DANMARKS OG GRØNLANDS GEOLOGISKE UNDERSØGELSE RAPPORT 2000/22

Reprocessing of data from the GGU/1995 survey in the Kangâmiut area

Rasmus Rasmussen

GEOLOGICAL SURVEY OF DENMARK AND GREENLAND
MINISTRY OF ENVIRONMENT AND ENERGY

GEUS

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G E U S

Contents

1. Summary

Exploration activities in the Davis Strait offshore southern and central West Greenland during the 1970s included drilling of 5 wells. All five wells were declared dry and further exploration work was at that time given up. Re-evaluation by GEUS showed that all prospects were in some way flawed or inadequately tested for determining the petroleum potential in the area (Chalmers and Pulvertaft, 1992; Sønderholm et al, 1999). The Kangâmiut-1 well was drilled on the western flank of the N-S trending Kangâmiut Ridge. Hydrocarbons were recorded in a porous section below a seal just above the crystalline basement. A drill stem test of the upper porous part of the reservoir probably failed to test the formation fluids because of drilling mud invasion to the formation as a consequence of the well control operations following a very high pressure build-up (Bates, 1997).

Government-funded acquisition of approximately 800 km of new seismic data in the Kangâmiut area took place in 1995 as part of an attempt to re-attract industry interest. In 1999 re-interpretation of data from the area was initiated. Because of noise problems in particular and poor data quality in general in the existing data at target level above and at the flanks of the Kangâmiut Ridge a reprocessing project was initiated. Based on results from two test-lines (line GGU/95-26 and line GGU/95-28) it was decided to re-process all seismic lines covering the Kangâmiut area from the GGU/1995 survey.

2. Introduction

The test processing was performed on two dip-lines across the Kangâmiut Ridge, both located about 5-10 km offset to the well. A segment of line GGU/95-26 (shot-point 550-1550) was selected for a suite of tests. The recommended processing sequence was finally applied to both test lines (line GGU/95-26 (shot-point 550-1550) and line GGU/95-28 (shot-point 950-1950)). The objective of the test processing was to improve the resolution of the data in general, but especially at the primary target level above the basement level of the Kangâmiut Ridge. The main efforts in the reprocessing have been directed to a solution of the noise contaminating the data and to attenuate the water bottom multiples, which were present in the data from the original processing. Especially the attenuation of the random noise probably caused by the high velocities in the shallow water Quaternary cover east of the shelf break has been an important issue in the reprocessing. Glacial loading effects is considered to be responsible for the high velocities in the Quaternary cover in this part of the survey area.

For the processing tests and the subsequent reprocessing the Promax processing software has been applied. Based on encouraging results from the test trials, it was decided to reprocess all data from the GGU/1995 survey covering the Kangâmiut Ridge area, i.e. approximately 800 km.

3. Acquisition parameters

Energy source:	VSX Sleeve Airgun
Airgun depth:	6m
Volume:	4100 cu. In. ≅ 67.2 l
Pressure:	2000 psi
SP interval:	25 m

Instrumentation:

Field recorder:	Titan 1000
Filter:	L.C.: out, H.C.: 180/72 (Hz, dB/Oct)
Record length:	8 sec
Sample interval:	2 ms
Format:	SEG-D

Receiver cable:

Streamer length:	3000 m
No. of groups:	240
Group interval:	12.5 m
Cable depth:	8 m
Near trace offset:	200 m for line GGU/95-(25-28) and 267 m for line GGU/95-(20,29-36)

4. Processing

4.1 Wave equation multiple removal (WEMR).

Enclosure 1 shows two panels: The left panel shows a reprocessing sequence, where no multiple removal has been applied except a water bottom deconvolution. For the right panel wave equation multiple removal has been applied in addition (in the following 'WEMR' will be used as abbreviation for this multiple attenuation process). The multiples are attenuated substantially by the WEMR processing, but the WEMR test also demonstrates the necessity to combine the WEMR processing with other multiple attenuation tools. The high frequency dipping noise around shot-point 700-850 is located on the near traces and as demonstrated in section 4.4, this noise will be removed by an inner trace mute. The high frequency noise still remaining after application of WEMR in the shot-point range from SP 700 to SP 1100 between 1.5 and 3.0 seconds is removed by FK-filtering in the shot and receiver domain (enclosure 2).

4.2 FK noise reduction in shot and receiver domain.

In enclosure 2 a number of asymmetric, polygonal FK filters of different strength have been tested both in the shot and the receiver domain.
From the left in the upper panel:
No FK filtering
FK filtering in shot and receiver domain, filter strength 1
FK filtering in shot domain only, filter strength 2.
From the left in the lower panel:
FK filtering in shot and receiver domain, filter strength 2
FK filtering in shot and receiver domain, filter strength 3
FK filtering in shot and receiver domain, filter strength 4

First of all, the test shows that whatever of the tested filters that have been used, the dipping noise has been reduced substantially. The high frequency noise in the shot-point range from SP 700 to SP 1100 between 1.5 and 3.0 seconds on the upper left panel without FK filtering has been effectively removed by the FK noise filtering by all the tested FK filter strengths. Comparison of the upper panel 3 with upper panel 2 or lower panel 1 immediately shows the benefit of applying FK noise filtering both in the shot and the receiver domain. Closer evaluation of the panels with different FK filter strength applied in both shot and receiver domain shows that the dipping noise has been most effectively removed by applying filter strength 3 and 4. The efficiency of these two filters with respect to noise reduction is very similar. However the dipping primary event between 3 and 5 seconds in the right part of the panels (the Kangâmiut Ridge) has been weakened by the application of filter strength 4. Therefore FK filtering in shot and receiver domain with FK filter strength 3 is evaluated to give the best overall result. The pass region for the FK filter is from –4 ms/trace to 5 ms/trace. The pass region for the FK filter is in addition limited by a polygonal filter design.

