APPENDIX E: PARALLEL SENSOR TEST 1

Date: November 27th, 2007

Report: Dominic Brown

Staff: Yatha Hoffman
Lee Davison
Joel Stockill
Shaun Burnett

1. Introduction

Location:

Station	Location: UTM WGS 84 / Zone 54J	
	Easting	Northing
BC 24	373994	6695141

Coil Azimuth: 90° true N (declination approx. 7˚ E)

Results:
BF7: BF7-9103 failed, ok the rest
P50: All good
BF4: All good

Tested a total of 32 coils:
18 Phoenix MTC-50 (P50)
10 BF7 EMI
4 BF4 EMI

BF7-9103 was put aside after decent coherency results could not be achieved.
Signal increased towards the end of testing due to approaching storm.

Test 2 yielded poor results due to connection problems to the spider unit (not included).

Coil #	Coil Type	Result		Role	Comments
		Pass	Fail		
BF7-7001	EMI	Test 1		Hx,Hy,Hz	
BF7-7004	EMI	Test 3		Hx,Hy,Hz	
BF7-7006	EMI	Test 1		Hx,Hy,Hz	
BF7-7007	EMI	Test 3		Hx,Hy,Hz	
BF7-9103	EMI		Test 1,3,4, 5,10		Changed cables, ports and cleaned connections
BF7-9104	EMI	Test 1		Hx,Hy,Hz	
BF7-9306	EMI	Test 3		Hx,Hy,Hz	
BF7-9307	EMI	Test 1		Hx,Hy,Hz	
BF7-9602	EMI	Test 1		Hx,Hy,Hz	
BF7-9802	EMI	Test 3		Hx,Hy,Hz	
BF4-9016	EMI	Test 5,10	Test 4	Hx,Hy,Hz	
BF4-9122	EMI	Test 4	Test 5,10	Spare	
BF4-9622	EMI	Test 4,5,10		Hx,Hy,Hz	
BF4-9623	EMI	Test 4,5,10		Hx,Hy,Hz	
P50-2010	Phoenix	Test 6		Hx,Hy,Hz	
P50-2017	Phoenix	Test 6		Hx,Hy,Hz	
P50-2114	Phoenix	Test 7	Test 6	Hx,Hy,Hz	Changed cable
P50-2117	Phoenix	Test 6		Hx,Hy,Hz	
P50-2126	Phoenix	Test 6		Hx,Hy,Hz	
P50-2202	Phoenix	Test 6		Hx,Hy,Hz	
P50-2236	Phoenix	Test 7		Hx,Hy,Hz	
P50-2237	Phoenix	Test 7		Hx,Hy,Hz	
P50-2436	Phoenix	Test 7		Hx,Hy,Hz	
P50-2445	Phoenix	Test 7		Hx,Hy,Hz	
P50-2447	Phoenix	Test 7		Hx,Hy,Hz	
P50-2448	Phoenix	Test 8,9		Hx,Hy,Hz	
P50-2451	Phoenix	Test 8		Hx,Hy,Hz	
P50-2455	Phoenix	Test 8,9		Hx,Hy,Hz	
P50-2456	Phoenix	Test 8,9		Hx,Hy,Hz	
P50-2457	Phoenix	Test 8,9		Hx,Hy,Hz	
P50-2459	Phoenix	Test 8,9		Hx,Hy,Hz	
P50-2461	Phoenix	Test 9		Hx,Hy,Hz	

2. Low Frequency Coils – Test 1

Available Coils:

TS Strip	Manufacturer	Serial #	Tasked To
1	EMI	BF7-9104	Logger Site
2	EMI	BF7-9103	Logger Site
3	EMI	BF7-9602	Logger Site
4	EMI	BF7-9307	Logger Site
5	EMI	BF7-7006	Logger Site
6	EMI	BF7-7001	Logger Site

Processing Parameters:

Parameter	Value
QuickLay Version	3_Alpha.33
PSD Method	Welch
Window	Hanning
Window length	8196
Segment Overlap	50%

2.1 Test Results: 1000sps

NetEvent: PST_20081126.2249.net
Sample Rate: 1000sps
TS Length: 650000 samples (~11min)

