**GE** *Vision* 

geophysical services

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B-2305 CALIPER FIE	LD LOG
SITE:_EXELON VICTORIA COUNTY COL DAT CLIENT:_MACTECJOB AUTHOR:_ <del>C. CARTER_R_STELLER_U[10]20</del> PAG	E: <u>11 /18 /87</u> :_7501 E 1 OF 2
CONTACT: ALLAN SHAWCELLPHC	NE:_919-949-1707 NE:301-704-2684
CONTACT:PHC	DNE: DNE: DNE:
PHC	DNE: DNE: DNE:
COMPANY:PHC	DNE:
BOREHOLE DESIGNATION: <u><u><u></u></u><u><u><u></u><u><u></u><u><u></u><u></u><u></u><u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u></u></u></u></u></u>	
BOREHOLE FLUID: WATER; FRESH WATER MUD_ / ; SA	LT WATER MUD; ST CIRCULATION: <u>\$ 1 % H (?</u>
LOGGING CREW: -C. CARTER & STELLER 11/13/07	IME:
GEOVision Geophysical Services 1151 Pomona Road, Unit P, Corona, CA 9288.	2 Ph (951) 549-1234 Fx (951) 549-1236

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,	SITE:_EXELON VICTORIA COUNTY COL_ <u>B-25</u> CLIENT:_MACTEC AUTHOR:_ <del>C. CARTER_ 2. STELLER_ u/j</del>				<u>المامج</u> DATE: <u>المامح</u> JOB:_7501 Jobe: 2 OF 2			
	WINCH: MICROLOG CALIPER PI	GER	5310	SILVER 5772 / OTHER	OYO OTHER	RG/	OTHER	
×	PROBE OF MINUS CAS DEPTH REF DEPTH REF AFTER SUF	ING STICK	AT START AT END	2.08M(6.82 FT 1.71 5.12 '5.10 -0.02'	, ,	10.4%? YES		
			START	START	END	END		
	LOG N	AME	DEPTH	TIME	DEPTH	TIME	· ·	
	82305CALTE	STOI	Φ	18:05	Ø	18:07	÷	
	B2305 CALL		230.01	18:19	5,1	18:42		
	62305 CAU	TESTOZ	Q	18:50	ß	18:5Z		
			ļ					
			1		1	l	]	
	CALIBRATI		0/01 004	[	AS BUILT		PVC FITTING	
	CALIDRATI	UNPLATE	5/N 201	1.968 IN	3.937 IN	8.000 IN	4.507 IN	
	FILE NAME		(50 MM)	(100 MM)	(203.2 MM)	(114.3 MM)		
	AS MEAS.			1.02	3.94	B.04-	4.54	
	AS MEAS.	1 adaman	TREAM	2.81	3.91	8.01	4.54	
	AS MEAS.	57305 CAL	- 16/5/0/2					
	AS MEAS.						1	
	AS MEAS.		*******					

MAINTENANCE PERFORMED ON SITE:\_

EQUIPMENT PROBLEMS OR FAILURES:

SUGGESTIONS, ADDITIONS, CHANGES:

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geophysical services

#### B-2306 BORING GEOPHYSICS FIELD LOG SUMMARY

SITE:_EXELON-VICTORIA CLIENT:_MACTEC AUTHOR:_C. CARTER	DATE: //////// JOB:_7501 PAGE 1 OF 1	
CONTACT:_STEVE CRISENZO	PHONE:_361-972-0198	

DIAMETERS AND DEPTH RANGES: _5"0 TO360 ft;, TO
BOREHOLE TOTAL DEPTH AS DRILLED: 310.54
CONDUCTOR CASING?: YES Y DEPTH TO BOTTOM OF CASING 2'; NO; NO;
DEPTH TO BEDROCK: NA
BOREHOLE FLUID: WATER; FRESH WATER MUD Y ; SALT WATER MUD ;

LOGGING CREW:\_C. Carter\_\_

Ξ.

LOG TYPE	FILE NAME	DEPTH RANGE	DATE	TIMES cc uliclo7	
ELOG	B2306ELOG 185-10/		11/16/17	4:39 - 5:07pm 4:18	-42 Pap
ELDG	B2306 ELOGUPOI	308.9-39.85 Ft	<b>t</b> )	4139 - 5107pm	
P-svelocity	B23065USPDEWLOI	2.1m - 90.5m	1)	5:20 - 6:45pm	
Caliper	B2306caltest of		41	7:20 - 7:21	
Carliper	B2306calupol	306,25-5.75 ft	4	7:40-8:11pm	
Caliper	B2306 caltesta		n	8:16 - 8:17pm	
Deviation	B2306AUUPO1	307.1-3.47 \$	11/16/07	8:38 - 8:52pm	
					1
				· ·	· · ·
	1		· · · · ·		
					4
					J

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B-2306	EL	OG	FIEL	D.	LOG
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SITE:_EXELON VICTORIA	DATE: 11/16/07
CLIENT:_MACTEC	JOB: 7501
AUTHOR:_C. CARTER	PAGE 1 OF 2
CONTACT:_STEVE CRISENZO	OFFICE PHONE:_361-972-0198
	_CELL PHONE:_919-949-1707
CONTACT:	_OFFICEPHONE:
	PHONE:
CONTACT:	PHONE:
	PHONE
CONTACT:	PHONE: PHONE:
	PHONE:
DRILLER	PHONE
COMPANY	PHONE: PHONE:
	( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (
GENERAL SITE CONDITIONS/LOCATION:	
CENERAL ON E CONDITIONO/ECOATION.	
BOREHOLE DESIGNATION: B-2304 LOC	ATION Prove ter
BUREHULE DESIGNATION: 15-250- LUC	ATION: Ferimos
COUNTY:_VICTORIA_RANGE:TOW	NSHIP:SECTION:
BOREHOLE CONSTRUCTION: CASED U	NCASED X
DIAMETERS AND DEPTH RANGES:0	INCASED <u>X</u> TO <u>310 <sup>[+</sup></u> ;, TO
BURENULE TUTAL DEPTH AS URILLED: SA	
CONDUCTOR CASING?: YES DEPTH TO B	OTTOM OF CASING; NO X
DEPTH TO BEDROCK: NA	DEPTH TO WATER TABLE: NA
DEPTH TO BEDROCK: <u>//A</u> BOREHOLE FLUID: WATER; FRESH WAT OTHER:	
DEPTH TO BOREHOLE ELUID	TIME SINCE LAST CIRCULATION: 3:4 Spm
	THE ONOL EAST STROLETHON, DI TOPHE
LOGGING CREW:_C. CARTER	
VEHICLE(S) USED AND MILEAGE: _RENTAL	
MOBILIZED FROM: Victoria, TX	DEPARTURE TIME: 2:30 pm
APPIVED ON SITE:	DEFARTORE TIME
ARRIVED ON SITE: 3:00 pm	CALIER
	CAUSE:
LOGGING STARTED: 4:39 pm	LOGGING COMPLETED: Sio7pm
· · · · ·	
GEOVision Geophysical Services 1151 Pomona Road, U	Init P, Corona, CA 92882 Ph (951) 549-1234 Fx (951) 549-1236
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SITE:_EXELON VICTORIA_3-236	DATE: 11/16/07
CLIENT:_MACTEC	JOB:_7501
AUTHOR:_C. CARTER	PAGE 2 OF 2

WINCH:	COMPROBE	SILVER	X	0Y0	_RG	OTHER
MICROLOGGE	R 5310 x	5772		OTHER		
ELOG PROBE	5490 <u>×</u>	OTHER				

PROBE LENGTH	2.50M(8.20 FT)	
PLUS YOKE 10.0M (32.8 FT)	32-8	
MINUS CASING STICK-UP	1.25'	
DEPTH REF. OFFSET AT START	39.75	
DEPTH REF. OFFSET AT END	39.85	
AFTER SURVEY DEPTH ERROR	0.10	LESS THAN 0.4%?

LOG NAME	START DEPTH	START TIME	END DEPTH	END TIME
B2306 ELOGTESTOL		4:18 m		4119 m
B2306 ELOGUPOI	308.9 \$	4:39 m	39.85.14	4119 pm
		1		
·				

MAINTENANCE PERFORMED ON SITE:

EQUIPMENT PROBLEMS OR FAILURES:\_

SUGGESTIONS, ADDITIONS, CHANGES:

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April 29, 2008

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## P-S SUSPENSION VELOCITY FIELD LOG

SITE: EXELON VICTORIA 32306		DATE: 11/16/07	
CLIENT:_MACTEC			
AUTHOR:_C. CARTER		PAGE 1 OF _ 7	
CONTACT:_STEVE CRISENZO			_
		_PHONE:_919-949-1707	_
		_PHONE:	
		_ PHONE:	
CONTACT:		_ PHONE:	
		_PHONE:	
CONTACT:		_ PHONE:	
		_PHONE:	
DRILLER:		_PHONE:	
COMPANY:		_PHONE:	
DIRECTIONS TO SITE:			
			,
· · · · · · · · · · · · · · · · · · ·			
GENERAL SITE CONDITIONS/LOCATION:			
GENERAL SITE CONDITIONS/LOCATION.	1	· · · ·	
		· · · · · · · · · · · · · · · · · · ·	
EA#:		a tra	
BOREHOLE DESIGNATION: 8-2306	LOCA	MON: Perimiter	
COUNTY:_VICTORIA_RANGE:TOV			
BOREHOLE CONSTRUCTION: CASED	UNCASED	<u>×</u>	
DIAMETERS AND DEPTH RANGES:	TO 310+	<u>;                                    </u>	
BOREHOLE TOTAL DEPTH AS DRILLED:	310 44		
CONDUCTOR CASING?: YES_K_ DEPTH TO	BOTTOM	OF CASING_2; NO	
DEPTH TO BEDROCK: <u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	DEPTH TO		
OTHER:			
	TIME SINC	ELAST CIRCULATION: 3:45m	

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GEOVision Report 7534-01 Exelon COL Victoria Boring Geophysical Logging rev 0

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Vision geophysical services

SITE:_EXELON VICTORIA_B-2306 CLIENT:_MACTEC AUTHOR:_C. CARTER	DATE: 11/18/07 JOB: 7501 PAGE 2 OF 7
LOGGING CREW:_C. CARTER	
VEHICLE(S) USED AND MILEAGE: _RENTAL_	
MOBILIZED FROM:_Victoria, TX	DEPARTURE TIME: 2, 30 pm
ARRIVED ON SITE: 3 pm	
	CAUSE:
LOGGING STARTED:	LOGGING COMPLETED: 6, 7 pm
	CAUSE: LOGGING COMPLETED:
LOGGING STARTED:	
ADDITIONAL DEMOB TIME:	REASON:
BATTERIES CHANGED BEFORE LOGGING: N WINCH COMPROBE INSTRUMENT OYO 12004 15014 RECEIVER S/N 12008 20042 MAINTENANCE PERFORMED ON SITE:	GREY X       OYO       RG       OTH         19029       RG       160023       X         26066       11001       23053       30086
EQUIPMENT PROBLEMS OR FAILURES:	
	· · · · · · · · · · · · · · · · · · ·
SUGGESTIONS, ADDITIONS, CHANGES:	
COMMENTS: Top of caring =	0.38m 2.4838 = 2.1m = RP 2.10m @ 7:08m
	· · · · · · · · · · · · · · · · · · ·
GEOVision Geophysical Services 1151 Pomona Ro	oad, Suite P, Corona, CA 92882 Ph (951) 549-1234 Fx (951) 549-1236

## **GEOVISION SUSPENSION LOGGING FIELD NOTES**

SITE: EXELON VICTORIA	82306
CLIENT: MACTEC	

DATE:	11	121	07	

	J	C	)	E
_				

B:\_7501 3

AUTHUR, U. UANTEN	AUTHOR:_	C.	CART	ER
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PAGE\_

