



Dayboro Geophysical Pty Ltd



BASS08
(Exploration Blocks T/37P and T/38P)
2D Processing 2008
Final Report

Prepared By
Ben Turner
Dayboro Geophysical Pty Ltd
Sept 2008



Dayboro Geophysical Pty Ltd



Table of Contents

1.0 Introduction

2.0 Acquisition Parameters

3.0 Processing Sequence Summary

4.0 Processing Sequence Detail

4.1 Reformat

4.2 Trace Editing

4.3 Navigation Merge

4.4 Spherical Divergence

4.5 Tau-P Deconvolution

4.6 SRME

4.7 First Pass Velocities

4.8 First Radon Demultiple

4.9 Second Pass Velocities

4.10 Second Radon Demultiple

4.11 Pre-Stack Time Migration

4.12 Final PSTM Velocity Analysis

4.13 Final Stack

4.14 Angle Stacks

4.15 Gather Output

Appendix A Pre-Processing Testing

Appendix B Demultiple Testing

Appendix C Post-Stack Testing

Appendix D Angle Gather Testing

Appendix E Line Listing

Appendix F Data Disposition

Appendix G Example EBCDICs

Appendix H Personnel and Contacts

Appendix I Polarity





1.0 Introduction

In 2008, CUE Energy Resources acquired 3660km of 2D Marine seismic data in the Bass Basin. These data were processed through a state of the art processing flow which included SRME, Tau-P Deconvolution and Pre-Stack Time Migration. The final output included PSTM stacks, PSTM gathers and three PSTM angle stacks. The following report details the processes and parameters chosen.

2.0 Acquisition Parameters

Recording Parameters:

Recording System	Sercel Seal 408XL
Record Length	6000ms
Sample Rate	2ms
Start of Data	40ms before FTB
Low Cut Filter	4.7Hz /12 dB Combined
High Cut Filter	200Hz @ 370dB/Oct
Polarity	First Break is Negative
Shotpoint Interval	25m

Streamer Parameters

Number of Streamers	1
Streamer Length	6000m
Number of Channels	480
Group Interval	12.5m
Operating Depth	8m +/- 1m
Offset CSCNG(inline)	145m (Center of source to center of near group)

Source Parameters

Array Volume	3040 cubic inches
Operating Pressure	2000 psi +/- 10%
Array Configuration	3 Strings
Array Numbering	Stbd to Port / 1 to 3
Array Separation	10m
Source Depth	6m +/- 1m
Center Source to Nav Mast	180m





3.0 Processing Sequence Summary

Reformat

- SEGD to Internal Format

Trace Editing

Navigation Merge

Spherical Divergence

- $1/V^2T$

Tau-P Deconvolution

- 500 P Traces
- -6000m/s to 1500m/s
- 8ms Gap 240ms Operator Length
- Tau-P Domain Mute

SRME

- Interpolate to Zero Offset
- Sort to Offset Domain
- Interpolate Between Shots
- Sort to Shot Domain
- SRME Modeling
- Adaptive Subtraction
- Remove Interpolated Shots

First Pass Velocities

- 1km Interval

First Radon Demultiple

- Reference Offset 3000m
- P-Min -200m
- P-Max 900m
- dP 10
- Multiple Rejection 100ms-900ms

Second Pass Velocities

- 500m Interval

Second Radon Demultiple

- Reference Offset 3000m
- P-Min -200m
- P-Max 900m
- dP 10
- Multiple Rejection 70ms-900ms





Pre-Stack Time Migration

- Type - Kirchhoff
- Migration Half Aperture 6000m
- Maximum Angle 70Deg
- Offset Minimum -6132.5m
- Offset Increment 50m
- Number of Offsets 121

Final Velocity Analysis

- 500m Increment

Final Stack

- Remove Second Pass Vels NMO
- Apply Final Vels NMO
- Mute
- Stack
- AGC – 500m
- Spectral Balance 2Hz-5Hz-80Hz-90Hz
- Bandpass Filter 2Hz-5Hz-80Hz-90Hz
- 5 Trace Running Mix
- AGC - 500m

Angle Stacks

- Near Range 5-15 Degrees
- Mid Range 15-25 Degrees
- Far Range 25-40 Degrees
 - Input PSTM Gathers
 - Remove Second Pass Vels NMO
 - Apply Final Vels NMO
 - Angle Mute
 - Stack
 - Spectral Balance 2Hz-5Hz-80Hz-90Hz
 - Bandpass Filter 2Hz-5Hz-80Hz-90Hz
 - 5 Trace Running Mix





4.0 Processing Sequence Detail

4.1 Reformat

The data was reformatted from SEG-D field tapes to the Claritas internal format.

4.2 Trace Editing

Traces and shots flagged as bad in the observers logs were removed from the processing flow. Edited traces included those associated with out of spec source, and receiver characteristics as well as those contaminated with external noise.

4.3 Navigation Merge

The seismic data were merged with the P1-90 navigation data supplied by the acquisition contractor.

4.4 Spherical Divergence

A $1/V^2T$ Spherical Divergence Correction using a regional velocity function was applied to the data. The velocity function used was:

<i>Time(ms)</i>	<i>Velocity(m/s)</i>
120	1484
454	1864
620	1970
800	2075
1180	2255
1560	2426
1886	2541
2260	2670
2809	2865
4670	3533
6000	4002





4.5 Tau-P Deconvolution

The Tau-P Deconvolution process involved both a linear noise filter and a deconvolution. The application of the process was as follows:

Apply Removable AGC – 500ms

Forward Tau-P Transform

- 500 P Traces
- Velocity Range -6000m/s To 1500m/s

Deconvolution

- 8ms Gap
- 240ms Operator Length
- Design Window – Whole P-Trace
- Application Window - Whole P-Trace

Tau-P Surgical Mute

Tau(ms)	P-Trace(#)
6000	220
580	335
208	500
6000	220
6000	500

Amplitude Preserving RHO Filter

Inverse Tau-P Transform

Remove AGC – 500ms

4.6 SRME

The SRME process involved three aspects, the first being regularization, the second being multiple model derivation and the final being adaptive subtraction of the multiple model from the input data.

Regularization

- Interpolate to Zero Offset
- Sort to Offset Domain
- Interpolate Between Shots
- Sort back to Shot Domain





SRME Multiple Modeling

- Frequency Range 0Hz – 90Hz
- Number of Taylor Terms - 2
- Taper - 20 Traces

Adaptive Subtraction

- Filter Length – 60ms
- No of Traces in Window – 6
- Spatial Moveup of Window – 1 Tr
- Temporal Length of Window 600ms

Remove Interpolated Shots

4.7 First Pass Velocities

The first pass velocity analysis was carried out at a 1km interval.

4.8 First Radon Demultiple

To assist with the second pass velocity analysis a radon demultiple was applied to the CDP gathers. The data were moved out with the first pass velocities prior to the radon demultiple, this NMO was then backed out after the radon.

Apply Removable AGC – 500ms

Parabolic Radon Demultiple

- Reference Offset 3000m
- P-Min -200m
- P-Max 900m
- dP 10
- Multiple Rejection 100ms-900ms

Remove AGC - 500ms

4.9 Second Pass Velocities

The second pass velocity analysis was carried out at a 500m interval.

4.10 Second Radon Demultiple





A second radon demultiple was applied to the data following the second pass velocity analysis, this radon utilized the second pass velocities for the normal move-out correction.

- Apply Removable AGC – 500ms
- Parabolic Radon Demultiple
 - Reference Offset 3000m
 - P-Min -200m
 - P-Max 900m
 - dP 10
 - Multiple Rejection 70ms-900ms
- Remove AGC - 500ms

4.11 Pre-Stack Time Migration

The second pass radon demultiple gathers were pre-stack time migrated, outputting gathers. The following migration parameters were used:

Pre-Stack Time Migration

- Type - Kirchhoff
- Migration Half Aperture 6000m
- Maximum Angle 70Deg
- Offset Range 132.5m -6132.5m
- Offset Increment 50m
- Number of Offsets 121

4.12 Final PSTM Velocity Analysis

A final 500m velocity analysis was performed on the PSTM gathers.

4.13 Final Stack and Post Stack Processing

The PSTM gathers were stacked and the stack subjected to the post-stack process described below:

- Remove Second Pass Vels NMO





- Apply Final Vels NMO
- Mute
- Stack
- AGC – 500m
- Spectral Balance 2Hz-5Hz-80Hz-90Hz
- Bandpass Filter 2Hz-5Hz-80Hz-90Hz
- 5 Trace Running Mix
- AGC - 500m

4.14 Angle Stacks

The PSTM gathers were mute to within three angle ranges, stacked and were subjected to the post-stack processes described below:

- Near Angle Range 5-15 Degrees
- Mid Angle Range 15-25 Degrees
- Far Angle Range 25-40 Degrees

- Remove Second Pass Vels NMO
- Apply Final Vels NMO
- Mute
- Stack (1/N Gain Recover)
- Spectral Balance 2Hz-5Hz-80Hz-90Hz
- Bandpass Filter 2Hz-5Hz-80Hz-90Hz
- 5 Trace Running Mix

4.15 Gather Output

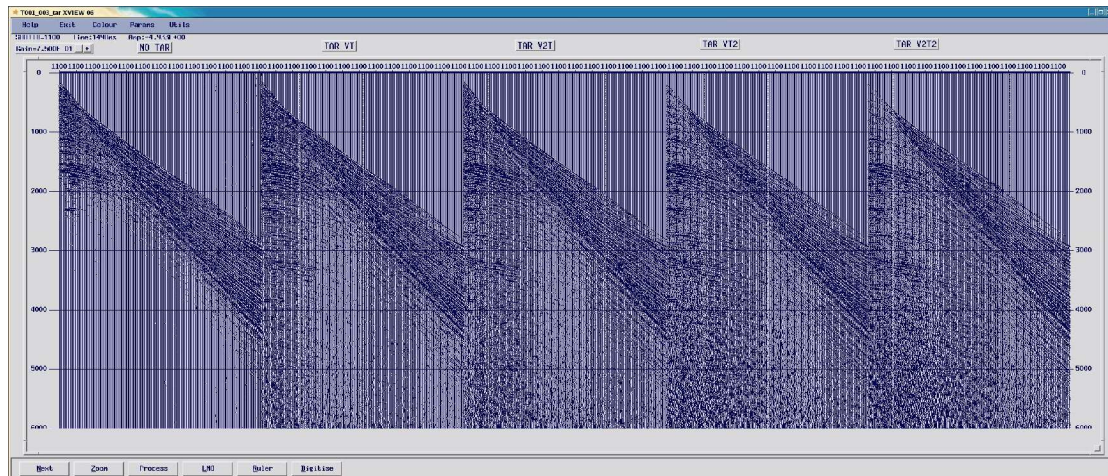
The PSTM gathers with the final PSTM velocities applied were output to SEG-Y format and transcribed to hard disk drive.



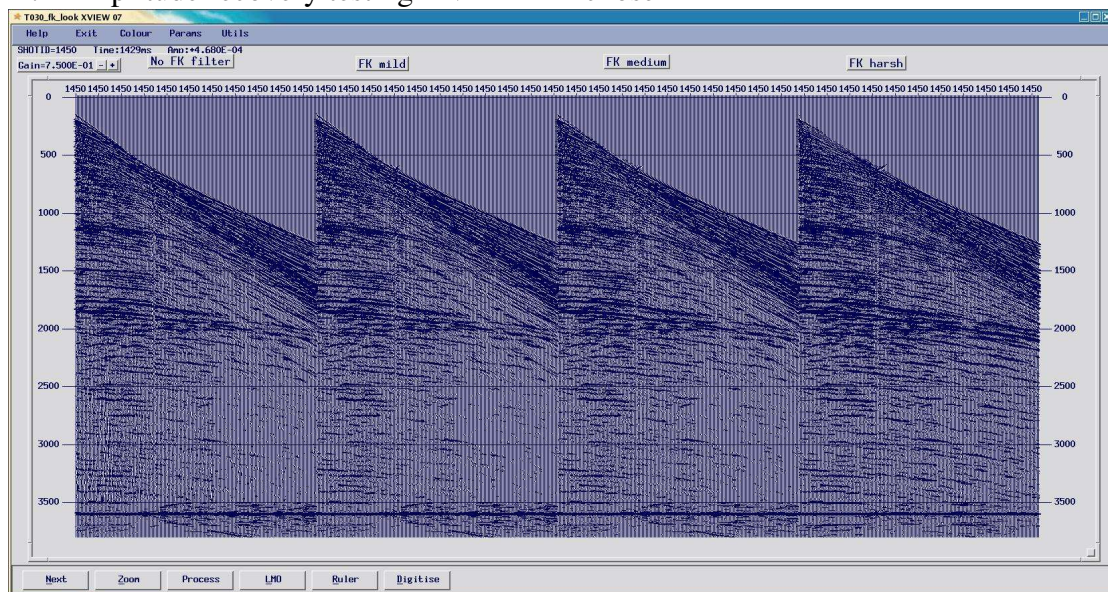


Appendix A Pre-Processing Testing

Parameter testing for each processing step was conducted on lines VCUE08-N40-31, VCUE08-E13-053 and VCUE08-E39-097. The tests were carried out in Dayboro and either evaluated in house by CUE or evaluated by way of PPT files e-mail to CUE.

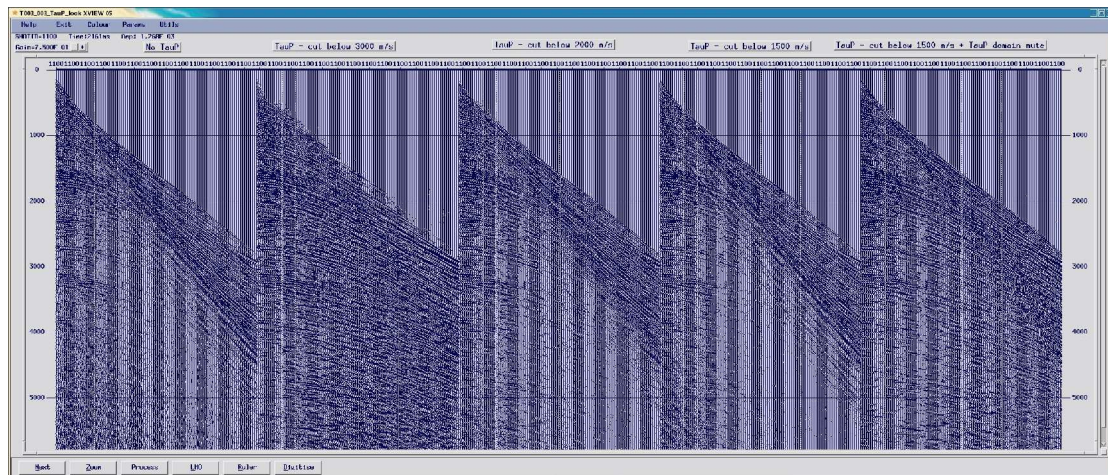


A.1 Amplitude recovery testing – V2T TAR chosen



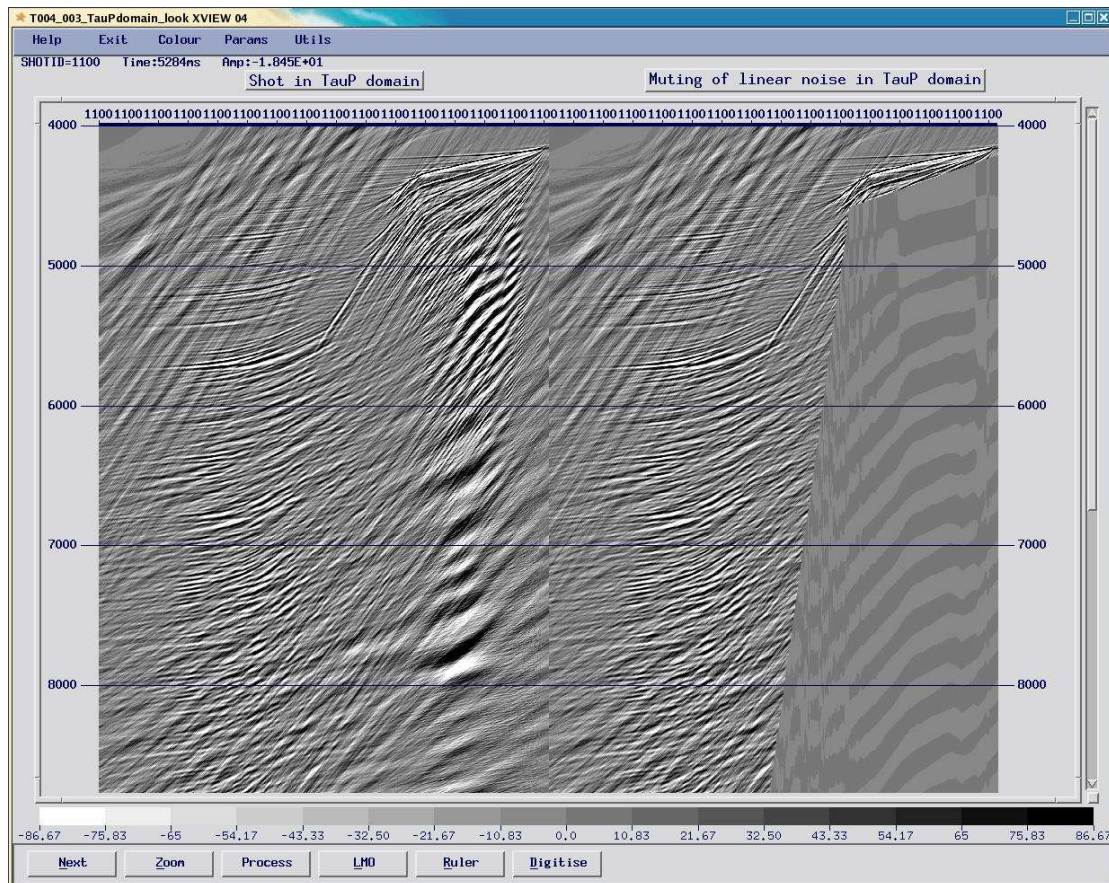
A.2 FK Linear noise filter testing. No FK filter chosen.