Results:
BF7-9103: Bad coherency, F<10Hz connections cleaned and retested

Time Series

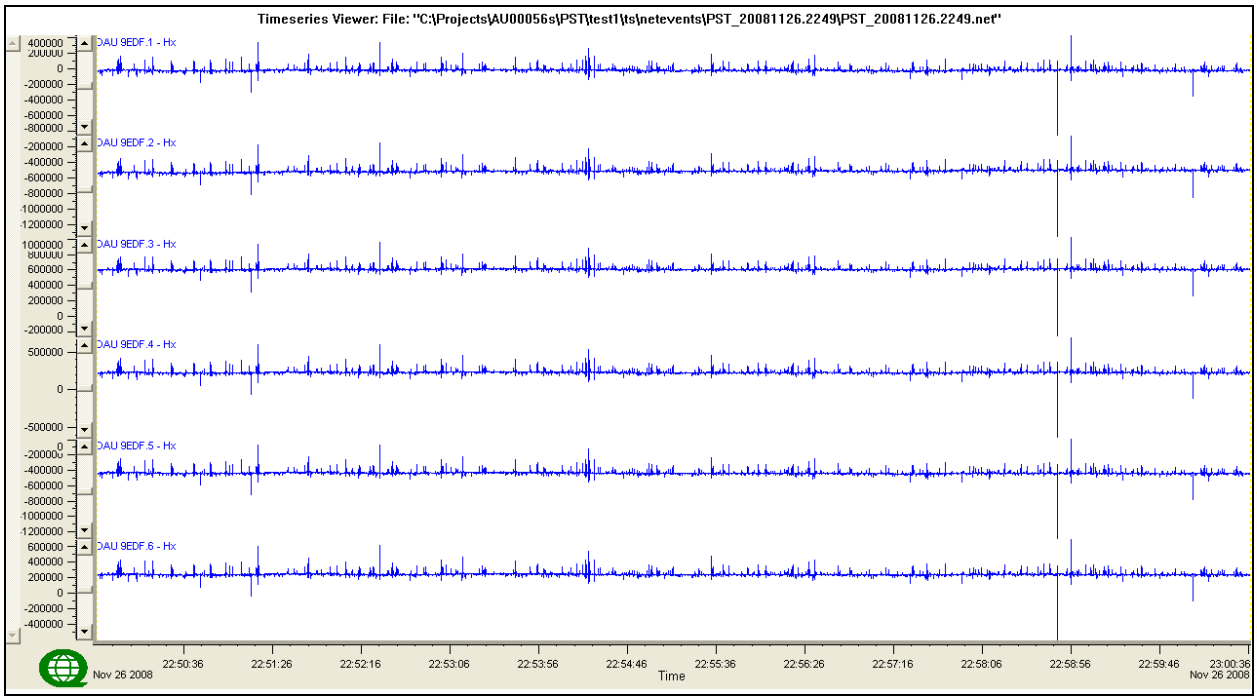

Figure 2-1: Complete time series @ 1000sps

Low Frequency Coil Results: 1000sps
Coherency to BF7-9104

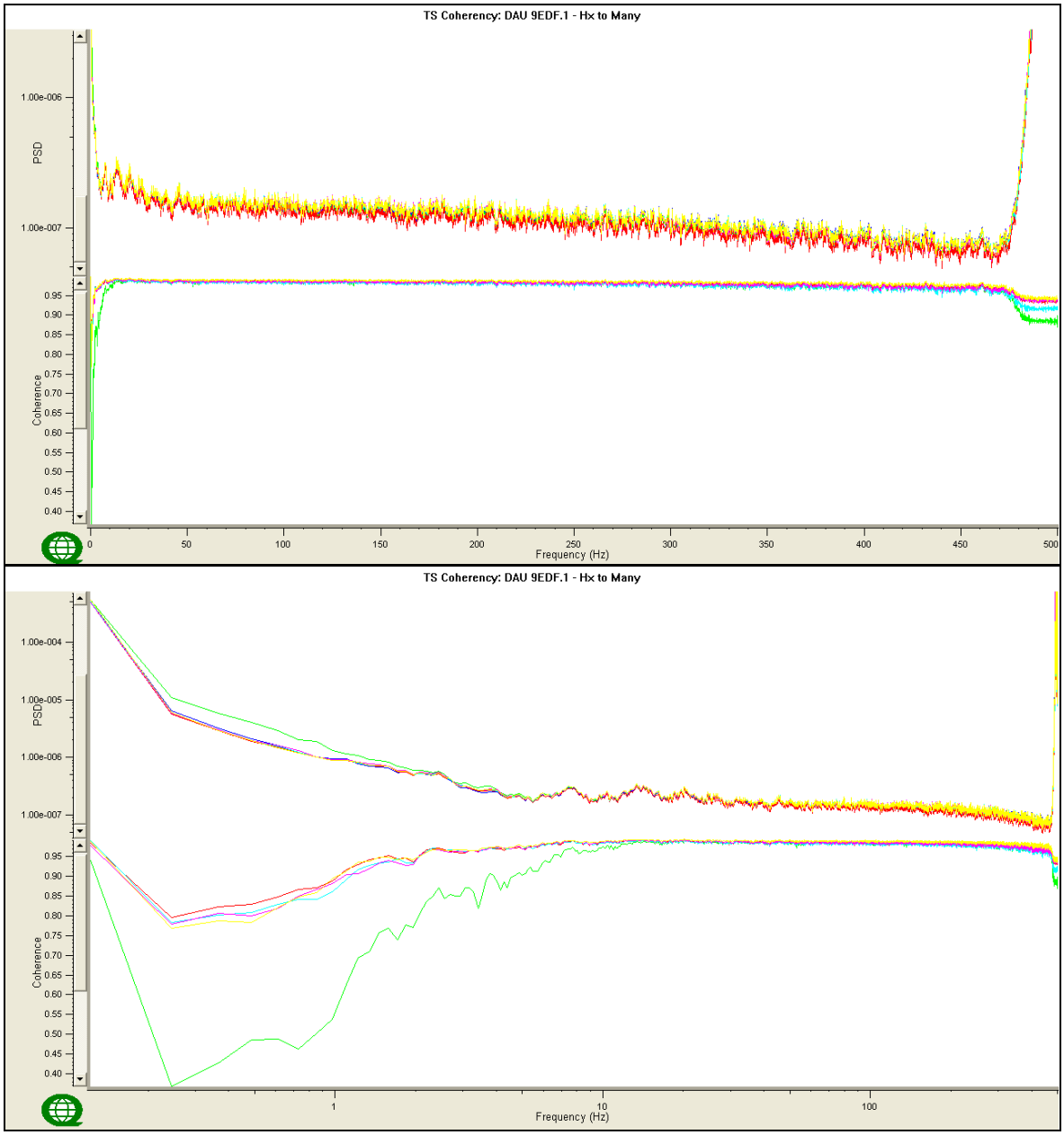

Figure 2-2: Coherencies are to BF7-9104 (blue). Upper linear, lower logarithmic frequency scales.

Colour	Channel	Notes
Blue	BF7-9104	
Green	BF7-9103	
Red	BF7-9602	
Cyan	BF7-9307	
Magenta	BF7-7006	
Yellow	BF7-7001	

3. Low Frequency Coils – Test 3

Available Coils:

TS Strip	Manufacturer	Serial #	Tasked To
1	EMI	BF7-9306	Logger Site
2	EMI	BF7-9802	Logger Site
3	EMI	BF7-7007	Logger Site
4	EMI	BF7-9103	Logger Site
5	EMI	BF7-7004	Logger Site

Processing Parameters:

Parameter	Value
QuickLay Version	3_Alpha.33
PSD Method	Welch
Window	Hanning
Window length	8196
Segment Overlap	50%

3.1 Test Results: 1000sps

NetEvent: PST_20081127.0024.net
Sample Rate: 1000sps
TS Length: 650000 samples (~11min)

Results:
All good, except coil BF7-9103.

Time Series

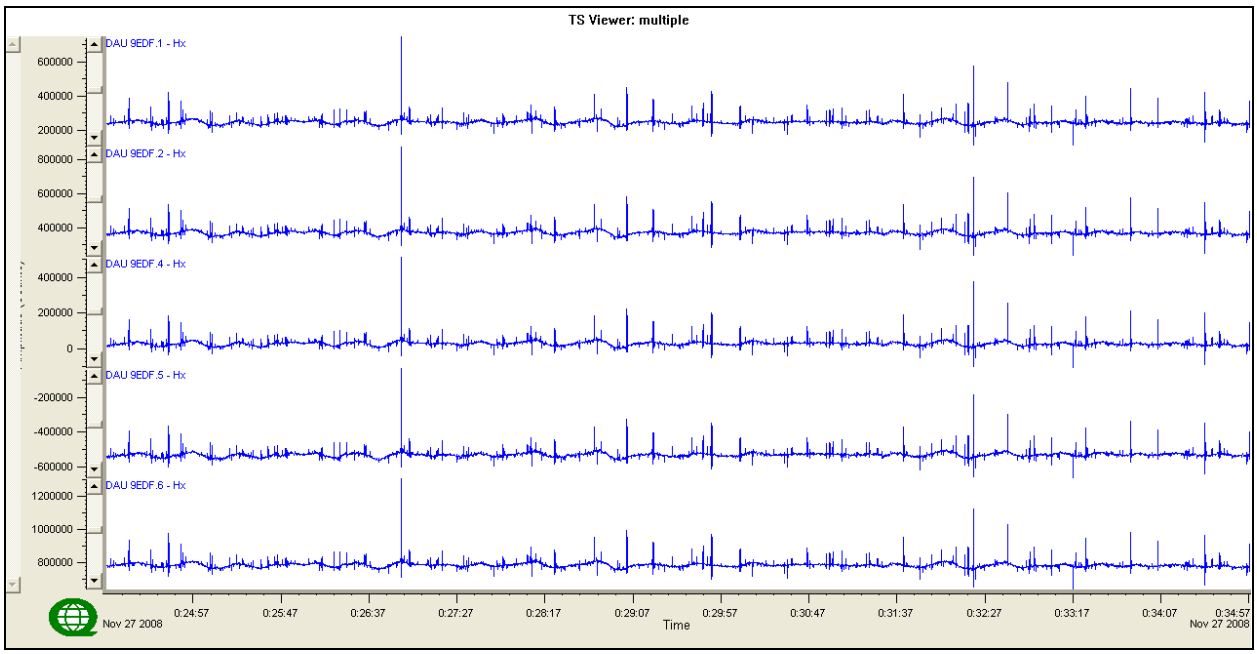

Figure 3-1: Complete time series @ 1000sps

Low Frequency Coil Results: 1000sps
Coherency to BF7-9306

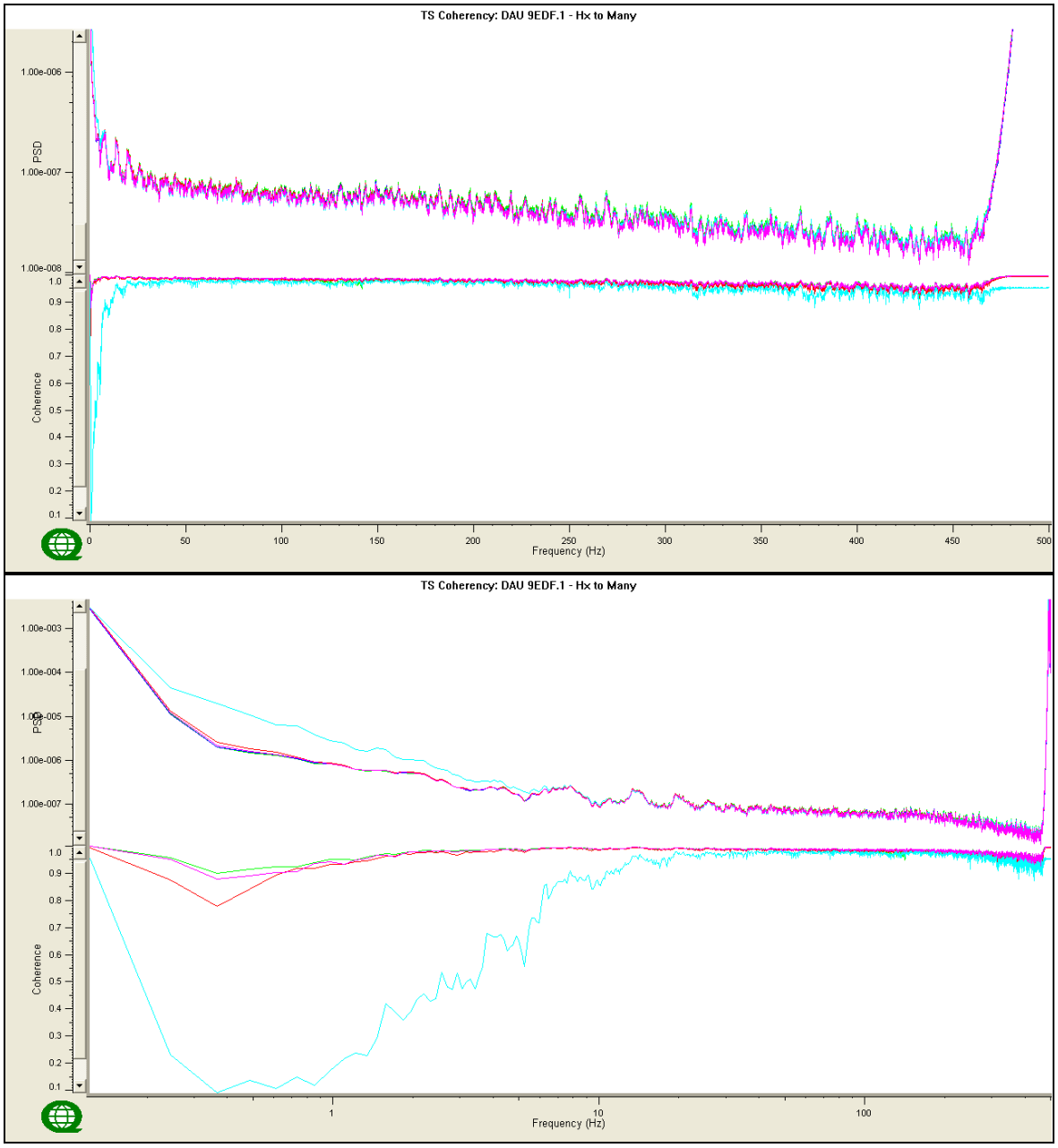

Figure 3-2: Coherencies are to BF7-9306 (blue). Upper linear, lower logarithmic frequency scales.