4.3 Velocity filtering.

In enclosure 3 a number of velocity filters has been tested both in the shot domain and in the CMP domain.
From the left in the upper panel:
No velocity filtering
FK velocity filtering in the CMP domain
Parabolic Radon velocity filtering in the CMP domain
FK and parabolic Radon velocity filtering in the CMP domain
From the left in the lower panel:
Linear Radon velocity filtering in the shot domain
Linear Radon velocity filtering in the shot domain and FK velocity filtering in the CMP domain
Linear Radon velocity filtering in the shot domain and parabolic Radon velocity filtering in the CMP domain
Linear Radon velocity filtering in the shot domain, FK and parabolic Radon velocity filtering in the CMP domain

Comparison of the tests, where only one velocity filter has been applied (i.e. upper panel 2 and 3 and lower panel 1) shows that the biggest improvement in the upper part of the data (down to about 3.0 seconds) is obtained by using the Radon velocity filter in the shot domain. Below this level there are very subtle differences between the application of the Radon velocity filter in the shot domain and the FK filter in the CMP domain. The signal from the faulted area in the western part of the test area at about 5.0 to 5.5 seconds is weakened by the CMP based parabolic Radon velocity filter. The overall best result with regards to noise reduction and multiple reduction is obtained by the Radon velocity filtering in the shot domain. The dipping sea-floor and the relatively flat sequence boundaries in the upper part of the dataset causes a bigger move-out difference in the shot domain than in the CMP domain (up-dip lines). This explains the improved efficiency by application of the Radon velocity filter in the shot domain (up-dip line) compared to apply the filtering in the CMP domain (see f. ex. Berndt and Moore, 1999).
Only minor differences are found between the test panel where only the Radon velocity filtering in the shot domain has been applied (lower test panel 1) and the panels where velocity filtering in the CMP domain has been applied in addition (lower test panel 2,3 and 4). It is considered, that a proper design of the Radon velocity filter in the shot domain is the only velocity filtering necessary for a proper multiple removal for up-dip lines in the test area. In case of down-dip lines, similar velocity filtering in the receiver domain is considered to be the most efficient way to attenuate remaining multiples and noise.

4.4 Mute testing

In enclosure 4, a number of different mute parameters have been tested. Inner trace mute tests are shown in the 4 upper panels and outer mute tests in the 7 lower panels. The strength of the inner trace mute increases from left to right. The strength of the outer trace mute increases from right to left. The advantage of using the inner trace mute is seen on the lower part of the seismic data section. The strong high frequency noise from 5.5 seconds down to the bottom of the seismic section around shot-point 700 has been strongly attenuated by the weakest inner trace mute applied in panel 1 and is completely removed in panel 2. The ambient noise in general is also substantially reduced in this panel. The final inner trace mute parameters are chosen to be slightly stronger than the parameters used in panel 2. The choice of outer trace mute parameters are very critical for the attenuation of the first water bottom multiple of the event just below the sea bottom (this event itself is very difficult to see except on the 2 lower panels to the left where the 2 strongest outer trace mutes have been applied). Apart from the area very close to the sea bottom, panel 4 and 5 are considered to give the best result. The parameters for the final outer trace mute are therefore chosen to lie between the parameters used in panel 4 and 5 except the area just below the sea bottom where parameters between the parameters for panel 1 and 2 have been used.

4.5 Comparison with the original processing

Finally, comparison with the original processing are presented in enclosure 5-8. Test trials not included in the enclosures showed, that the Kirchoff time migration was superior to finite difference migration. Kirchoff time migration has been used in the enclosures for the reprocessing test trials. In enclosure 5 the final migrated stack for the reprocessing test trials is presented for line GGU/95-26 (SP550-1550). In enclosure 6 the migrated stack of the same segment of the line from the original processing is presented. Similarly the reprocessing results for line GGU/95-28 (SP950-1950) is presented in enclosure 7 and the original processing for this line segment is presented in enclosure 8. In comparison with original processing the following improvements have been obtained :

Improvements of the definition of the top and flanks of the Kangâmiut Ridge.
Better attenuation of the multiples in the upper part of the seismic section down to about 2.0-2.5 seconds
In general, a better attenuation of ambient noise throughout the seismic section

4.6 Recommended processing flow

Based upon the test results the following processing sequence was recommended and implemented in the reprocessing of all GGU/1995 lines in the Kangâmiut Ridge area.

1. Tape read and noise editing

2. Resampling from 2 to 4 msec
3. Wave equation multiple removal
4. Spherical spreading T**2
5. WBDBS WB-90/WB+110
6. DBS 16/200
7. FK filtering in shot and receiver domain
8. Dip move out (DMO)
9. Radon velocity filtering in shot domain for up-dip lines (for down-dip lines Radon velocity filtering in receiver domain)
10. Velocity analyses
11. NMO/mute/stack
12. WBDAS WB-100/WB+120
13. DAS 24,32/200-2
14. Kirchoff time migration
15. TVF
16. TVS
17. Display

5. Conclusion

The objective of enhancing the data quality in the target zone above and at the flanks of the Kangâmiut Ridge by reprocessing the part of the GGU/1995 survey covering the Kangâmiut area has been fulfilled. The most important elements for improving the data quality have been a combination of wave equation multiple attenuation, FK noise filtering in the shot and the receiver domain and Radon velocity filtering in the shot domain (up-dip lines) or the receiver domain (down-dip lines). Especially the combination of multiple attenuation in the upper part of the data above and at the flanks of the Kangâmiut Ridge and the overall noise attenuation by the Radon velocity filtering applied in the shot domain (up-dip lines) or the receiver domain (down-dip lines) have proved to be a valid tool in enhancing the data quality. The experience gained from the reprocessing has demonstrated, that this method can actually be applied even in cases characterised by steeply dipping sequence boundaries.

6. Enclosures

Encl.1: WEMR multiple attenuation
Encl.2: FK noise filtering, shot and receiver domain
Encl.3: Velocity filtering
Encl.4: Mute panels, inner and outer trace mute
Encl.5: Kirchoff migration, reprocessing test trial result for line GGU/95-26 (SP550-1550)
Encl.6: Original processing, line GGU/95-26 (SP550-1550)
Encl.7: Kirchoff migration, reprocessing test trial result for line GGU/95-28 (SP950-1950)
Encl.8: Original processing, line GGU/95-28 (SP950-1950)

GGU/95-26 encl.1
SP: 55Ø-13ØØ
Testing of: WEMR

FIELD PARAMETERS

Date Recorded.........1995
Source Type...........VSX SLEEVE AIRGUN
Sample Rate...........2 ms
Record End Time.......819Ø ms
Long Offset...........3187.5 m
Gain Mode.............
Preamp Gain...........
Low Cut Filter........OUT
Low Cut Slope.........
High Cut Filter.......18Ø Hz
High Cut Slope........72 dB/Oct.
Antialias Filter......
Antialias Slope.......
Notch Filter..........
Notch Slope...........
Instruments...........TITAN 1ØØØ
Serial No.............
Format................SEG-D 8Ø15
Number Data Chans.....24Ø
Number Aux Chans......
Dial In Constant......

