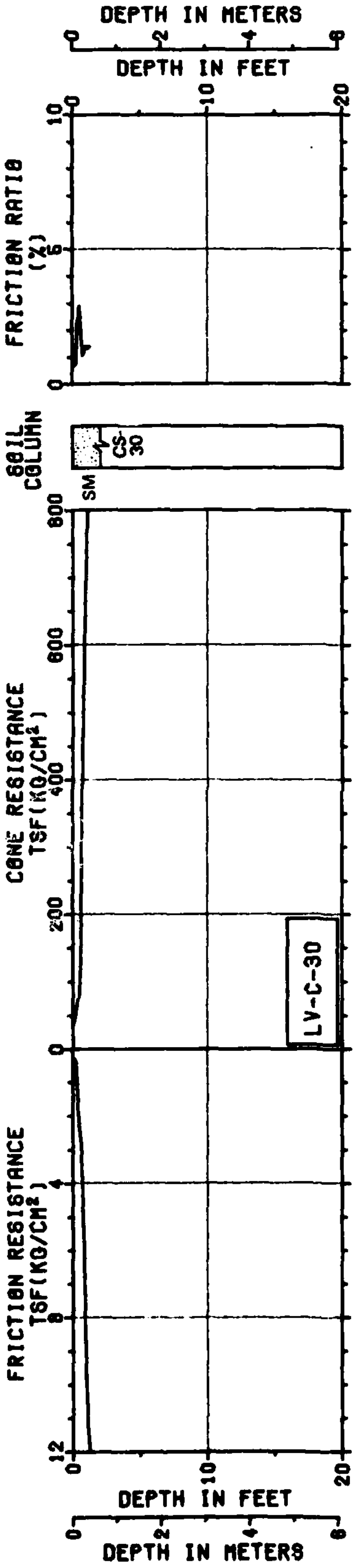


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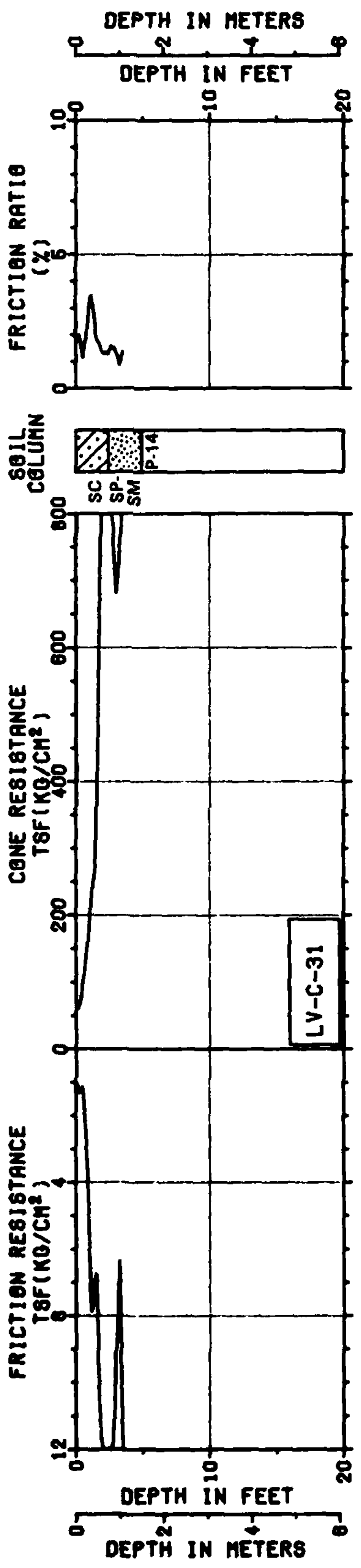
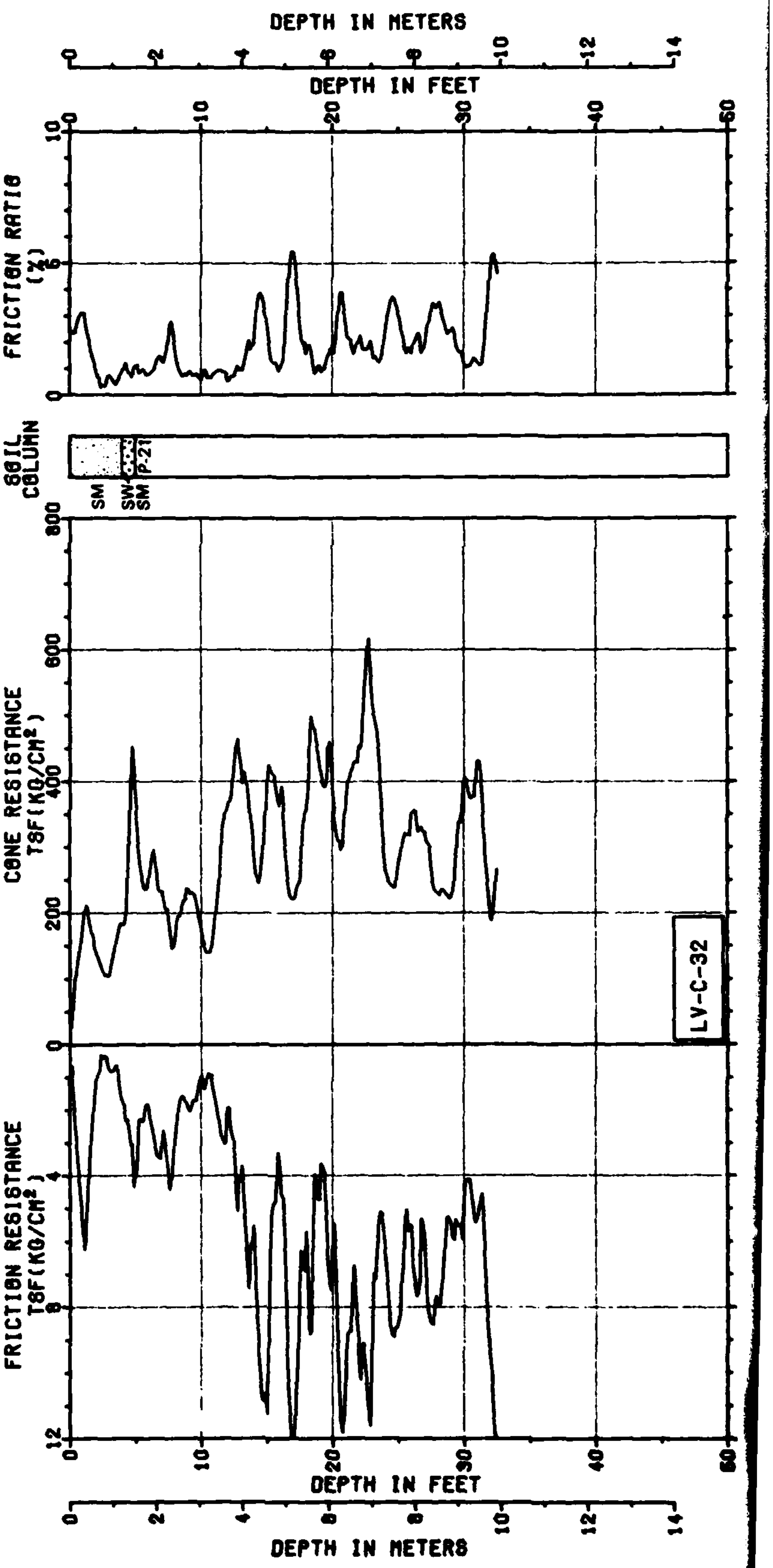
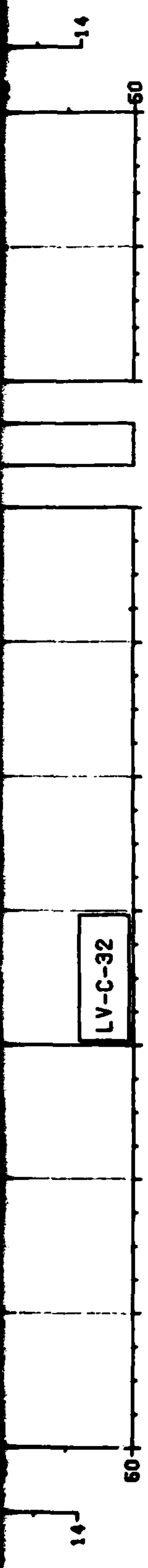
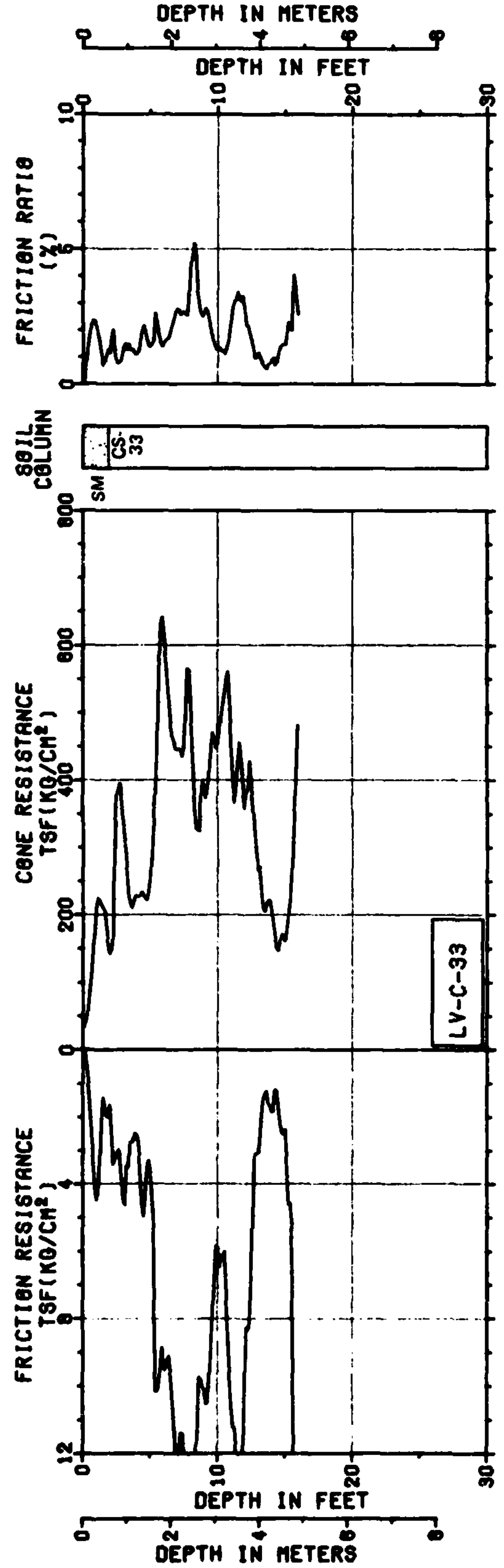
FIGURE II-11-1


LV-C-31
DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SC
SP-SM
P-14
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12

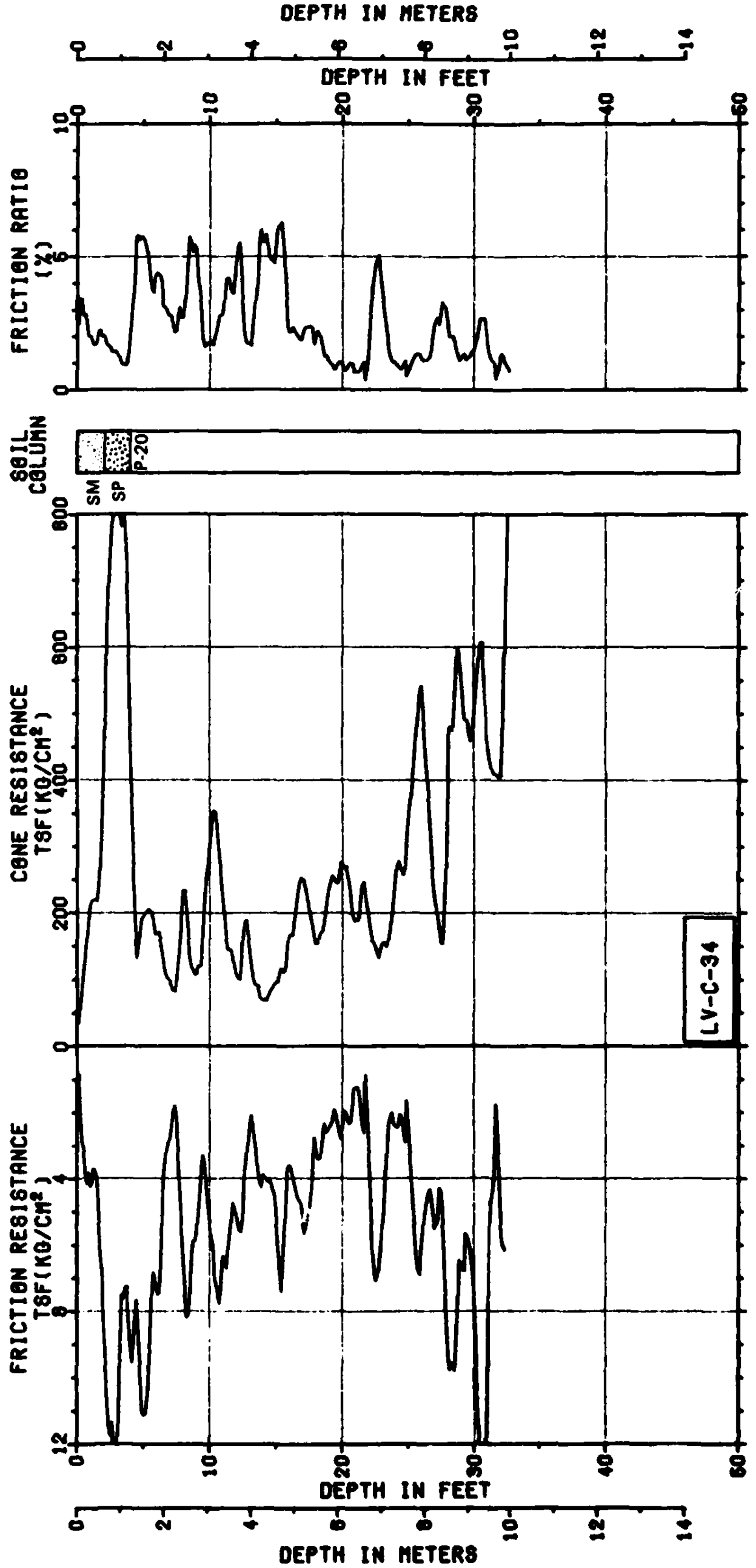

LV-C-32
DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SM
SW-SM
P-21
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12



LV-C-32
14
60



DEPTH IN METERS
0
2
4
6
8
DEPTH IN FEET
0
10
20
30
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SM
CS-33
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-33



DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SM
SP
P-20
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-34

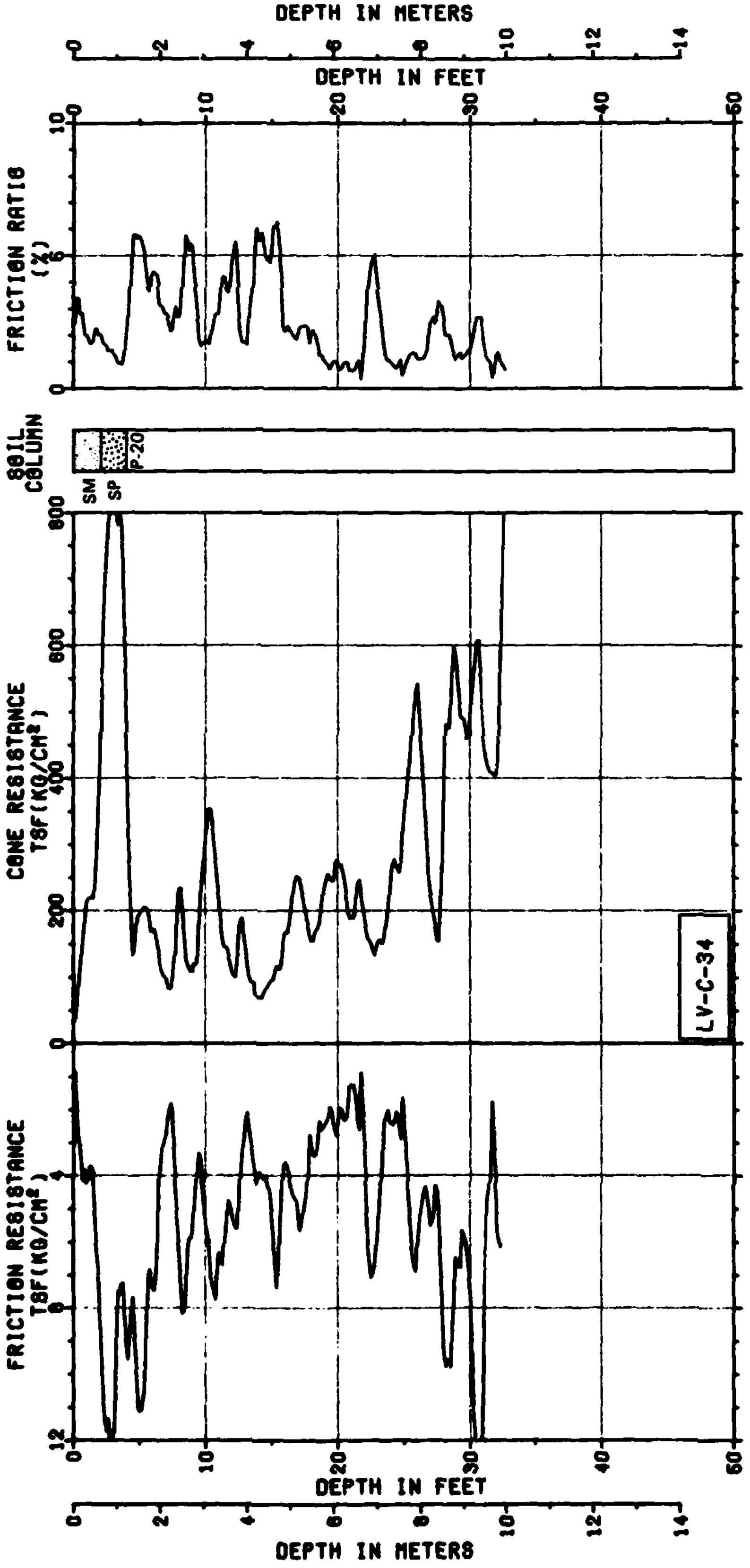


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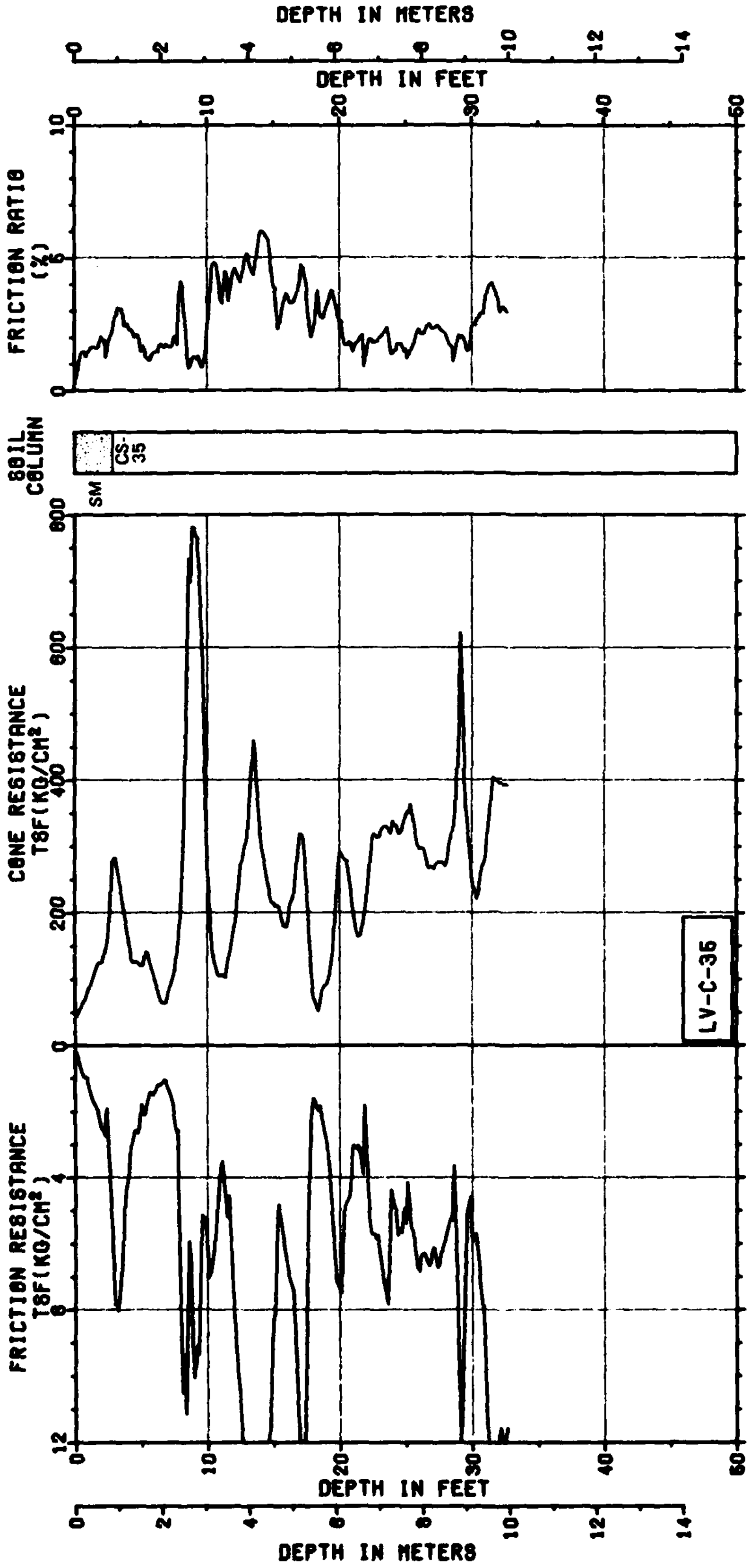
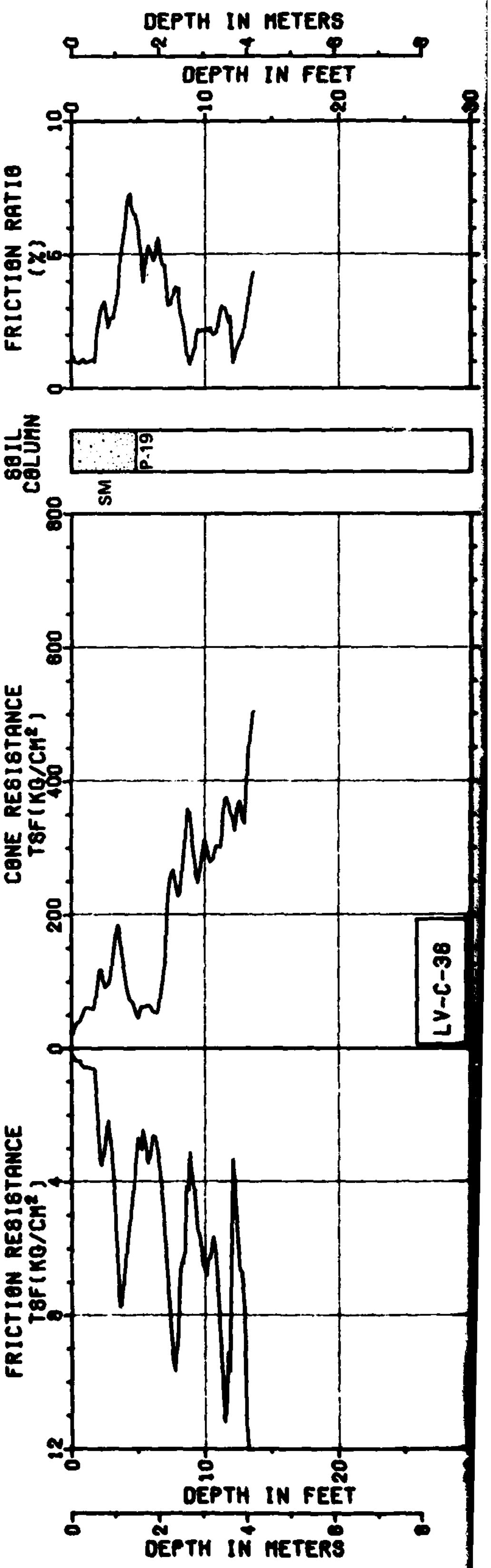
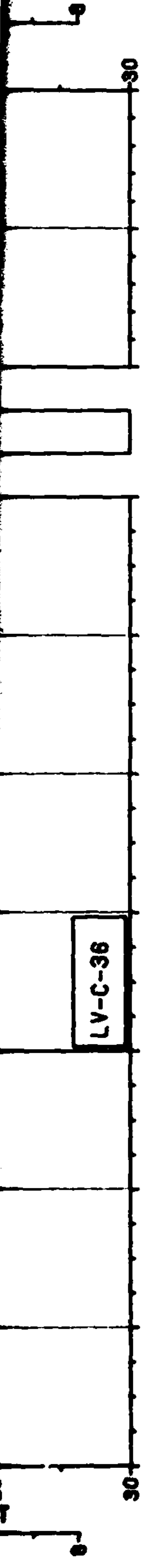
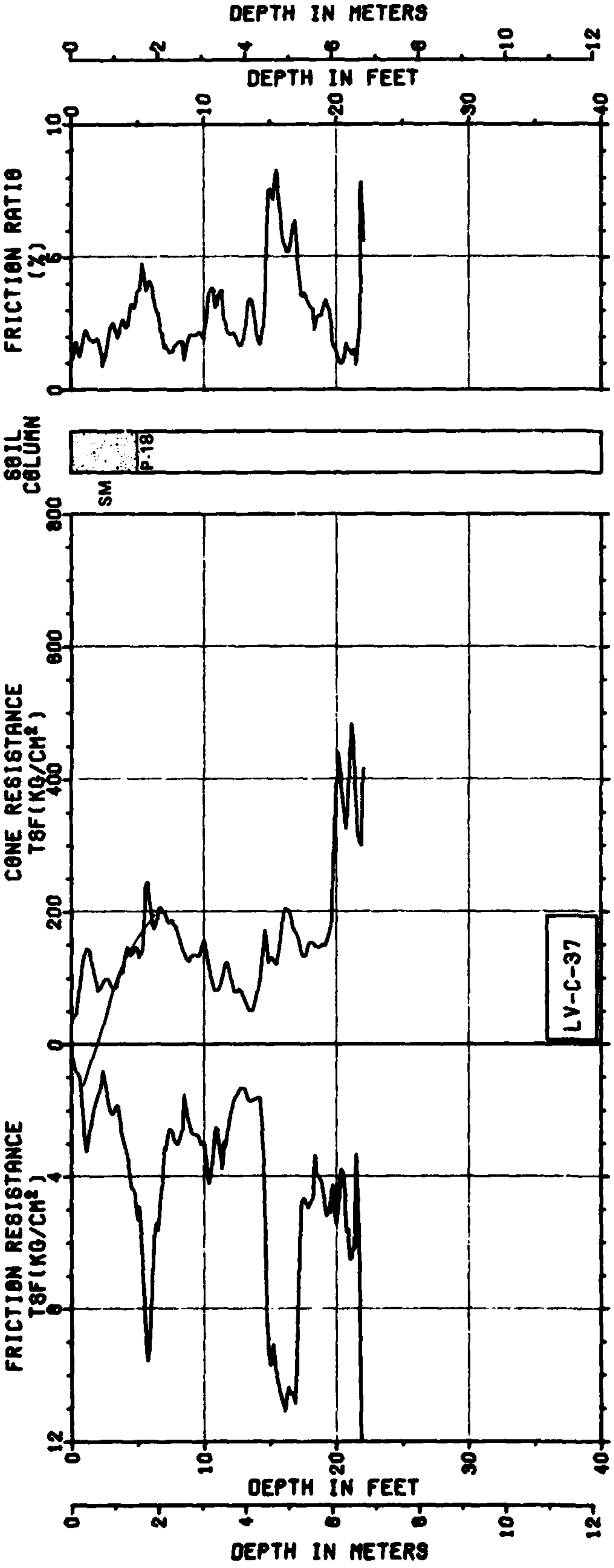
FIGURE II-11-1


DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
CS-35
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-35

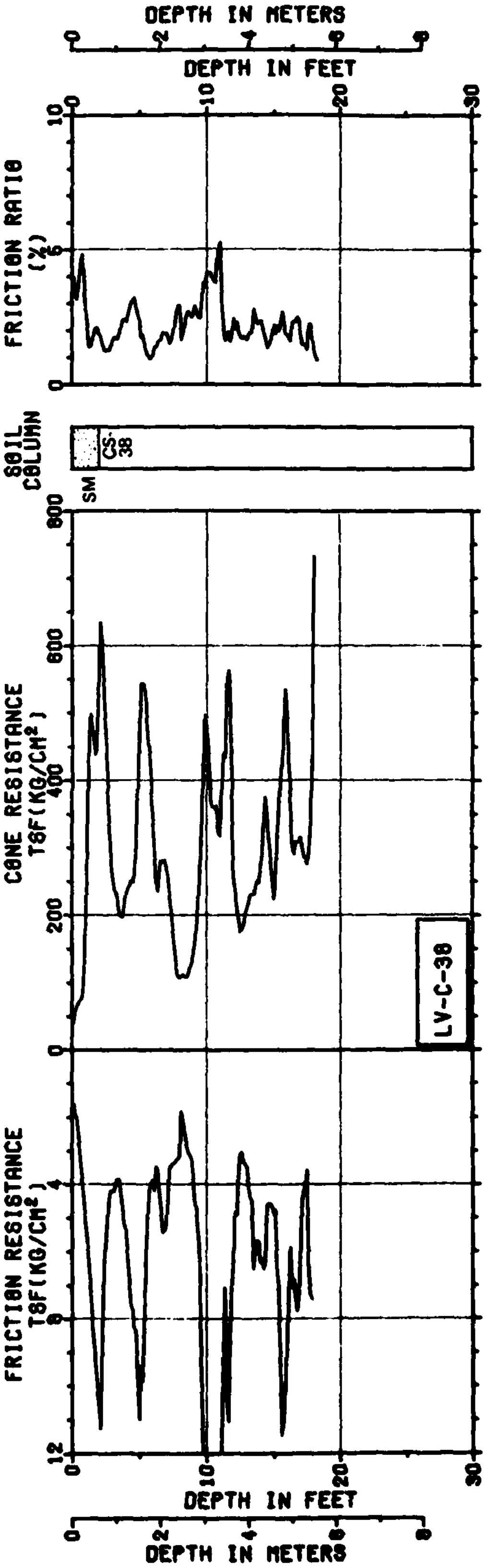

DEPTH IN METERS
0
2
4
6
8
DEPTH IN FEET
0
10
20
30
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
P-19
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-36



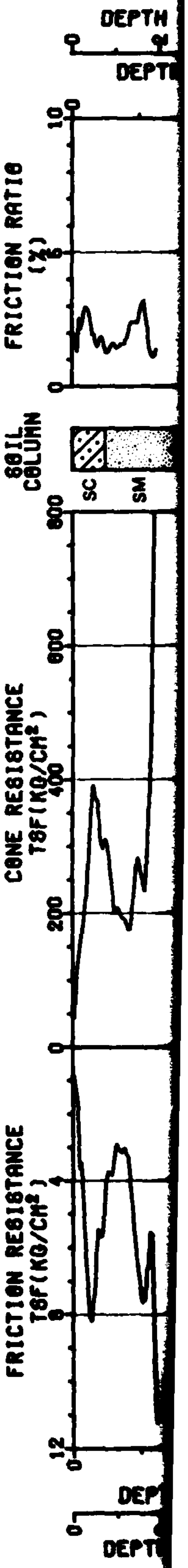
LV-C-36
30
30



LV-C-37
DEPTH IN METERS
0
2
4
6
8
10
12
DEPTH IN FEET
0
10
20
30
40
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
P-18
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12



LV-C-38
DEPTH IN METERS
0
2
4
6
8
DEPTH IN FEET
0
10
20
30
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
CS-38
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12



DEPTH
DEPT
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SC
SM
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12