OF	7

DEPTH	DEPTH	UNFILTERED	FILTERED	COMMENTS
METERS		FILE NO.	FILE NO.	CASING, WATER, ROCK, ETC
0.5	1.64			
1.0	3.28			
1.5	4.92			
2.0	6.56	001		5:20 pm
2.5	8.20	2		
3.0	9.84	3		
3.5	11.48	4		
4.0	13.12	5		
4.5	14.76	6		
5.0	16.40	1		
5.5	18.04	8		
6.0	19.69	G		
6.5	21.33	10		
7.0	22.97	n		
7.5	24.61	12		
8.0	26.25	13		
8.5	27.89	14		
9.0	29.53	15		
9.5	31.17	16		
10.0	32.81	17		
10.5	34.45	18		· · · · · · · · · · · · · · · · · · ·
11.0	36.09	19		
11.5	37.73	20		
12.0	39.37	21		
12.5	41.01	22		·
13.0	42.65	23	· · · ·	
13.5	44.29	24		· · · · · · · · · · · · · · · · · · ·
14.0	45.93	25		
14.5	47.57	26		
15.0	49.21	27		
15.5	50.85	28		
· 16.0	52.49	29		
16.5	54.13	30		
17.0	55.77	31		
17.5	57.41	32		
18.0	59.06	33		
18.5	60.70	34		
19.0	62.34	35		
19.5	63.98	36		
20.0	65.62	37		

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## **GEOVISION SUSPENSION LOGGING FIELD NOTES**

SITE: EXELON VICTORIA B 2306	DATE: 11/16/07
CLIENT:MACTEC	JOB:_7501
AUTHOR:_C. CARTER	PAGE4OF7

DEPTH	DEPTH	UNFILTERED	FILTERED	COMMENTS
METERS	FEET	FILE NO.	FILE NO.	CASING, WATER, ROCK, ETC

20.5 $67.26$ $36$ 21.0 $68.90$ $37$ 21.5 $70.54$ $40$ 22.0 $72.18$ $41$ 22.1 $70.54$ $47$ 23.0 $75.46$ $43$ 23.5 $77.10$ $444$ 24.1 $78.74$ $45$ 24.5 $80.38$ $46$ 25.0 $82.02$ $47$ 25.5 $83.86$ $46$ 26.0 $86.30$ $47$ 26.5 $86.84$ $50$ 27.0 $86.84$ $50$ 27.0 $86.84$ $50$ 27.0 $86.84$ $50$ 28.5 $93.50$ $54$ 29.5 $96.78$ $56$ 30.0 $98.43$ $57$ 31.0 $100.77$ $37$ 31.0 $100.77$ $37$ 31.0 $101.71$ $39$ 31.5 $103.35$ $6^{-2}$					
21.5       70.54       40         22.0       72.18       41         22.5       73.82       47.         23.0       75.46       43         23.5       77.10       44         24.0       78.74       45         24.0       78.74       45         25.5       83.08       46         25.0       82.02       47         26.5       83.86       48         26.0       85.30       47         26.5       86.94       50         27.0       88.58       \$1         27.5       90.22       57         28.0       91.86       53         28.0       96.74       55         29.5       96.78       56         30.0       98.43       57         31.0       101.71       39         31.5       103.85 $\epsilon^{\circ}$ 32.5       108.63       67         33.0       108.27 $\epsilon^{3}$ 33.1       109.64       67         33.5       109.91 $\epsilon^{4}$ 34.0       111.55       65         33.1       108.61 <td< td=""><td>20.5</td><td>67.26</td><td>38</td><td></td><td></td></td<>	20.5	67.26	38		
21.5       70.54       40         22.0       72.18       41         22.5       73.82       42.         23.0       75.46       43         23.5       77.10       44         24.0       78.74       45         24.0       78.74       45         25.0       80.38       46         25.0       82.02       47         26.5       83.86       48         26.0       85.30       44         26.5       86.94       50         27.0       88.68       \$1         27.5       90.22       52         28.0       91.86       53         28.0       91.86       53         28.0       96.74       55         29.5       90.78       56         30.0       98.43       \$7         31.0       10.07       38         31.0       10.71       39         31.5       103.85 $6^{\circ}$ 32.6       108.63 $6^{\circ}$ 33.0       108.27 $\epsilon^{3}$ 33.0       108.27 $\epsilon^{3}$ 33.0       108.27       <	21.0	68.90	39		
22.5 $73.82$ $42$ 23.0 $75.46$ $43$ 23.5 $77.10$ $44$ 24.0 $78.74$ $45$ 24.5 $80.38$ $46$ 25.0 $82.02$ $47$ 26.5 $83.66$ $46$ 26.0 $85.30$ $44$ 26.5 $86.94$ $50$ 27.0 $88.53$ $51$ 27.5 $90.22$ $52$ 28.5 $93.50$ $34$ 29.5 $96.78$ $56$ 30.0 $98.43$ $57$ 30.5 $100.07$ $58$ 31.0 $101.71$ $59$ 32.0 $104.99$ $61$ 32.0 $108.27$ $63$ 33.5 $100.91$ $64$ 34.0 $111.55$ $65$ 34.0 $111.55$ $65$ 35.5 $116.47$ $48$ 36.0 $118.48$ $67$ 35.5 $116.47$ $48$ 36.6 $111.57$		70.54	40		
22.5 $73.82$ $42$ 23.0 $75.46$ $43$ 23.5 $77.10$ $44$ 24.0 $78.74$ $45$ 24.5 $80.38$ $46$ 25.0 $82.02$ $47$ 26.5 $86.36$ $46$ 26.0 $85.30$ $44$ 26.5 $86.94$ $56$ 27.0 $88.56$ $51$ 27.5 $90.22$ $52$ 28.5 $93.50$ $34$ 29.5 $96.78$ $56$ 30.0 $98.43$ $57$ 30.5 $100.07$ $58$ 31.0 $101.71$ $59$ 32.0 $104.99$ $61$ 32.2 $106.83$ $67$ 33.5 $100.91$ $63$ 33.5 $100.91$ $64$ 34.0 $111.55$ $65$ 33.5 $109.44$ $48$ 34.0 $111.55$ $67$ 35.5 $116.47$ $48$ 36.0 $114.83$			41		
23.0 $75.46$ $43$ 23.5 $77.10$ $444$ 24.0 $78.74$ $45$ 24.5 $80.38$ $446$ 25.0 $82.02$ $47$ 25.5 $83.66$ $48$ 26.0 $85.30$ $47$ 26.5 $86.94$ $56$ 27.0 $88.58$ $$1$ 27.5 $90.22$ $$72$ 28.0 $91.86$ $$53$ 28.1 $91.86$ $$53$ 28.5 $93.50$ $$44$ 29.0 $95.14$ $$55$ 29.5 $96.78$ $$56$ 30.0 $98.43$ $$77$ 30.5 $100.07$ $$78$ 31.5 $103.35$ $60$ 32.0 $104.99$ $61$ 32.5 $106.63$ $67$ 33.5 $109.91$ $64$ 32.5 $106.83$ $67$ 33.6 $109.27$ $63$ 33.5 $109.47$ $63$ 34.0 $111.55$			42		
23.5       77.10 $4'4'$ 24.0       78.74 $4'5$ 24.5       80.38 $4'6$ 25.0       82.02 $4'7$ 25.5       83.66 $4'8$ 26.0       85.30 $4'f$ 26.5       86.94       50         27.0       86.58       \$1         27.5       90.22 $5'2$ 28.0       91.86       53         28.5       93.50 $5'4$ 29.0       95.14       55         29.1       96.78       56         30.0       98.43       \$7         30.5       100.07       38         31.0       101.71       57         32.0       104.99       61         32.2       106.63       62         33.3       108.27       6'3         33.5       109.91 $6'4'$ 34.0       111.55 $6'5'$ 34.5       113.19       66         35.5       116.47       48         36.0       14.83 $6'7$ 35.5       116.47       48         36.0       <			43		
24.0 $78.74$ $45$ $24.5$ $80.38$ $46$ $25.5$ $83.66$ $46$ $26.0$ $85.30$ $47$ $26.0$ $85.30$ $47$ $26.0$ $85.30$ $47$ $26.0$ $85.30$ $47$ $26.0$ $85.30$ $47$ $26.6$ $86.94$ $50$ $27.0$ $88.58$ $$1$ $27.5$ $90.22$ $$72$ $28.0$ $91.86$ $$53$ $28.5$ $93.50$ $$44$ $29.0$ $95.14$ $55$ $29.5$ $96.76$ $56$ $30.0$ $98.43$ $$77$ $30.5$ $100.07$ $$78$ $31.0$ $101.71$ $$97$ $32.0$ $104.99$ $61$ $32.5$ $106.63$ $672$ $33.0$ $100.27$ $63$ $33.0$ $108.27$ $63$ $34.0$ $111.55$ $65$ $34.5$ $118.47$ $48$			44		
24.5       80.38 $4/6$ 25.0       82.02 $47$ 25.5       83.66 $4/8$ 26.0       86.30 $4/7$ 26.5       86.94       50         27.0       88.58       \$1         27.5       90.22       \$7         28.0       91.86       \$53         29.0       95.14       \$55         30.0       98.43       \$7         30.5       100.07       \$8         31.0       101.71       \$9         31.1       101.71       \$9         32.2       106.83       \$67         33.0       108.27       \$63         33.0       108.27       \$63         33.5       109.91       \$64         35.5       116.47 $4/8$ 36.5       119.75 $70$ 36.5       119.75 $70$ 36.5       119.75 $70$ 36.5       119.75 $70$ 36.5       119.75 $75$ 38.5       126.31 $74$ 38.5       126.31 $74$ 38.5			45		
25.0 $82.02$ $47$ 25.5 $83.66$ $44$ 26.6 $86.30$ $447$ 26.5 $86.94$ $56$ 27.0 $85.88$ $51$ 27.5 $90.22$ $57$ 28.0 $91.86$ $53$ 28.5 $93.50$ $344$ 29.0 $95.14$ $55$ 29.0 $96.78$ $56$ 30.0 $98.43$ $57$ 30.5 $40.07$ $58$ 31.0 $101.71$ $59$ 31.5 $103.35$ $6 \circ$ 32.0 $104.99$ $61$ 32.5 $106.63$ $67$ 33.5 $109.91$ $64$ 33.5 $109.91$ $64$ 34.5 $113.19$ $66$ 35.0 $114.83$ $67$ 36.5 $119.75$ $70$ 37.0 $121.39$ $71$ 38.5 $128.67$ $73$ 38.6 $124.67$ $73$ 38.5 $128.67$ <td></td> <td></td> <td>46</td> <td></td> <td></td>			46		
25.5       83.66 $46$ 26.0       85.30 $4f$ 26.5       86.94       50         27.0       88.58       \$1         27.0       88.58       \$1         27.0       90.22       \$2         28.0       91.86       \$3         28.5       93.50       \$4         29.0       95.14       \$5         29.5       96.78       \$6         30.0       98.43       \$7         30.5       100.07       \$8         31.5       103.35 $6^{\circ}$ 32.0       104.99 $61$ 32.5       106.63 $62$ 33.0       108.27 $63$ 33.5       109.91 $64'$ 34.5       113.19 $66$ 35.0       114.83 $67$ 35.5       116.47 $68$ 36.0       118.11 $69$ 36.5       119.75 $75^{\circ}$ 37.5       123.03 $72^{\circ}$ 38.5       128.31 $71^{\circ}$ 38.5       128.31 $74^{\circ}$			47		
28.0       85.30 $4q$ 28.5       86.94 $5b$ 27.0       88.58       \$1         27.5       90.22 $5z$ 28.0       91.86 $53$ 28.5       93.50 $54$ 29.0       95.14 $55$ 29.5       96.78 $56$ 30.0       98.43 $57$ 30.5       100.07 $58$ 31.0       101.71 $5q$ 32.0       104.99 $61$ 32.5       106.63 $6z$ 33.0       108.27 $63$ 33.5       109.91 $64$ 34.0       111.55 $65$ 34.5       113.19 $66$ 35.5       116.47 $48$ 36.0       114.83 $67$ 37.0       121.39       11         37.5       123.03 $7z$ 38.6       126.31 $74$ 38.0       124.67 $73$ 38.5       128.31 $74$ 39.0       124.67 $73$ 39			48	· · ·	
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27.0 $88.58$ $\$1$ 27.5 $90.22$ $\$z$ 28.0 $91.86$ $\$3$ 28.5 $93.50$ $\$4$ 29.0 $95.14$ $\$5$ 29.5 $96.78$ $$6$ 30.0 $98.43$ $$77$ 30.5 $100.07$ $$8$ 31.0 $101.71$ $$97$ 31.5 $103.35$ $$6^\circ$ 32.0 $104.99$ $$61$ 32.5 $106.63$ $$67$ 33.0 $108.27$ $$63$ 33.5 $109.91$ $$64'$ 34.0 $111.55$ $$65'$ 34.5 $113.19$ $$66'$ 35.0 $114.83$ $$67'$ 36.5 $119.75$ $7^\circ$ 36.5 $119.75$ $7^\circ$ 37.0 $121.39$ $71$ 37.0 $124.87$ $73$ 38.0 $124.67$ $73$ 38.5 $128.51$ $74$ 38.0 $124.67$ $73$ 38.5					
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$31.5$ $103.35$ $6 \circ$ $32.0$ $104.99$ $61$ $32.5$ $106.63$ $67$ $33.0$ $108.27$ $63$ $33.5$ $109.91$ $64$ $34.5$ $113.19$ $66$ $34.5$ $113.19$ $66$ $35.0$ $114.83$ $67$ $35.5$ $116.47$ $48$ $36.0$ $118.11$ $69$ $36.5$ $119.75$ $70$ $37.0$ $121.39$ $71$ $37.5$ $123.03$ $172$ $38.0$ $124.67$ $73$ $38.5$ $126.31$ $74$ $39.0$ $127.95$ $75$ $39.5$ $129.59$ $76$			59		
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37.5       123.03       72         38.0       124.67       73         38.5       126.31       74         39.0       127.95       75         39.5       129.59       76			2)		
38.0         124.67         73           38.5         126.31         74           39.0         127.95         75           39.5         129.59         76					
38.5         126.31         74           39.0         127.95         75           39.5         129.59         76					
39.0         127.95         75           39.5         129.59         76					
39.5 129.59 76					
	40.0	131.23	77		,

