GEOLOGIC DIVISION ROCK STORAGE FACILITY 1030 O'BRIEN DRIVE

ORIGINAL + 3 COPIES TO ACCOMPANY ROCK BOXES

BOX #	DESCRIPTION OF CONTENTS (INCLUDE ALL SPECIMEN NUMBERS)
Hole GØ-1D Box 1-26 (26 total)	6cm core samples from 120m hole near Parkfield, CA (35.855N, 120.281°W) Received from Geomatrix in Feb. 2003. (Donald Wells, 510-663-4100) Hole drilled in 1987 - site of Parkfield Seismic Array. Primarily sandstone, clays, some conglomerate - detailed geologic log available.
Hole SW-1 Box 1-4 (4 total)	6cm cores from ≈15m hole near Parkfield, CA (exact location unknown) Box 2 - few pieces of solid core but mostly small flakes/chunks Box 3 - large, solid core pieces, darker grey, crumbly (~10.12 - 14.4m) Box 4 - 14.4 - 15.21m
Hole SE-1 Box 1-3 (3 total)	6cm cores from ~15m hole near Parkfield, CA (exact location unknown) Box 1 - more solid but mostly flaky, brown, sandstone Box 2 - pretty dirty sandstone - some big cores Box 3 - larger core - nice size samples (9.54-15.2m)
Hole N-1D Box 1-2 (2 total)	6cm cores from ~15m hole near Parkfield, CA (exact location unknown) Box 1 - muddy/slaty - all in pieces Box 2 - solid cores - look good, brownish grey sandstone (10.94-15.2m)

COLLECTOR	PROJECT/AREA	BRANCH	EXT.	MAIL STOP
DARCY K. McPHEE	PARKFIELD, CA	WESP-GUMP	4173	989

COPY TO: WAREHOUSE OFFICE BRANCH COLLECTOR	ACCESSION NUMBER	DISPOSAL AFTER
	03-05-4075	

PALLET 3'100

GEOMATRIX

APPENDIX A

CHARACTERIZATION OF PARKFIELD DENSE SEISMIC ARRAY SITE

EXPLANATION OF BORING LOGS

The following boring logs describe the HQ rock core obtained at the site of the Parkfield Seismic Array. This explanation is intended to clarify the data headings and formats used on these logs. Note that all measurements are in metric units. The descriptions of some colors are correlated to standard color charts, such as; dark brown (10 YR 3/3).

Project No: Geomatrix project number. Date: Date drilling started. Project Name: EPRI-PARKFIELD Location: Location within the Array. Hole No. Hole number is the same as the instrumentation numbers. El. Approximate ground elevation. Type of Boring: HQ size rock core. Rig: Mobil B-80 Drill/Core rig. Datum: Approximate elevation based on USGS topographic map of the Cholame Valley 7.5 Minute Quadrangle. Geologist: Geomatrix Consultants - Jim Hengesh / Chuck Taylor. Water Level: Depth at which water was first encountered.

1. Depth: All depths are in meters (m).

2. Description of Rock Core: This column presents a lithologic description of the rock type represented by the rock core. The depth at which changes take place, and the general nature of the rock mass (fractured, broken, sheared, etc.). The descriptive terms for grain size, weathering, and hardness are given below;

GRAIN SIZE

Fine-grained	Average grain size up to 0.05 inch.
Medium-grained	Average grain size from 0.05 to 0.2 inch.
Coarse-grained	Average Grain size greater than 0.2 inch.

WEATHERING

Fresh	Rock is unstained and surfaces of discontinuities are unstained.
Slightly	Staining on surfaces of rock and on some discontinuities, but discoloration does not extend into the rock mass.
Moderate	Staining on surfaces of discontinuities and discoloration extends into the rock mass.
Highly	Individual rock fragments are thoroughly stained. Some minerals altered to clays. Rock mass begins to take on soil characteristics.

