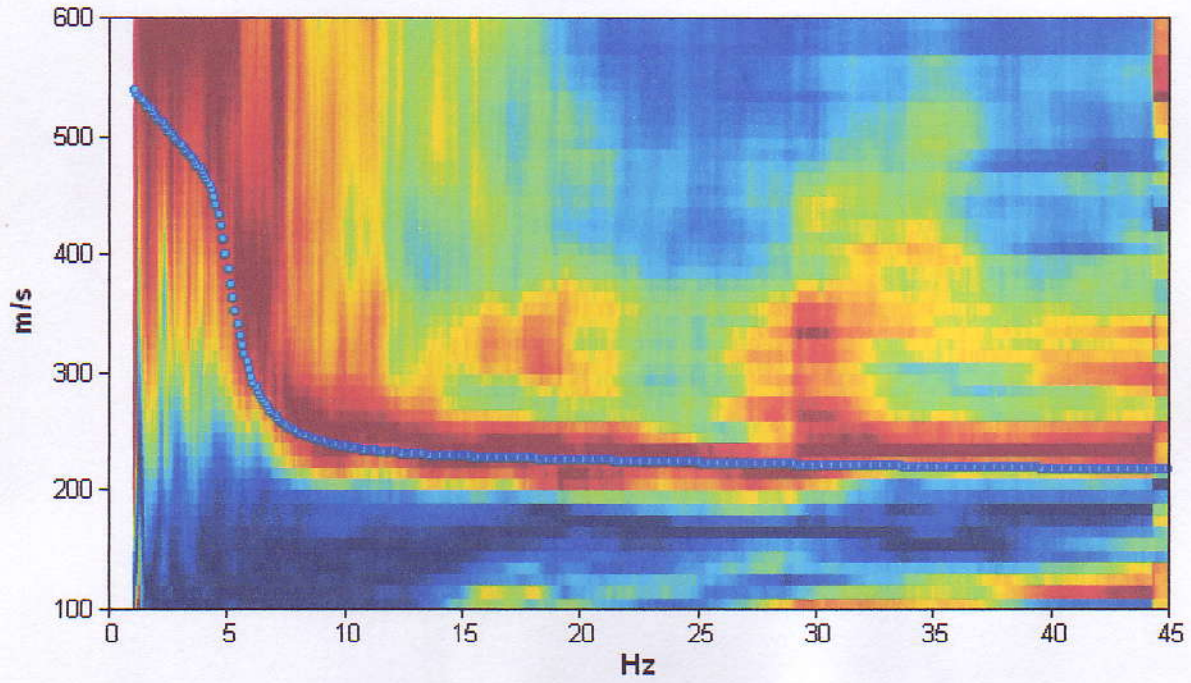
ARGINIBORGHETTO REMI1, REMI 1 RITORNO

Start recording: 22/06/10 12:55:35 End recording: 22/06/10 13:00:41
Trace length: 0h05'06".
Sampling frequency: 512 Hz

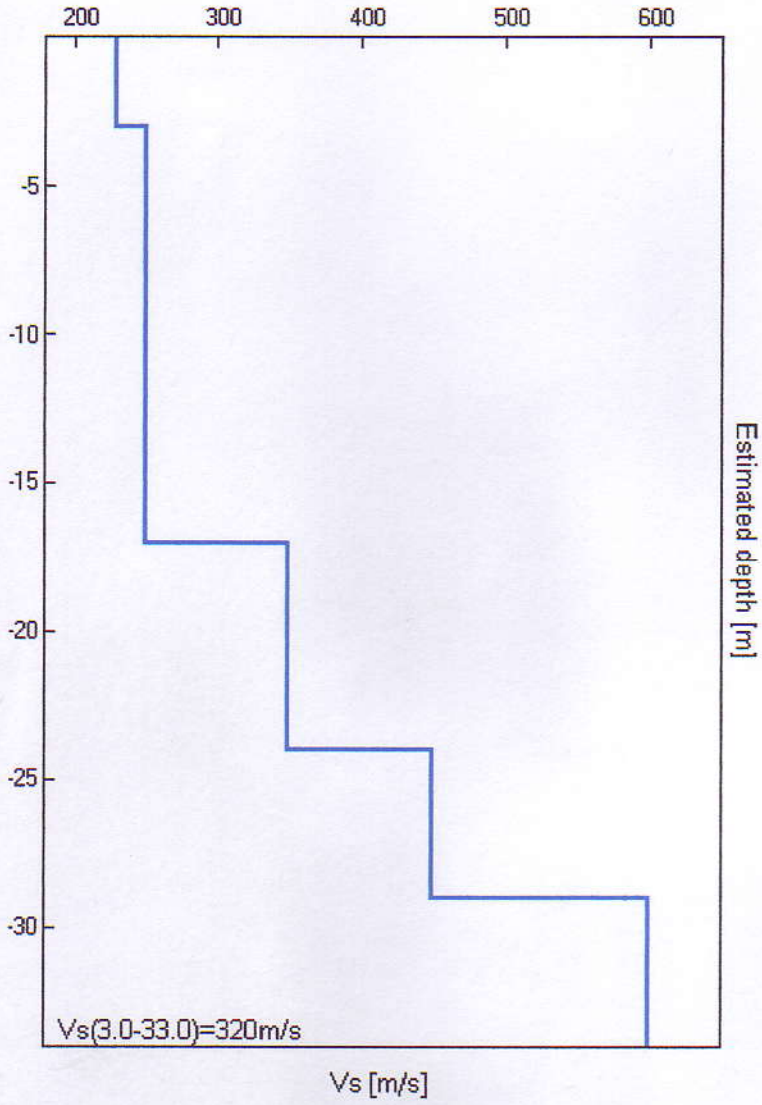
Channel labels: TR01 +TR01 ; TR02 +TR02 ; TR03 +TR03 ; TR04 +TR04 ; TR05 +TR05 ; TR06 +TR06 ; TR07 +TR07 ; TR08 +TR08 ; TR09 +TR09 ; TR10 +TR10 ; TR11 +TR11 ; TR12 +TR12 ; TR13 +TR13 ; TR14 +TR14 ; TR15 +TR15 ; TR16 +TR16 ; TR17 +TR17