Colour	Channel	Notes
Blue	BF7-9306	
Green	BF7-9802	
Red	BF7-7007	
Cyan	BF7-9103	to be retested with another coil cable
Magenta	BF7-7004	

4. Low Frequency Coils – Test 4

Available Coils:

TS Strip	Manufacturer	Serial #	Tasked To
1	EMI	BF4-9016	Logger Site
2	EMI	BF7-9103	Logger Site
3	EMI	BF4-9122	Logger Site
4	EMI	BF4-9622	Logger Site
5	EMI	BF4-9623	Logger Site

Processing Parameters:

Parameter	Value
QuickLay Version	3_Alpha.33
PSD Method	Welch
Window	Hanning
Window length	8196
Segment Overlap	50%

Results:

BF4-9016 & BF7-9103 failed due to low coherency and poor PSD.

4.1 Test Results: 1000sps

NetEvent: PST_20081127.0109.net
Sample Rate: 1000sps
TS Length: 650000 samples (~11min)

Time Series

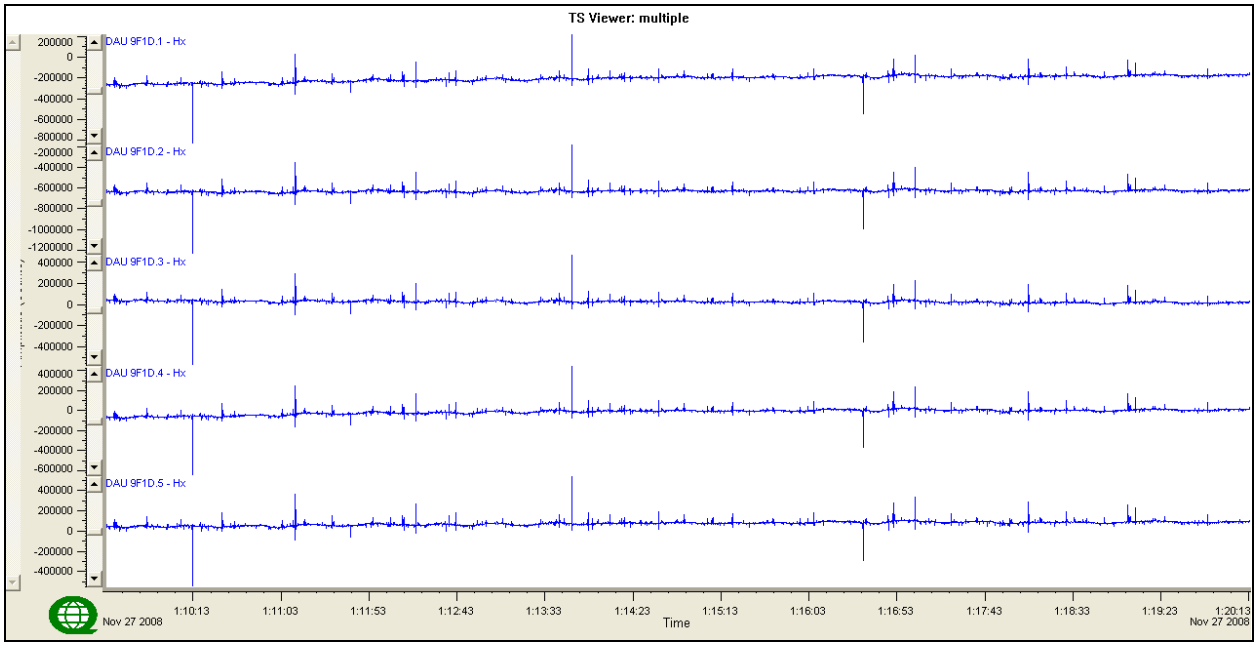

Figure 4-1: Complete time series at 1000sps

Low Frequency Coil Results: 1000sps
Coherency to BF4-9122

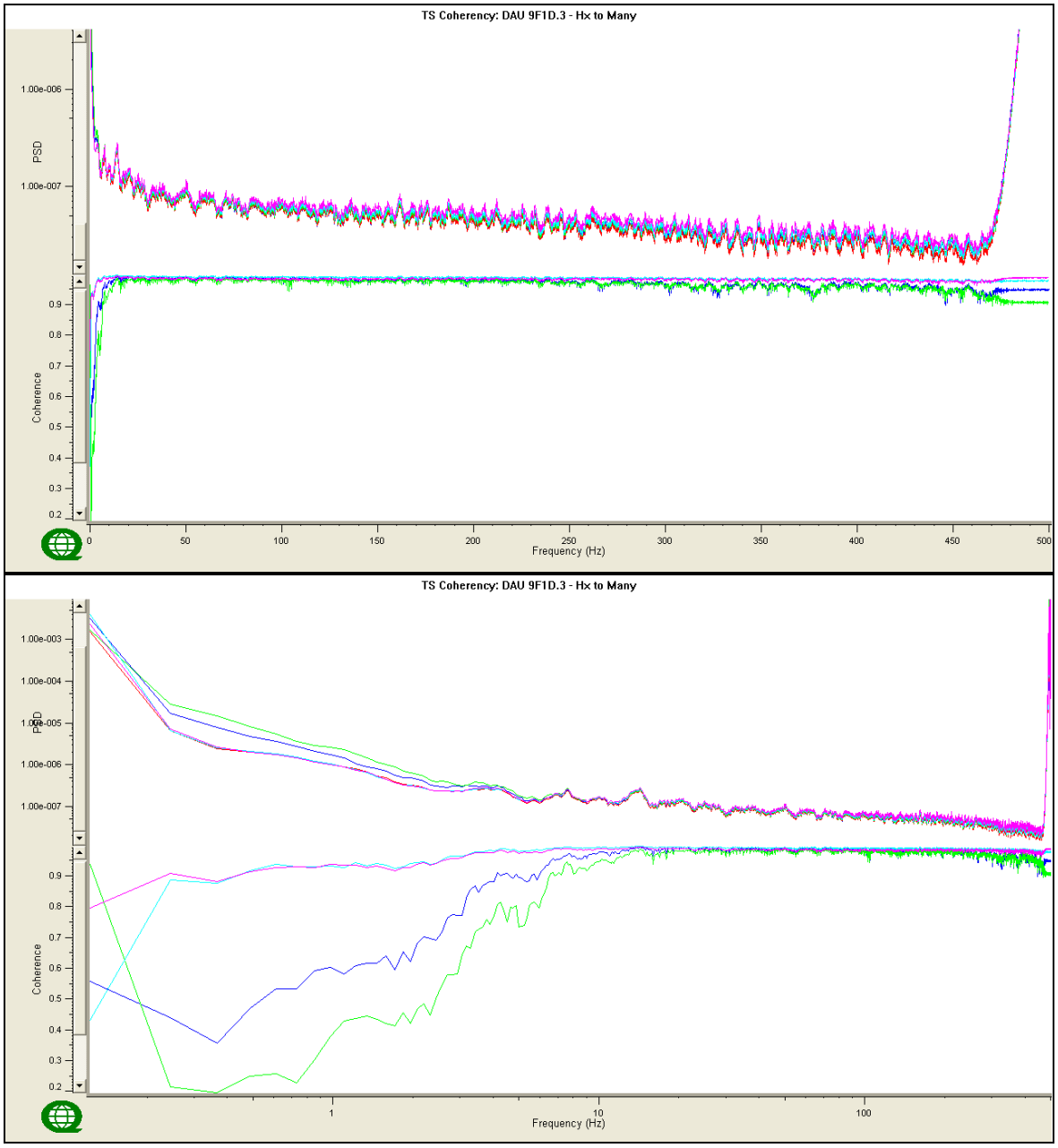

Figure 4-2: Coherencies are to BF4-9122 (Red).Upper linear, lower logarithmic frequency scales.

