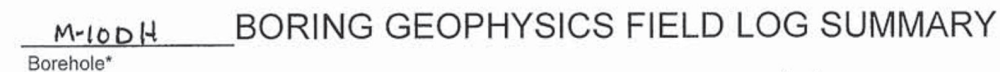


APPENDIX E

BORING GEOPHYSICAL LOGGING

FIELD DATA LOGS



LOGGING CREW: V. Gonzalez, C. Carter

[illegible]

Ph (951) 349-1234 Ex (951) 349-1236

ELOG FIELD LOG REV 1.1a



M-10DH ELOG FIELD LOG

Borehole*

SITE*: North Anna DATE*: 9/16/2009
CLIENT*: Mactec JOB*: 9333
AUTHOR*: V. Gonzalez PAGE: 1 OF 2

CONTACT: _____ PHONE: Off Cell

CONTACT: _____ PHONE: Off Cell

CONTACT: _____ PHONE: Off Cell

CONTACT: _____ PHONE: Off Cell

COMPANY: _____

GENERAL SITE CONDITIONS/LOCATION: _____

COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____
BOREHOLE CONSTRUCTION: CASED _____ UNCASD X
DIAMETERS AND DEPTH RANGES: 3.8" 0 TO 201.9 FT; _____ TO _____

BOREHOLE TOTAL DEPTH AS DRILLED*: 201.9 FT

SURFACE CASING?: YES X DEPTH TO BOTTOM OF CASING 89.8 FT NO _____
DEPTH TO BEDROCK: ~ 90 DEPTH TO WATER TABLE: N/A
BOREHOLE FLUID: WATER X; FRESH WATER MUD _____; SALT WATER MUD _____;
OTHER: _____

DEPTH TO BOREHOLE FLUID: N/A TIME SINCE LAST CIRCULATION: N/A

LOGGING CREW: V. Gonzalez, C. Carter
VEHICLE(S) USED AND MILEAGE: _____
MOBILIZED FROM: Fredericksburg, VA DEPARTURE TIME: 6:15
ARRIVED ON SITE: 7:15
STANDBY TIME: N/A CAUSE: _____

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

ELOG FIELD LOG REV 1.1a



M-10DH ELOG FIELD LOG
Borehole*

SITE*: North Anna DATE*: 9/16/2009
CLIENT*: Mactec JOB*: 9333
AUTHOR*: V Gonzalez PAGE: PAGE 2 OF 2

WINCH: COMPROBE ☐ SILVER ☒ OYO ☐ RG ☐ OTHER ☐
MICROLOGGER* 5310 ☐ 5772 ☒ OTHER ☐
ELOG PROBE* 5490 ☒ OTHER ☐
SHEAVE* COMPROBE ☐ OYO 101 ☐ 102 ☒ 103 ☐ RG ☐

PROBE LENGTH	2.50M(8.20 FT)	
PLUS YOKE 10.0M (32.8 FT)*	<u>32.8 FT</u>	
MINUS CASING STICK-UP*	<u>1.5 FT</u>	
DEPTH REF. OFFSET AT START*	<u>39.3 FT</u>	} REF TO GROUND SURFACE
DEPTH REF. OFFSET AT END*	<u>39.45 FT</u>	
AFTER SURVEY DEPTH ERROR*	<u>0.05 FT</u>	

LOG NAME*	START DEPTH*	START TIME	END DEPTH*	END TIME
<u>M10DH ELOG UP01</u>	<u>200.1</u>	<u>13:35</u>	<u>~ 86 FT</u>	<u>13:45</u>
<u>M10DH ELOG TEST 01</u>	<u>N/A</u>	<u>13:03</u>	<u>N/A</u>	<u>13:05</u>

MAINTENANCE PERFORMED ON SITE*: N/A (N/A if none)

EQUIPMENT PROBLEMS OR FAILURES*: N/A (N/A if none)

SUGGESTIONS, ADDITIONS, CHANGES: _____

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

P-S FIELD LOG REV V1.4



M-10DH

P-S SUSPENSION VELOCITY FIELD LOG REV 1.4

Borehole

CORRESPONDING P-S SUSPENSION PROCEDURE REV 1.4.

SITE*: North Anna DATE*: 9/16/2009
CLIENT*: Mactec JOB*: 9333
AUTHOR*: V Gonzalez PAGE 1 OF * 4

CONTACT: _____ PHONE: Off Cell _____

CONTACT: _____ PHONE: Off Cell _____

CONTACT: _____ PHONE: Off Cell _____

CONTACT: _____ PHONE: Off Cell _____

DIRECTIONS TO SITE: _____

GENERAL SITE CONDITIONS/LOCATION: _____

COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____

BOREHOLE CONSTRUCTION*: CASED _____ UNCASED x

DIAMETERS AND DEPTH RANGES*: 3.8" 0 TO 201.9 Ft ; _____ TO _____

BOREHOLE TOTAL DEPTH AS DRILLED*: 201.9 Ft

SURFACE CASING?: x DEPTH TO BOTTOM OF CASING 89.8 Ft ; NO _____

DEPTH TO BEDROCK: ~90 DEPTH TO WATER TABLE: N/A

BOREHOLE FLUID: WATER x ; FRESH WATER MUD _____ ; SALT WATER MUD; _____

OTHER: _____

DEPTH TO BOREHOLE FLUID*: N/A TIME SINCE LAST CIRCULATION: N/A

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

GEOVision Geophysical Services

1124 Olympic Drive, Corona, CA 92881 Ph (951) 549-1234 Fx (951) 549-1236



P-S FIELD LOG REV V1.4

M-10DH **P-S SUSPENSION VELOCITY FIELD LOG REV 1.4**

Borehole

CORRESPONDING P-S SUSPENSION PROCEDURE REV 1.4.