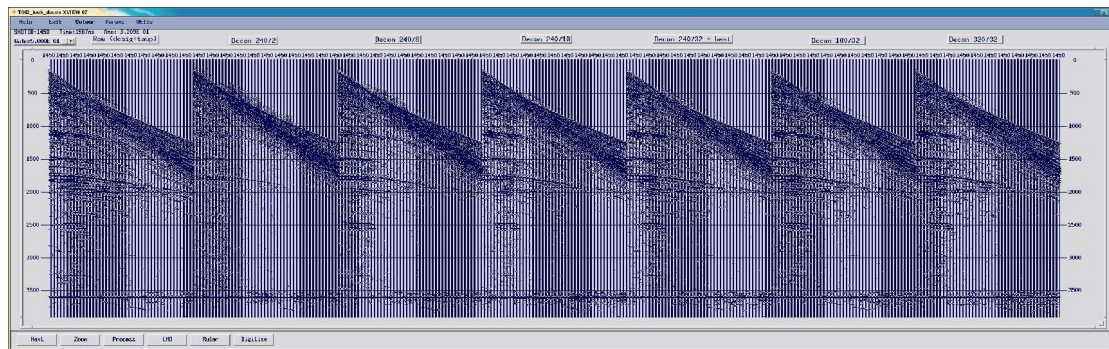
A.3.1 Tau-P Domain Linear Noise Filter Testing.



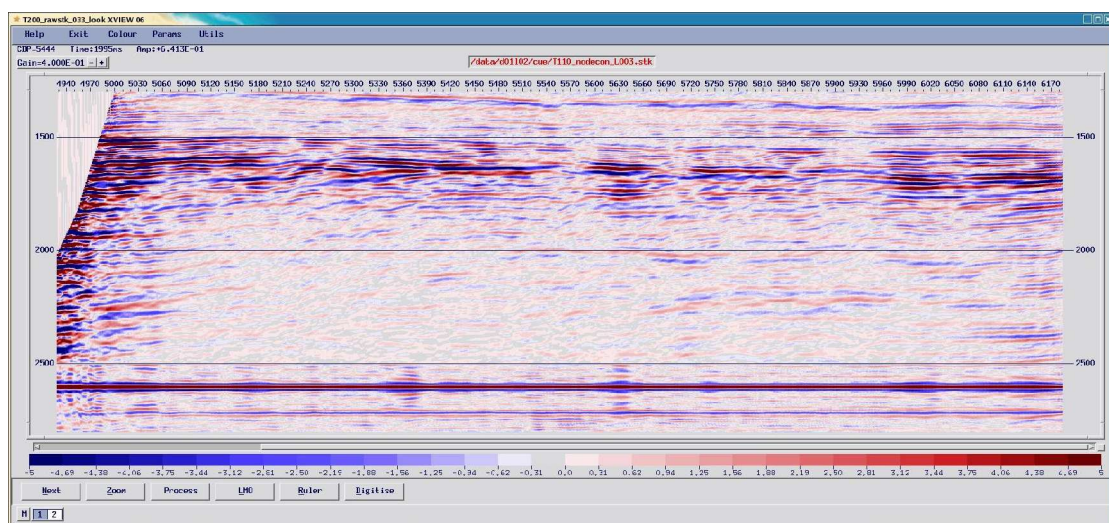


A.3.2 Tau-P Domain Linear Noise Filter Testing. Linear noise is easily discriminated in the Tau-P domain, and muted.

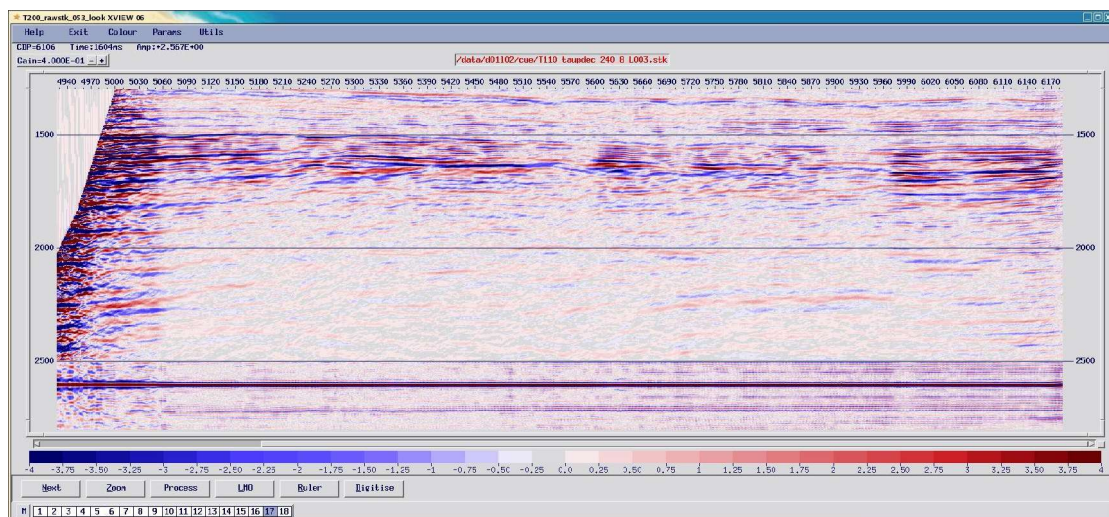




A.4.1 Deconvolution tests in Tau-P domain shown in shot domain. Parameters chosen were 240 ms window and 8 ms operator length.

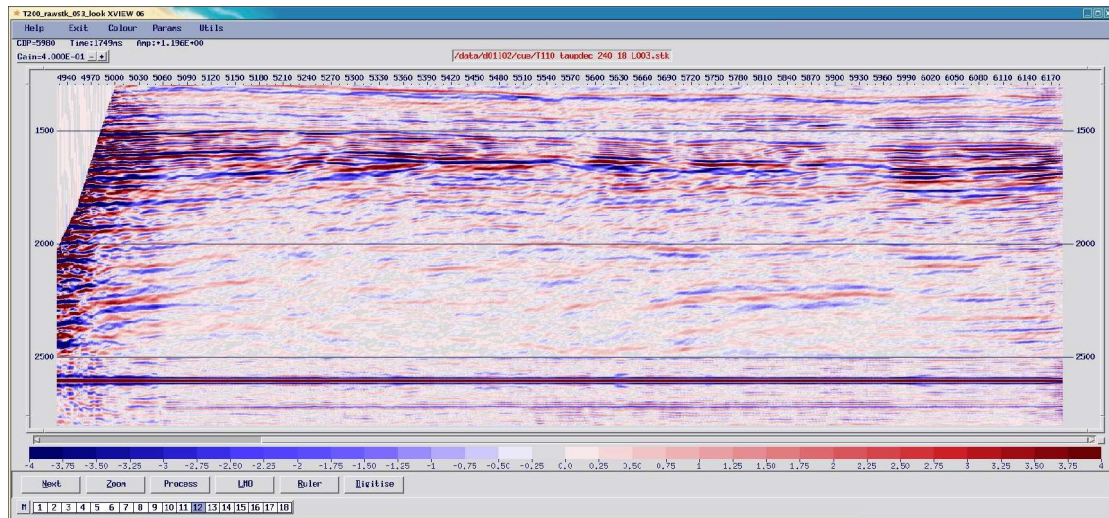


A.4.2 Deconvolution tests in Tau-P domain shown on stack. No decon stack.

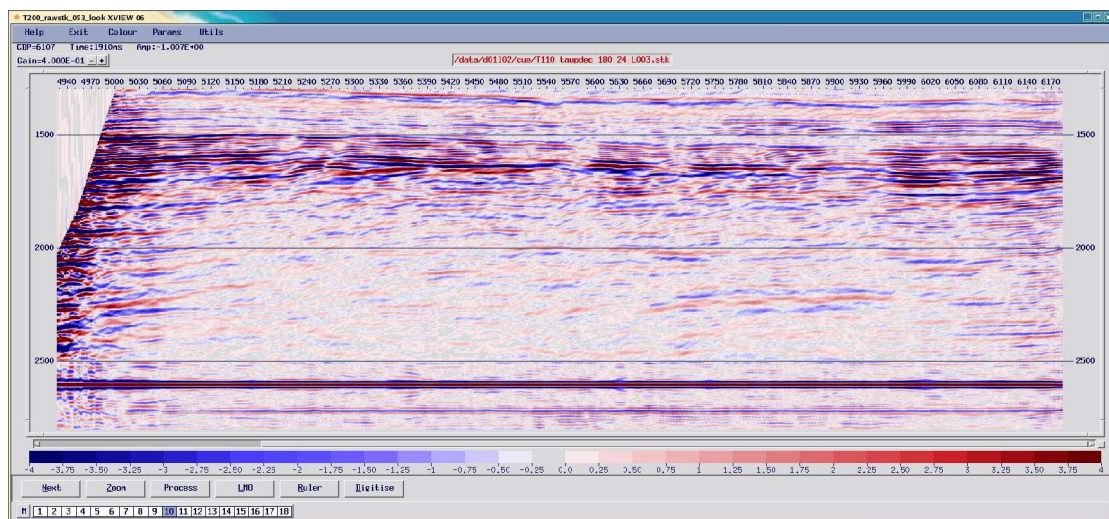


A.4.3 Deconvolution tests in Tau-P domain shown on stack, parameters chosen were 240ms/8 ms, as shown here.



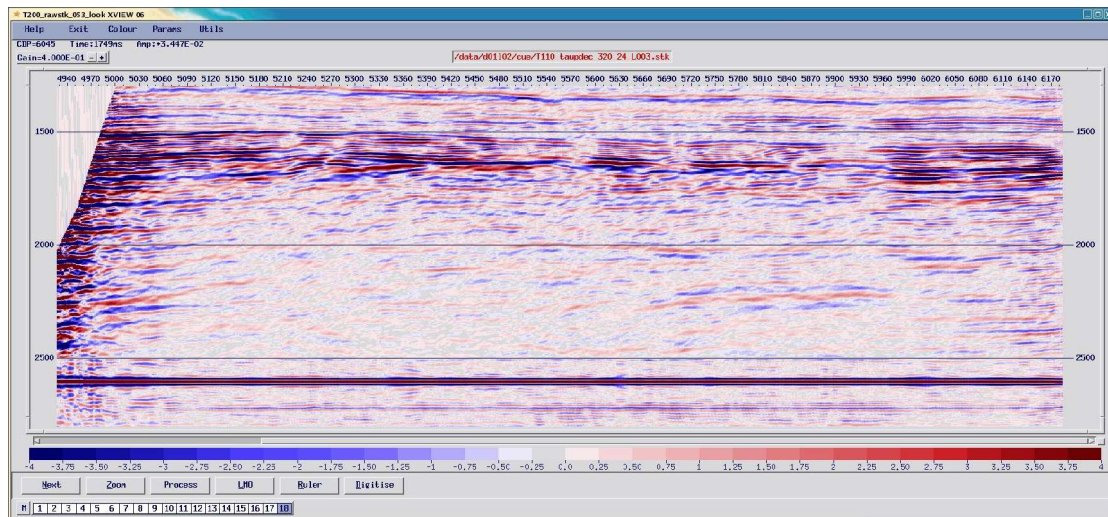


A.4.4 Deconvolution tests in Tau-P domain shown on stack, 240ms/18 ms.

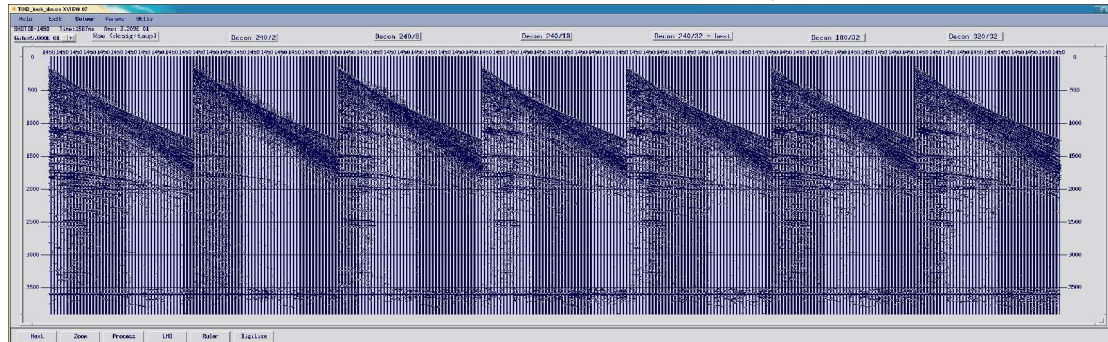


A.4.5 Deconvolution tests in Tau-P domain shown on stack, 180ms/24 ms.

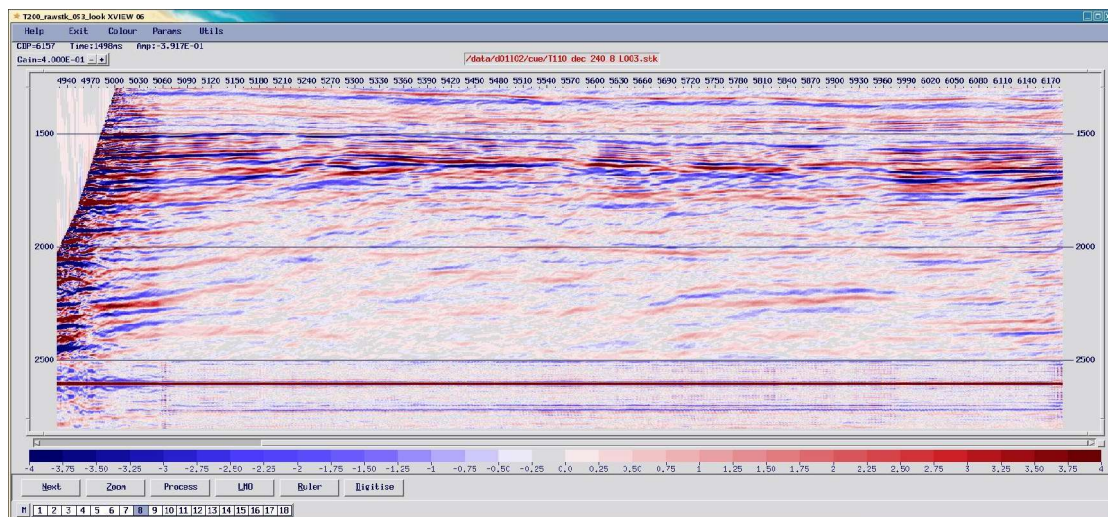




A.4.6 Deconvolution tests in Tau-P domain shown on stack, 320ms/18 ms.

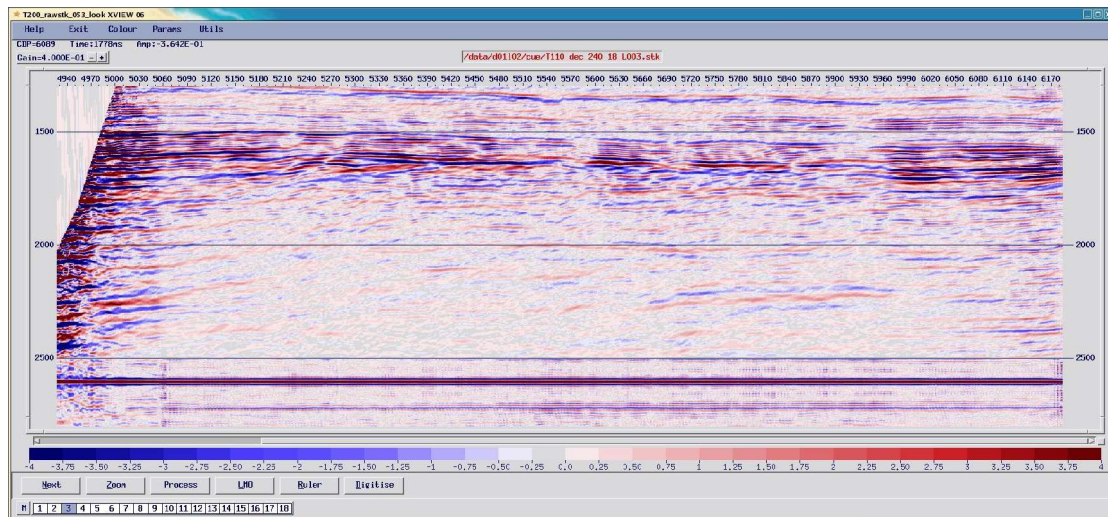


A.5.1 Deconvolution tests in TX domain shown in shot domain.

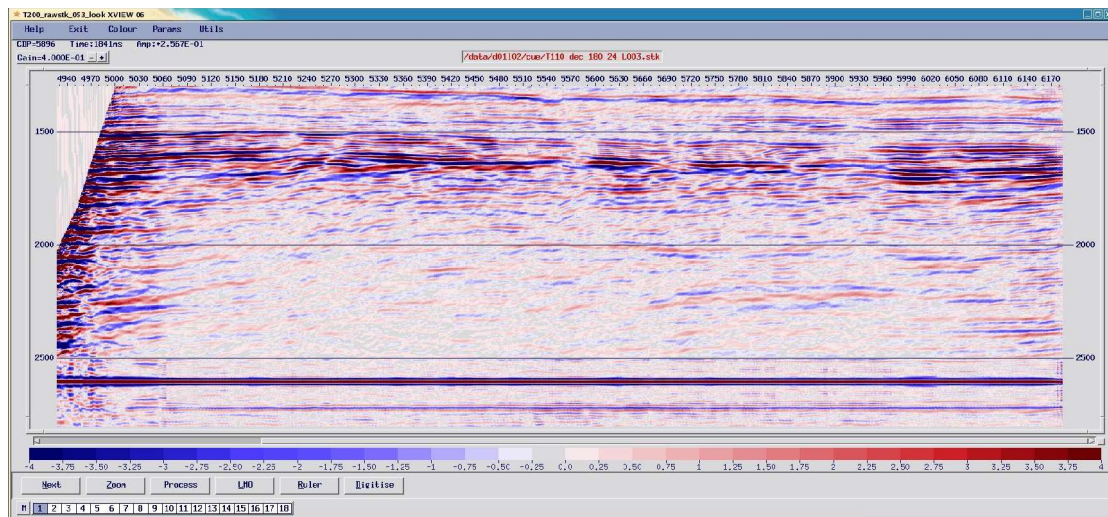


A.5.2 Deconvolution tests in TX domain shown on stack, 240ms/8 ms.