Colour	Channel	Notes
Blue	BF4-9016	to be retested
Green	BF7-9103	to be retested
Red	BF4-9122	
Cyan	BF4-9622	
Magenta	BF4-9623	

5. Low Frequency Coils – Test 5

Available Coils:

TS Strip	Manufacturer	Serial #	Tasked To
1	EMI	BF4-9623	Logger Site
2	EMI	BF4-9622	Logger Site
3	EMI	BF4-9016	Logger Site
4	EMI	BF7-9103	Logger Site
5	EMI	BF4-9122	Logger Site

Processing Parameters:

Parameter	Value
QuickLay Version	3_Alpha.33
PSD Method	Welch
Window	Hanning
Window length	8196
Segment Overlap	50%

5.1 Test Results: 1000sps

NetEvent: PST_20081127.0148.net
Sample Rate: 1000sps
TS Length: 650000 samples (~11min)

Results:
Ok, BF7-9103 & BF4-9122 failed due to low coherency

Time Series

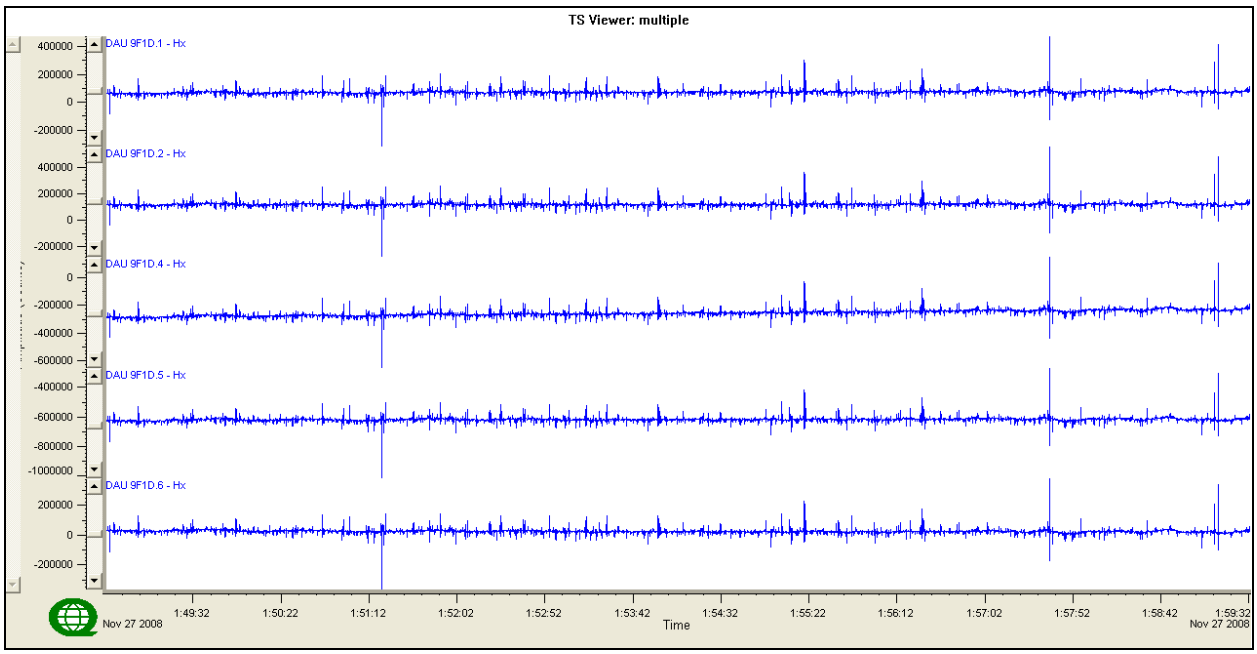

Figure 5-1: Complete time series @ 1000sps

Low Frequency Coil Results: 1000sps
Coherency to BF4-9623

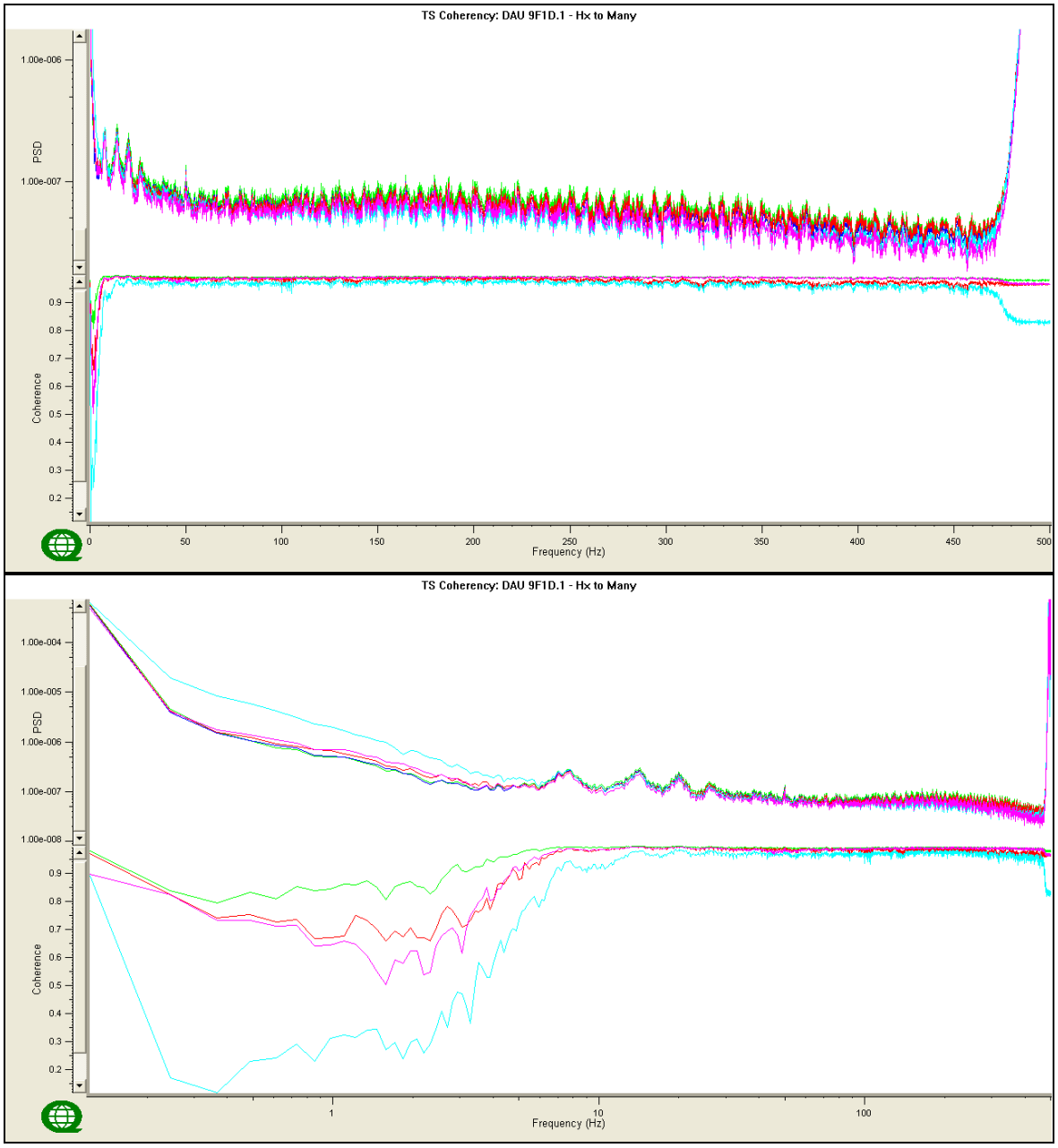

Figure 5-2: Coherencies are to BF4-9623 (blue). Upper linear, lower logarithmic frequency scales.

Colour	Channel	Notes
Blue	BF4-9623	
Green	BF4-9622	
Red	BF4-9016	
Cyan	BF7-9103	poor coherency and PSD
Magenta	BF4-9122	weak performance

6. Low Frequency Coils – Test 6

Available Coils:

TS Strip	Manufacturer	Serial #	Tasked To
1	PHOENIX	P50-2010	Logger Site
2	PHOENIX	P50-2017	Logger Site
3	PHOENIX	P50-2202	Logger Site
4	PHOENIX	P50-2126	Logger Site
5	PHOENIX	P50-2114	Logger Site
6	PHOENIX	P50-2117	Logger Site

Processing Parameters:

Parameter	Value
QuickLay Version	3_Alpha.33
PSD Method	Welch
Window	Hanning
Window length	8196
Segment Overlap	50%

6.1 Test Results: 1000sps

NetEvent: PST_20081127.0314.net
Sample Rate: 1000sps
TS Length: 650000samples (~11min)

Results:
Weak performance for P50-2114 on coherency.