SITE*: North Anna DATE*: 9/16/2009
CLIENT*: mactec JOB*: 9333
AUTHOR*: V Gonzalez PAGE 2 OF 4

LOGGING CREW*: V Gonzalez, C. Carter
MOBILIZED FROM: Fredericksburg, VA DEPARTURE TIME: 6:15
ARRIVED ON SITE: 7:15
STANDBY TIME: N/A CAUSE: _____
LOGGING STARTED: 14:24 LOGGING COMPLETED: 15:11

BATTERIES CHANGED BEFORE LOGGING: YES _____; NO ☒; STORED WITH NEW _____
WINCH _____ COMPROBE ☐ GREY ☒ OYO ☐ RG ☐ OTH _____
INSTRUMENT* OYO 12004 ☐ 15014 ☐ 19029 ☐ RG 160023 ☒ 160024 ☐
RECEIVER S/N* 12008 ☐ 20042 ☐ 26066 ☐ 11001 ☐ 23053 ☐ 30086 ☒
ISOLATION TUBE S/N* 300083 ☒ 24053 ☐ 28068 ☐ 28072 ☐ 2M _____
SHEAVE* COMPROBE ☐ OYO 101 ☐ 102 ☒ 103 ☐ RG ☐
MICROLOGGER* 5310 ☐ 5772 ☒ NOT APPLICABLE (OYO) ☐
PROBE OFFSET* OYO 2.0M ☐ RG 2.5M ☒
MINUS CASING STICK-UP* 0.46m
DEPTH REF. OFFSET AT START* 2.04m
DEPTH REF. OFFSET AT END* 2.03m
AFTER SURVEY DEPTH ERROR* 0.01m
} REF TO GROUND SURFACE

LOG NAME*	START DEPTH*	START TIME	END DEPTH*	END TIME
<u>M10DHSUSPDOWN01</u>	<u>28.0m</u>	<u>14:24</u>	<u>57.0m</u>	<u>15:11</u>

MAINTENANCE PERFORMED ON SITE*: N/A (N/A if none)

EQUIPMENT PROBLEMS OR FAILURES*: N/A (N/A if none)

DEVIATIONS FROM TEST PLAN*: N/A (N/A if none)

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

GEOVision Geophysical Services

1124 Olympic Drive, Corona, CA 92881 Ph (951) 549-1234 Fx (951) 549-1236

P-S FIELD LOG REV 1.4

M-10 DH **GEOVISION SUSPENSION LOGGING FIELD NOTES**

SITE*: North Anna DATE*: 9/16/2009
CLIENT*: Mactec JOB*: 9333
AUTHOR*: V Gonzalez PAGE* 3 OF 4

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO*	FILTERED FILE NO* (if any)	COMMENTS CASING, WATER, ROCK, ETC
20.5	67.26			
21.0	68.90			
21.5	70.54			
22.0	72.18			
22.5	73.82			
23.0	75.46			
23.5	77.10			
24.0	78.74			
24.5	80.38			
25.0	82.02			
25.5	83.66			
26.0	85.30			
26.5	86.94			
27.0	88.58			
27.5	90.22			
28.0	91.86	001		14:24
28.5	93.50	002		
29.0	95.14	003		
29.5	96.78	004		
30.0	98.43	005		
30.5	100.07	006		
31.0	101.71	007		
31.5	103.35	008		
32.0	104.99	009		
32.5	106.63	010		
33.0	108.27	011		
33.5	109.91	012		
34.0	111.55	013		
34.5	113.19	014		
35.0	114.83	015		
35.5	116.47	016		
36.0	118.11	017		
36.5	119.75	018		
37.0	121.39	019		
37.5	123.03	020		
38.0	124.67	021		
38.5	126.31	022		
39.0	127.95	023		
39.5	129.59	024		
40.0	131.23	025		

P-S FIELD LOG REV 1.4

M-10 Dth **GEOVISION SUSPENSION LOGGING FIELD NOTES**

SITE*: North Anna DATE*: 9/16/2009
CLIENT*: Mactec JOB*: 9333
AUTHOR*: V Gonzalez PAGE* 4 OF 4

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO*.	FILTERED FILE NO*. (if any)	COMMENTS CASING, WATER, ROCK, ETC
40.5	132.87	026		
41.0	134.51	027		
41.5	136.15	028		
42.0	137.80	029		
42.5	139.44	030		
43.0	141.08	031		
43.5	142.72	032		
44.0	144.36	033		
44.5	146.00	034		
45.0	147.64	035		
45.5	149.28	036		
46.0	150.92	037		
46.5	152.56	038		
47.0	154.20	039		
47.5	155.84	040		
48.0	157.48	041		
48.5	159.12	042		
49.0	160.76	043		
49.5	162.40	044		
50.0	164.04	045		
50.5	165.68	046		
51.0	167.32	047		
51.5	168.96	048		
52.0	170.60	049		
52.5	172.24	050		
53.0	173.88	051		
53.5	175.52	052		
54.0	177.17	053		
54.5	178.81	054		
55.0	180.45	055		
55.5	182.09	056		
56.0	183.73	057		
56.5	185.37	058		
57.0	187.01	059		15:11
57.5	188.65			
58.0	190.29			
58.5	191.93			
59.0	193.57			
59.5	195.21			
60.0	196.85			

ACOUSTIC TELEVIEWER LOG FORM 1.1.pdf



M-16DH ACOUSTIC TELEVIEWER FIELD LOG Rev 1.1

Borehole*

GEOVISION HI-RES ACOUSTIC TELEVIEWER PROCEDURE V1.0

SITE*: North Anna DATE*: 9/16/2009
CLIENT*: Mactec JOB*: 9333
AUTHOR*: V Gonzalez PAGE 1 OF 2
REVIEWER: _____ (post field work)

CONTACT: _____ PHONE: Off Cell

CONTACT: _____ PHONE: Off Cell

DRILLER _____ PHONE: Off Cell
COMPANY: _____

GENERAL SITE CONDITIONS/LOCATION: _____

COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____
BOREHOLE CONSTRUCTION: CASED _____ UNCASD X
DIAMETERS AND DEPTH RANGES: 3.6" 0 TO 201.9 FT; _____ TO _____

BOREHOLE TOTAL DEPTH AS DRILLED*: 201.9 FT

SURFACE CASING?: YES X DEPTH TO BOTTOM OF CASING 89.8 FT NO _____
DEPTH TO BEDROCK: ~90 FT DEPTH TO WATER TABLE: N/A
BOREHOLE FLUID: WATER X; FRESH WATER MUD _____; SALT WATER MUD _____;
OTHER: _____
DEPTH TO BOREHOLE FLUID: N/A TIME SINCE LAST CIRCULATION: N/A

LOGGING CREW: V Gonzalez, C. Carter
VEHICLE(S) USED AND MILEAGE: _____
MOBILIZED FROM: Fredericksburg, VA DEPARTURE TIME: 6:15
ARRIVED ON SITE: 7:15
STANDBY TIME: _____ CAUSE: _____

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

ACOUSTIC TELEVIEWER LOG FORM 1.1.pdf



M-10DH ACOUSTIC TELEVIEWER FIELD LOG Rev 1.1

Borehole* GEOVISION HI-RES ACOUSTIC TELEVIEWER PROCEDURE V1.0

SITE*: North Anna DATE*: 9/16/2009
CLIENT*: Mactec JOB*: 9333
AUTHOR*: V Gonzalez PAGE 2 OF 2
REVIEWER*: _____ (post field work)

WINCH: _____ COMPROBE _____ SILVER X OYO _____ OTHER _____
MICROLOGGER* 5310 _____ 5772 X _____
TELEVIEWER* ACOUSTIC #5174 _____ OTHER 6641 _____
SHEAVE* COMPROBE _____ OYO 101 _____ 102 X 103 _____ RG _____