PROCESSING SEQUENCE

1) Tape read and data editing
2) Resampling from 2 to 4 ms using antialiasing filter
3) Static correstion -5Ø ms
4) Noise editing

5) Panels: left panel — WEMR NOT applied; right panel — WEMR (Wave Equation Multiple Rejection)

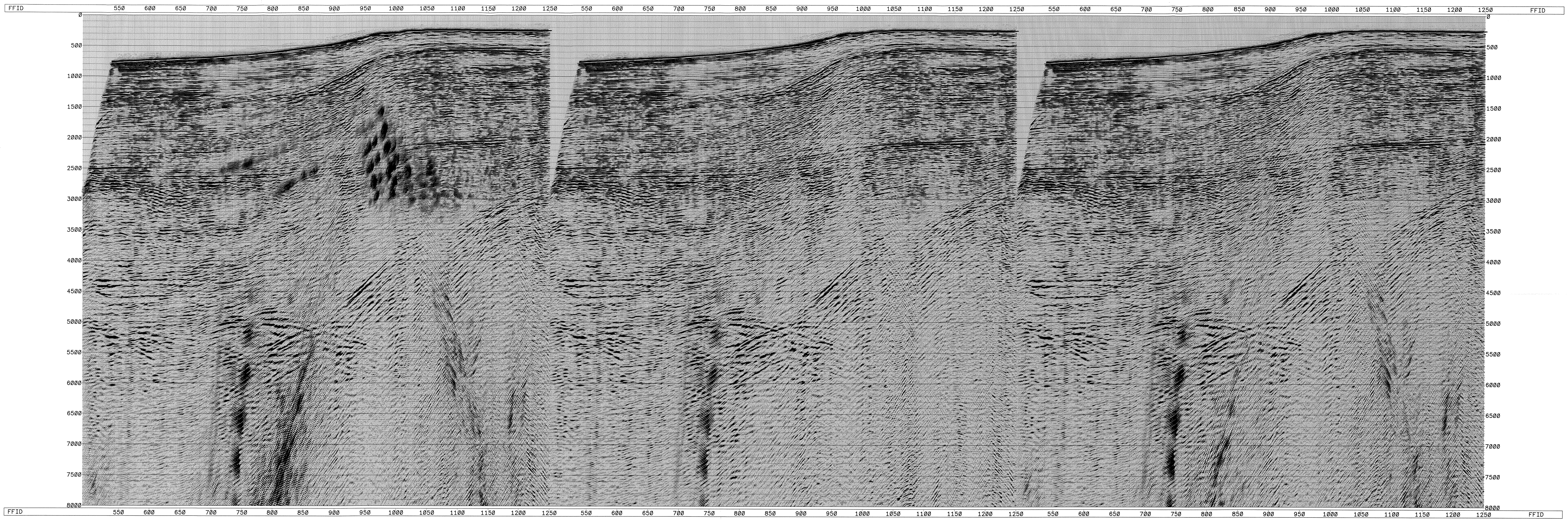
6) Gain recovery T**2
7) WBDBS WB-9Ø/WB+11Ø
8) DBS 16/2ØØ
9) NMO
1Ø)Mute
11)Stack
12)DAS 32/2ØØ
13)Trace resampling from 6.25 m to 25 m CDP distance
14)F-X Decon
15)Bandpass filtering
16)TVS scaling

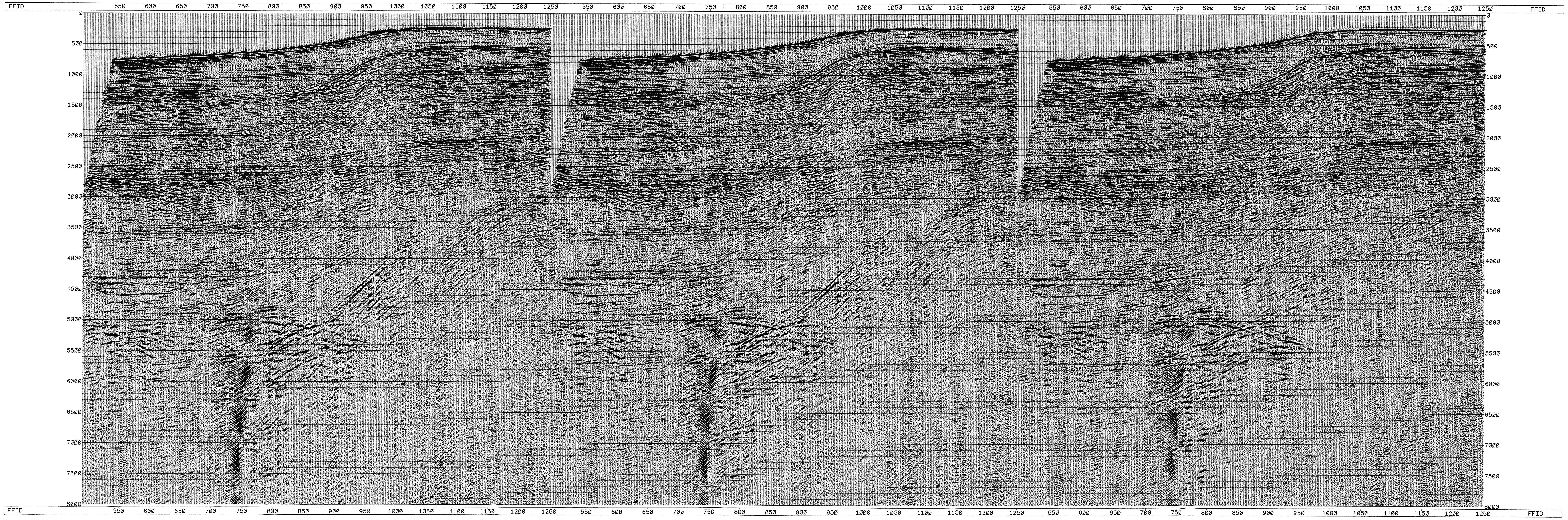
DISPLAY PARAMETERS

Fri Oct 1 1Ø:Ø2:16 1999
Traces/Centimeters = 2Ø
Bias Percent = Ø
Gain Set = Ø.85
Gain Constant = 541.7Ø5