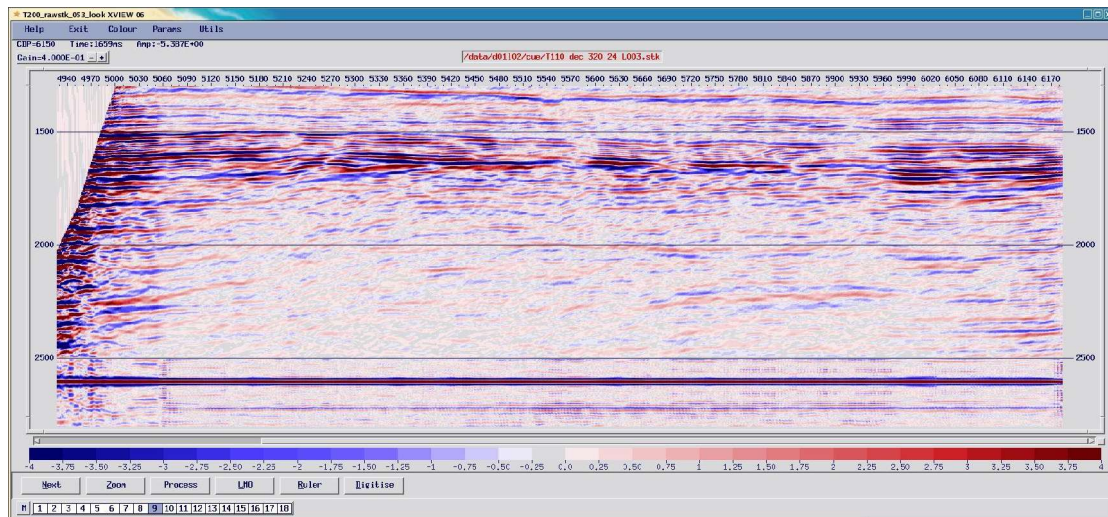


A.5.3 Deconvolution tests in TX domain shown on stack, 240ms/18 ms.

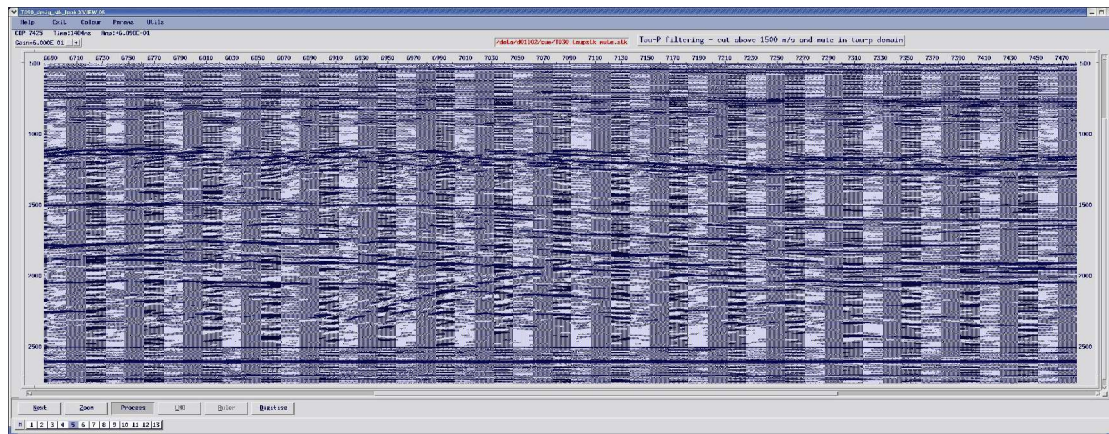


A.5.4 Deconvolution tests in TX domain shown on stack, 180ms/24 ms.

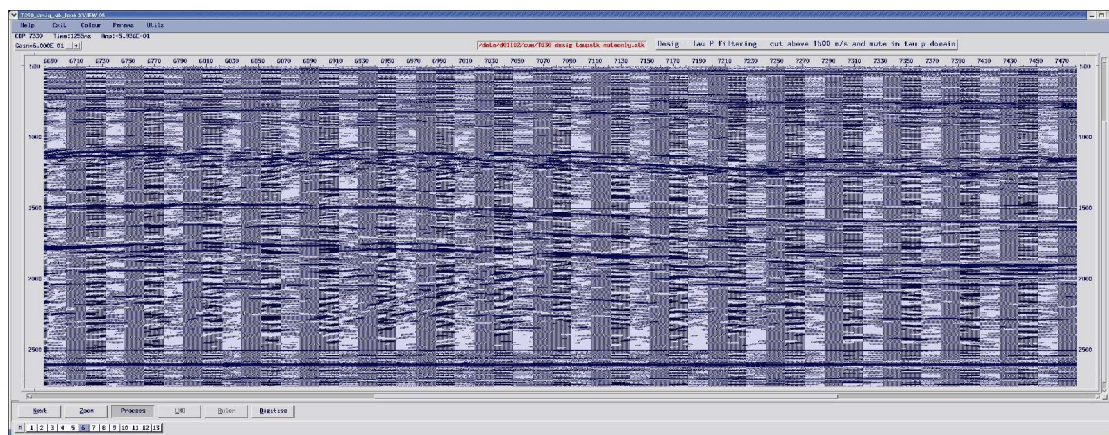




A.5.6 Deconvolution tests in TX domain shown on stack, 320ms/24 ms.



A.6.1 Designature Operator testing. Stack without Designature.

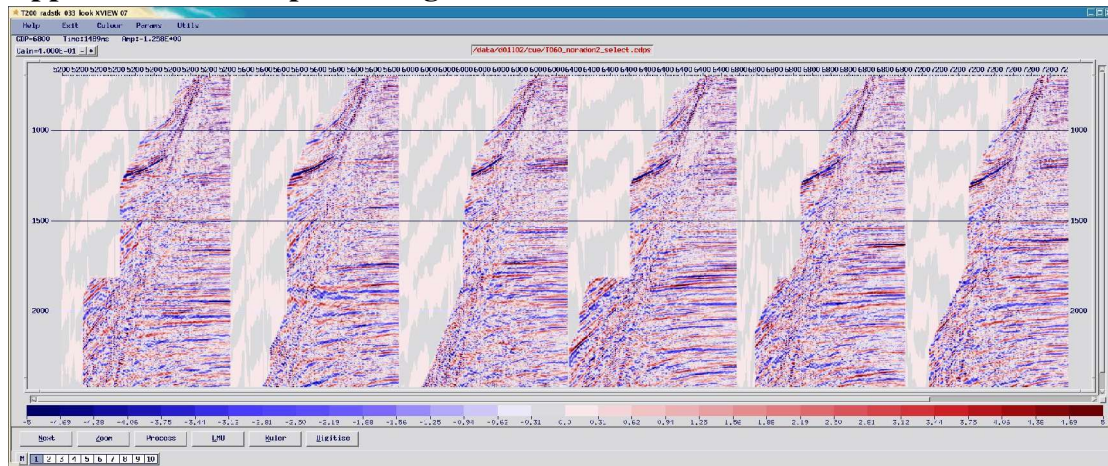


A.6.2 Designature Operator Testing. Stack with Designature operator applied. Cue decided not to apply designature at this stage.

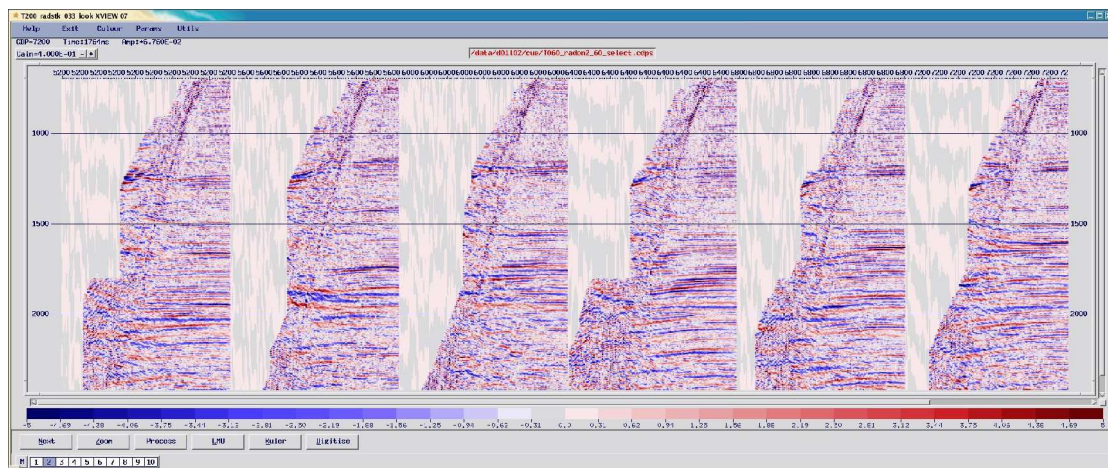




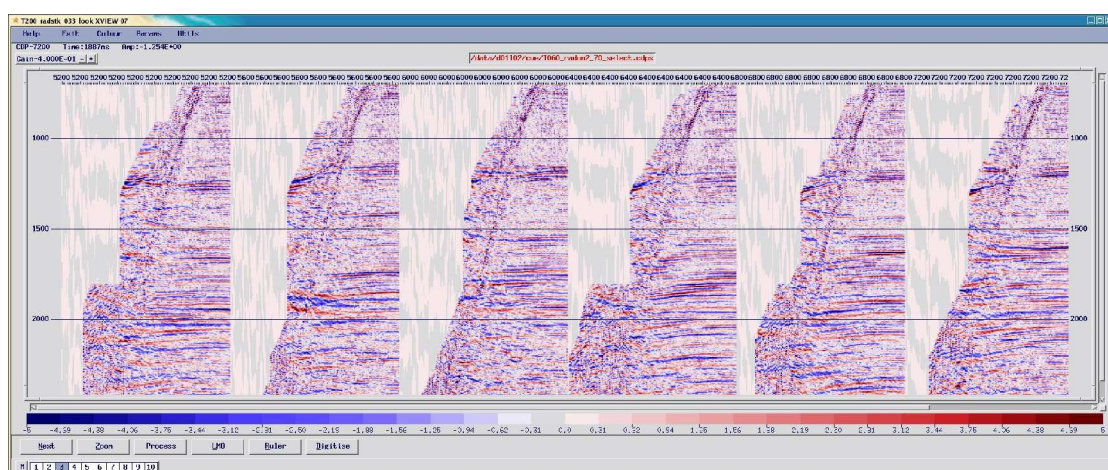
Appendix B Demultiple Testing



B.1.1 CDP gathers with no radon applied

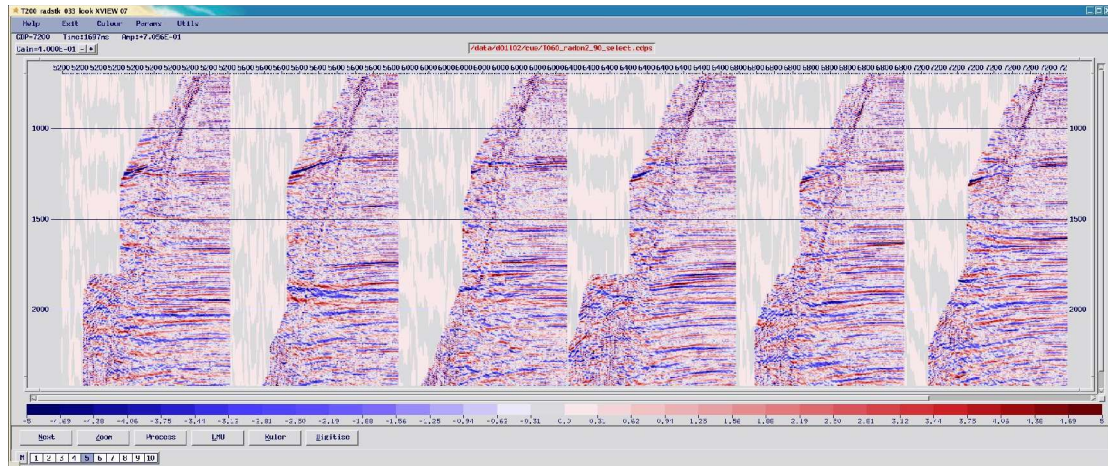


B.1.2 CDP gathers with radon, multiple rejection between 60-900 ms.

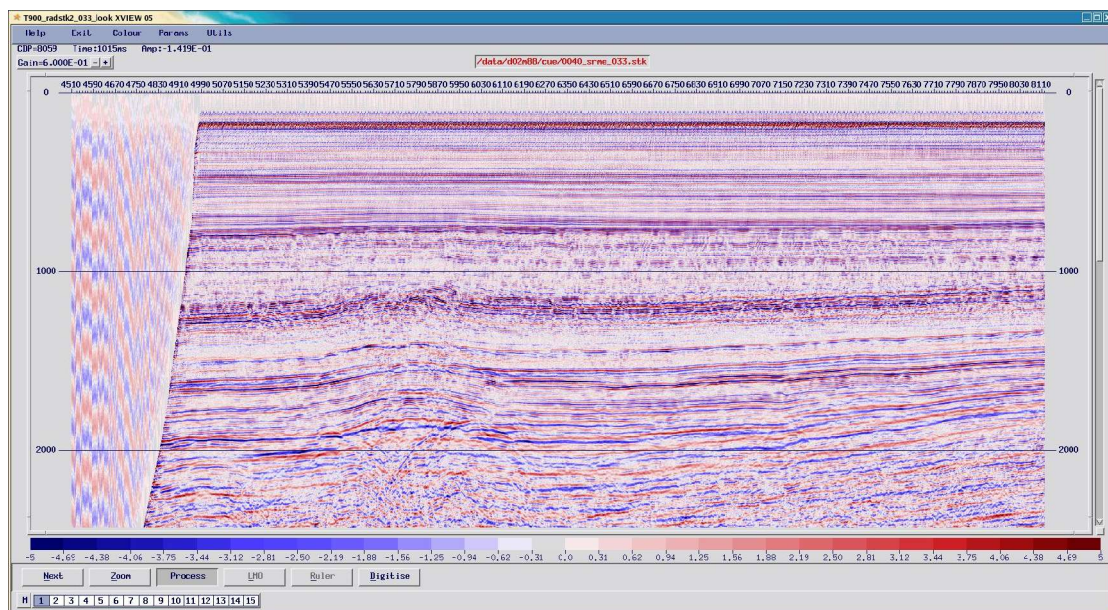


B.1.3 CDP gathers with radon, multiple rejection between 70-900 ms – chosen.



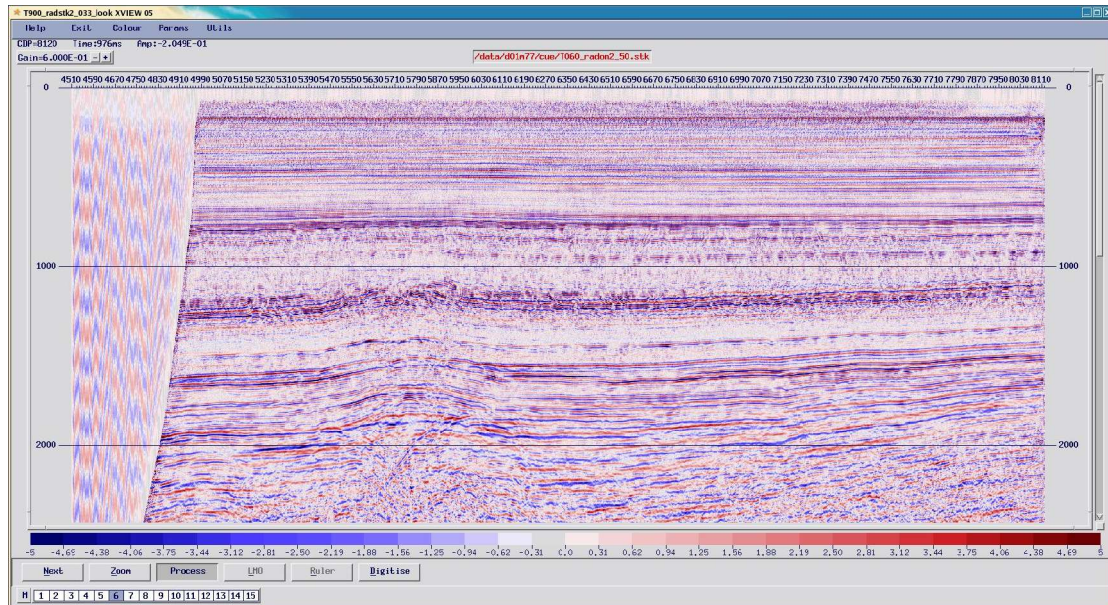


B.1.4 CDP gathers with radon, multiple rejection above 90 ms.

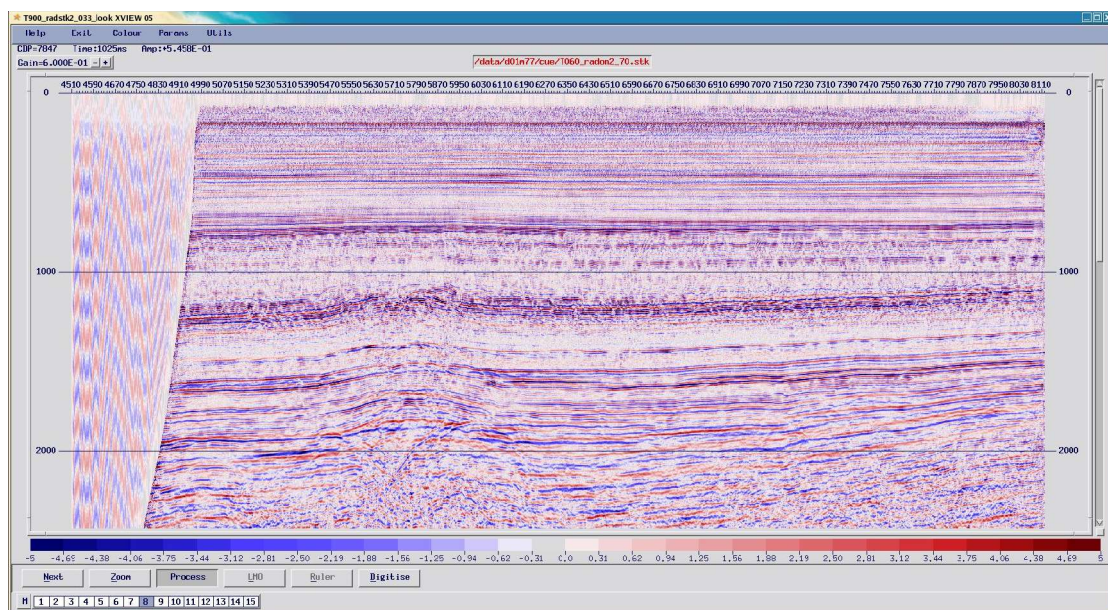


B.1.5 Stack with no radon applied



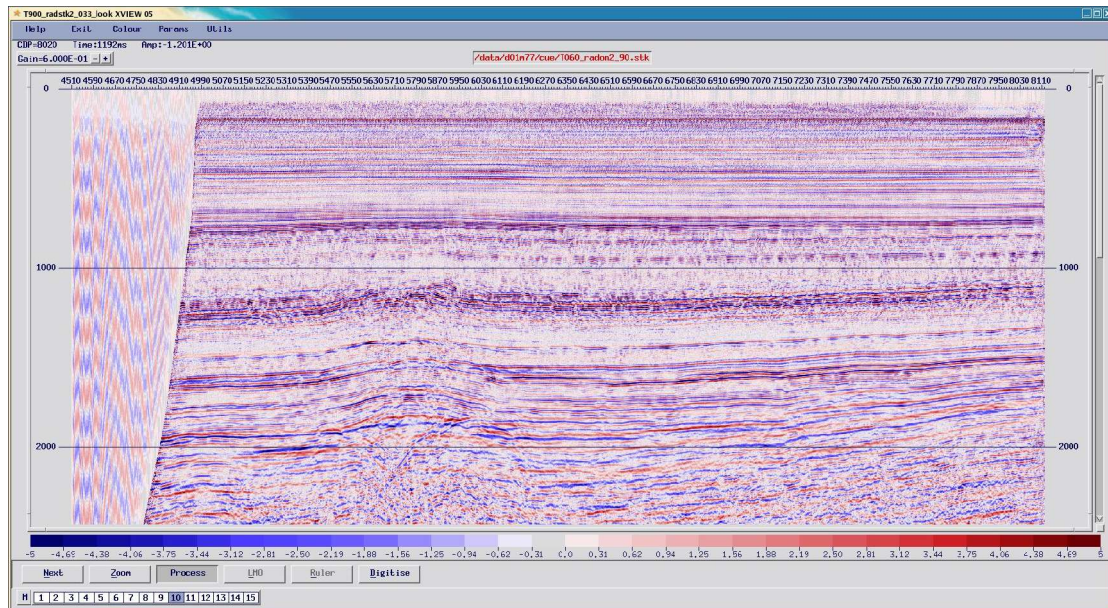


B.1.6 Stack after radon, multiple rejection between 60-900 ms.