PROBE TILT TEST* 88.22 BRUNTON TILT* 88
PROBE TILT TEST* 17.76 BRUNTON TILT* 18
PROBE TILT TEST* 42.90 BRUNTON TILT* 43 AFTER LOG* Yes
PROBE AZIMUTH TEST* 147.5 BRUNTON AZIMUTH* 153
PROBE AZIMUTH TEST* 258.7 BRUNTON AZIMUTH* 248
PROBE AZIMUTH TEST* 180.3 BRUNTON AZIMUTH* 179 AFTER LOG* Yes

PROBE OFFSET*	1.44M(4.72FT)	} REF TO GROUND SURFACE
MINUS CASING STICK-UP*	<u>1.50 FT</u>	
DEPTH REF. OFFSET AT START*	<u>3.22</u>	
DEPTH REF. OFFSET AT END*	<u>3.16</u>	
AFTER SURVEY DEPTH ERROR*	<u>0.06 FT</u>	

LOG NAME*	START DEPTH*	START TIME	END DEPTH*	END TIME
<u>MODHAWUP01</u>	<u>196.9 FT</u>	<u>16:15</u>	<u>86.9 FT</u>	<u>16:52</u>

MAINTENANCE PERFORMED ON SITE*: _____ (N/A if none)

DEVIATION FROM PROCEDURE (IF ANY) OR EQUIPMENT PROBLEMS OR FAILURES*(N/A if none)

1. Unmarked utilities and grounding grid around borehole and surroundings which may have affected probe compass during pre-log testing.
2. sludge at ~197 FT. SUBMERGED PROBE INITIALLY AND THEN RAISED TO ~100 FT and re lowered to ~197 to clean off probe window in borehole water. Reset at ~197 to begin logging run upward.

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL



M-10D14
Borehole*

CALIPER FIELD LOG REV 1.2.PDF

CALIPER FIELD LOG

Procedure ASTM D6167-97(2004)

SITE*: North Anna DATE*: 9/16/2009
CLIENT*: Mactec JOB*: 9333
AUTHOR*: V. Gonzalez PAGE: 1 OF 2

CONTACT: _____ PHONE: Off Cell

CONTACT: _____ PHONE: Off Cell

CONTACT: _____ PHONE: Off Cell

DRILLER _____ PHONE: Off Cell
COMPANY: _____

GENERAL SITE CONDITIONS/LOCATION: _____

COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____

BOREHOLE CONSTRUCTION: CASED _____ UNCASD _____

DIAMETERS AND DEPTH RANGES: 3.8" 0 TO 201.9 FT; _____ TO _____

BOREHOLE TOTAL DEPTH AS DRILLED*: 201.9 FT

SURFACE CASING?: YES X DEPTH TO BOTTOM OF CASING 89.8 FT; NO _____

DEPTH TO BEDROCK: ~90 FT DEPTH TO WATER TABLE: N/A

BOREHOLE FLUID: WATER X; FRESH WATER MUD _____; SALT WATER MUD _____;

OTHER: _____

DEPTH TO BOREHOLE FLUID: N/A TIME SINCE LAST CIRCULATION: N/A

LOGGING CREW: V. Gonzalez, C. Carter

VEHICLE(S) USED AND MILEAGE: _____

MOBILIZED FROM: Frederickburg, VA DEPARTURE TIME: 6:15

ARRIVED ON SITE: 7:15

STANDBY TIME: _____ CAUSE: _____

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL



CALIPER FIELD LOG REV 1.2.PDF

M-10DH

Borehole*

CALIPER FIELD LOG

Procedure ASTM D6167-97(2004)

SITE*: North Anna DATE*: 9/16/2009
CLIENT*: Mactec JOB*: 9333
AUTHOR*: V. Gonzalez PAGE: PAGE 2 OF 2

WINCH: _____ COMPROBE _____ SILVER ☒ OYO _____ RG _____ OTHER _____
MICROLOGGER* 5310 ☐ 5772 ☒ OTHER _____
CALIPER PROBE* 5368 ☐ OTHER 6621
SHEAVE* COMPROBE ☐ OYO 101 ☐ 102 ☒ 103 ☐ RG ☐

PROBE OFFSET	2.08M(6.82 FT)	12 IN MAX
MINUS CASING STICK-UP*	<u>1.50 ft</u>	
DEPTH REF. OFFSET AT START*	<u>5.32 ft</u>	} REF TO GROUND SURFACE
DEPTH REF. OFFSET AT END*	<u>5.25 ft</u>	
AFTER SURVEY DEPTH ERROR*	<u>0.07 ft</u>	

LOG NAME*	START DEPTH*	START TIME*	END DEPTH*	END TIME*
<u>M10DHCALTEST01</u>	<u>N/A</u>	<u>17:09</u>	<u>N/A</u>	<u>17:11</u>
<u>M10DHCALUP01</u>	<u>198.8</u>	<u>17:27</u>	<u>84</u>	<u>17:38</u>
<u>M10DHCALTEST02</u>	<u>N/A</u>	<u>17:50</u>	<u>N/A</u>	<u>17:51</u>

CALIBRATION PLATE S/N 201

FILE NAME	AS BUILT			PVC FITTING
	1.968 IN (50 MM)	3.937 IN (100 MM)	8.000 IN (203.2 MM)	4.504 IN (114.4 MM)
AS MEAS.* <u>M10DHCALTEST01</u>	<u>2.02</u>	<u>3.96</u>	<u>8.03</u>	<u>4.54</u>
AS MEAS.* <u>M10DHCALTEST02</u>	<u>2.02</u>	<u>4.00</u>	<u>8.06</u>	<u>4.59</u>
AS MEAS.				
AS MEAS.				
AS MEAS.				
AS MEAS.				