2

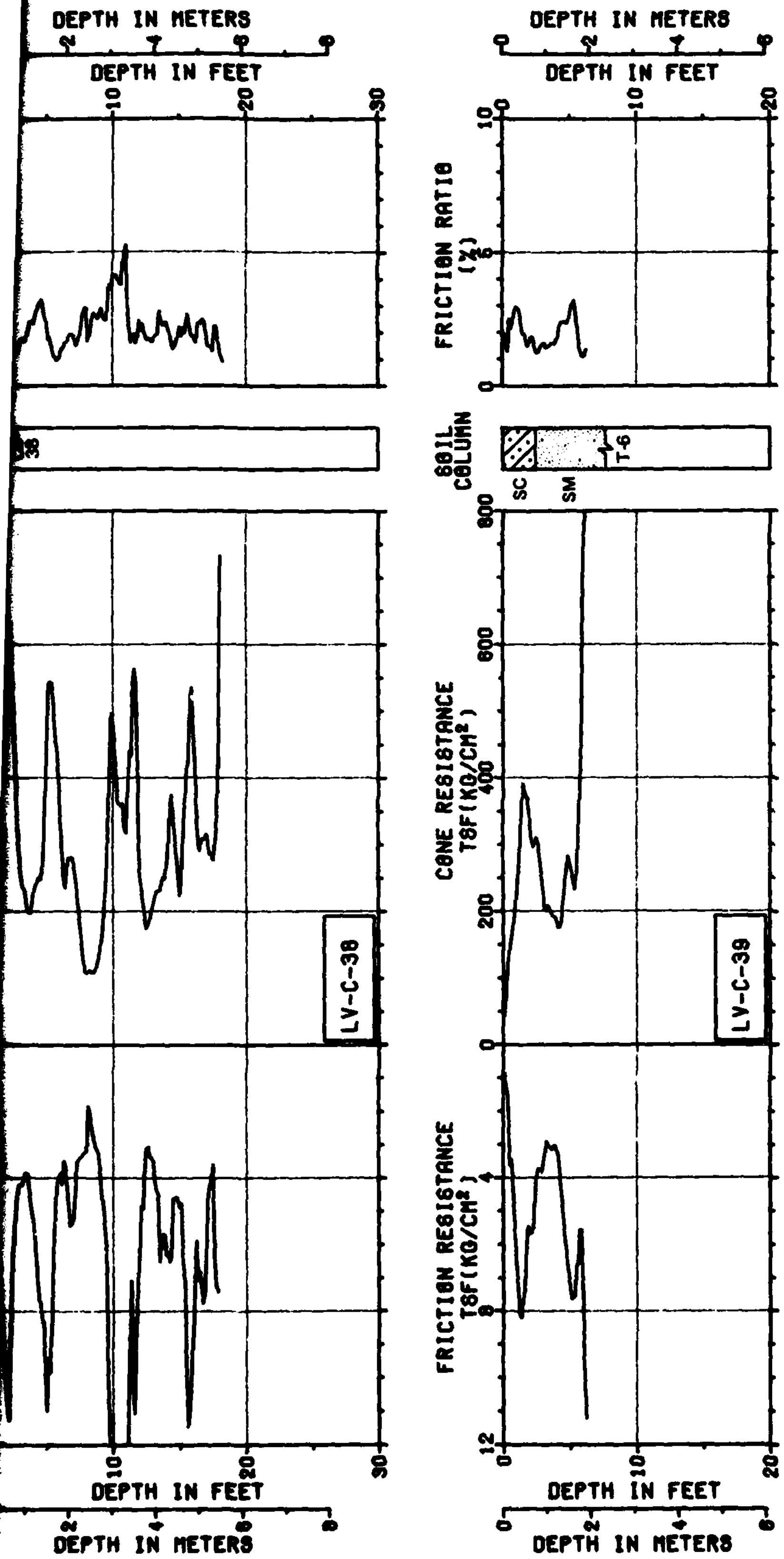


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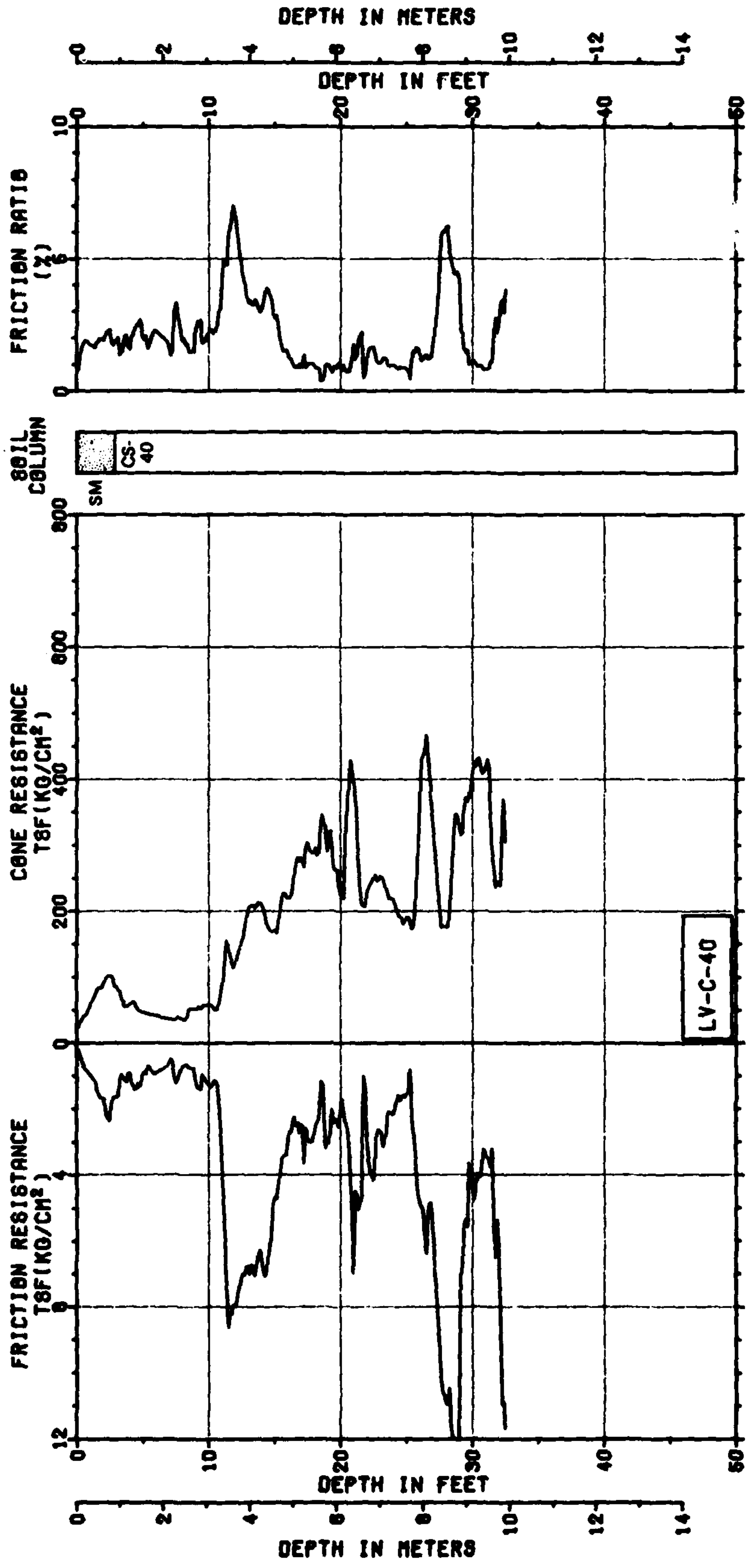
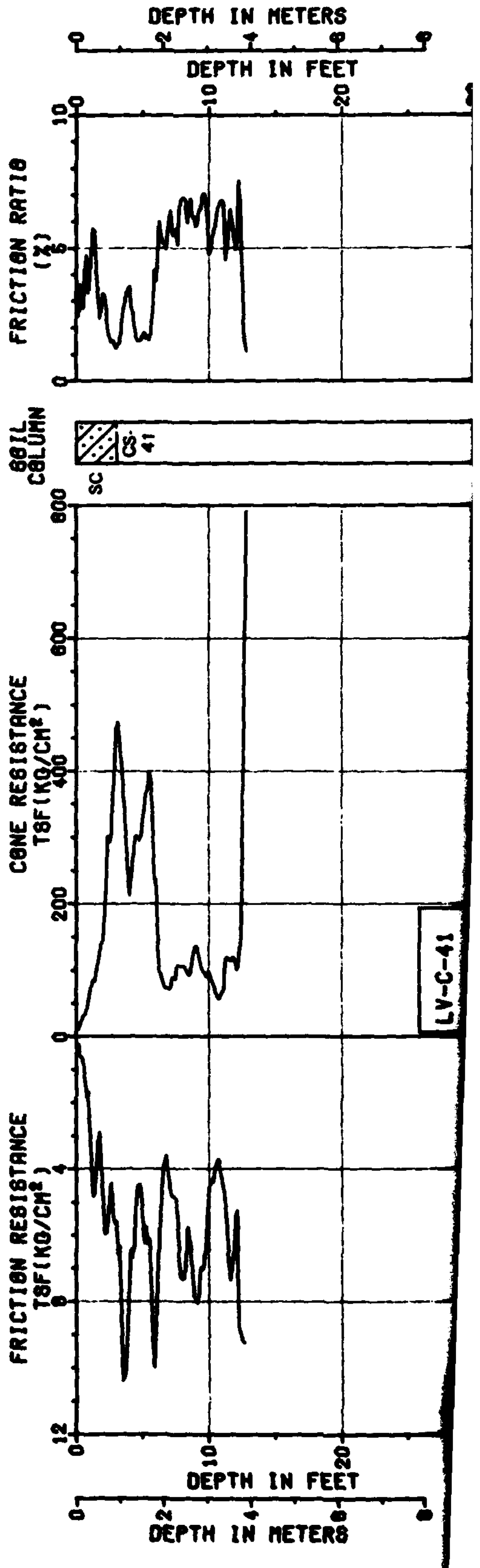
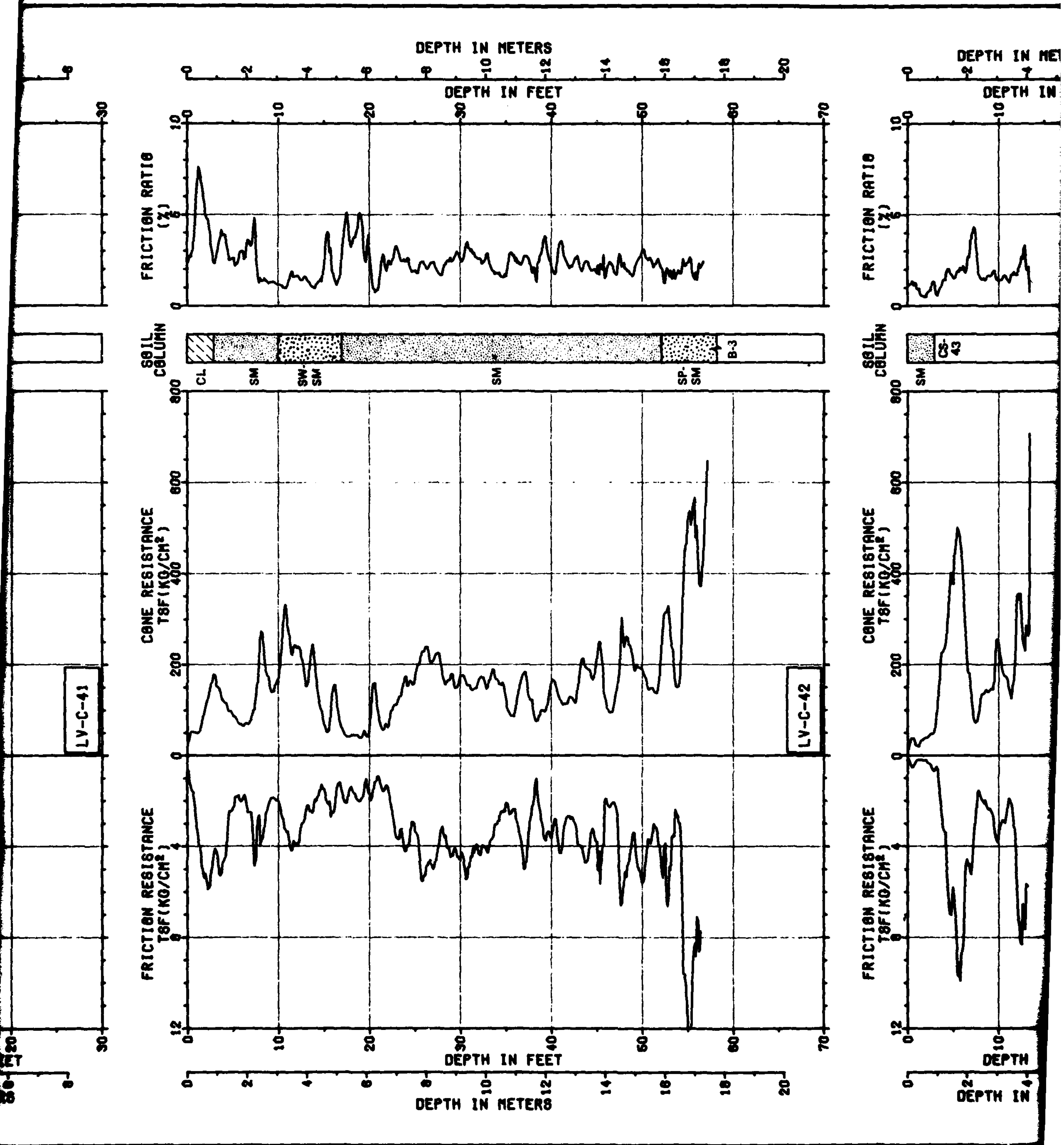
FIGURE II-11-1

3


DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
CS-40
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-40


DEPTH IN METERS
0
2
4
6
8
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SC
CS-41
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-41


DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
CL
SM
SW-SM
SM
SP-SM
B-3
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
LV-C-41
LV-C-42
CS-43
SM
0
2
4
6
8
10
12
14
16
18
20
10
20
30
40
50
60
70
200
400
600
800
4
8
12

2

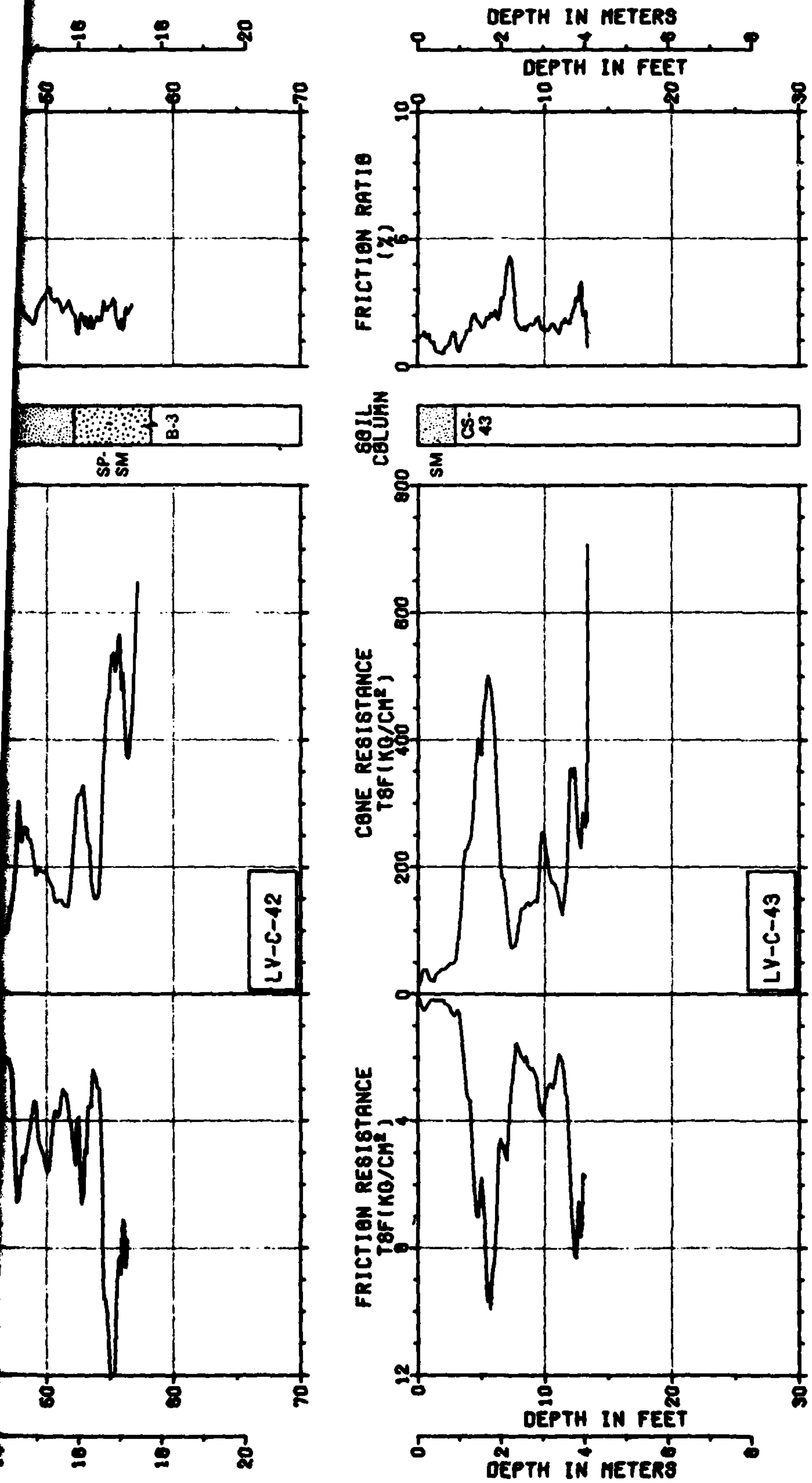


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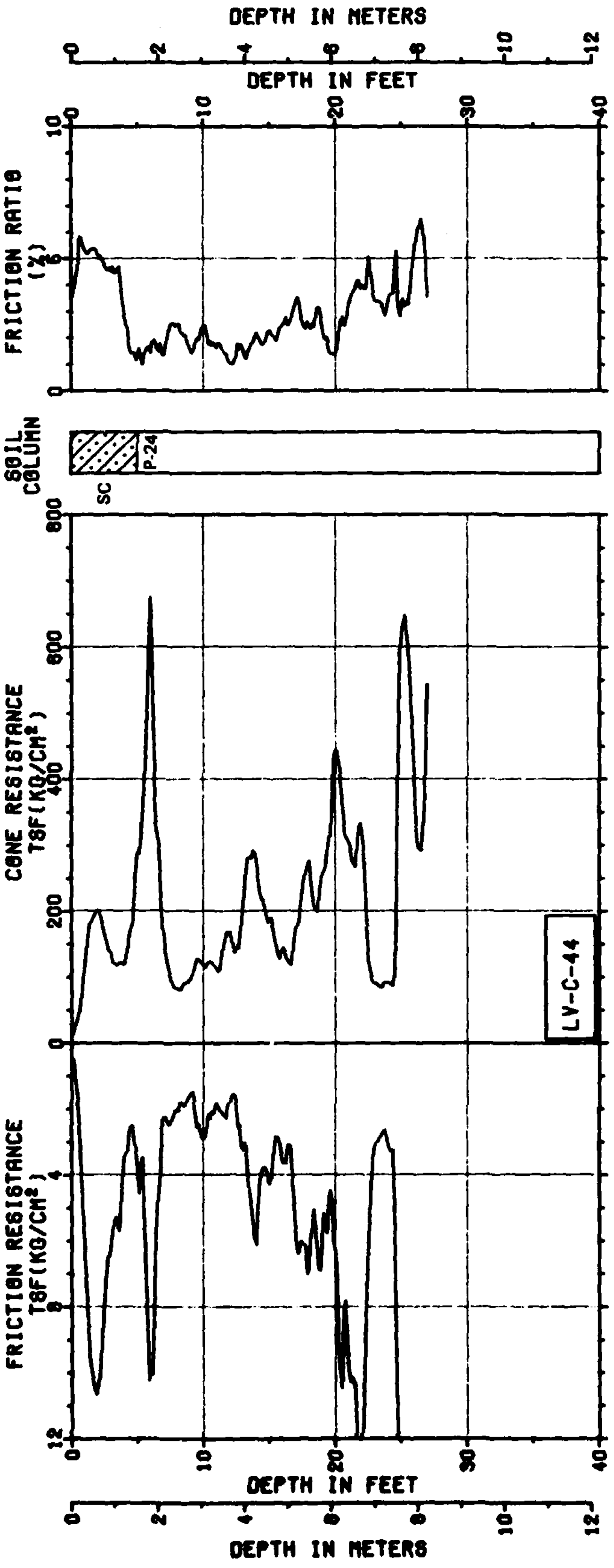
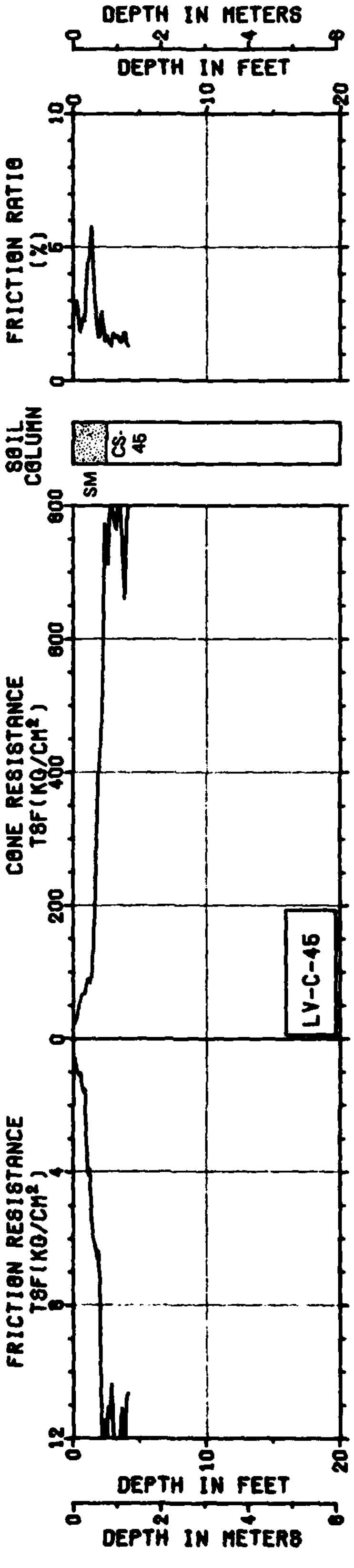
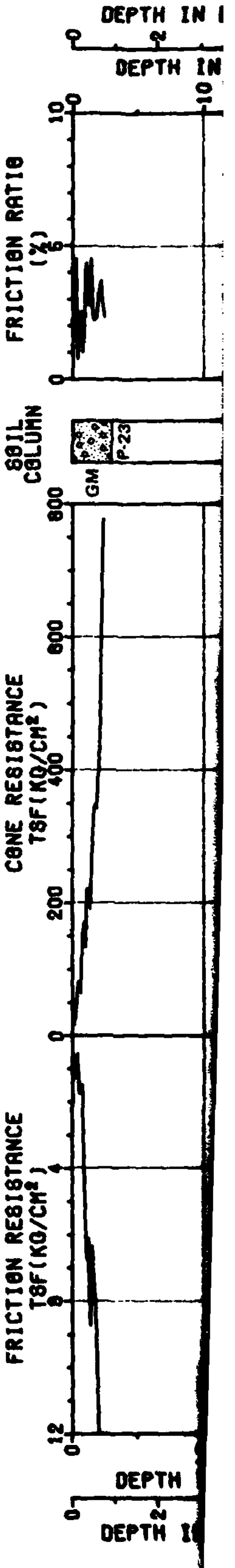
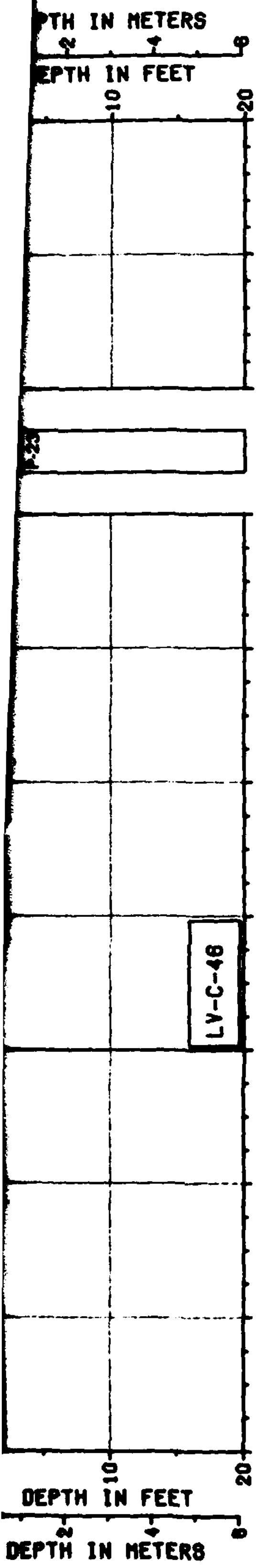
FIGURE II-11-1

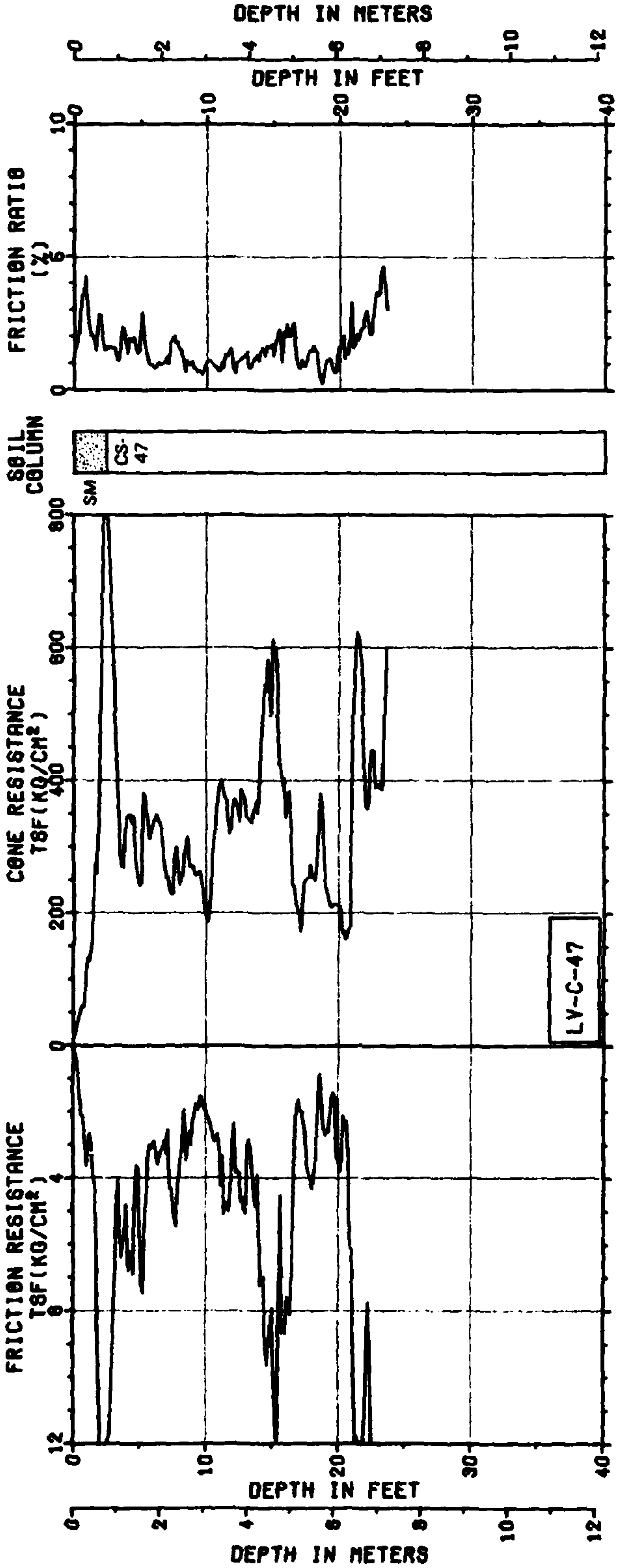
2

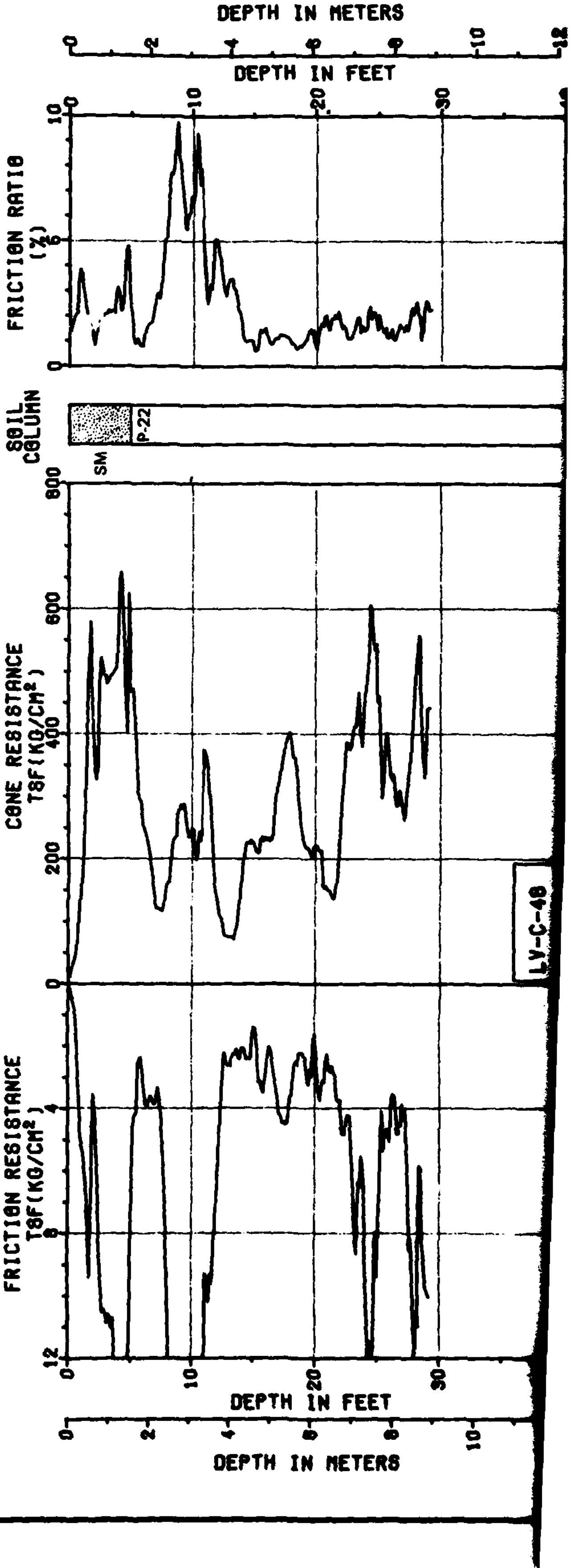

DEPTH IN METERS
0
2
4
6
8
10
12
DEPTH IN FEET
0
10
20
30
40
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SC
P-24
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-44
DEPTH IN FEET
DEPTH IN METERS

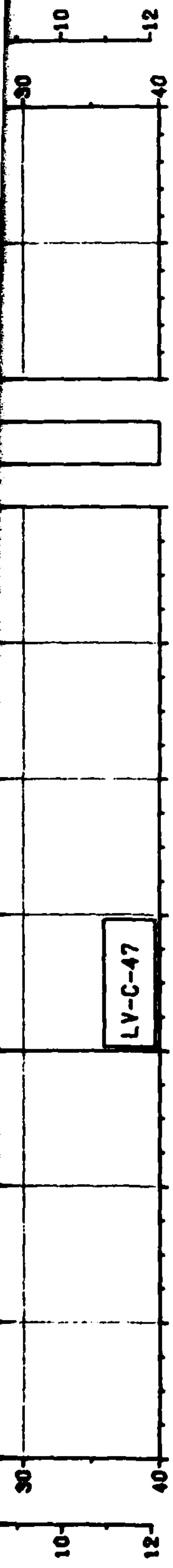

DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
CS-45
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-45
DEPTH IN FEET
DEPTH IN METERS


DEPTH IN
0
2
DEPTH IN
0
10
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
GM
P-23
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
DEPTH
0
2
DEPTH I


DEPTH IN METERS
DEPTH IN FEET
P-23
LV-C-46
DEPTH IN FEET
DEPTH IN METERS
0
2
4
6
10
20


DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
SM
CS-47
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
LV-C-47
DEPTH IN FEET
DEPTH IN METERS
0
2
4
6
8
10
12
0
10
20
30
40
0
5
10
200
400
600
800
4
8
12


DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
SM
P-22
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
LV-C-48
DEPTH IN FEET
DEPTH IN METERS
0
2
4
6
8
10
12
0
10
20
30
0
5
10
200
400
600
800
4
8
12