GEOVision Report 7534-01 Exelon COL Victoria Boring Geophysical Logging rev 0

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## **GEOVISION SUSPENSION LOGGING FIELD NOTES**

SITE:_EXELON VICTORIA_B-2306	DATE: #116107				
CLIENT:MACTEC	_JOB:_7501				
AUTHOR:_C. CARTER	_PAGEOF				

DEPTH	DEPTH	UNFILTERED	FILTERED	COMMENTS
METERS	FEET	FILE NO.	FILE NO.	CASING, WATER, ROCK, ETC

T		20			
40.5	132.87	78			
41.0	134.51	79			
41.5	136.15	86		·	
42.0	137.80	81			
42.5	139.44	82			
43.0	141.08	83			
43.5	142.72	84			
44.0	144.36	85			
44.5	146.00	86			
45.0	147.64	87			
45.5	149.28	88			
46.0	150.92	89			
46.5	152.56	90			
47.0	154.20	91			
47.5	155.84	92			
48.0	157.48	93			
48.5	159.12	94			
49.0	160.76	९ऽ			
49.5	162.40	96			
50.0	164.04	97			
50.5	165.68	98			
51.0	167.32	29			
51.5	168.96	150			
52.0	170.60	101			
52.5	172.24	102			
53.0	173.88	103			
53.5	175.52	104			
54.0	177.17	105	· · ·		
54.5	178.81	10.6			
55.0	180.45	107			
55.5	182.09	108			
56.0	183.73	109			
56.5	185.37	110			
57.0	187.01	111		·	
57.5	188.65	112			
58.0	190.29	113			5
58.5	191.93	114			
59.0	193.57	115		•	
59.5	195.21	116			
60.0	196.85	11-7			
00.0	100.00				

# **GEOVISION SUSPENSION LOGGING FIELD NOTES**

SITE: EXELON VICTORIA 8-2306	DATE: 11/16/07
CLIENT: MACTEC	JOB:_7501
AUTHOR:_C. CARTER	PAGEOF

DEPTH	DEPTH	UNFILTERED	FILTERED		COMMENTS	
METERS	FEET	FILE NO.	FILE NO.	;	CASING, WATER, ROCK, ETC	11

60.5	198.49	118		
61.0	200.13	119		
61.5	201.77	120		
62.0	203.41	121		
62.5	205.05	122		1
63.0	206.69	123		
63.5	208.33	124		-
64.0	209.97	125		
64.5	211.61	126		
65.0	213.25	127		
65.5	214.90	128	-	
66.0	216.54	129		
66.5	218.18	130		
67.0	219.82	(3)		
67.5	221.46	132		
68.0	223.10	133		
68.5	224.74	134		·
69.0	226.38	135	······	
69.5	228.02	136		
70.0	229.66	137		17
70.5	231.30	138		
71.0	232.94	139	2	
71.5	234.58	140		
72.0	236.22	141	-	
72.5	237.86	142		
73.0	239.50	143		
73.5	241.14	144		
74.0	242.78	145		
74.5	244.42	146		
75.0	246.06	147		
75.5	247.70	148		
76.0	249.34	149		
76.5	250.98	150		
77.0	252.62	LS I		
77.5	254.27	152		
78.0	255.91	153		
78.5	257.55	154		
79.0	259.19	155		
79.5	260.83	156		
80.0	262.47	157	s	

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## **GEOVISION SUSPENSION LOGGING FIELD NOTES**

SITE:_EXELON VICTORIA_B-2306	DATE: ulible
CLIENT:MACTEC	_JOB:_7501
AUTHOR:_C. CARTER	_PAGEOF

DEPTH	DEPTH	UNFILTERED	FILTERED	COMMENTS
METERS	FEET	FILE NO.	FILE NO.	CASING, WATER, ROCK, ETC

			· · · · · · · · · · · · · · · · · · ·
80.5	264.11	158	
81.0	265.75	159	
81.5	267.39	160	
82.0	269.03	161	
82.5	270.67	162	
83.0	272.31	163	
83.5	273.95	164	
84.0	275.59	165	
84.5	277.23	168	
85.0	278.87	167	
85.5	280.51	168	
86.0	282.15	169	· · · · · · · · · · · · · · · · · · ·
86.5	283.79	170	
87.0	285.43	171	
87.5	287.07	112	
88.0	288.71	173	· · · · · · · · · · · · · · · · · · ·
88.5	290.35	174	
89.0	291.99	175	
89.5	293.64	176	-
90.0	295.28	177	
90.5	296.92	178	6145pm
91.0	298.56	*	
91.5	300.20		
92.0	301.84	2	
92.5	303.48		-
93.0	305.12		
93.5	306.76		-
94.0	308.40		
94.5	310.04		
95.0	311.68		
95.5	313.32		
96.0	314.96		
96.5	316.60	· .	·
07.0		plante des service de la cara	
97.0	318.24		
97.0 97.5	318.24 319.88		 
97.5	319.88		· · · · · · · · · · · · · · · · · · ·
97.5 98.0	319.88 321.52		
97.5 98.0 98.5	319.88 321.52 323.16		

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geophysical services

_	B-2300 C	ALIPER	FIELD	LOG
			DATE	11/16/07
SITE:_EXELON VICTORIA C			DATE:	1
CLIENT:_MACTEC AUTHOR:_C. CARTER			100100	DE 2
AUTHORO. CARTER			FAGE IN	51.2
CONTACT:_STEVE CRISEN	20	OFFICE	PHONE:	_361-972-0198
		CELL	PHONE:	919-949-1707
CONTACT: ALLAN SHAW		_CELL	_PHONE:	301-704-2684
			PHONE:	
CONTACT:			_ PHONE:_	
			PHONE:	
CONTACT:			PHONE:	
			_ PHONE:	
DRILLER: COMPANY:			_PHONE:	
COMPANY:			_PHONE:	·
	04 004 71011			
GENERAL SITE CONDITION	S/LOCATION:			
				-
BOREHOLE DESIGNATION:	B-2306	LOCATION	Perime	ter
COUNTY VICTORIA RANG	GE TOWN	SHIP	SE	ECTION.
COUNTY:_VICTORIARANG BOREHOLE CONSTRUCTIO DIAMETERS AND DEPTH RA BOREHOLE TOTAL DEPTH	N: CASED UN	CASED X		
DIAMETERS AND DEPTH RA	NGES: 5" OTO	0 310 ft		то
BOREHOLE TOTAL DEPTH	AS DRILLED: 310 F	f		
CONDUCTOR CASING?: YE	S 🗶 DEPTH TO B	OTTOM OF	CASING	-2 : NO
DEPTH TO BEDROCK: NA		DEPTH TO	WATER	TABLE: NA
DEPTH TO BEDROCK: NA BOREHOLE FLUID: WATER	; FRESH WATE	RMUDX	; SALT W	ATER MUD;
DEPTH TO BOREHOLE FLU	D:	TIME SINC	CE LAST C	CIRCULATION: 3:45 pm
· ·				•
LOGGING CREW:_C. CARTE	R	3	,	
VEHICLE(S) USED AND MILI	EAGE: _RENTAL			
MOBILIZED FROM:_VICTOR	IA, TX	_DEPARTU	RE TIME:	2130pm
ARRIVED ON SITE: 3: 50	~~		÷.	
STANDBY TIME:		CAUSE:		
LOGGING STARTED: 714	10 pm	LOGGING	COMPLE	TED: 8:11pm
GEOVision Geophysical Services	1151 Pomona Road, Un	it P, Corona, CA	1 92882 P	h (951) 549-1234 Fx (951) 549-1236

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J1101	ACTEC C. CARTER			•••	JOB:_7501 PAGE 2 OF 2	
WINCH:	COMP			020	RG	OTHER
MICROLO		5310 X	5772	OTHER	KG	OTHER
	ROBE	5368 <u>×</u>	OTHER			
			7			
	FSET		2.08M(6.82 FT	() 12 IN MAX		1
	SING STICK		1.25			
	F. OFFSET		5.57			
	F. OFFSET		.08			
AFIER SU	RVEY DEPT	T CRRUK		LESS THAI	N U.4%?	1
	·	START	START	END	END	ר
LOGI	VAME	DEPTH	TIME	DEPTH	TIME	
B2306Ca	e test ol		7:20m		Tizipm	-
B2306CAL	to Pol	306.251	7:40m	5.75'	8: 11 m	- ·
B2306C	al ostor		8:16 pm		Silm	]
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		· · · · · · · · · · · · · · · · · · ·				- ·
		<u> </u>				- · .
		1	<u> </u>		1	_
ALIBRATI	ON PLATE	S/N 201		AS BUILT		PVC FITTING
			1.968 IN	3.937 IN	8.000 IN	4.500 IN
	FILE	NAME	(50 MM)	(100 MM)	(203.2 MM)	(114.3 MM)
AS MEAS.	B2306 cal		2.629	3,993	8.050	4.561
AS MEAS.	82306cal	145102	1.949	3.848	8.036	4.536
AS MEAS						··········
AS MEAS. AS MEAS.					+	
AS MEAS						
AS MEAS.			1	1	1	1

SUGGESTIONS, ADDITIONS, CHANGES:

GEOVision Geophysical Services

1151 Pomona Road, Unit P, Corona, CA 92882

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

Page 504 of 735

DCN# EXE805

Project 6468-07-1777

MACTEC Engineering and Consulting, Inc. Exelon COL - Victoria County Site

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**GE** *Vision* 

geophysical services

# B-2306 DEVIATION FIELD LOG

SITE: EXELON VICTORIA COUNTY COL	DATE: 11/16/07
CLIENT:_MACTEC	JOB:_7501
AUTHOR:_C. CARTER	PAGE 1 OF 2
CONTACT:_STEVE CRISENZO	_OFFICE PHONE:_361-972-0198
	_CELL PHONE:_919-949-1707
CONTACT:	
	PHONE:
CONTACT:	PHONE:
	PHONE:
CONTACT:	PHONE:
	PHONE:
DRILLER:	PHONE:PHONE:
COMPANY:	PHONE:
DIRECTIONS TO SITE	
DIRECTIONS TO SITE:	
	in the second
GENERAL SITE CONDITIONS/LOCATION	
GENERAL SITE CONDITIONS/LOCATION:	
GENERAL SITE CONDITIONS/LOCATION:	
BOREHOLE DESIGNATION:	LOCATION: Perimeter
BOREHOLE DESIGNATION: B~2306	LOCATION: Perimeter
BOREHOLE DESIGNATION: B~2306	LOCATION: Perimeter
BOREHOLE DESIGNATION: B~2306	LOCATION: Perimeter
BOREHOLE DESIGNATION: <u>B~2306</u> COUNTY:_VICTORIA_RANGE: TOW BOREHOLE CONSTRUCTION: CASED U DIAMETERS AND DEPTH RANGES: <u>5<sup>41</sup></u> 0 BOREHOLE TOTAL DEPTH AS DRILLED: 34	LOCATION: <u>Perimeter</u> /NSHIP:SECTION: JNCASED X TOTO \$
BOREHOLE DESIGNATION: <u>B~2306</u> COUNTY:_VICTORIA_RANGE: TOW BOREHOLE CONSTRUCTION: CASED U DIAMETERS AND DEPTH RANGES: <u>5<sup>41</sup></u> 0 BOREHOLE TOTAL DEPTH AS DRILLED: 34	LOCATION: <u>Perimeter</u> /NSHIP:SECTION: JNCASED X TOTO \$
BOREHOLE DESIGNATION: <u>B~2306</u> COUNTY:_VICTORIA_RANGE: TOW BOREHOLE CONSTRUCTION: CASED U DIAMETERS AND DEPTH RANGES: <u>5<sup>41</sup></u> 0 BOREHOLE TOTAL DEPTH AS DRILLED: 34	LOCATION: <u>Perimeter</u> /NSHIP:SECTION: JNCASED X TOTO \$
BOREHOLE DESIGNATION: <u>B~2306</u> COUNTY:_VICTORIA_RANGE: TOW BOREHOLE CONSTRUCTION: CASED U DIAMETERS AND DEPTH RANGES: <u>5<sup>41</sup></u> 0 BOREHOLE TOTAL DEPTH AS DRILLED: 34	LOCATION: <u>Perimeter</u> /NSHIP:SECTION: JNCASED X TOTO \$
BOREHOLE DESIGNATION: <u>B</u> ~2306 COUNTY: VICTORIA_RANGE:TOW BOREHOLE CONSTRUCTION: CASEDU DIAMETERS AND DEPTH RANGES: <u>5"</u> 0 BOREHOLE TOTAL DEPTH AS DRILLED: <u>34</u> CONDUCTOR CASING?: YES <u>X</u> DEPTH TO DEPTH TO BEDROCK: <u>NA</u> BOREHOLE FLUID: WATER; FRESH WAT OTHER:	LOCATION: <u>Perimeter</u> /NSHIP:SECTION: JNCASED X TO <u>310 ft</u> ;TO o ft BOTTOM OF CASING 2'; NO DEPTH TO WATER TABLE: <u>NJ</u> TER MUD X; SALT WATER MUD;
BOREHOLE DESIGNATION: <u>B</u> ~2306 COUNTY: VICTORIA_RANGE:TOW BOREHOLE CONSTRUCTION: CASEDU DIAMETERS AND DEPTH RANGES: <u>5"</u> 0 BOREHOLE TOTAL DEPTH AS DRILLED: <u>34</u> CONDUCTOR CASING?: YES <u>X</u> DEPTH TO DEPTH TO BEDROCK: <u>NA</u> BOREHOLE FLUID: WATER; FRESH WAT OTHER:	LOCATION: <u>Perimeter</u> /NSHIP:SECTION: JNCASED X TO <u>310 ft</u> ;TO o ft BOTTOM OF CASING 2'; NO DEPTH TO WATER TABLE: <u>NJ</u> TER MUD X; SALT WATER MUD;
BOREHOLE DESIGNATION: <u>B</u> ~2306 COUNTY: VICTORIA_RANGE:TOW BOREHOLE CONSTRUCTION: CASEDU DIAMETERS AND DEPTH RANGES: <u>5"</u> 0 BOREHOLE TOTAL DEPTH AS DRILLED: <u>34</u> CONDUCTOR CASING?: YES <u>X</u> DEPTH TO DEPTH TO BEDROCK: <u>NA</u> BOREHOLE FLUID: WATER; FRESH WAT OTHER:	LOCATION: <u>Perimeter</u> /NSHIP:SECTION: JNCASED X TOTO \$
BOREHOLE DESIGNATION: <u>B</u> ~2306 COUNTY: VICTORIA_RANGE:TOW BOREHOLE CONSTRUCTION: CASEDU DIAMETERS AND DEPTH RANGES: <u>5"</u> 0 BOREHOLE TOTAL DEPTH AS DRILLED: <u>34</u> CONDUCTOR CASING?: YES <u>X</u> DEPTH TO DEPTH TO BEDROCK: <u>NA</u> BOREHOLE FLUID: WATER; FRESH WAT OTHER:	LOCATION: <u>Perimeter</u> /NSHIP:SECTION: JNCASED X TO <u>310 ft</u> ;TO o ft BOTTOM OF CASING 2'; NO DEPTH TO WATER TABLE: <u>NJ</u> TER MUD X; SALT WATER MUD;
BOREHOLE DESIGNATION: <u>B</u> ~2306 COUNTY: VICTORIA_RANGE:TOW BOREHOLE CONSTRUCTION: CASEDU DIAMETERS AND DEPTH RANGES: <u>5"</u> 0 BOREHOLE TOTAL DEPTH AS DRILLED: <u>34</u> CONDUCTOR CASING?: YES <u>X</u> DEPTH TO DEPTH TO BEDROCK: <u>NA</u> BOREHOLE FLUID: WATER; FRESH WAT OTHER:	LOCATION: <u>Perimeter</u> /NSHIP:SECTION: JNCASED X TO <u>310 ft</u> ;TO o ft BOTTOM OF CASING 2'; NO DEPTH TO WATER TABLE: <u>NJ</u> TER MUD X; SALT WATER MUD;

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Volume 2, Rev. 0 - 7/10/08

<b>GE</b> <i>Vision</i>
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geophysical services

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SITE:_EXELON VICTORIA COUNTY COL 8-23	DATE: 11/16/07		
CLIENT: MACTEC	JOB: 7501		
AUTHOR:_C. CARTER	PAGE 2 OF 2		
LOGGING CREW:_C. CARTER_			
VEHICLE(S) USED AND MILEAGE: _RENTAL			
MOBILIZED FROM: Victoria , Tx	DEPARTURE TIME: 2:30 m		
ARRIVED ON SITE: 3 mm			
STANDBY TIME:	CAUSE:		
LOGGING STARTED: 8:38pm	LOGGING COMPLETED: 8:52		
WINCH: COMPROBE SILVER X	_ OYO RG ÓTHER		
MICROLOGGER 5310 \$ 5772	OTHER		
TELEVIEWER 5174 × OTHER	omer		
PROBE TILT TESTBRUNTON TI	17 86		
2 PROBE TILT TEST 14.8 BRUNTON TI			
	LT 11 After ung		
PROBE AZIMUTH TEST 234.3 BRUNTON A			
	ZIMUTH_14S		
3 PROBE AZIMUTH TEST 29.7 BRUNTON A	LT After lug ZIMUTH <u>230</u> ZIMUTH <u>145</u> ZIMUTH <u>31</u> After lug		
PROBE OFFSET 1.44M(4.72F1			
MINUS CASING STICK-UP 1.25'			
DEPTH REF. OFFSET AT START 3.47			
DEPTH REF. OFFSET AT END 3.47	the same sector		
AFTER SURVEY DEPTH ERROR 0	LESS THAN 0.4%?		
·			
START START	END END		
LOG NAME DEPTH TIME	DEPTH TIME		
B2306400P01 307.1' 8:38 pm	n 3.47 8:52 mm		
· · · · · · · · · · · · · · · · · · ·			
MAINTENANCE PERFORMED ON SITE:			
EQUIPMENT PROBLEMS OR FAILURES:			
ESON MENT PRODEEMO OR PAILUREO.			
SUGGESTIONS ADDITIONS CHANCES			
SUGGESTIONS, ADDITIONS, CHANGES:			
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CROWLE OF LEVELS			
GEOVISION Geophysical Services 1151 Pomona Road,	Unit P, Corona, CA 92882 Ph (951) 549-1234 Fx (951) 549-1236		
GEOVision Report 7534-01 Exelon COL Victoria Boring Geop	hysical Logging rev 0 April 29, 2008 Page 502 of		



geophysical services

# B-2307 BORING GEOPHYSICS FIELD LOG SUMMARY

SITE:_EXELON-VICTORIA	DATE: "18107
CLIENT:_MACTEC	JOB: 7501
AUTHOR:_C. CARTER	PAGE 1 OF 1

CONTACT:\_STEVE CRISENZO\_

4

PHONE:\_361-972-0198\_

BOREHOLE CONSTRUCTION: CASED UNCASED	
DIAMETERS AND DEPTH RANGES: 5" 0 TO 310 ft ; TO	
BOREHOLE TOTAL DEPTH AS DRILLED: 310 ft	
CONDUCTOR CASING?: YES X DEPTH TO BOTTOM OF CASING 2' ; NO; NO;	
DEPTH TO BEDROCK: NA	*
BOREHOLE FLUID: WATER; FRESH WATER MUDX_; SALT WATER MUD	_;

LOGGING CREW:\_C. Carter\_\_\_\_\_

				14
LOG TYPE	FILE NAME	DEPTH RANGE	DATE	TIMES
ELOG	B23076-06155701	¢	histor	11:59-12:01 pm
ELOG	BZ307ELOGUPOI	309.35 -39.5-6+	11/18/07	12:50 - 1:18 m
CALLAGR	B2307CALTESTOI			1:26 - 1:28 pm
CALIPER	B230KowPol	304.2-5.6 ft	11/18/07	1:44-2:13pm
CALIPER	B2307CALTESTOZ			2118-2119pm
Der P-svelocity	001.0rg - 178.0rg	2.0 - 90.5m	n 118607	2149 - 4:31pm
Deviation	BZ307AUUPOL	303.2 - 3.5ft	ulis107	5134 - 5147pm
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Ph (951) 549-1234 Fx (951) 549-1236