MAINTENANCE PERFORMED ON SITE*: _____ (N/A if none)

EQUIPMENT PROBLEMS OR FAILURES*: _____ (N/A if none)

SUGGESTIONS, ADDITIONS, CHANGES: _____

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

GEOVision Geophysical Services

1124 Olympic Drive Corona, CA 92881

Ph (951) 549-1234 Fx (951) 549-1236

Borehole*

DATE*: 9/17/09

JOB*: 9333

PAGE*: 1 OF 1 cc 8/24/09

PHONE:

UNCASED X

BOREHOLE TOTAL DEPTH AS DRILLED*: 201.9 ft

DEPTH TO BEDROCK: ~90 ft

BOREHOLE FLUID: WATER _____; FRESH WATER MUD X; SALT WATER MUD _____;

u 9/21/09

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

Ph (951) 549-1234 Fx (951) 549-1236

ELOG FIELD LOG REV 1.1a



M-1004

ELOG FIELD LOG

SITE*: North Anna Borehole*
CLIENT*: MACTEC
AUTHOR*: C. Carter
DATE*: 9/17/09
JOB*: 9333
PAGE: 1 OF 2

CONTACT: _____ PHONE: Off Cell
CONTACT: _____ PHONE: Off Cell
CONTACT: _____ PHONE: Off Cell
CONTACT: _____ PHONE: Off Cell
COMPANY: _____

GENERAL SITE CONDITIONS/LOCATION: _____

COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____
BOREHOLE CONSTRUCTION: CASED _____ UNCASD X
DIAMETERS AND DEPTH RANGES: 3.78 0 TO 102.9 ft; _____ TO _____

BOREHOLE TOTAL DEPTH AS DRILLED*: 102.9 ft

SURFACE CASING?: YES X DEPTH TO BOTTOM OF CASING 7 ft; NO _____
DEPTH TO BEDROCK: ~100 ft DEPTH TO WATER TABLE: ~25 ft
BOREHOLE FLUID: WATER _____; FRESH WATER MUD X; SALT WATER MUD _____;
OTHER: _____

DEPTH TO BOREHOLE FLUID: _____ TIME SINCE LAST CIRCULATION: NA

LOGGING CREW: C. Carter, V. Gonzalez
VEHICLE(S) USED AND MILEAGE: _____
MOBILIZED FROM: Fredricksburg DEPARTURE TIME: 6:15 am
ARRIVED ON SITE: 7 am
STANDBY TIME: NA CAUSE: _____

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

ELOG FIELD LOG REV 1.1a



M-10DH ELOG FIELD LOG
Borehole*

SITE*: North Anna DATE*: 9/17/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Cortel PAGE: PAGE 2 OF 2

WINCH: _____ COMPROBE _____ SILVER ☒ OYO _____ RG _____ OTHER _____
MICROLOGGER* 5310 ☐ 5772 ☒ OTHER _____
ELOG PROBE* 5490 ☒ OTHER _____
SHEAVE* COMPROBE ☐ OYO 101 ☐ 102 ☒ 103 ☐ RG ☐

PROBE LENGTH	2.50M(8.20 FT)	
PLUS YOKE 10.0M (32.8 FT)*	<u>72.8</u>	
MINUS CASING STICK-UP*	<u>2.83</u>	
DEPTH REF. OFFSET AT START*	<u>38.17</u>	} REF TO GROUND SURFACE
DEPTH REF. OFFSET AT END*	<u>38.20</u>	
AFTER SURVEY DEPTH ERROR*	<u>.03</u>	

LOG NAME*	START DEPTH*	START TIME	END DEPTH*	END TIME
M10DH ELOG TEST 02	NA	3:48	NA	3:49
M10DH ELOG UP 02	105.55 ft	4:02	36.6 ft	4:08

MAINTENANCE PERFORMED ON SITE*: NA (N/A if none)

EQUIPMENT PROBLEMS OR FAILURES*: NA (N/A if none)

SUGGESTIONS, ADDITIONS, CHANGES: _____

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

P-S FIELD LOG REV V1.4



M-10DH

P-S SUSPENSION VELOCITY FIELD LOG REV 1.4

Borehole

CORRESPONDING P-S SUSPENSION PROCEDURE REV 1.4.

SITE*: North Anna DATE*: 9/17/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Carter PAGE 1 OF * 4

CONTACT: _____ PHONE: Off Cell _____
CONTACT: _____ PHONE: Off Cell _____
CONTACT: _____ PHONE: Off Cell _____
CONTACT: _____ PHONE: Off Cell _____

DIRECTIONS TO SITE: _____

GENERAL SITE CONDITIONS/LOCATION: _____

COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____
BOREHOLE CONSTRUCTION*: CASED _____ UNCASD X
DIAMETERS AND DEPTH RANGES*: 3.18" 0 TO 201.9 ft; _____ TO _____
BOREHOLE TOTAL DEPTH AS DRILLED*: 201.9 ft
SURFACE CASING?: yes DEPTH TO BOTTOM OF CASING 7 ft; NO _____
DEPTH TO BEDROCK: ~90 ft DEPTH TO WATER TABLE: ~25 ft
BOREHOLE FLUID: WATER _____; FRESH WATER MUD X; SALT WATER MUD; _____
OTHER: _____
DEPTH TO BOREHOLE FLUID*: Ø TIME SINCE LAST CIRCULATION: N/A

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

GEOVision Geophysical Services

1124 Olympic Drive, Corona, CA 92881 Ph (951) 549-1234 Fx (951) 549-1236



P-S FIELD LOG REV V1.4

M-100A P-S SUSPENSION VELOCITY FIELD LOG REV 1.4

Borehole

CORRESPONDING P-S SUSPENSION PROCEDURE REV 1.4.

SITE*: North Anna DATE*: 5/17/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Carter PAGE 2 OF * 4

LOGGING CREW*: C. Carter V. Gonzalez
MOBILIZED FROM: Fredricksburg DEPARTURE TIME: 6:15 am
ARRIVED ON SITE: 7 am
STANDBY TIME: NA CAUSE: _____
LOGGING STARTED: 4:27 LOGGING COMPLETED: 4:57 pm

BATTERIES CHANGED BEFORE LOGGING: YES _____; NO X; STORED WITH NEW _____

WINCH _____ COMPROBE ☐ GREY ☒ OYO ☐ RG ☐ OTH _____
INSTRUMENT* OYO 12004 ☐ 15014 ☐ 19029 ☐ RG 160023 ☒ 160024 ☐
RECEIVER S/N* 12008 ☐ 20042 ☐ 26066 ☐ 11001 ☐ 23053 ☐ 30086 ☒
ISOLATION TUBE S/N* 300083 ☒ 24053 ☐ 28068 ☐ 28072 ☐ 2M _____
SHEAVE* COMPROBE ☐ OYO 101 ☐ 102 ☒ 103 ☐ RG ☐
MICROLOGGER* 5310 ☐ 5772 ☒ NOT APPLICABLE (OYO) ☐
PROBE OFFSET* OYO 2.0M ☐ RG 2.5M ☒
MINUS CASING STICK-UP* .86 m
DEPTH REF. OFFSET AT START* 1.64 m
DEPTH REF. OFFSET AT END* 1.65 m
AFTER SURVEY DEPTH ERROR* 0.01 m

REF TO GROUND SURFACE

LOG NAME*	START DEPTH*	START TIME	END DEPTH *	END TIME
	<u>2.5 m</u>	<u>4:27</u>	<u>30.0 m</u>	<u>4:57 pm</u>

MAINTENANCE PERFORMED ON SITE*: NA (N/A if none)