GEOMATRIX CONSULTANTS

TEST BORING RECORD

Project No. 1222A Date Start 1-13-87

Project Name EPRI - Parkfield Location Center of seismic array

Hole No. 60-60(120HQ) Gr. El. 1677'± Type of Boring HQ-core Rig B-80

Datum USGS Cholame Valley 7.5' quadrangle Geologist J. Hengesh/C. Taylor Water Level 41.5m

DEPTH (M)	DESCRIPTION	DEPTH (M)	GRAPHIC LOG	CORE REC./RUN	% REC.	RQD %	NOTES
1	SOILS, weathered SAND and GRAVEL Black organic rich clayey fine sand and dark brown (10 YR 3/3), medium grained sandy clay	1		1.52	0		Box 1
							1.52 Bottom of run
2	BOULDER CONGLOMERATE Heterolithologic rock fragments in an olive (5 Y 4/3), medium to coarse, poorly sorted clayey sand, fragments include gray, red and black chert, graywacke, and fault breccia	2		1.52	0		
3		3					3.04
4		4		1.52	0		
							4.56
5		5		1.52	0		
6		6					6.08
7	COARSE GRAINED SANDSTONE Poorly sorted, quartz and lithic rich silica cemented sands, small fractures are filled with clay and slickensided	7	NB LC	1.4/1.52	92	.54/1.52 36	
							7.60
8	Medium Grained Sandstone Moderately well sorted, quartz and lithic rich (arkosic), silica cemented sandstone, moderately weathered, soft, very pale brown to dark brown mottled, many mechanical breaks	8	NB	1.45/1.52	95	.67/1.52 44	
9		9					9.12
10	Clay seams (CS) are common	10	CS	.9/1.52	59	.1/1.52 7	Box 2

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Datum USGS Cholame Valley 7.5' quadrangle Geologist J. Hengesh/C. Taylor Water Level 41.5m

DEPTH (M)	DESCRIPTION	DEPTH (M)	GRAPHIC LOG	CORE REC./RUN	% REC.	RQD %	NOTES
	Medium Grained Sandstone, less weathering Moderately well sorted, arkosic, silica cemented sandstone, slightly weathered, soft, spheroidal, light to dark gray mottling is common				94	83	
21		21	LC				20.98
				.92 / 1.52	60	.92 / 1.52	
22		22	LC			61	22.50
	Medium to Fine Grained Sandstone Slightly finer grained than above						Box 5
23		23		1.52 / 1.52	100	1.17 / 1.52	
						77	
24		24					24.02
	Dark damp friable zone			1.12 / 1.52	74	.90 / 1.52	Slightly wet zone
25		25				59	25.54
26	Highly fractured and fragmented zone with down dip slickensides, fracture surfaces are curved and smooth	26		Broken .79 / 1.22	65	.78 / 1.52	Sample #2 for testing 26.02 to 26.20
			LC			64	26.76
	Medium Grained Sandstone Moderately well sorted, arkosic, silica cemented sandstone, slightly weathered, soft, light to medium gray (2.5 Y 6/0-5/0) mottled, low angle fractures are irregular and rough with no coating or filling, vertical fractures undulating, smooth, highly polished with subhorizontal slickensides						Box 6
27		27		1.40 / 1.52	92	1.00 / 1.52	
28		28	LC			66	28.38
29	Extremely fragmented and friable	29		1.25 / 1.52	82	.69 / 1.52	
				Broken		45	
30		30	LC				29.90 Box 7

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Datum USGS Cholame Valley 7.5' quadrangle Geologist J. Hengesh/C. Taylor Water Level 41.5m

DEPTH (M)	DESCRIPTION	DEPTH (M)	GRAPHIC LOG	CORE REC./RUN	% REC.	RQD %	NOTES
			LC		92	70	Box 9 40.54
41	SANDSTONE SLIGHTLY WEATHERED Moderately well sorted, arkosic, silica cemented sandstone, slightly weathered, soft, gray to dark gray (2.5 Y 4/0-5/0) mottled	41		1.52/1.52	100	1.50/1.52 99	
42		42					42.06
43	Many mechanical breaks in center portion of run, friable, crushed	43	MB	1.48/1.52	99	.53/1.52 35	43.58
44		44		1.51/1.52	99	.92/1.52 61	Box 10
45		45					45.10 Sample #3 for testing 45.68 to 45.79
46	This portion of run is crushed and friable	46	MB	.91/.91	100	.33/.91 36	46.01
47		47		1.52/1.52	100	.16/1.52 11	47.53
48		48		1.49/1.52	98	.98/1.52 64	Box 11
49		49	LC				49.05
50		50		1.43/1.52	94	.94/1.52 62	

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Datum USGS Cholame Valley 7.5' quadrangle Geologist J. Hengesh/C. Taylor Water Level 41.5m'

