



Low Cut Filter Test

NZ 3D Processing

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cgg.com



INSTITUTE FOR GEOPHYSICS



Passion for Geoscience

1. Convert to CGG internal format
2. Nav merge / trace edit
3. Low cut filter

- **Objective:**

To attenuate extreme low frequency noise.

- **Procedure:**

Low Cut Filter (LCF) was applied to shot gathers.

A LCF of 3 Hz was already applied in the acquisition system, so we tested 2.5 Hz and 3 Hz LCF.

- **Display:**

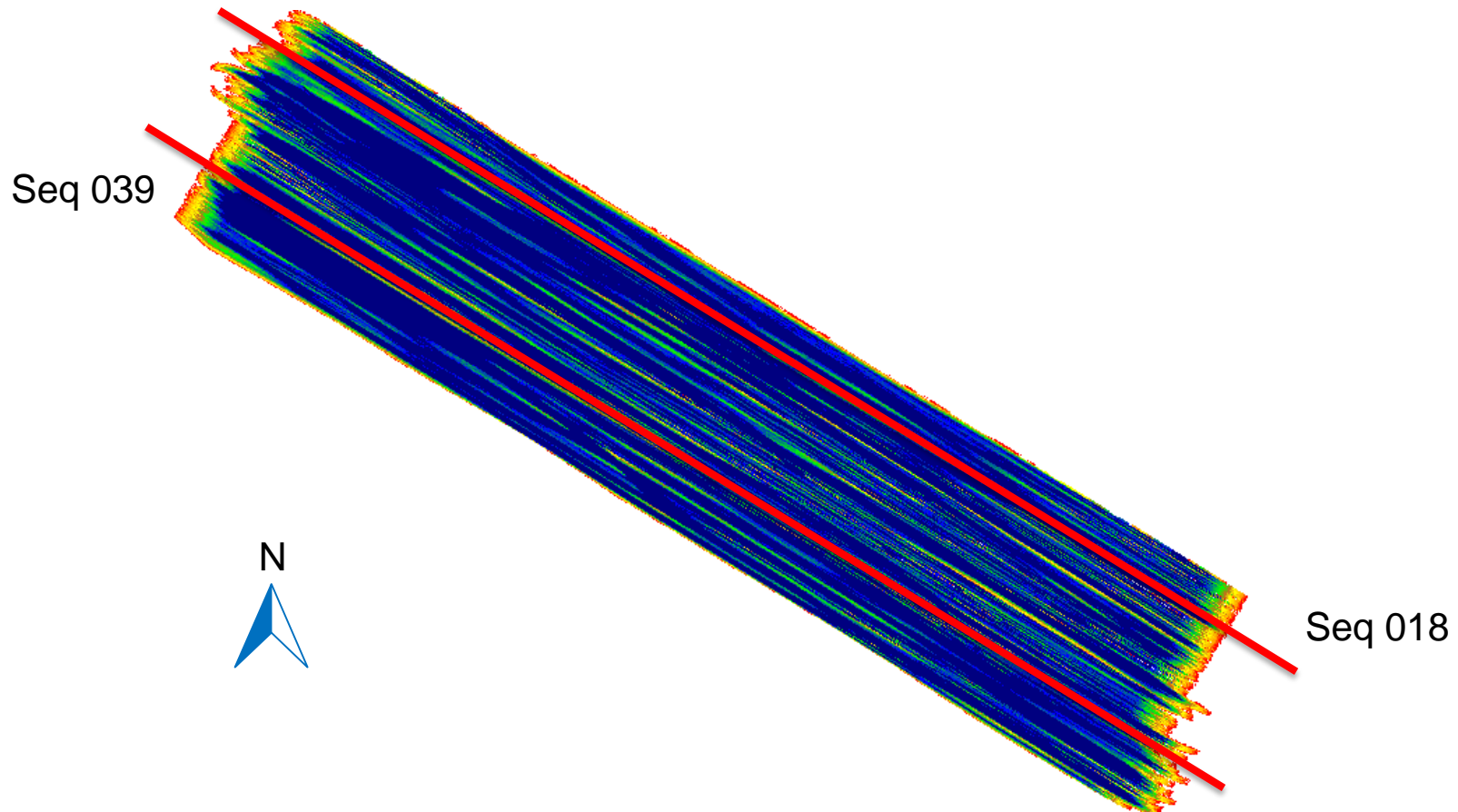
Test line: Seq 018 (Gun 1 Cable 2); Sequence 039 (Gun 2 Cable 1).

Display: Selected shot gathers, and stacks.

- **Observation and Recommendation:**

LCF of 2.5 Hz attenuates low frequency noise without hurting the primaries and is recommended for production.