EQUIPMENT PROBLEMS OR FAILURES*: NA (N/A if none)

DEVIATIONS FROM TEST PLAN*: NA (N/A if none)

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

GEOVision Geophysical Services

1124 Olympic Drive, Corona, CA 92881 Ph (951) 549-1234 Fx (951) 549-1236

P-S FIELD LOG REV 1.4

M-10D#

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE*: North Anna

DATE*: 9/17/09

CLIENT*: MACTEC

JOB*: 9333

AUTHOR*: C. Corbett

PAGE* 3 OF 4

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO*	FILTERED FILE NO* (if any)	COMMENTS CASING, WATER, ROCK, ETC
0.5	1.64			
1.0	3.28			
1.5	4.92			
2.0	6.56	CC 9/17/09		
2.5	8.20	200		4:27
3.0	9.84	201		
3.5	11.48	202		
4.0	13.12	203		
4.5	14.76	204		
5.0	16.40	205		
5.5	18.04	206		
6.0	19.69	207		
6.5	21.33	208		
7.0	22.97	209		
7.5	24.61	210		
8.0	26.25	211		
8.5	27.89	212		
9.0	29.53	213		
9.5	31.17	214		
10.0	32.81	215		
10.5	34.45	216		
11.0	36.09	217		
11.5	37.73	218		
12.0	39.37	219		
12.5	41.01	220		
13.0	42.65	221		
13.5	44.29	222		
14.0	45.93	223		
14.5	47.57	224		
15.0	49.21	225		
15.5	50.85	226		
16.0	52.49	227		
16.5	54.13	228		
17.0	55.77	229		
17.5	57.41	230		
18.0	59.06	231		
18.5	60.70	232		
19.0	62.34	233		
19.5	63.98	234		
20.0	65.62	235		

M-10Dth

P-S FIELD LOG REV 1.4

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE*: North Anna

DATE*: 9/17/09

CLIENT*: MACTEC

JOB*: 9333

AUTHOR*: C. Carter

PAGE* 4 OF 4

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO*.	FILTERED FILE NO*. (if any)	COMMENTS CASING, WATER, ROCK, ETC
20.5	67.26	236		
21.0	68.90	237		
21.5	70.54	238		
22.0	72.18	239		
22.5	73.82	240		
23.0	75.46	241		
23.5	77.10	242		
24.0	78.74	243		
24.5	80.38	244		
25.0	82.02	245		
25.5	83.66	246		
26.0	85.30	247		
26.5	86.94	248		
27.0	88.58	249		
27.5	90.22	250		
28.0	91.86	251		
28.5	93.50	252		
29.0	95.14	253		
29.5	96.78	254		
30.0	98.43	255		4:57
30.5	100.07			
31.0	101.71			
31.5	103.35			
32.0	104.99			
32.5	106.63			
33.0	108.27			
33.5	109.91			
34.0	111.55			
34.5	113.19			
35.0	114.83			
35.5	116.47			
36.0	118.11			
36.5	119.75			
37.0	121.39			
37.5	123.03			
38.0	124.67			
38.5	126.31			
39.0	127.95			
39.5	129.59			
40.0	131.23			



CALIPER FIELD LOG REV 1.2.PDF

M-100H
Borehole*

CALIPER FIELD LOG

Procedure ASTM D6167-97(2004)

SITE*: North Anna DATE*: 9/17/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Carter PAGE: 1 OF 2

CONTACT: _____ PHONE: Off Cell

CONTACT: _____ PHONE: Off Cell

CONTACT: _____ PHONE: Off Cell

DRILLER: _____ PHONE: Off Cell
COMPANY: _____

GENERAL SITE CONDITIONS/LOCATION: _____

COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____
BOREHOLE CONSTRUCTION: CASED _____ UNCASD X
DIAMETERS AND DEPTH RANGES: 3.18" 0 TO 201.9 ft; _____ TO _____

BOREHOLE TOTAL DEPTH AS DRILLED*: 201.9 ft

SURFACE CASING?: YES X DEPTH TO BOTTOM OF CASING 7 ft; NO _____
DEPTH TO BEDROCK: ~90 ft DEPTH TO WATER TABLE: ~25
BOREHOLE FLUID: WATER _____; FRESH WATER MUD X; SALT WATER MUD _____;
OTHER: _____
DEPTH TO BOREHOLE FLUID: ~15 ft TIME SINCE LAST CIRCULATION: NA

LOGGING CREW: C. Carter, V. Gonzalez
VEHICLE(S) USED AND MILEAGE: _____
MOBILIZED FROM: Fredricksburg DEPARTURE TIME: 6:15
ARRIVED ON SITE: 7am
STANDBY TIME: NA CAUSE: _____

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL



CALIPER FIELD LOG REV 1.2.PDF

M-10DH

Borehole*

CALIPER FIELD LOG

Procedure ASTM D6167-97(2004)

SITE*: North Anna DATE*: 9/17/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Carter PAGE: PAGE 2 OF 2

WINCH: _____ COMPROBE _____ SILVER ☒ OYO _____ RG _____ OTHER _____
MICROLOGGER* 5310 ☐ 5772 ☒ OTHER _____
CALIPER PROBE* 5368 ☐ OTHER 6621
SHEAVE* COMPROBE ☐ OYO 101 ☐ 102 ☒ 103 ☐ RG ☐

PROBE OFFSET	2.08M(6.82 FT)	12 IN MAX
MINUS CASING STICK-UP*	<u>2.83</u>	
DEPTH REF. OFFSET AT START*	<u>3.99</u>	} REF TO GROUND SURFACE
DEPTH REF. OFFSET AT END*	<u>4.00</u>	
AFTER SURVEY DEPTH ERROR*	<u>.01</u>	

LOG NAME*	START DEPTH*	START TIME*	END DEPTH*	END TIME*
<u>M10DHCACTEST03</u>	<u>NA</u>	<u>5:17</u>	<u>NA</u>	<u>5:20pm</u>
<u>M10DHCACTEST02</u>	<u>100.9 ft</u>	<u>5:33</u>	<u>3.85 ft</u>	<u>5:44pm</u>
<u>M10DHCACTEST04</u>	<u>NA</u>	<u>5:50</u>	<u>NA</u>	<u>5:51</u>

CALIBRATION PLATE S/N 201

FILE NAME	AS BUILT			PVC FITTING
	1.968 IN (50 MM)	3.937 IN (100 MM)	8.000 IN (203.2 MM)	4.504 IN (114.4 MM)
AS MEAS.* <u>M10DHCACTEST03</u>	<u>1.94</u>	<u>3.92</u>	<u>8.00</u>	<u>4.50</u>
AS MEAS.* <u>M10DHCACTEST04</u>	<u>1.96</u>	<u>3.89</u>	<u>7.99</u>	<u>4.51</u>
AS MEAS.				
AS MEAS.				
AS MEAS.				
AS MEAS.				