Static Shift = Ø
Centimeters/Second = 5
Clip Limit = 4
RMS Amplitude = 1.56912

ADVANCE ProMAX





East

GGU/95-26 encl. 2
SP 550-1250
Testing of:
FK filtering, SP&REC

FIELD PARAMETERS

Date Recorded........1995
Source Type..........VSX SLEEVE AIRGUN
Sample Rate..........2 ms
Record End Time......8190 ms
Long Offset..........3187.5 m
Gain Mode............
Preamp Gain..........
Low Cut Filter.......OUT
Low Cut Slope........
High Cut Filter......180 Hz
High Cut Slope.......72 dB/Oct.
Antialias Filter.....
Antialias Slope......
Notch Filter.........
Notch Slope..........
Instruments..........TITAN 1000
Serial No............
Format...............SEG-D 8015
Number Data Chans....240
Number Aux Chans.....
Dial In Constant.....

PROCESSING SEQUENCE

1) Tape read and noise editing
2) Resampling from 2 to 4 ms using antialiasing filter
3) Static correction -50 ms
4) Wave Equation Multiple Rejection
5) Gain recovery T**2
6) WBDBS WB-90/WB+110
7) DBS 16/200

8) Panels: upper panels:

	1	2	3
upper panels:	no fk	fkfilt1 ,SP&REC	fkfilt2, only SP
lower panels:	fkfilt2, SP&REC	fkfilt3, SP&REC	fkfilt4, SP&REC

9) NMO
10) Mute
11) Stack
12) DAS 32/200
13) Trace resampling from 6.25 m to 25 m CDP distance
14) F-X Decon
15) Bandpass filtering
16) TVS scaling

DISPLAY PARAMETERS

Fri Oct 1 14:09:24 1999
Traces/Centimeters = 20
Bias Percent = 0
Gain Set = 0.85
Gain Constant = 601.888

Static Shift = 0
Centimeters/Second = 5
Clip Limit = 4
RMS Amplitude = 1.41222

ADVANCE ProMAX

East

GGU/95-26 encl. 3
SP 550-1250
Testing of: velocity filtering

FIELD PARAMETERS

Date Recorded........1995
Source Type..........VSX SLEEVE AIRGUN
Sample Rate..........2 ms
Record End Time......8190 ms
Long Offset..........3187.5 m
Gain Mode...........
Preamp Gain.........
Low Cut Filter.......OUT
Low Cut Slope........
High Cut Filter......180 Hz
High Cut Slope.......72 dB/Oct.
Antialias Filter.....
Antialias Slope......
Notch Filter.........
Notch Slope..........
Instruments..........TITAN 1000
Serial No............
Format...............SEG-D 8015
Number Data Chans....240
Number Aux Chans.....
Dial In Constant.....

PROCESSING SEQUENCE

1) Tape read and noise editing
2) Resampling from 2 to 4 ms using antialiasing filter
3) Static correction -50 ms
4) Wave Equation Multiple Rejection
5) Gain recovery T**2
6) WBDBS WB-90/WB+110
7) DBS 16/200
8) FK filtering in shot and receiver domain

9) Testing of velocity filtering

upper panels:

1	2	3	4
no velocity filtering	CDP FK	CDP Radon	CDP FK+Radon

lower panels:

5	6	7	8
SP Radon	SP Radon/CDP FK	SP Radon/CDP Radon	SP Radon/CDP FK+Radon

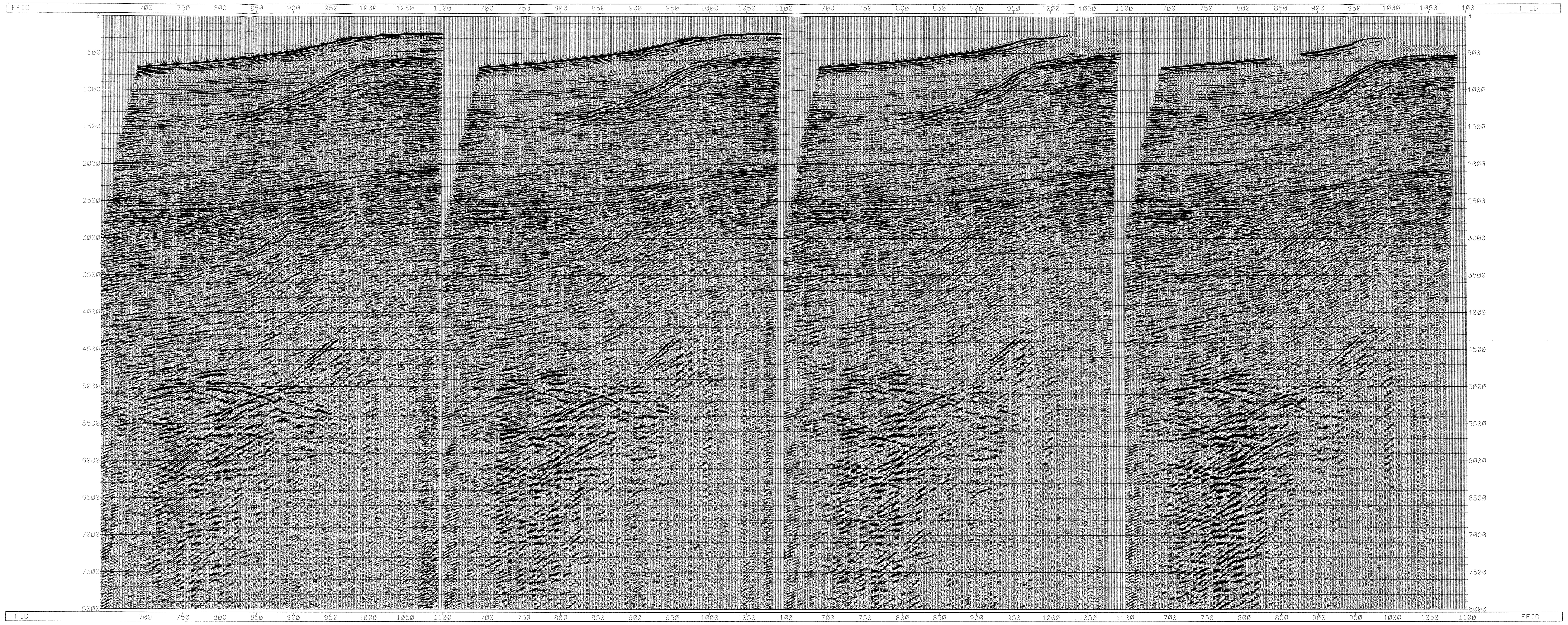
10) NMO
11) Mute
12)Stack
13)DAS 32/200
14)Trace resampling from 6.25 m to 25 m CDP distance
15)F-X Decon
16)Bandpass filtering
17)TVS scaling