THEORETICAL RAYLEIGH WAVE PHASE VELOCITY DISPERSION CURVE



Depth at the bottom of the layer [m]	Thickness [m]	Vs [m/s]	Poisson ratio
3.00	3.00	230	0.35
17.00	14.00	250	0.35
24.00	7.00	350	0.35
29.00	5.00	450	0.35
inf.	inf.	600	0.35

Vs(3.0-33.0)=320m/s

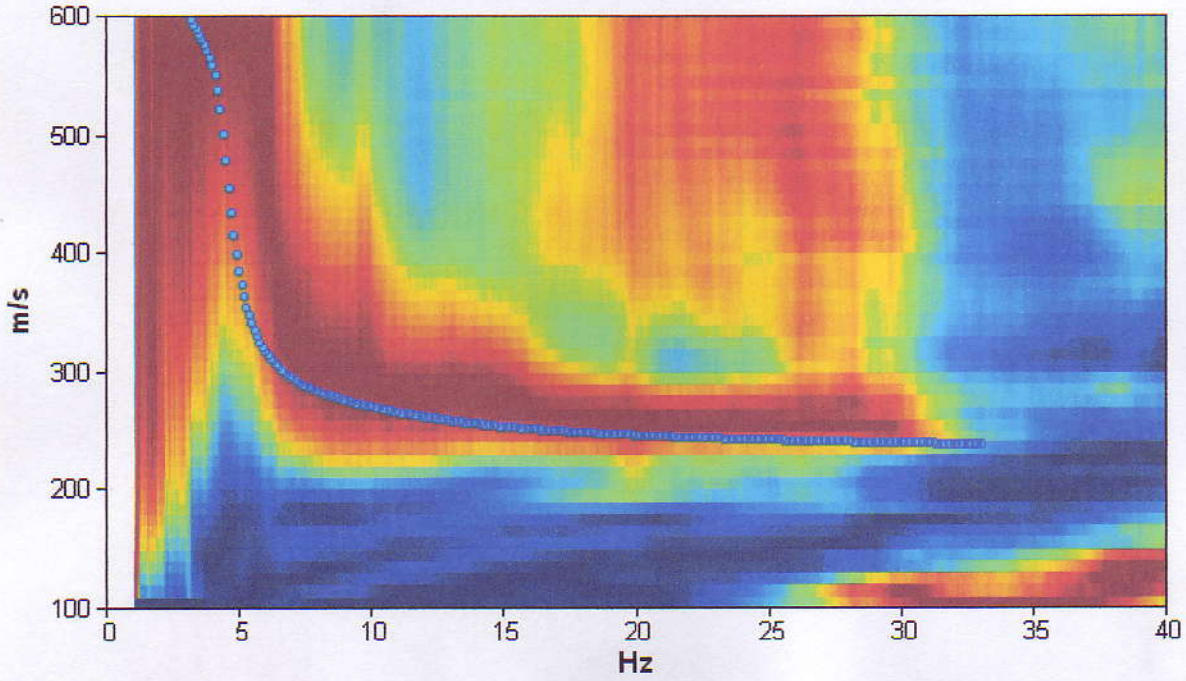

200
300
400
500
600
-5
-10
-15
-20
-25
-30
Estimated depth [m]
Vs(3.0-33.0)=320m/s
Vs [m/s]

ARGINI BORGHETTO REMI 2, REMI 2 ANDATA

Start recording: 22/06/10 16:19:55 End recording: 22/06/10 16:25:01
Trace length: 0h05'07".
Sampling frequency: 512 Hz