MAINTENANCE PERFORMED ON SITE*: NA (N/A if none)

EQUIPMENT PROBLEMS OR FAILURES*: NA (N/A if none)

SUGGESTIONS, ADDITIONS, CHANGES: _____

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

GEOVision Geophysical Services

1124 Olympic Drive Corona, CA 92881

Ph (951) 549-1234 Fx (951) 549-1236

BORING SUMMARY LOG REV 1.1a.pdf



M-10DH BORING GEOPHYSICS FIELD LOG SUMMARY
Borehole*

SITE*: North Anna DATE*: 9/17/09, 9/18/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Carter PAGE*: 1 OF 1
CONTACT: _____ PHONE: _____

BOREHOLE CONSTRUCTION: CASED _____ UNCASD ☒
DIAMETERS AND DEPTH RANGES: 3.78" 0 TO 201.9 ft; _____ TO _____
BOREHOLE TOTAL DEPTH AS DRILLED*: 201.9 ft
SURFACE CASING?: YES ☒ DEPTH TO BOTTOM OF CASING 75 ft / 10 ft NO _____
DEPTH TO BEDROCK: ~90 ft
BOREHOLE FLUID: WATER _____; FRESH WATER MUD ☒; SALT WATER MUD _____

LOGGING CREW: C. Carter, V. Gonzalez

cc 9/18/09

LOG TYPE*	FILE NAME*	DEPTH RANGE*	DATE*	TIMES*
ELOG	M10DH ELOG TEST 02	NA	9/16/09	3:48 - 3:49 pm
ELOG	M10DH ELOG UP02	105.55 - 366 ft	9/16/09	4:02 - 4:08 pm
P-S velocity	M10DH SUSP002	2.5 - 30.0 m	9/16/09	4:27 - 4:57 pm
Caliper	M10DH CAL TEST 03	NA	9/16/09	5:17 - 5:20 pm
Caliper	M10DH CAL UP02	100.9 - 385 ft	9/16/09	5:33 - 5:44 pm
Caliper	M10DH CAL TEST 04	NA	9/16/09	5:50 - 5:51 pm
ATV	M10DH ATV P02	99.4 - 2.8 ft	9/18/09	9:33 - 10:04 am
		cc 9/21/09		

Date
9/17/09
9/17/09
9/17/09
9/17/09
9/17/09
9/17/09
9/18/09

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

GEOVision Geophysical Services 1151 Pomona Road, Unit P, Corona, CA 92882 Ph (951) 549-1234 Fx (951) 549-1236

ACOUSTIC TELEVIEWER LOG FORM 1.1.pdf



M-10DH ACOUSTIC TELEVIEWER FIELD LOG Rev 1.1

Borehole*

GEOVISION HI-RES ACOUSTIC TELEVIEWER PROCEDURE V1.0

SITE*: North Anna DATE*: 9/18/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Carter PAGE 1 OF 2
REVIEWER: _____ (post field work)

CONTACT: _____ PHONE: Off Cell

CONTACT: _____ PHONE: Off Cell

DRILLER: _____ PHONE: Off Cell

COMPANY: _____

GENERAL SITE CONDITIONS/LOCATION: _____

COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____

BOREHOLE CONSTRUCTION: CASED _____ UNCASD X

DIAMETERS AND DEPTH RANGES: 3.78" 0 TO 201.9 ft; _____ TO _____

BOREHOLE TOTAL DEPTH AS DRILLED*: 201.9 ft

SURFACE CASING?: YES X DEPTH TO BOTTOM OF CASING 9 ft; NO _____

DEPTH TO BEDROCK: ~90 ft DEPTH TO WATER TABLE: ~25 ft

BOREHOLE FLUID: WATER _____; FRESH WATER MUD X; SALT WATER MUD _____;

OTHER: _____

DEPTH TO BOREHOLE FLUID: 21 ft TIME SINCE LAST CIRCULATION: 9am

LOGGING CREW: C. Carter, V. Gonzalez

VEHICLE(S) USED AND MILEAGE: _____

MOBILIZED FROM: Fredricksburg

DEPARTURE TIME: 6:15

ARRIVED ON SITE: 7:15

STANDBY TIME: 7:30-9am

CAUSE: Drillers cleaning out borehole

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

ACOUSTIC TELEVIEWER LOG FORM 1.1.pdf



M-10DA ACOUSTIC TELEVIEWER FIELD LOG Rev 1.1

Borehole* GEOVISION HI-RES ACOUSTIC TELEVIEWER PROCEDURE V1.0

SITE*: North Anna DATE*: 9/18/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Carter PAGE 2 OF 2
REVIEWER*: _____ (post field work)

WINCH: _____ COMPROBE _____ SILVER ☒ OYO _____ OTHER _____
MICROLOGGER* 5310 5772 ☒
TELEVIEWER* ACOUSTIC #5174 OTHER 6641
SHEAVE* COMPROBE _____ OYO 101 _____ 102 ☒ 103 _____ RG _____

PROBE TILT TEST* 90.66 BRUNTON TILT* 90
PROBE TILT TEST* 24.10 BRUNTON TILT* 24
PROBE TILT TEST* 26.74 BRUNTON TILT* 27 AFTER LOG* yes
PROBE AZIMUTH TEST* 125.30 BRUNTON AZIMUTH* 133
PROBE AZIMUTH TEST* 217.40 BRUNTON AZIMUTH* 211
PROBE AZIMUTH TEST* 152.20 BRUNTON AZIMUTH* 158 AFTER LOG* yes

PROBE OFFSET*	1.44M(4.72FT)	} REF TO GROUND SURFACE
MINUS CASING STICK-UP*	<u>1.92</u>	
DEPTH REF. OFFSET AT START*	<u>2.8</u>	
DEPTH REF. OFFSET AT END*	<u>2.74</u>	
AFTER SURVEY DEPTH ERROR*	<u>.06</u>	

LOG NAME*	START DEPTH*	START TIME	END DEPTH*	END TIME
<u>MIDDHAUV02</u>	<u>99.4 ft</u>	<u>9:33</u>	<u>2.8 ft</u>	<u>10:04</u>

MAINTENANCE PERFORMED ON SITE*: NA (N/A if none)

DEVIATION FROM PROCEDURE (IF ANY) OR EQUIPMENT PROBLEMS OR FAILURES* (N/A if none)

Water level dropped to ~21 ft while running the log. The window got thick clay when it came out of water. We could not fill hole w/ probe in the hole due to unstable borehole condition.