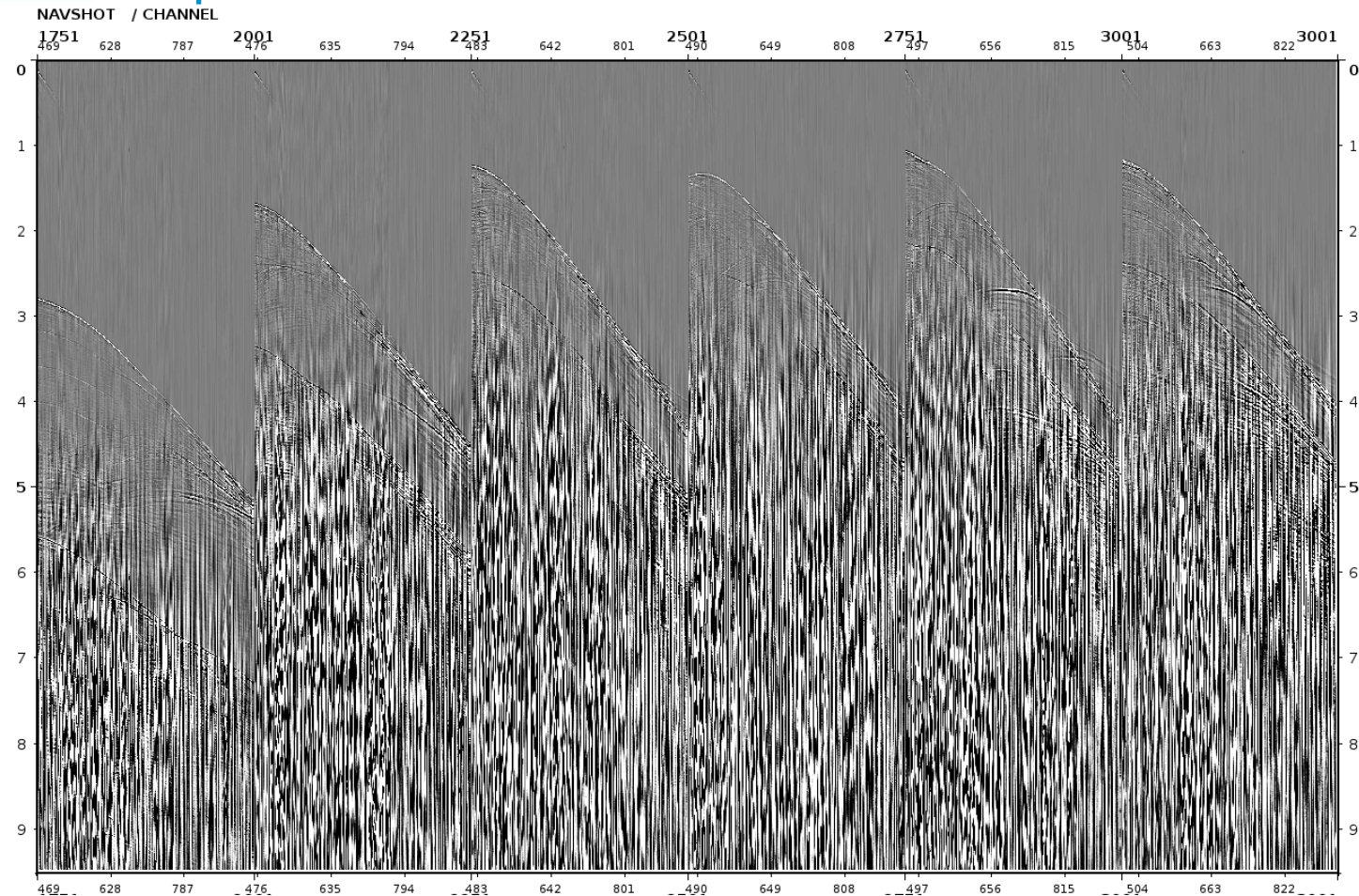
Harsher low cut filter can be applied later (after de-ghost) if necessary.