Time Series

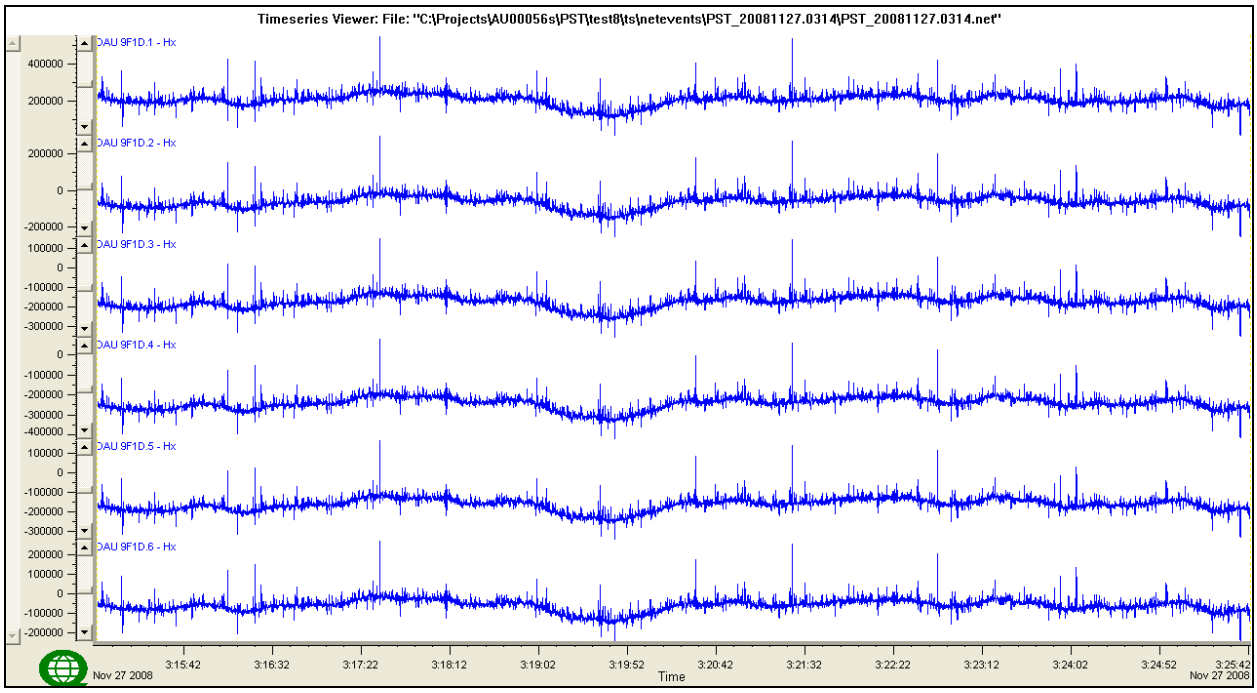

Figure 6-1: Complete time series @ 1000sps

Low Frequency Coil Results: 1000sps
Coherency to P50-2010

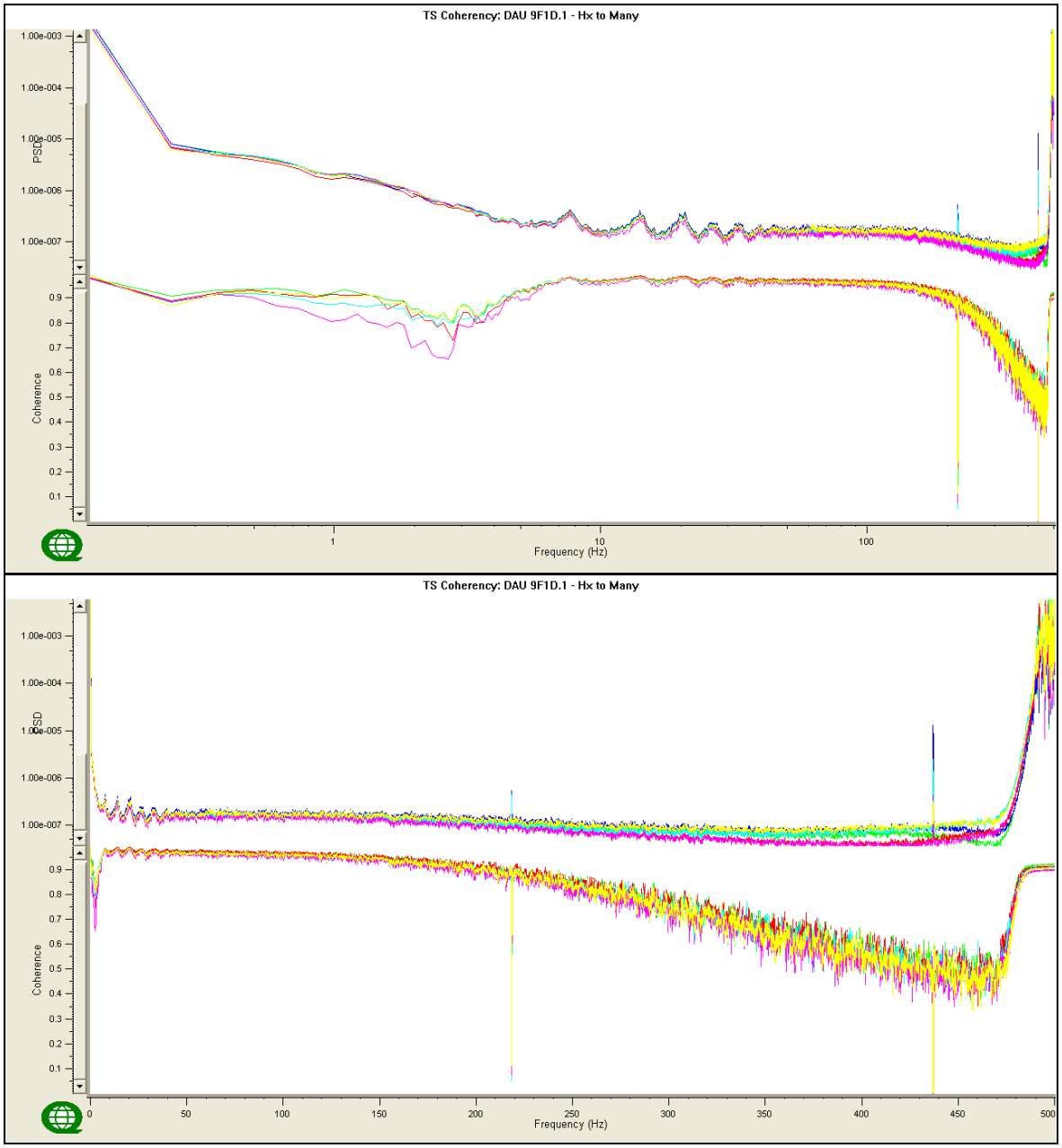

Figure 6-2: Coherencies are to P50-2010 (blue). Upper linear, lower logarithmic frequency scales.

Colour	Channel	Notes
Blue	P50-2010	
Green	P50-2017	
Red	P50-2202	
Cyan	P50-2126	
Magenta	P50-2114	to be retested
Yellow	P50-2117	

7. Low Frequency Coils – Test 7

Available Coils:

TS Strip	Manufacturer	Serial #	Tasked To
1	PHOENIX	P50-2236	Logger Site
2	PHOENIX	P50-2237	Logger Site
3	PHOENIX	P50-2436	Logger Site
4	PHOENIX	P50-2445	Logger Site
5	PHOENIX	P50-2114	Logger Site
6	PHOENIX	P50-2447	Logger Site

Processing Parameters:

Parameter	Value
QuickLay Version	3_Alpha.33
PSD Method	Welch
Window	Hanning
Window length	8196
Segment Overlap	50%

7.1 Test Results: 1000sps

NetEvent: PST_20081127.0351.net
Sample Rate: 1000sps
TS Length: 650000 samples (~11min)