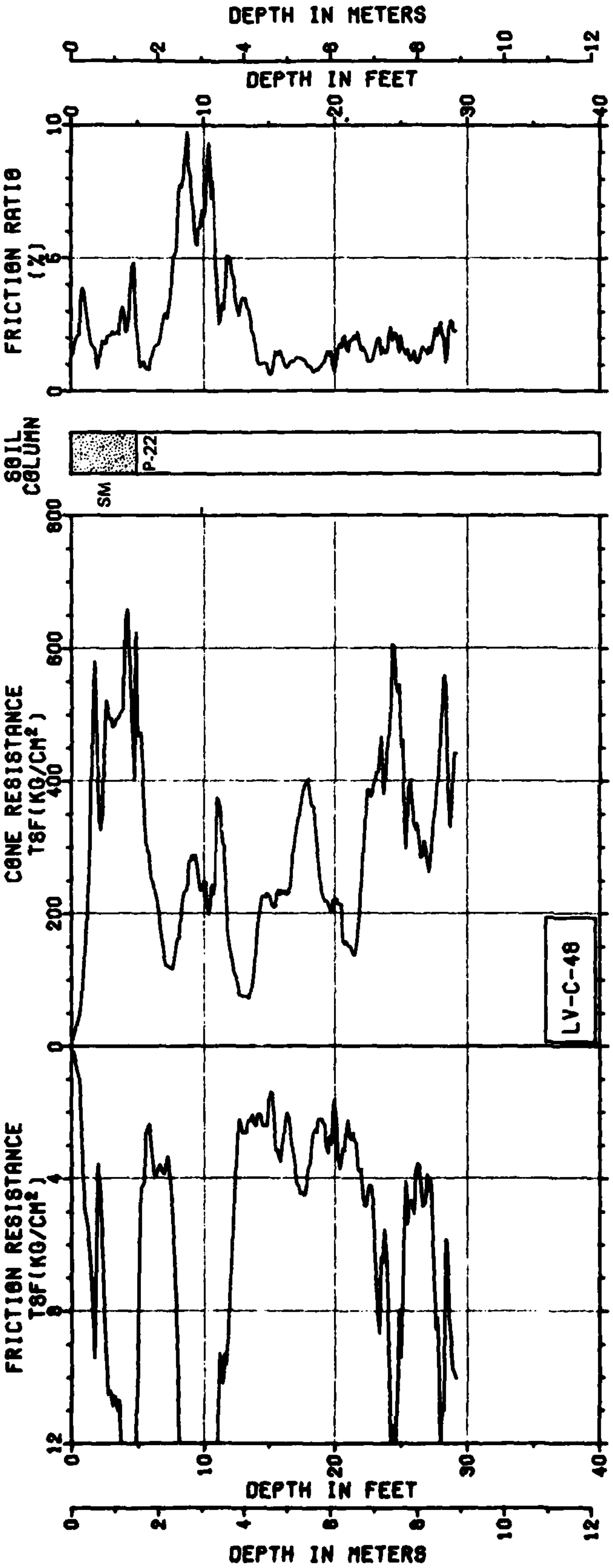


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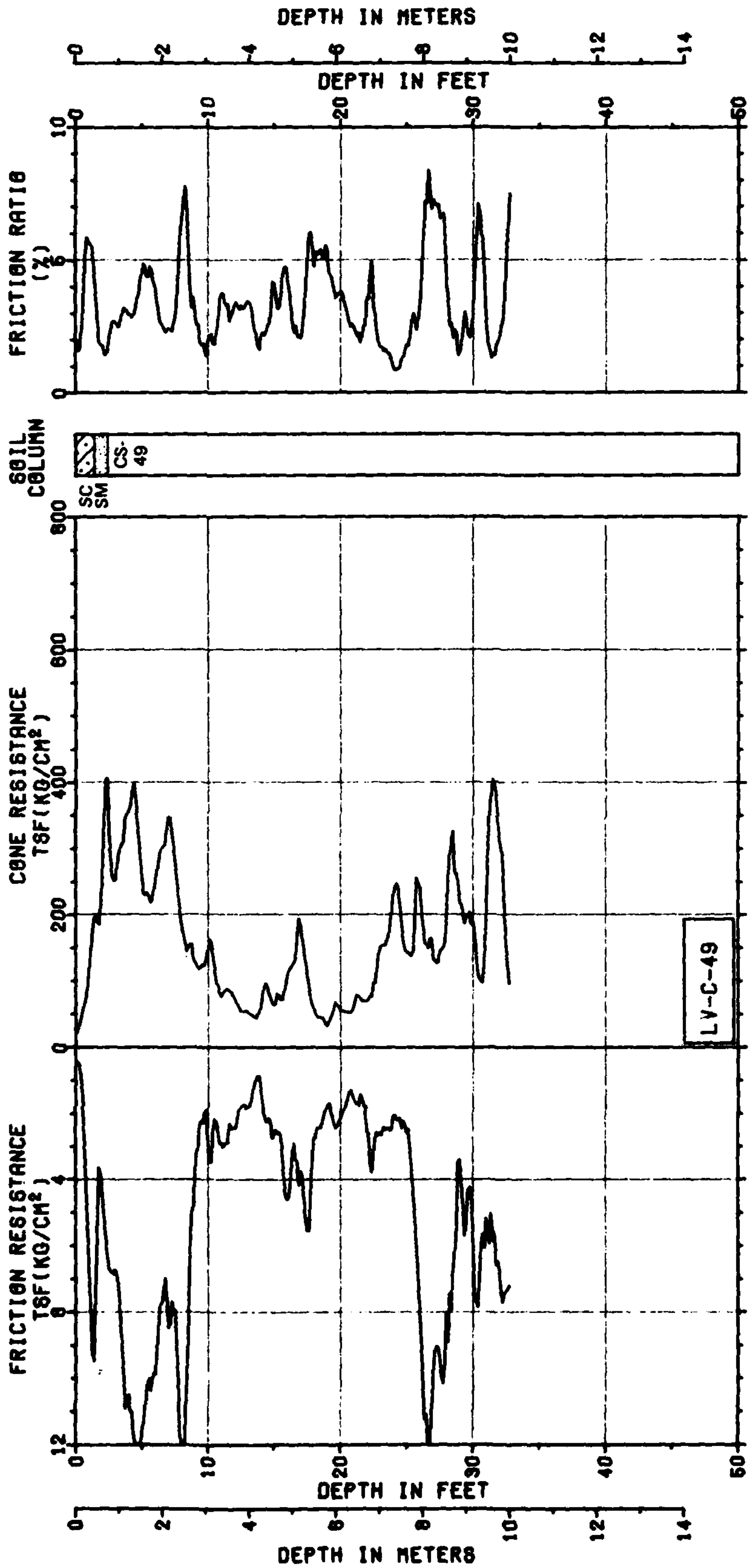
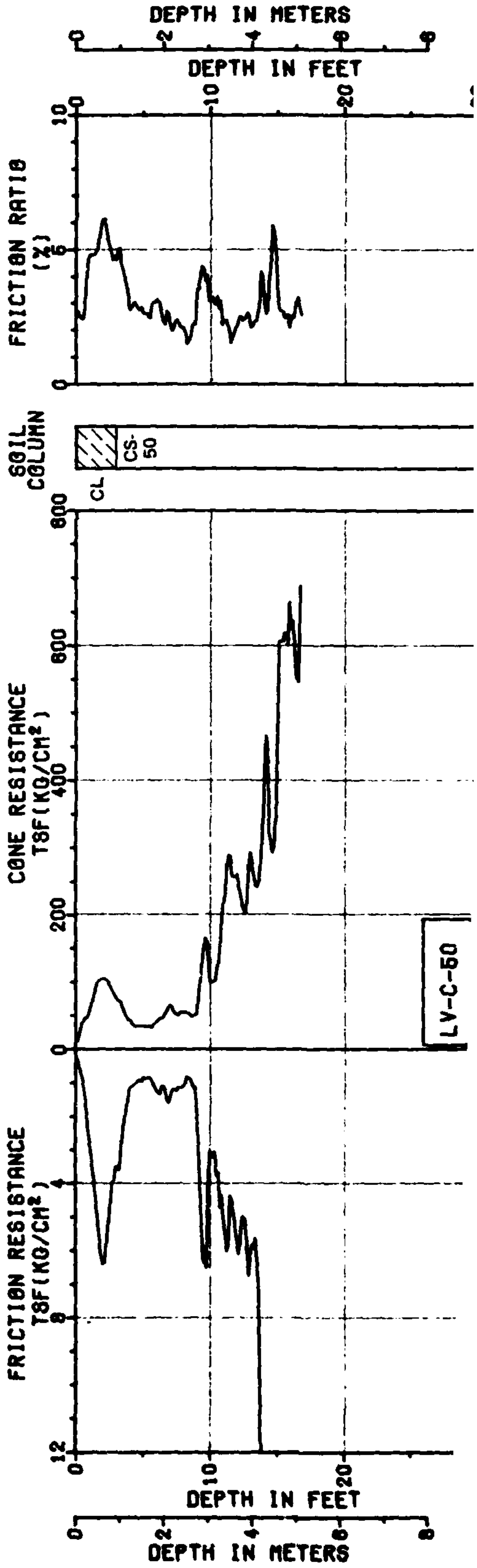
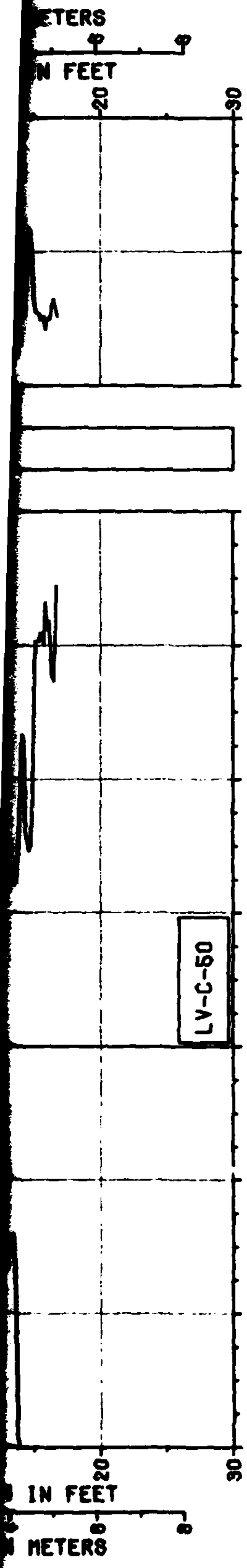
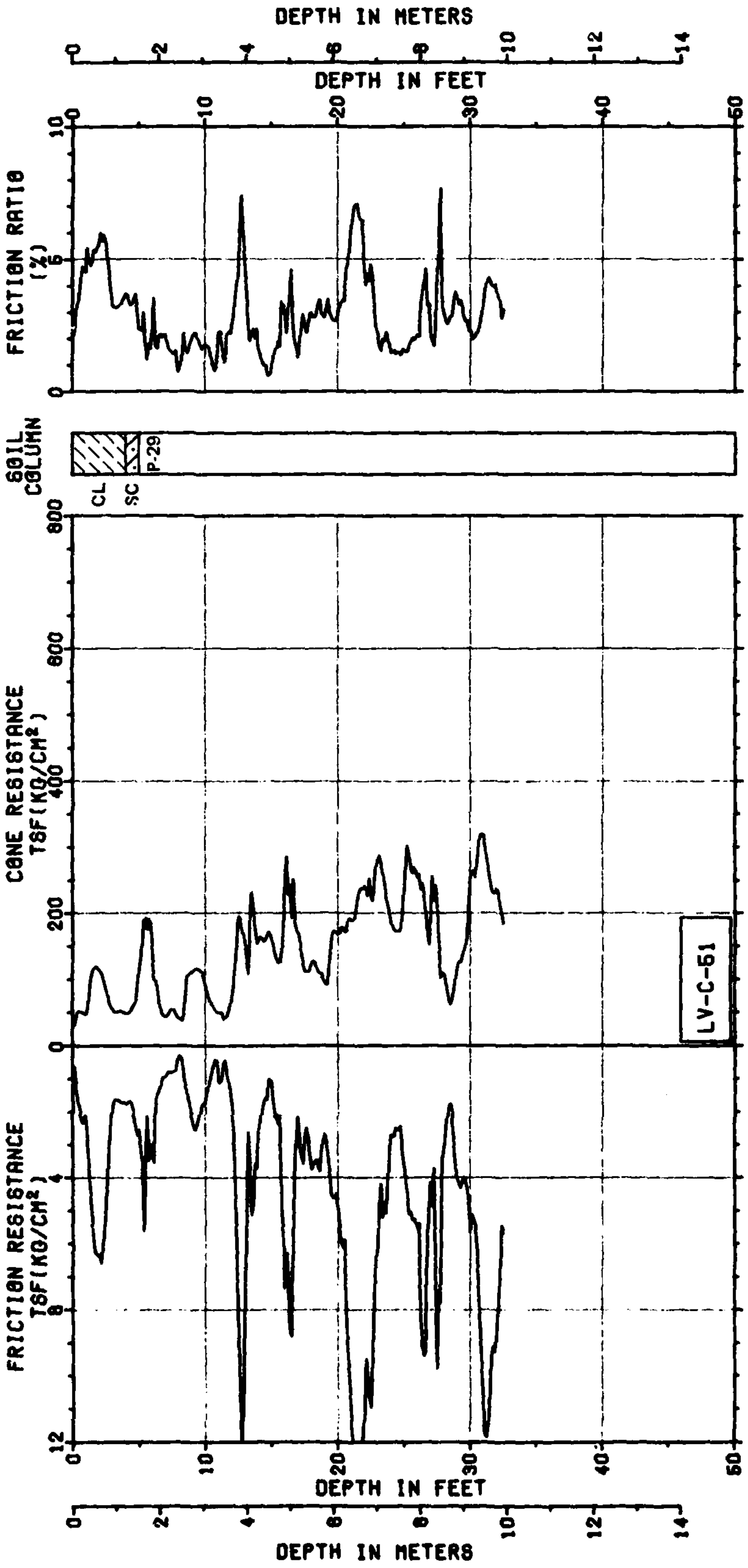
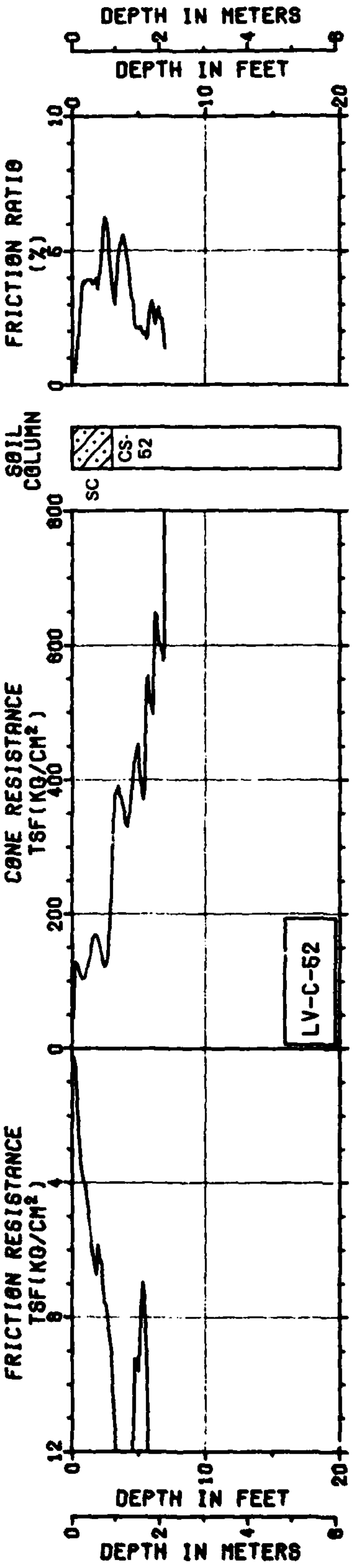
FIGURE II-11-1

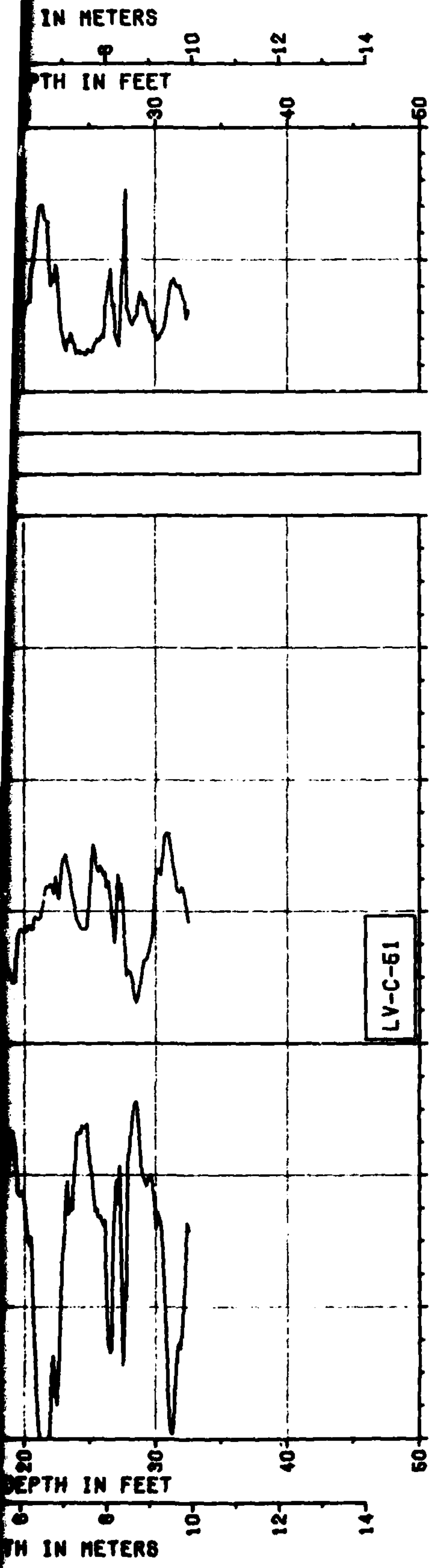

DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SC
SM
CS-49
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-49

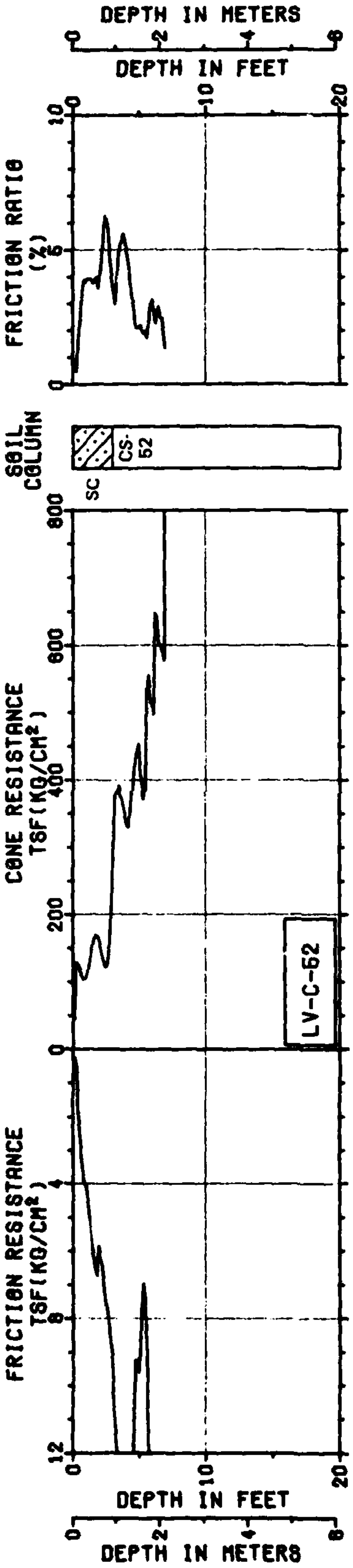

DEPTH IN METERS
0
2
4
6
8
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
CL
CS-50
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-50


ETERS
4
6
N FEET
20
30
LV-C-50
20
30
IN FEET
4
6
8
METERS


DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
CL
SC
P-29
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-51
DEPTH IN FEET
DEPTH IN METERS


DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SC
CS-52
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-52
DEPTH IN FEET
DEPTH IN METERS





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CONE PENETROMETER TEST RESULTS LAKE VALLEY, NEVADA

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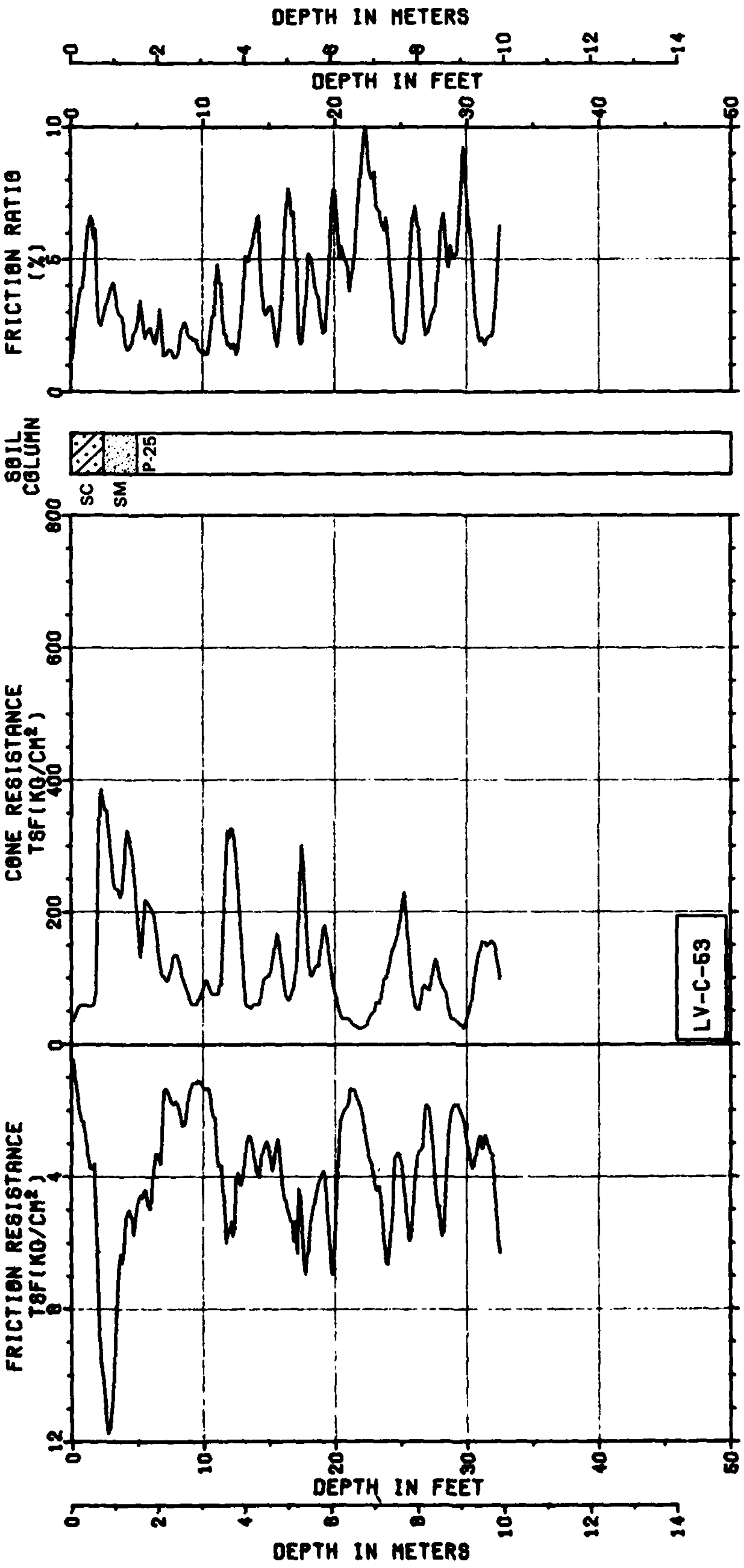
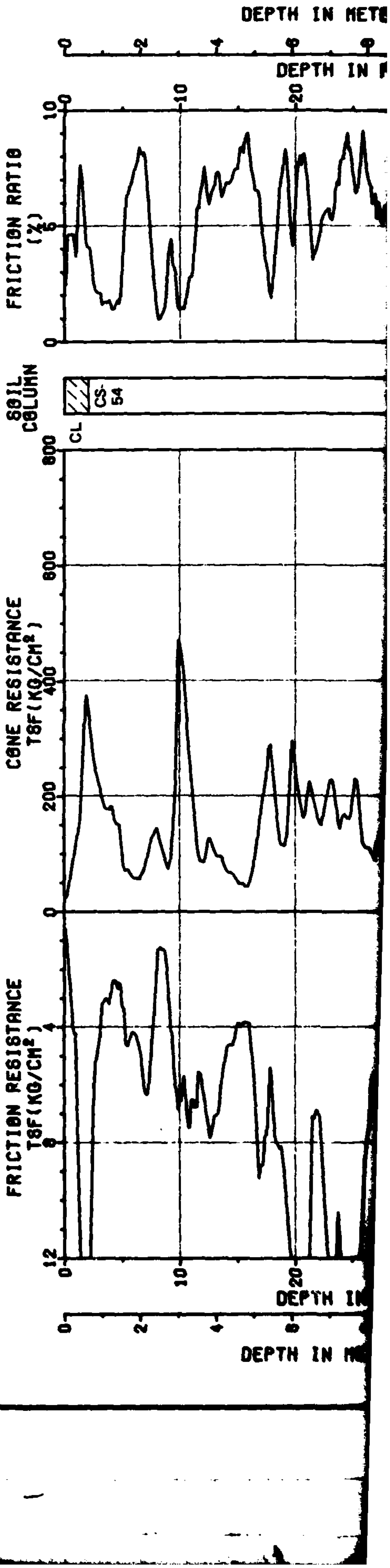
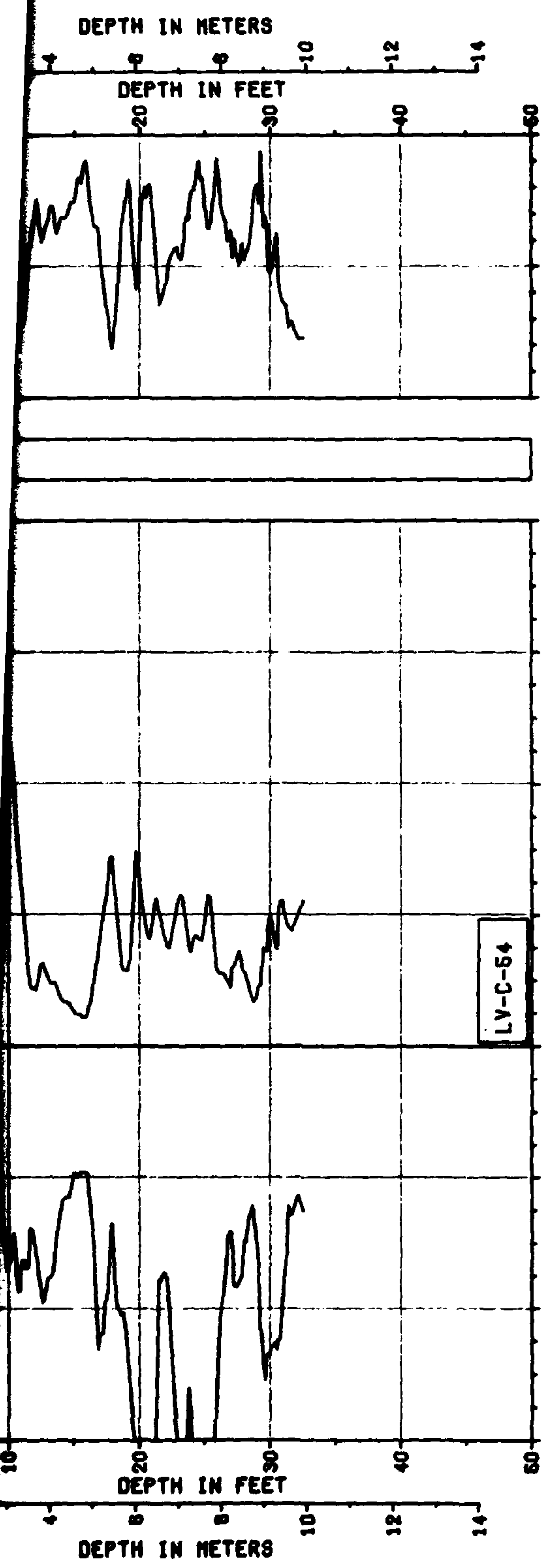
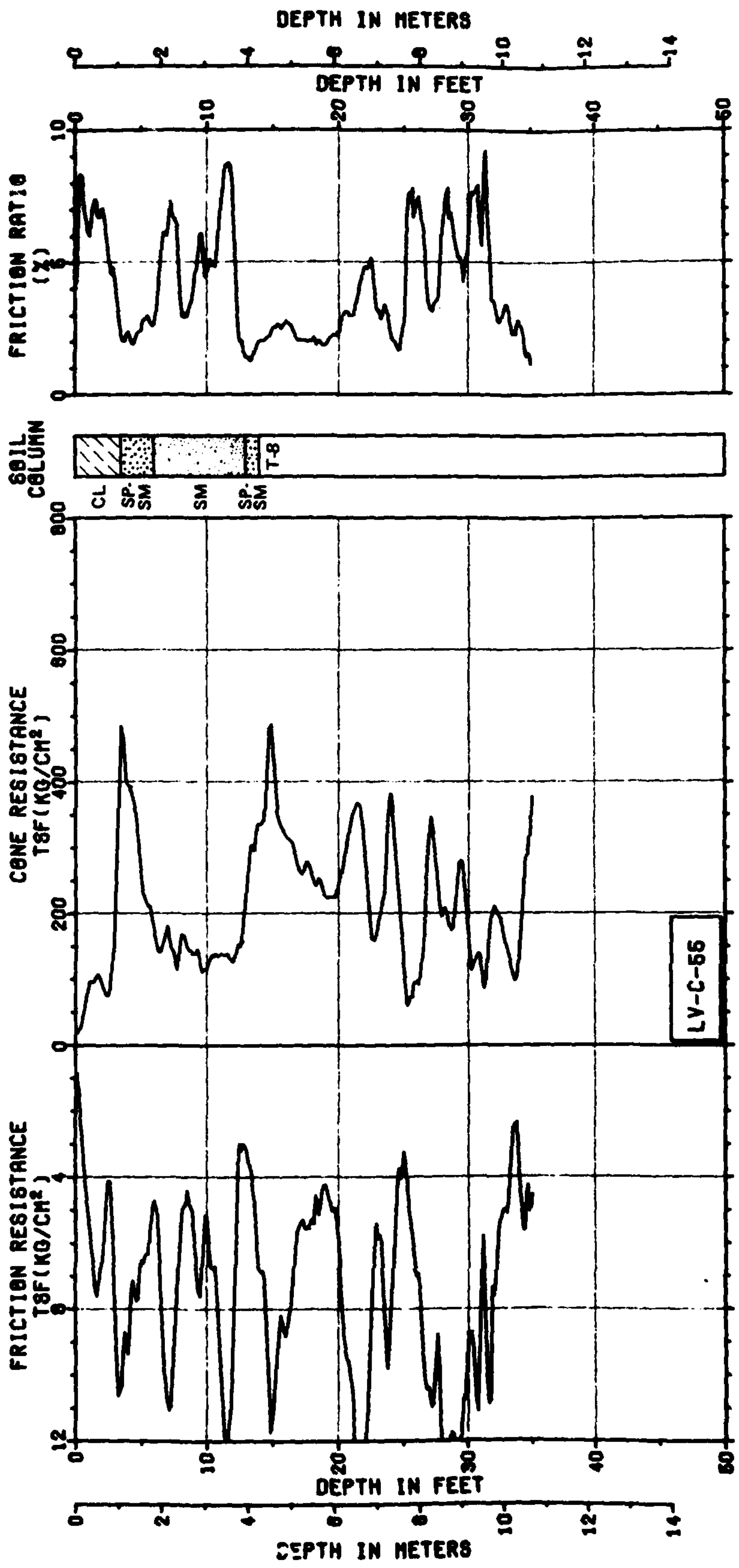
FIGURE II-11-1


DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SC
SM
P-25
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-53

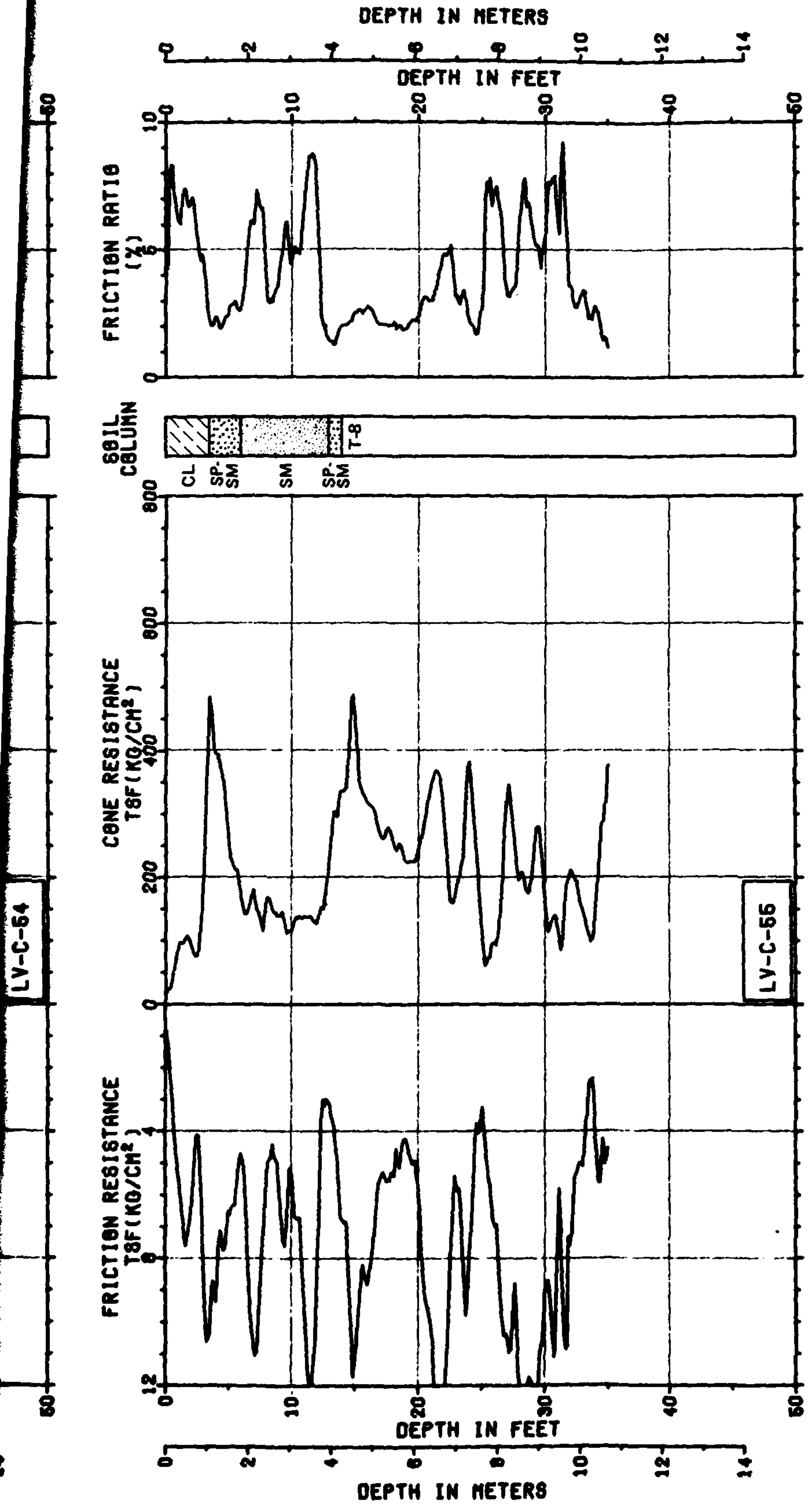

DEPTH IN METE
0
2
4
6
DEPTH IN F
0
10
20
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
CL
CS-54
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
DEPTH IN
DEPTH IN M


DEPTH IN METERS
4
6
8
10
12
14
DEPTH IN FEET
20
30
40
50
LV-C-54
10
20
30
40
50
DEPTH IN FEET
4
6
8
10
12
14
DEPTH IN METERS


DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
CL
SP-SM
SM
SP-SM
T-8
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-55
0
10
20
30
40
50
DEPTH IN FEET
0
2
4
6
8
10
12
14
DEPTH IN METERS