Selected Shot Gathers

Seq 018: Selected Shot Gather Before LCF

6

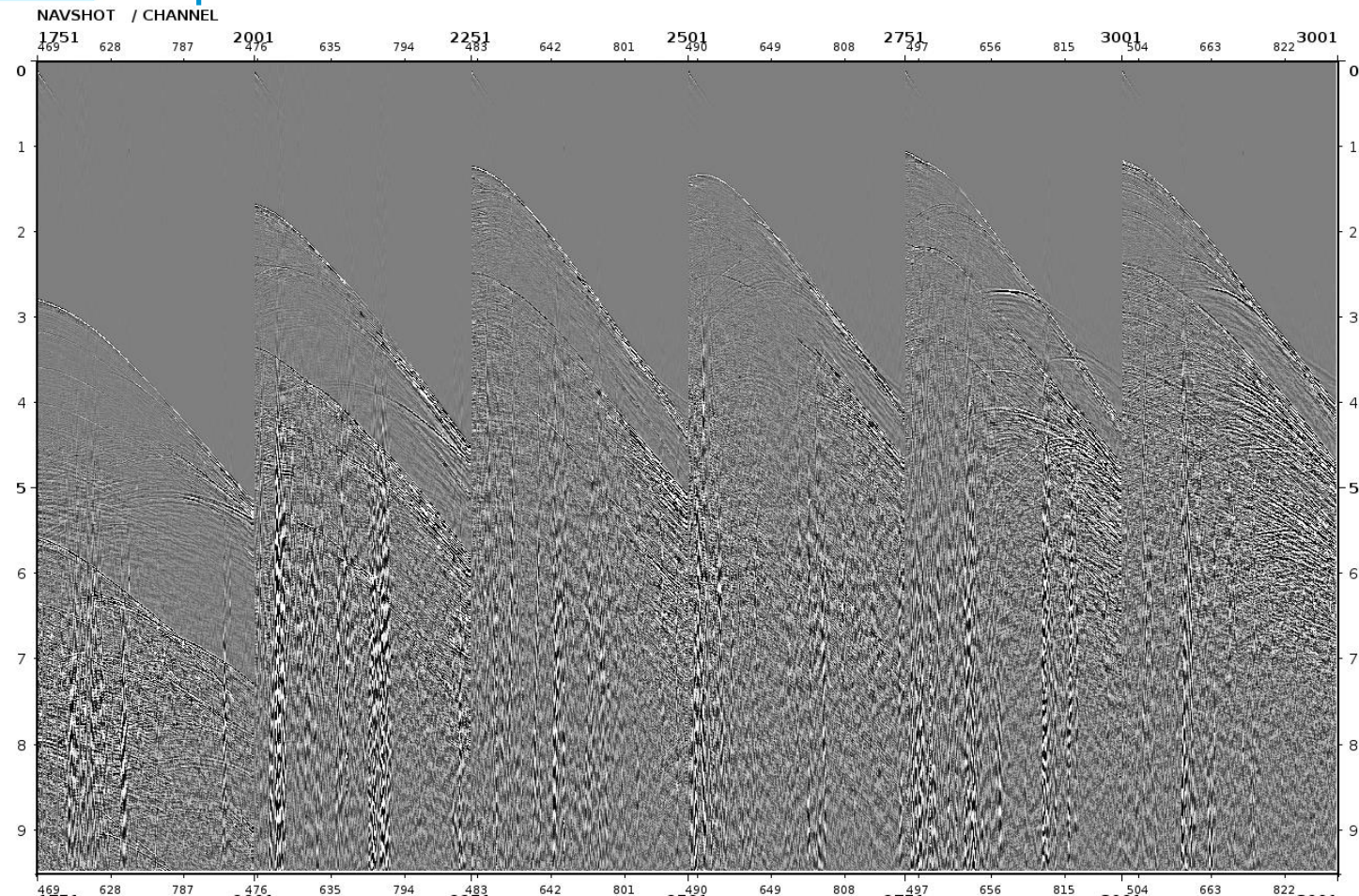


- TVS applied for display



Seq 018: Selected Shot Gather After LCF of 2.5 Hz

7

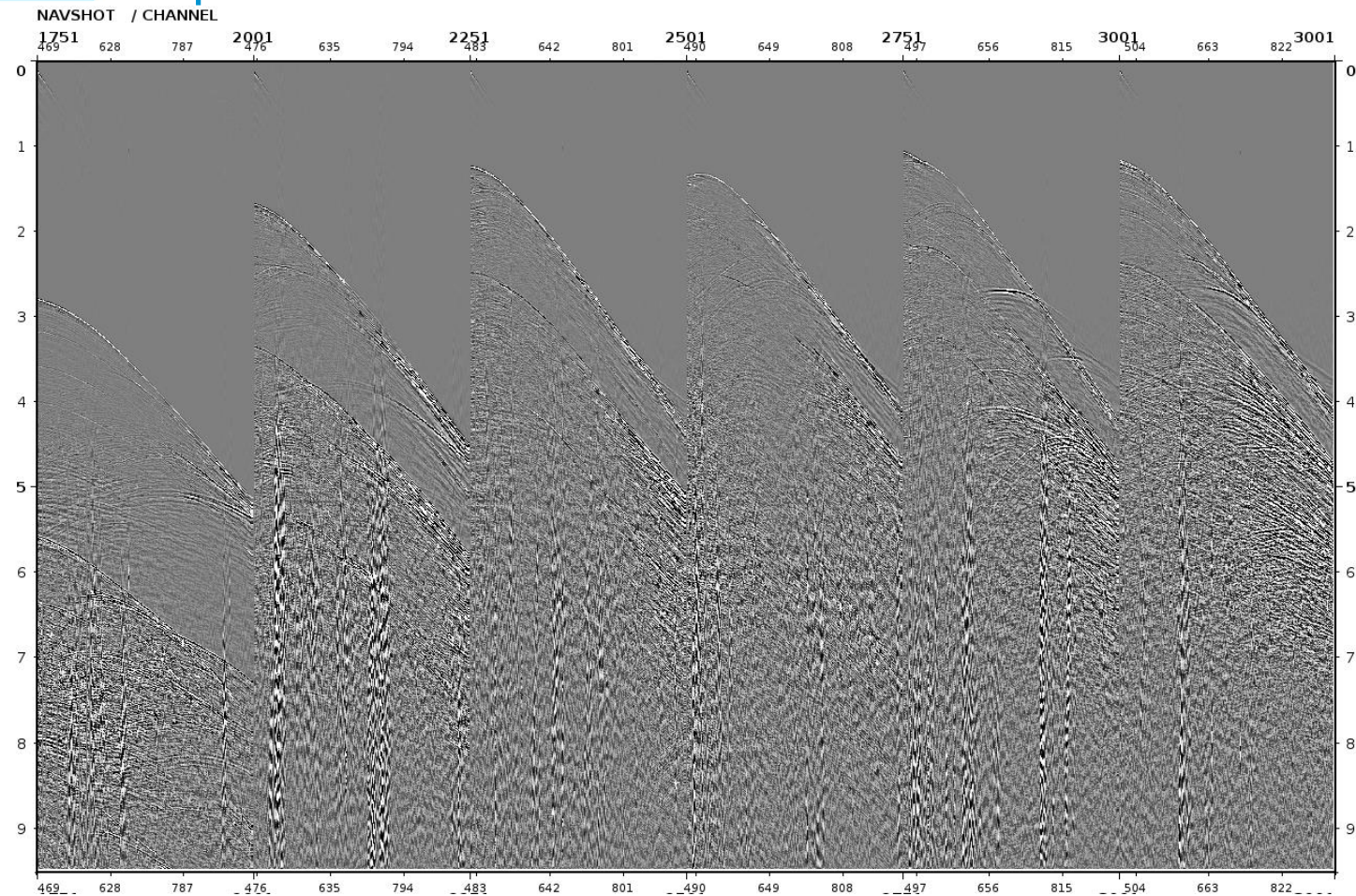


- TVS applied for display



Seq 018: Selected Shot Gather After LCF of 3.0 Hz

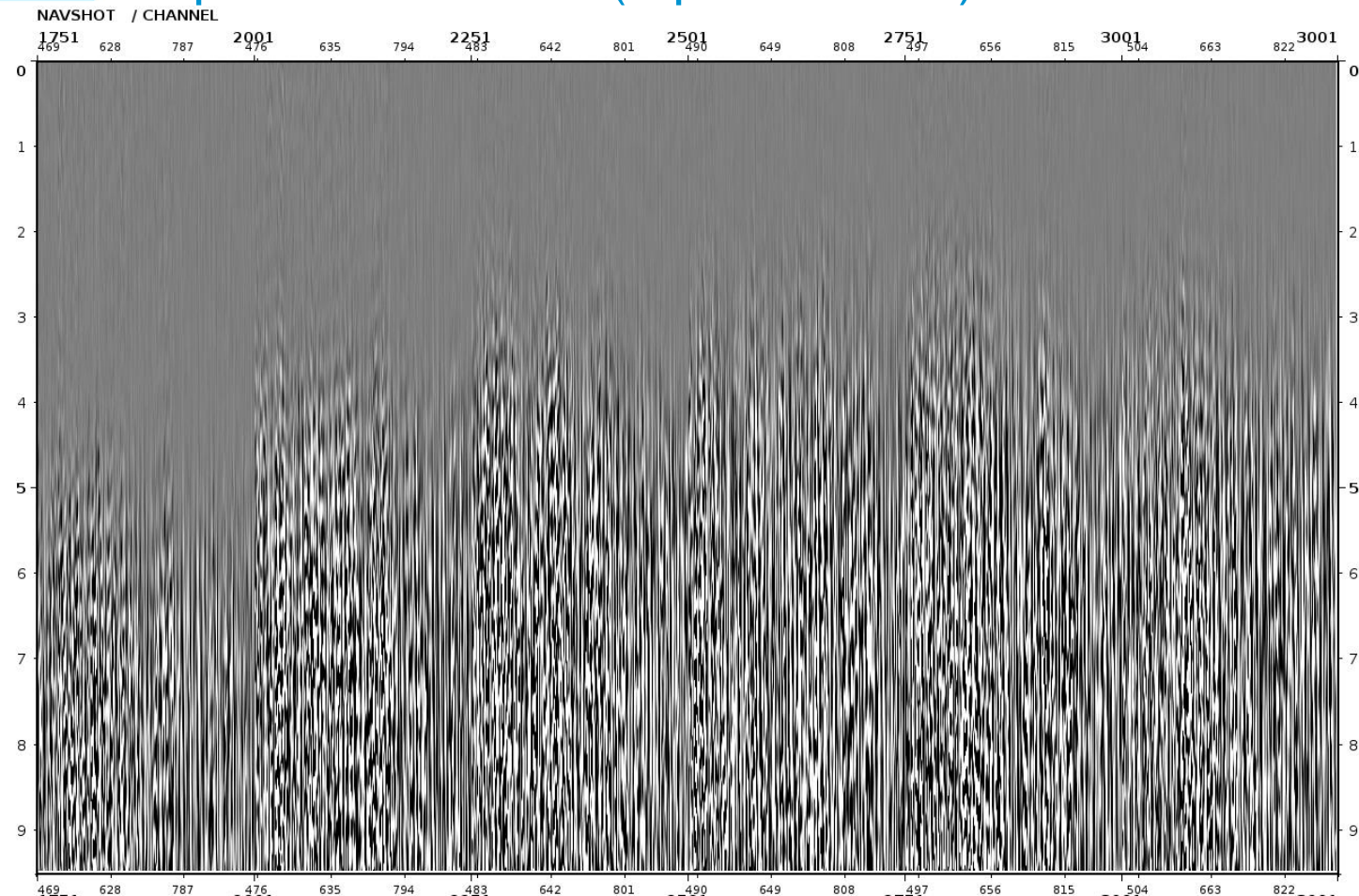
8



- TVS applied for display

Seq 018: Difference (Input - 2.5 Hz)