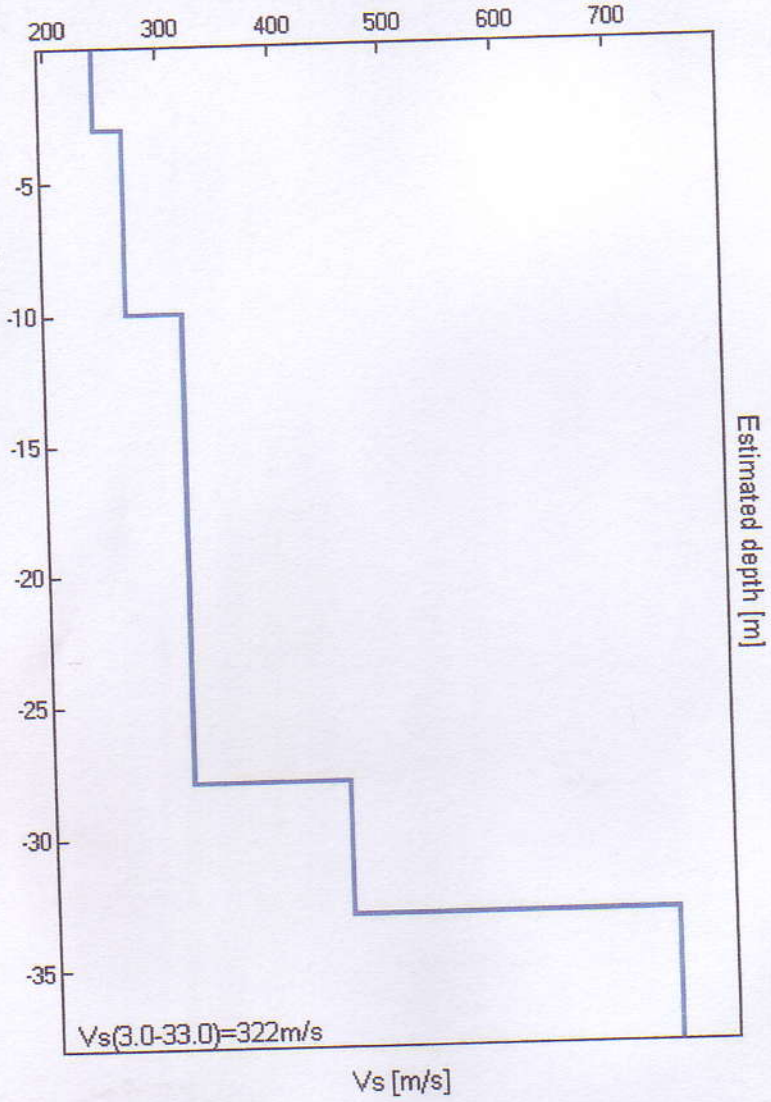
Channel labels: TR01 +TR01 ; TR02 +TR02 ; TR03 +TR03 ; TR04 +TR04 ; TR05 +TR05 ; TR06 +TR06 ; TR07 +TR07 ; TR08 +TR08 ; TR09 +TR09 ; TR10 +TR10 ; TR11 +TR11 ; TR12 +TR12 ; TR13 +TR13 ; TR14 +TR14 ; TR15 +TR15 ; TR16 +TR16 ; TR17 +TR17

THEORETICAL RAYLEIGH WAVE PHASE VELOCITY DISPERSION CURVE



Depth at the bottom of the layer [m]	Thickness [m]	Vs [m/s]	Poisson ratio
3.00	3.00	245	0.35
10.00	7.00	270	0.35
28.00	18.00	320	0.35
33.00	5.00	460	0.35
inf.	inf.	750	0.35

Vs(3.0-33.0)=322m/s


200
300
400
500
600
700
-5
-10
-15
-20
-25
-30
-35
Vs(3.0-33.0)=322m/s
Vs [m/s]
Estimated depth [m]

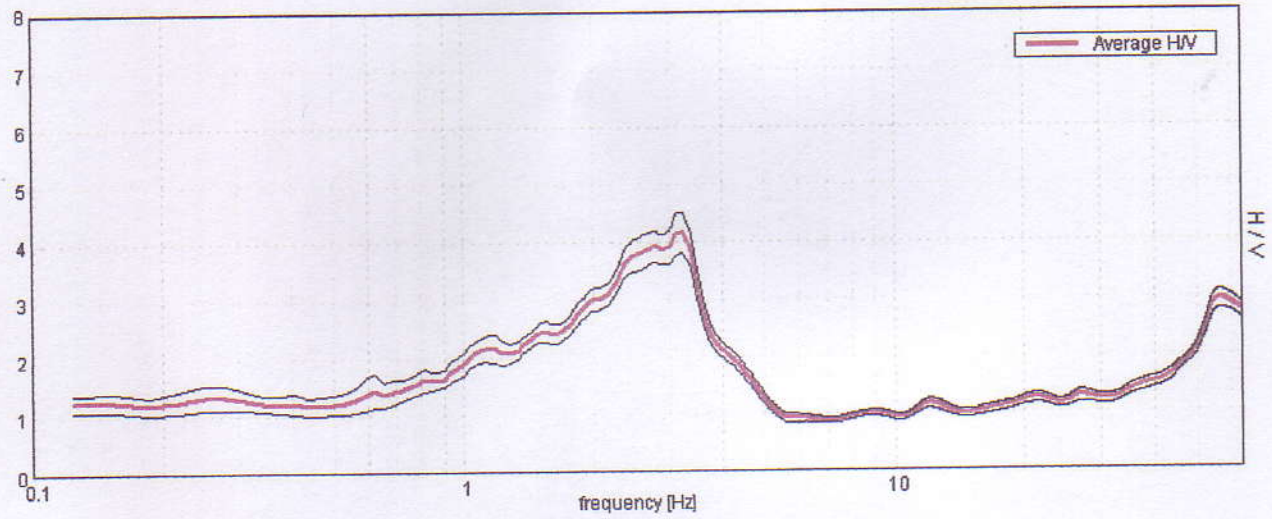
ARGINI BORGHETTO TROMINO, ARGINI BORGHETTO 1

Instrument: TRZ-0089/01-10
Start recording: 22/06/10 12:49:11 End recording: 22/06/10 13:09:12
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN
GPS data not available