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SITE: EXELON VICTORIA	DATE: 11/18/07
SITE:_EXELON VICTORIA CLIENT:_MACTEC	JOB:_7501
AUTHOR:_C. CARTER	PAGE 1 OF 2
CONTACT:_STEVE CRISENZO	OFFICE PHONE:_361-972-0198
	_CELLPHONE:_919-949-1707
CONTACT:	_OFFICE PHONE:
	PHONE:
CONTACT:	PHONE:
	PHONE:
CONTACT:	PHONE:
Ne a	PHONE:
DRILLER:	
COMPANY:	
COUNTY: VICTORIA RANGE: T	OWNSHIP: SECTION:
COUNTY:_VICTORIA_RANGE:T BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: _\$" BOREHOLE TOTAL DEPTH AS DRILLED: CONDUCTOR CASING?: YES_X_ DEPTH T	OWNSHIP:SECTION: _ UNCASED <u>ک</u> _ 0 TO <u>عنه ۲۹</u> ;TO _ عنه ۲۹ _ 3 انه ۲۹ _ 3 انه ۲۹
CONDUCTOR CASING?: YES_X_ DEPTH T DEPTH TO BEDROCK: BOREHOLE FLUID: WATER; FRESH \	OWNSHIP:      SECTION:        UNCASED_X      TO        TOTOTOTO      TO        310 ft       ;      TO        310 ft       ;      TO        TO      TO      TO
COUNTY:_VICTORIA_RANGE:T BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: _\$" BOREHOLE TOTAL DEPTH AS DRILLED: CONDUCTOR CASING?: YES_X_ DEPTH T DEPTH TO BEDROCK:; FRESH \	OWNSHIP:      SECTION:        UNCASED      TO         0 TOKH
COUNTY:_VICTORIARANGE:T BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: _\$" BOREHOLE TOTAL DEPTH AS DRILLED: CONDUCTOR CASING?: YES_X_ DEPTH T DEPTH TO BEDROCK: BOREHOLE FLUID: WATER; FRESH V OTHER: DEPTH TO BOREHOLE FLUID: DEPTH TO BOREHOLE FLUID: LOGGING CREW:_C. CARTER	OWNSHIP:SECTION: UNCASED_X 0 TO <u>310 ft</u> ;, TO 310 ft O BOTTOM OF CASING 2'; NO DEPTH TO WATER TABLE: <u>1/4</u> VATER MUD_X; SALT WATER MUD; TIME SINCE LAST CIRCULATION: <u>11:45 cm</u>
COUNTY:_VICTORIA_RANGE:T BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: <u>\$</u> " BOREHOLE TOTAL DEPTH AS DRILLED: CONDUCTOR CASING?: YES_X DEPTH T DEPTH TO BEDROCK: <u>NA</u> BOREHOLE FLUID: WATER; FRESH N OTHER: DEPTH TO BOREHOLE FLUID: LOGGING CREW:_C. CARTER VEHICLE(S) USED AND MILEAGE: _RENTA	OWNSHIP:SECTION: _ UNCASED _X _ 0 TO310 ft ;TO _ 310 ft O BOTTOM OF CASING _2 ' ; NO DEPTH TO WATER TABLE:A DEPTH TO WATER TABLE:A VATER MUD; TIME SINCE LAST CIRCULATION: //:45am
COUNTY:_VICTORIA_RANGE:T BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: <u>\$</u> BOREHOLE TOTAL DEPTH AS DRILLED: CONDUCTOR CASING?: YES_XDEPTH T DEPTH TO BEDROCK: <u>MA</u> BOREHOLE FLUID: WATER; FRESH N OTHER: DEPTH TO BOREHOLE FLUID: <u>\$</u> LOGGING CREW:_C. CARTER VEHICLE(S) USED AND MILEAGE: _RENTA MOBILIZED FROM: <u>Victorice</u>	OWNSHIP:SECTION: _ UNCASED _X _ 0 TO310 ft ;TO _ 310 ft O BOTTOM OF CASING _2 ' ; NO DEPTH TO WATER TABLE:A DEPTH TO WATER TABLE:A VATER MUD; TIME SINCE LAST CIRCULATION: //:45am
COUNTY:_VICTORIA_RANGE:T BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: _\$" BOREHOLE TOTAL DEPTH AS DRILLED: CONDUCTOR CASING?: YES_X_ DEPTH T DEPTH TO BEDROCK:A BOREHOLE FLUID: WATER; FRESH V OTHER: DEPTH TO BOREHOLE FLUID: DEPTH TO BOREHOLE FLUID: LOGGING CREW:_C. CARTER VEHICLE(S) USED AND MILEAGE:RENTA MOBILIZED FROM: ARRIVED ON SITE:	OWNSHIP:SECTION: UNCASED _X 0 TO310 ft ;TO J0 Ft ;TO O BOTTOM OF CASING _2 ' ; NO DEPTH TO WATER TABLE:A VATER MUD _X ; SALT WATER MUD; TIME SINCE LAST CIRCULATION: //:45 am L DEPARTURE TIME: _10 : 00 am
COUNTY:_VICTORIARANGE:T BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: BOREHOLE TOTAL DEPTH AS DRILLED: CONDUCTOR CASING?: YES_XDEPTH T DEPTH TO BEDROCK: BOREHOLE FLUID: WATER; FRESH \ OTHER: DEPTH TO BOREHOLE FLUID: DEPTH TO BOREHOLE FLUID: LOGGING CREW:_C. CARTER VEHICLE(S) USED AND MILEAGE:RENTA MOBILIZED FROM: ARRIVED ON SITE: STANDBY TIME:	OWNSHIP:SECTION: UNCASED_X 0 TO <u>310 ft</u> ;,TO 310 ft O BOTTOM OF CASING_2'; NO DEPTH TO WATER TABLE: <u>104</u> VATER MUD_X; SALT WATER MUD; TIME SINCE LAST CIRCULATION: <u>//:45 amages</u> L DEPARTURE TIME: <u>10:00 amages</u> CAUSE:
COUNTY:_VICTORIA_RANGE:T BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: _\$" BOREHOLE TOTAL DEPTH AS DRILLED: CONDUCTOR CASING?: YES_X_ DEPTH T DEPTH TO BEDROCK:A BOREHOLE FLUID: WATER; FRESH V OTHER: DEPTH TO BOREHOLE FLUID: DEPTH TO BOREHOLE FLUID: LOGGING CREW:_C. CARTER VEHICLE(S) USED AND MILEAGE:RENTA MOBILIZED FROM: ARRIVED ON SITE:	OWNSHIP:SECTION: UNCASED _X 0 TO310 ft ;TO J0 Ft ;TO O BOTTOM OF CASING _2 ' ; NO DEPTH TO WATER TABLE:A VATER MUD _X ; SALT WATER MUD; TIME SINCE LAST CIRCULATION: //:45 am L DEPARTURE TIME: _10 : 00 am
COUNTY: _VICTORIA _ RANGE:T BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: _\$" BOREHOLE TOTAL DEPTH AS DRILLED: CONDUCTOR CASING?: YES × DEPTH T DEPTH TO BEDROCK: BOREHOLE FLUID: WATER; FRESH \ OTHER: DEPTH TO BOREHOLE FLUID: DEPTH TO BOREHOLE FLUID: LOGGING CREW: _C. CARTER VEHICLE(S) USED AND MILEAGE: _RENTA MOBILIZED FROM: ARRIVED ON SITE: STANDBY TIME: LOGGING STARTED:	OWNSHIP:SECTION: UNCASED_X 0 TO <u>310 ft</u> ;,TO 310 ft O BOTTOM OF CASING_2'; NO DEPTH TO WATER TABLE: <u>104</u> VATER MUD_X; SALT WATER MUD; TIME SINCE LAST CIRCULATION: <u>//:45 amages</u> L DEPARTURE TIME: <u>10:00 amages</u> CAUSE:

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SITE:_EXELON VICTORIA_8-2307	DATE: <u>ון וואלסר</u>
CLIENT:_MACTEC	JOB:_7501
AUTHOR:_C. CARTER	PAGE 2 OF 2

SILVER × OYO\_ RG\_\_\_\_ OTHER COMPROBE WINCH: 5310<u>×</u> 5772 OTHER MICROLOGGER ELOG PROBE 5490 🗡 OTHER\_

PROBE LENGTH	2.50M(8.20 FT)	)
PLUS YOKE 10.0M (32.8 FT)	32.8	
MINUS CASING STICK-UP	1.2	
DEPTH REF. OFFSET AT START	39.8	N
DEPTH REF. OFFSET AT END	39.15	а.
AFTER SURVEY DEPTH ERROR	_ US	LESS THAN 0.4%?

	START	START	END	END
LOG NAME	DEPTH	TIME	DEPTH	TIME
B2307 ELOGTESTOI		11:51am		12:01pm 1:18pm
82307 ELOGTESTO 1 2307 ELOGUPOI	309.35'	12:50 m	39.5'	1:18m
		1		

MAINTENANCE PERFORMED ON SITE:\_

EQUIPMENT PROBLEMS OR FAILURES:

SUGGESTIONS, ADDITIONS, CHANGES:\_

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GEOVision Report 7534-01 Exelon COL Victoria Boring Geophysical Logging rev 0

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## P-S SUSPENSION VELOCITY FIELD LOG

SITE:_EXELON VICTORIA_B-2307	DATE: 11/18/07
CLIENT:_MACTEC	JOB:_7501
AUTHOR:_C. CARTER	PAGE 1 OF
CONTACT:_STEVE CRISENZO	OFFICE PHONE:_361-972-0198
	_CELLPHONE:_919-949-1707
CONTACT:	OFFICE PHONE:
	PHONE:
CONTACT:	PHONE:
	PHONE:
CONTACT:	
	PHONE:
DRILLER:	
COMPANY:	A DECEMPTING ALGEORY OF STREET, STREET
GENERAL SITE CONDITIONS/LOCATION:_	Bayton Markana Angelo
	Barrow
GENERAL SITE CONDITIONS/LOCATION:_ EA#: BOREHOLE DESIGNATION: ひょっ230つ	Barrier Set and and
=======	LOCATION: Perimeter TOWNSHIP: SECTION:
EA#: BOREHOLE DESIGNATION: COUNTY:_VICTORIARANGE: BOREHOLE CONSTRUCTION: CASED	LOCATION: Perimeter TOWNSHIP:SECTION:
EA#: BOREHOLE DESIGNATION: COUNTY:_VICTORIARANGE: BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: 51	LOCATION: Perimeter TOWNSHIP:SECTION: UNCASED X 0 TO 310 ft ; TO
EA#: BOREHOLE DESIGNATION: COUNTY:_VICTORIARANGE: BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: BOREHOLE TOTAL DEPTH AS DRILLED:	LOCATION:SECTION: TOWNSHIP:SECTION: UNCASED_X 0 TOTO 3/0ft
EA#: BOREHOLE DESIGNATION: COUNTY:_VICTORIARANGE: BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: BOREHOLE TOTAL DEPTH AS DRILLED:	LOCATION:SECTION: TOWNSHIP:SECTION: UNCASED_X 0 TOTO 3/0ft
EA#: BOREHOLE DESIGNATION: COUNTY:_VICTORIARANGE: BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: BOREHOLE TOTAL DEPTH AS DRILLED: CONDUCTOR CASING?: YES DEPTH	LOCATION: <u>Perimeter</u> TOWNSHIP: <u>SECTION:</u> UNCASED <u>X</u> _0 TO <u>3/0 f+</u> ; <u>TO</u> 3/6 ft H TO BOTTOM OF CASING 2'; NO
EA#: BOREHOLE DESIGNATION: <u>3-2307</u> COUNTY:_VICTORIA_RANGE: BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: <u>51</u> BOREHOLE TOTAL DEPTH AS DRILLED: CONDUCTOR CASING?: YES <u>C</u> DEPTH DEPTH TO BEDROCK: <u>MA</u> BOREHOLE FLUID: WATER; FRESH	LOCATION:SECTION: TOWNSHIP:SECTION: UNCASED_X 0 TOTO 3/0ft
EA#: BOREHOLE DESIGNATION: 13-2307 COUNTY:_VICTORIARANGE: BOREHOLE CONSTRUCTION: CASED DIAMETERS AND DEPTH RANGES: <u>51</u> BOREHOLE TOTAL DEPTH AS DRILLED: CONDUCTOR CASING?: YES <u>C</u> DEPTH DEPTH TO BEDROCK: <u>MA</u> BOREHOLE FLUID: WATER; FRESH OTHER:	LOCATION: <u>Perimeter</u> TOWNSHIP: <u>SECTION:</u> UNCASED <u>K</u> O TO <u>3/0 ft</u> ; <u></u> TO 3/0 ft H TO BOTTOM OF CASING <u>2'</u> ; NO DEPTH TO WATER TABLE: <u>MA</u>

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GEOVision Report 7534-01 Exelon COL Victoria Boring Geophysical Logging rev 0

GE SVISION geophysical services	
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7	ulal
SITE: EXELON VICTORIA 3-230	DATE: 11/18/07
CLIENT:_MACTEC	JOB:_7501
AUTHOR:_C. CARTER	PAGE 2 OF
OGGING CREW:_C. CARTER	. · · · · ·
/EHICLE(S) USED AND MILEAGE: _RENTAL_	
MOBILIZED FROM:_Victoria, TX	
ARRIVED ON SITE: 20:30an	
STANDBY TIME:	
OGGING STARTED: 2149	
OGGING STARTED:	
	ARRIVAL TIME:
ADDITIONAL DEMOB TIME:	REASON:
NINCH     COMPROBE       NSTRUMENT     OYO 12004     15014       RECEIVER S/N     12008     20042	GREY OYO RG OTH 19029 RG 160023 160024 26066 11001 23053 30086
MAINTENANCE PERFORMED ON SITE:	
	1. J
EQUIPMENT PROBLEMS OR FAILURES:	······································
SUGGESTIONS, ADDITIONS, CHANGES:	
· · · · · · · · · · · · · · · · · · ·	
and the second of the second o	1 77. 00 100
COMMENTS: Top of carine	= .37m RP = 1.63m
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	A BRICH ST
· · · · · · · · · · · · · · · · · · ·	
	3 · · · · · · · · · · · · · · · · · · ·
EOVision Geophysical Services 1151 Pomona Ros	ad, Suite P, Corona, CA 92882 Ph (951) 549-1234 Fx (951) 549-1236