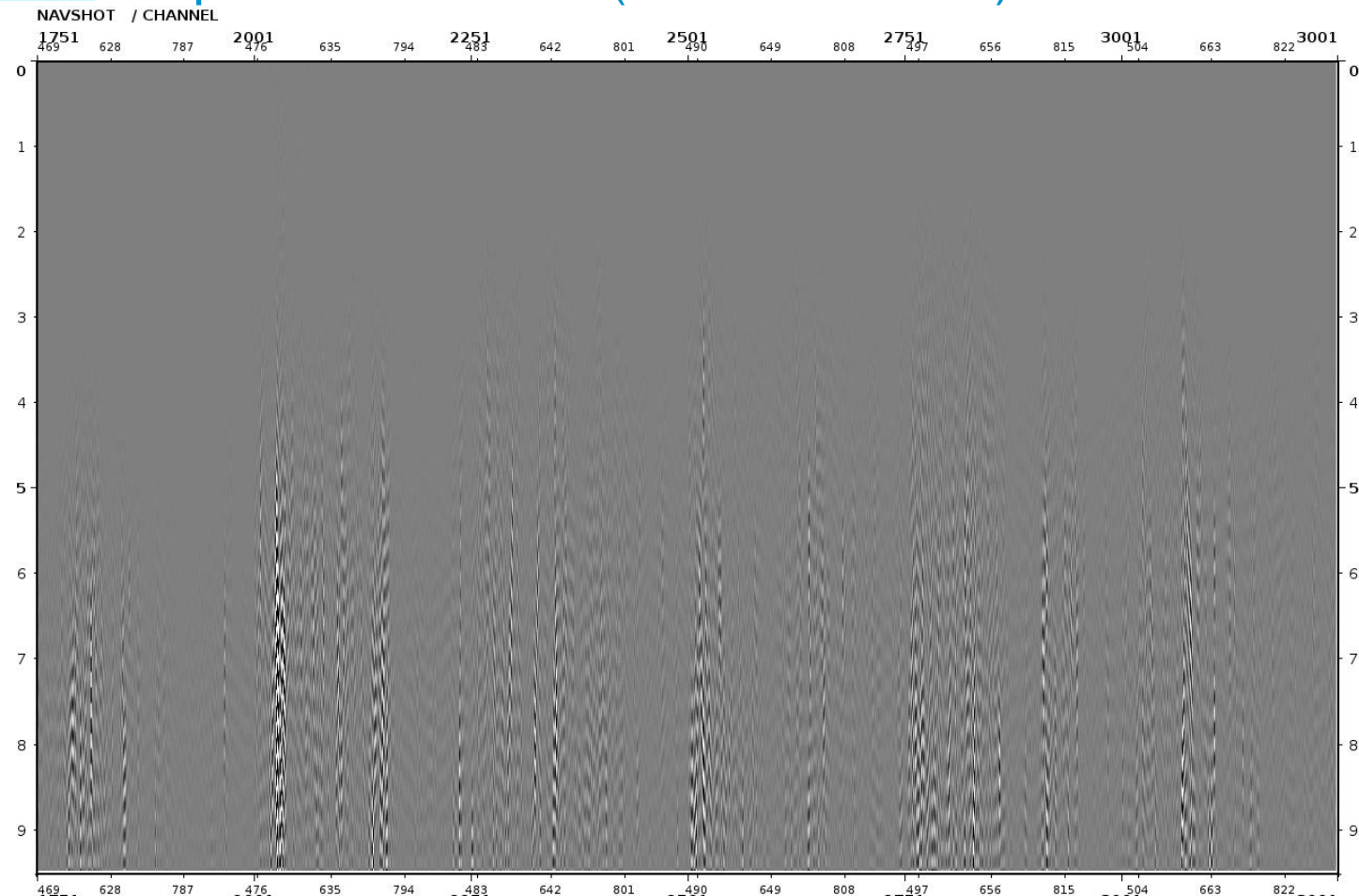
9



- TVS applied for display

Seq 018: Difference (2.5 Hz - 3.0 Hz)