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

BORING SUMMARY LOG REV 1 11/13/09



M-30BH BORING GEOPHYSICS FIELD LOG SUMMARY

Borehole*

SITE*: North Anna DATE*: 9/15/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Carter PAGE*: 1 OF 1
CONTACT: _____ PHONE: _____

BOREHOLE CONSTRUCTION: CASED _____ UNCASD ☒
DIAMETERS AND DEPTH RANGES: 3.78" 0 TO 102.7 ft; _____ TO _____
BOREHOLE TOTAL DEPTH AS DRILLED*: 102.7 ft cc 11/13/09 201.7 ft
SURFACE CASING?: YES ☒ DEPTH TO BOTTOM OF CASING 44 ft; NO _____
DEPTH TO BEDROCK: 45 ft
BOREHOLE FLUID: WATER _____; FRESH WATER MUD ☒; SALT WATER MUD _____

LOGGING CREW: C. Carter, V. Gonzalez

LOG TYPE*	FILE NAME*	DEPTH RANGE*	DATE*	TIMES*
ELOG	M30DH ELOGTEST01	NA	9/15/09	3:05-3:07pm
ELOG	M30DH ELOGVP01	200.45-39.55 ft	9/15/09	3:49-4:05pm
P-S velocity	M30DH SUSPDOWN01	14.0-57.0m	9/15/09	
ELOG	M30DH ELOGVP02	75-39.85 ft	9/15/09	4:11-4:15
P-S velocity	M30DH SUSPDOWN01	14.0-57.0m	9/15/09	4:52-5:40pm

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

GEOVision Geophysical Services

1151 Pomona Road, Unit P, Corona, CA 92882

Ph (951) 549-1234 Ex (951) 549-1236

ELOG FIELD LOG REV 1.1a



M-30 DH

ELOG FIELD LOG

Borehole*

SITE*: North Anna DATE*: 9/15/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Carter PAGE: 1 OF 2

CONTACT: _____ PHONE: Off Cell

CONTACT: _____ PHONE: Off Cell

CONTACT: _____ PHONE: Off Cell

CONTACT: _____ PHONE: Off Cell

COMPANY: _____

GENERAL SITE CONDITIONS/LOCATION: _____

COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____

BOREHOLE CONSTRUCTION: CASED _____ UNCASD X

DIAMETERS AND DEPTH RANGES: 3.78" 0 TO 102.7 ft; _____ TO _____

BOREHOLE TOTAL DEPTH AS DRILLED*: 102.7 ft cc 11/3/09 201.7 ft

SURFACE CASING?: YES X DEPTH TO BOTTOM OF CASING 44 ft; NO _____

DEPTH TO BEDROCK: 45 ft DEPTH TO WATER TABLE: NA

BOREHOLE FLUID: WATER X; FRESH WATER MUD _____; SALT WATER MUD _____

OTHER: _____

DEPTH TO BOREHOLE FLUID: ~4 ft TIME SINCE LAST CIRCULATION: NA

LOGGING CREW: C. Carter, V. Gonzalez

VEHICLE(S) USED AND MILEAGE: Fredericksburg VA cc 9/15/09 cc 9/15/09

cc MOBILIZED FROM: 6:15 am Fredericksburg DEPARTURE TIME: 7:15 am 6:15 am

cc 9/15/09 ARRIVED ON SITE: 7:15 am

STANDBY TIME: NA CAUSE: _____

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

ELOG FIELD LOG REV 1.1a



M-30DH ELOG FIELD LOG
Borehole*

SITE*: North Anna DATE*: 8/15/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Carter PAGE: PAGE 2 OF 2

WINCH: _____ COMPROBE _____ SILVER ☒ OYO _____ RG _____ OTHER _____
MICROLOGGER* 5310 ☐ 5772 ☒ OTHER _____
ELOG PROBE* 5490 ☒ OTHER _____
SHEAVE* COMPROBE ☐ OYO 101 ☐ 102 ☒ 103 ☐ RG ☐

PROBE LENGTH	2.50M(8.20 FT)
PLUS YOKE 10.0M (32.8 FT)*	<u>32.8</u>
MINUS CASING STICK-UP*	<u>1.08</u>
DEPTH REF. OFFSET AT START*	<u>39.92</u>
DEPTH REF. OFFSET AT END*	<u>39.55</u> 39.95
AFTER SURVEY DEPTH ERROR*	<u>.37</u>

REF TO GROUND SURFACE

LOG NAME*	START DEPTH*	START TIME	END DEPTH*	END TIME
M30DH ELOG TEST 01	NA	3:05	NA	3:07
M30DH ELOG VP 01	200.45 ft	3:49	39.55 ft	4:05
M30DH ELOG VP 02	75 ft	4:11	39.85 ft	4:15

MAINTENANCE PERFORMED ON SITE*: NA (N/A if none)

EQUIPMENT PROBLEMS OR FAILURES*: NA (N/A if none)

SUGGESTIONS, ADDITIONS, CHANGES: _____

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

P-S FIELD LOG REV V1.4



M-30DH

P-S SUSPENSION VELOCITY FIELD LOG REV 1.4

Borehole

CORRESPONDING P-S SUSPENSION PROCEDURE REV 1.4.

SITE*: North Anna DATE*: 9/15/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Cartel PAGE 1 OF * 5

CONTACT: _____ PHONE: Off Cell _____

CONTACT: _____ PHONE: Off Cell _____

CONTACT: _____ PHONE: Off Cell _____

CONTACT: _____ PHONE: Off Cell _____

DIRECTIONS TO SITE: _____

GENERAL SITE CONDITIONS/LOCATION: _____

COUNTY: _____ RANGE: _____ TOWNSHIP: _____ SECTION: _____

BOREHOLE CONSTRUCTION*: CASED _____ UNCASD X

DIAMETERS AND DEPTH RANGES*: 3.78" 0 TO 201.7 ft; _____ TO _____

BOREHOLE TOTAL DEPTH AS DRILLED*: 201.7 ft

SURFACE CASING?: yes DEPTH TO BOTTOM OF CASING 44 ft; NO _____

DEPTH TO BEDROCK: 45 ft DEPTH TO WATER TABLE: _____

BOREHOLE FLUID: WATER X; FRESH WATER MUD _____; SALT WATER MUD; _____

OTHER: _____

DEPTH TO BOREHOLE FLUID*: ~17 ft TIME SINCE LAST CIRCULATION: NA

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

GEOVision Geophysical Services

1124 Olympic Drive, Corona, CA 92881 Ph (951) 549-1234 Fx (951) 549-1236



P-S FIELD LOG REV V1.4

M-30BH

P-S SUSPENSION VELOCITY FIELD LOG REV 1.4

Borehole

CORRESPONDING P-S SUSPENSION PROCEDURE REV 1.4.