CO

31 JUN



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LAKE VALLEY, NEVADA

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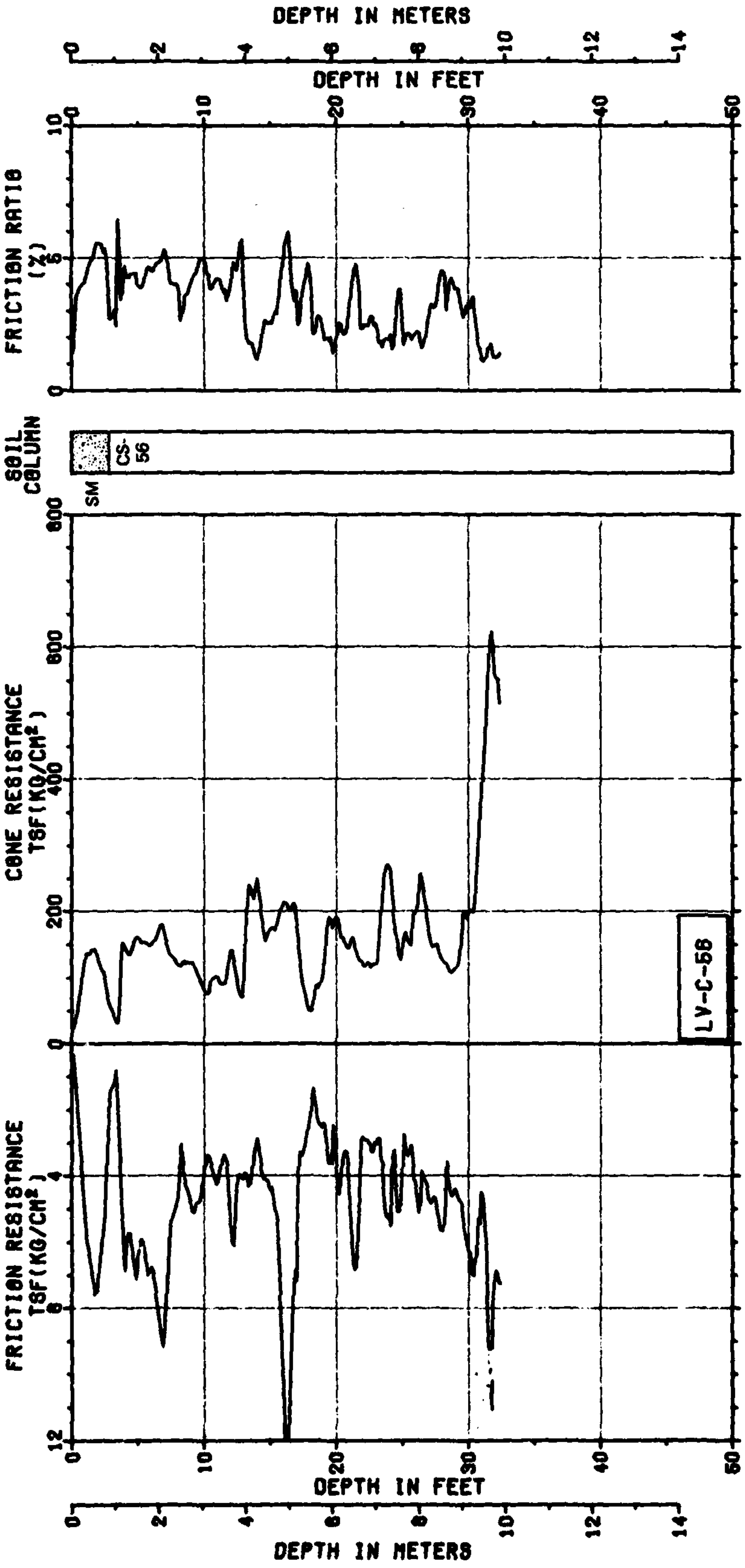
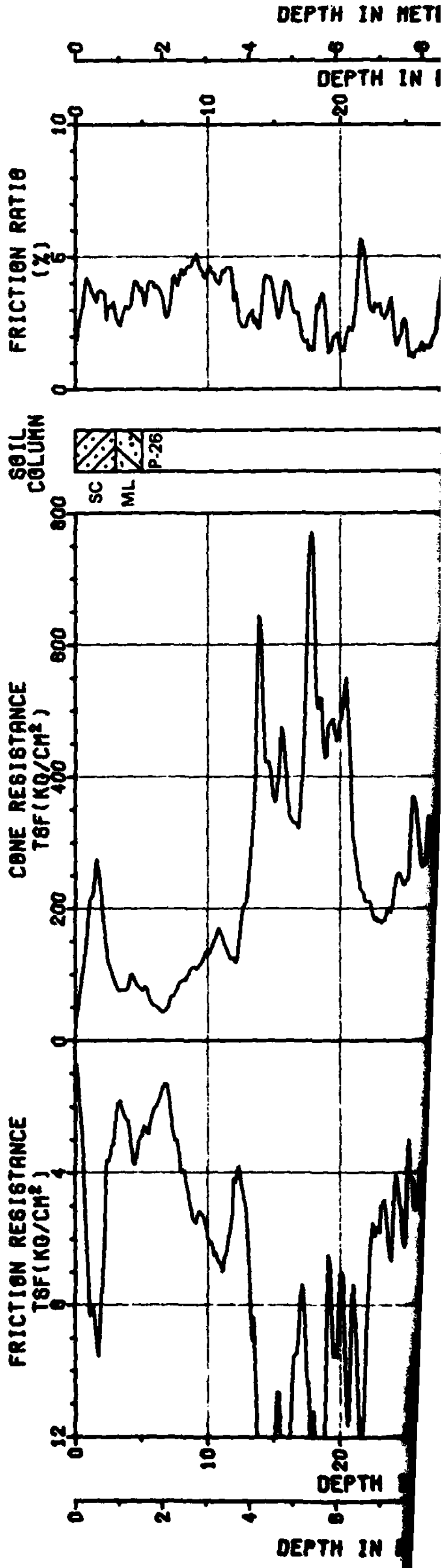
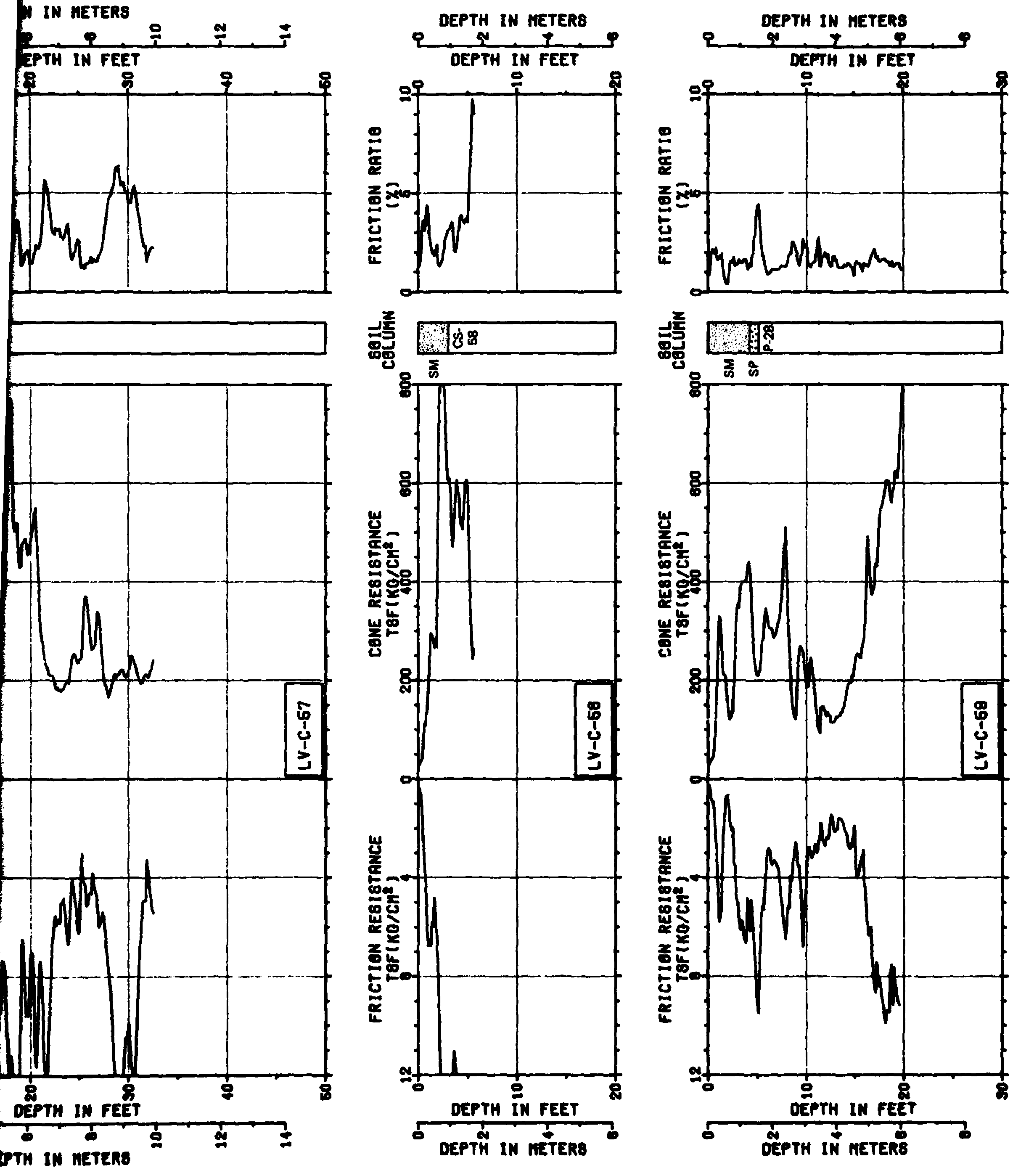
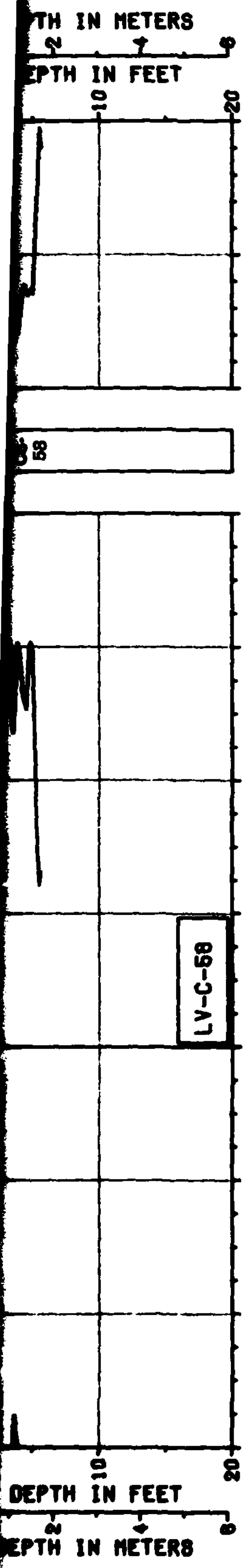
FIGURE II-11-1


DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
CS-56
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
LV-C-56
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
DEPTH IN FEET
DEPTH IN METERS


DEPTH IN METI
0
2
4
6
8
DEPTH IN
0
10
20
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SC
ML
P-26
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
DEPTH
DEPTH IN


DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
SM
CS-58
SP
P-28
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
LV-C-67
LV-C-68
LV-C-69
0
2
4
6
8
10
12
14
20
30
40
50
200
400
600
800

2



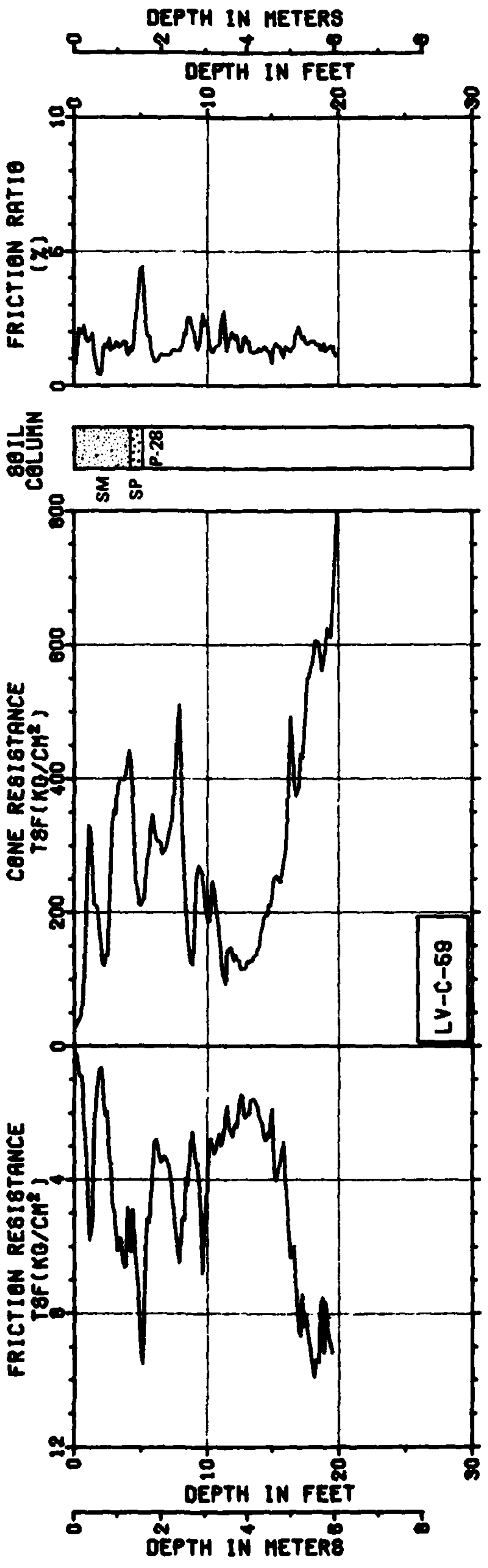


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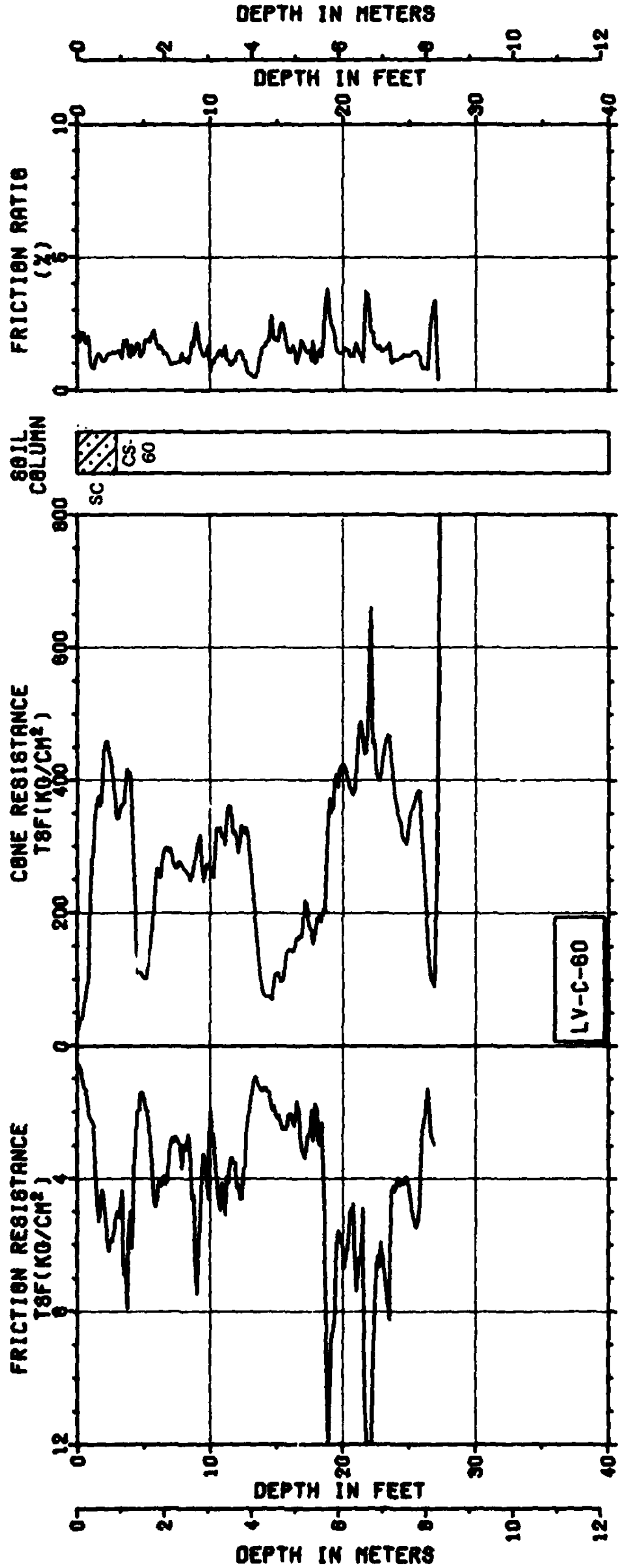
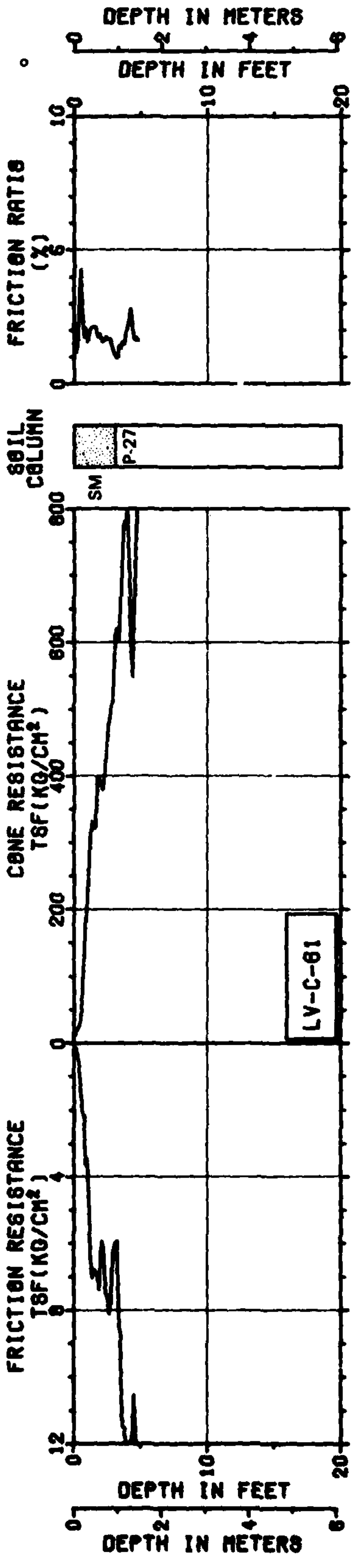
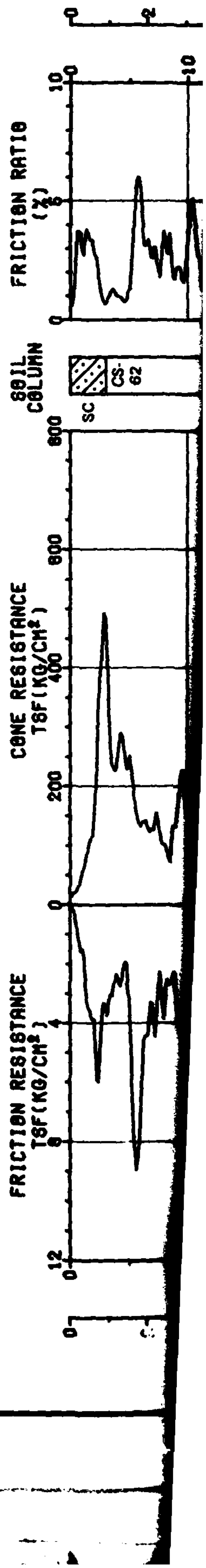
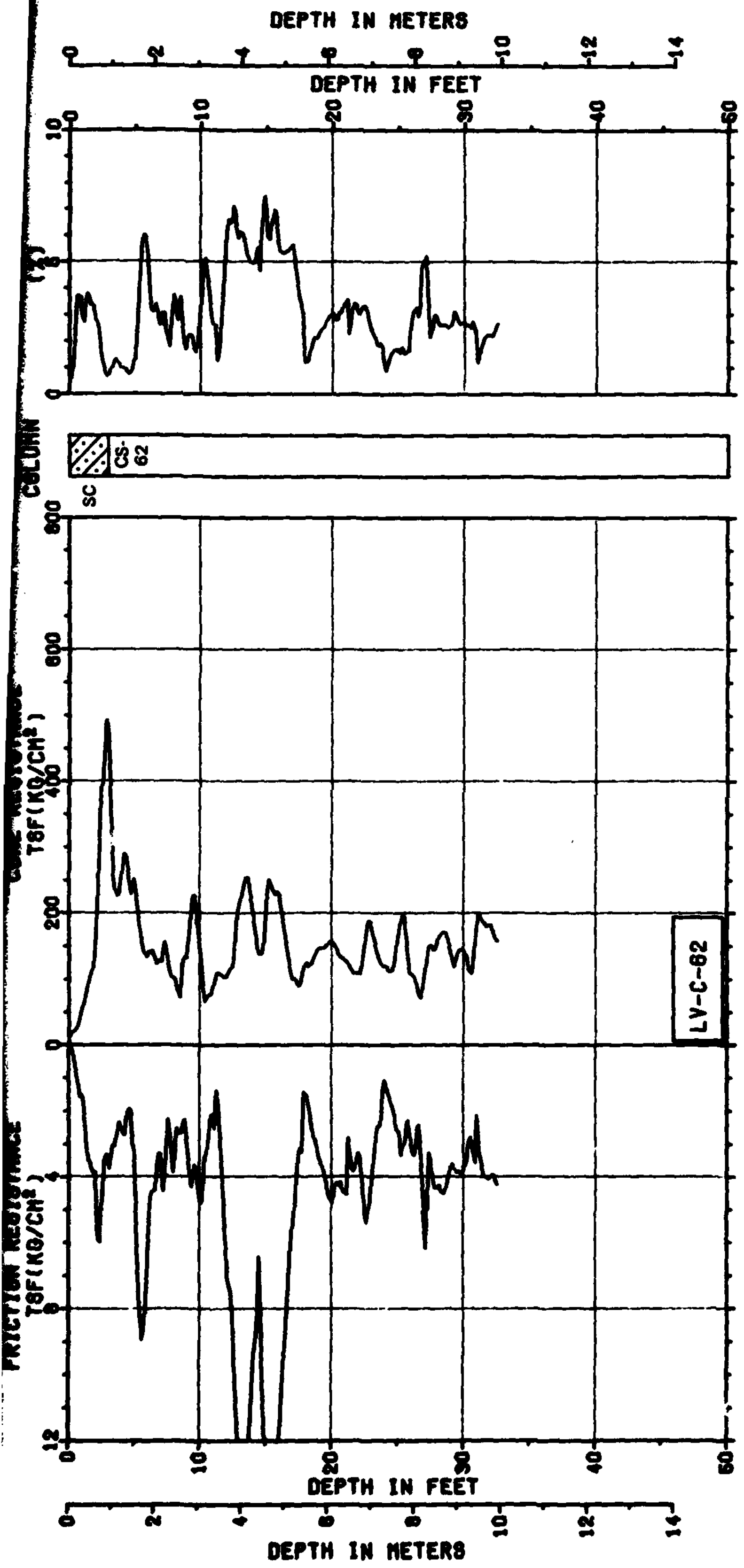
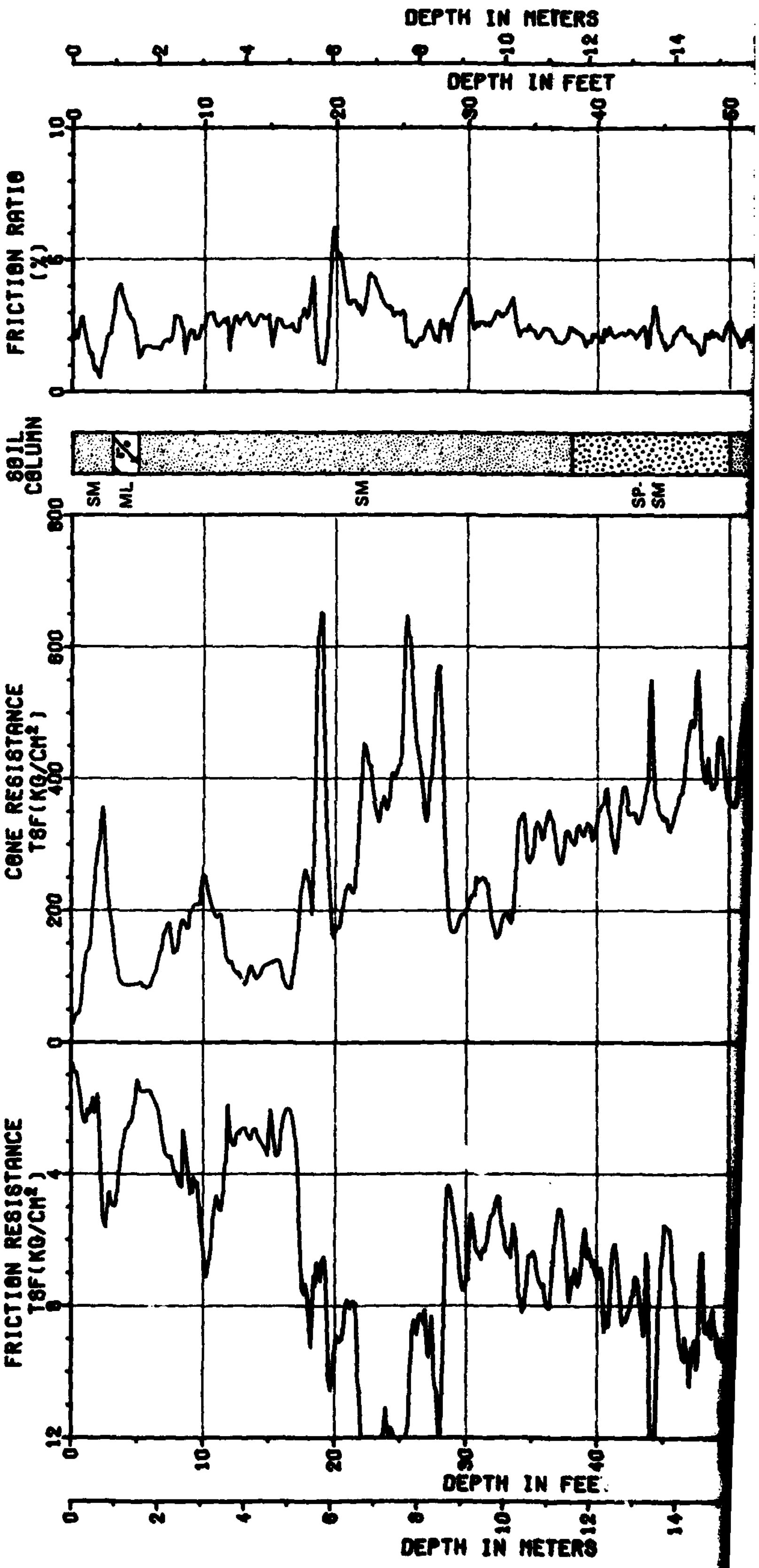
FIGURE II-11-1


DEPTH IN METERS
0
2
4
6
8
10
12
DEPTH IN FEET
0
10
20
30
40
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SC
CS-60
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
LV-C-60
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12


DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
P-27
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
LV-C-61
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12


0
2
0
10
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SC
CS-62
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12


DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
60
10
5
0
(%)
COLUMN
SC
CS-62
800
600
400
200
0
TSF(KG/CM²)
LV-C-62
4
8
12
TSF(KG/CM²)
DEPTH IN FEET
DEPTH IN METERS


DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
ML
SM
SP-SM
800
600
400
200
0
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
DEPTH IN FEE
DEPTH IN METERS