10

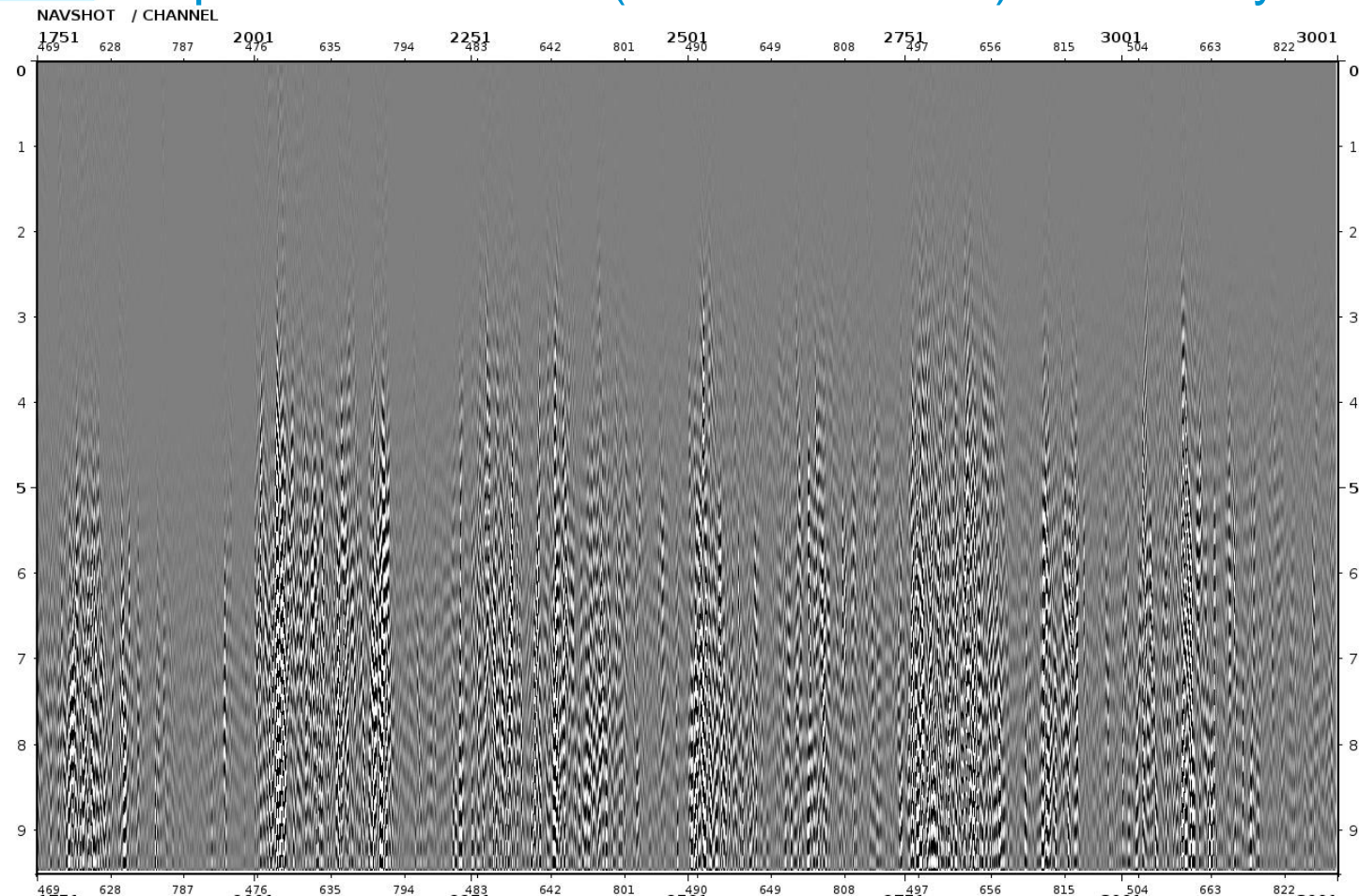


- TVS applied for display
- No Sign observed below 3Hz



Seq 018: Difference (2.5 Hz - 3.0 Hz) Gained by 15 dB

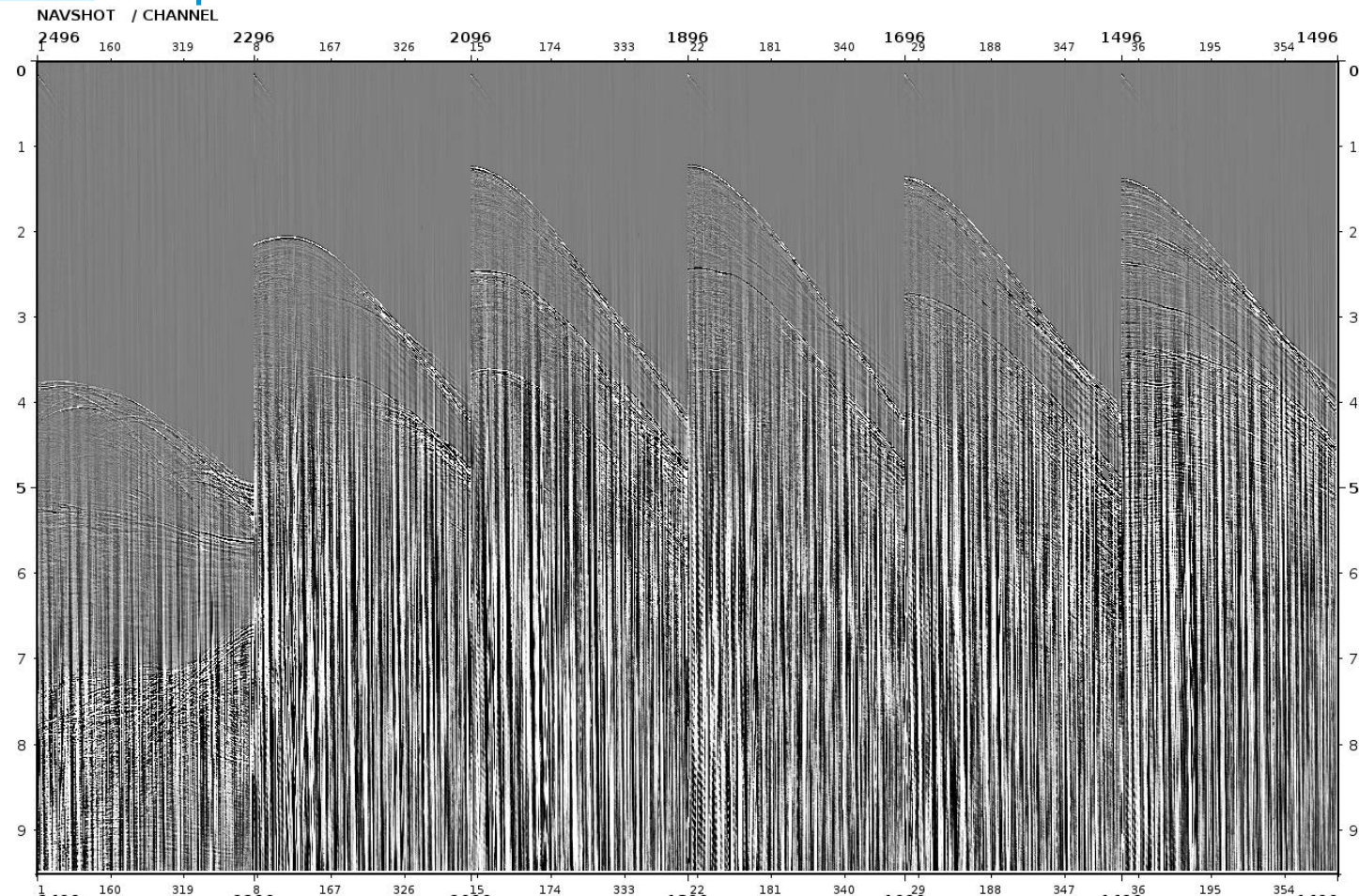
11