DISPLAY PARAMETERS

Mon Oct 4 12:44:15 1999
Traces/Centimeters = 20
Bias Percent = 0
Gain Set = 0.85
Gain Constant = 639.43

Static Shift = 0
Centimeters/Second = 5
Clip Limit = 4
RMS Amplitude = 1.32931

ADVANCE ProMAX



GGU/95-26 encl. 4
SP 700-1100
Testing of:
mute

FIELD PARAMETERS

Date Recorded........1995
Source Type..........VSX SLEEVE AIRGUN
Sample Rate..........2 ms
Record End Time......8190 ms
Long Offset..........3187.5 m
Gain Mode............
Preamp Gain..........
Low Cut Filter.......OUT
Low Cut Slope........
High Cut Filter......180 Hz
High Cut Slope.......72 dB/Oct.
Antialias Filter.....
Antialias Slope......
Notch Filter.........
Notch Slope..........
Instruments..........TITAN 1000
Serial No............
Format...............SEG-D 8015
Number Data Chans....240
Number Aux Chans.....
Dial In Constant.....

PROCESSING SEQUENCE

1) Tape read and noise editing
2) Resampling from 2 to 4 ms using antialiasing filter
3) Static correction -50 ms
4) Wave Equation Multiple Rejection
5) Gain recovery T**2
6) WBDBS WB-90/WB+110
7) DBS 16/200
8) FK filtering in shot and receiver domain
9) Radon velocity filtering in shotdomain
10) FKDMO
11) NMO
12) Mute testing

upper panels (inner trace mute testpanels):

1	2	3	4
mute i1 (weak)	mute i2	mute i3	mute i4 (strong)

lower panels (outer trace mute testpanels):

5	6	7	8	9	10	11
mute o1 (weak)	mute o2	mute o3	mute o4	mute o5	mute o6	mute o7 (strong)

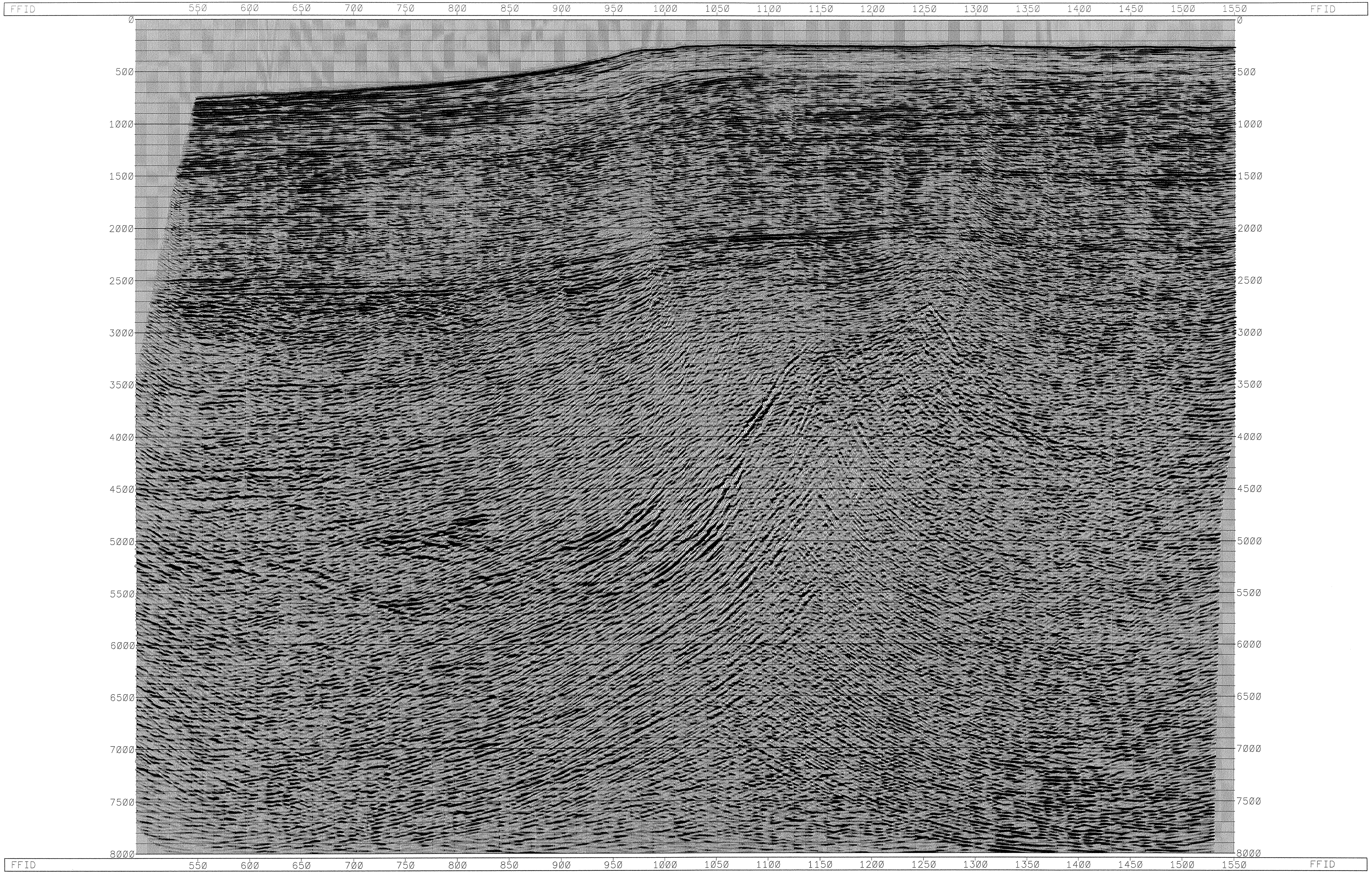
13) Stack
14) DAS 32/200
15) Trace resampling from 6.25 m to 25 m CDP distance
16) F-X Decon
17) Bandpass filtering
18) TVS scaling