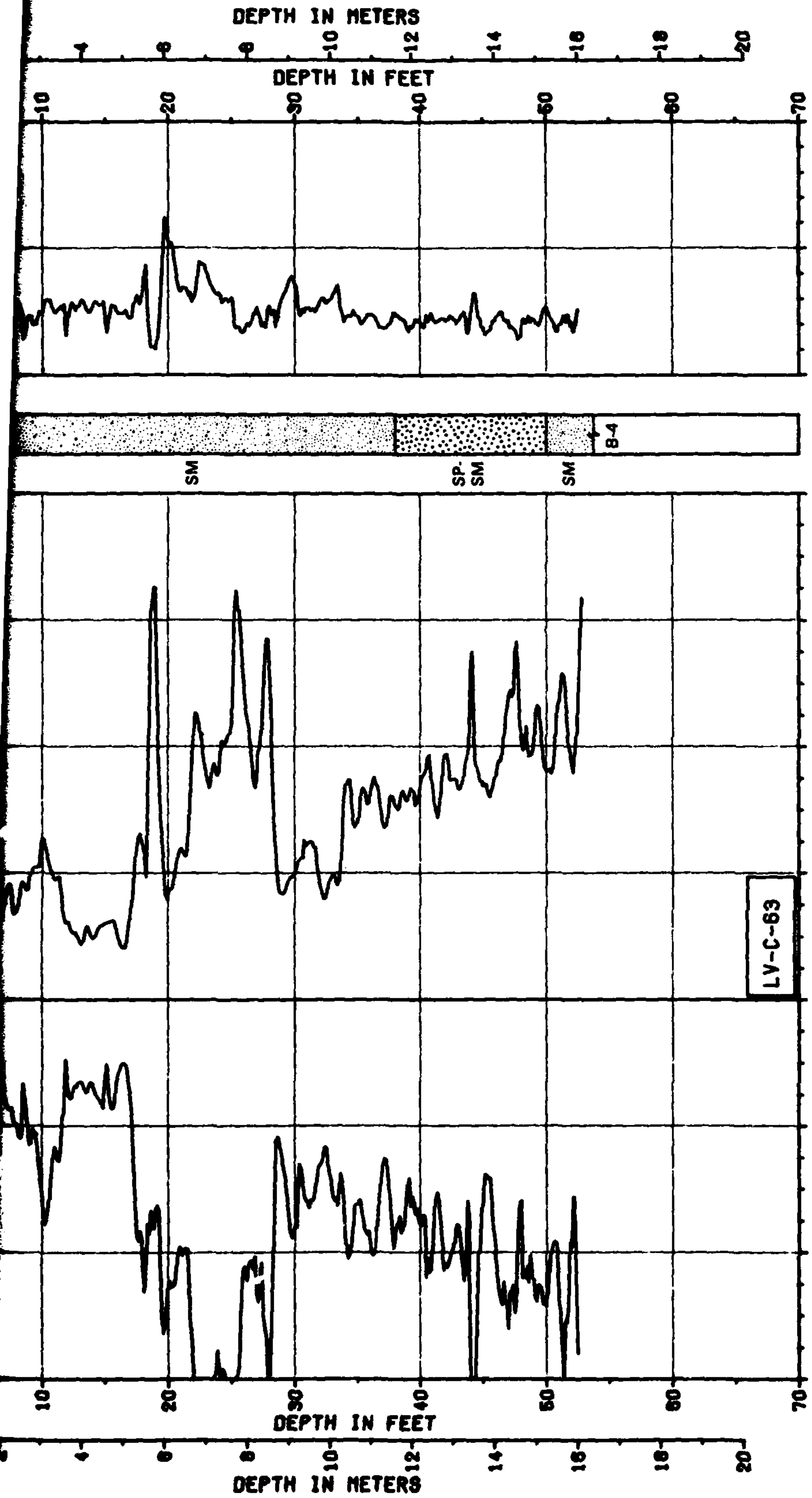


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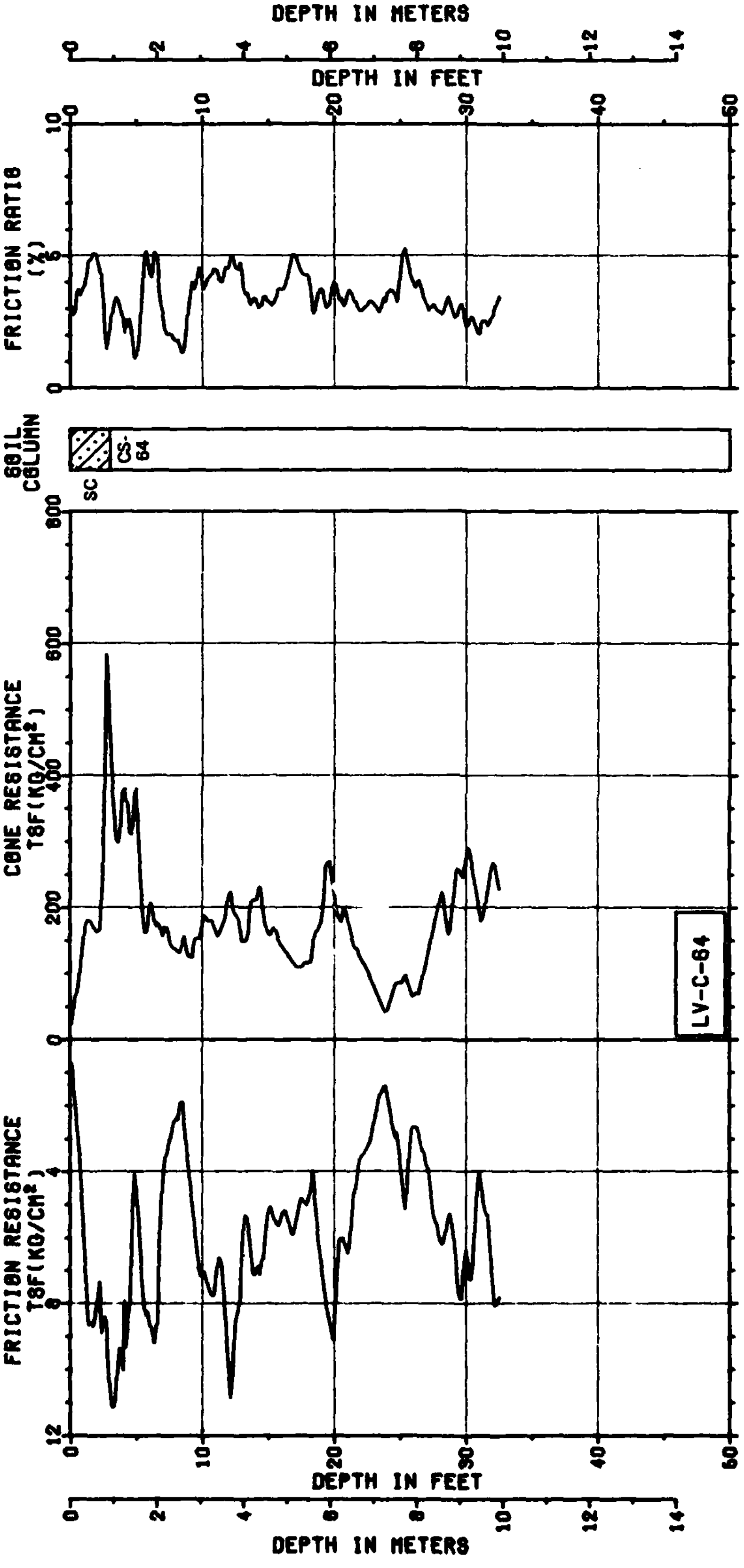
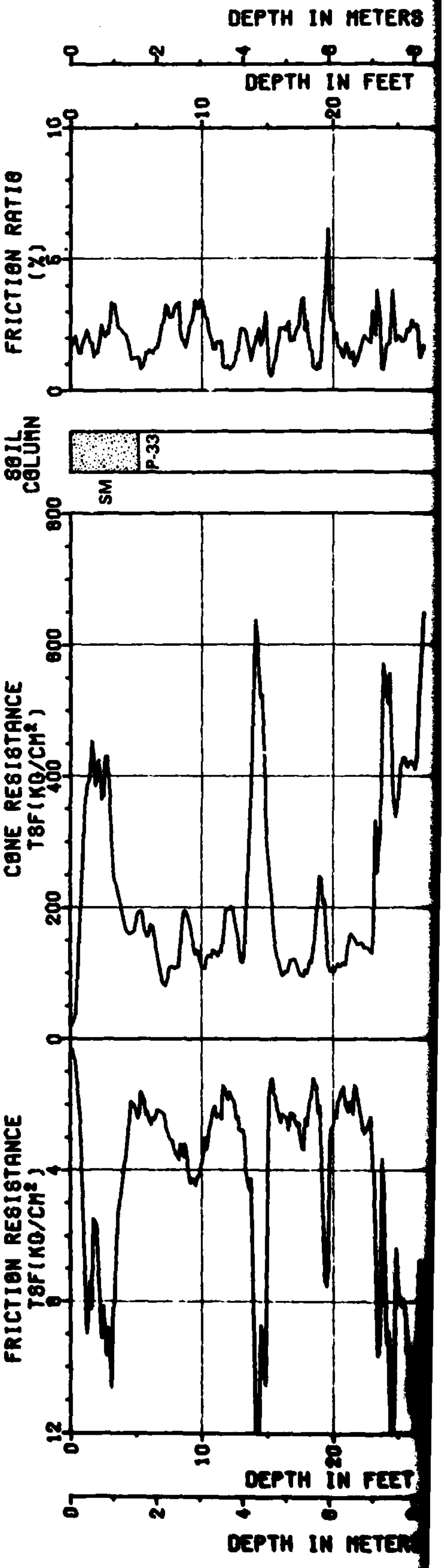
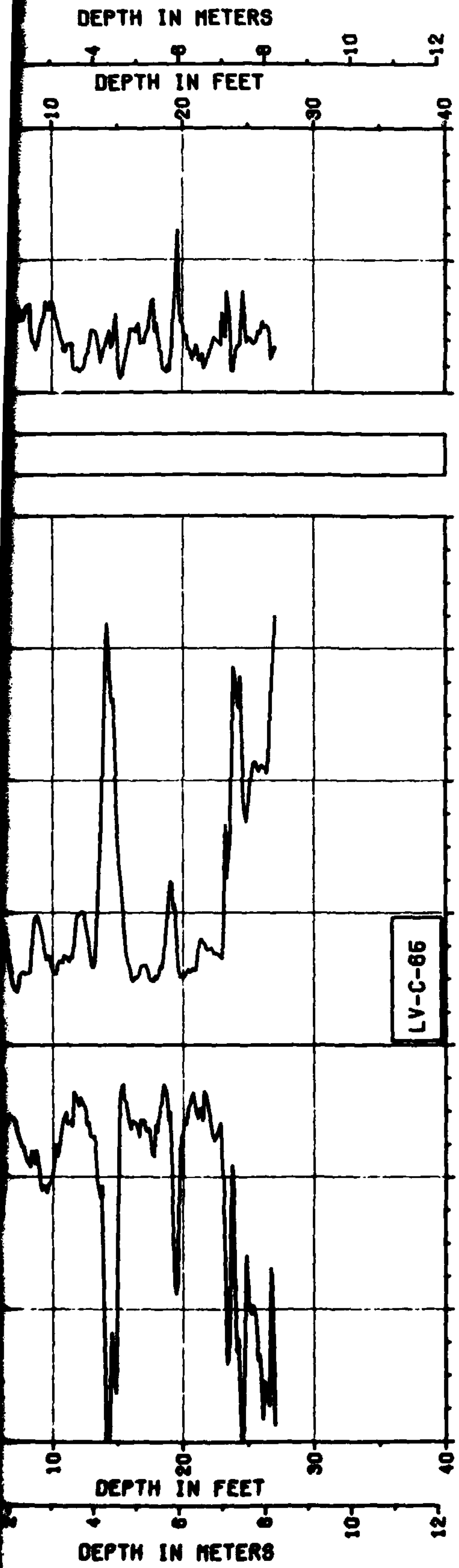
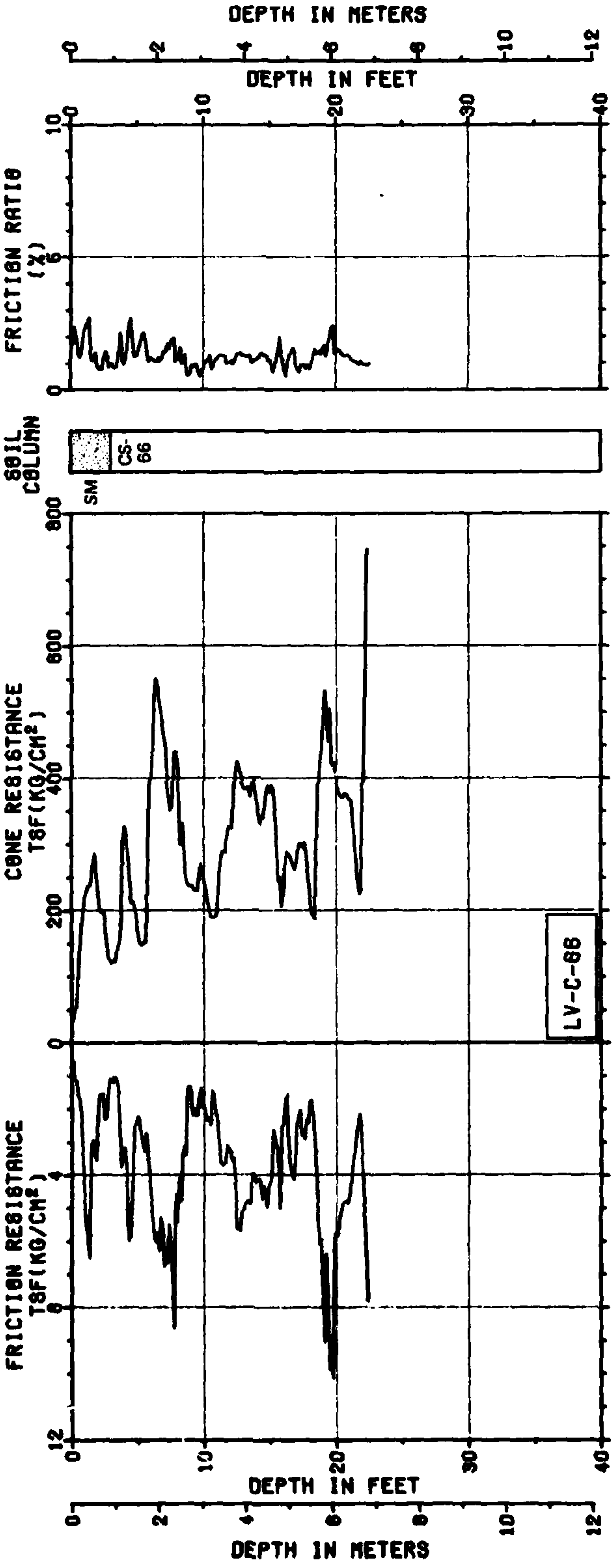
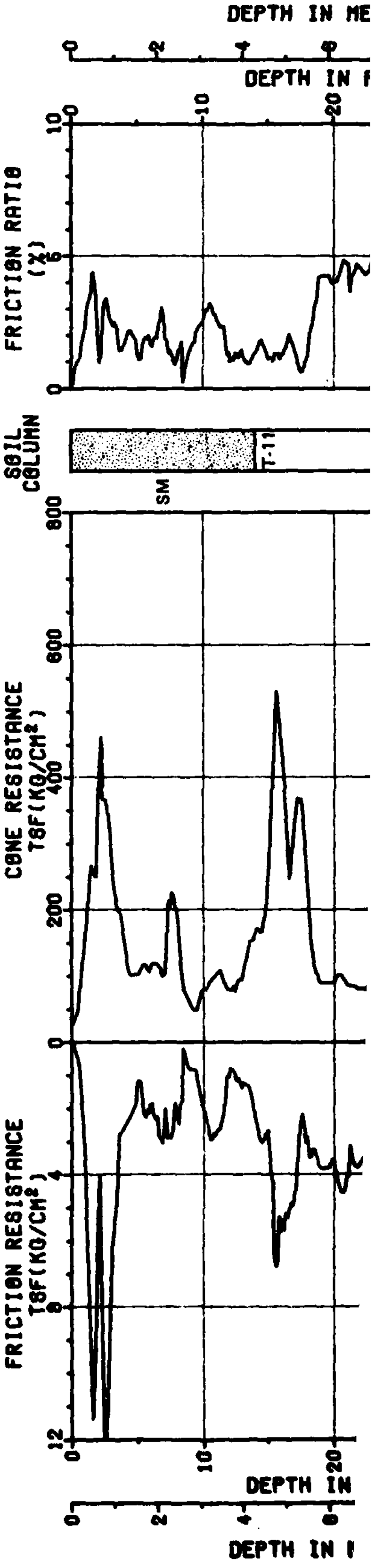
FIGURE II-11-1


DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SC
CS-64
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
LV-C-64
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12


DEPTH IN METERS
0
2
4
6
8
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SM
P-33
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12


DEPTH IN METERS
4
6
8
10
12
DEPTH IN FEET
10
20
30
40
LV-C-86
10
20
30
40
DEPTH IN FEET
4
6
8
10
12
DEPTH IN METERS


DEPTH IN METERS
0
2
4
6
8
10
12
DEPTH IN FEET
0
10
20
30
40
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
CS-66
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-86
0
10
20
30
40
DEPTH IN FEET
0
2
4
6
8
10
12
DEPTH IN METERS


0
2
4
6
0
10
20
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
T-11
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
0
10
20
0
2
4
6

2

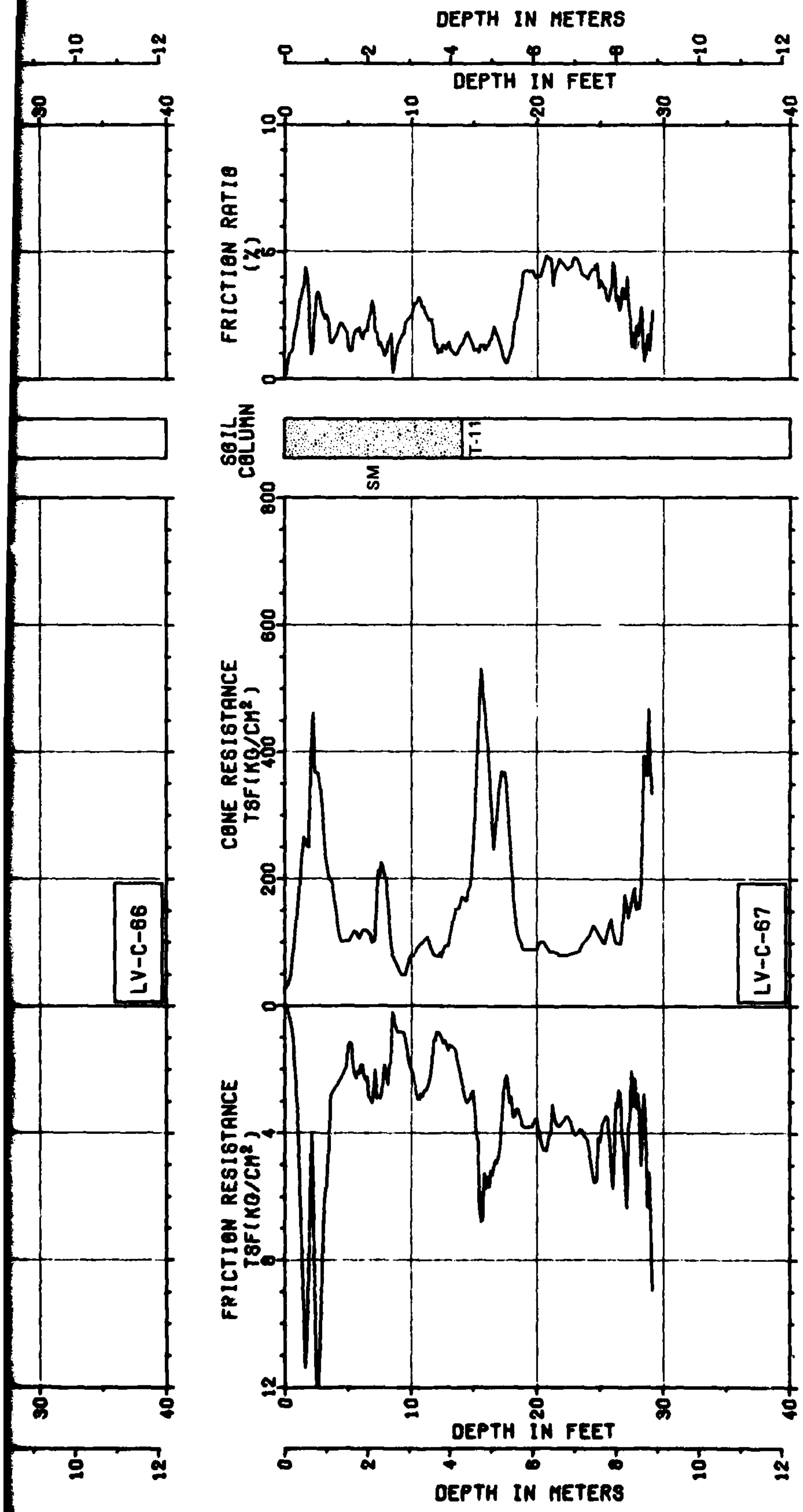


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FIGURE II-11-1

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UNCLASSIFIED E-TR-27-LV-2 NL

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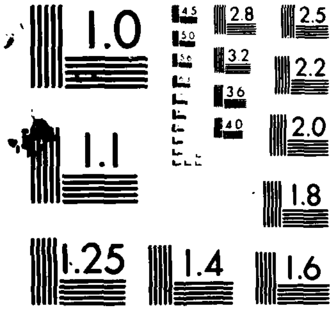
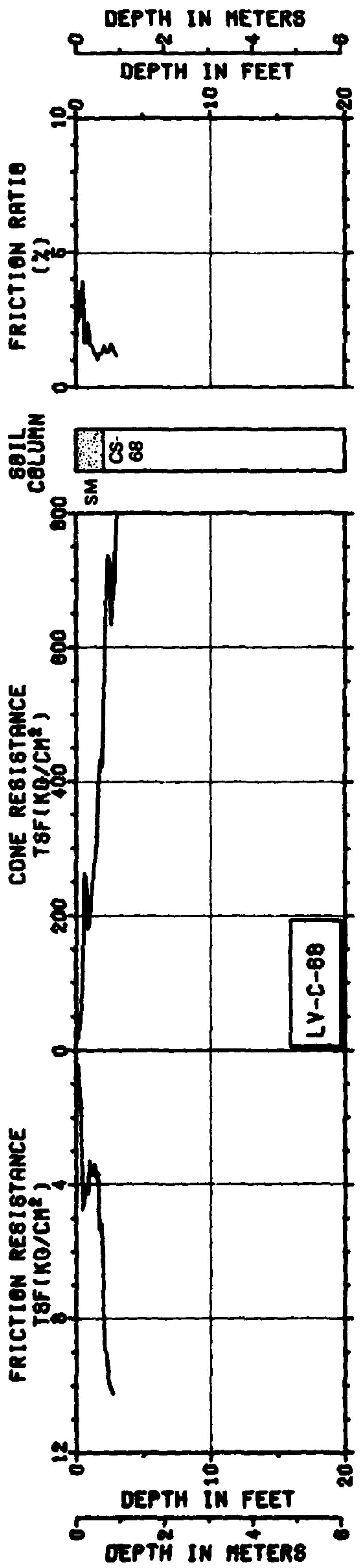
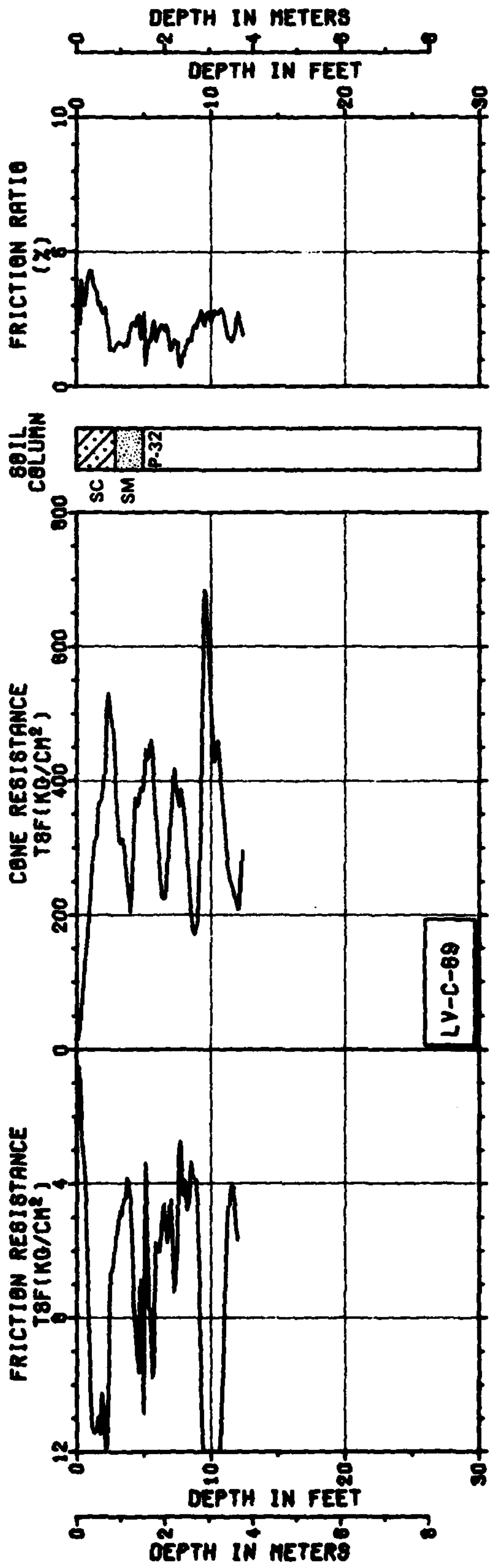
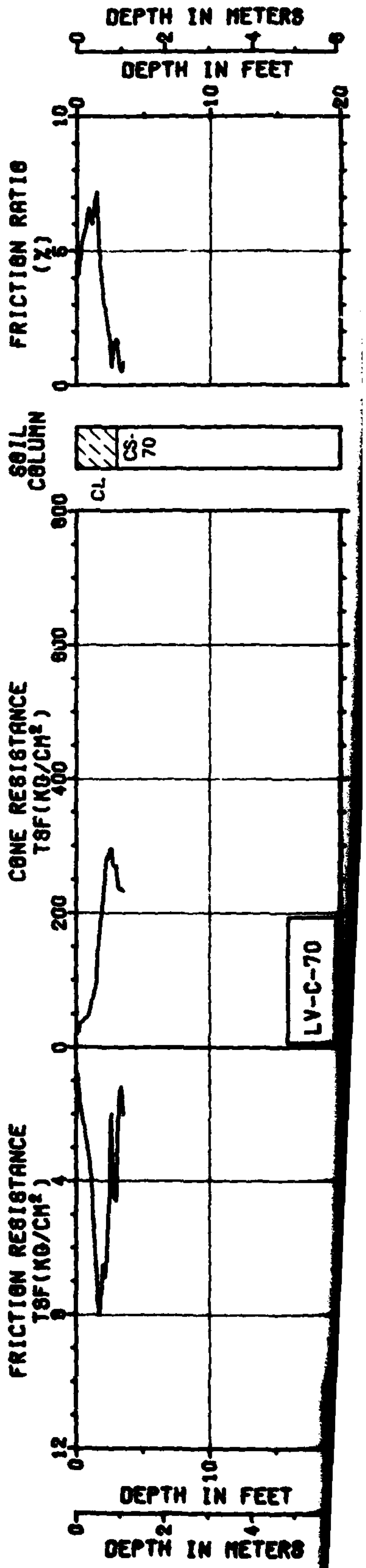
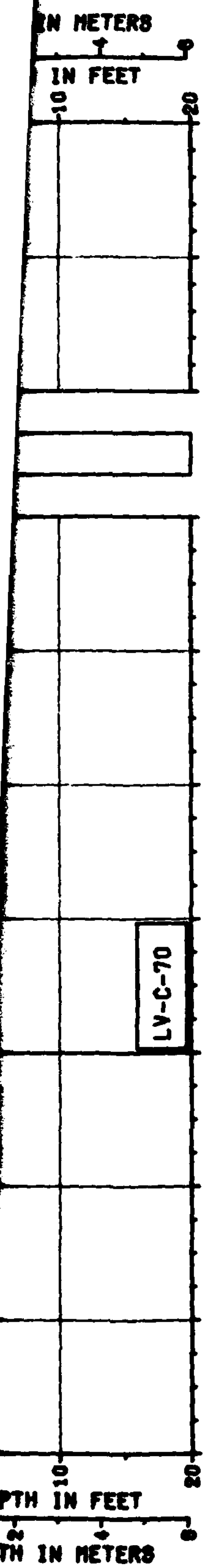


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

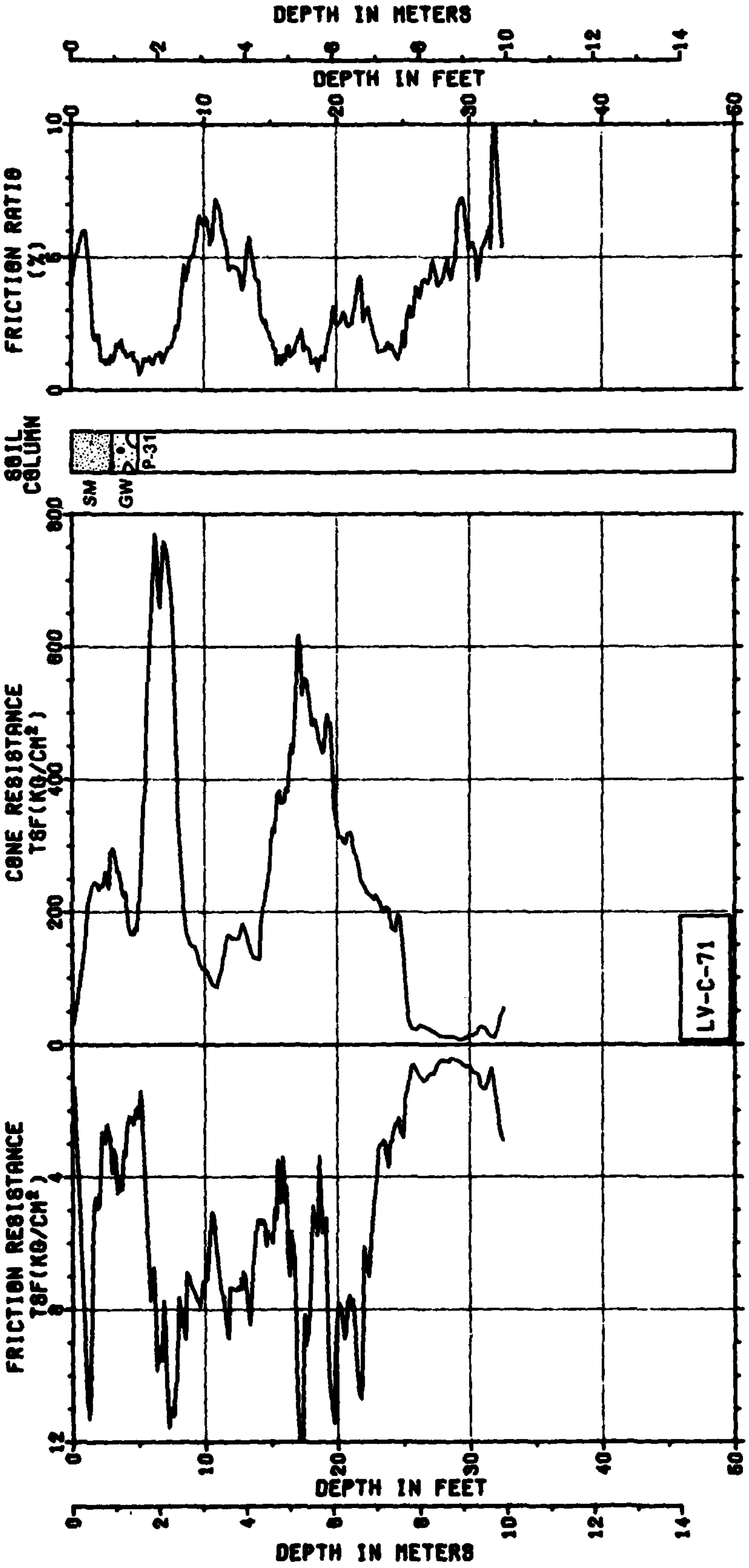

DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SM
CS-68
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-68


DEPTH IN METERS
0
2
4
6
8
DEPTH IN FEET
0
10
20
30
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SC
SM
P-32
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-69

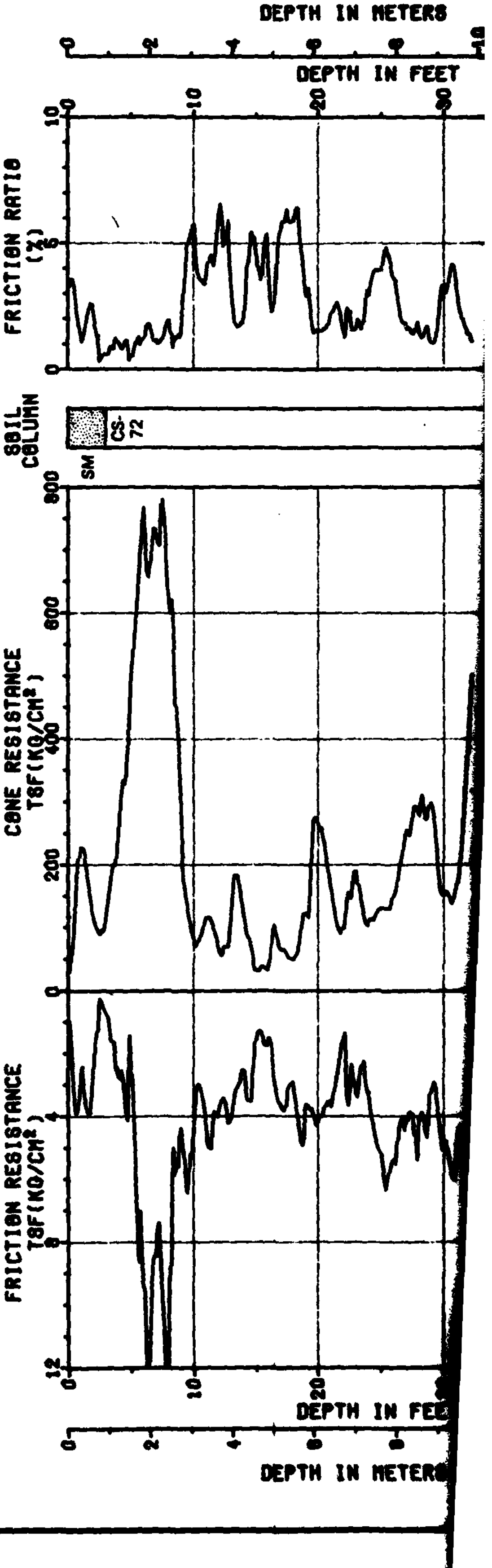

DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
CL
CS-70
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-70



IN METERS
IN FEET
10
20
LV-C-70
PTH IN FEET
TH IN METERS



DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SM
GW
P-31
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-71
DEPTH IN FEET
DEPTH IN METERS



DEPTH IN METERS
0
2
4
6
8
10
DEPTH IN FEET
0
10
20
30
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SM
CS-72
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
DEPTH IN FE
DEPTH IN METERS