- TVS applied for display
- No Sign observed below 3Hz

Seq 039: Selected Shot Gather Before LCF

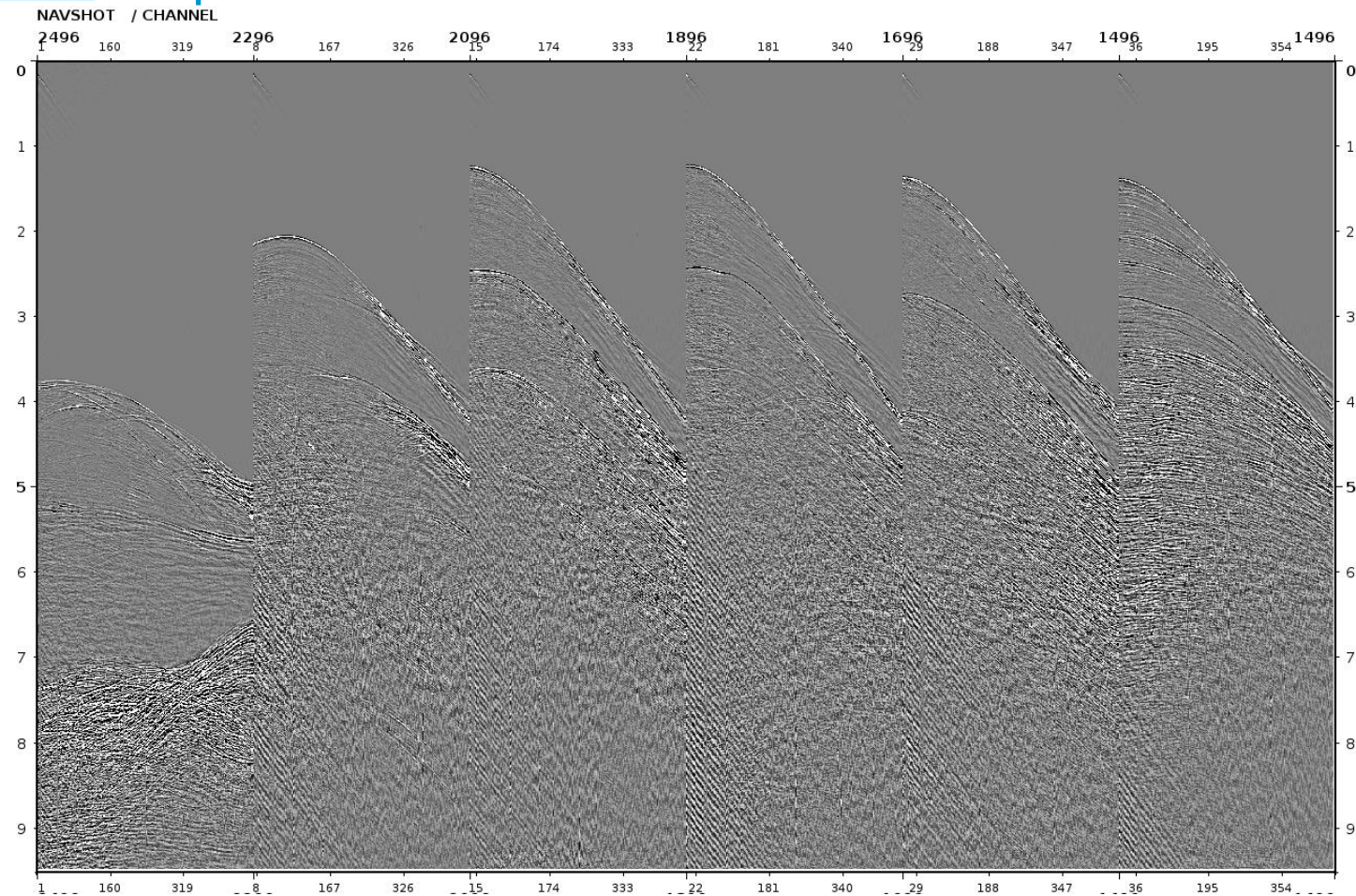
12





Seq 039: Selected Shot Gather After LCF of 2.5 Hz

13