Results:
All good

Time Series

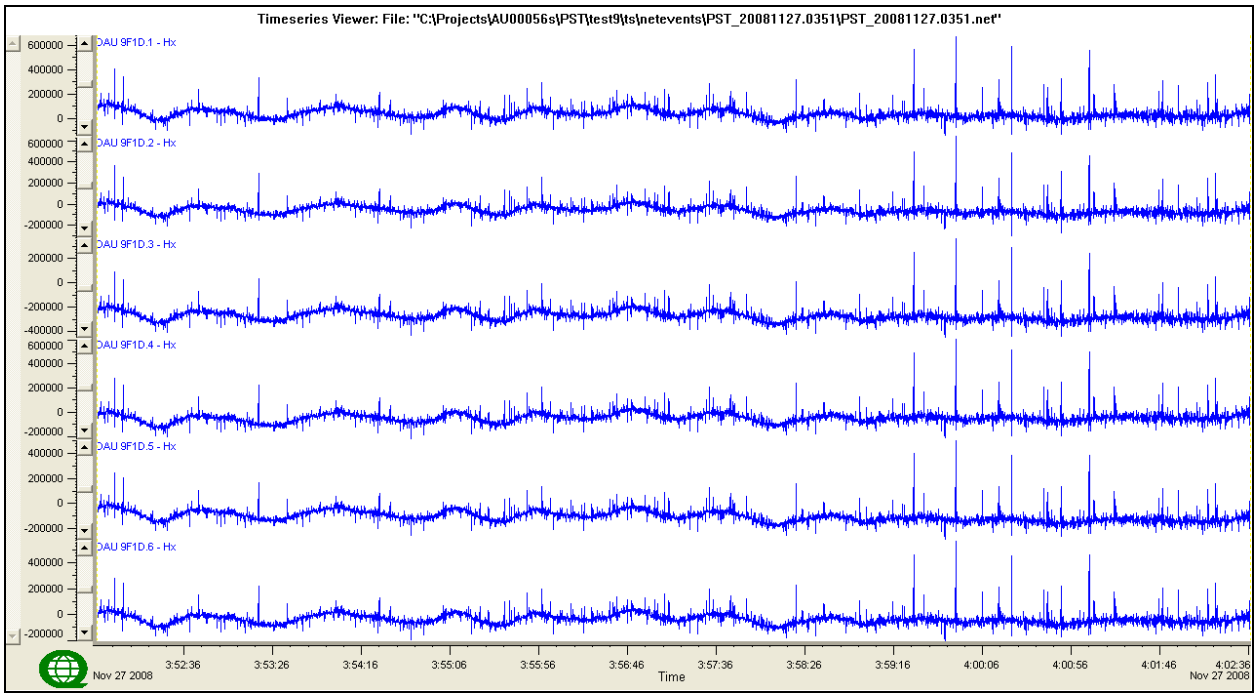

Figure 7-1: Complete time series @ 1000sps

Low Frequency Coil Results: 1000sps
Coherency to P50-2236

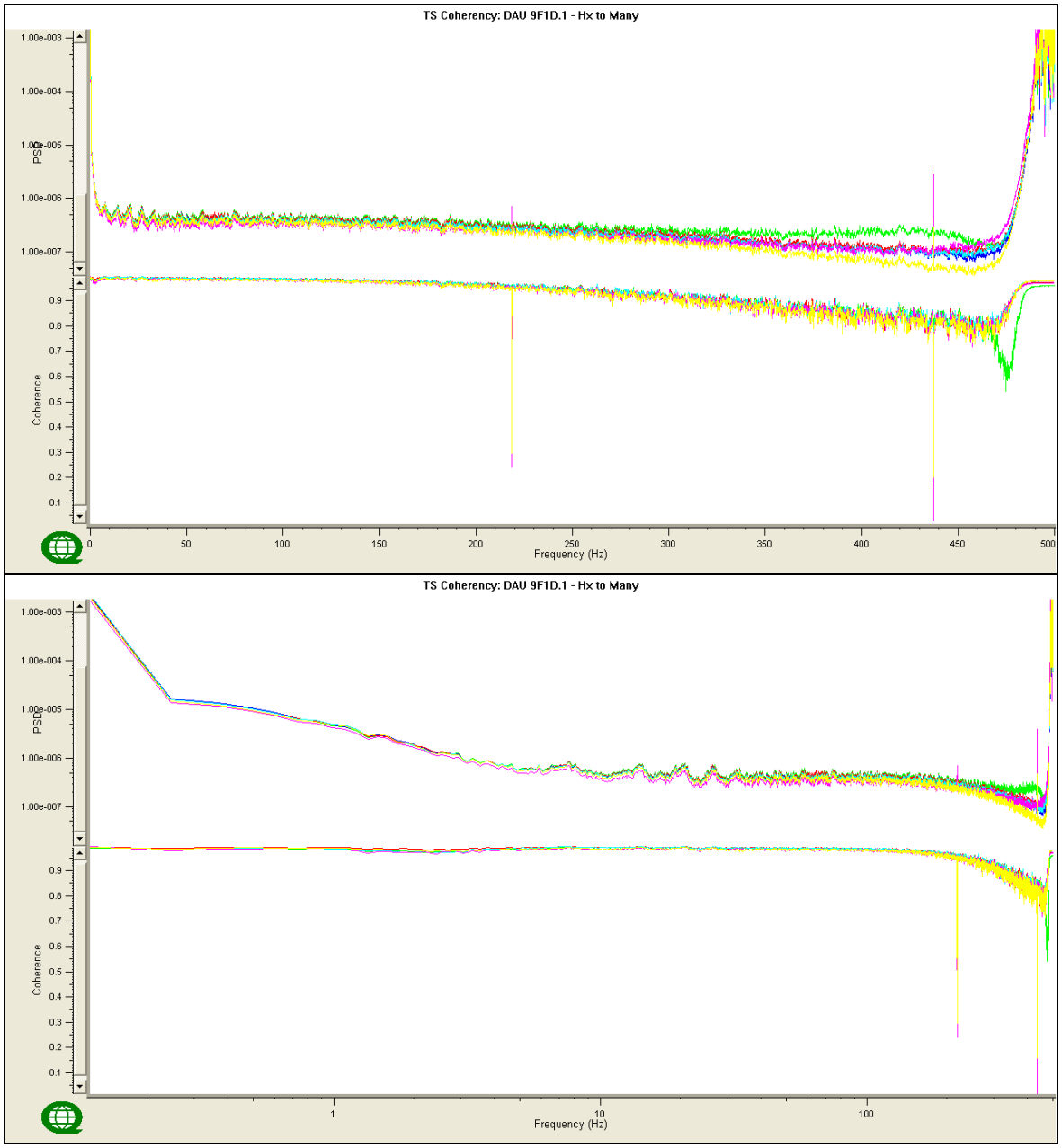

Figure 7-2: Coherencies are to P50-2236 (blue). Upper linear, lower logarithmic frequency scales.

Colour	Channel	Notes
Blue	P50-2236	
Green	P50-2237	
Red	P50-2436	
Cyan	P50-2445	
Magenta	P50-2114	
Yellow	P50-2447	

8. Low Frequency Coils – Test 8

Available Coils:

TS Strip	Manufacturer	Serial #	Tasked To
1	PHOENIX	P50-2451	Logger Site
2	PHOENIX	P50-2448	Logger Site
3	PHOENIX	P50-2456	Logger Site
4	PHOENIX	P50-2455	Logger Site
5	PHOENIX	P50-2459	Logger Site
6	PHOENIX	P50-2457	Logger Site

Processing Parameters:

Parameter	Value
QuickLay Version	3_Alpha.33
PSD Method	Welch
Window	Hanning
Window length	8196
Segment Overlap	50%

8.1 Test Results: 1000sps

NetEvent: PST_20081127.0435.net
Sample Rate: 1000sps
TS Length: 650000 samples (~11min)