DEPTH (M)	DESCRIPTION	DEPTH (M)	GRAPHIC LOG	CORE REC./RUN	% REC.	RQD %	NOTES
	Medium Grained Sandstone As above, fracture is planar, smooth clay filled and slickensided			1.52/1.52	100	1.29/1.52 85	60.08
61		61					61.60
	Medium to Fine Grained Sandstone Well sorted, silica cemented arkosic sandstone, slightly weathered to fresh, gray (5 Y 6/1), soft, irregular clay seams are scatterd throughout			1.41/1.52	93	1.41/1.52 93	Box 14
62		62					
.63		63	LC				63.22
	Medium Grained Sandstone Moderately well sorted, silica cemented, arkosic sandstone, slightly weathered to fresh, gray, soft to very soft, fewer clay seams than above, fracture is planar, stepped, slickensided, clay coated			.91/.91	100	100	
64		64					64.13
	Fracture zone, very soft, friable			1.00/1.52	66	.63/1.52 41	
65		65	LC				65.65
	Fine to Medium Grained Sandstone As above, slightly finer grain size very soft			1.03/1.52	66	.98/1.52 64	
66		66					
	As above, slightly firmer, soft						67.17
67		67					
	Medium Grained Sandstone As above, soft to very soft, slight increase in grain size .66 m into run, small fractures are irregular stepped and calcite filled			1.22/1.22	100	.5/1.52 41	Box 15
68		68					
	Fracture is planar, smooth, clay coated with poorly developed slickensides			.31 .31	100	61	68.39 68.70
69		69		1.52/1.52	100	1.52/1.52 100	
	Fractures are planar rough, calcite filled, slight increase in grain size at bottom of run						
70		70					

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Datum USGS Cholame Valley 7.5' quadrangle Geologist J. Hengesh/C. Taylor Water Level 41.5m

DEPTH (M)	DESCRIPTION	DEPTH (M)	GRAPHIC LOG	CORE REC./RUN	% REC.	RQD %	NOTES
	Gravelly Sandstone Poorly sorted, silica cemented, fine grained sandstone with small gravels fresh, moderately hard, fractures are undulating rough and partly calcite filled, mechanical breaks are common	81		1.52 / 1.52	100	1.20 / 1.52 79	Box 18 81.48
82	CONGLOMERATE Sandy Conglomerate Poorly sorted, silica cemented, moderately hard, higher proportion of gravel than above Gravelly Sandstone As above, though contains fewer gravels	82		1.52 / 1.52	100	1.28 / 1.52 84	83.00 Sample #6 for testing 83.70 to 83.79
84	SANDSTONE Clayey Fine Grained Sandstone Moderately sorted, clayey, silica cemented arkosic sandstone, slightly weathered to fresh, soft to moderately hard	84		1.52 / 1.52	100	1.29 / 1.52 85	Box 19 84.52
85		85	70°	1.52 / 1.52	100	1.22 / 1.52 80	
86	CLAYEY FAULT GOUGE Very dark green, extremely friable sheared clay, many polished, stepped slickensided fractures at 70°, many calcite filled veins Moderately hard zone at .95 m into run then back to friable clay	86		1.52 / 1.52	100	.79 / 1.52 52	86.04 87.56
88		88		1.15 / 1.52	76	.16 / 1.52 11	Box 20 89.08
89	Fractured, soft, crumbly	89		1.20 / 1.52	79	0	Sample #7 for testing 89.50 to 89.70
90		90					

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Datum USGS Cholame Valley 7.5' quadrangle Geologist J. Hengesh/C. Taylor Water Level 41.5m

DEPTH (M)	DESCRIPTION	DEPTH (M)	GRAPHIC LOG	CORE REC./RUN	% REC.	RQD %	NOTES
101	Medium Grained Sandstone Moderately well sorted, silica cemented, arkosic sandstone, core is fresh, soft, as above, occasional minor discoloration	101		1.52/1.52	100	1.28/1.52 84	101.24
102		102	LC	1.32/1.52	87	.43/1.52 28	Box 23 102.76
103		103		1.49/1.52	98	1.45/1.52 95	
104		104	LC				104.28
105		105	LC	1.26/1.52	83	.57/1.52 38	105.80
106		106		1.22/1.22	100	1.17/1.22 96	Box 24 107.22
107	This clay seams running subvertically through core	107					
108		108	LC	1.38/1.52	91	.56/1.52 37	108.74
109		109		1.48/1.52	97	1.20/1.52 79	
110		110					