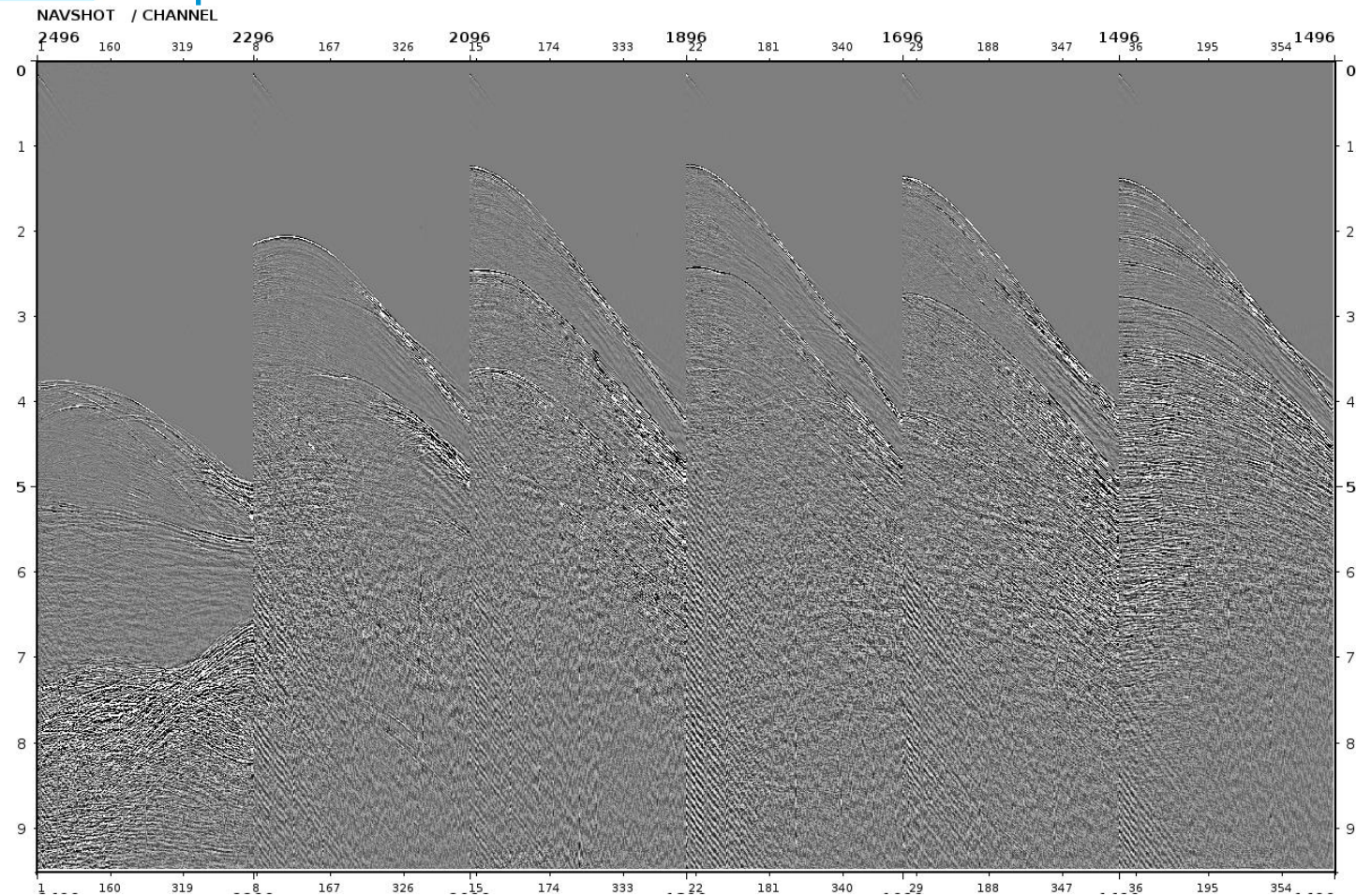


- TVS applied for display



Seq 039: Selected Shot Gather After LCF of 3.0 Hz

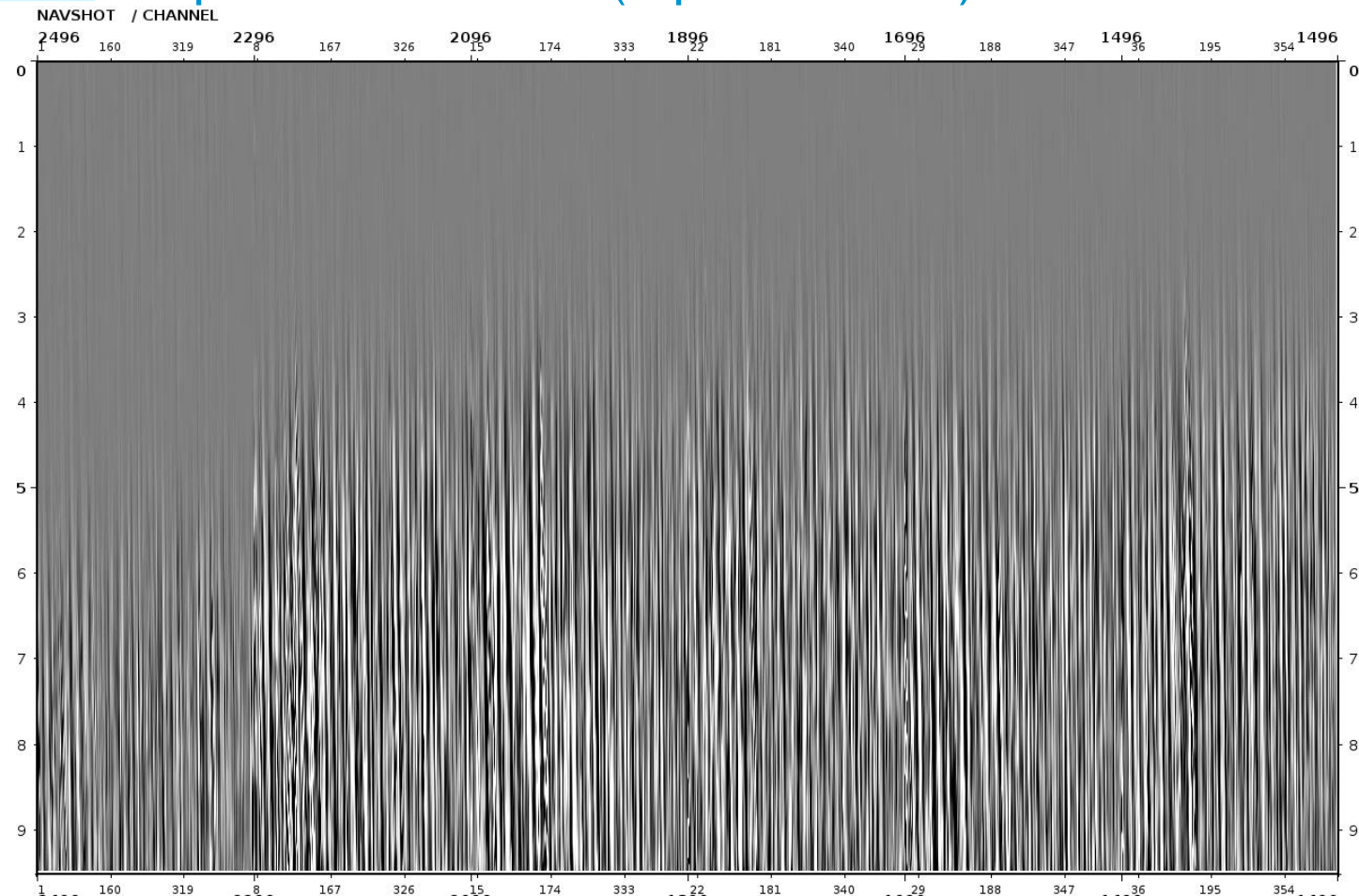
14



- TVS applied for display

Seq 039: Difference (Input - 2.5 Hz)