DISPLAY PARAMETERS

Tue Oct 5 12:01:54 1999
Traces/Centimeters = 20
Bias Percent = 0
Gain Set = 0.85
Gain Constant = 740.756

Static Shift = 0
Centimeters/Second = 5
Clip Limit = 4
RMS Amplitude = 1.14748

ADVANCE ProMAX



East

GGU95-26 encl. 5
SP 550-1550
Testline
Migration

GEUS

Report File no.
Enclosure
17327(5/8)

FIELD PARAMETERS

Date Recorded........1995
Source Type..........VSX SLEEVE AIRGUN
Sample Rate..........2 ms
Record End Time......8190 ms
Long Offset..........3187.5 m
Gain Mode............
Preamp Gain..........
Low Cut Filter.......OUT
Low Cut Slope........
High Cut Filter......180 Hz
High Cut Slope.......72 dB/Oct.
Antialias Filter.....
Antialias Slope......
Notch Filter.........
Notch Slope..........
Instruments..........TITAN 1000
Serial No............
Format...............SEG-D 8015
Number Data Chans....240
Number Aux Chans.....
Dial In Constant.....

PROCESSING SEQUENCE

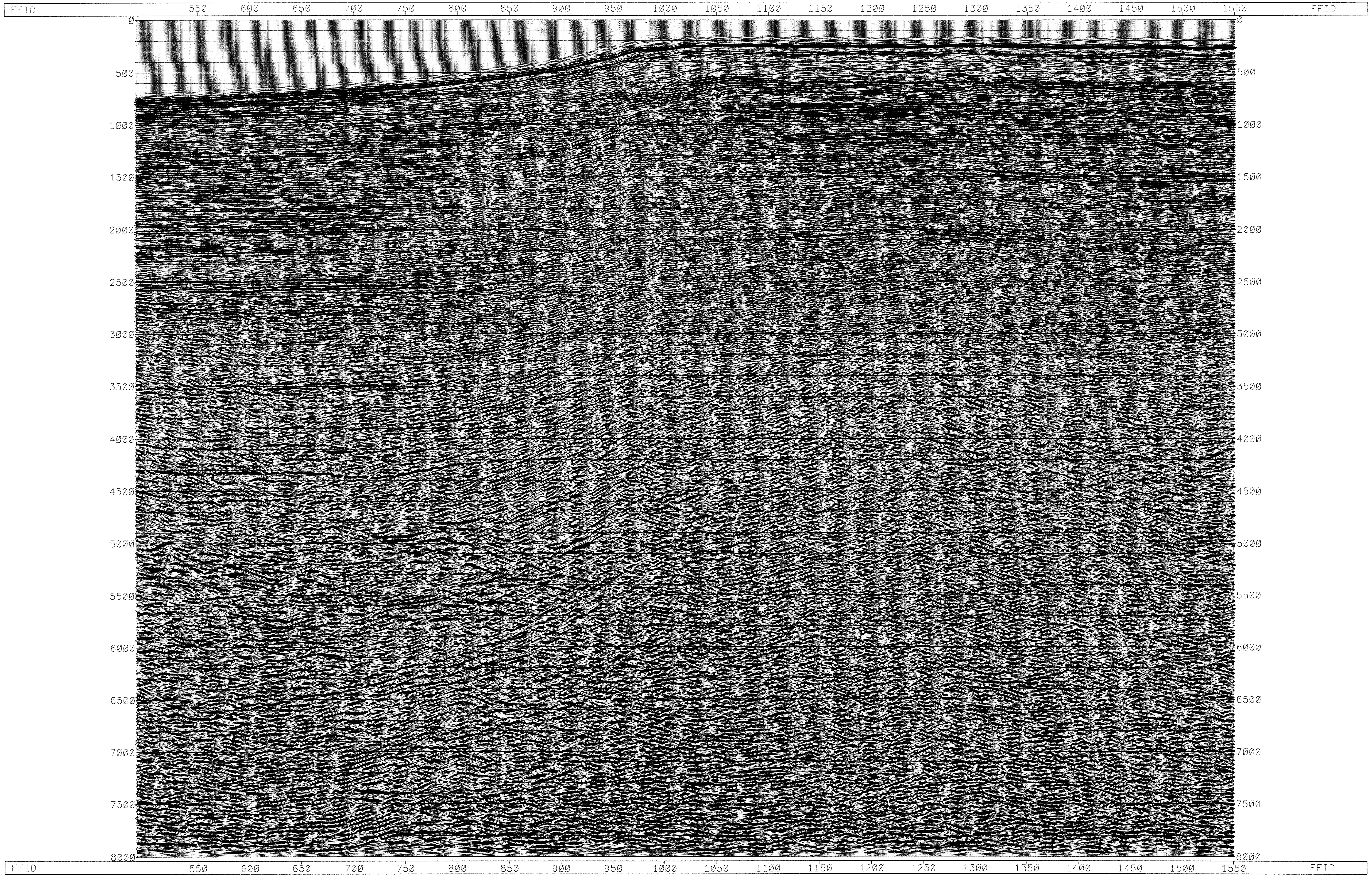
1) Tape read and noise editing
2) Resampling from 2 to 4 ms using antialiasing filter
3) Static correction -50 ms
4) Wave Equation Multiple Rejection
5) Gain recovery T**2
6) WBDBS WB-90/WB+110
7) DBS 16/200
8) FK filtering in shot and receiver domain
9) Radon velocity filtering in shotdomain
10) FKDMO
11) NMO
12) Mute
13) Stack
14) WBDAS WB-100/WB+120
15) DAS 32/200
16) Kirchoff migration
17) Trace resampling from 6.25 m to 25 m CDP distance
18) F-X Decon
19) Bandpass filtering
20) TVS scaling

DISPLAY PARAMETERS

Wed Dec 1 09:20:53 1999
Traces/Centimeters = 20
Bias Percent = 0
Gain Set = 0.8
Gain Constant = 358.469