Results:
All good

Time Series

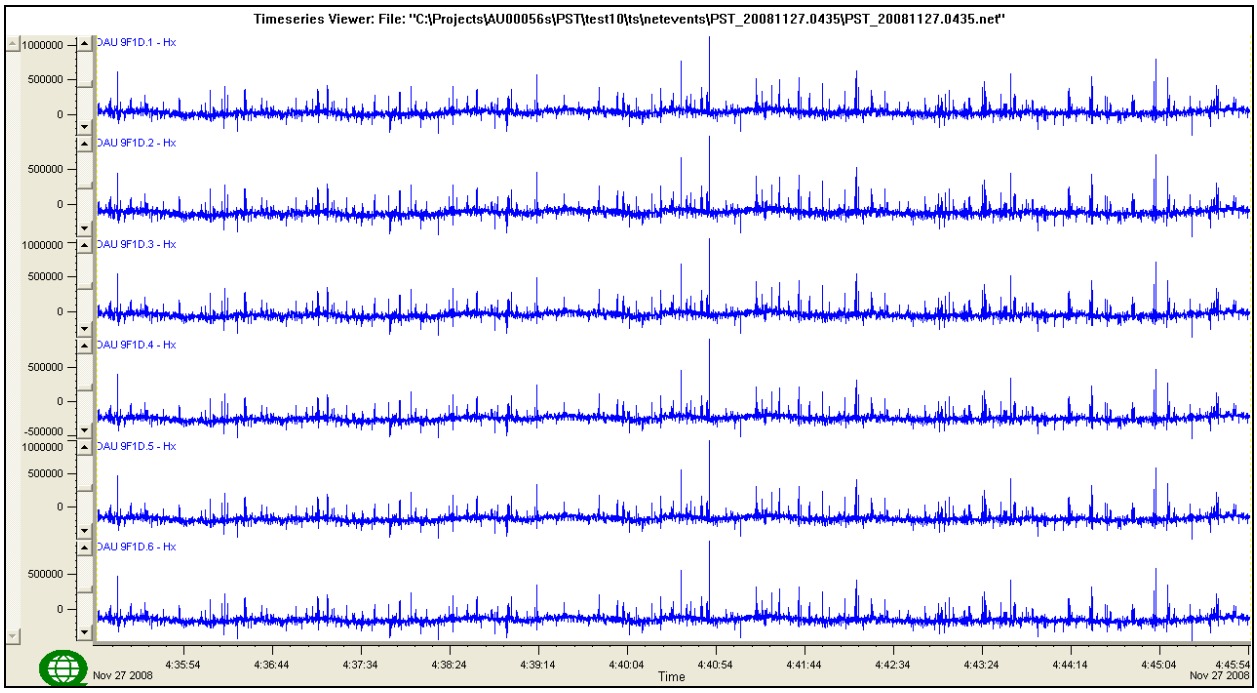

Figure 8-1: Complete time series @ 1000sps

Low Frequency Coil Results: 1000sps
Coherency to P50-2451

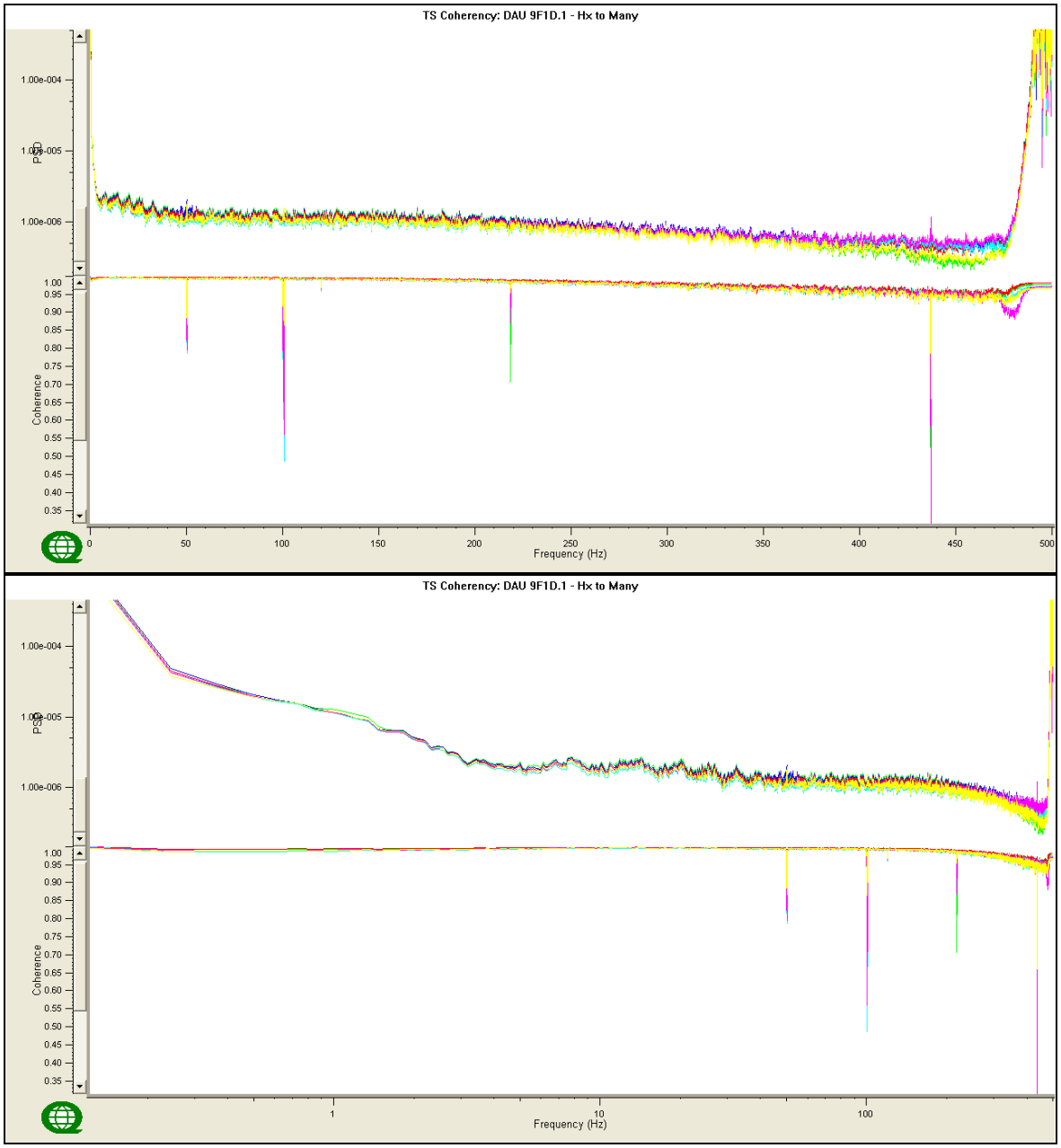

Figure 8-2: Coherencies are to P50-2451 (blue). Upper linear, lower logarithmic frequency scales.

Colour	Channel	Notes
Blue	P50-2451	
Green	P50-2448	
Red	P50-2456	
Cyan	P50-2455	
Magenta	P50-2459	
Yellow	P50-2457	

9. Low Frequency Coils – Test 9

Available Coils:

TS Strip	Manufacturer	Serial #	Tasked To
1	PHOENIX	P50-2451	Logger Site
2	PHOENIX	P50-2448	Logger Site
3	PHOENIX	P50-2456	Logger Site
4	PHOENIX	P50-2455	Logger Site
5	PHOENIX	P50-2459	Logger Site
6	PHOENIX	P50-2457	Logger Site

Processing Parameters:

Parameter	Value
QuickLay Version	3_Alpha.33
PSD Method	Welch
Window	Hanning
Window length	8196
Segment Overlap	50%

9.1 Test Results: 1000sps

NetEvent: PST_20081127.0504.net
Sample Rate: 1000sps
TS Length: 650000 samples (~11min)

Results:
All Good

Time Series

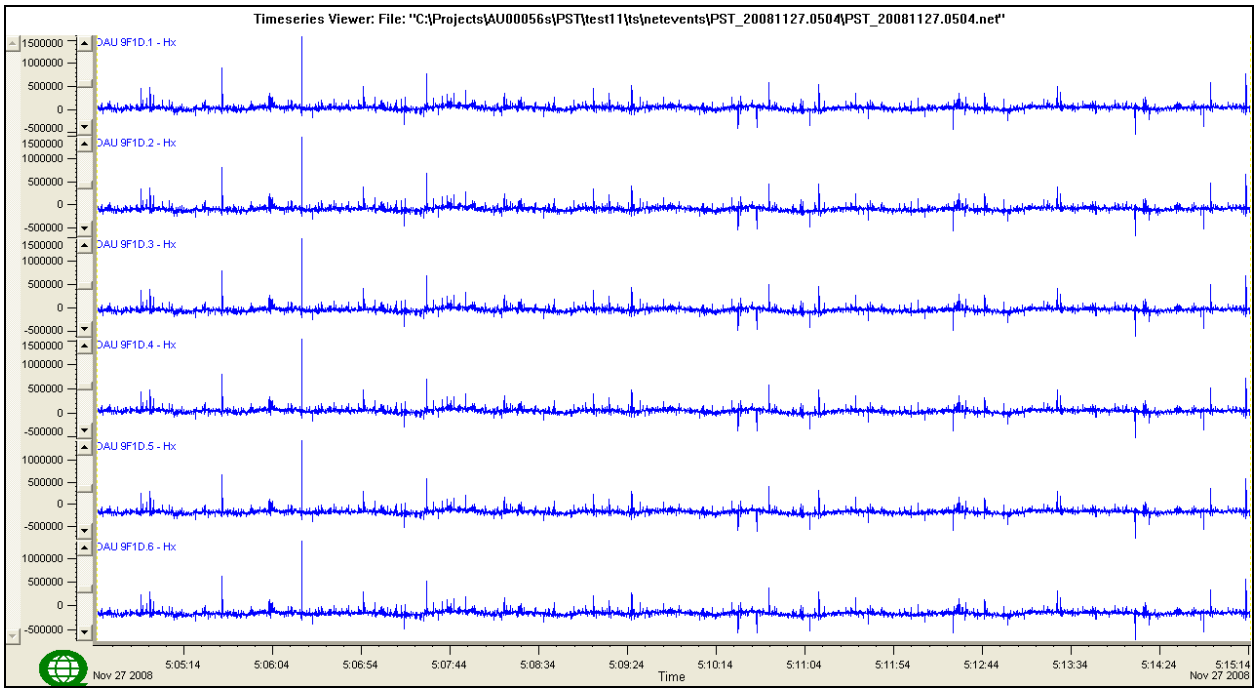

Figure 9-1: Complete time series @ 1000sps

Low Frequency Coil Results: 1000sps
Coherency to P50-2461

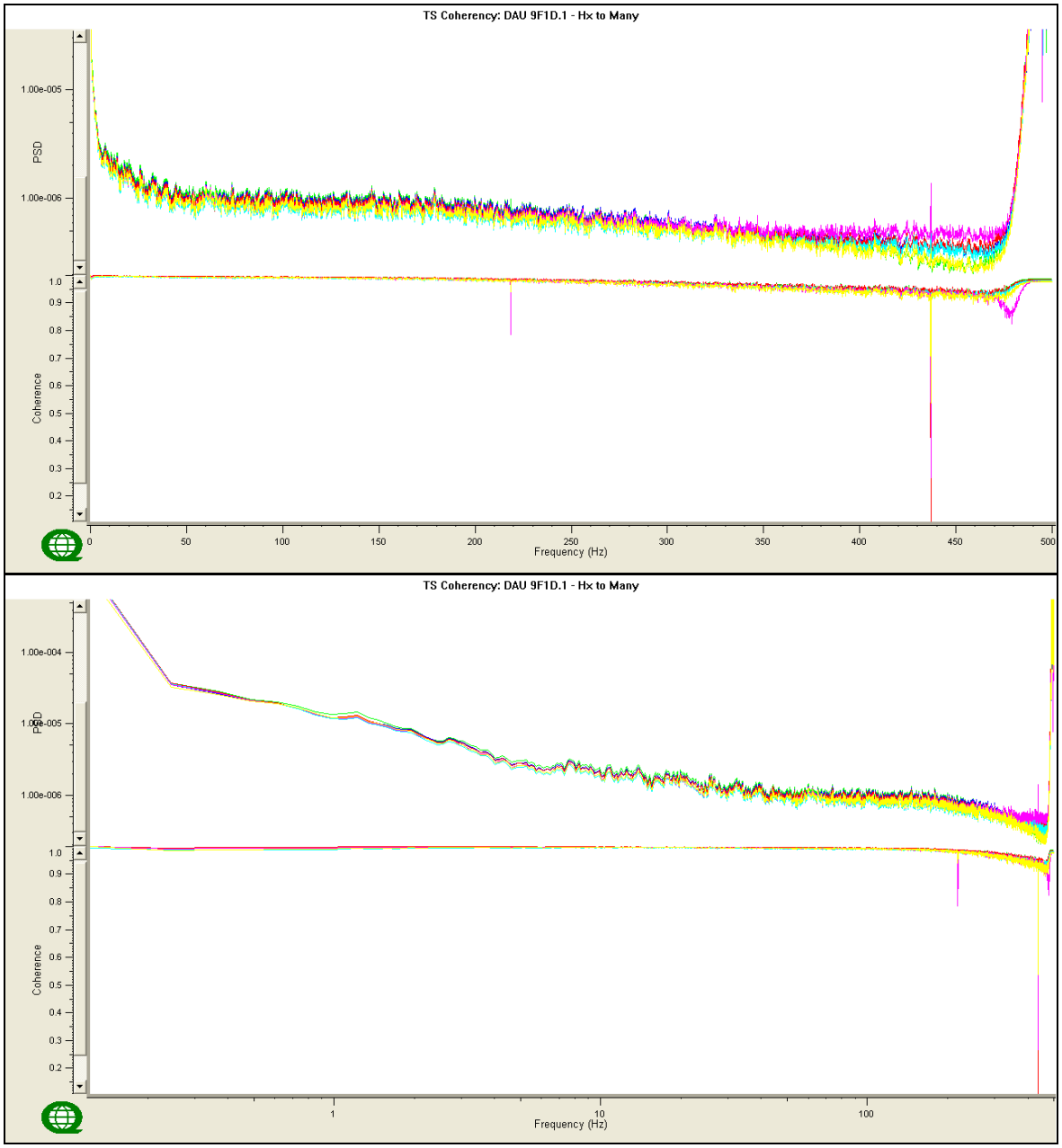

Figure 9-2: Coherencies are toP50-2461 (blue). Upper linear, lower logarithmic frequency scales.

