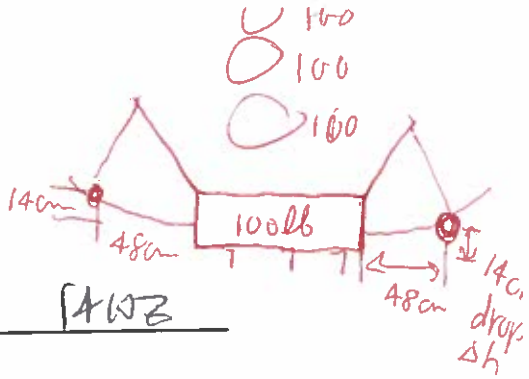
VSP Preliminary Data Sheet



Date: 12AUG98 Type of Phones OYO 1402

1. Well Name X2

2. Location of Well

X= 10029.89 Y= 9997.03 Z= 850.27 elev H2O

∇ = +847.734m

Casing Elevation: 850.27

3. Depth to top of water table (measured from CE) 8.32ft = 2.5359m

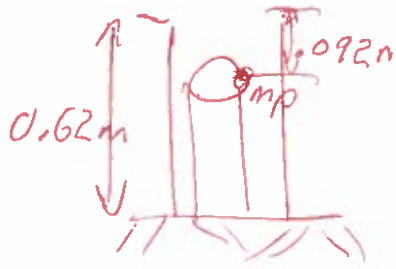
4. Casing Elevation, distance above ground level= (.62-.092) = .528m

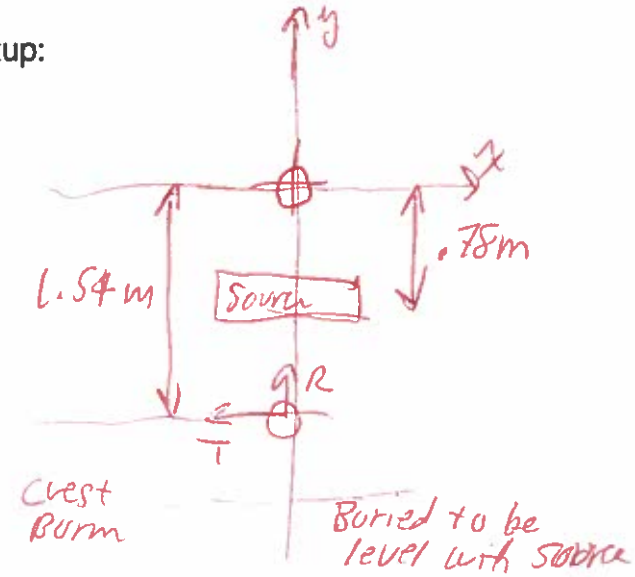
5. Reference phone offset from borehole= 1.54m south

6. Reference phone depth below ground level= 0

7. Source Offset from borehole= 0.78m south

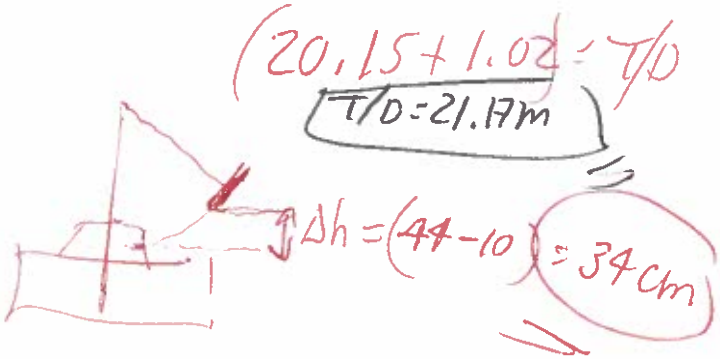
8. Sketch of setup:



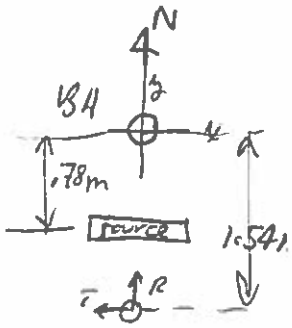


9. Blue Box switch settings:

Channel	Component
1	Vertical
2	Longitudinal (radial)
3	Transverse



BSU GEOPHYSICS VSP OBSERVER'S LOG



Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° East
Azimuth y-axis: 90° Azimuth
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27 CE 2