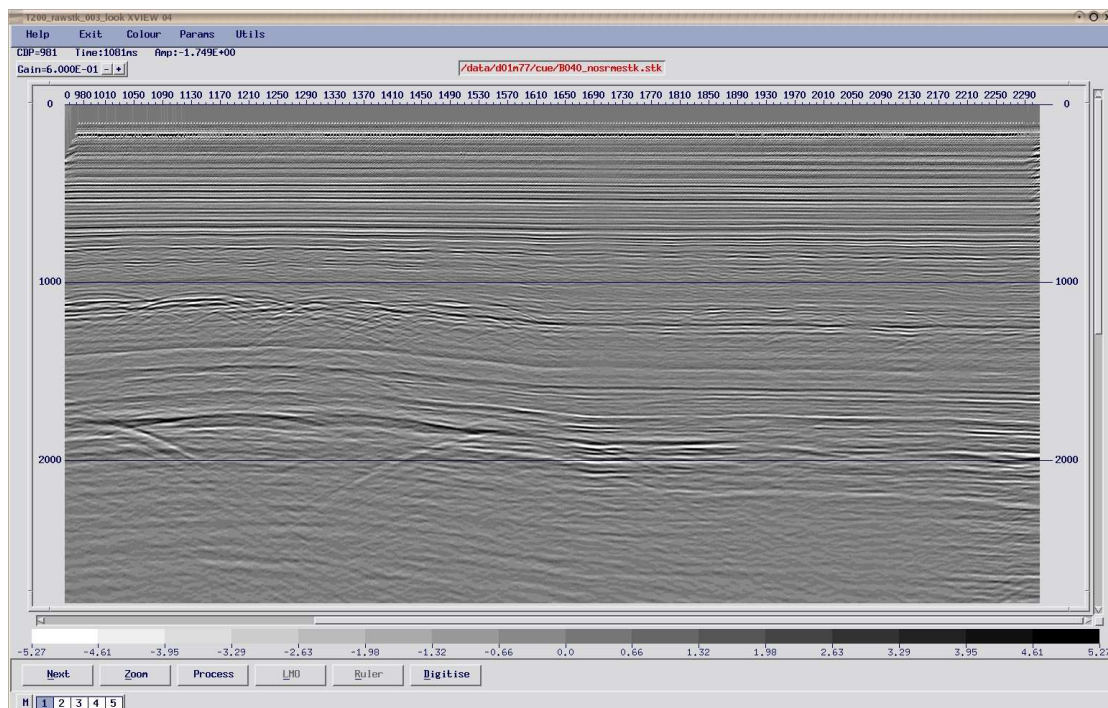


B.1.7 Stack after radon, multiple rejection between 70-900 ms – this parameter chosen.



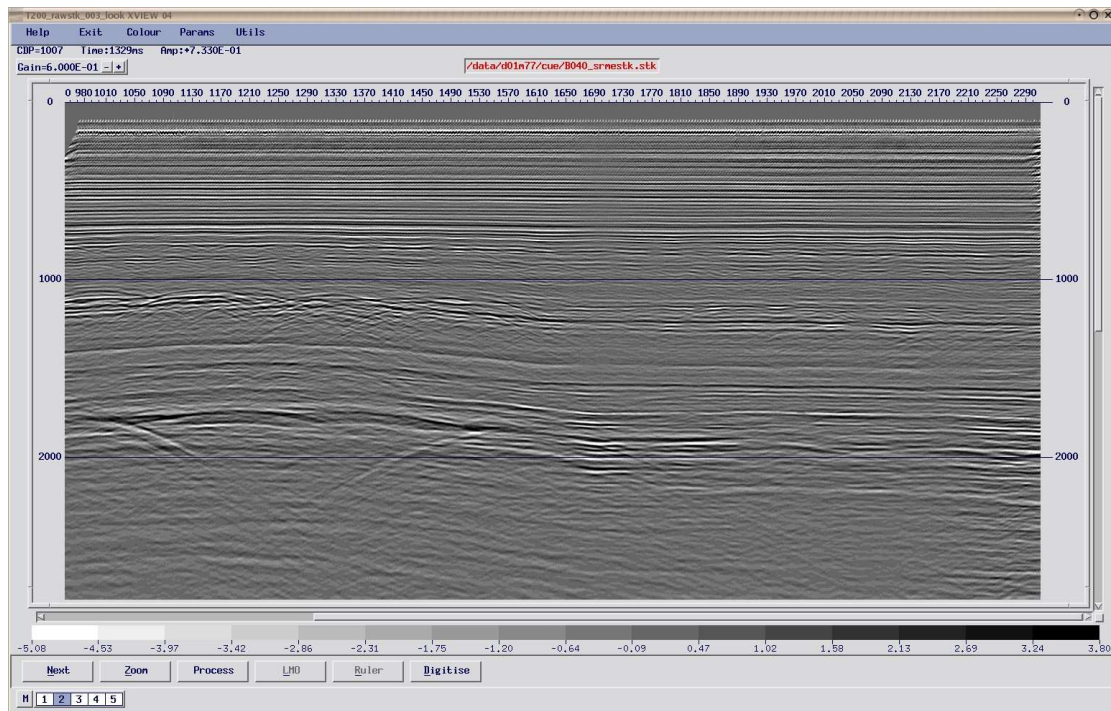


B.1.8 Stack after radon, multiple rejection between 90-900 ms.

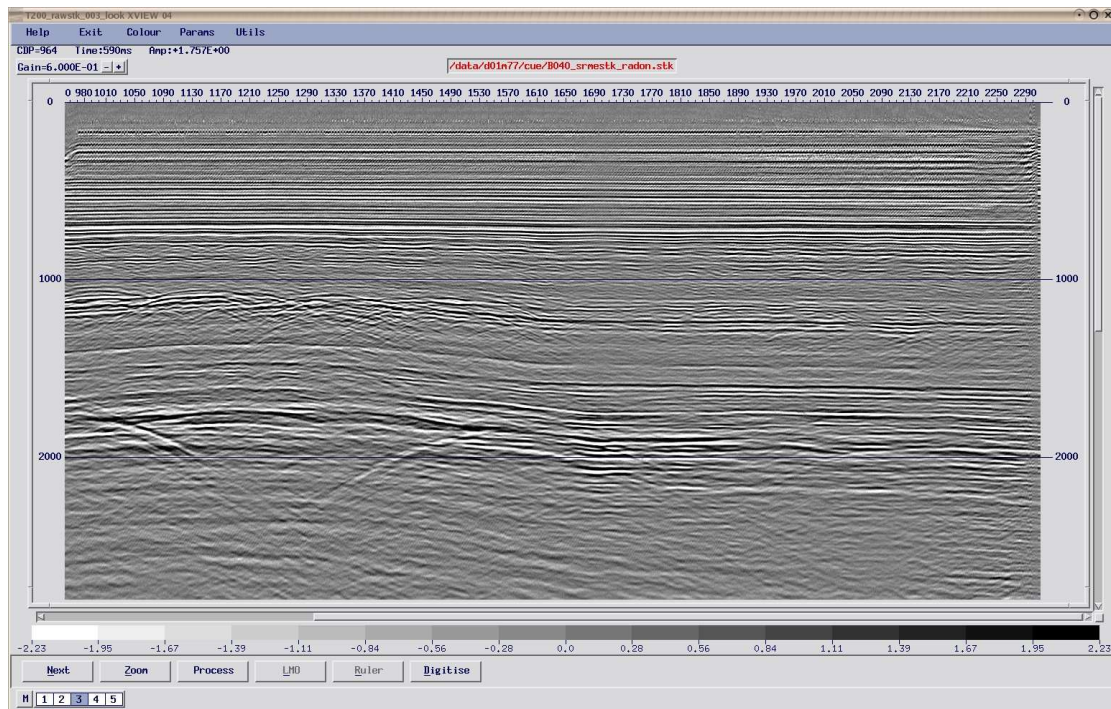


B.2.1 – SRME Tests – Stack before SRME



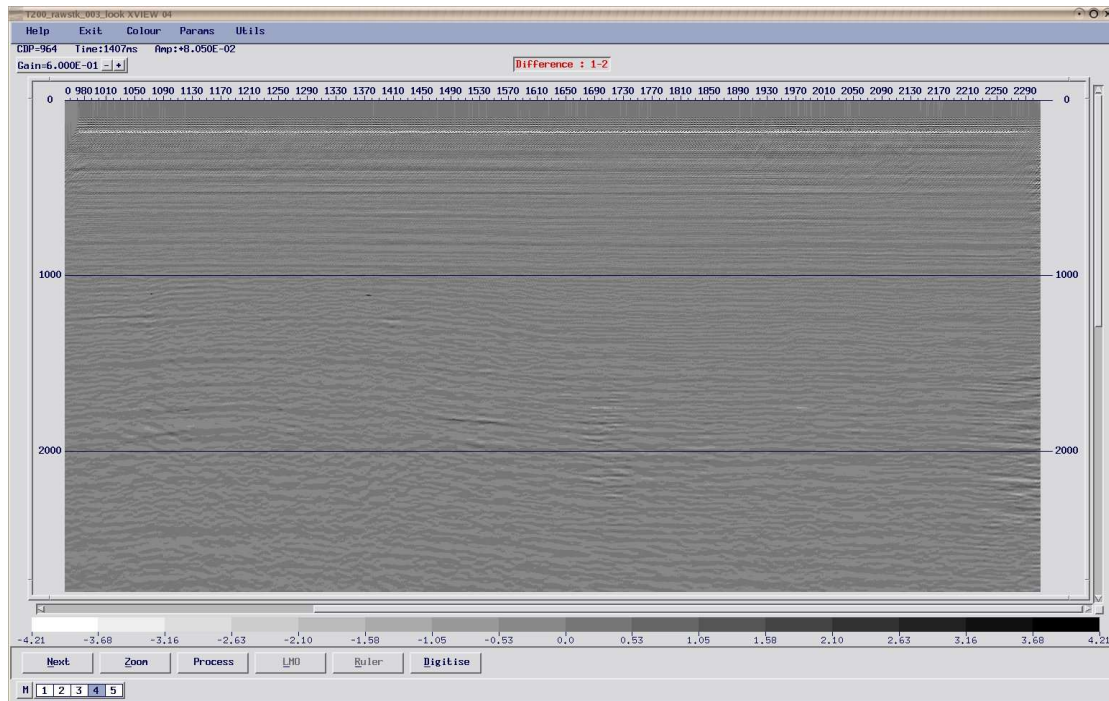


B.2.2 – SRME Tests – Stack after SRME

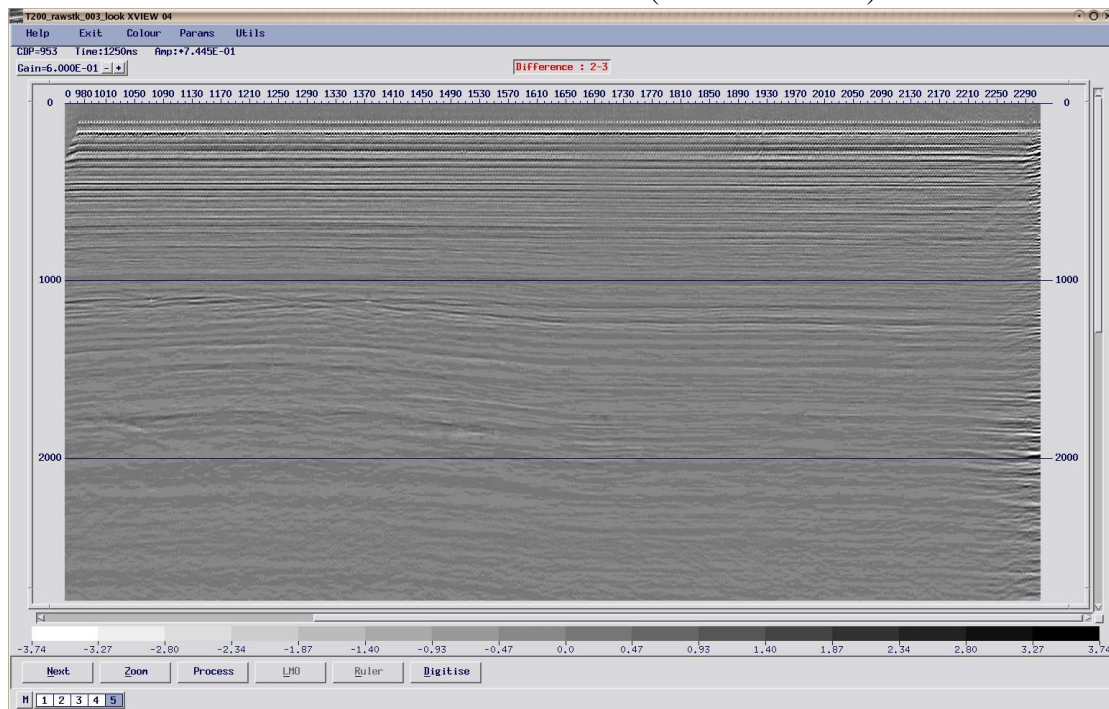


B.2.3 – SRME Tests – Stack after SRME and RADON





B.2.4 – SRME Tests – Difference SRME – RAW (Effect of SRME)

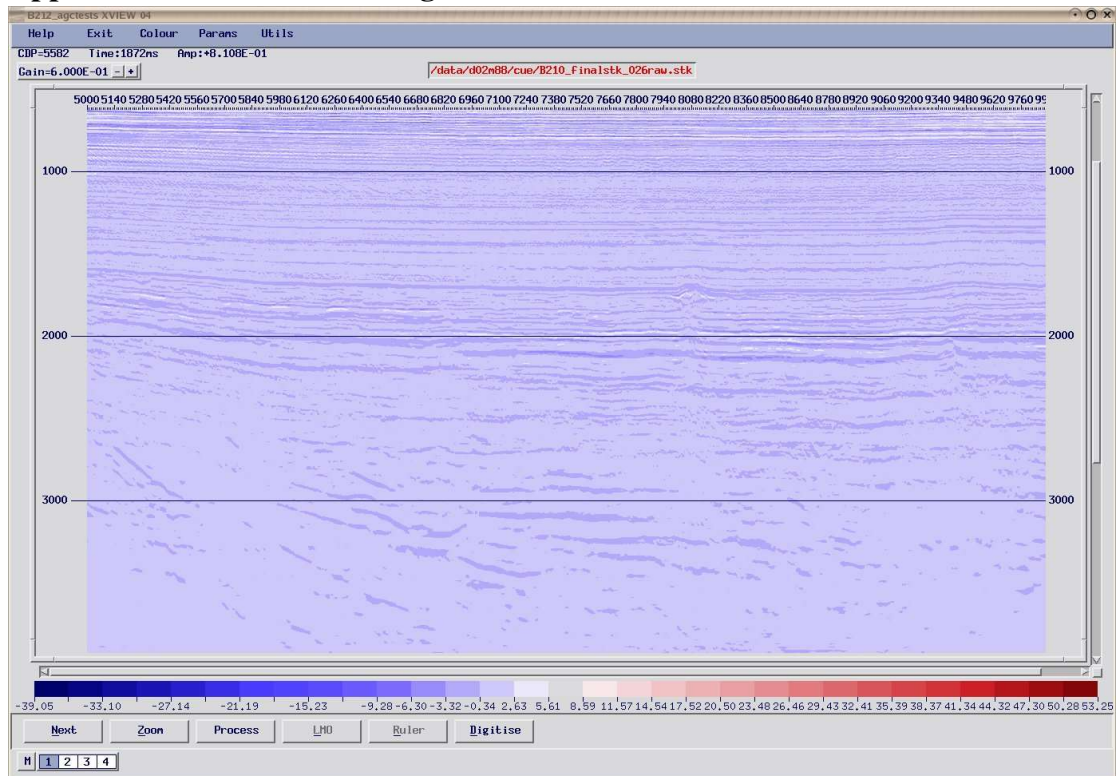


B.2.4 – SRME Tests – Difference between SRME+Radon and SRME. (Effect of Radon)