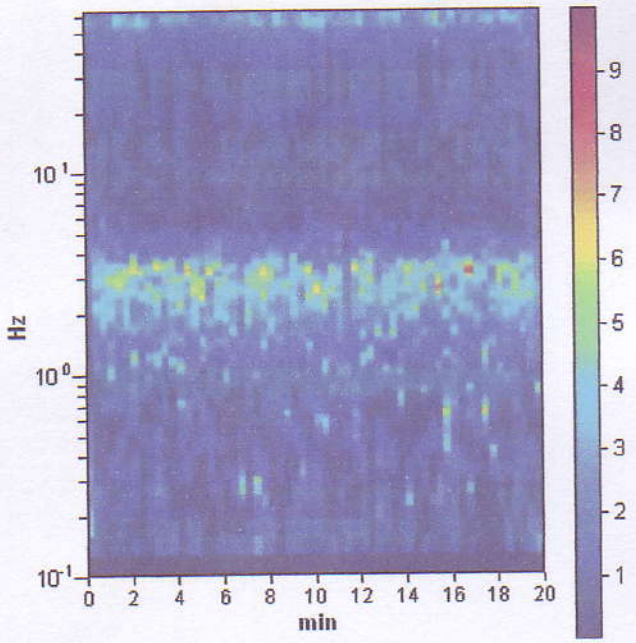
Trace length: 0h20'00". Analysis performed on the entire trace.
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%

HORIZONTAL TO VERTICAL SPECTRAL RATIO

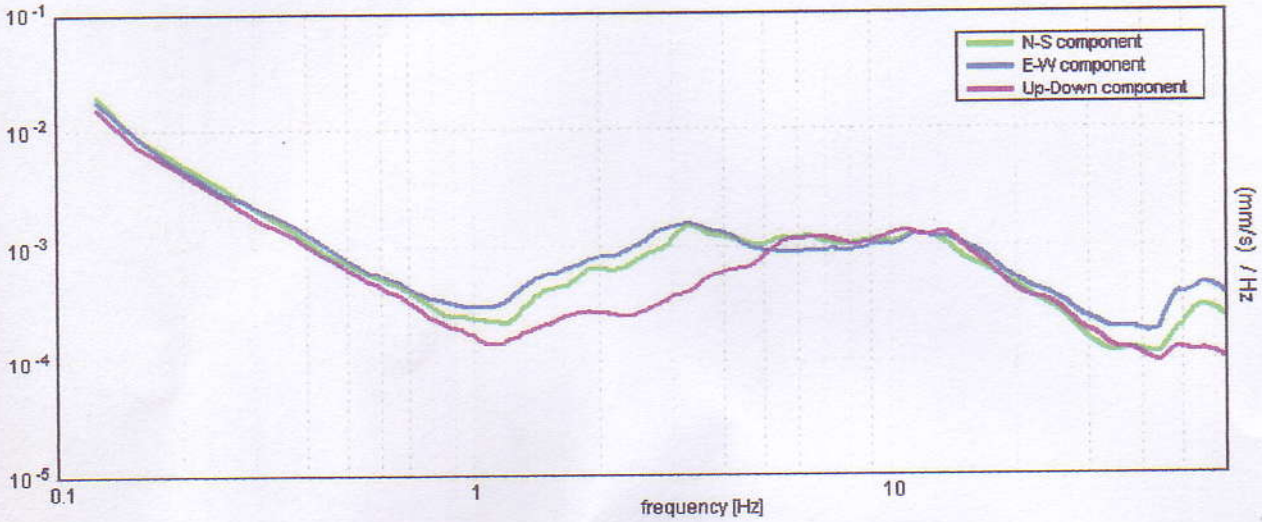
Max. H/V at 3.22 ± 0.11 Hz (in the range 0.0 - 64.0 Hz).