SITE*: North Anna DATE*: 9/15/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Carter PAGE 2 OF 5

LOGGING CREW*: C. Carter, V. Gonzalez
MOBILIZED FROM: Fredricksburg DEPARTURE TIME: 6:15
ARRIVED ON SITE: 7:15
STANDBY TIME: _____ CAUSE: _____
LOGGING STARTED: _____ LOGGING COMPLETED: _____

BATTERIES CHANGED BEFORE LOGGING: YES _____; NO ☒; STORED WITH NEW _____
WINCH _____ COMPROBE ☐ GREY ☒ OYO ☐ RG ☐ OTH _____
INSTRUMENT* OYO 12004 ☐ 15014 ☐ 19029 ☐ RG 160023 ☒ 160024 ☐
RECEIVER S/N* 12008 ☐ 20042 ☐ 26066 ☐ 11001 ☐ 23053 ☐ 30086 ☒
ISOLATION TUBE S/N* 300083 ☒ 24053 ☐ 28068 ☐ 28072 ☐ 2M _____
SHEAVE* COMPROBE ☐ OYO 101 ☐ 102 ☒ 103 ☐ RG ☐
MICROLOGGER* 5310 ☐ 5772 ☒ NOT APPLICABLE (OYO) ☐
PROBE OFFSET* OYO 2.0M ☐ RG 2.5M ☒
MINUS CASING STICK-UP* .33 m
DEPTH REF. OFFSET AT START* 2.17 m } CC REF TO GROUND SURFACE
DEPTH REF. OFFSET AT END* 2.17 m } 11/3/09
AFTER SURVEY DEPTH ERROR* 0.0 m

LOG NAME*	START DEPTH*	START TIME	END DEPTH*	END TIME
<u>M30 BH SUSPENSION</u>	<u>14.0m</u>	<u>4:52</u>	<u>57.0m</u>	<u>5:40pm</u>

MAINTENANCE PERFORMED ON SITE*: NA (N/A if none)

EQUIPMENT PROBLEMS OR FAILURES*: NA (N/A if none)

DEVIATIONS FROM TEST PLAN*: NA (N/A if none)

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

GEOVision Geophysical Services

1124 Olympic Drive, Corona, CA 92881 Ph (951) 549-1234 Fx (951) 549-1236

P-S FIELD LOG REV 1.4

M-300A **GEOVISION SUSPENSION LOGGING FIELD NOTES**

SITE*: North Anna DATE*: 9/15/09
CLIENT*: MACTEC JOB*: 9333
AUTHOR*: C. Carter PAGE* 3 OF 5

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO*.	FILTERED FILE NO* (if any)	COMMENTS CASING, WATER, ROCK, ETC
0.5	1.64			
1.0	3.28			
1.5	4.92			
2.0	6.56			
2.5	8.20			
3.0	9.84			
3.5	11.48			
4.0	13.12			
4.5	14.76			
5.0	16.40			
5.5	18.04			
6.0	19.69			
6.5	21.33			
7.0	22.97			
7.5	24.61			
8.0	26.25			
8.5	27.89			
9.0	29.53			
9.5	31.17			
10.0	32.81			
10.5	34.45			
11.0	36.09			
11.5	37.73			
12.0	39.37			
12.5	41.01			
13.0	42.65			
13.5	44.29			
14.0	45.93	001		4152
14.5	47.57	2		
15.0	49.21	3		
15.5	50.85	4		
16.0	52.49	5		
16.5	54.13	6		
17.0	55.77	7		
17.5	57.41	8		
18.0	59.06	9		
18.5	60.70	10		
19.0	62.34	11		
19.5	63.98	12		
20.0	65.62	13		

P-S FIELD LOG REV 1.4

M-300H

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE*: North Anna

DATE*: 9/15/09

CLIENT*: MACTEC

JOB*: 9333

AUTHOR*: C. Carter

PAGE* 4 OF 5

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO*	FILTERED FILE NO* (if any)	COMMENTS CASING, WATER, ROCK, ETC
20.5	67.26	14		
21.0	68.90	15		
21.5	70.54	16		
22.0	72.18	17		
22.5	73.82	18		
23.0	75.46	19		
23.5	77.10	20		
24.0	78.74	21		
24.5	80.38	22		
25.0	82.02	23		
25.5	83.66	24		
26.0	85.30	25		
26.5	86.94	26		
27.0	88.58	27		
27.5	90.22	28		
28.0	91.86	29		
28.5	93.50	30		
29.0	95.14	31		
29.5	96.78	32		
30.0	98.43	33		
30.5	100.07	34		
31.0	101.71	35		
31.5	103.35	36		
32.0	104.99	37		
32.5	106.63	38		
33.0	108.27	39		
33.5	109.91	40		
34.0	111.55	41		
34.5	113.19	42		
35.0	114.83	43		
35.5	116.47	44		
36.0	118.11	45		
36.5	119.75	46		
37.0	121.39	47		
37.5	123.03	48		
38.0	124.67	49		
38.5	126.31	SD cc 9/15/09		
39.0	127.95	51		
39.5	129.59	52		
40.0	131.23	53		

M-30DH

P-S FIELD LOG REV 1.4

GEOVISION SUSPENSION LOGGING FIELD NOTES

SITE*: North Anna

DATE*: 9/15/09

CLIENT*: MACTEC

JOB*: 9333

AUTHOR*: C. Carter

PAGE* 5 OF 5

ITEMS WITH * MUST BE COMPLETED. OTHER INFORMATION IS OPTIONAL

DEPTH METERS	DEPTH FEET	UNFILTERED FILE NO*	FILTERED FILE NO*. (if any)	COMMENTS CASING, WATER, ROCK, ETC
40.5	132.87	54		
41.0	134.51	55		
41.5	136.15	56		
42.0	137.80	57		
42.5	139.44	58		
43.0	141.08	59		
43.5	142.72	60		
44.0	144.36	61		
44.5	146.00	62		
45.0	147.64	63		
45.5	149.28	64		
46.0	150.92	65		
46.5	152.56	66		
47.0	154.20	67		
47.5	155.84	68		
48.0	157.48	69		
48.5	159.12	70		
49.0	160.76	71		
49.5	162.40	72		
50.0	164.04	73		
50.5	165.68	74		
51.0	167.32	75		
51.5	168.96	76		
52.0	170.60	77		
52.5	172.24	78		
53.0	173.88	79		
53.5	175.52	80		
54.0	177.17	81		
54.5	178.81	82		
55.0	180.45	83		
55.5	182.09	84		
56.0	183.73	85		
56.5	185.37	86		
57.0	187.01	87		S: 40
57.5	188.65			
58.0	190.29			
58.5	191.93			
59.0	193.57			
59.5	195.21			
60.0	196.85			