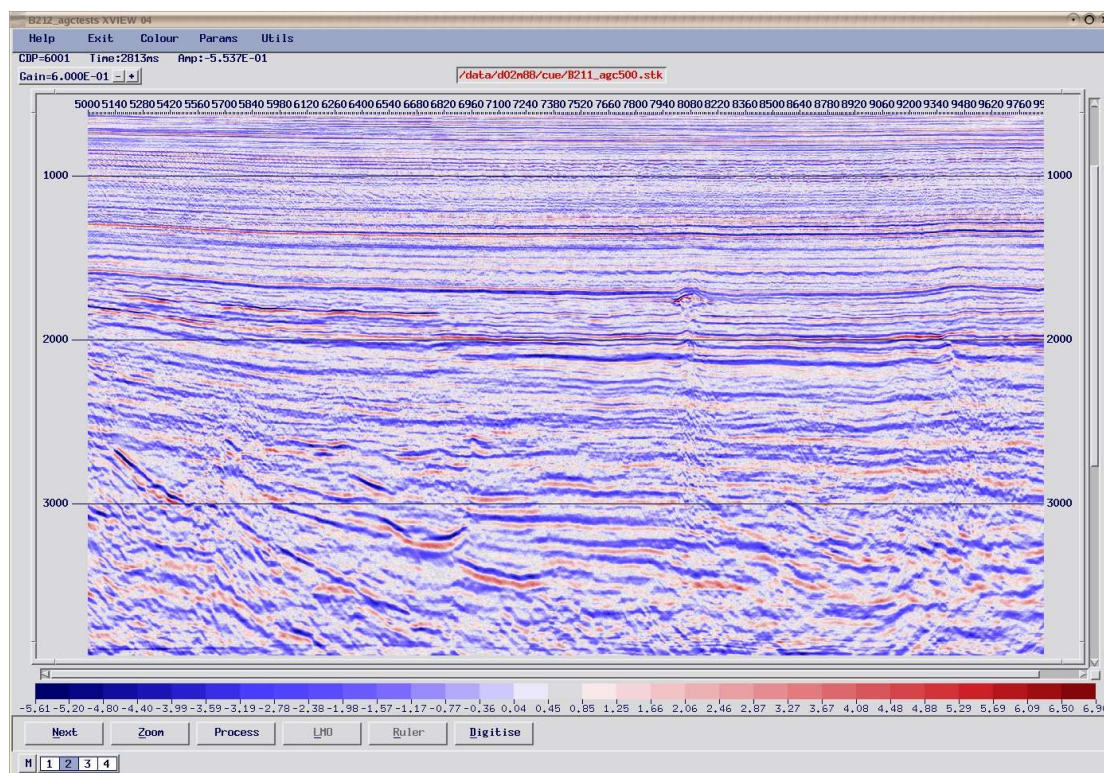


Appendix C Post-Stack Testing

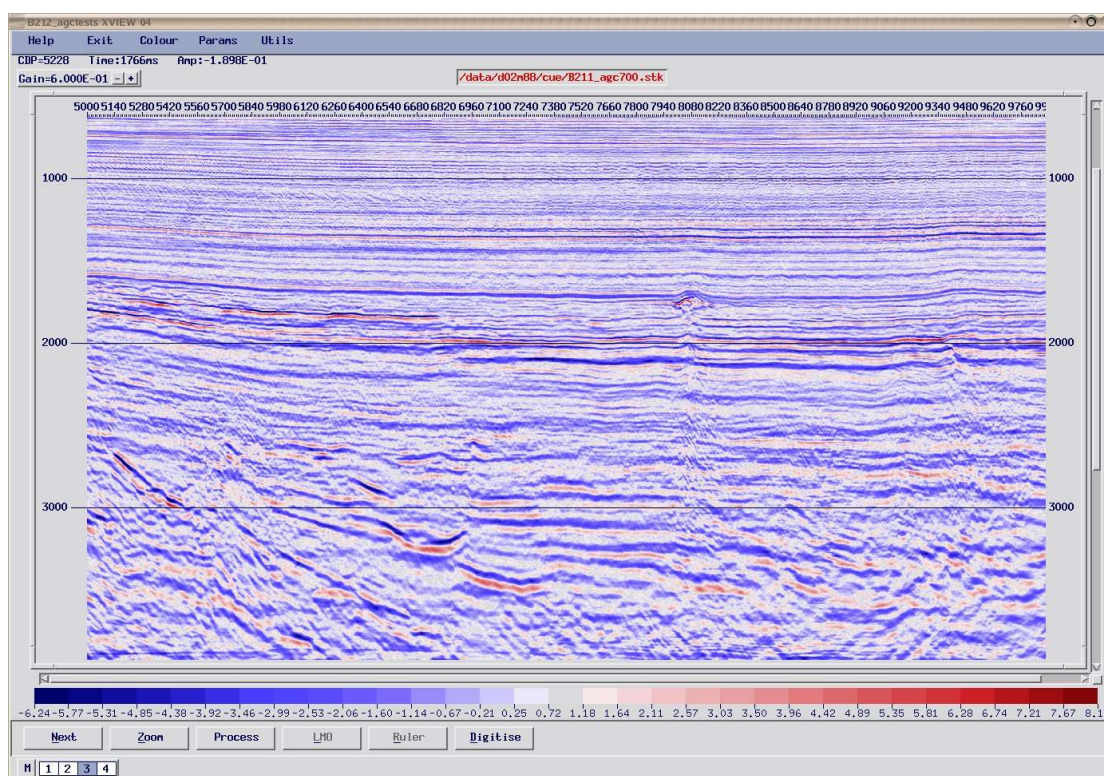


C.1.1 No AGC PSTM Stack



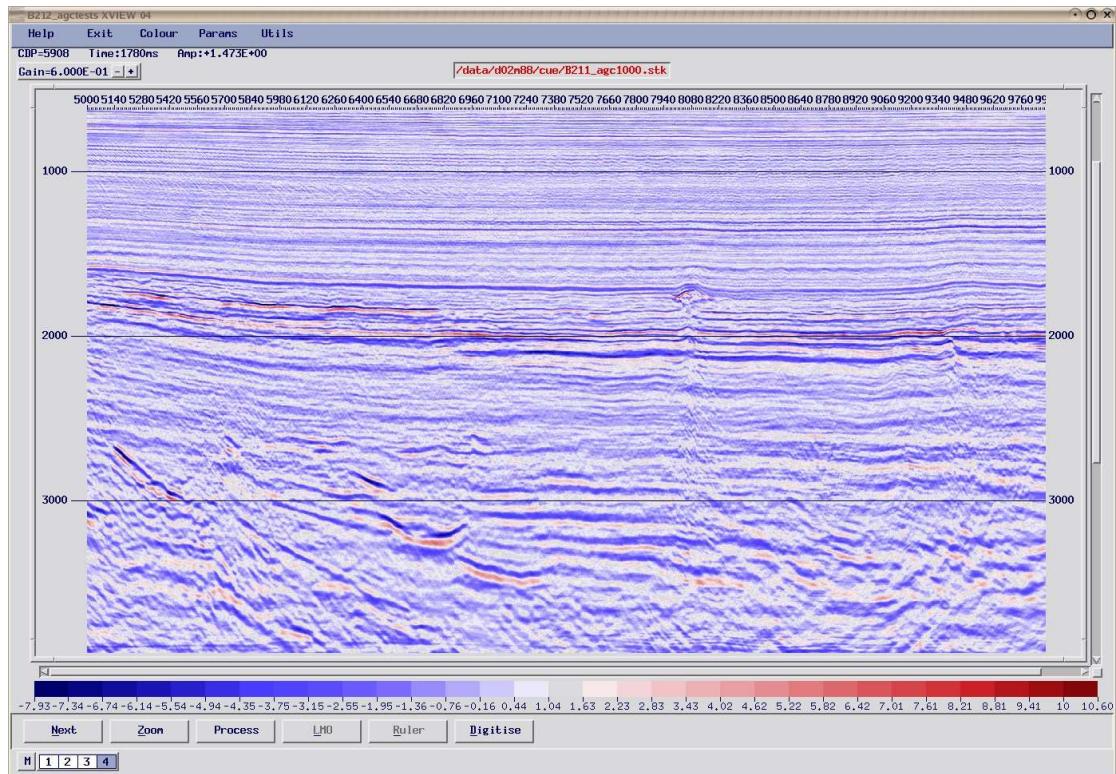


C.1.2 500ms AGC Stack

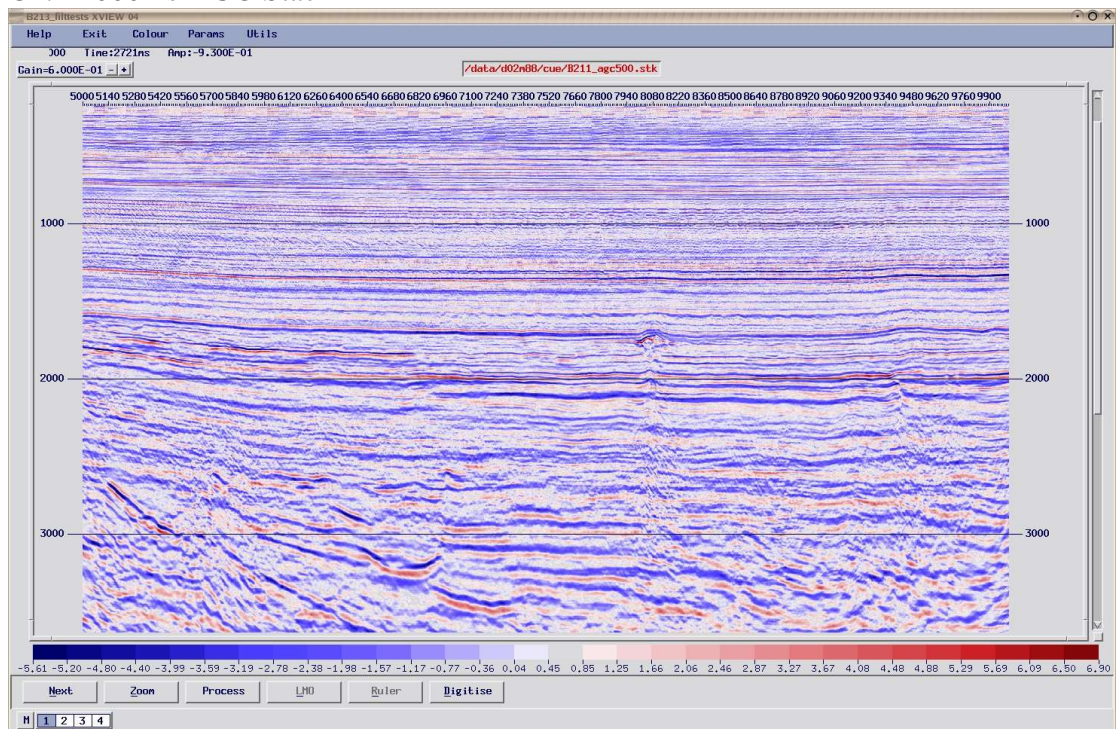


C.1.3 700ms AGC Stack



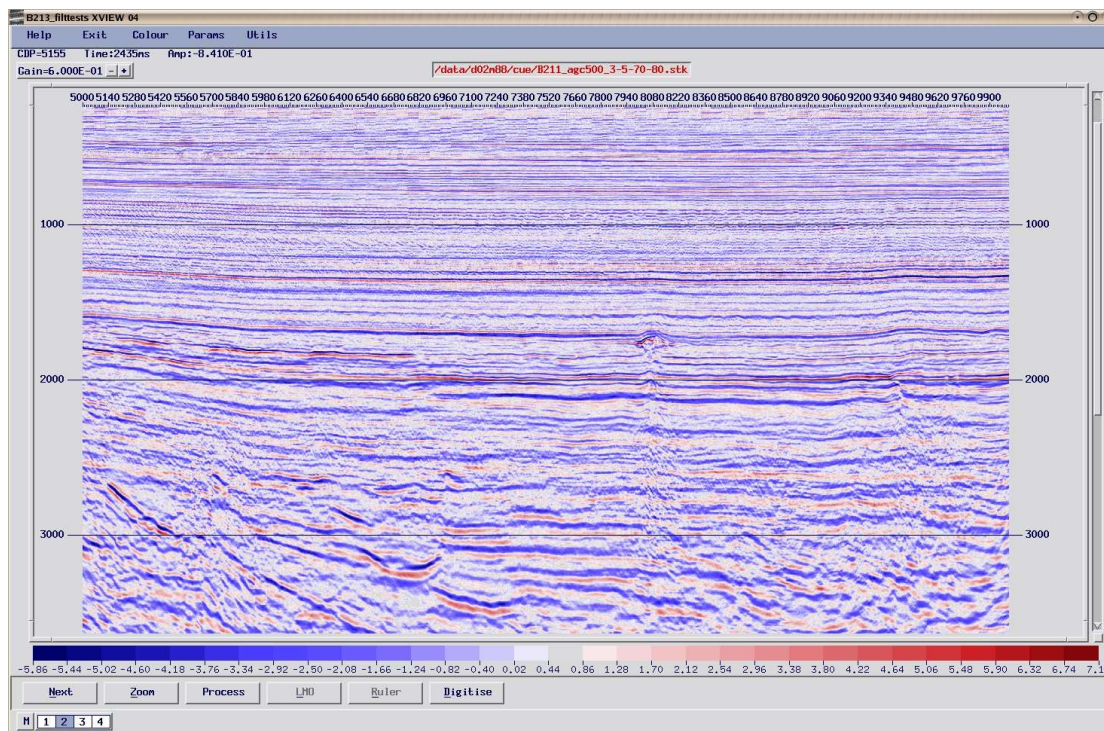


C1.4 1000ms AGC Stack

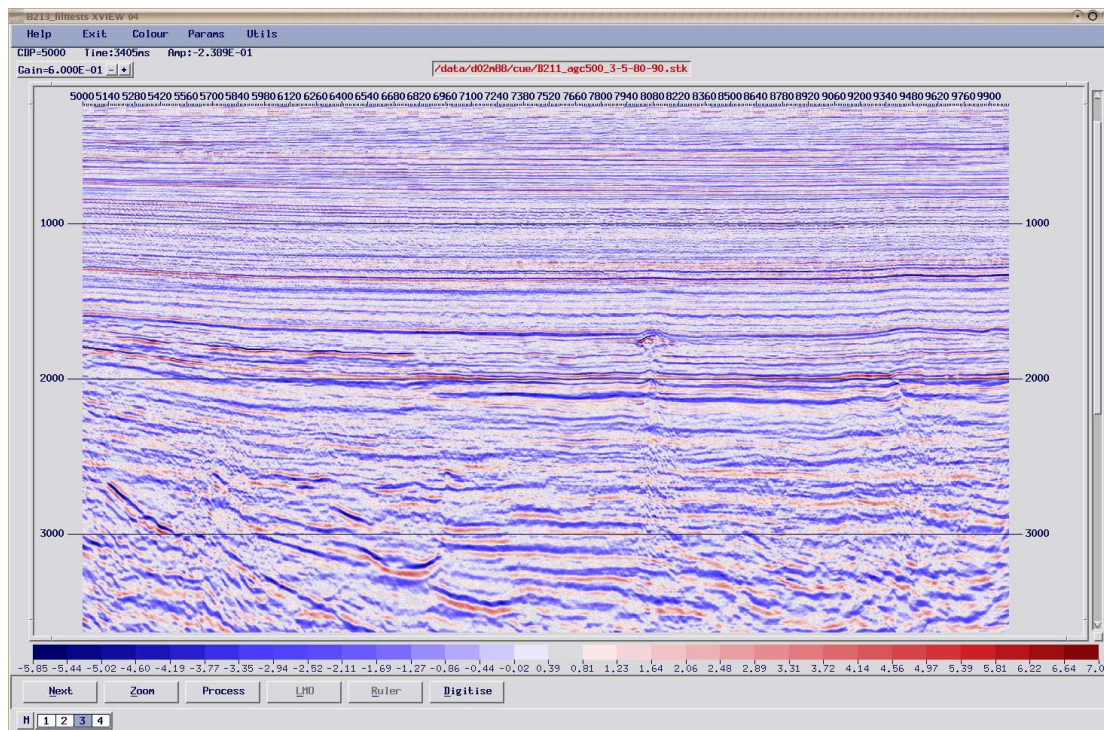


C2.1 No Filter Stack



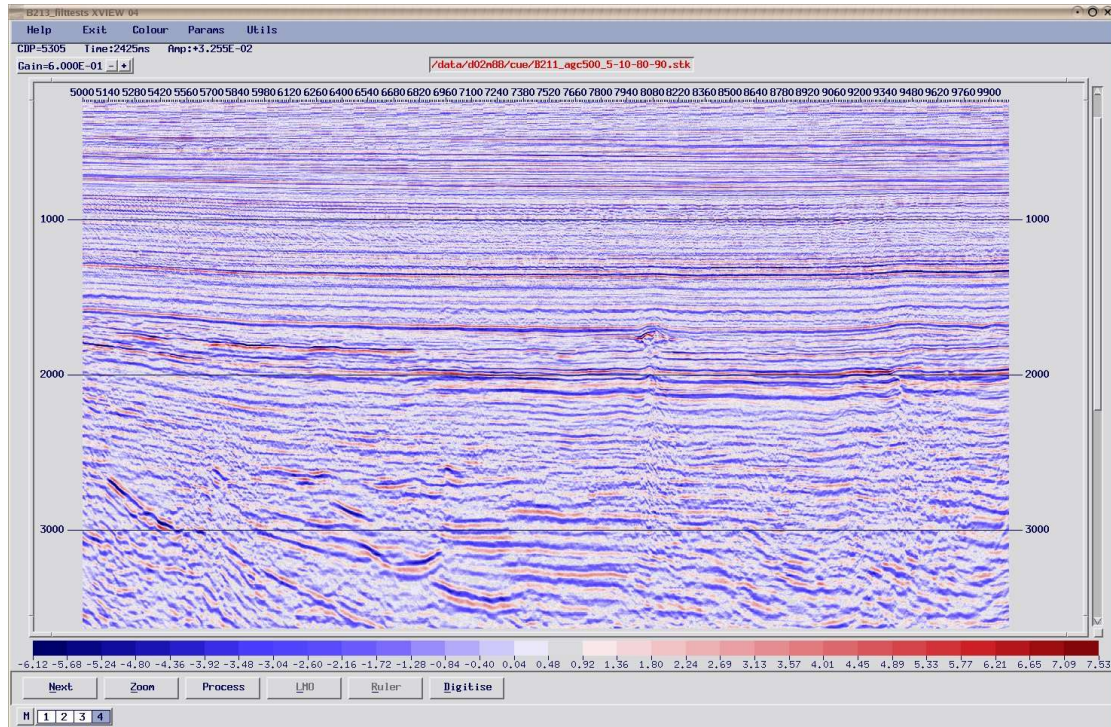


C2.2 3Hz-5Hz-70Hz-80Hz Bandpass Filter Stack

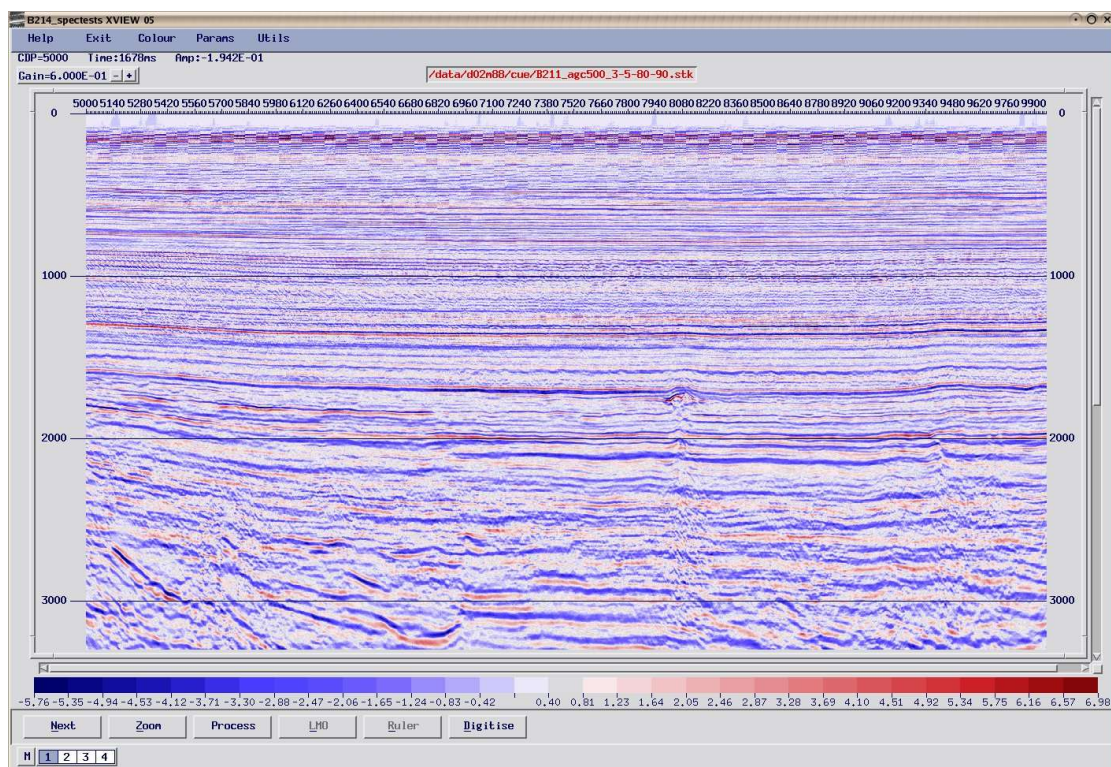


C2.3 3Hz-5Hz-80Hz-90Hz Bandpass Filter Stack



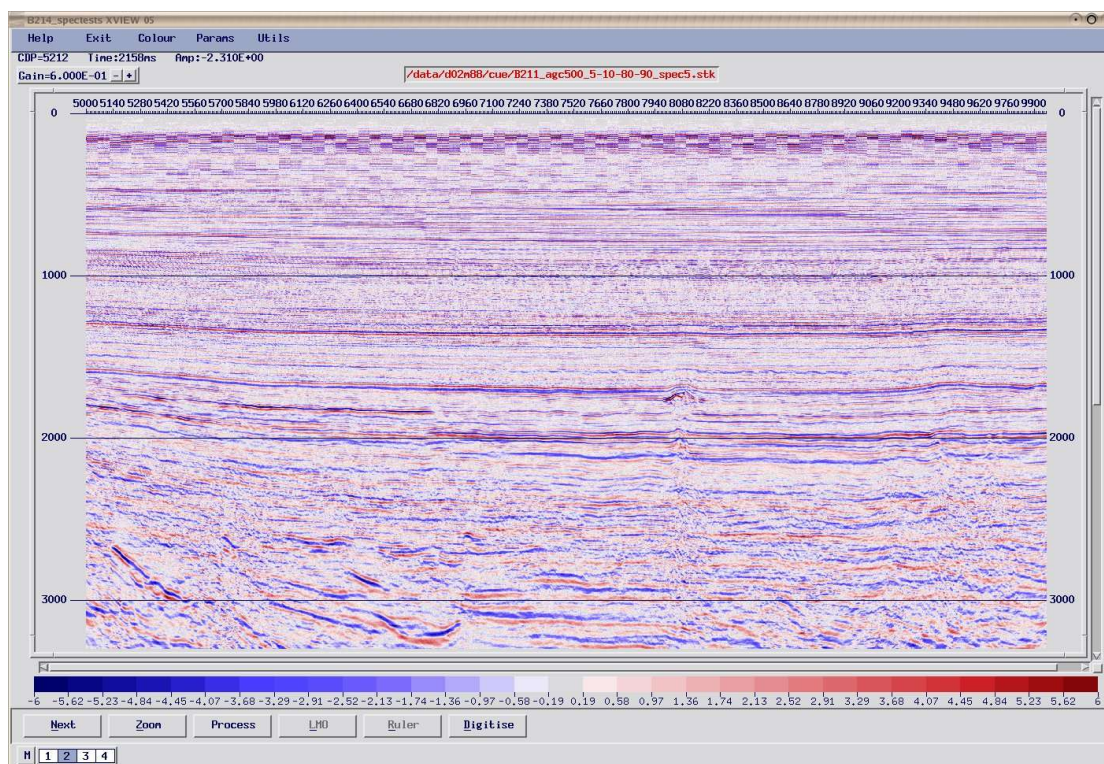


C2.4 5Hz-10Hz-80Hz-90Hz Bandpass Filter Stack

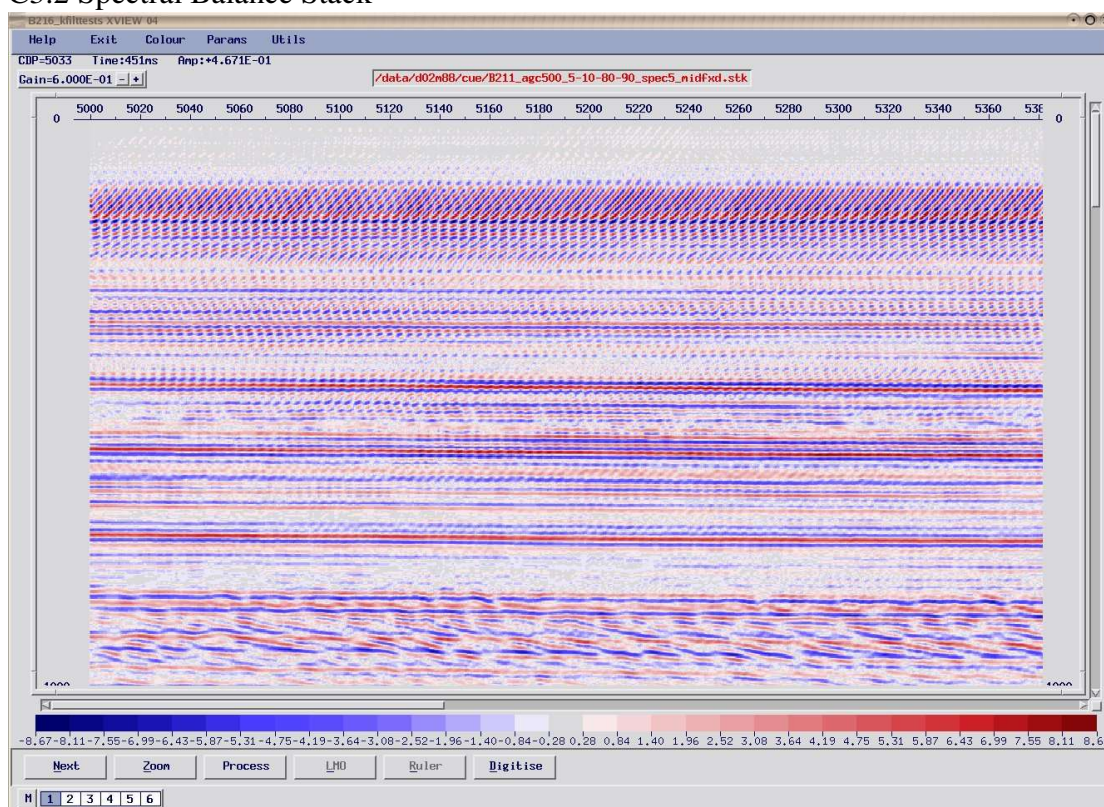


C3.1 No Spectral Balance Stack



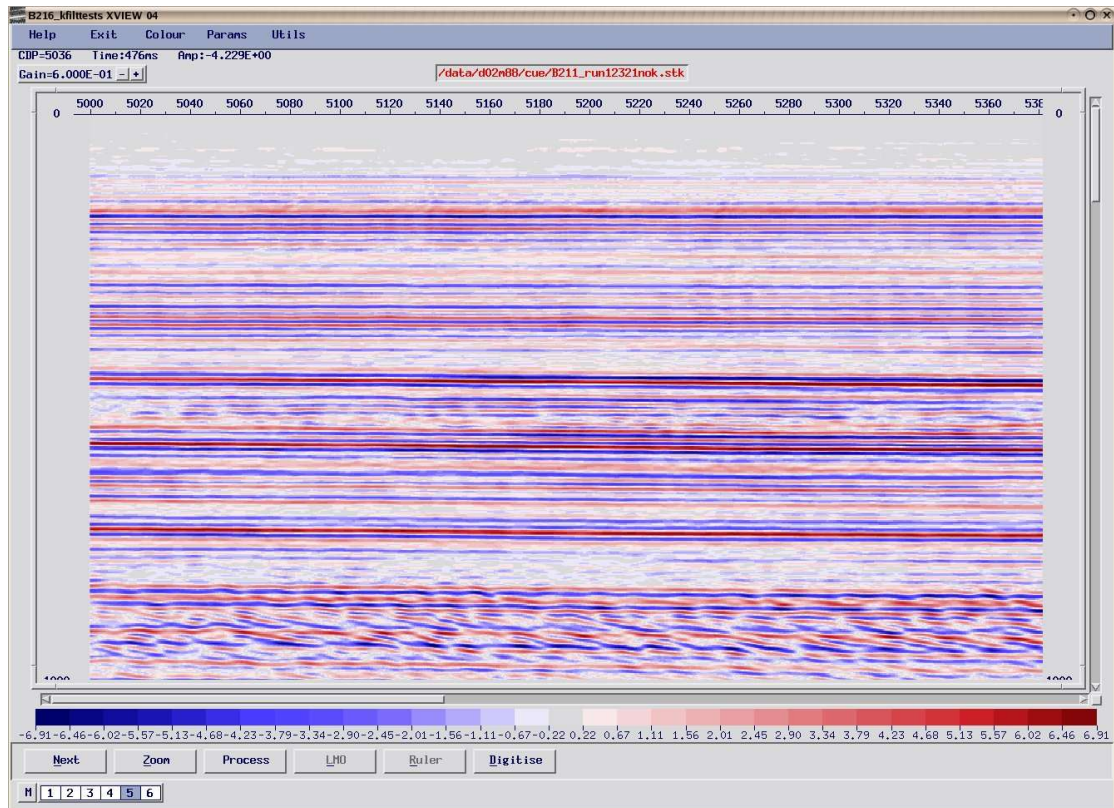


C3.2 Spectral Balance Stack



C4.1 Shallow Data Showing Aliasing



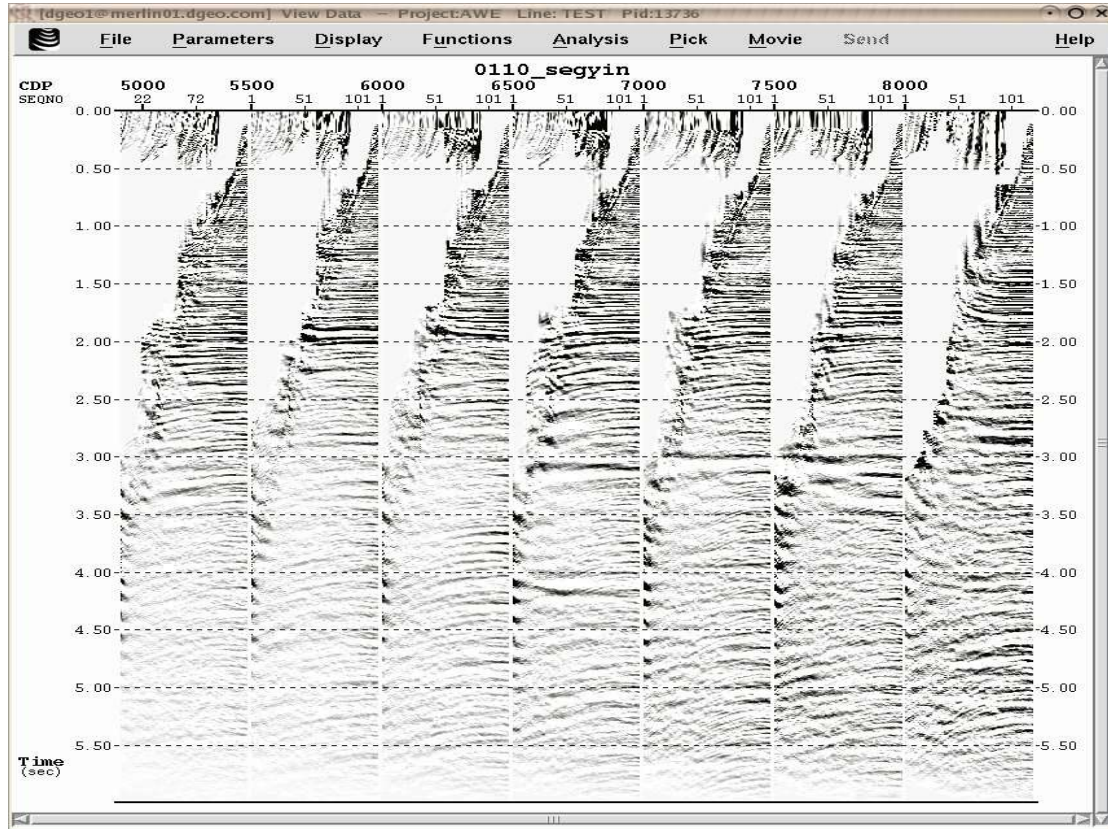


C4.2 Shallow Data After Running Mix



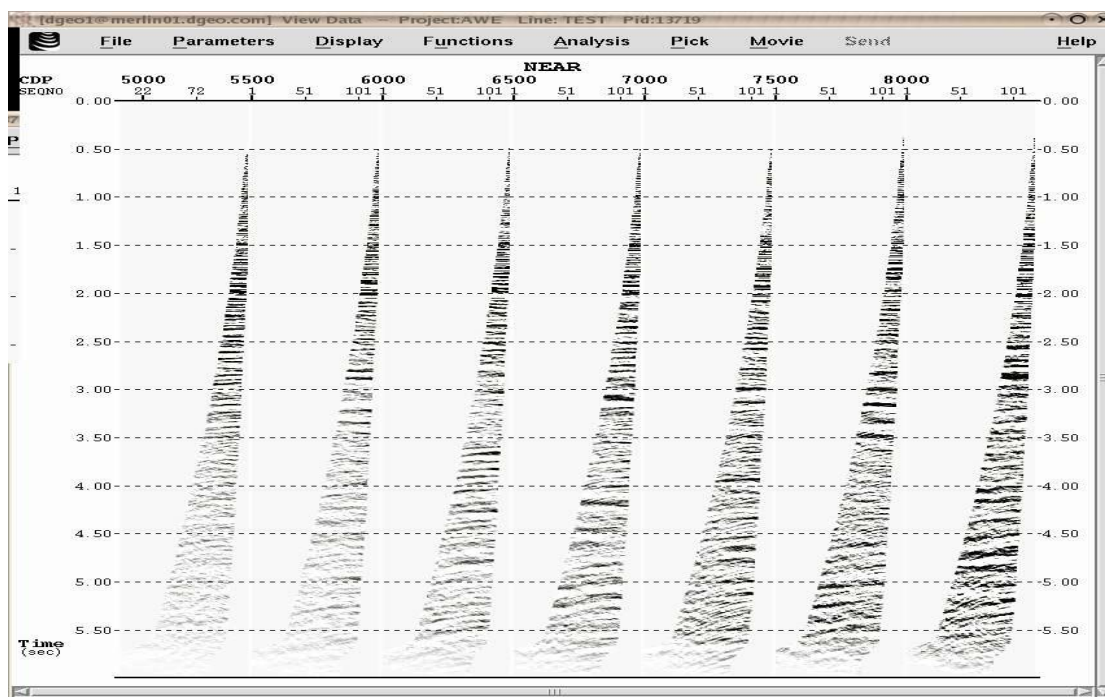


Appendix D Angle Gather Testing

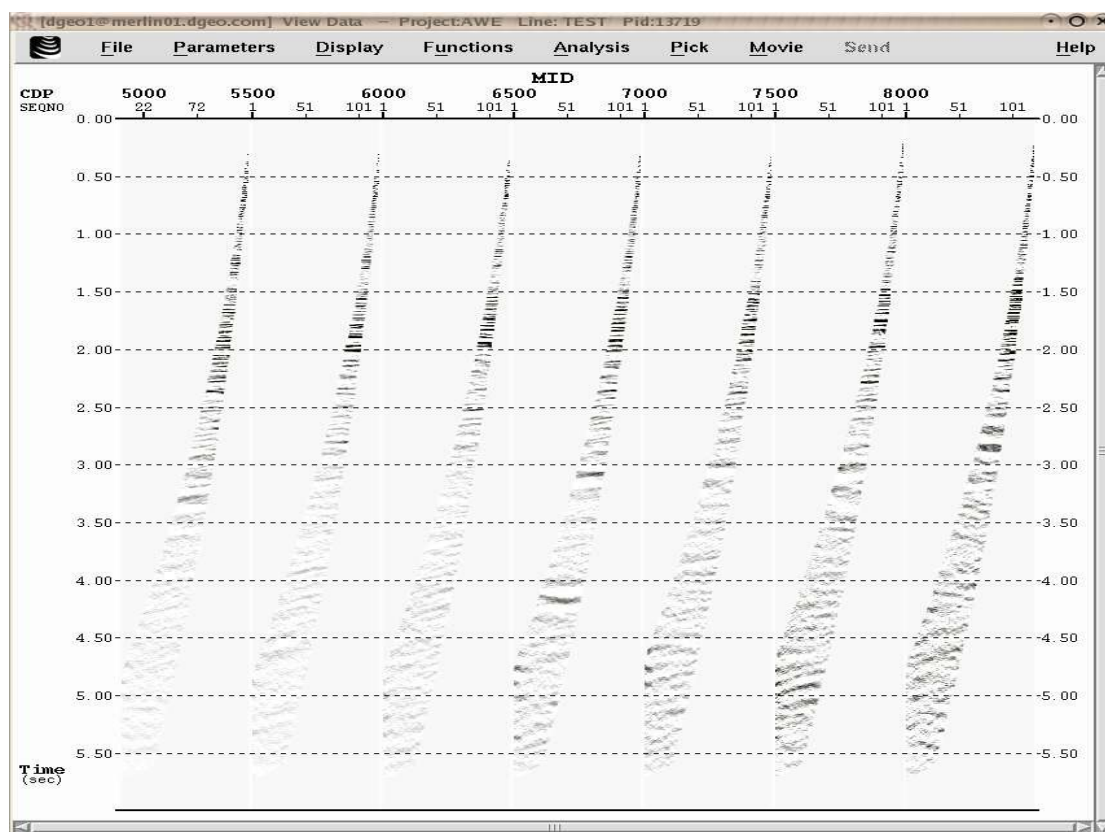


D.1 PSTM Gathers – All Angles



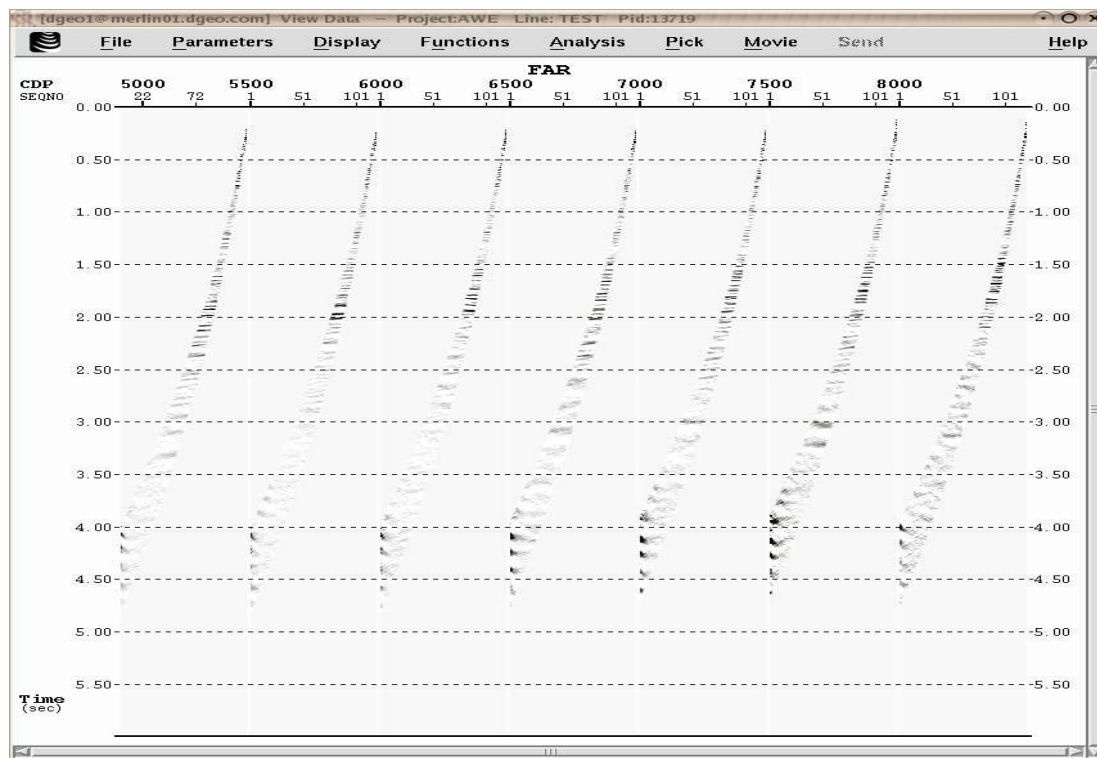


D.2 PSTM Gathers 5-20 Degrees



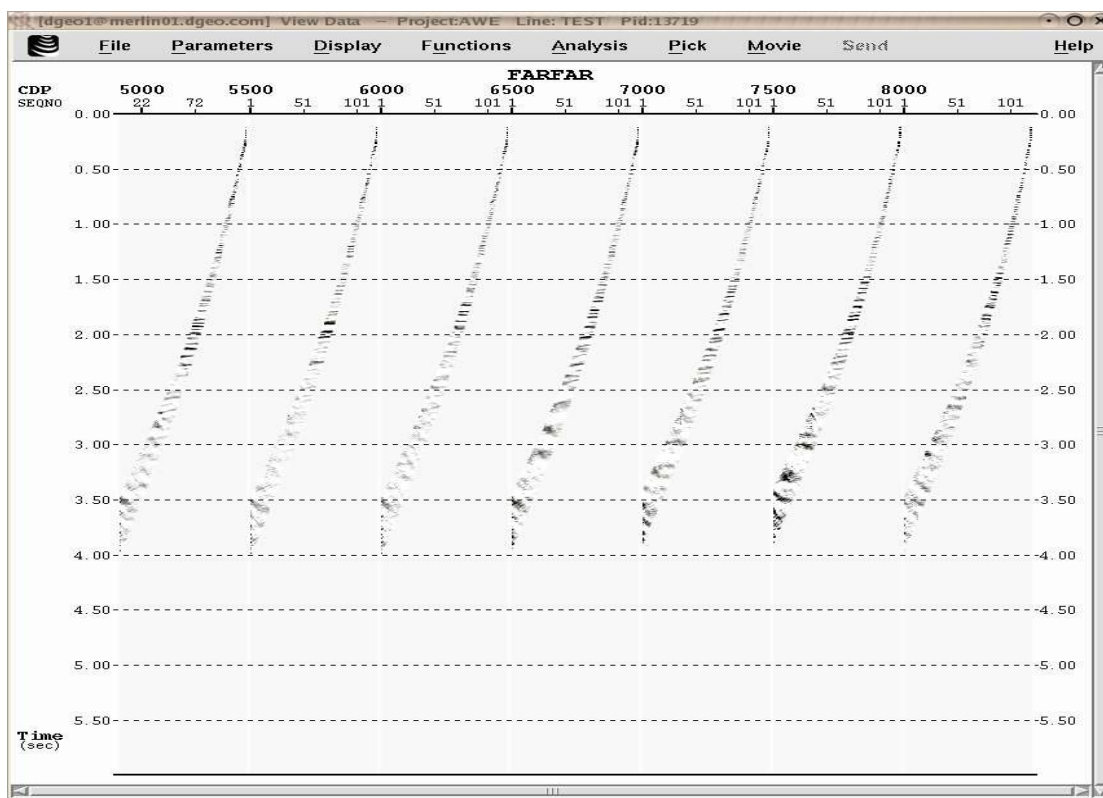
D.3 PSTM Gathers 20-35Degrees





D.4 PSTM Gathers 35-50 Degrees





D.5 PSTM Gathers 50-70 Degrees





Appendix E Line Listing

Line Name	Seq	FGF	LGF	FGSP	LGSP	NRSHTS	Line Name	Seq	FGF	LGF	FGSP	LGSP	NRSHTS
VCUE08-E08-001	1	1001	3340	3220	881	2339	VCUE08-E25-058	58	1001	2357	1001	2357	1356
VCUE08-E11-002	2	1001	3332	1001	3333	2332	VCUE08-E29-059	59	1001	2358	2238	881	1357
VCUE08-E15-003	3	1001	3331	3211	881	2330	VCUE08-E24-060	60	1001	2377	1001	2377	1376
VCUE08-E12-004	4	1001	3333	1001	3333	2332	VCUE08-E28-061	61	1001	2359	2239	881	1358
VCUE08-E09-005	5	1001	3341	3221	881	2340	VCUE08-E44-063	63	1001	1867	1001	1867	866
VCUE08-E14-006	6	1001	3333	1001	3333	2332	VCUE08-E49-065	65	1001	1709	1589	881	708
VCUE08-E10-007	7	1002	3338	3217	881	2336	VCUE08-E45-066	66	1001	1860	1001	1860	859
VCUE08-E06-008	8	1001	2291	1001	2291	1290	VCUE08-N19-067	67	1001	2813	2933	881	2052
VCUE08-E04-009	9	1001	2297	2177	881	1296	VCUE08-N14-068	68	1001	3188	1001	3188	2187
VCUE08-E07-010	10	1001	2289	1001	2289	1288	VCUE08-N18-069	69	1001	2984	2861	881	1980
VCUE08-N34-011	11	1001	1791	1001	1791	790	VCUE08-N13-070	70	1001	3238	1001	3238	2237
VCUE08-N32-012	12	1001	1795	1675	881	794	VCUE08-N17-071	71	1001	3036	2916	881	2035
VCUE08-N26-013	13	1001	2573	1001	2573	1572	VCUE08-N12-072	72	1001	3290	1001	3290	2289
VCUE08-N21-014	14	1001	2832	2712	881	1831	VCUE08-N16-073	73	1001	3086	2968	881	2087
VCUE08-N24-015	15	1002	2676	1001	2675	1674	VCUE08-N11-074	74	1001	3293	1001	3293	2292