2

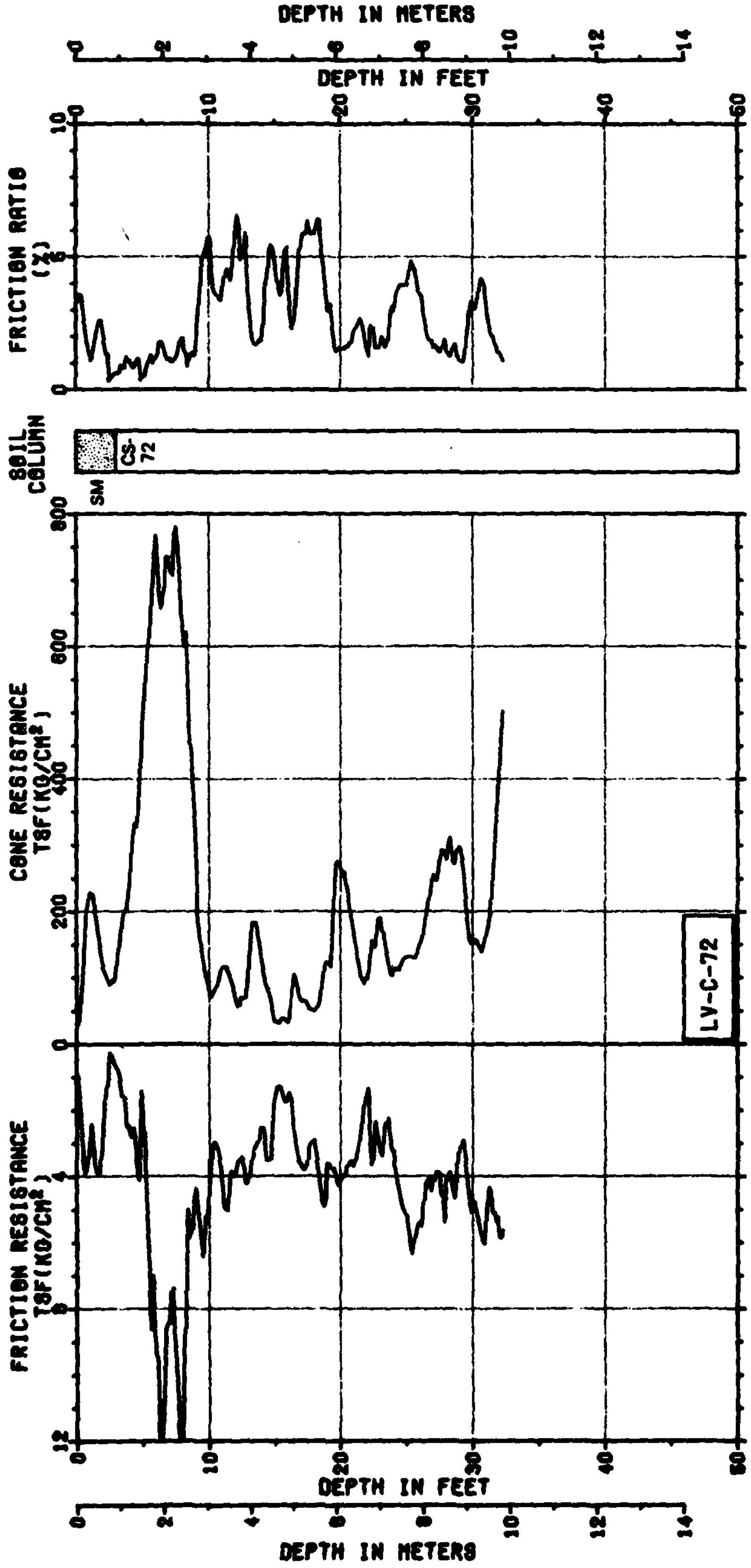


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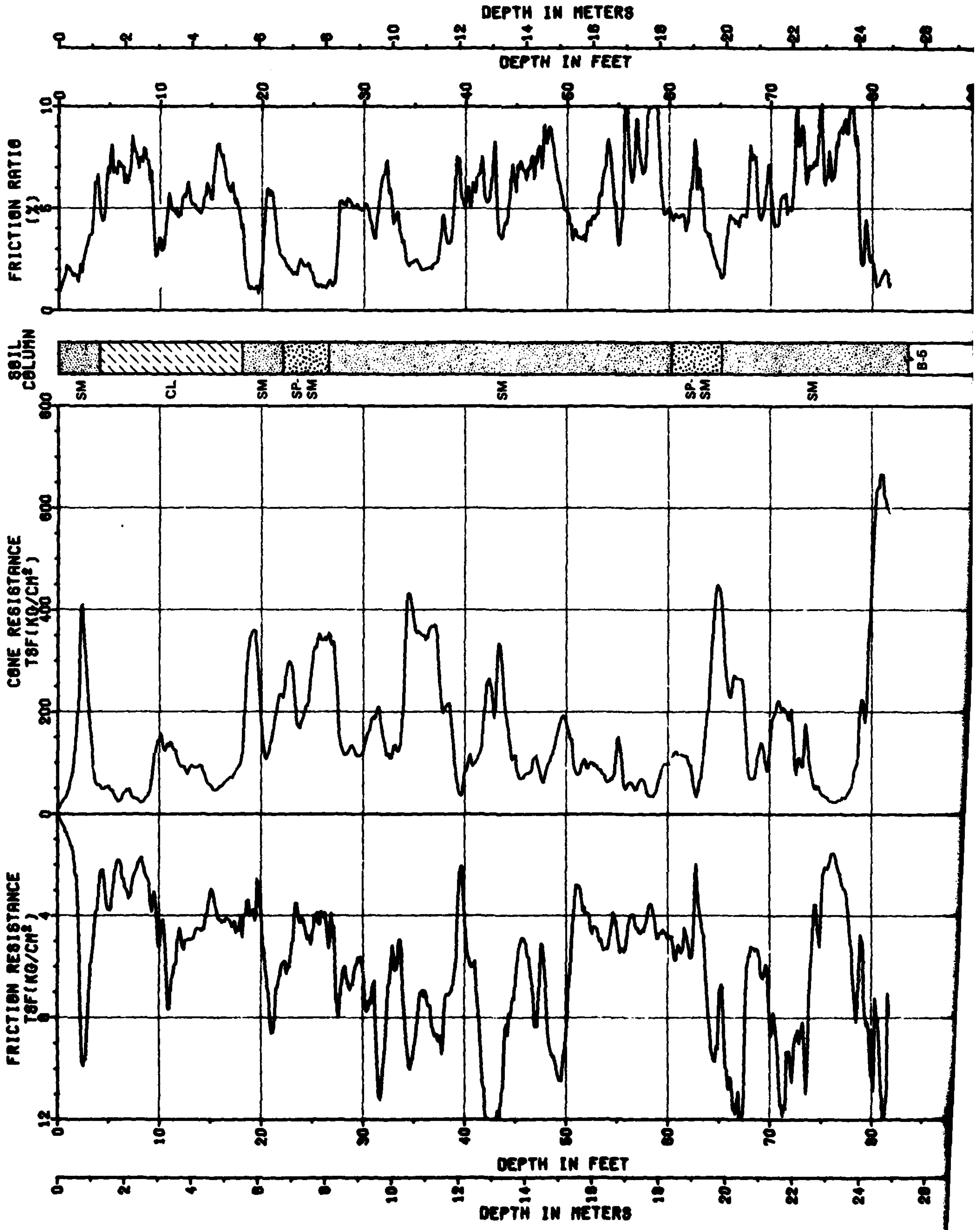
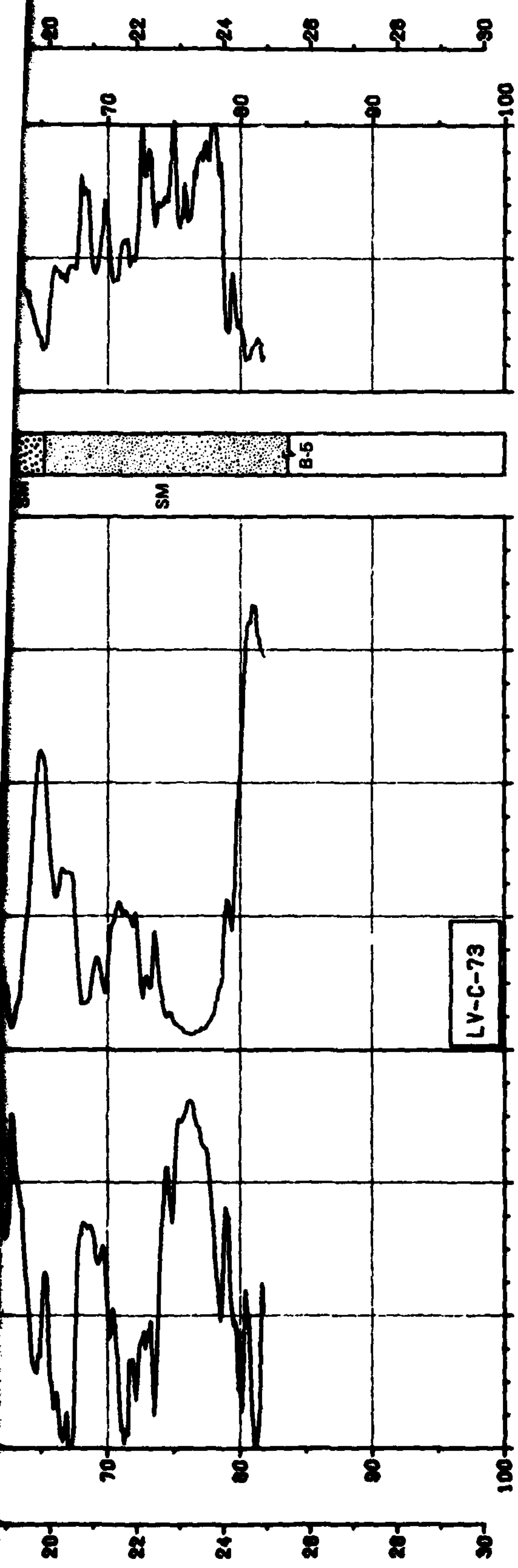
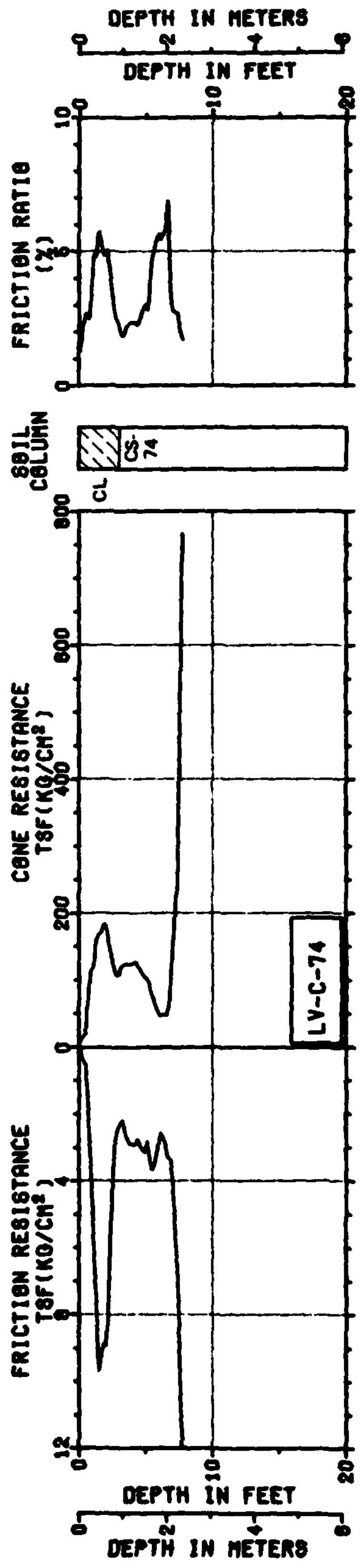
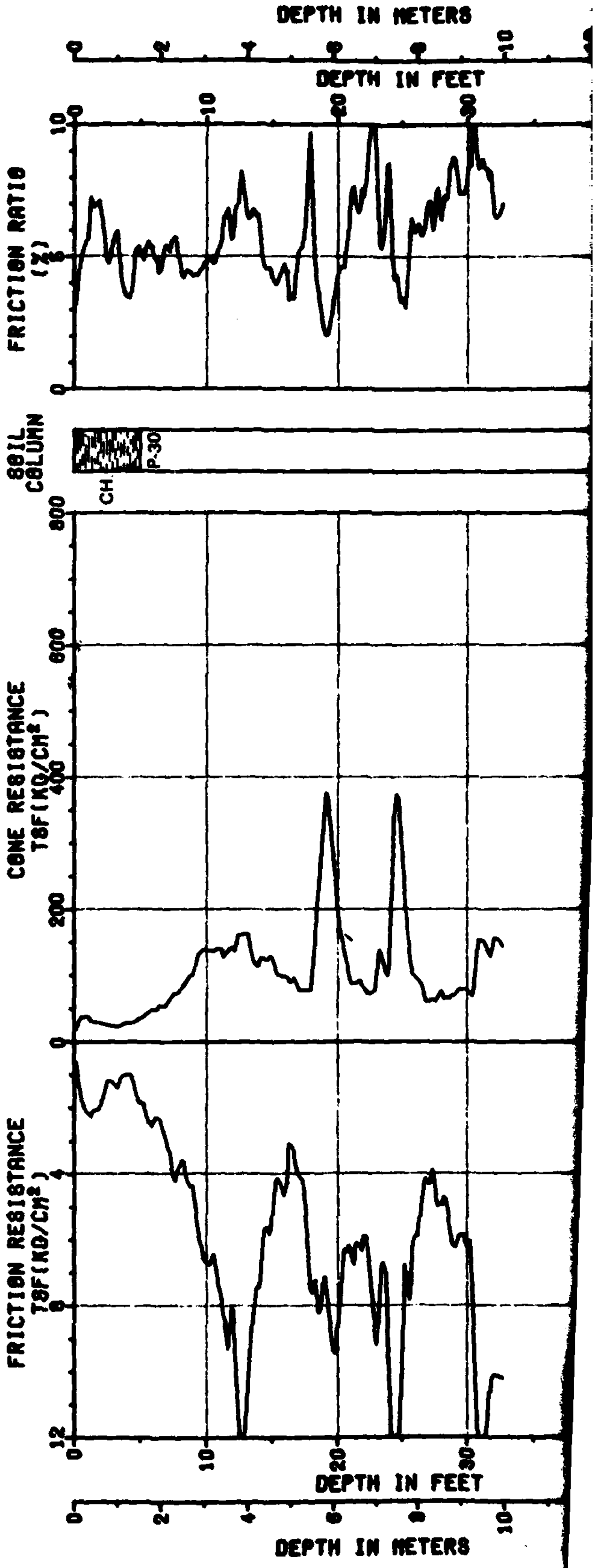
FIGURE II-11-1


DEPTH IN METERS
0
2
4
6
8
10
12
14
16
18
20
22
24
26
DEPTH IN FEET
0
10
20
30
40
50
60
70
80
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
SM
CL
SM
SP-SM
SM
SP-SM
SM
B-5
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
DEPTH IN FEET
0
10
20
30
40
50
60
70
80
DEPTH IN METERS
0
2
4
6
8
10
12
14
16
18
20
22
24
26


LV-C-73
SM
B-5
70
80
90
100
20
22
24
26
28
30


LV-C-74
DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
CL
CS-74
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
0
2
4
6
10
20
200
400
600
800
8
12


DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
CH
P-30
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
0
2
4
6
8
10
20
30
200
400
600
800
12

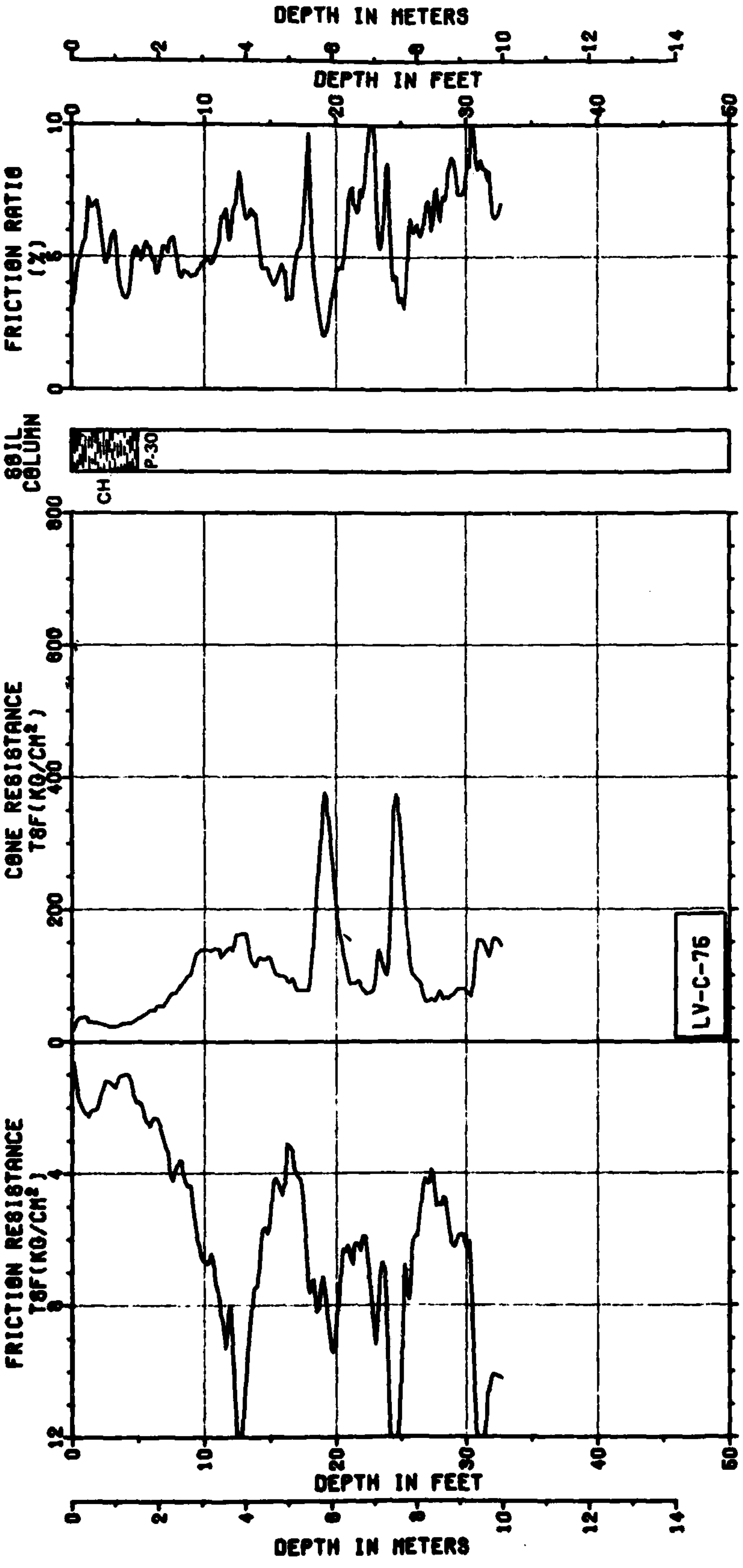


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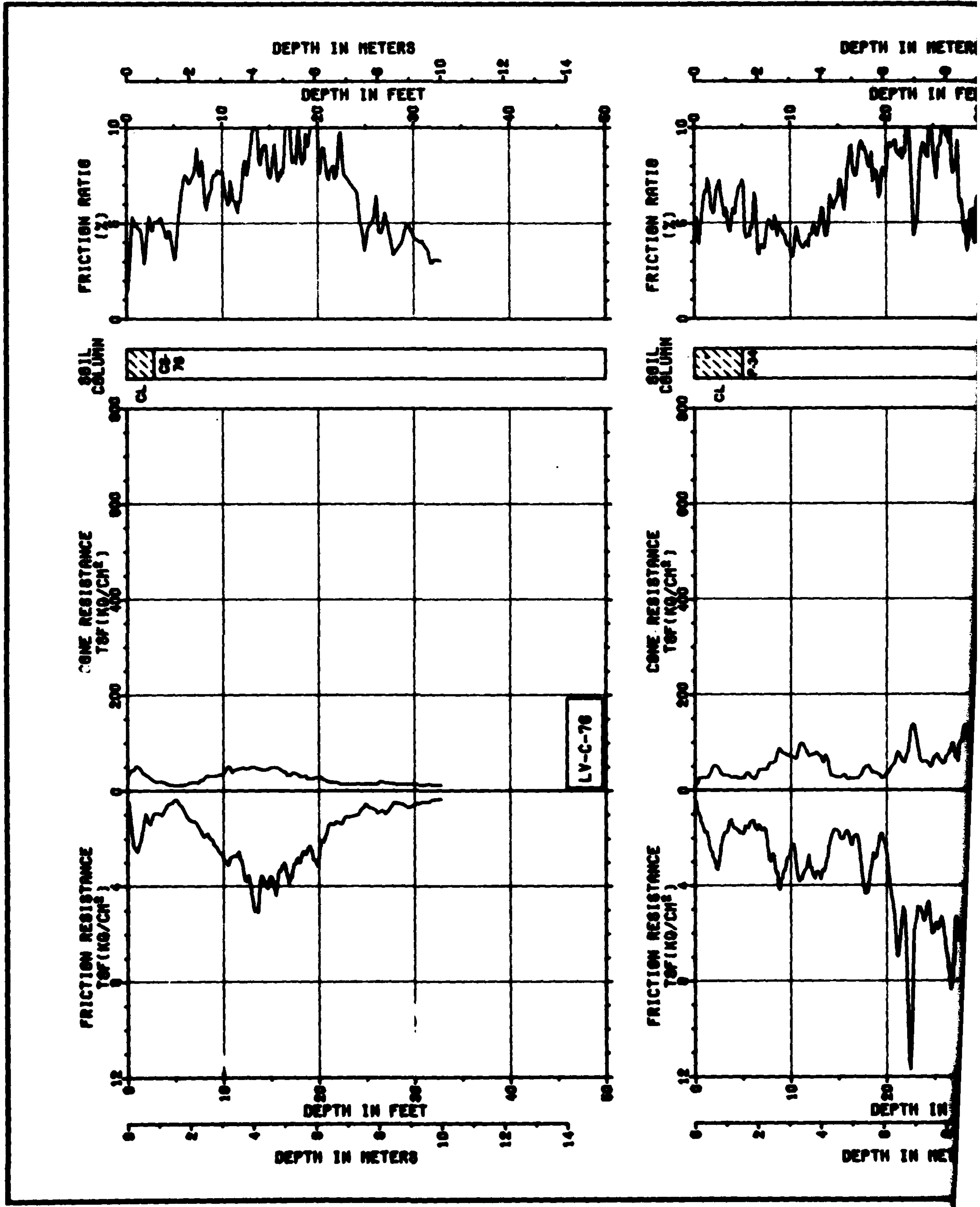
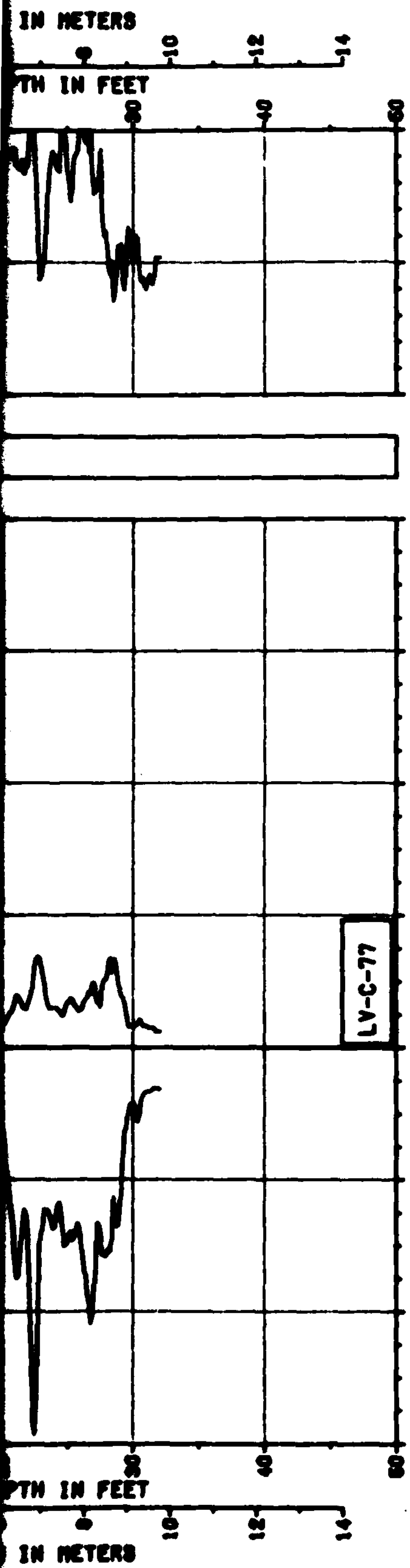
FIGURE II-11-1


DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
CL
CH
76
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-76
DEPTH IN FEET
DEPTH IN METERS
DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
CL
P-34
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)



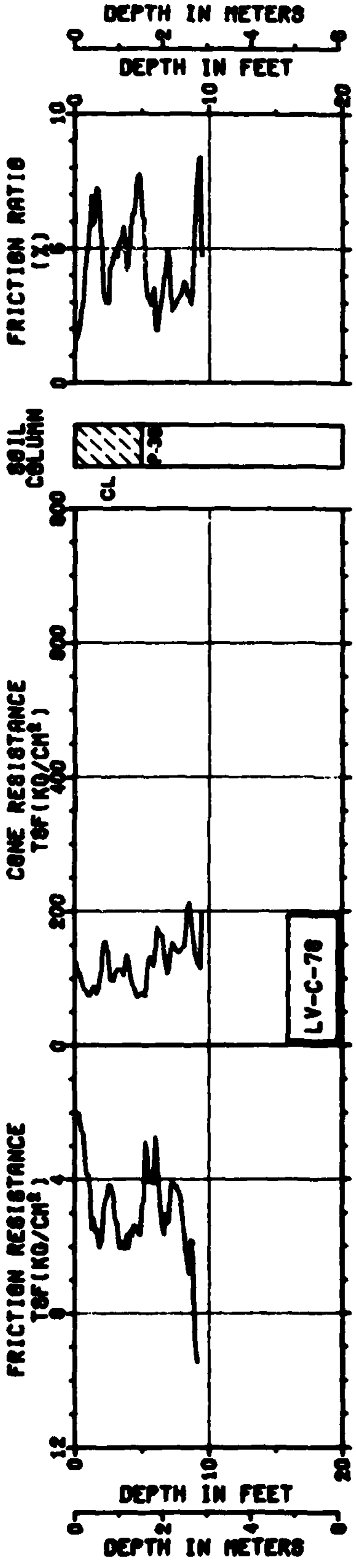


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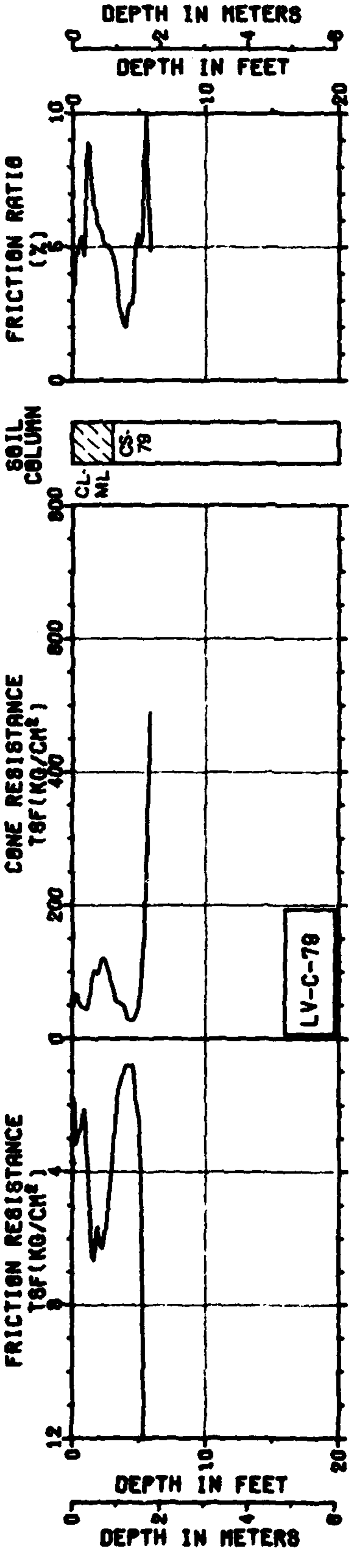
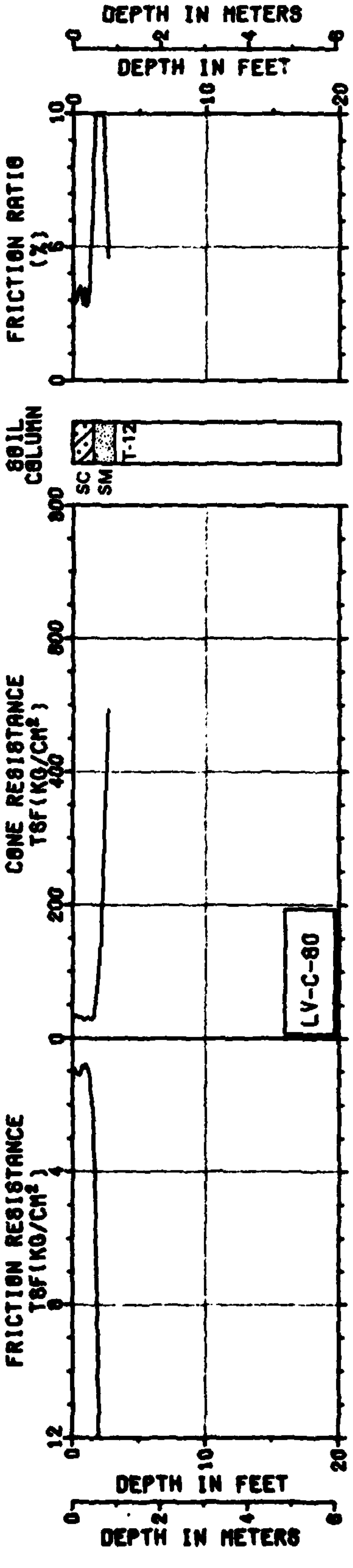
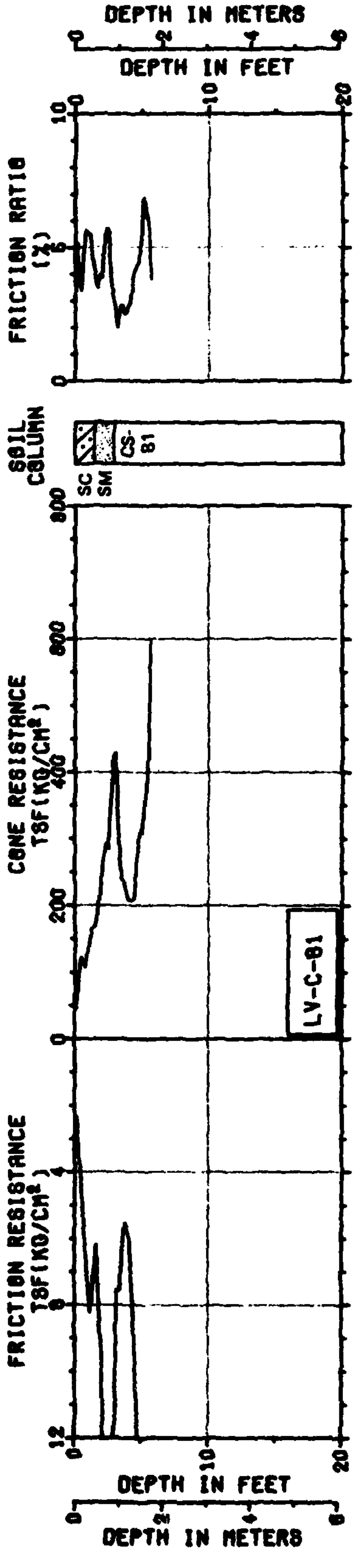
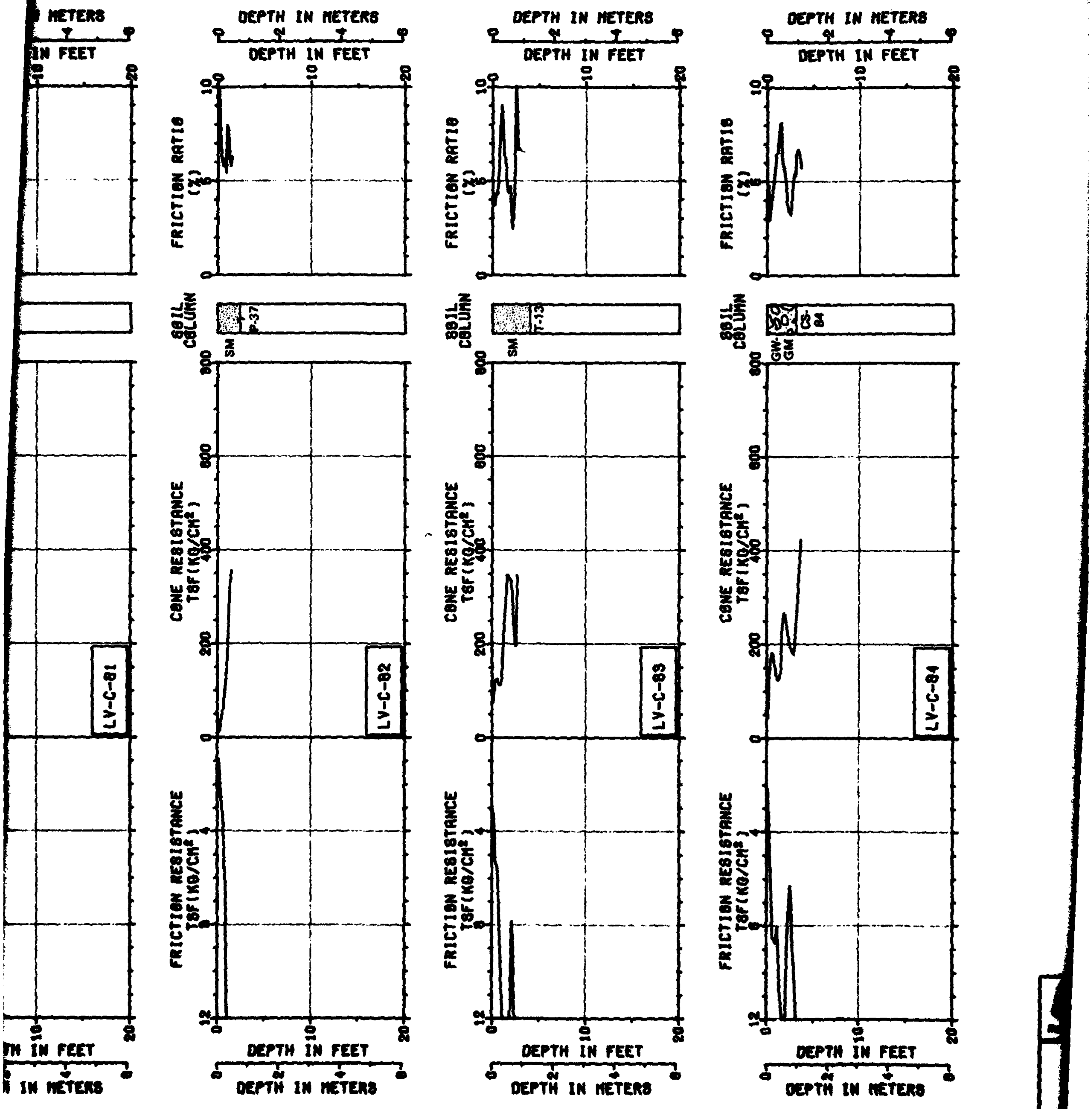
FIGURE II-11-1


LV-C-79
DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
CL-ML
CS-79
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
0
2
4
6
10
20
200
400
600
800
8
12

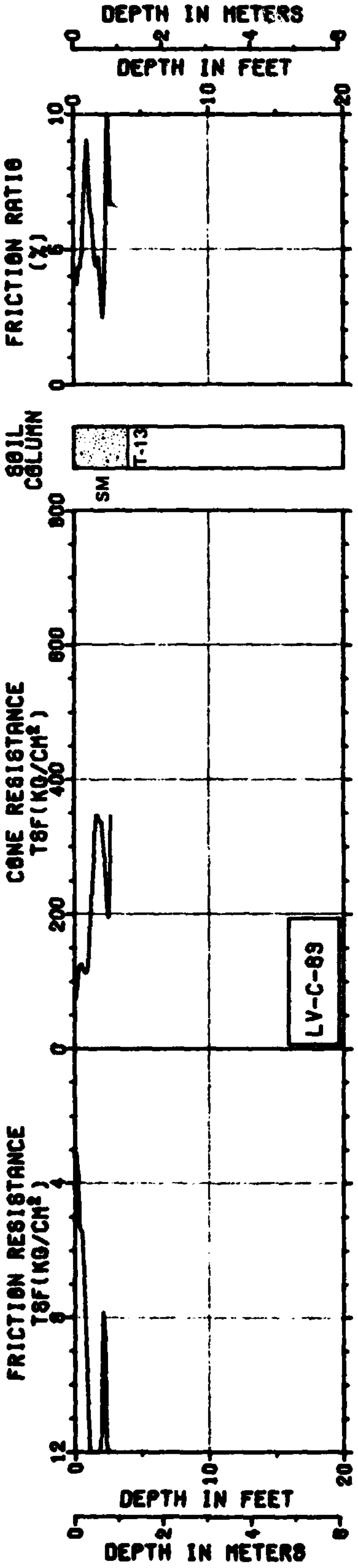

LV-C-80
DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
SC
SM
T-12
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
0
2
4
6
10
20
200
400
600
800
8
12


LV-C-81
DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
SC
SM
CS-81
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
0
2
4
6
10
20
200
400
600
800
8
12


FRICTION RATIO (%)
SOIL COLUMN
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)


DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
0
2
4
6
10
20
5
200
400
600
800
8
12
SM
P-37
T-13
GW-GM
CS-84
LV-C-81
LV-C-82
LV-C-83
LV-C-84