Colour	Channel	Notes
Blue	P50-2461	
Green	P50-2448	
Red	P50-2456	
Cyan	P50-2455	
Magenta	P50-2459	
Yellow	P50-2457	

10. Low Frequency Coils – Test 10

Available Coils:

TS Strip	Manufacturer	Serial #	Tasked To
1	EMI	BF4-9622	Logger Site
2	EMI	BF4-9623	Logger Site
3	EMI	BF4-9016	Logger Site
4	EMI	BF4-9122	Logger Site
5	EMI	BF7-9103	Logger Site

Processing Parameters:

Parameter	Value
QuickLay Version	3_Alpha.33
PSD Method	Welch
Window	Hanning
Window length	8196
Segment Overlap	50%

10.1 Test Results: 1000sps

NetEvent: PST_20081129.0431.net
Sample Rate: 1000sps
TS Length: 650000 samples (~11min)

Results:
BF4-9122 & BF7-9103 failed due to low coherency

Time Series

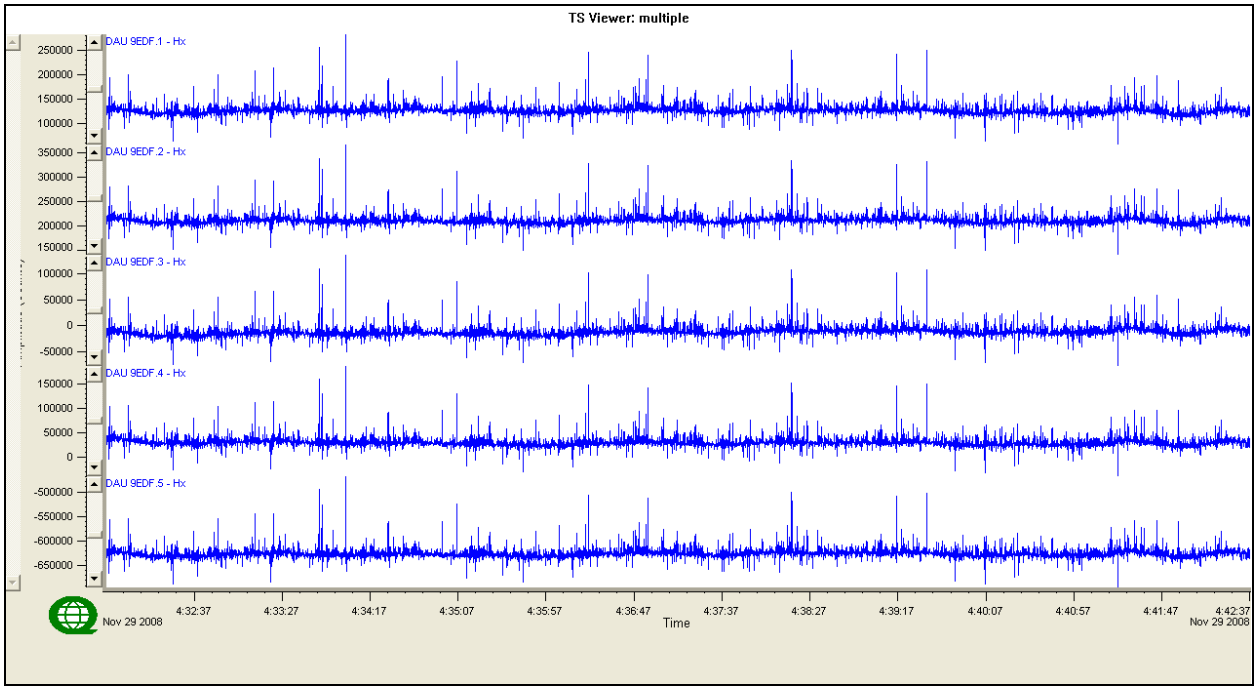

Figure 10-1: Complete time series @ 1000sps

Low Frequency Coil Results: 1000sps
Coherency to BF4-9623

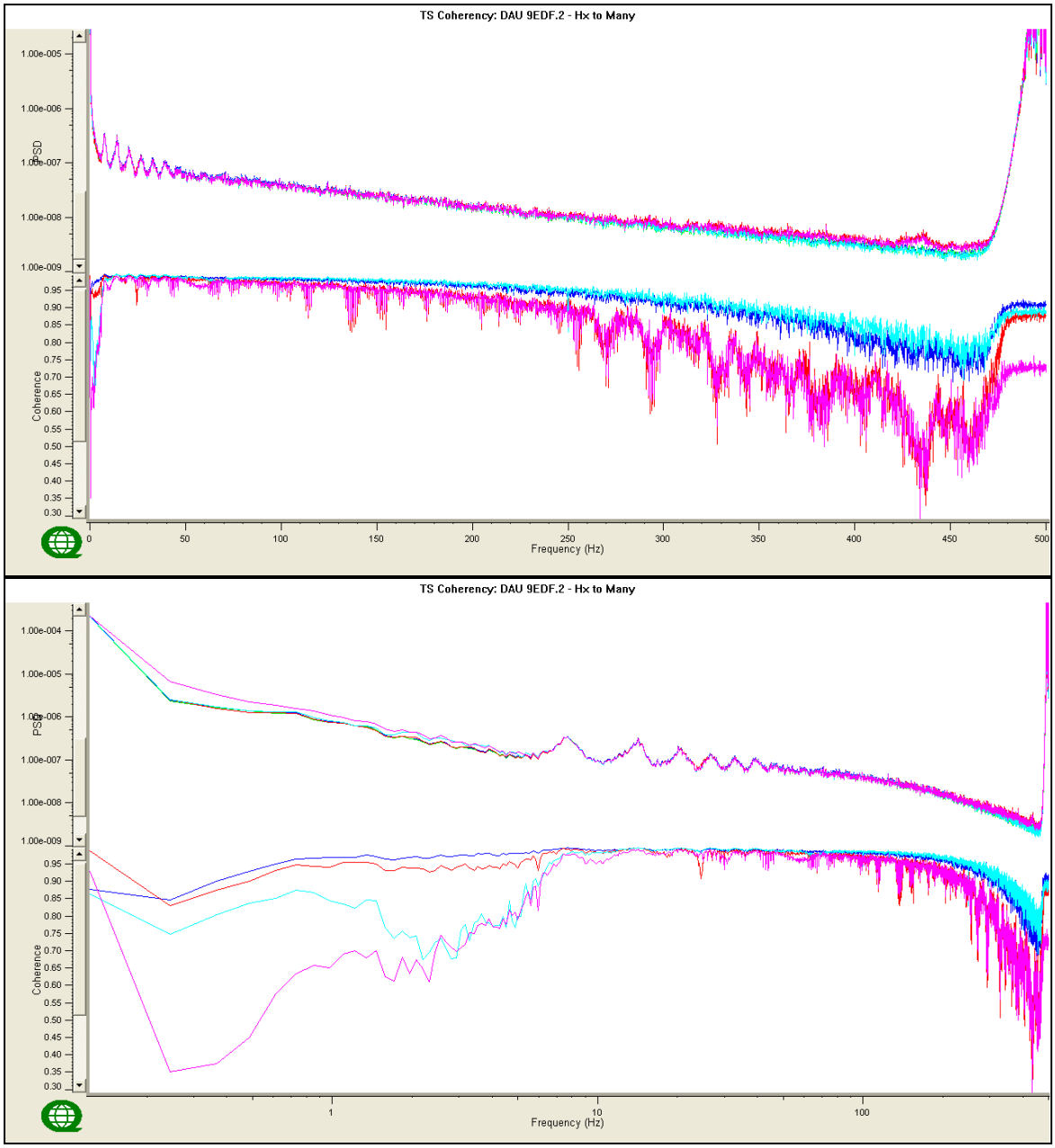

Figure 10-2: Coherencies are to BF4-9623 (green). Upper linear, lower logarithmic frequency scales.

Colour	Channel	Notes
Blue	BF4-9622	
Green	BF4-9623	
Red	BF4-9016	
Cyan	BF4-9122	poor performance
Magenta	BF7-9103	poor performance