VCUE08-N20-016	16	1001	2882	2762	881	1881	VCUE08-N15-075	75	1001	3136	3016	881	2135
VCUE08-N27-017	17	1001	2522	1001	2522	1521	VCUE08-N10-076	76	1001	3291	1001	3291	2290
VCUE08-N22-018	18	1001	2650	2659	1010	1649	VCUE08-N05-077	77	1001	3287	3167	881	2286
VCUE08-N28-019	19	1001	2480	1001	2480	1479	VCUE08-N09-078	78	1001	3291	1001	3291	2290
VCUE08-N23-020	20	1001	2727	2607	881	1726	VCUE08-N04-080	80	1001	3286	3166	881	2285
VCUE08-N30-021	21	1001	2481	1001	2481	1480	VCUE08-N08-081	81	1001	3291	1001	3291	2290
VCUE08-N25-022	22	1001	2626	2506	881	1625	VCUE08-N03-082	82	1001	3286	3166	881	2285
VCUE08-N29-023	23	1001	2479	1001	2479	1478	VCUE08-N07-083	83	1001	3287	1001	3287	2286
VCUE08-N31-024	24	1001	2187	2067	881	1186	VCUE08-N02-084	84	1001	3287	3167	881	2286
VCUE08-E03-025	25	1001	2296	2176	881	1295	VCUE08-N06-085	85	1001	3288	1001	3288	2287
VCUE08-E01-026	26	1001	2293	1001	2293	1292	VCUE08-N01-086	86	1001	3286	3166	881	2285
VCUE08-E35-027	27	1001	1790	1001	1790	789	VCUE08-E18-087	87	1001	2056	1001	2056	1055
VCUE08-N33-028	28	1001	1795	1675	881	794	VCUE08-E18-088	88	1866	3333	1866	3333	1467
VCUE08-E02-029	29	1001	2299	2179	881	1298	VCUE08-E22-089	89	1001	3333	3213	881	2332
VCUE08-E05-030	30	1001	2294	1001	2294	1293	VCUE08-E19-090	90	1001	3332	1001	3333	2332
VCUE08-N40-031	31	1001	1783	1001	1783	782	VCUE08-E23-091	91	1001	3331	3211	881	2330
VCUE08-N36-032	32	1001	1790	1670	881	789	VCUE08-E27-092	92	1001	2359	1001	2359	1358
VCUE08-N39-033	33	1001	1785	1001	1785	784	VCUE08-E32-093	93	1001	2355	2235	881	1354
VCUE08-N43-034	34	1001	1779	1659	881	778	VCUE08-E37-094	94	1001	2094	1001	2094	1093
VCUE08-N38-035	35	1001	1786	1001	1786	785	VCUE08-E41-095	95	1001	1972	1852	881	971
VCUE08-N41-036	36	1001	1733	1663	931	732	VCUE08-E35-096	96	1001	2149	1001	2149	1148
VCUE08-N37-037	37	1001	1790	1001	1790	789	VCUE08-E39-097	97	1001	2017	1897	881	1016
VCUE08-N42-039	39	1001	1780	1660	881	779	VCUE08-E42-098	98	1001	1939	1001	1939	938
VCUE08-N46-040	40	1001	1775	1001	1775	774	VCUE08-E46-099	99	1001	1822	1702	881	821
VCUE08-N49-041	41	1001	1771	1651	881	770	VCUE08-E50-100	100	1001	1706	1001	1706	705
VCUE08-N45-042	42	1001	1774	1001	1774	773	VCUE08-E53-101	101	1001	1596	1476	881	595
VCUE08-N48-043	43	1001	1771	1651	881	770	VCUE08-E48-102	102	1001	1747	1001	1747	746
VCUE08-N44-044	44	1001	1777	1001	1777	776	VCUE08-E52-103	103	1001	1632	1512	881	631
VCUE08-N47-045	45	1001	1774	1654	881	773	VCUE08-E47-104	104	1001	1789	1001	1789	788
VCUE08-N50-046	46	1001	1768	1001	1768	767	VCUE08-E51-105	105	1001	1670	1550	881	669
VCUE08-N54-047	47	1001	1763	1643	881	762	VCUE08-E43-106	106	1001	1901	1001	1901	900
VCUE08-N51-048	48	1001	1766	1001	1766	765	VCUE08-E40-107	107	1001	1986	1866	881	985