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.54 m

Channel Configuration:	Borehole Phone	Reference Phone
	V=Channel 1	V=Channel 4
	R=Channel 2	R=Channel 5
	T=Channel 3	T=Channel 6

Ref. Polarization:	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
SRX2000	1	20.5					0	-.78m	270	90
	2	20.5							90	90
	3	20.5							270	90
	4	20.5							90	90
	5	20.5							270	90
	6	20.5							90	90
	7	20.5							270	90
	8	20.5							90	90
									270	
									90	

0 lbs
100 lbs
200 lbs
300 lbs

▽ = +847.7341 m

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° GNT
Azimuth y-axis: 90° AWAY
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27

Reference Phone: CE 2
Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.54 m

Channel Configuration:	Borehole Phone	Reference Phone
	V=Channel 1	V=Channel 4
	R=Channel 2	R=Channel 5
	T=Channel 3	T=Channel 6

Ref. Polarization:	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
W/X20001	1	20.5					0	-.78m	270	135
	2	20.5							90	
	3	20.25							270	
	4	20.25							90	
	5	20.0							270	
	6	20.0							90	
	7	19.75							270	
	8	19.75							90	
	9	19.50							270	
	10	19.50							90	

11:05

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: 1528 m above G.L.
Azimuth x-axis: 90° East
Azimuth y-axis: 90° Anti
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27 CE V

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.54 m

Channel Configuration:
Borehole Phone: V=Channel 1, R=Channel 2, T=Channel 3
Reference Phone: V=Channel 4, R=Channel 5, T=Channel 6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	11	19.25					0	-.78	270	135
	12	19.25							90	
	13	19.0							270	
	14	19.0							90	
	15	18.75							270	
	16	18.75							90	
	17	18.50							270	
	18	18.50							90	
	19	18.25							270	
	20	18.25							90	

had to release tool

11:11

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° East
Azimuth y-axis: 90° Azimuth
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27 CE 2

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.54 m

Channel Configuration:

	Borehole Phone	Reference Phone
V=Channel	1	4
R=Channel	2	5
T=Channel	3	6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	21	18.0					0	-.78	270	135
	22	18.0							90	
	23	17.75							270	
	24	17.75							90	
	25	17.50							270	
	26	17.50							90	
	27	17.25							270	
	28	17.25							90	
	29	17.0							270	
	30	17.0							90	

11:17

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° CNT
Azimuth y-axis: 90° CLKWZ
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27 CE 2

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.54 m

Channel Configuration:
Borehole Phone: V=Channel 1, R=Channel 2, T=Channel 3
Reference Phone: V=Channel 4, R=Channel 5, T=Channel 6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	31	16.75					0	-.78	270	135
	32	16.75							90	
	33	16.50							270	
	34	16.50							90	
	35	16.25							270	
	36	16.25							90	
	37	16.0							270	
	38	16.0							90	
	39	15.75							270	
	40	15.75							90	

11:22

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° ENE
Azimuth y-axis: 90° Almost
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27

Reference Phone: CE 2
Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.58 m

Channel Configuration:	Borehole Phone	Reference Phone
	V=Channel 1	V=Channel 4
	R=Channel 2	R=Channel 5
	T=Channel 3	T=Channel 6

Ref. Polarization:	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut -7 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	41	15.50					0	-.78	270	135
	42	15.50							90	
	43	15.25							270	
	44	15.25							90	
	45	15.0							270	
	46	15.0							90	
	47	14.75							270	
	48	14.75							90	
	49	14.50							270	
	50	14.50							90	

11:30

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° CNT
Azimuth y-axis: 90° CLOCK
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27 CE 2

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.54 m

Channel Configuration:	Borehole Phone	Reference Phone
	V=Channel 1	V=Channel 4
	R=Channel 2	R=Channel 5
	T=Channel 3	T=Channel 6