H/V TIME HISTORY

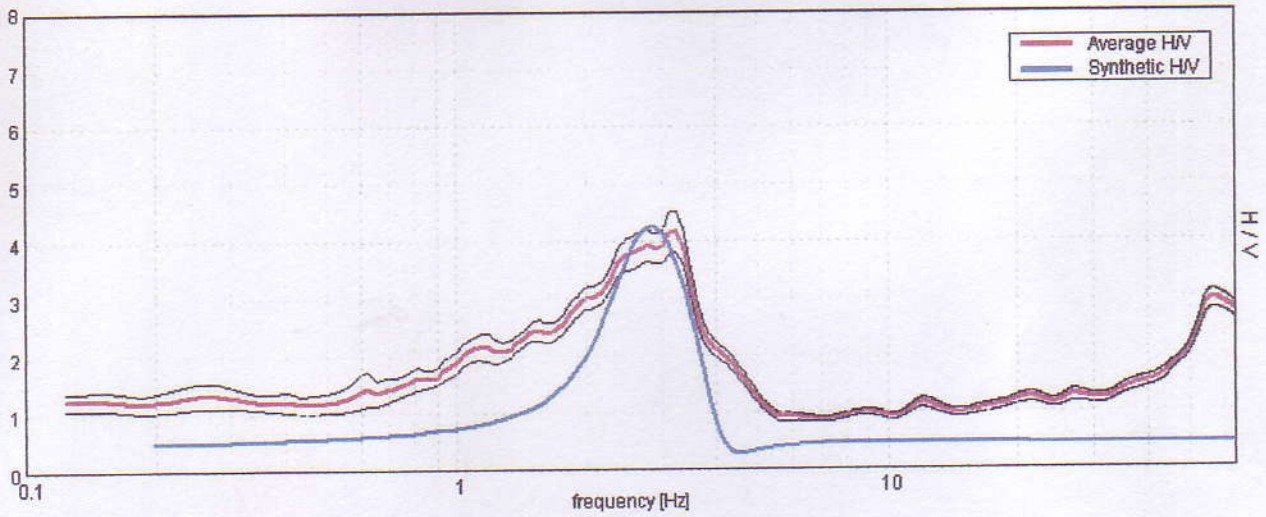


SINGLE COMPONENT SPECTRA



EXPERIMENTAL VS. SYNTHETIC H/V

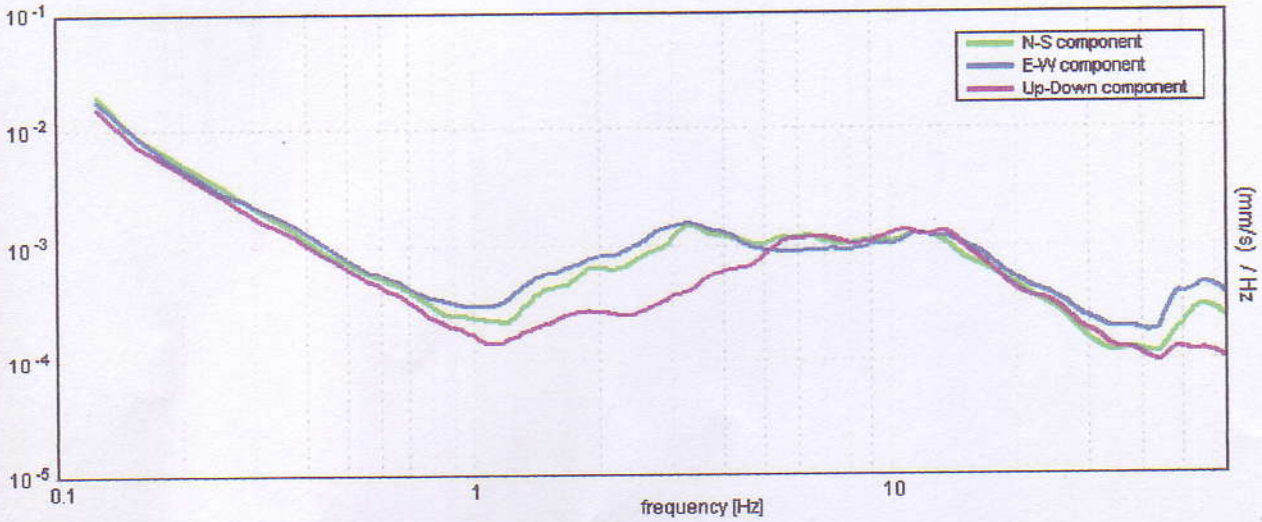
Max. H/V at 3.22 ± 0.11 Hz (in the range 0.0 - 64.0 Hz).



Depth at the bottom of the layer [m]	Thickness [m]	Vs [m/s]	Poisson ratio
20.00	20.00	230	0.35
23.00	3.00	300	0.35
28.00	5.00	570	0.35
inf.	inf.	570	0.35