VCUE08-N55-049	49	1001	1762	1642	881	761	VCUE08-E34-108	108	1001	2191	1001	2191	1190
VCUE08-N52-050	50	1001	1766	1001	1766	765	VCUE08-E38-109	109	1001	2062	1942	881	1061
VCUE08-N56-051	51	1001	1761	1641	881	760	VCUE08-E33-110	110	1001	2357	1001	2357	1356
VCUE08-N53-052	52	1001	1763	1001	1763	762	VCUE08-E36-111	111	1001	2131	2011	881	1130
VCUE08-E13-053	53	1001	3332	3212	881	2331	VCUE08-E31-112	112	1001	2358	1001	2358	1357
VCUE08-E17-054	54	1001	3333	1001	3333	2332	VCUE08-E26-113	113	1001	2354	2234	881	1353
VCUE08-E21-055	55	1001	3331	3211	881	2330	VCUE08-E20-114	114	1001	3333	1001	3333	2332
VCUE08-E16-056	56	1001	3333	1001	3333	2332	VCUE08-E54-115	115	1001	2136	1001	2136	1135
VCUE08-E30-057	57	1001	2356	2236	881	1355							





Appendix F Data Disposition

Hard Disk Archives

PSTM Gathers

Disk Name	Hard Disk 1
Directory	/Gathers
Data Description	PSTM Gathers
Format	SEGY
Lines in this Archive	
VCUE08-E08-001	VCUE08-E02-029
VCUE08-E11-002	VCUE08-E05-030
VCUE08-E15-003	VCUE08-N41-036
VCUE08-E12-004	VCUE08-N37-037
VCUE08-E09-005	VCUE08-N42-039
VCUE08-E14-006	VCUE08-N46-040
VCUE08-E10-007	VCUE08-N49-041
VCUE08-E06-008	VCUE08-N45-042
VCUE08-E04-009	VCUE08-N48-043
VCUE08-E07-010	VCUE08-N44-044
VCUE08-N34-011	VCUE08-N47-045
VCUE08-N32-012	VCUE08-N50-046
VCUE08-N26-013	VCUE08-N54-047
VCUE08-N21-014	VCUE08-N51-048
VCUE08-N24-015	VCUE08-N55-049
VCUE08-N20-016	VCUE08-N52-050
VCUE08-N27-017	VCUE08-N56-051
VCUE08-N22-018	VCUE08-N53-052
VCUE08-N28-019	VCUE08-E13-053
VCUE08-N23-020	VCUE08-E17-054
VCUE08-N30-021	VCUE08-E21-055
VCUE08-N25-022	VCUE08-E16-056
VCUE08-N29-023	VCUE08-E30-057
VCUE08-N31-024	VCUE08-E25-058
VCUE08-E03-025	VCUE08-E29-059
VCUE08-E01-026	VCUE08-E24-060
VCUE08-N33-028	

Disk Name	Hard Disk 2
Directory	/Gathers
Data Description	PSTM Gathers
Format	SEGY
Lines in this Archive	
VCUE08-E35-027	VCUE08-E18-087
VCUE08-N40-031	VCUE08-E18-088
VCUE08-N36-032	VCUE08-E22-089
VCUE08-N39-033	VCUE08-E19-090
VCUE08-N43-034	VCUE08-E23-091
VCUE08-N38-035	VCUE08-E27-092
VCUE08-E28-061	VCUE08-E32-093
VCUE08-E44-063	VCUE08-E37-094
VCUE08-E49-065	VCUE08-E41-095
VCUE08-E45-066	VCUE08-E35-096
VCUE08-N19-067	VCUE08-E39-097
VCUE08-N14-068	VCUE08-E42-098
VCUE08-N18-069	VCUE08-E46-099
VCUE08-N13-070	VCUE08-E50-100
VCUE08-N17-071	VCUE08-E53-101
VCUE08-N12-072	VCUE08-E48-102
VCUE08-N16-073	VCUE08-E52-103
VCUE08-N11-074	VCUE08-E47-104
VCUE08-N15-075	VCUE08-E51-105
VCUE08-N10-076	VCUE08-E43-106
VCUE08-N05-077	VCUE08-E40-107
VCUE08-N09-078	VCUE08-E34-108
VCUE08-N04-080	VCUE08-E38-109
VCUE08-N08-081	VCUE08-E33-110
VCUE08-N03-082	VCUE08-E36-111
VCUE08-N07-083	VCUE08-E31-112
VCUE08-N02-084	VCUE08-E26-113
VCUE08-N06-085	VCUE08-E20-114
VCUE08-N01-086	VCUE08-E54-115