Static Shift = 0
Centimeters/Second = 5
Clip Limit = 4
RMS Amplitude = 2.23171

ADVANCE ProMAX



East

GGU95-26 encl. 6

SP 550-1550

Original processing

Migration

GEUS

Report File no.
Enclosure
17327(6/8)

FIELD PARAMETERS

```
Date Recorded........1995
Source Type..........VSX SLEEVE AIRGUN
Sample Rate..........2 ms
Record End Time......8190 ms
Long Offset..........3187.5 m
Gain Mode............
Preamp Gain..........
Low Cut Filter.......OUT
Low Cut Slope........
High Cut Filter......180 Hz
High Cut Slope.......72 dB/Oct.
Antialias Filter.....
Antialias Slope......
Notch Filter.........
Notch Slope..........
Instruments..........TITAN 1000
Serial No............
Format...............SEG-D 8015
Number Data Chans....240
Number Aux Chans.....
Dial In Constant.....
```

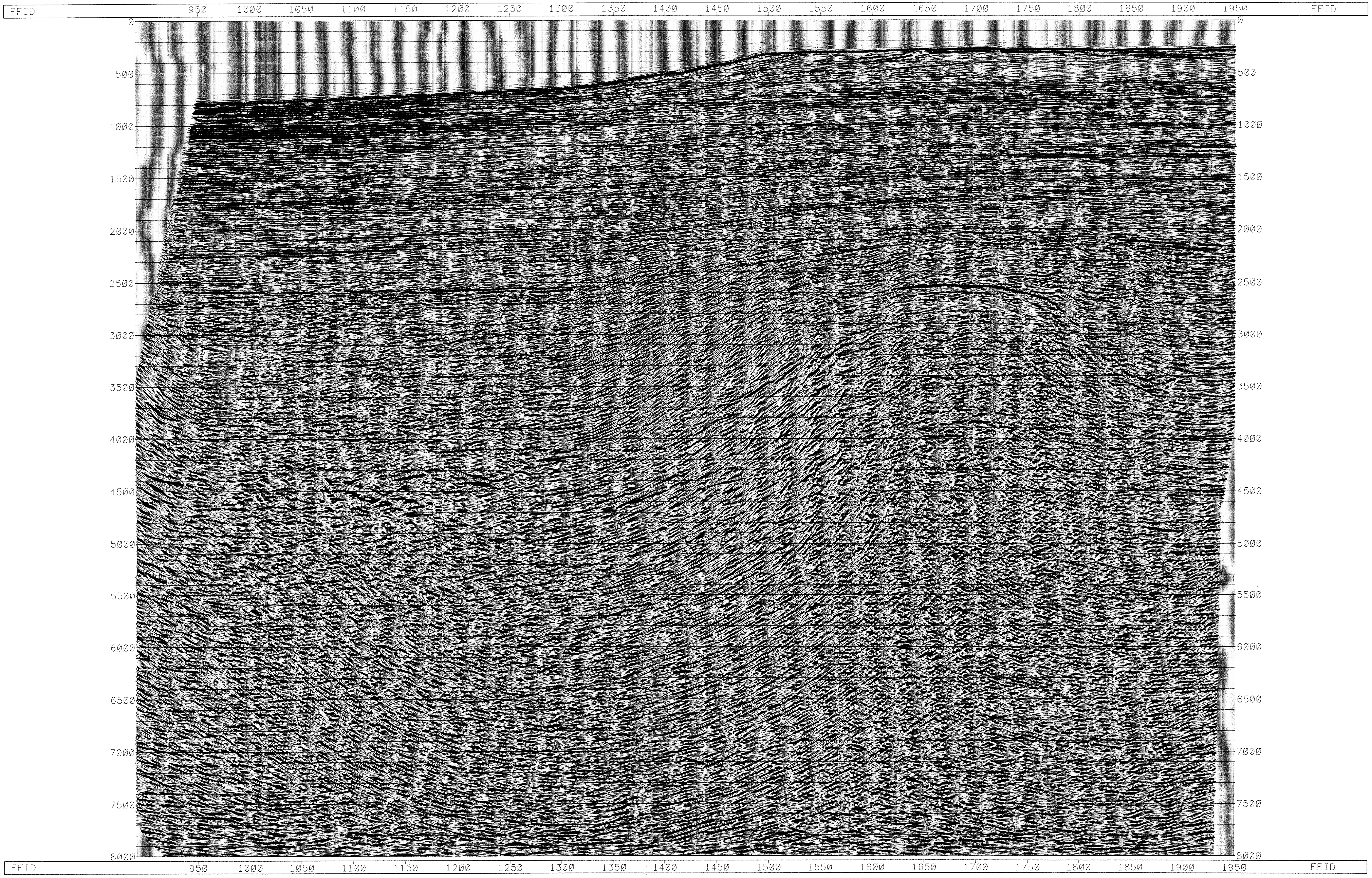
PROCESSING SEQUENCE

DISPLAY PARAMETERS

```
Wed Dec  1 09:21:12 1999
Traces/Centimeters = 20
Bias Percent   = 0
Gain Set       = 0.8
Gain Constant = 18.3527
```

```
Static Shift  = 0
Centimeters/Second  = 5
Clip Limit    = 4
RMS Amplitude = 43.5903
```

ADVANCE ProMAX



East

GGU95-28 encl. 7

SP 950-1950

Testline

Migration

GEUS

Report File no.
Enclosure
17327(7/8)

FIELD PARAMETERS

Date Recorded........1995
Source Type..........VSX SLEEVE AIRGUN
Sample Rate..........2 ms
Record End Time......8190 ms
Long Offset..........3187.5 m
Gain Mode............
Preamp Gain..........
Low Cut Filter.......OUT
Low Cut Slope........
High Cut Filter......180 Hz
High Cut Slope.......72 dB/Oct.
Antialias Filter.....
Antialias Slope......
Notch Filter.........
Notch Slope..........
Instruments..........TITAN 1000
Serial No............
Format...............SEG-D 8015
Number Data Chans....240
Number Aux Chans.....
Dial In Constant.....