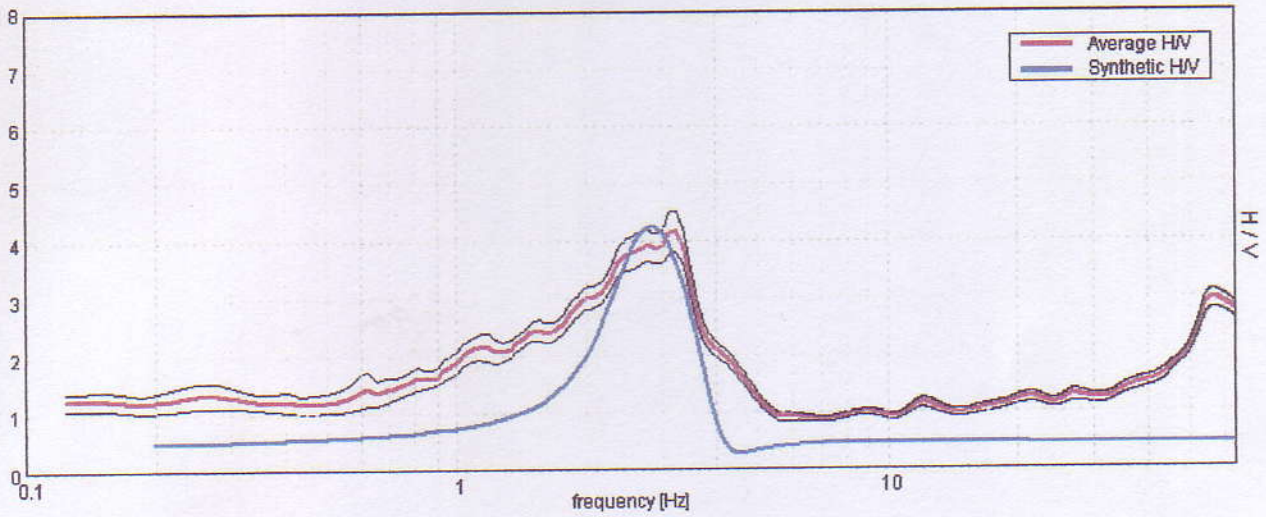
Vs(3.0-33.0)=296m/s

SINGLE COMPONENT SPECTRA



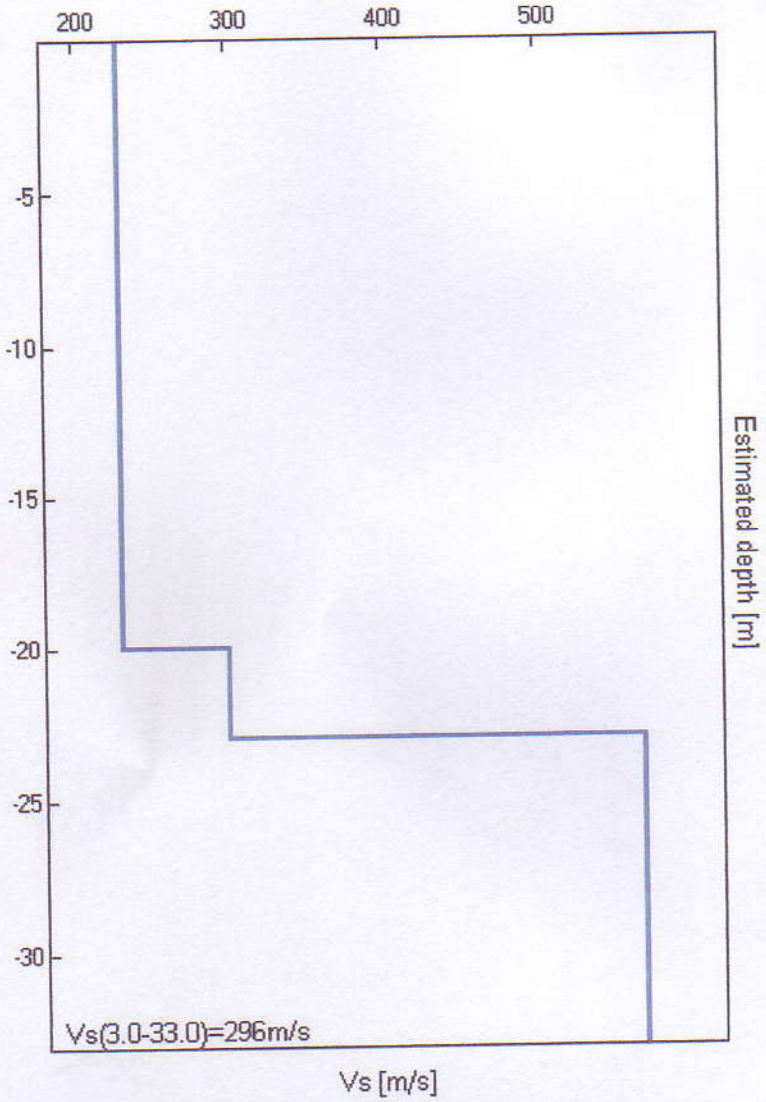
EXPERIMENTAL VS. SYNTHETIC H/V

Max. H/V at 3.22 ± 0.11 Hz (in the range 0.0 - 64.0 Hz).



Depth at the bottom of the layer [m]	Thickness [m]	Vs [m/s]	Poisson ratio
20.00	20.00	230	0.35
23.00	3.00	300	0.35
28.00	5.00	570	0.35
inf.	inf.	570	0.35

Vs(3.0-33.0)=296m/s


200
300
400
500
-5
-10
-15
-20
-25
-30
Vs(3.0-33.0)=296m/s
Vs [m/s]
Estimated depth [m]

[According to the Sesame, 2005 guidelines. **Please read carefully the *Grilla* manual before interpreting the following tables.**]

Max. H/V at 3.22 ± 0.11 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable HVSR curve
[All 3 should be fulfilled]

$f_0 > 10 / L_w$	3.22 > 0.50	OK	
$n_c(f_0) > 200$	3862.5 > 200	OK	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 156 times	OK	

Criteria for a clear HVSR peak
[At least 5 out of 6 should be fulfilled]

Exists f^- in $[f_0/4, f_0] \mid A_{H/V}(f^-) < A_0 / 2$	1.281 Hz	OK	
Exists f^+ in $[f_0, 4f_0] \mid A_{H/V}(f^+) < A_0 / 2$	4.063 Hz	OK	
$A_0 > 2$	4.16 > 2	OK	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.01663| < 0.05	OK	
$\sigma_f < \varepsilon(f_0)$	0.05353 < 0.16094	OK	
$\sigma_A(f_0) < \theta(f_0)$	0.1774 < 1.58	OK	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$