**Final PSTM Stacks**

Disk Name	Hard Disk 2		
Directory	/Final_Stack		
Data Description	PSTM Stack		
Format	SEG Y		
Lines in this Archive			
VCUE08-E08-001	VCUE08-E02-029	VCUE08-E25-058	VCUE08-E22-089
VCUE08-E11-002	VCUE08-E05-030	VCUE08-E29-059	VCUE08-E19-090
VCUE08-E15-003	VCUE08-N40-031	VCUE08-E24-060	VCUE08-E23-091
VCUE08-E12-004	VCUE08-N36-032	VCUE08-E28-061	VCUE08-E27-092
VCUE08-E09-005	VCUE08-N39-033	VCUE08-E44-063	VCUE08-E32-093
VCUE08-E14-006	VCUE08-N43-034	VCUE08-E49-065	VCUE08-E37-094
VCUE08-E10-007	VCUE08-N38-035	VCUE08-E45-066	VCUE08-E41-095
VCUE08-E06-008	VCUE08-N41-036	VCUE08-N19-067	VCUE08-E35-096
VCUE08-E04-009	VCUE08-N37-037	VCUE08-N14-068	VCUE08-E39-097
VCUE08-E07-010	VCUE08-N42-039	VCUE08-N18-069	VCUE08-E42-098
VCUE08-N34-011	VCUE08-N46-040	VCUE08-N13-070	VCUE08-E46-099
VCUE08-N32-012	VCUE08-N49-041	VCUE08-N17-071	VCUE08-E50-100
VCUE08-N26-013	VCUE08-N45-042	VCUE08-N12-072	VCUE08-E53-101
VCUE08-N21-014	VCUE08-N48-043	VCUE08-N16-073	VCUE08-E48-102
VCUE08-N24-015	VCUE08-N44-044	VCUE08-N11-074	VCUE08-E52-103
VCUE08-N20-016	VCUE08-N47-045	VCUE08-N15-075	VCUE08-E47-104
VCUE08-N27-017	VCUE08-N50-046	VCUE08-N10-076	VCUE08-E51-105
VCUE08-N22-018	VCUE08-N54-047	VCUE08-N05-077	VCUE08-E43-106
VCUE08-N28-019	VCUE08-N51-048	VCUE08-N09-078	VCUE08-E40-107
VCUE08-N23-020	VCUE08-N55-049	VCUE08-N04-080	VCUE08-E34-108
VCUE08-N30-021	VCUE08-N52-050	VCUE08-N08-081	VCUE08-E38-109
VCUE08-N25-022	VCUE08-N56-051	VCUE08-N03-082	VCUE08-E33-110
VCUE08-N29-023	VCUE08-N53-052	VCUE08-N07-083	VCUE08-E36-111
VCUE08-N31-024	VCUE08-E13-053	VCUE08-N02-084	VCUE08-E31-112
VCUE08-E03-025	VCUE08-E17-054	VCUE08-N06-085	VCUE08-E26-113
VCUE08-E01-026	VCUE08-E21-055	VCUE08-N01-086	VCUE08-E20-114
VCUE08-E35-027	VCUE08-E16-056	VCUE08-E18-087	VCUE08-E54-115
VCUE08-N33-028	VCUE08-E30-057	VCUE08-E18-088	





Near Angle Stacks

Disk Name	Hard Disk 2		
Directory	/Near_Stack		
Data Description	PSTM Near Stack		
Format	SEG Y		
Lines in this Archive			
VCUE08-E08-001	VCUE08-E02-029	VCUE08-E25-058	VCUE08-E22-089
VCUE08-E11-002	VCUE08-E05-030	VCUE08-E29-059	VCUE08-E19-090
VCUE08-E15-003	VCUE08-N40-031	VCUE08-E24-060	VCUE08-E23-091
VCUE08-E12-004	VCUE08-N36-032	VCUE08-E28-061	VCUE08-E27-092
VCUE08-E09-005	VCUE08-N39-033	VCUE08-E44-063	VCUE08-E32-093
VCUE08-E14-006	VCUE08-N43-034	VCUE08-E49-065	VCUE08-E37-094
VCUE08-E10-007	VCUE08-N38-035	VCUE08-E45-066	VCUE08-E41-095
VCUE08-E06-008	VCUE08-N41-036	VCUE08-N19-067	VCUE08-E35-096
VCUE08-E04-009	VCUE08-N37-037	VCUE08-N14-068	VCUE08-E39-097
VCUE08-E07-010	VCUE08-N42-039	VCUE08-N18-069	VCUE08-E42-098
VCUE08-N34-011	VCUE08-N46-040	VCUE08-N13-070	VCUE08-E46-099
VCUE08-N32-012	VCUE08-N49-041	VCUE08-N17-071	VCUE08-E50-100
VCUE08-N26-013	VCUE08-N45-042	VCUE08-N12-072	VCUE08-E53-101
VCUE08-N21-014	VCUE08-N48-043	VCUE08-N16-073	VCUE08-E48-102
VCUE08-N24-015	VCUE08-N44-044	VCUE08-N11-074	VCUE08-E52-103
VCUE08-N20-016	VCUE08-N47-045	VCUE08-N15-075	VCUE08-E47-104
VCUE08-N27-017	VCUE08-N50-046	VCUE08-N10-076	VCUE08-E51-105
VCUE08-N22-018	VCUE08-N54-047	VCUE08-N05-077	VCUE08-E43-106
VCUE08-N28-019	VCUE08-N51-048	VCUE08-N09-078	VCUE08-E40-107
VCUE08-N23-020	VCUE08-N55-049	VCUE08-N04-080	VCUE08-E34-108
VCUE08-N30-021	VCUE08-N52-050	VCUE08-N08-081	VCUE08-E38-109
VCUE08-N25-022	VCUE08-N56-051	VCUE08-N03-082	VCUE08-E33-110
VCUE08-N29-023	VCUE08-N53-052	VCUE08-N07-083	VCUE08-E36-111
VCUE08-N31-024	VCUE08-E13-053	VCUE08-N02-084	VCUE08-E31-112
VCUE08-E03-025	VCUE08-E17-054	VCUE08-N06-085	VCUE08-E26-113
VCUE08-E01-026	VCUE08-E21-055	VCUE08-N01-086	VCUE08-E20-114
VCUE08-E35-027	VCUE08-E16-056	VCUE08-E18-087	VCUE08-E54-115
VCUE08-N33-028	VCUE08-E30-057	VCUE08-E18-088	





Mid Angle Stacks

Disk Name	Hard Disk 2		
Directory	/Mid_Stack		
Data Description	PSTM Mid Stack		
Format	SEG Y		
Lines in this Archive			
VCUE08-E08-001	VCUE08-E02-029	VCUE08-E25-058	VCUE08-E22-089
VCUE08-E11-002	VCUE08-E05-030	VCUE08-E29-059	VCUE08-E19-090
VCUE08-E15-003	VCUE08-N40-031	VCUE08-E24-060	VCUE08-E23-091
VCUE08-E12-004	VCUE08-N36-032	VCUE08-E28-061	VCUE08-E27-092
VCUE08-E09-005	VCUE08-N39-033	VCUE08-E44-063	VCUE08-E32-093
VCUE08-E14-006	VCUE08-N43-034	VCUE08-E49-065	VCUE08-E37-094
VCUE08-E10-007	VCUE08-N38-035	VCUE08-E45-066	VCUE08-E41-095
VCUE08-E06-008	VCUE08-N41-036	VCUE08-N19-067	VCUE08-E35-096
VCUE08-E04-009	VCUE08-N37-037	VCUE08-N14-068	VCUE08-E39-097
VCUE08-E07-010	VCUE08-N42-039	VCUE08-N18-069	VCUE08-E42-098
VCUE08-N34-011	VCUE08-N46-040	VCUE08-N13-070	VCUE08-E46-099
VCUE08-N32-012	VCUE08-N49-041	VCUE08-N17-071	VCUE08-E50-100
VCUE08-N26-013	VCUE08-N45-042	VCUE08-N12-072	VCUE08-E53-101
VCUE08-N21-014	VCUE08-N48-043	VCUE08-N16-073	VCUE08-E48-102
VCUE08-N24-015	VCUE08-N44-044	VCUE08-N11-074	VCUE08-E52-103
VCUE08-N20-016	VCUE08-N47-045	VCUE08-N15-075	VCUE08-E47-104
VCUE08-N27-017	VCUE08-N50-046	VCUE08-N10-076	VCUE08-E51-105
VCUE08-N22-018	VCUE08-N54-047	VCUE08-N05-077	VCUE08-E43-106
VCUE08-N28-019	VCUE08-N51-048	VCUE08-N09-078	VCUE08-E40-107
VCUE08-N23-020	VCUE08-N55-049	VCUE08-N04-080	VCUE08-E34-108
VCUE08-N30-021	VCUE08-N52-050	VCUE08-N08-081	VCUE08-E38-109
VCUE08-N25-022	VCUE08-N56-051	VCUE08-N03-082	VCUE08-E33-110
VCUE08-N29-023	VCUE08-N53-052	VCUE08-N07-083	VCUE08-E36-111
VCUE08-N31-024	VCUE08-E13-053	VCUE08-N02-084	VCUE08-E31-112
VCUE08-E03-025	VCUE08-E17-054	VCUE08-N06-085	VCUE08-E26-113
VCUE08-E01-026	VCUE08-E21-055	VCUE08-N01-086	VCUE08-E20-114
VCUE08-E35-027	VCUE08-E16-056	VCUE08-E18-087	VCUE08-E54-115
VCUE08-N33-028	VCUE08-E30-057	VCUE08-E18-088	



**Far Angle Stacks**

Disk Name	Hard Disk 2		
Directory	/Far_Stack		
Data Description	PSTM Far Stack		
Format	SEG Y		
Lines in this Archive			
VCUE08-E08-001	VCUE08-E02-029	VCUE08-E25-058	VCUE08-E22-089
VCUE08-E11-002	VCUE08-E05-030	VCUE08-E29-059	VCUE08-E19-090
VCUE08-E15-003	VCUE08-N40-031	VCUE08-E24-060	VCUE08-E23-091
VCUE08-E12-004	VCUE08-N36-032	VCUE08-E28-061	VCUE08-E27-092
VCUE08-E09-005	VCUE08-N39-033	VCUE08-E44-063	VCUE08-E32-093
VCUE08-E14-006	VCUE08-N43-034	VCUE08-E49-065	VCUE08-E37-094
VCUE08-E10-007	VCUE08-N38-035	VCUE08-E45-066	VCUE08-E41-095
VCUE08-E06-008	VCUE08-N41-036	VCUE08-N19-067	VCUE08-E35-096
VCUE08-E04-009	VCUE08-N37-037	VCUE08-N14-068	VCUE08-E39-097
VCUE08-E07-010	VCUE08-N42-039	VCUE08-N18-069	VCUE08-E42-098
VCUE08-N34-011	VCUE08-N46-040	VCUE08-N13-070	VCUE08-E46-099
VCUE08-N32-012	VCUE08-N49-041	VCUE08-N17-071	VCUE08-E50-100
VCUE08-N26-013	VCUE08-N45-042	VCUE08-N12-072	VCUE08-E53-101
VCUE08-N21-014	VCUE08-N48-043	VCUE08-N16-073	VCUE08-E48-102
VCUE08-N24-015	VCUE08-N44-044	VCUE08-N11-074	VCUE08-E52-103
VCUE08-N20-016	VCUE08-N47-045	VCUE08-N15-075	VCUE08-E47-104
VCUE08-N27-017	VCUE08-N50-046	VCUE08-N10-076	VCUE08-E51-105
VCUE08-N22-018	VCUE08-N54-047	VCUE08-N05-077	VCUE08-E43-106
VCUE08-N28-019	VCUE08-N51-048	VCUE08-N09-078	VCUE08-E40-107
VCUE08-N23-020	VCUE08-N55-049	VCUE08-N04-080	VCUE08-E34-108
VCUE08-N30-021	VCUE08-N52-050	VCUE08-N08-081	VCUE08-E38-109
VCUE08-N25-022	VCUE08-N56-051	VCUE08-N03-082	VCUE08-E33-110
VCUE08-N29-023	VCUE08-N53-052	VCUE08-N07-083	VCUE08-E36-111
VCUE08-N31-024	VCUE08-E13-053	VCUE08-N02-084	VCUE08-E31-112
VCUE08-E03-025	VCUE08-E17-054	VCUE08-N06-085	VCUE08-E26-113
VCUE08-E01-026	VCUE08-E21-055	VCUE08-N01-086	VCUE08-E20-114
VCUE08-E35-027	VCUE08-E16-056	VCUE08-E18-087	VCUE08-E54-115
VCUE08-N33-028	VCUE08-E30-057	VCUE08-E18-088	



**Final Velocities**

Disk Name	Hard Disk 2		
Directory	/Velocities		
Data Description	PSTM Velocities		
Format	ASCII		
Lines in this Archive			
VCUE08-E08-001	VCUE08-E02-029	VCUE08-E25-058	VCUE08-E22-089
VCUE08-E11-002	VCUE08-E05-030	VCUE08-E29-059	VCUE08-E19-090
VCUE08-E15-003	VCUE08-N40-031	VCUE08-E24-060	VCUE08-E23-091
VCUE08-E12-004	VCUE08-N36-032	VCUE08-E28-061	VCUE08-E27-092
VCUE08-E09-005	VCUE08-N39-033	VCUE08-E44-063	VCUE08-E32-093
VCUE08-E14-006	VCUE08-N43-034	VCUE08-E49-065	VCUE08-E37-094
VCUE08-E10-007	VCUE08-N38-035	VCUE08-E45-066	VCUE08-E41-095
VCUE08-E06-008	VCUE08-N41-036	VCUE08-N19-067	VCUE08-E35-096
VCUE08-E04-009	VCUE08-N37-037	VCUE08-N14-068	VCUE08-E39-097
VCUE08-E07-010	VCUE08-N42-039	VCUE08-N18-069	VCUE08-E42-098
VCUE08-N34-011	VCUE08-N46-040	VCUE08-N13-070	VCUE08-E46-099
VCUE08-N32-012	VCUE08-N49-041	VCUE08-N17-071	VCUE08-E50-100
VCUE08-N26-013	VCUE08-N45-042	VCUE08-N12-072	VCUE08-E53-101
VCUE08-N21-014	VCUE08-N48-043	VCUE08-N16-073	VCUE08-E48-102
VCUE08-N24-015	VCUE08-N44-044	VCUE08-N11-074	VCUE08-E52-103
VCUE08-N20-016	VCUE08-N47-045	VCUE08-N15-075	VCUE08-E47-104
VCUE08-N27-017	VCUE08-N50-046	VCUE08-N10-076	VCUE08-E51-105
VCUE08-N22-018	VCUE08-N54-047	VCUE08-N05-077	VCUE08-E43-106
VCUE08-N28-019	VCUE08-N51-048	VCUE08-N09-078	VCUE08-E40-107
VCUE08-N23-020	VCUE08-N55-049	VCUE08-N04-080	VCUE08-E34-108
VCUE08-N30-021	VCUE08-N52-050	VCUE08-N08-081	VCUE08-E38-109
VCUE08-N25-022	VCUE08-N56-051	VCUE08-N03-082	VCUE08-E33-110
VCUE08-N29-023	VCUE08-N53-052	VCUE08-N07-083	VCUE08-E36-111
VCUE08-N31-024	VCUE08-E13-053	VCUE08-N02-084	VCUE08-E31-112
VCUE08-E03-025	VCUE08-E17-054	VCUE08-N06-085	VCUE08-E26-113
VCUE08-E01-026	VCUE08-E21-055	VCUE08-N01-086	VCUE08-E20-114
VCUE08-E35-027	VCUE08-E16-056	VCUE08-E18-087	VCUE08-E54-115
VCUE08-N33-028	VCUE08-E30-057	VCUE08-E18-088	





Dayboro Geophysical Pty Ltd



DVD Archives

DVD001- Final PSTM Stacks Seq001-057

DVD002- Final PSTM Stacks Seq058-115

DVD003- Final Near Angle PSTM Stacks Seq001-057

DVD004- Final Near Angle PSTM Stacks Seq058-115

DVD005- Final Mid Angle PSTM Stacks Seq001-057

DVD006- Final Mid Angle PSTM Stacks Seq058-115

DVD007- Final Far Angle PSTM Stacks Seq001-057

DVD008- Final Far Angle PSTM Stacks Seq058-115

DVD009- Final Report

- Final Velocities Seq001-115



Dayboro Geophysical Pty Ltd



Appendix G Example EBCDIC

C 1 CLIENT CUE ENERGY LTD COMPANY DAYBORO GEOPHYSICAL CREW NO 1
 C 2 LINE BASSCUE08-E08 AREA BASS BASIN SURVEY BASSCUE08 2D MSS
 C 3 YEAR 2008
 C 5 DATA TRACES/RECORD 121 AUXILIARY TRACES PER RECORD 0 CDP FOLD 121
 C 6 SAMPLE INTERVAL 2MS SAMPLES PER TRACE 3000 BYTES PER SAMPLE 8
 C 7 RECORDING FORMAT SEGDFORMAT THIS REEL SEGDFORMAT
 C 8
 C 9 ACQUISITION PARAMETERS
 C10 COMPANY CGGVERITAS VESSEL M/V PACIFIC TITAN
 C11 AREA T37/38P
 C12 SP INTERVAL 25M NO OF CHANNELS 480 GROUP INTERVAL 12.5
 C13 CENTRE SOURCE TO CENTER NEAR GROUP 145M CABLE DEPTH 8M SOURCE DEPTH 6M
 C14
 C15 PROCESSING FLOW
 C16 Reformat
 C17 Trace Edit
 C18 Navigation Merge - 50ms Static Applied
 C19 Spherical Divergence Correction 1/VVT
 C20 Tau-P Deconvolution
 C21 -- AGC 500ms - Linear Tau-P Transform - Deconvolution 8ms Gap 240ms Op
 C22 -- RHO Filter - Tau-P Mute - Inverse Tau-P Transform - Remove 500ms AGC
 C23 Surface Related Multiple Elimination
 C24 -- Shot Interpolation - Interpolation to Zero Offset
 C25 -- 2D SRME
 C26 -- Adaptive Subtraction
 C27 First Pass Velocity Analysis 1km Interval
 C28 Parabolic Radon Demultiple
 C29 -- AGC 500ms - Radon 70ms - 900ms Removed (3000m Ref Offset) - Remove AGC
 C30 Second Pass Velocity Analysis 1km Interval
 C31 Kirchhoff PSTM
 C32 -- Half Aperture 6000m - Maximum Angle 70 Degrees
 C33 -- Offset Range 132.5m To 6132.5 At 50m (121 Offsets)
 C34 Third Pass Velocity Analysis 500m
 C35 Spectral Whitening 2-5-80-90Hz (5Hz AGC Length)
 C36 Band Pass Filter 2-5-80-90Hz - Output SEGDFORMAT
 C37 Header Byte Format Header Byte Format Header Byte Format
 C38 CDP 21 Int4 TRACE 13 Int4 SHOTID 17 Int4
 C39 CDP_X 73 Int4 CDP_Y 77 Int4 OFFSET 37 Int4
 C40





Dayboro Geophysical Pty Ltd



Appendix H Contacts and Personnel

Contacts

Dayboro Geophysical Pty Ltd

92 Fingerboard Rd
Dayboro QLD 4521
61 7 34251050

www.dayborogeo.com

ben@dayborogeo.com

Cue Energy Resources Limited

Level 21, 114 William Street
Melbourne Vic 3000
61 3 9670 8668

www.cuenrg.com.au

mail@cuenrg.com.au

Personnel

Desmond Leech – Cue Energy Seismic Interpreter

Bill Lodwick – Cue Energy Consultant Geophysicist

Ben Turner – Dayboro Geophysical Processing Manager

Szilard Albert – Dayboro Geophysical Senior Geophysicist

Appendix I Polarity

The observers logs note that “First Break is Negative”. This refers to the direct arrival, as such the water-bottom reflection is a Positive peak. Nothing in the processing flow has altered the polarity of the data and so the polarity is classified as SEG Normal.



Dayboro Geophysical Pty Ltd