2



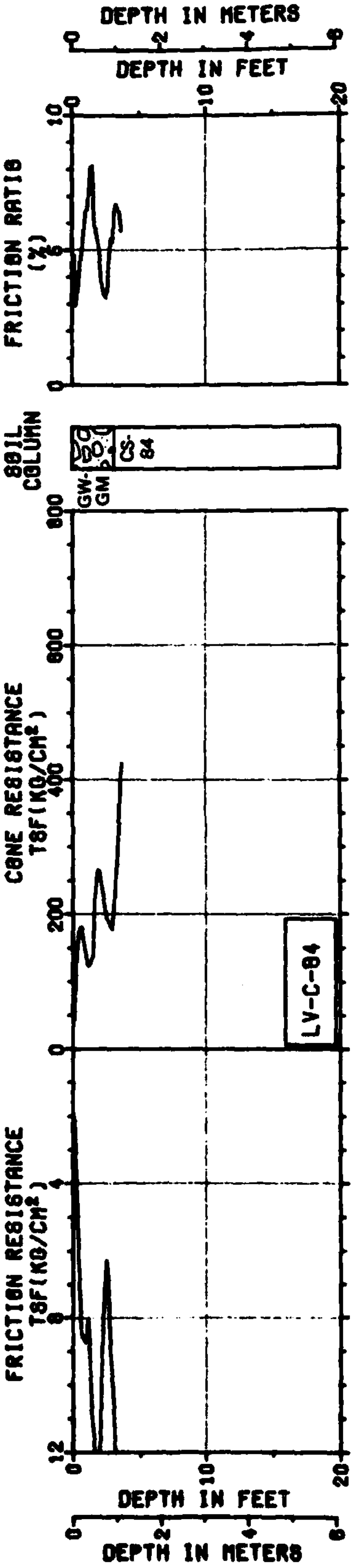


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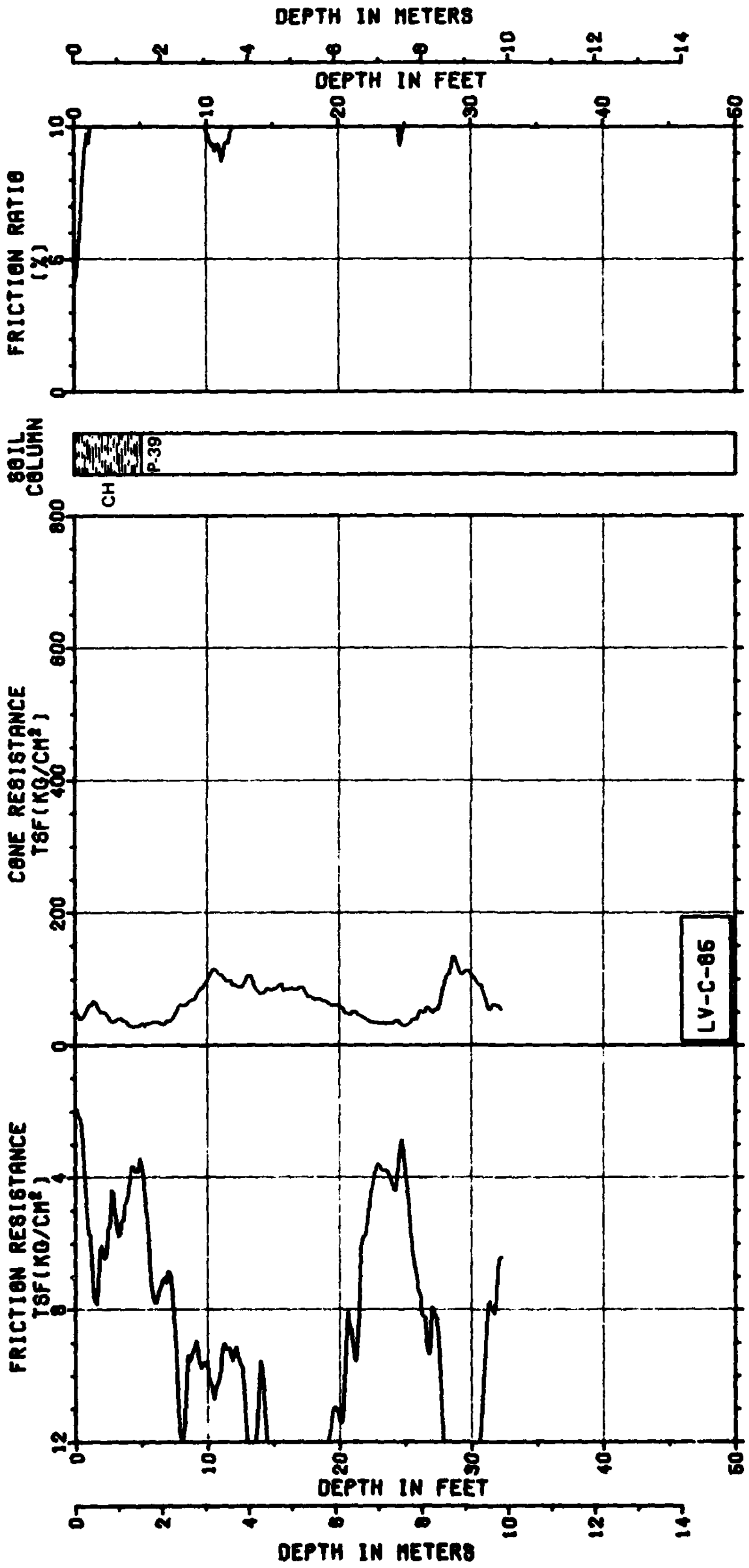
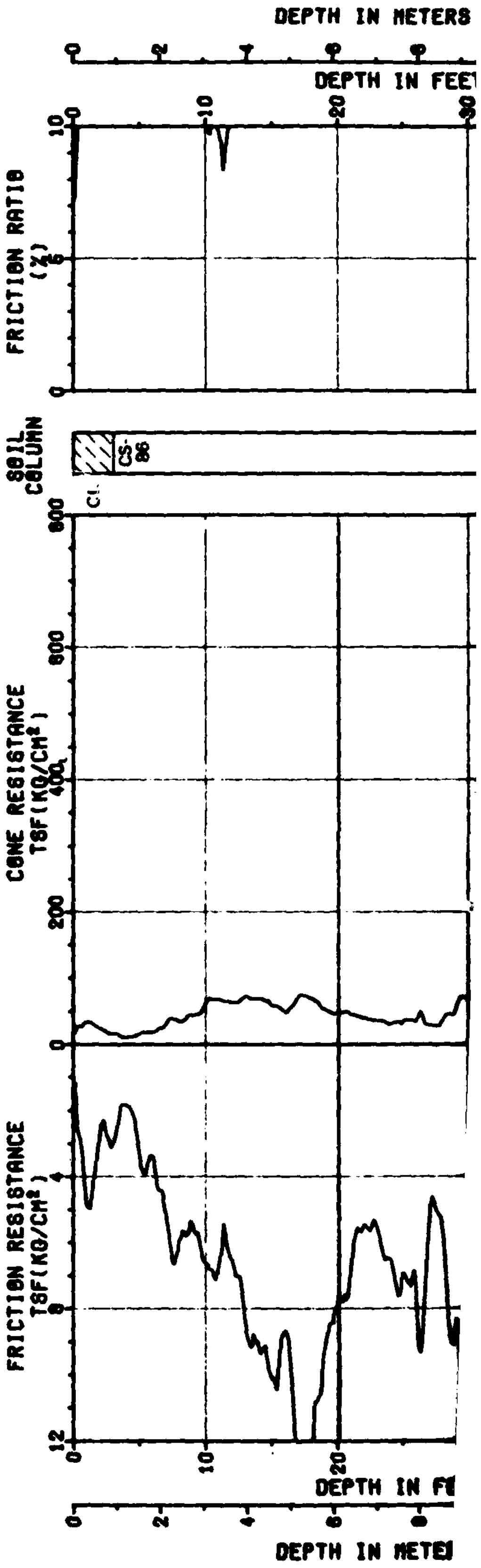
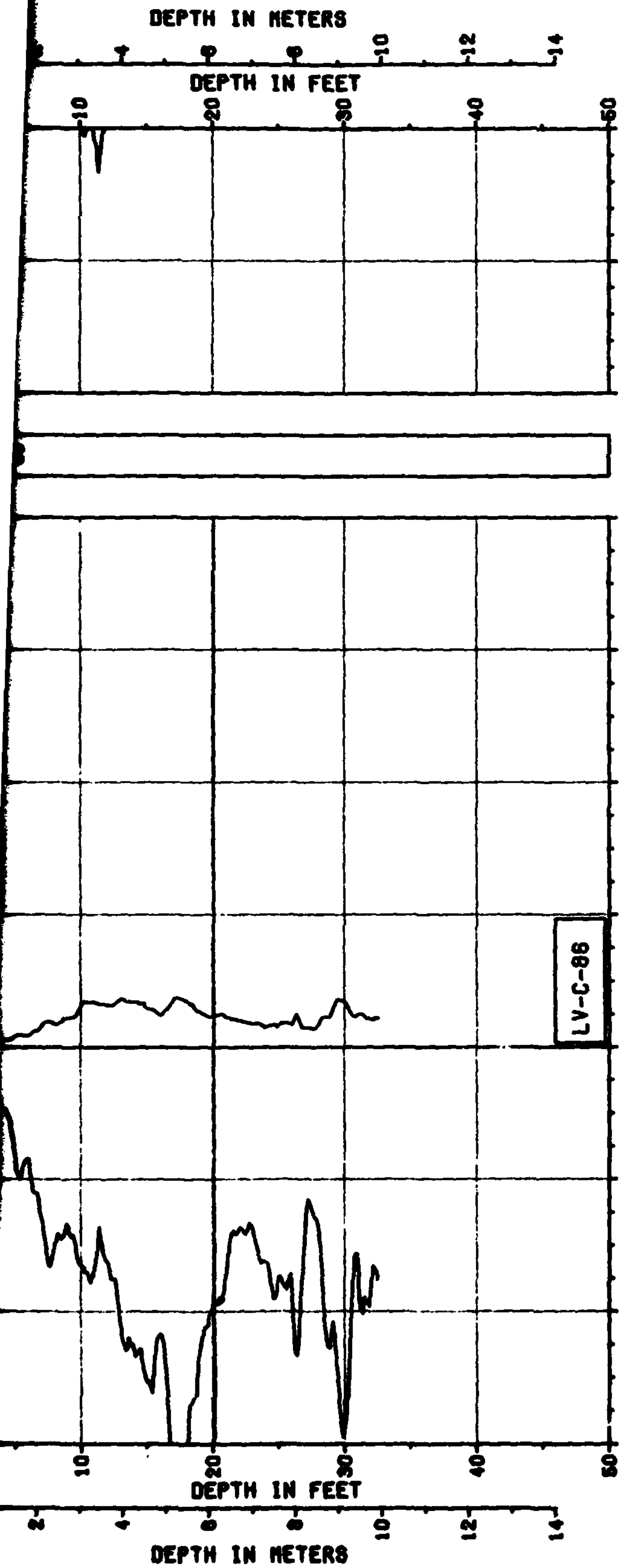
FIGURE II-11-1

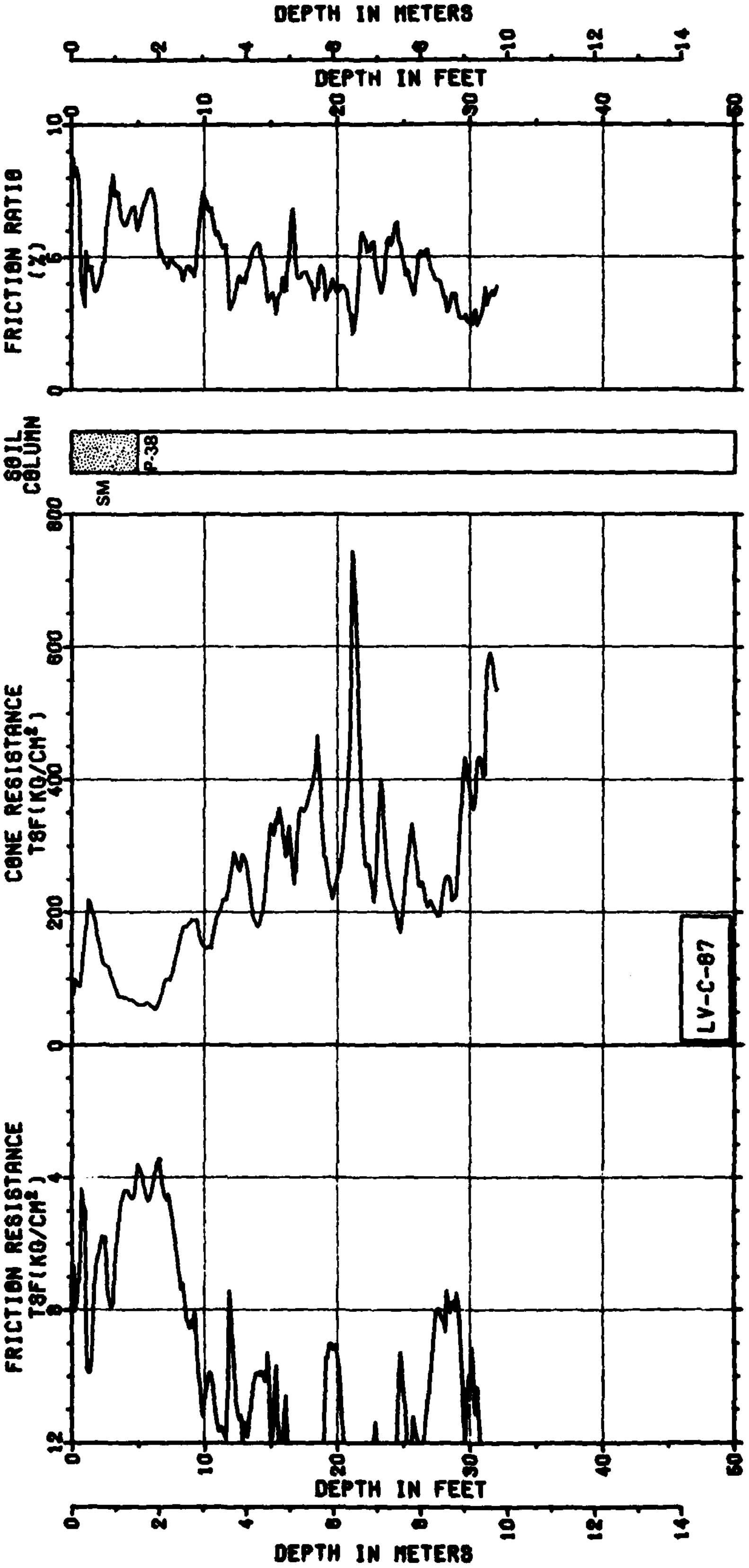
2

3


DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
CH
P-39
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
LV-C-86
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
DEPTH IN FEET
DEPTH IN METERS

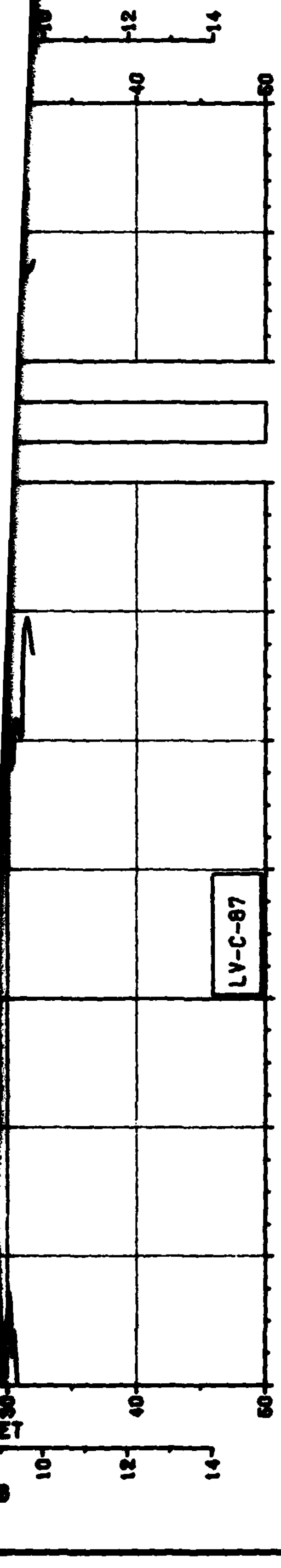

DEPTH IN METERS
0
2
4
6
8
DEPTH IN FEE
0
10
20
30
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
CS-86
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
DEPTH IN FE
DEPTH IN METE


DEPTH IN METERS
2
4
6
8
10
12
14
DEPTH IN FEET
10
20
30
40
50
LV-C-86
10
20
30
40
50
DEPTH IN FEET
2
4
6
8
10
12
14
DEPTH IN METERS


DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
P-38
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
LV-C-87
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
0
10
20
30
40
50
DEPTH IN FEET
0
2
4
6
8
10
12
14
DEPTH IN METERS


0
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12

2



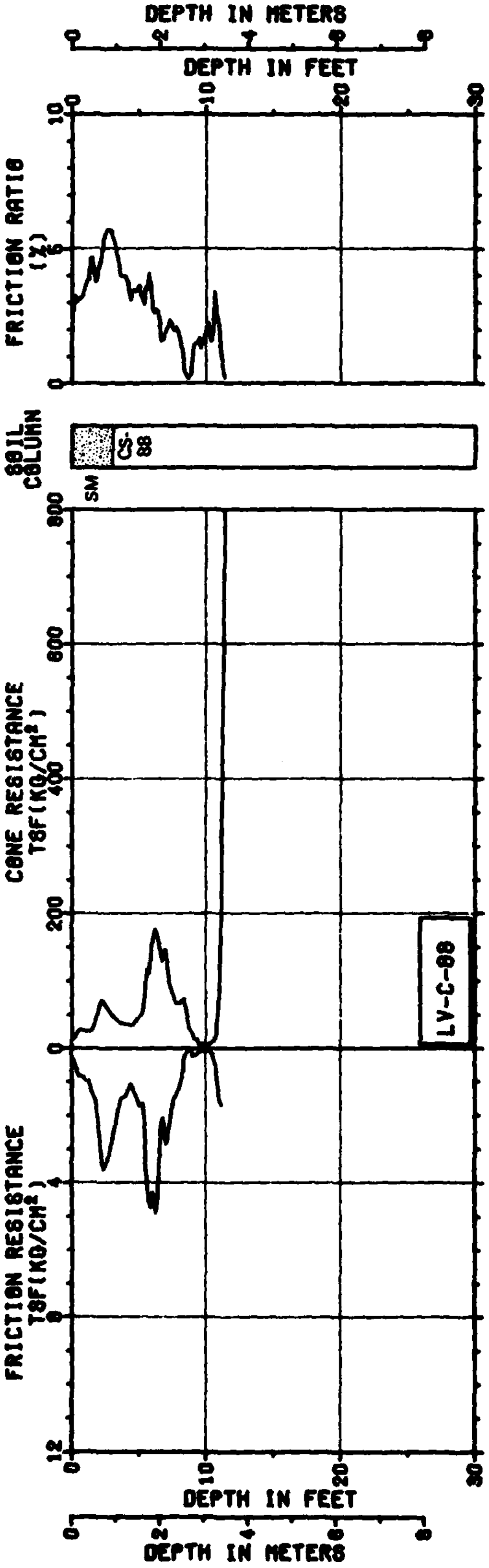


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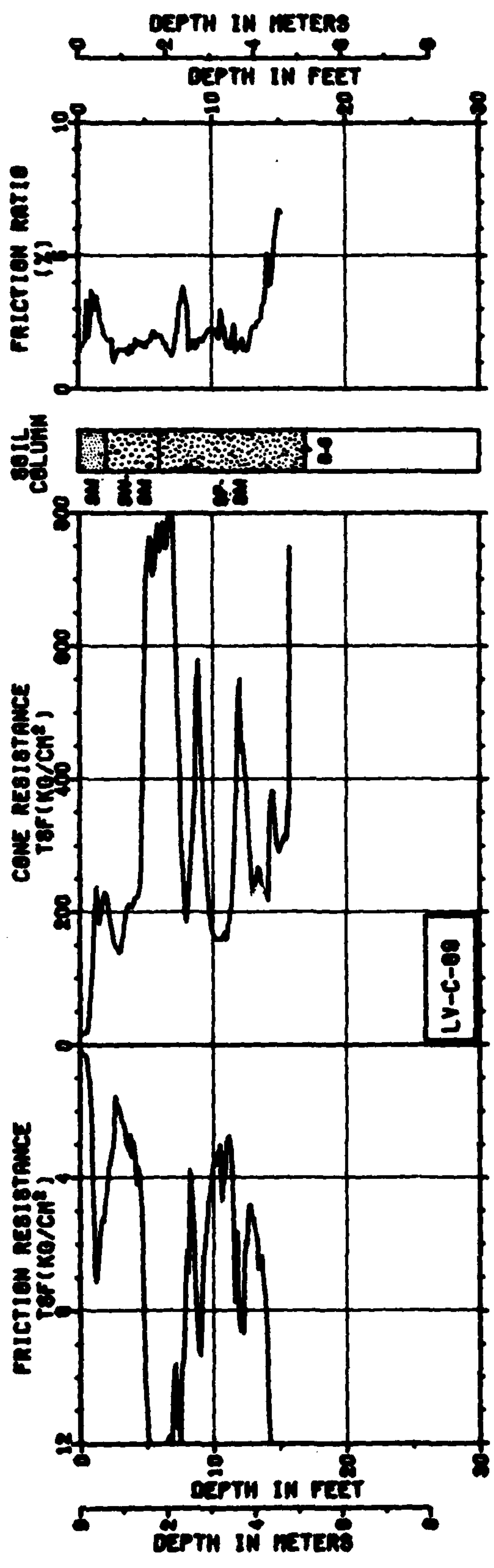
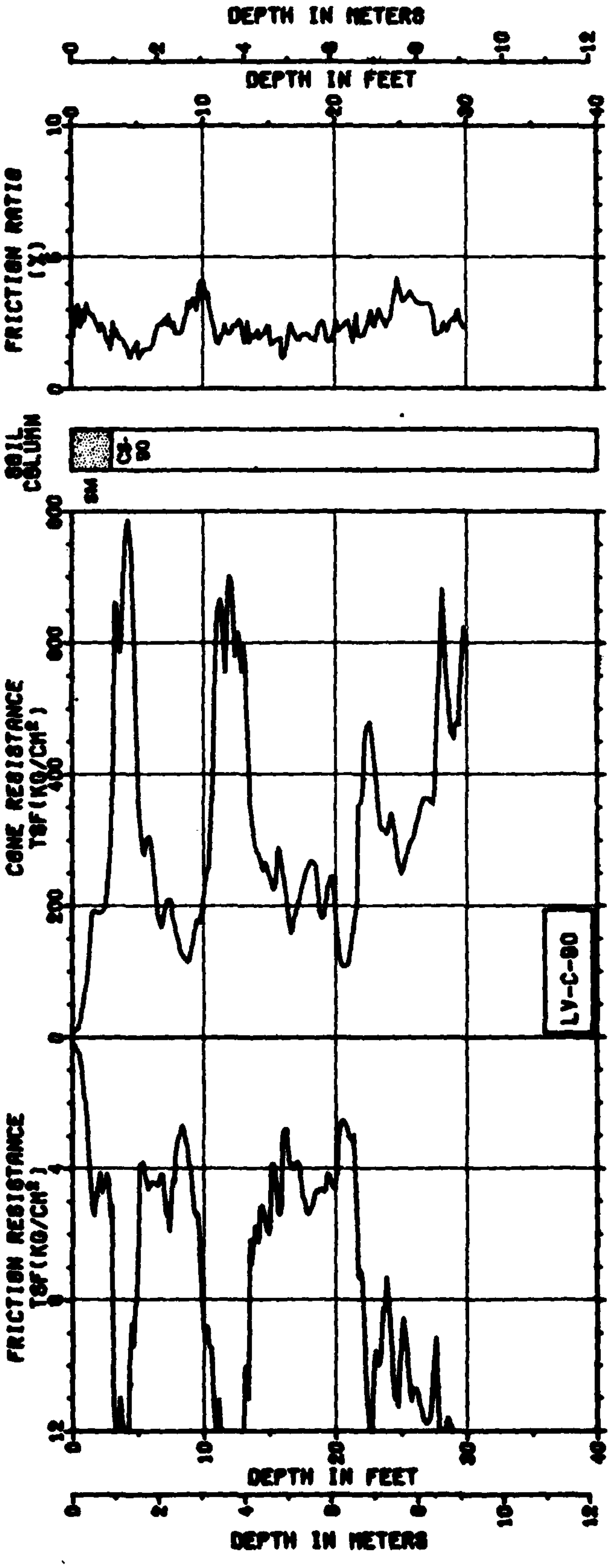
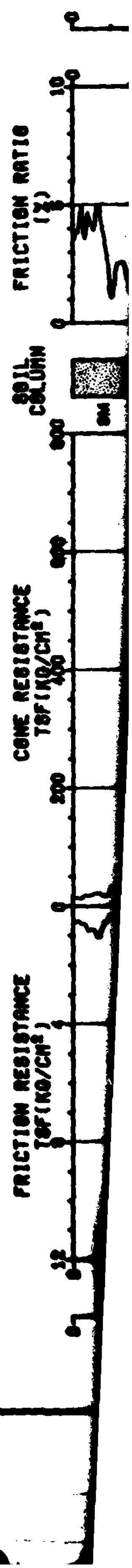
FIGURE II-11-1


DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
SW
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
LV-C-89
0
10
20
30
0
2
4
6
8
200
400
600
800
12


DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
SW
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
LV-C-90
0
10
20
30
40
2
4
6
8
10
12
200
400
600
800


FRICTION RATIO (%)
SOIL COLUMN
SW
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
10
200
400
600
800
0
4
8
12

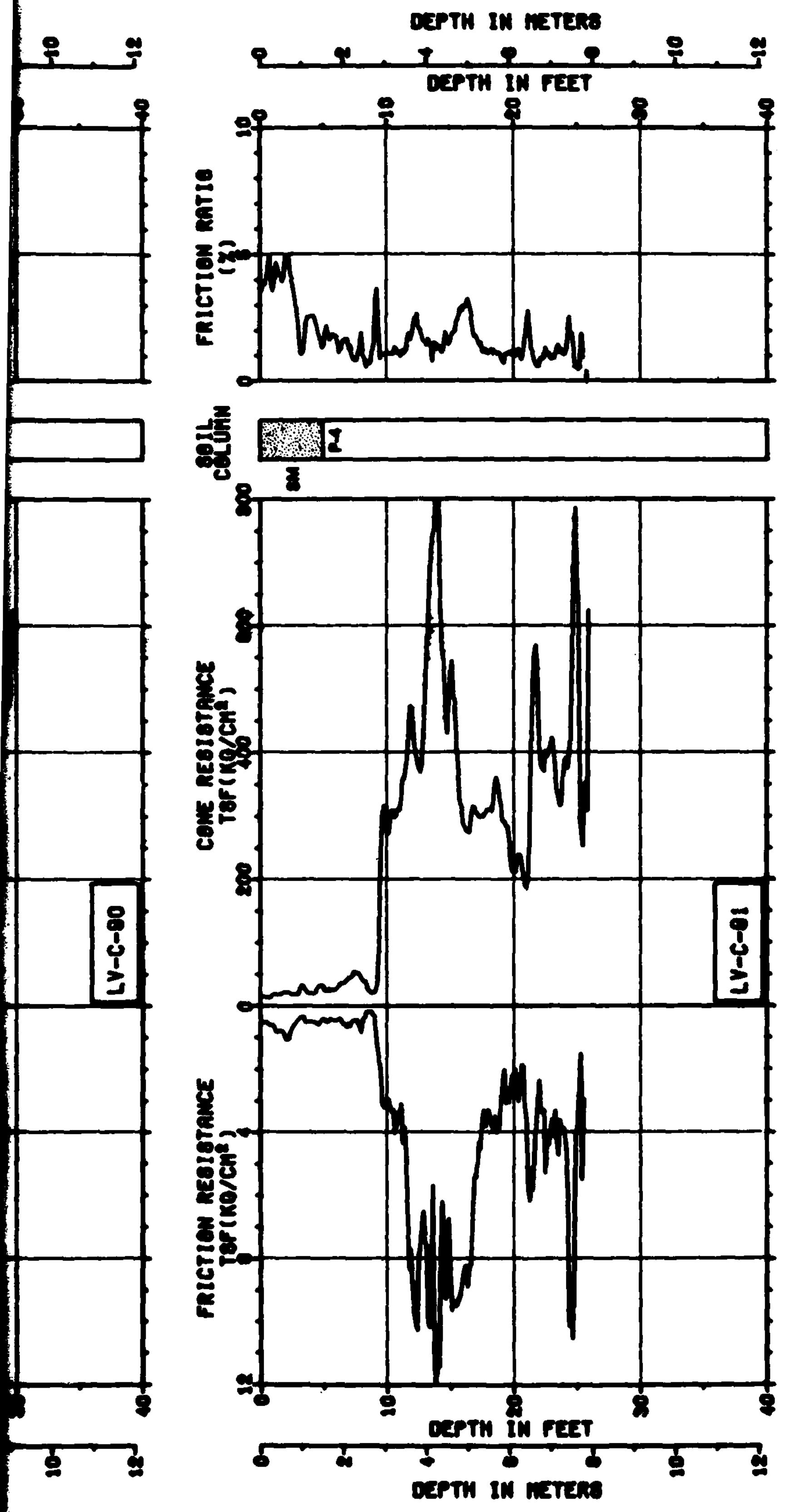


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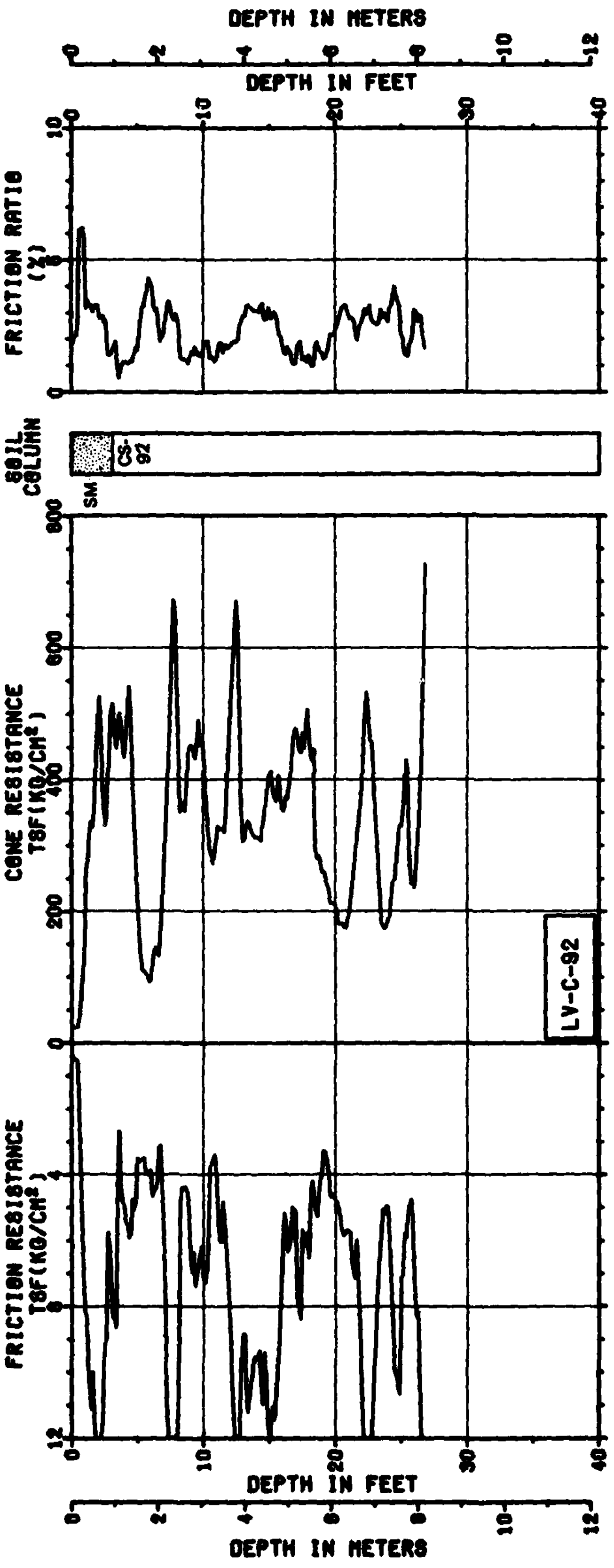
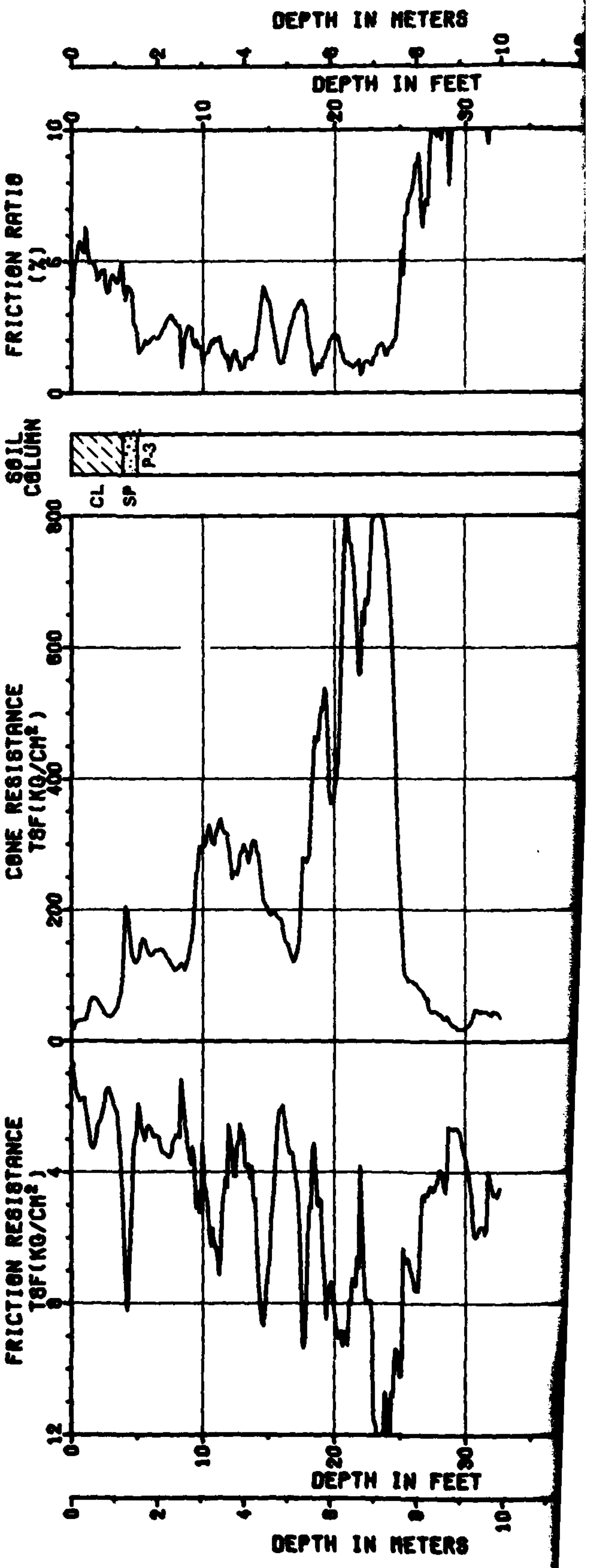
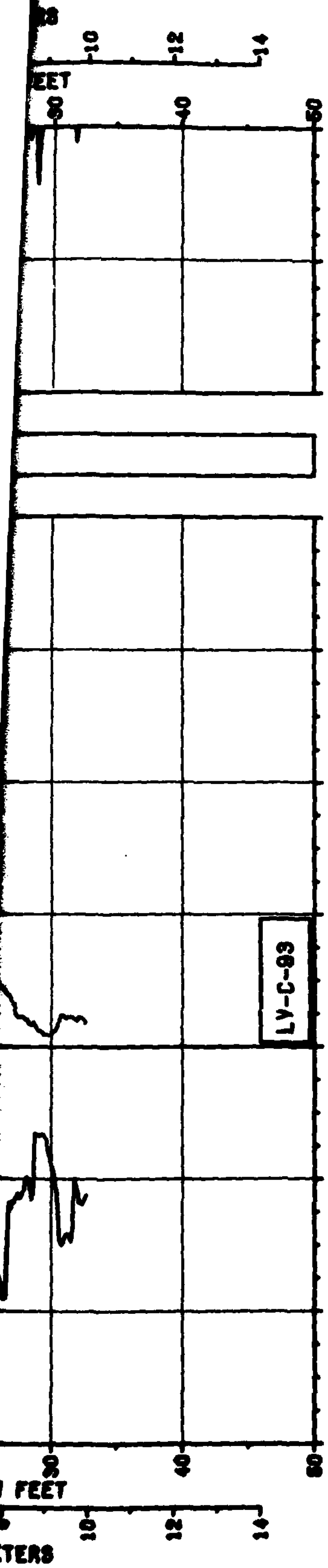
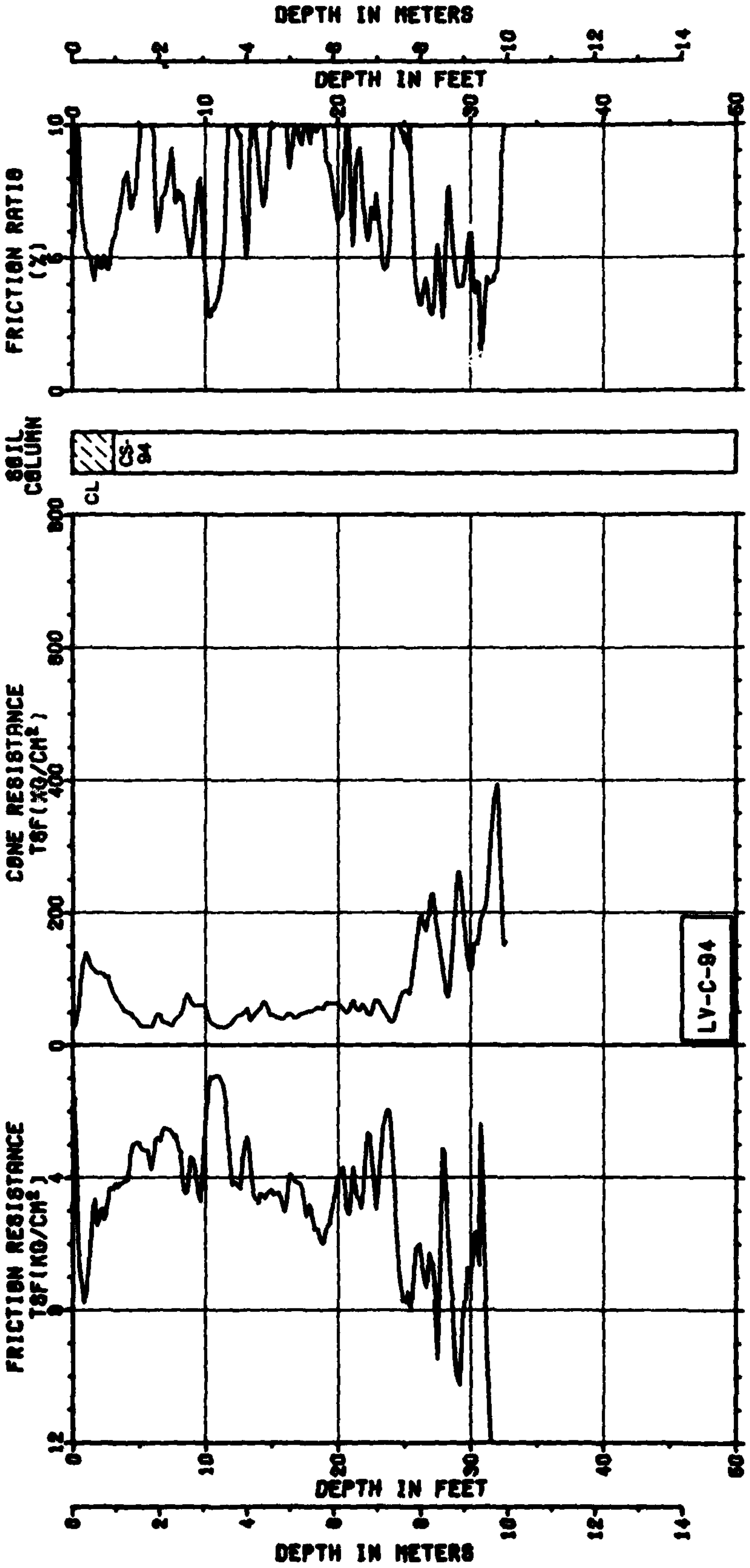
FIGURE II-11-1