Ref. Polarization:	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	51	14.25					0	-.78	270	135
	52	14.25							90	
	53	14.0							270	
	54	14.0							90	
	55	13.75							270	
	56	13.75							90	
	57	13.50							270	
	58	13.50							90	
	59	13.25							270	
	60	13.25							90	

11:34

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° ENE
Azimuth y-axis: 90° Almost
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27

Reference Phone: CE 2
Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.54 m

Channel Configuration:
Borehole Phone: V=Channel 1, R=Channel 2, T=Channel 3
Reference Phone: V=Channel 4, R=Channel 5, T=Channel 6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	61	13.0					0	-.78	270	135
	62	13.0							90	
	63	12.75							270	
	64	12.75							90	
	65	12.50							270	
	66	12.50							90	
	67	12.25							270	
	68	12.25							90	
	69	12.0							270	
	70	12.0							90	V

11:41

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° East
Azimuth y-axis: 90° Azimuth
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27 CE 2

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.54 m

Channel Configuration:	Borehole Phone	Reference Phone
	V=Channel 1	V=Channel 4
	R=Channel 2	R=Channel 5
	T=Channel 3	T=Channel 6

Ref. Polarization:	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	71	11.75					0	-.78	270	135
	72	11.75							90	
	73	11.50							270	
	74	11.50							90	
	75	11.25							270	
	76	11.25							90	
	77	11.0							270	
	78	11.0							90	
	79	10.75							270	
	80	10.75							90	

11:46

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° East
Azimuth y-axis: 90° Azimuth
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27 CE 2

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.54 m

Channel Configuration:	Borehole Phone	Reference Phone
	V=Channel 1	V=Channel 4
	R=Channel 2	R=Channel 5
	T=Channel 3	T=Channel 6

Ref. Polarization:	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	81	10.50					0	-.78	270	135
	82	10.50							90	
	83	10.25							270	
	84	10.25							90	
	85	10.0							270	
	86	10.0							90	
	87	9.75							270	
	88	9.75							90	
	89	9.50							270	
	90	9.50							90	

11:51

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° CNT
Azimuth y-axis: 80° Abut2
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27 CE 2

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.54 m

Channel Configuration:	Borehole Phone	Reference Phone
	V=Channel 1	V=Channel 4
	R=Channel 2	R=Channel 5
	T=Channel 3	T=Channel 6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	91	9.25					0	-.78	270	135
	92	9.25							90	
	93	9.0							270	
	94	9.0							90	
	95	8.75							270	
	96	8.75							90	
	97	8.50							270	
	98	8.50							90	
	99	8.25							270	
	100	8.25							90	

11:56

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° GNT
Azimuth y-axis: 90° Azimuth
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27 CE 2

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= −1.59 m

Channel Configuration:

	Borehole Phone	Reference Phone
V=Channel	1	4
R=Channel	2	5
T=Channel	3	6

Ref. Polarization:

	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	101	8.0					0	−.78	270	135
	102	8.0							90	
	103	7.75							270	
	104	7.75							90	
	105	7.50							270	
	106	7.50							90	
	107	7.25							270	
	108	7.25							90	
	109	7.0							270	
	110	7.0							90	

12:03

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° ENE
Azimuth y-axis: 90° ALONG
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27 CE 2

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.54 m

Channel Configuration:	Borehole Phone	Reference Phone
	V=Channel 1	V=Channel 4
	R=Channel 2	R=Channel 5
	T=Channel 3	T=Channel 6

Ref. Polarization:	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	111	6.75					0	-.78	270	135
	112	6.75							90	
	113	6.50							270	
	114	6.50							90	
	115	6.25							270	
	116	6.25							90	
	117	6.0							270	
	118	6.0							90	
	119	5.75							270	
	120	5.75							90	

12.08

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° East
Azimuth y-axis: 90° Azimuth
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27 CE 2

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.59 m

Channel Configuration:	Borehole Phone	Reference Phone
	V=Channel 1	V=Channel 4
	R=Channel 2	R=Channel 5
	T=Channel 3	T=Channel 6

Ref. Polarization:	Az	Vert.
V	0	0
R	0	90
T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	121	5.50					0	-.78	270	135
	122	5.50							90	
	123	5.25							270	
	124	5.25							90	
	125	5.0							270	
	126	5.0							90	
	127	4.75							270	
	128	4.75							90	
	129	4.50							270	
	130	4.50							90	