Freq.range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20

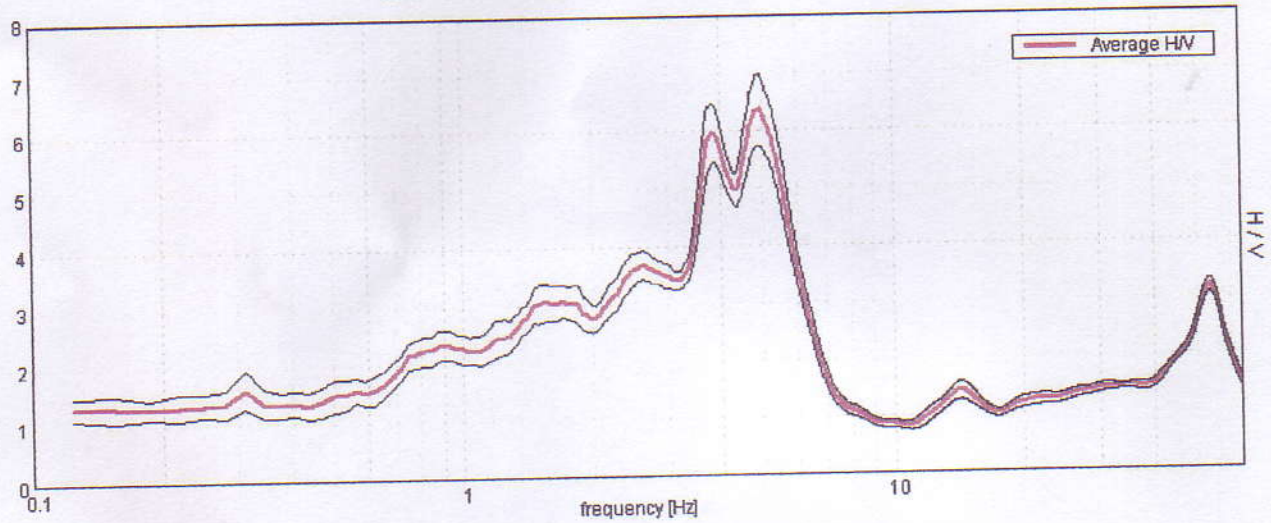
ARGINI BORGHETTO TROMINO, ARGINI BORGHETTO 2

Instrument: TRZ-0089/01-10
Start recording: 22/06/10 17:06:27 End recording: 22/06/10 17:26:28
Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN
GPS data not available

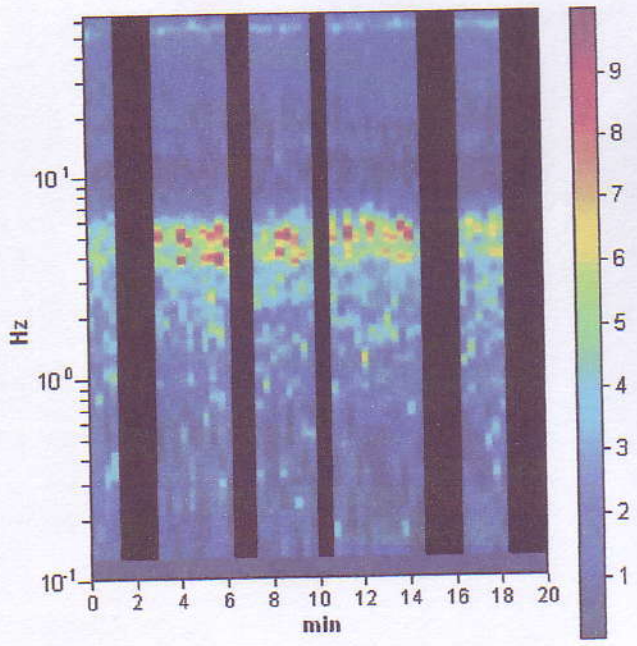
Trace length: 0h20'00". Analyzed 67% trace (manual window selection)
Sampling frequency: 128 Hz
Window size: 20 s
Smoothing window: Triangular window
Smoothing: 10%

HORIZONTAL TO VERTICAL SPECTRAL RATIO

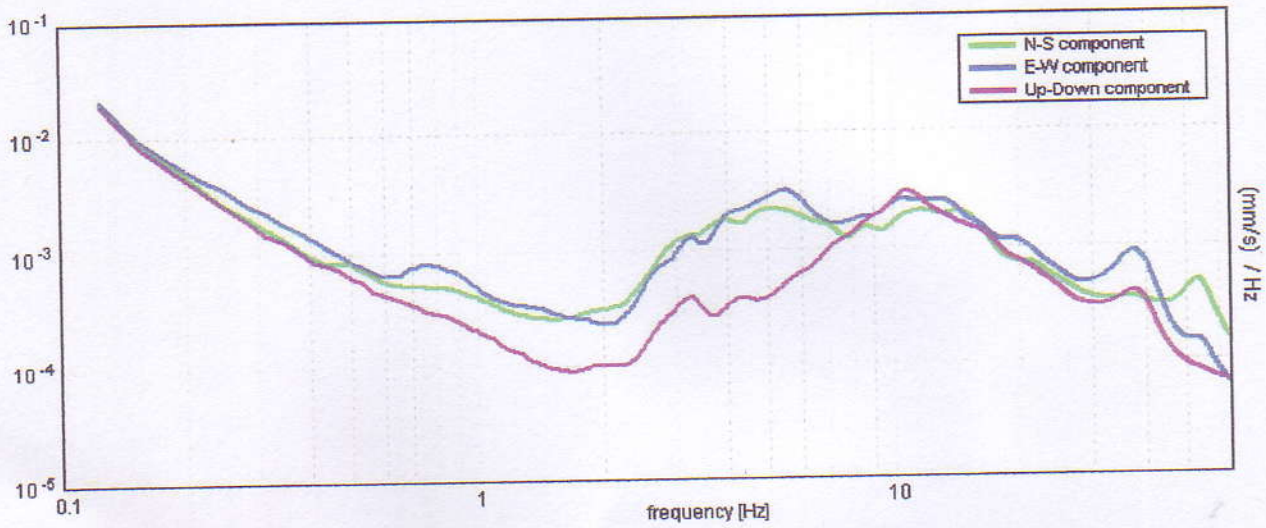
Max. H/V at 4.91 ± 0.17 Hz. (In the range 0.0 - 64.0 Hz).