DEPTH IN METERS
0
2
4
6
8
10
12
DEPTH IN FEET
0
10
20
30
40
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
CS-92
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
LV-C-92
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12

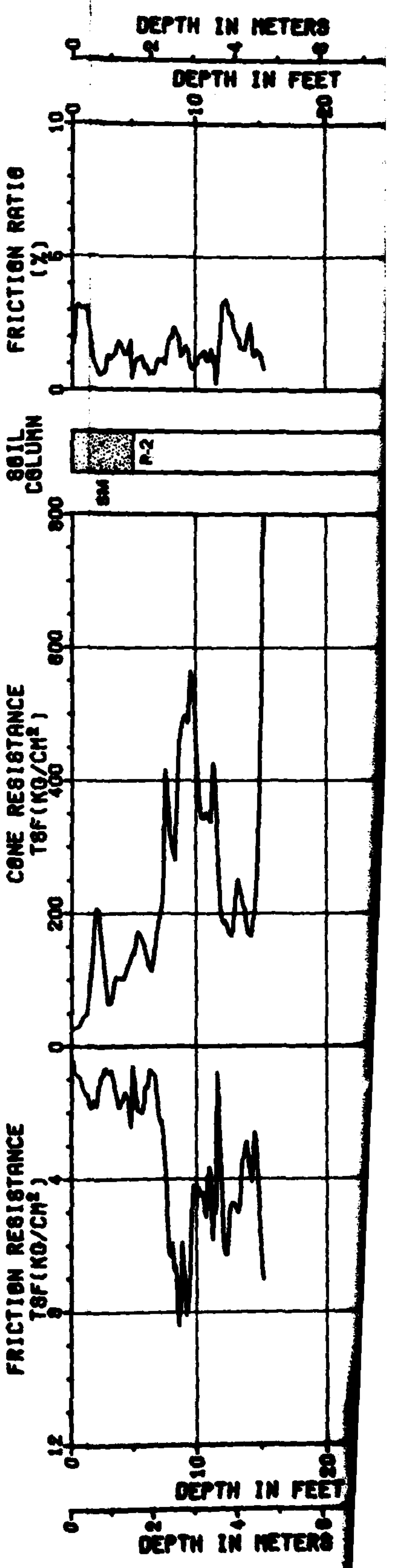

DEPTH IN METERS
0
2
4
6
8
10
DEPTH IN FEET
0
10
20
30
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
CL
SP
P-3
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12



DEPTH IN METERS
10
12
14
DEPTH IN FEET
30
40
50
LV-C-93
30
40
50
DEPTH IN FEET
10
12
14
DEPTH IN METERS



DEPTH IN METERS
0
2
4
6
8
10
12
14
DEPTH IN FEET
0
10
20
30
40
50
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
CL
CS-94
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
LV-C-94
0
10
20
30
40
50
DEPTH IN FEET
0
2
4
6
8
10
12
14
DEPTH IN METERS



DEPTH IN METERS
0
2
4
6
DEPTH IN FEET
0
10
20
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
R-2
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
4
8
12
0
10
20
DEPTH IN FEET
0
2
4
6
DEPTH IN METERS

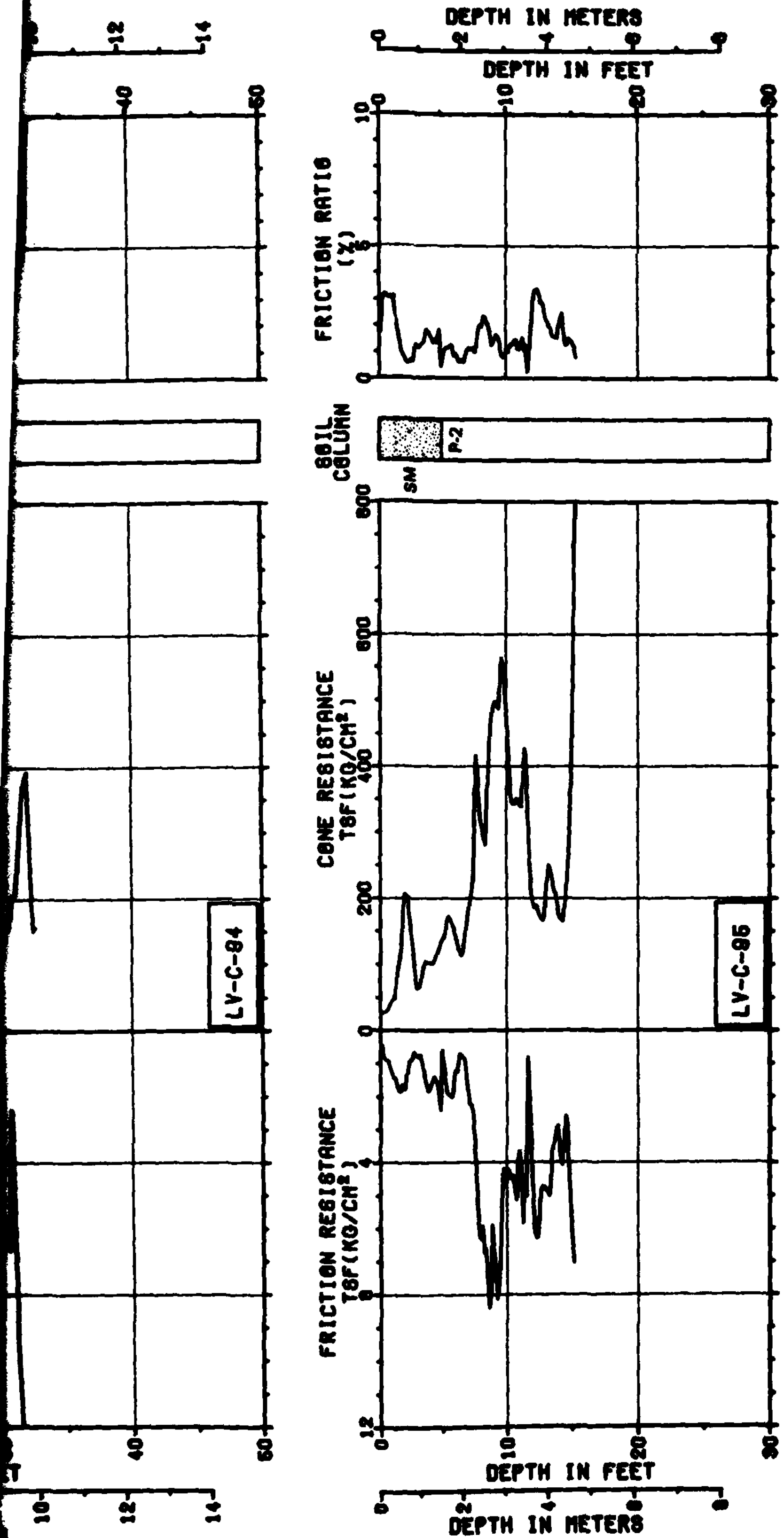


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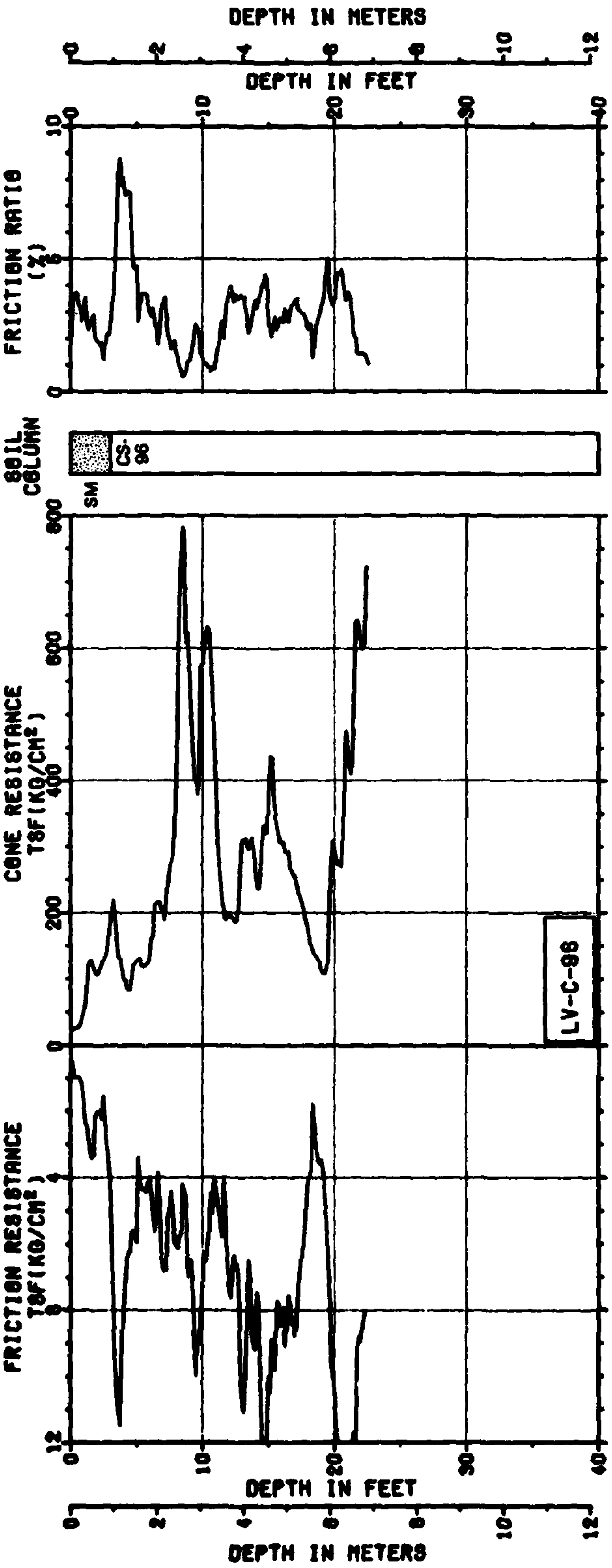
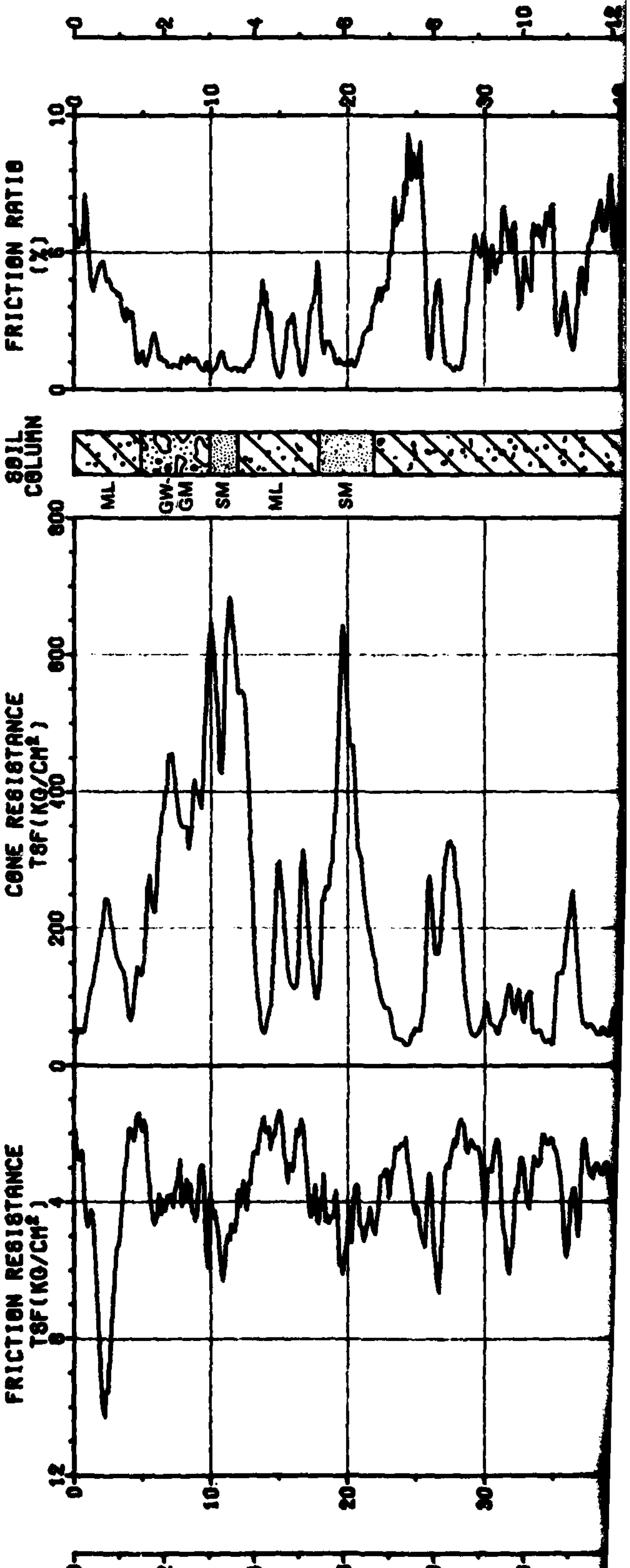
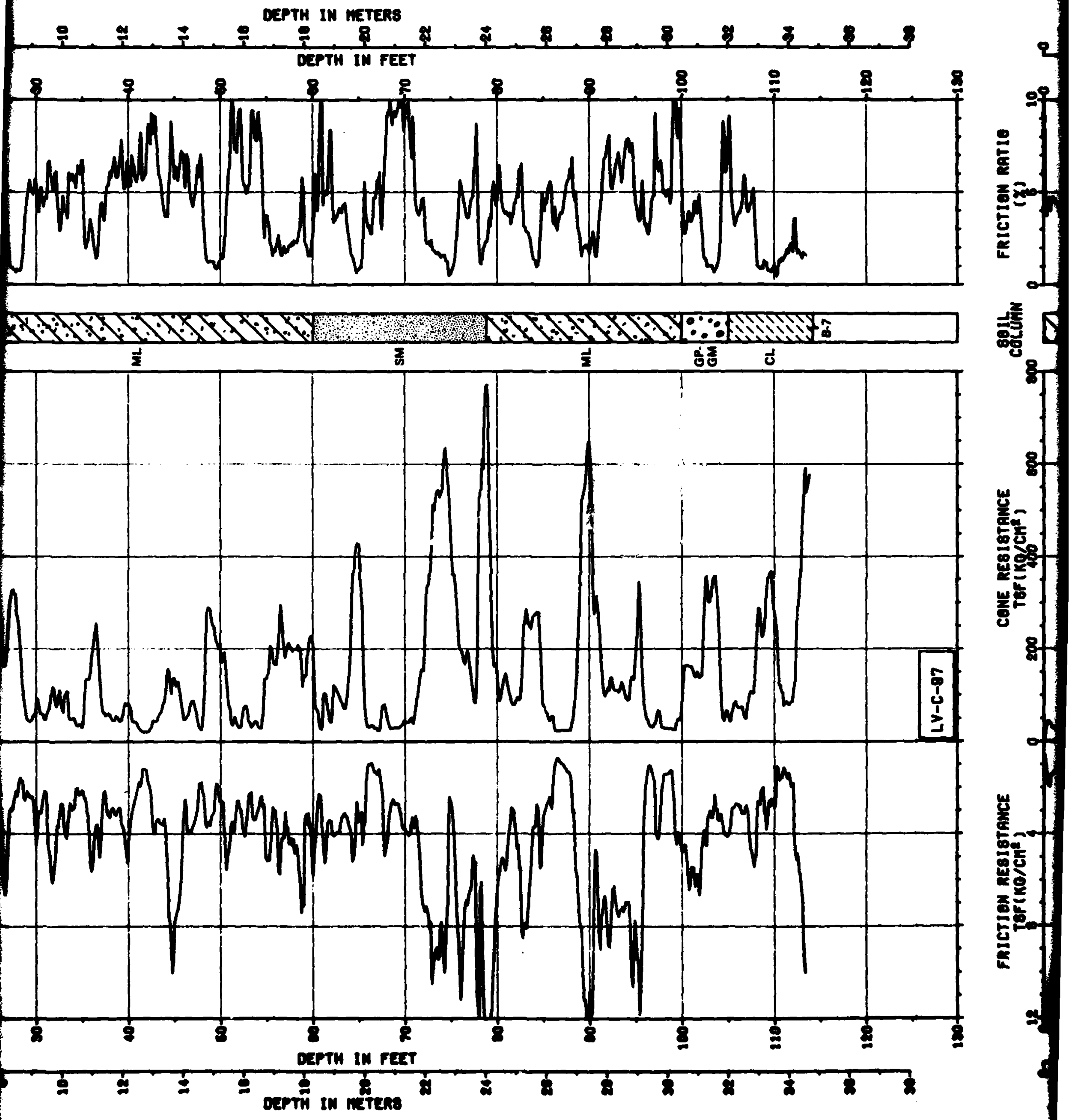
FIGURE II-11-1

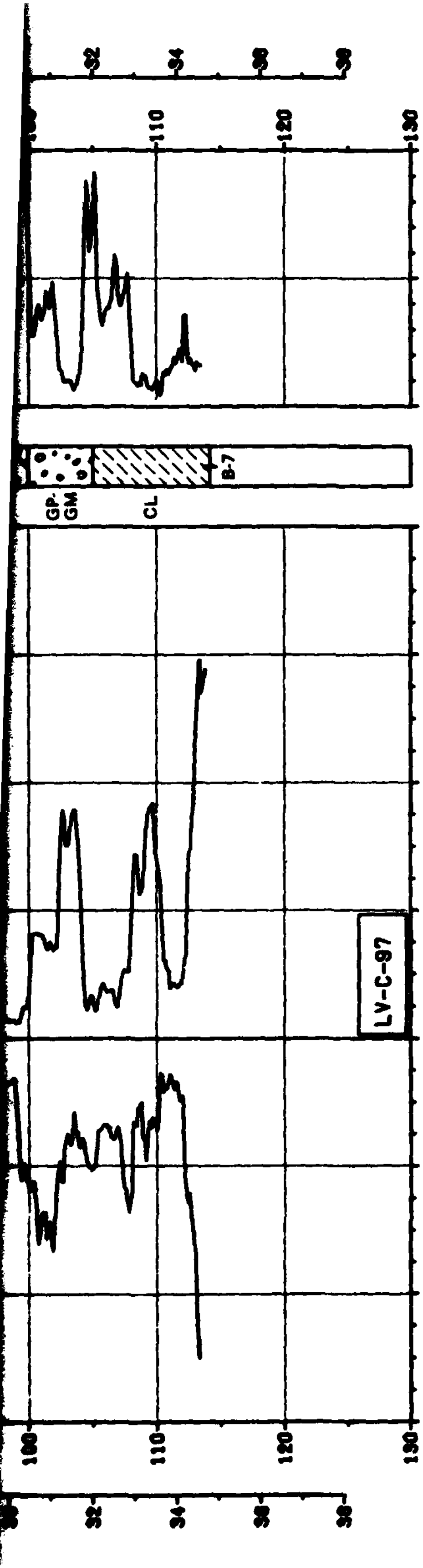
3


DEPTH IN METERS
0
2
4
6
8
10
12
DEPTH IN FEET
0
10
20
30
40
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
SM
CS-98
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12
LV-C-98


0
2
4
6
8
10
12
0
10
20
30
40
FRICTION RATIO (%)
10
5
0
SOIL COLUMN
ML
GW-GM
SM
ML
SM
CONE RESISTANCE TSF(KG/CM²)
800
600
400
200
0
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12


DEPTH IN METERS
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
DEPTH IN FEET
30
40
50
60
70
80
90
100
110
120
130
FRICTION RATIO (%)
0
5
10
SOIL COLUMN
ML
SM
ML
GP-GM
CL
B-7
CONE RESISTANCE TSF(KG/CM²)
0
200
400
600
800
LV-C-97
FRICTION RESISTANCE TSF(KG/CM²)
0
4
8
12

2



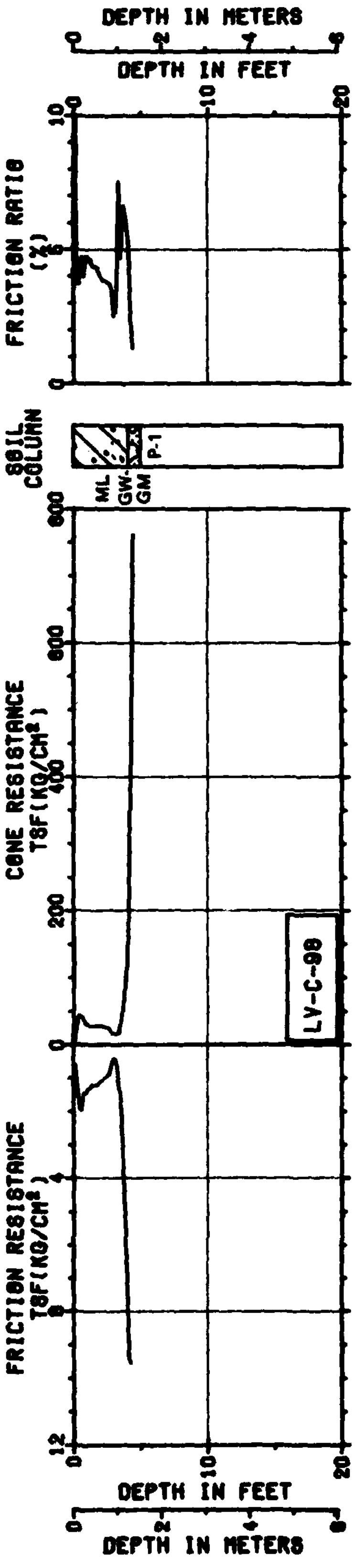


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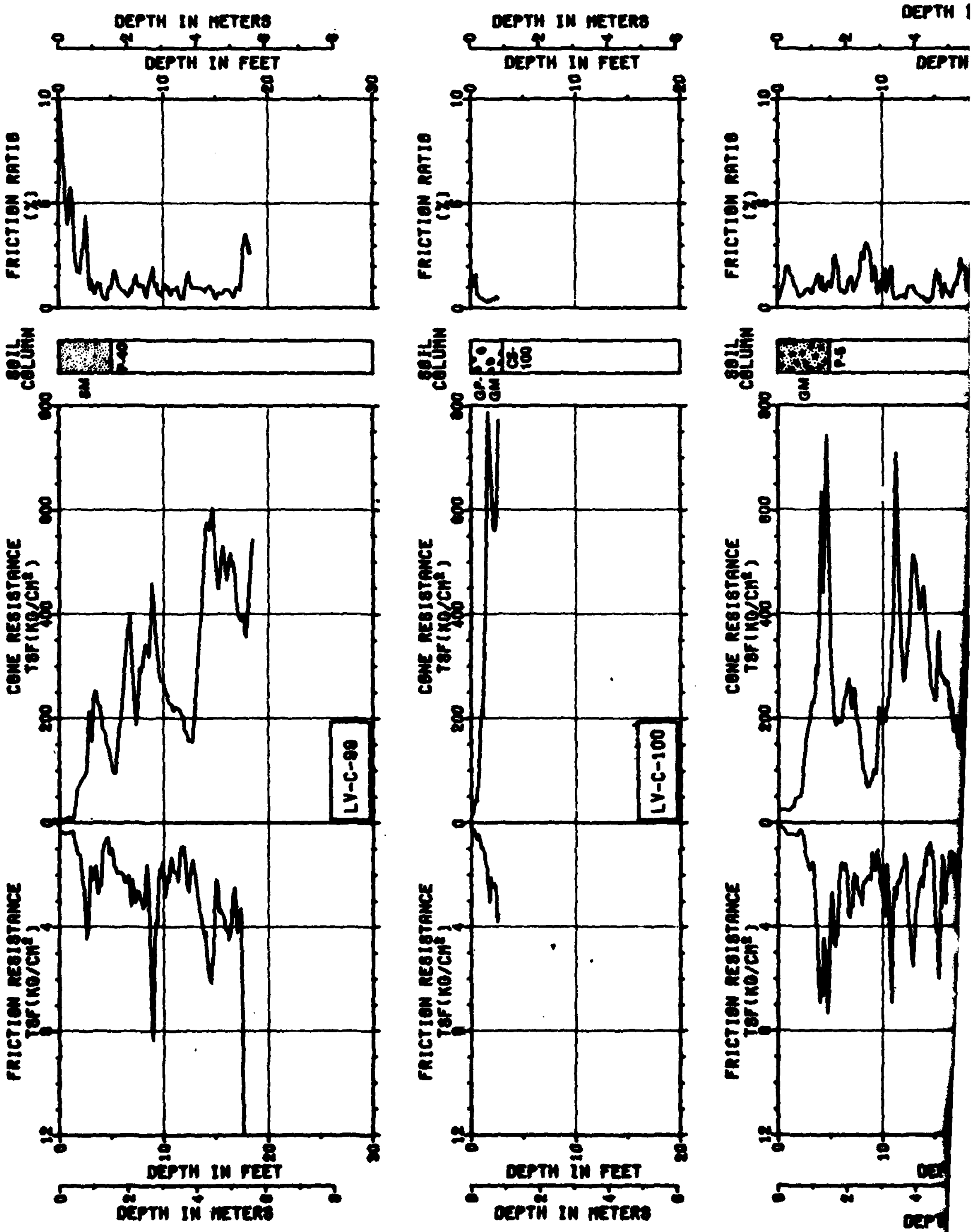
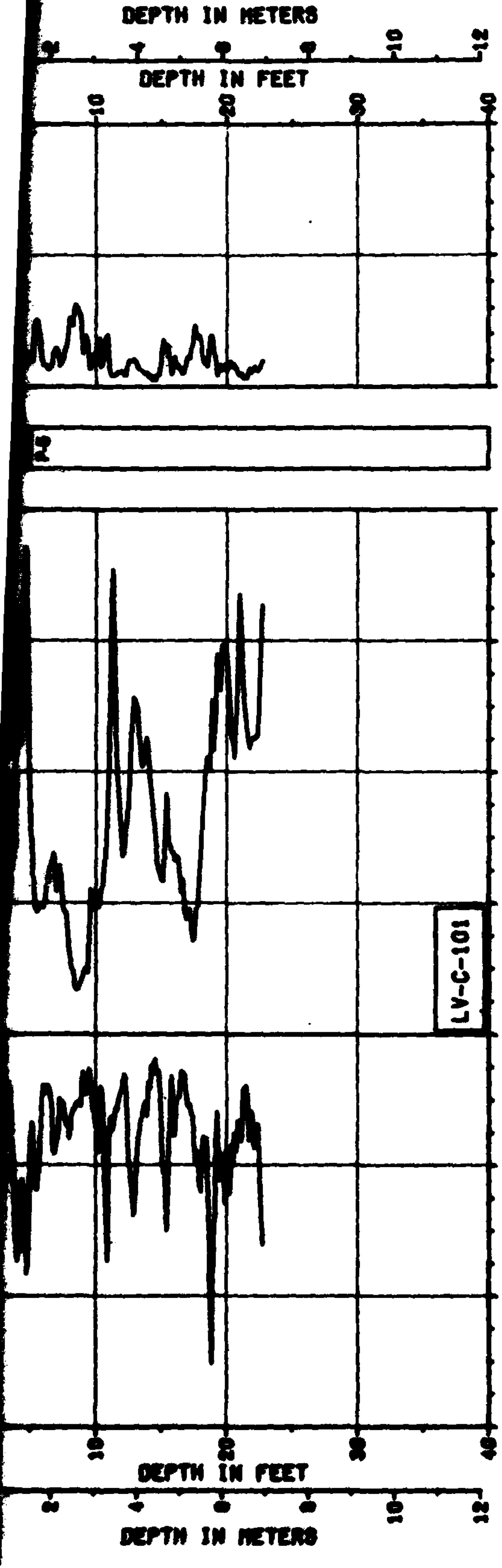
FIGURE II-11-1


DEPTH IN METERS
DEPTH IN FEET
FRICTION RATIO (%)
SOIL COLUMN
GM
P-40
CONE RESISTANCE TSF(KG/CM²)
FRICTION RESISTANCE TSF(KG/CM²)
LV-C-99
GP-GM
CH-100
LV-C-100
P-5
0
10
20
30
2
4
6
8
200
400
600
800
12



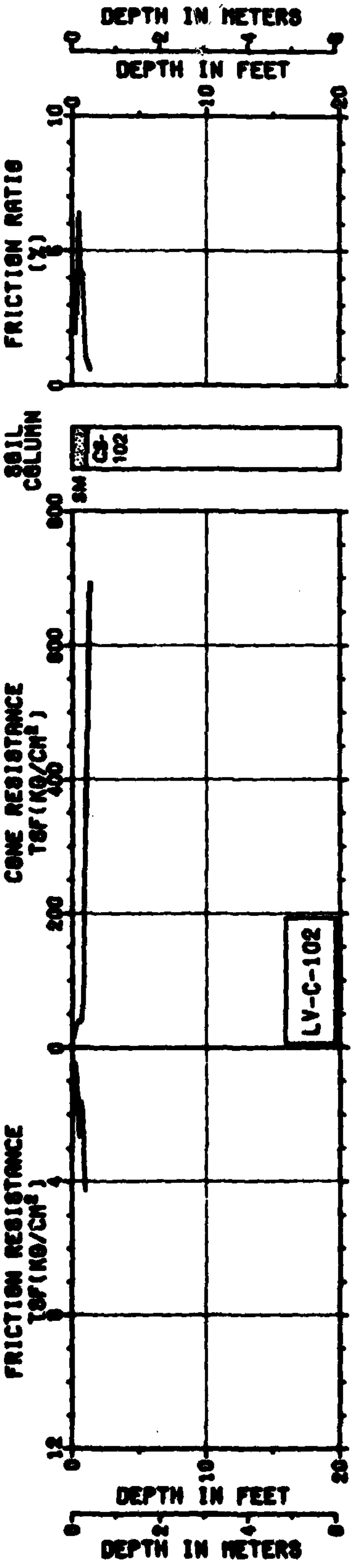


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FIGURE

DAT
FILM