DCN# EXE805

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<b>GEOVISION</b>	SUSPENSION	LOGGING	<b>FIELD NOTES</b>

SITE:_EXELON VICTORIA	DATE: 11/18/07
CLIENT: MACTEC	JOB:_7501
AUTHOR:_C. CARTER	PAGEOF7

DEPTH	DEPTH	UNFILTERED	FILTERED	COMMENTS	
METERS	FEET	FILE NO.	FILE NO.	CASING, WATER, ROCK, ETC	
	والتوسية بينية مريا النصاد بيريك			· · · ·	
0.5	1.64				
1.0	3.28			-	
1.5	4.92				
2.0	6.56	001		2:49	
2.5	8.20	2			
3.0	9.84	3	515 B 2		
3.5	11.48	4			
4.0	13.12	5			
4.5	14.76	6		-	
5.0	16.40	7			
5.5	18.04	8			
6.0	19.69	9			
6.5	21.33	10			
7.0	22.97	i in			
7.5	24.61	12			
8.0	26.25	13			
8.5	27.89	14			
9.0	29.53	15			
9.5	31.17	16			
10.0	32.81	17		new puper	
10.5	34.45	18		•	
11.0	36.09	19		•	
11.5	37.73	20			
12.0	39.37	21			
12.5	41.01	22.			
13.0	42.65	23			
13.5	44.29	24			
14.0	45.93	25	. 4		4
14.5	47.57	26	· · · ·	·	17
15.0	49.21	27			- in
15.5	50.85	28			
16.0	52.49	29			
16.5	54.13	30			
17.0	55.77	31			·
17.5	57.41	32			
18.0	59.06	33			
18.5	60.70	34			<u> </u>
19.0	62.34	35			金 祖二
19.5	63.98	36			
20.0	65.62	37			1941 ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (

# **GEOVISION SUSPENSION LOGGING FIELD NOTES**

SITE: EXELON VICTORIA B-230	DATE: 1/18/07
CLIENT:MACTEC	JOB:_7501
AUTHOR:_C. CARTER	PAGE 4 OF 7

DEPTH	DEPTH	UNFILTERED	FILTERED	COMMENTS
METERS	FEET	FILE NO.	FILE NO.	CASING, WATER, ROCK, ETC

		· · · · · · · · · · · · · · · · · · ·		
20.5	67.26	38		
21.0	68.90	39		
21.5	70.54	40		
22.0	72.18	41		
22.5	73.82	42		
23.0	75.46	· 43		
23.5	77.10	44		
24.0	78.74	45		2
24.5	80.38	46		
25.0	82.02	47		
25.5	83.66	48		
26.0	85.30	49		
26.5	86.94	50	· ·	
27.0	88.58	51		
27.5	90.22	52		
28.0	91.86	53		
28.5	93.50	54		
29.0	95.14	55		
29.5	96.78	56		
30.0	98.43	57		
30.5	100.07	82		
31.0	101.71	59		
31.5	103.35	60		
32.0	104.99	61		
32.5	106.63	62		······································
33.0	108.27	63		
33.5	109.91	64		
34.0	111.55	65		
34.5	113.19	66		
35.0	114.83	67		
35.5	116.47	68		
36.0	118.11	69		
36.5	119.75	20		
37.0	121.39	ור		
37.5	123.03	72		
38.0	124.67			
38.5	126.31	74	4	
39.0	127.95	75		
39.5	129.59	76		
40.0	131.23	77		

GEOVision Report 7534-01 Exelon COL Victoria Boring Geophysical Logging rev 0

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## **GEOVISION SUSPENSION LOGGING FIELD NOTES**

SITE: EXELON VICTORIA 8-2301	DATE: 111867
CLIENT:MACTEC	JOB:_7501
AUTHOR:_C. CARTER	PAGEOF7

DEPTH D	EPTH	UNFILTERED	FILTERED	COMMENTS
METERS FI	EET	FILE NO.	FILE NO.	CASING, WATER, ROCK, ETC

U C			·
40.5	132.87	78	
41.0	134.51	79	
41.5	136.15	80	
42.0	137.80	81	
42.5	139.44	82	
43.0	141.08	83	
43.5	142.72	84	
44.0	144.36	85	
44.5	146.00	86	
45.0	147.64	87	
45.5	149.28	88	
46.0	150.92	89	
46.5	152.56	10	
47.0	154.20	91	
47.5	155.84	92	
48.0	157.48	93	
48.5	159.12	94	
49.0	160.76	95	
49.5	162.40	96	
50.0	164.04	<u> </u>	
50.5	165.68	98	
51.0	167.32	ନ୍ୟ	
51.5	168.96	100	Disk change
52.0	170.60	101	
52.5	172.24	102	
53.0	173.88	103	
53.5	175.52	104	
54.0	. 177.17	105	
54.5	178.81	106	
55.0	180.45	107	
55.5	182.09	801	
56.0	183.73	109	
56.5	185.37	110	
57.0	187.01	111	
57.5	188.65	112	
58.0	190.29	113	
58.5	191.93	แน	
59.0	193.57	115	
59.5	195.21	116	
60.0	196.85	117	

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# **GEOVISION SUSPENSION LOGGING FIELD NOTES**

SITE:_EXELON VICTORIA_ 3-2307		DATE: 11	1847	
CLIENT:MACTEC	5	JOB:_7501		-
AUTHOR:_C. CARTER		PAGE 6	OF	
			/	

	1
METERS FEET FILE NO. FILE NO. CASING, WATER, ROCK, ETC	

Γ	60.5	198.49	118		
	61.0	200.13	119		P
F	61.5	201.77	120		
	62.0	203.41	121		
Ī	62.5	205.05	122		
	63.0	206.69	123	•	
Γ	63.5	208.33	124		
T	64.0	209.97	125		
F	64.5	211.61	126		
Γ	65.0	213.25	12.7		
Γ	65.5	214.90	128		
ſ	66.0	216.54	129		-
	66.5	218.18	130		
Γ	67.0	219.82	13/		
Г	67.5	221.46	132		
Γ	68.0	223.10	133		1
ſ	68.5	224.74	134		
Γ	69.0	226.38	135		
Γ	69.5	228.02	136		
Γ	70.0	229.66	137		
Γ	70.5	231.30	138		
ľ	71.0	232.94	139		
Γ	71.5	234.58	140		
T	72.0	236.22	141.		
. [	72.5	237.86	142		
Γ	73.0	239.50	143	e	
Γ	73.5	241.14	144		а. •
Γ	74.0	242.78	145		
[	74.5	244.42	146		
[	75.0	246.06	147		neu paper
[	75.5	247.70	149		
[	76.0	249.34	150		
[	76.5	250.98	151		
- [	. 77.0	252.62	152		
Γ	77.5	254.27	153		
Γ	78.0	255.91	154		
Γ	78.5	257.55	155		
Γ	79.0	259.19	156		
Γ	79.5	260.83	157		
- r	80.0	262.47	157		

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SITE:_EXI	ELON VICT	TORIA B-230]		DATE: 4/18/07
_				JOB:_7501
	C. CARTE			PAGE7OF7
	-			, , ,
DEPTH	DEPTH	UNFILTERED	FILTERED	COMMENTS
METERS	FEET	FILE NO.	FILE NO.	CASING, WATER, ROCK, ETC
				·
80.5	264.11	158		
81.0	265.75	159		
81.5	267.39	160		
82.0	269.03	161		
82.5	270.67	162		
83.0	272.31	163		
83.5	273.95	164		
84.0	275.59	165		
84.5	277.23	166		
85.0	278.87	167		
85.5	280.51	168		
86.0	282.15	169		
86.5	283.79	170		
87.0	285.43	171		×
87.5	287.07	172		
88.0	288.71	173		
88.5	290.35	174		
89.0	291.99	175		
89.5	293.64	176		
90.0	295.28	177		
90.5	296.92	178		4:31
91.0	298.56			
91.5	300.20			· · · · · · · · · · · · · · · · · · ·
92.0	301.84			* <u>1</u>
92.5	303.48			
93.0	305.12			
93.5	306.76			
94.0	308.40			
94.5	310.04			
95.0	311.68			
95.5	313.32			
96.0	314.96			
96.5	316.60			
97.0	318.24			
97.5	319.88			
98.0	321.52			
98.5	323.16			
99.0	324.80			
99.5	326.44			

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geophysical services

	B-2307		R FIELD LOG
SITE:_EXELON VICTORIA CLIENT: MACTEC	COUNTY COL		DATE: 11/18/67 JOB: 7501 PAGE 1 OF 2
AUTHOR:_C. CARTER	······		PAGE 1 OF 2
		OFFICE_	_PHONE:_361-972-0198
		_CELL	_ PHONE:_919-949-1707
CONTACT:ALLAN SHAW_			PHONE:301-704-2684
CONTRACT			_ PHONE:
CONTACT:			PHONE:
CONTACT:			PHONE:PHONE:
CONTACT		3 <b></b>	PHONE:
			PHONE:
COMPANY:			_ PHONE: _ PHONE:
COUNTY: VICTORIA RAI	NGE: TC	WNSHIP:	SECTION:
BOREHOLE CONSTRUCT	ON: CASED	UNCASED X	32011011
DIAMETERS AND DEPTH	RANGES: 5"	0 TO 310 Ft	;,TO
BOREHOLE TOTAL DEPTH	AS DRILLED:	310ft	
CONDUCTOR CASING? V	ES V DEPTHI	IO BOTTOM OF	CASING 2. NO
DEPTH TO BEDROCK:	<b>A</b>	DEPTH TO	O WATER TABLE: MA
BOREHOLE FLUID: WATER	R; FRESH W	ATER MUD	SALT WATER MUD;
DEPTH TO BOREHOLE FL	UID:	TIME SIN	CE LAST CIRCULATION: 11:45000
LOGGING CREW:_C. CAR			
VEHICLE(S) USED AND MI	LEAGE: _RENTAL	·	
MOBILIZED FROM: VICTO	RIA. TX	DEPARTL	JRE TIME: 10:00 am
ARRIVED ON SITE: 10:	soam		14
STANDBY TIME:		CAUSE:	,
LOGGING STARTED: 1:4	ypm		COMPLETED: 2:13
GEOVision Geophysical Services	1151 Pomona Roa	d, Unit P, Corona, C.	A 92882 Ph (951) 549-1234 Fx (951) 549-12

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SITE:_EXEL CLIENT:_M AUTHOR: (		OUNTY COL <u>B-</u>	2307	DATE: <u></u> JOB:_750 PAGE 2 O	1		
Aumonv					1 2		
WINCH:	COMPROBE	SILVER	X OYO	RG	OTHER		
MICROLOG	GER 5310	× 5772	OTHER				
	ROBE 5368						
		<u>_</u>		-			
PROBE OF			82 FT) 12 IN M	AX			
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	F. OFFSET AT E						
AFTER SUF	RVEY DEPTH ER	ROR .02	LESS 1	HAN 0.4%?			
			· ·	•		181 <sup>20</sup>	
	STA		END	END			
LOG N			DEPTH				
B2307C		1:26 p	~	1:2800	<u>-</u>		
B2307CA4	and the second s	7 1:44	121	2:13 m			
82307CAL	TESTOR	2.18	m	2:19 1	n		
		•	,				
	l						
CALIBRATI	ON PLATE S/N 2		AS BL		PVC FITT	and the second sec	1/18/07
P		1.968	and the second se				1111 ~ (
	FILE NAM	the second se					
	B2307CLL TEST						
AS MEAS.	BZ307CALTES			2 8.030	4.567		
AS MEAS.							
AS MEAS.							i.
AS MEAS.							l
AS MEAS.							