H/V TIME HISTORY

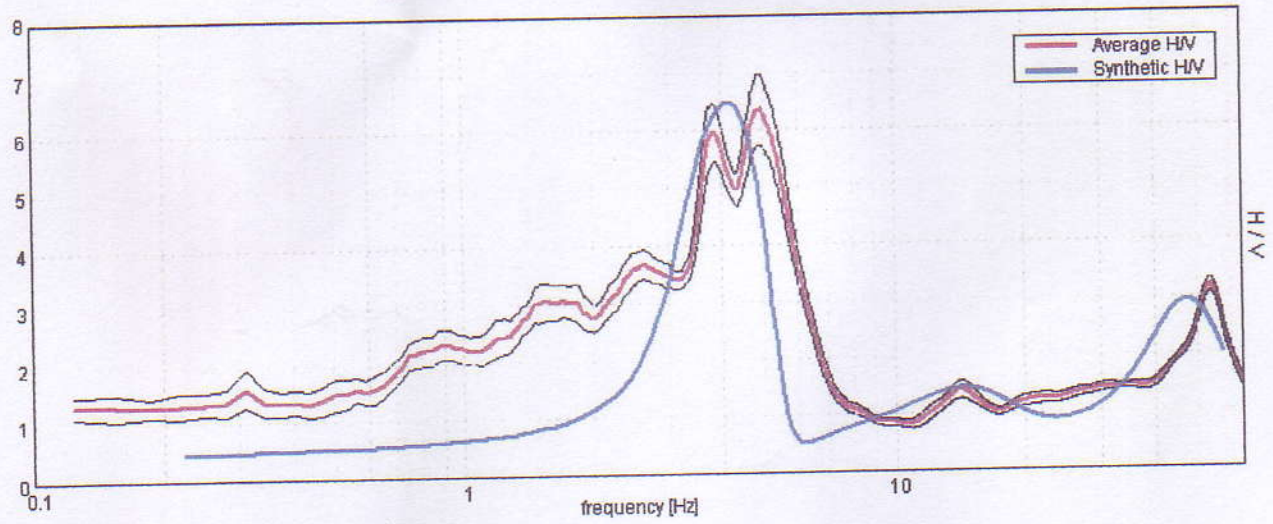


SINGLE COMPONENT SPECTRA



EXPERIMENTAL VS. SYNTHETIC H/V

Max. H/V at 4.91 ± 0.17 Hz. (In the range 0.0 - 64.0 Hz).



Depth at the bottom of the layer [m]	Thickness [m]	Vs [m/s]	Poisson ratio
0.30	0.30	55	0.35
2.30	2.00	135	0.35
15.30	13.00	220	0.35
28.30	13.00	560	0.35
inf.	inf.	560	0.35

Vs(2.0-32.0)=329m/s


100
200
300
400
500
600
-5
-10
-15
-20
-25
-30
Vs(2.0-32.0)=329m/s
Vs [m/s]
Estimated depth [m]

[According to the Sesame, 2005 guidelines. **Please read carefully the *Grilla* manual before interpreting the following tables.**]

Max. H/V at 4.91 ± 0.17 Hz (in the range 0.0 - 64.0 Hz).

Criteria for a reliable HVSR curve [All 3 should be fulfilled]			
$f_0 > 10 / L_w$	4.91 > 0.50	OK	
$n_c(f_0) > 200$	3925.0 > 200	OK	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5$Hz $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5$Hz	Exceeded 0 out of 236 times	OK	
Criteria for a clear HVSR peak [At least 5 out of 6 should be fulfilled]			
Exists f^- in $[f_0/4, f_0]$ | $A_{H/V}(f^-) < A_0 / 2$	2.25 Hz	OK	
Exists f^+ in $[f_0, 4f_0]$ | $A_{H/V}(f^+) < A_0 / 2$	6.156 Hz	OK	
$A_0 > 2$	6.37 > 2	OK	
$f_{peak}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	|0.01697| < 0.05	OK	
$\sigma_f < \varepsilon(f_0)$	0.08325 < 0.24531	OK	
$\sigma_A(f_0) < \theta(f_0)$	0.311 < 1.58	OK	

L_w	window length
n_w	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
f	current frequency
f_0	H/V peak frequency
σ_f	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
A_0	H/V peak amplitude at frequency f_0
$A_{H/V}(f)$	H/V curve amplitude at frequency f
f^-	frequency between $f_0/4$ and f_0 for which $A_{H/V}(f^-) < A_0/2$
f^+	frequency between f_0 and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$, $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{logH/V}(f)$	standard deviation of log $A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

Threshold values for σ_f and $\sigma_A(f_0)$					
Freq.range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	0.25 f_0	0.2 f_0	0.15 f_0	0.10 f_0	0.05 f_0
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\theta(f_0)$ for $\sigma_{logH/V}(f_0)$	0.48	0.40	0.30	0.25	0.20