PROCESSING SEQUENCE

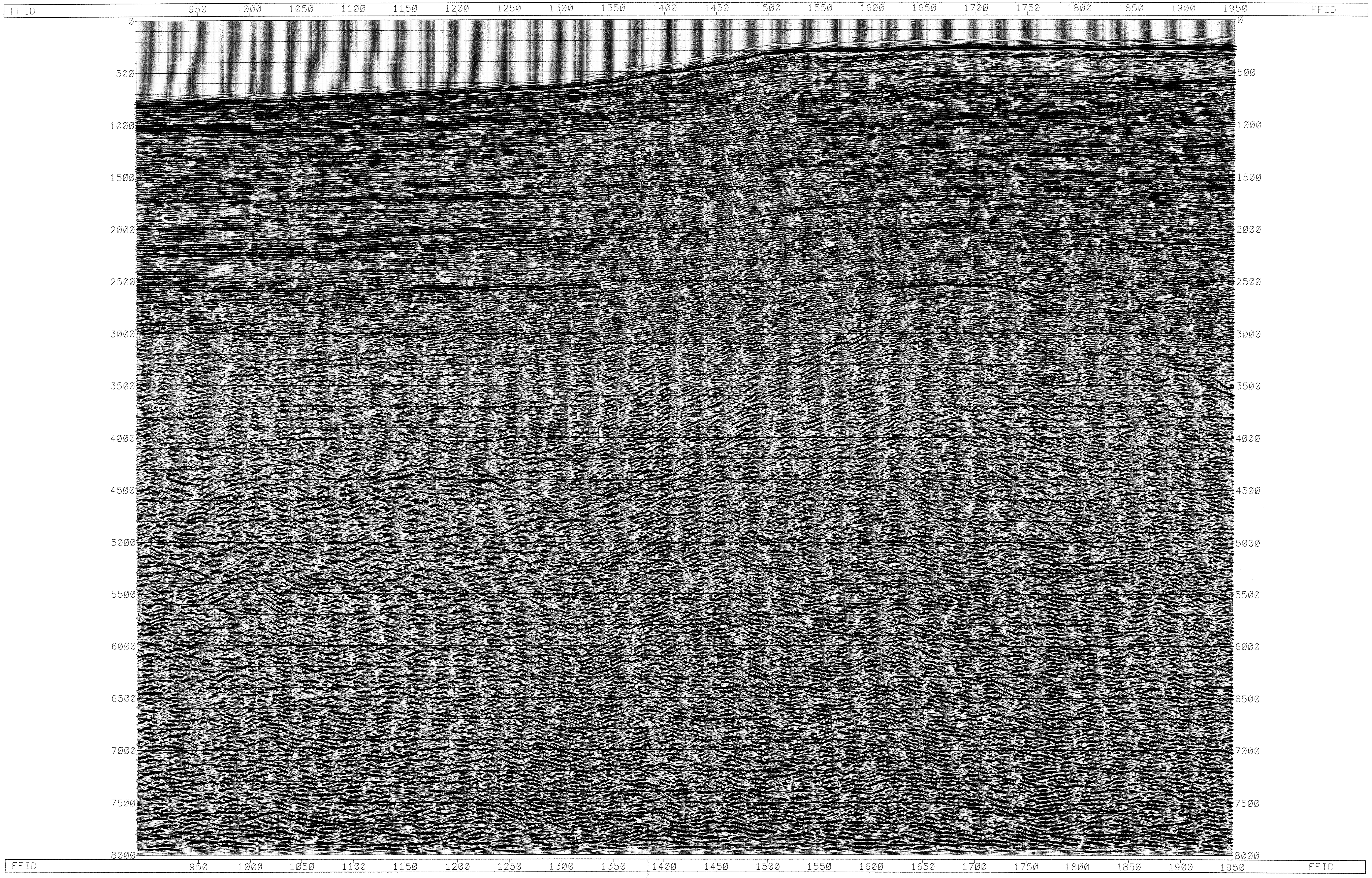
1) Tape read and noise editing
2) Resampling from 2 to 4 ms using antialiasing filter
3) Static correction -50 ms
4) Wave Equation Multiple Rejection
5) Gain recovery T**2
6) WBDBS WB-90/WB+110
7) DBS 16/200
8) FK filtering in shot and receiver domain
9) Radon velocity filtering in shotdomain
10)FKDMO
11)NMO
12)Mute
13)Stack
14)WBDAS WB-100/WB+120
15)DAS 32/200
16)Kirchoff migration
17)Trace resampling from 6.25 m to 25 m CDP distance
18)F-X Decon
19)Bandpass filtering
20)AGC robust scaling

DISPLAY PARAMETERS

Fri Dec 3 10:48:48 1999
Traces/Centimeters = 20
Bias Percent = 0
Gain Set = 0.8
Gain Constant = 613.141

Static Shift = 0
Centimeters/Second = 5
Clip Limit = 4
RMS Amplitude = 1.30476

ADVANCE ProMAX



East

GGU95-28 encl. 8
SP 950-1950
Original processing
Migration

GEUS

Report File no.
Enclosure
17327(8/8)

FIELD PARAMETERS

Date Recorded........1995
Source Type..........VSX SLEEVE AIRGUN
Sample Rate..........2 ms
Record End Time......8190 ms
Long Offset..........3187.5 m
Gain Mode............
Preamp Gain..........
Low Cut Filter.......OUT
Low Cut Slope........
High Cut Filter......180 Hz
High Cut Slope.......72 dB/Oct.
Antialias Filter.....
Antialias Slope......
Notch Filter.........
Notch Slope..........
Instruments..........TITAN 1000
Serial No............
Format...............SEG-D 8015
Number Data Chans....240
Number Aux Chans.....
Dial In Constant.....

PROCESSING SEQUENCE

DISPLAY PARAMETERS

Fri Dec 3 08:39:36 1999
Traces/Centimeters = 20
Bias Percent = 0
Gain Set = 0.8
Gain Constant = 18.6753

Static Shift = 0
Centimeters/Second = 5
Clip Limit = 4
RMS Amplitude = 42.8372

ADVANCE ProMAX

7. List of reprocessed lines from the GGU/1995 survey

Line	Shot-point	Line direction
GGU/95-20	101-1393	271º
GGU/95-25	101-2103	269º
GGU/95-26	101-2091	88º
GGU/95-27	103-2499	269º
GGU/95-28	101-2511	88º
GGU/95-29	101-2246	267º
GGU/95-30	101-2207	85º
GGU/95-31	101-2096	262º
GGU/95-32	101-2108	81º
GGU/95-33	101-3755	262º
GGU/95-34	101-4145	355º
GGU/95-35	101-2397	48º
GGU/95-36	101-3683	170º

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