MAINTENANCE PERFORMED ON SITE:

EQUIPMENT PROBLEMS OR FAILURES:

SUGGESTIONS, ADDITIONS, CHANGES:

GEOVIsion Geophysical Services

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

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Page 518 of 735

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DCN# EXE805



geophysical services

B-2307 D	EVIATION	N FIELD LC	)G	
SITE:_EXELON VICTORIA COUNTY COL		DATE: 11186	57	
CLIENT: MACTEC		JOB:_7501		
CLIENT:_MACTEC AUTHOR:_C. CARTER		PAGE 1 OF 2	Neros minglisteret.	
		<ul> <li>To 199 (1999) Andres (6 Second Science)</li> </ul>		
CONTACT:_STEVE CRISENZO	OFFICE	PHONE:_361-9	72-0198	
	_CELL	PHONE:_919-9	49-1707	
CONTACT:	_OFFICE_	PHONE:		
		PHONE:		
CONTACT:		PHONE:		
		PHONE:		
CONTACT:		PHONE:		
-		PHONE:		
DRILLER:		PHONE:		
COMPANY:		PHONE:		•
	····			
DIRECTIONS TO SITE:				
GENERAL SITE CONDITIONS/LOCATION:				×
BOREHOLE DESIGNATION: B-2307	LOCATION	1: Perimete	< ·	
COUNTY:_VICTORIA_RANGE:TO	WNSHIP:	SECT	ION:	
BOREHOLE CONSTRUCTION: CASED	UNCASED X			-
DIAMETERS AND DEPTH RANGES: 5"	0 TO 310 ft		то	
BOREHOLE TOTAL DEPTH AS DRILLED:	310 ft	' ' '	· • • _	
CONDUCTOR CASING?: YES X DEPTH T	O BOTTOM O	CASING 2	· NO	i
DEPTH TO BEDROCK: UA		WATER TABL		
BOREHOLE FLUID: WATER; FRESH W/				
		_; SALI WAT		
	THE			140
DEPTH TO BOREHOLE FLUID: $\_ \oint \_$	TIME SINC	E LAST CIRCU	LATION:	173am
, ,				· •
		~		•
				: *
EOVision Geophysical Services 1151 Pomona Road	l, Unit P, Corona, (	CA 92882 Ph (95.	1) 549-1234 F:	x (951) 549-1236
				13
	unical Learning		20, 2000	No. 545
Vision Report 7534-01 Exelon COL Victoria Boring Geoph	nysical Logging re	vu April	29, 2008	Page 515 of

MACTEC Engineering and Consulting, Inc. Exelon COL - Victoria County Site

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geophysical services

	SITE:_EXELON VICTOR CLIENT:_MACTEC		TY COL 8-2-30	7	DATE: "///8 JOB:_7501_	67	
	AUTHOR:_C. CARTER_				PAGE 2 OF 2		
	LOGGING CREW:_C. C VEHICLE(S) USED AND	MILEAGE					
	MOBILIZED FROM: Vi	ctoria -		DEPARTUR	RE TIME: 10:00	the second s	
	ARRIVED ON SITE: 10	:30 an				ce uliston	
	STANDBY TIME: LOGGING STARTED:	5:74		CAUSE:	DOMPLETED.		7
	LOGGING STARTED.		~	LOGGING	COMPLETED:	201 7.1	(pm
	WINCH: COMPR MICROLOGGER	OBE 5310_ <u>⊀</u> _	SILVER_¥	OYO OTHER	RG	OTHËR	
	TELEVIEWER	5174 <u>×</u>					
2	PROBE TILT TEST PROBE TILT TEST	60.1 96.9	BRUNTON TIL	т 6		4	
	PROBE TILT TEST	31.76	BRUNTON TIL		After 6	3	
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	PROBE AZIMUTH TEST PROBE AZIMUTH TEST						
2	PROBE AZINIOTH TEST	111.0	BRUNTON AZI		S After (	og	
	PROBE OFFSET		1.44M(4.72FT)			1.	
	MINUS CASING STICK-	UP	1.2				
	DEPTH REF. OFFSET	T START					
	DEPTH REF. OFFSET		3,50				
	AFTER SURVEY DEPT	HERROR	. 02	LESS THA	N 0.4%?		
		OTADT	CTADT			7	
	LOG NAME	START DEPTH	START	END DEPTH	END		
	B23074UUPO1	303.2'	S:34	3.546	5:47	- ·	
		1.1.				1	
				1		1	
						1 .	
			l	1			
	MAINTENANCE PERFC	RMED OF	N SITE:				
			IL LIDES				
	EQUIPMENT PROBLEM	IS OR FA	LURES.				
	SUGGESTIONS, ADDIT	IONS CH	ANGES				
C	GEOVision Geophysical Service	s 11	51 Pomona Road, U	nit P, Corona,	CA 92882 Ph (95	51) 549-1234 Fx (9	51) 549-1236
G	EOVision Report 7534-01 Exe	on COL Vict	oria Boring Geophy	vsical Logging	rev 0 A	pril 29, 2008	Page 516 of

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# APPENDIX E BORING GEOPHYSICAL LOGGING FIELD MEASUREMENT PROCEDURES

## PROCEDURE FOR

### OYO P-S SUSPENSION SEISMIC VELOCITY LOGGING

#### Background

This procedure describes a method for measuring shear and compressional wave velocities in soil and rock. The OYO P-S Suspension Method is applied by generating shear and compressional waves in a borehole using the OYO P-S Suspension Logger borehole tool and measuring the travel time between two receiver geophones or hydrophones located in the same tool.

#### Objective

The outcome of this procedure is a plot and table of P and  $S_H$  wave velocity versus depth for each borehole. Standard analysis is performed on receiver to receiver data. Data is presented in report format, with digital data files transmitted in Excel, Word or ASCII format.

#### Instrumentation

- 1. OYO Model 170 Digital Logging Recorder or equivalent
- 2. OYO P-S Suspension Logger probe or equivalent, including two sets horizontal and vertical geophones, seismic source, and power supply for the source and receivers
- 3. Winch and winch controller, with logging cable
- 4. Batteries to operate P-S Logger and winch

The Suspension P-S Logger system, manufactured by OYO Corporation, or the Robertson Digital P-S Suspension Probe with the Robertson Micrologger2 are currently the only commercially available suspension logging systems. As shown in Figure 1, these systems consists of a borehole probe suspended by a cable and a recording/control electronics package on the surface.

The suspension system probe consists of a combined reversible polarity solenoid horizontal shear-wave generator ( $S_H$ ) and compressional-wave generator (P), joined to



two biaxial geophones by a flexible isolation cylinder. The separation of the two geophones is one meter, allowing average wave velocity in the region between the geophones to be determined by inversion of the wave travel time between the two geophones. The total length of the probe is approximately 7 meters; the center point of the geophones is approximately 4 meters above the bottom end of the probe.

The probe receives control signals from, and sends the amplified geophone signals to, the instrumentation package on the surface via an armored 4 or 7 conductor cable. The cable is wound onto the drum of a winch and is used to support the probe. Cable travel is measured by a rotary encoder to provide probe depth data.

The entire probe is suspended by the cable and may be centered in the borehole by nylon "whiskers." Therefore, source motion is not coupled directly to the borehole walls; rather, the source motion creates a horizontally propagating pressure wave in the fluid filling the borehole and surrounding the source. This pressure wave produces a horizontal displacement of the soil forming the wall of the borehole. This displacement propagates up and down the borehole wall, in turn causing a pressure wave to be generated in the fluid surrounding the geophones as the soil displacement wave passes their location.

#### **Environmental Conditions**

The OYO P-S Suspension Logging Method can be used in either cased or uncased boreholes. For best results, the uncased borehole must be between 10 and 20 cm in diameter, or 4 to 8 inches. A cased borehole may be as small as 3 inches, if properly grouted (see below) and the grout annulus does not exceed 1 inch.

Uncased boreholes are preferred because the effects of the casing and grouting are removed. It is recommended that the borehole be drilled using the rotary mud method. This method does little damage to the borehole wall, and the drilling fluid coats and seals the borehole wall reducing fluid loss and wall collapse. The borehole fluid is required for the logging, and must be well circulated prior to logging.

If the borehole must be cased, the casing must be PVC and properly installed and grouted. Any voids in the grout will cause problems with the data. Likewise, large grout bulbs used to fill cavities will also cause problems. The grout must be set before testing. This means the grouting must take place at least 48 hours before testing.

For borehole casing, applicable preparation procedures are presented in ASTM Standard D4428/D4428M-91 Section 4.1 (see ASTM website for copy).

#### Calibration

Calibration of the digital recorder is required. Calibration is limited to the timing accuracy of the recorder. GEOVision's Seismograph Calibration Procedure or equivalent should be used. Calibration must be performed on an annual basis.



#### Measurement Procedure

The entire probe is lowered into the borehole to a specific measurement depth by the winch. A measurement sequence is then initiated by the operator from the instrumentation package control panel. No further operator intervention is then needed to complete the measurement sequence described below.

The system electronics activates the SH-wave source in one direction and records the output of the two horizontally oriented geophone axes which are situated parallel to the axis of motion of the source. The source is then activated in the opposite direction, and the horizontal output signals are again recorded, producing a SH-wave record of polarity opposite to the previous record. The source is finally actuated in the first direction again, and the responses of the vertical geophone axes to the resultant P-wave are recorded during this sampling.

The data from each geophone during each source activation is recorded as a different channel on the recording system. The seismograph has at least six channels (two simultaneous recording channels), each with at least a 12 bit 1024 sample record. Newer seismographs may have longer record lengths. The recorded data is displayed on a CRT or LCD display and possibly on paper tape output as six channels with a common time scale. Data is stored on digital media for further processing. Up to 8 sampling sequences can be stacked (averaged) to improve the signal to noise ratio of the signals.

Review of the data on the display or paper tape allows the operator to set the gains, filters, delay time, pulse length (energy), sample rate, and stacking number in order to optimize the quality of the data before recording. In the case of the Model 170, printed data is verified by the operator prior to moving the probe. In the case of the Robertson Micrologger2, storage on the hard disk should be verified from time-to-time, certainly before exiting the borehole.

Typical depth spacing for measurements is 1.0 meters, or 3.3 feet. Alternative spacing is 0.5 meter, or 1.6 feet.

#### **Required Field Records**

- 1) Field log for each borehole showing
  - a) Borehole identification
  - b) Date of test
  - c) Tester or data recorder



- d) Description of measurement
- e) Any deviations from test plan and action taken as a result
- f) QA Review
- 2) Paper output records are no longer required, since the Micrologger2 cannot generate them. However, data must be stored in at least 2 places prior to leaving the site
- 3) List of record ID numbers (for data on digital media) and corresponding depth
- 4) Diskettes, CDRom, or USB flash drives with backup copies of data on hard disk, labeled with borehole designation, record ID numbers, date, and tester name.

An example Field Log is attached to this procedure.

#### Analysis

Following completion of field work, the recorded digital records are processed by computer using the OYO Corporation software program PSLOG and interactively analyzed by an experienced geophysicist to produce plots and tables of P and  $S_H$  wave velocity versus depth.

The digital time series records from each depth are transferred to a personal computer for analysis. Figure 2 shows a sample of the data from a single depth. These digital records are analyzed to locate the first minima on the vertical axis records, indicating the arrival of P-wave energy. The difference in travel time between these arrivals is used to calculate the P-wave velocity for that 1-meter interval. When observable, P-wave arrivals on the horizontal axis records are used to verify the velocities determined from the vertical axis data. In addition, the soil velocity calculated from the travel time from source to first receiver is compared to the velocity derived from the travel time between receivers.

The digital records are studied to establish the presence of clear SH-wave pulses, as indicated by the presence of opposite polarity pulses on each pair of horizontal records. Ideally, the SH-wave signals from the 'normal' and 'reverse' source pulses are very nearly inverted images of each other. Digital FFT – IFFT lowpass filtering are used to remove the higher frequency P-wave signal from the SH-wave signal.

The first maxima are picked for the 'normal' signals and the first minima are picked for the 'reverse' signals. The absolute arrival time of the 'normal' and 'reverse' signals may vary by +/- 0.2 milliseconds, due to differences in actuation time of the solenoid source caused by constant mechanical bias in the source or by borehole inclination. This variation does not affect the velocity determinations, as the differential time is measured between arrivals of waves created by the same source actuation. The final velocity



value is the average of the values obtained from the 'normal' and 'reverse' source actuations.