12:14

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° East
Azimuth y-axis: 90° Azimuth
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27 CE 2

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= -1.54 m

Channel Configuration:	Borehole Phone	Reference Phone	Ref. Polarization:	Az	Vert.
	V=Channel 1	V=Channel 4	V	0	0
	R=Channel 2	R=Channel 5	R	0	90
	T=Channel 3	T=Channel 6	T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	131	4.25					0	-.78	270	135
	132	4.25							90	
	133	4.0							270	
	134	4.0							90	
	135	3.75							270	
	136	3.75							90	
	137	3.50							270	
	138	3.50							90	
	139	3.25							270	
	140	3.25							90	

12:18

BSU GEOPHYSICS VSP OBSERVER'S LOG

Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° East
Azimuth y-axis: 90° Azimuth
Well Coord: X= 10029.89 Y= 9997.03 Z= 850.27 CE 2

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= −1.54 m

Channel Configuration:	Borehole Phone	Reference Phone	Ref. Polarization:	Az	Vert.
	V=Channel 1	V=Channel 4	V	0	0
	R=Channel 2	R=Channel 5	R	0	90
	T=Channel 3	T=Channel 6	T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	141	3.0					0	−.78	270	135
	142	3.0							90	
	143	2.75							270	
	144	2.75							90	
	145	2.50							270	
	146	2.50							90	
	147	2.25							270	
	148	2.25							90	
	149	2.0							270	
	150	2.0							90	

12:24

BSU GEOPHYSICS VSP OBSERVER'S LOG

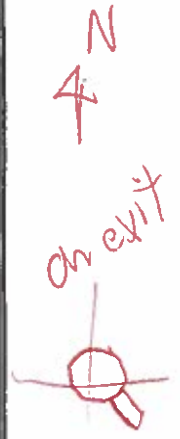
Coordinate System Origin at Borehole
Casing Elevation: .528 m above G.L.
Azimuth x-axis: 90° GNT
Azimuth y-axis: 90° Above
Well Coord: X= 10024.89 Y= 9997.03 Z= 850.27 CE 2

Reference Phone: Offset:_____m
Azimuth_____
Elev. 0 m below G.L.
X= 0 m
Y= −1.54 m

Channel Configuration:	Borehole Phone	Reference Phone	Ref. Polarization:	Az	Vert.
	V=Channel 1	V=Channel 4	V	0	0
	R=Channel 2	R=Channel 5	R	0	90
	T=Channel 3	T=Channel 6	T	270	90

Date: 12 AUG 98 Location: X2 URISP
High-Cut 1000 Low-Cut 4 Sample Int. .0002 Number Samples 2500

Shot		Borehole Phone		Source					Source Polarization	
Rec.	File	Depth	Elev.	Offset	Azimuth	Elev.	X	Y	Azimuth	Vertical
	151	1.75					0	−.78	270	135
	152	1.75							90	
	153	1.50							270	
	154	1.50							90	
	155	1.25							270	
	156	1.25							90	
	157	1.0							270	
	158	1.0							90	



VSP Check List

Project: X2

Date: 12 AUG 98

Odometer Start: 154727 Finish: 154912

Time Out: 9:00 Time In: 13:30

Item	Out	In	Comment
BHG-2 Borehole Geophone	✓		
BHGC-1 Control Box (Blue)	✓		
Cable: Spool to BHGC-1	✓		
Cable: BHGC-1 to Bison			
Ban/Alligator Power Cables BHGC-1			
OYO 3-c Reference Phone (Blue)			
Dummy tool			
Snatch Block and Come-a-long			
Bison Seismograph			
90° Hammer Source + Sand Bags			
Vertical Hammer Source + Sand Bags			
135° Hammer Source			
WD-40 and Black Tape			
Observer's Sheets/Note Book			
Rope			
Claw Hammer and Large Nails			
Tape measure (50m)			
Gloves			
Compass and Maps			
24Volt Clamp Battery			
Gas Card & Keys			
Water Table Logging Probe			