In Figure 2, the time difference over the 1-meter interval of 1.70 millisecond is equivalent to a SH-wave velocity of 588 m/sec. Whenever possible, time differences are determined from several phase points on the S<sub>H</sub> -wave pulse trains to verify the data obtained from the first arrival of the  $S_{H}$  -wave pulse. In addition, the soil velocity calculated from the travel time from source to first receiver is compared to the velocity derived from the travel time between receivers.

Figure 3 is a sample composite plot of the far normal horizontal geophone records for a range of depths. This plot shows the waveforms at each depth, clearly showing the Swave arrivals. This display format is used during analysis to observe trends in velocity with changing depth.

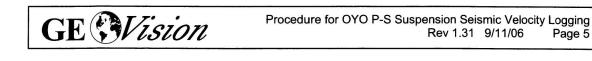
Once the proper picks are entered in PSLOG, the picks are transferred to an Excel spreadsheet where Vs and Vp are calculated. The spreadsheet allows output for presentation in charts and tables.

Standard analysis is performed on receiver 1 to receiver 2 data, with separate analysis performed on source to receiver data as a quality assurance procedure.



**References:** 

- 1. "In Situ P and S Wave Velocity Measurement", Ohya, S. 1986. Proceedings of In-Situ '86, Use of In-Situ Tests In Geotechnical Engineering, an ASCE Specialty Conference sponsored by the Geotechnical Engineering Division of ASCE and co-sponsored by the Civil Engineering Dept of Virginia Tech.
- 2. Guidelines for Determining Design Basis Ground Motions, Report TR-102293, Electric Power Research Institute, Palo Alto, California, November 1993, Sections 7 and 8.
- 3. "Standard test Methods for Crosshole Seismic Testing", ASTM Standard D4428/D4428M-91, July 1991, Philadelphia, PA



Page 5

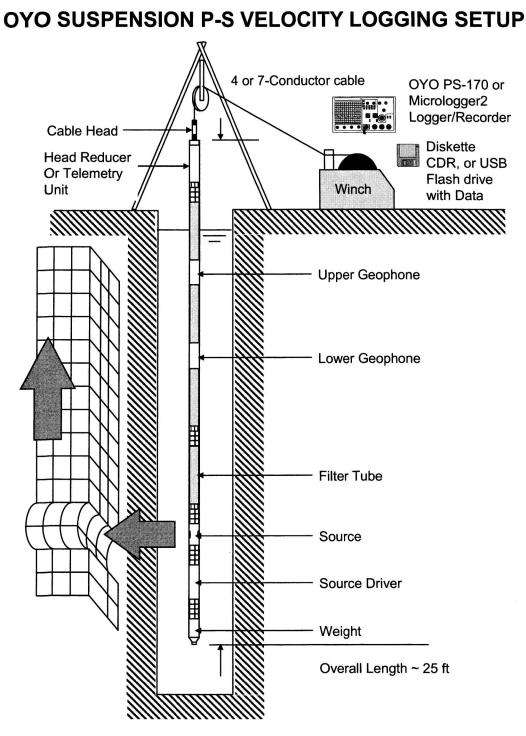


Figure 1. Suspension PS logging method setup

GE SVision Procedure for OYO P-S Suspension Seismic Velocity Logging Rev 1.31 9/11/06 Page 6

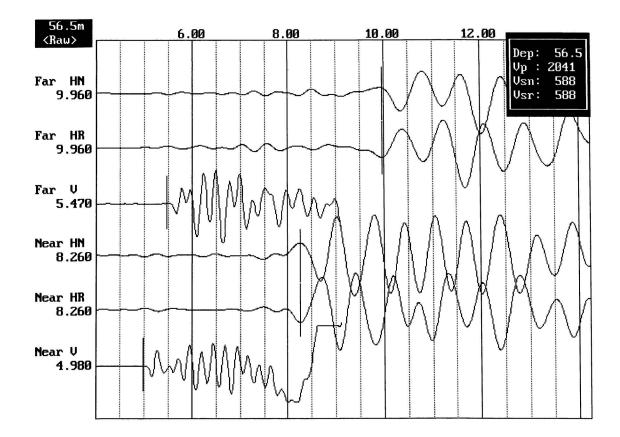
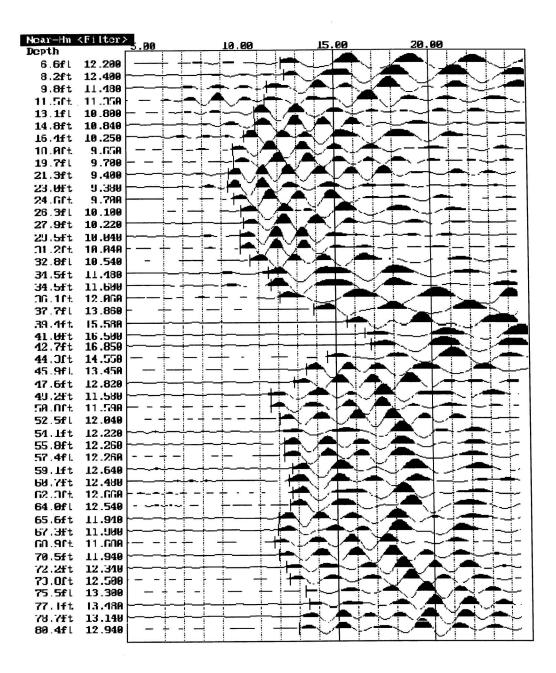
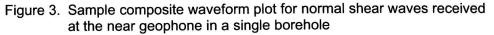


Figure 2. Sample suspension method waveform data showing horizontal normal and reversed (HR and HN), and vertical (V) waveforms received at the near (bottom 3 channels) and far (top 3 channels) geophones. The arrivals in milliseconds for each pick are shown on the left. The box in the upper right corner shows the depth in the borehole and the velocities calculated based on the picks.



Procedure for OYO P-S Suspension Seismic Velocity Logging Rev 1.31 9/11/06 Page 7







Procedure for OYO P-S Suspension Seismic Velocity Logging Rev 1.31 9/11/06 Page 8



## P-S SUSPENSION VELOCITY FIELD LOG

SITE:		DATE:
CLIENT:		
AUTHOR:		
CONTACT:	OFFICE	PHONE:
		PHONE:
CONTACT:	OFFICE	PHONE:
		PHONE:
		PHONE:
		PHONE:
CONTACT:		
		PHONE:
DRILLER:		
COMPANY:		
DIRECTIONS TO SITE:		
GENERAL SITE CONDITIONS/LOCATION:		
EA#:		
EA#: BOREHOLE DESIGNATION:	LOCAT	TION:
COUNTY:RANGE:		
BOREHOLE CONSTRUCTION: CASED	UNCASED	
DIAMETERS AND DEPTH RANGES:0	то	;,то
BOREHOLE TOTAL DEPTH AS DRILLED:		
CONDUCTOR CASING?: YES DEPTH TO		
DEPTH TO BEDROCK:	DEPTH TO	WATER TABLE:
BOREHOLE FLUID: WATER ; FRESH WA	TER MUD	; SALT WATER MUD ;
OTHER:	_	
	TIME SINC	E LAST CIRCULATION:
GEOVision Geophysical Services 1151 Pomona Roa	d, Suite P, Co	orona, CA 92882 Ph (951) 549-1234 Fx (951) 549-1236



SITE:	DATE:
CLIENT:	JOB:
AUTHOR:	PAGE 2 OF
VEHICLE(S) USED AND MILEAGE:	
	DEPARTURE TIME:
ARRIVED ON SITE:	_
STANDBY TIME:	_CAUSE:
LOGGING STARTED:	LOGGING COMPLETED:
STANDBY TIME:	CAUSE: LOGGING COMPLETED:
LOGGING STARTED:	LOGGING COMPLETED:
DEMOBILIZED TO:	ARRIVAL TIME:
ADDITIONAL DEMOB TIME:	REASON:
INSTRUMENT OYO 12004 15014 RECEIVER S/N 12008 20042 MAINTENANCE PERFORMED ON SITE: EQUIPMENT PROBLEMS OR FAILURES:	
SUGGESTIONS, ADDITIONS, CHANGES:	
COMMENTS:	
GEOVision Geophysical Services 1151 Pomona Ro	ad, Suite P, Corona, CA 92882 Ph (951) 549-1234 Fx (951) 549-123

# **GEOVISION SUSPENSION LOGGING FIELD NOTES**

SITE:				DATE:	
CLIENT:	JOE			JOB:	
AUTHOR:				PAGE	OF
DEPTH	DEPTH	UNFILTERED	FILTERED	COMMENTS	
METERS	a presidente de la construcción de	FILE NO.	FILE NO.	THE STATE AND A DEPENDENT AND A DEPENDENT OF THE STATE	TER, 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				
14.5	47.57				
15.0	49.21				
15.5	50.85				
16.0	52.49				
16.5	54.13			1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
17.0	55.77				
17.5	57.41				
18.0	59.06				

# **GEOVISION SUSPENSION LOGGING FIELD NOTES**

SITE:				DATE:			
CLIENT:				JOB:	JOB:		
AUTHOR:	· · · · · · · · · · · · · · · · · · ·			PAGE	OF		
DEDTU	DEPTH						
DEPTH METERS		UNFILTERED FILE NO.	FILTERED FILE NO.		ATER, ROCK, ETC		
METERS	FEEI	FILE NO.	FILE NO.	CASING, W	ATER, ROCK, ETC		
18.5	60.70						
19.0	62.34						
19.5	63.98						
20.0	65.62						
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						
28.5	93.50						
29.0	95.14		a.				
29.5	96.78				2.		
30.0	98.43						
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	e fondite e e e e e e e e e e e e e e e e e e					
35.5	116.47						
36.0	118.11						

#### PROCEDURE FOR USING THE ROBERTSON GEOLOGGING HI-RESOLUTION ACOUSTIC TELEVIEWER (HIRAT)

#### **Reviewed 2/13/06**

#### Background

The acoustic televiewer is a device for producing a qualitative image of the wall of a borehole. Because it uses ultrasound rather than visible light it is able to work in dirty or opaque borehole fluids, although heavy drilling mud will cause excessive dispersion of the acoustic beam. The picture below shows the sonde's lower nylon section, and one of the bowspring attachments which are used to centralize the sonde in the borehole.



Pulses of ultrasound (0.5 - 1.5MHz) are generated by a piezo-electric resonator. The pulses are transmitted through the oil in which the resonator is immersed, through the wall of the acoustic housing, then propagate through the borehole fluid and are reflected from the wall of the borehole. The reflected energy is picked up by the same transducer, from which is recorded both the **amplitude** of the returned pulse and the **travel-time** which have elapsed. Blanking must be applied to prevent the transducer from registering reflections from the inside surface of the acoustic housing. The material of the housing is chosen so that its acoustic properties are similar to the oil which fills it. The housing is not designed to withstand borehole fluid pressures, but has a piston device to allow equalization between inside and outside pressure.

The *amplitude* of the returned pulse is a function of the acoustic reflectivity of the borehole wall. If the beam strikes a hard borehole wall normally to the surface the energy will be returned to the transducer and a strong return will be recorded. If the formation is softer, then less energy will be reflected. Also, if the surface of the borehole is rough, or effectively missing because of the presence of a fracture or other structure, then energy will be dispersed and a poor return will be recorded.

The *travel-time* is a simple function of the diameter of the borehole and the velocity of sound in the borehole fluid (typically 1.5Km/sec). An A/D converter monitors the output from the transducer once the blanking period has expired and a comparator is used to detect the peak amplitude during the sampling window.

The coaxially-mounted transducer has a planar radiating surface, but the vibration characteristics are such that the acoustic pulse is emitted as a 'pencil' beam. The emitted beam is deflected by a planar mirror so that it leaves the acoustic housing at right angles to the sonde axis. The mirror is rotated to scan the borehole wall. The ultrasound pulses are synchronized with rotation of the mirror so that up to 360 pulses are emitted in every revolution. Because of the time which must elapse for the two-way transit of the borehole fluid, there is an upper limit upon the number of radial samples that may be acquired from a borehole of a particular radius. In larger boreholes, therefore, it may be necessary to reduce the number of radial samples. The sonde is able to operate at 90, 180 or 360 samples per revolution.

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