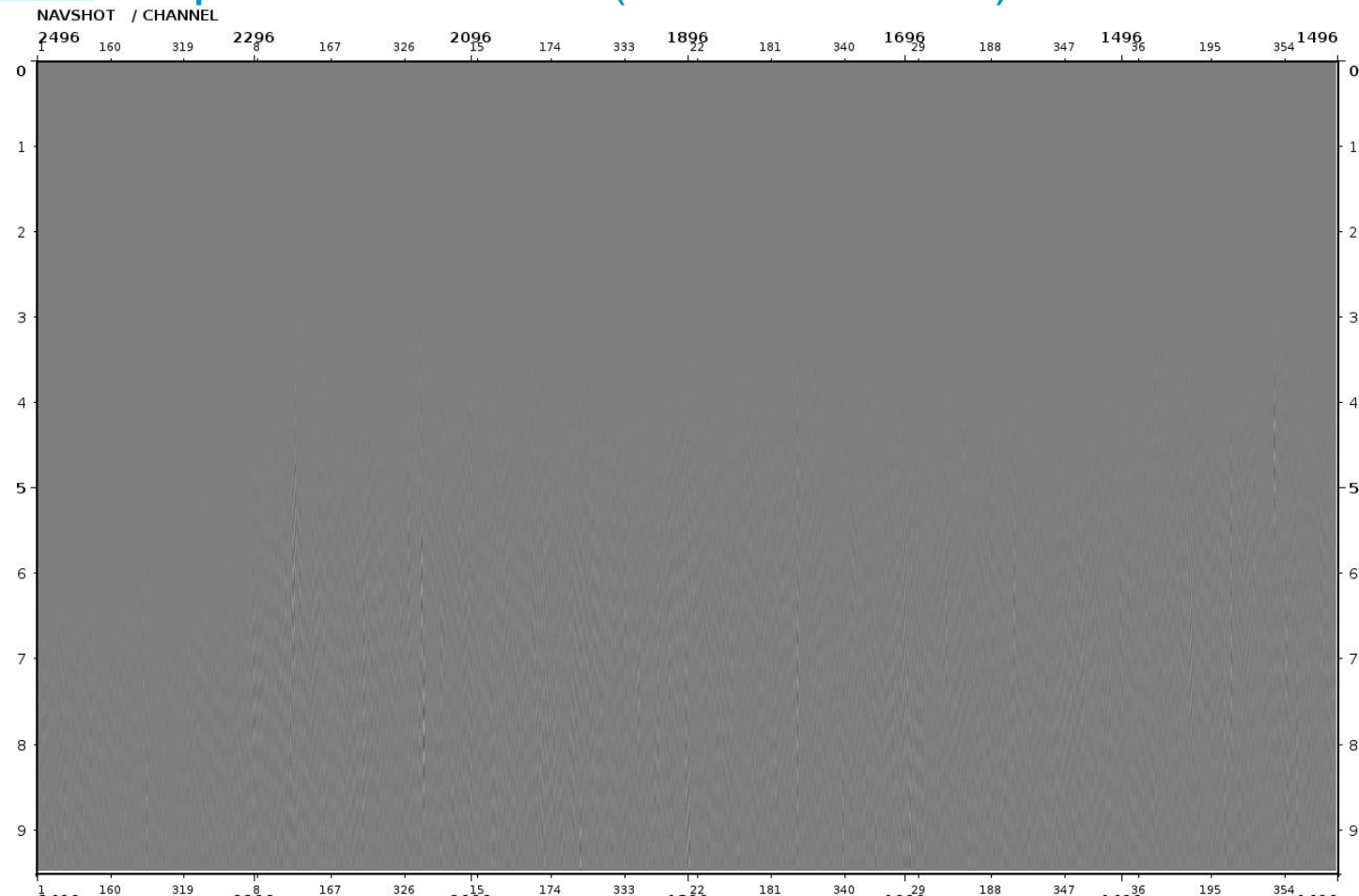
15



- TVS applied for display

Seq 039: Difference (2.5 Hz - 3.0 Hz)

16

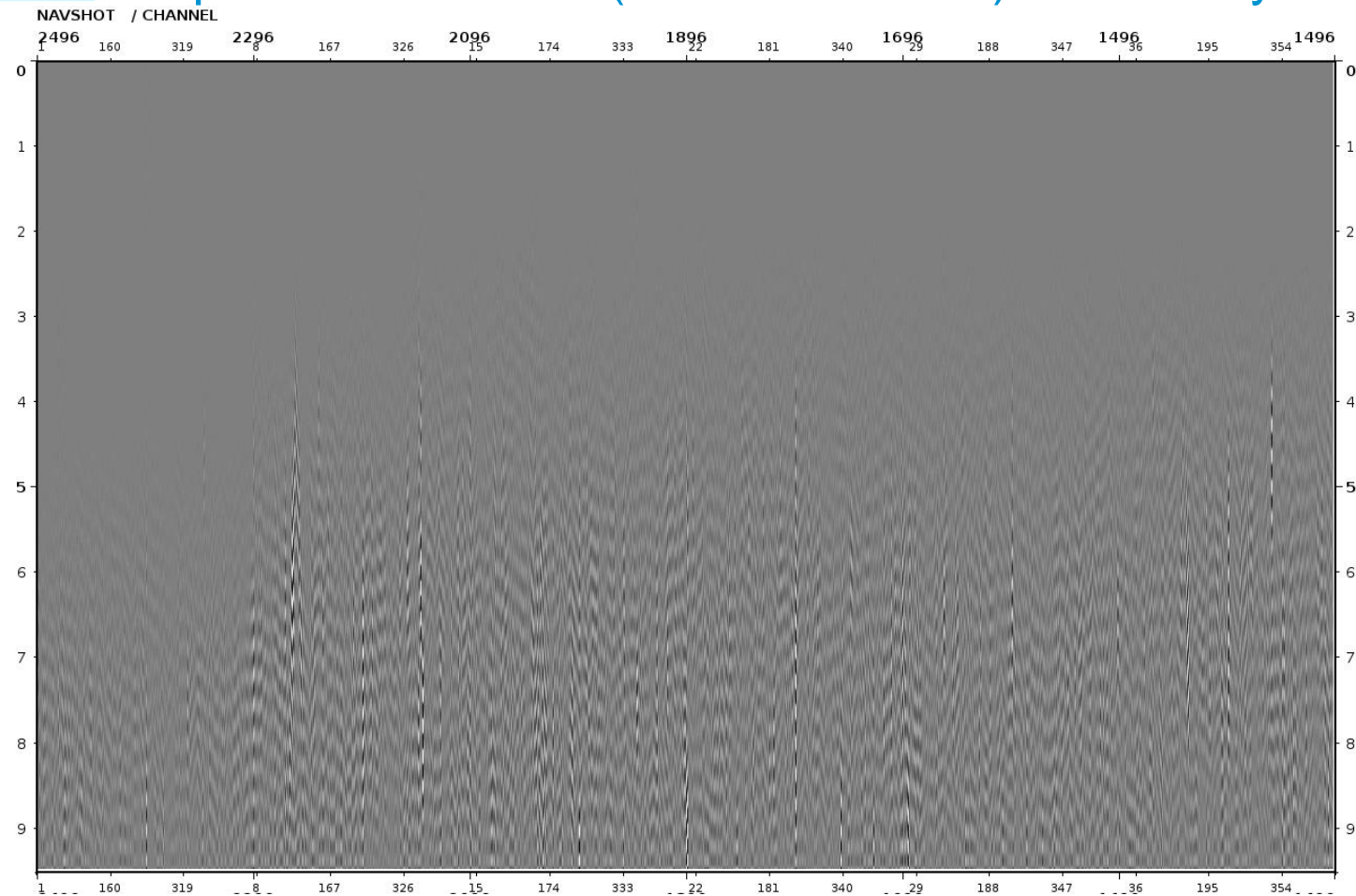


- TVS applied for display
- No Sign observed below 3Hz



Seq 039: Difference (2.5 Hz - 3.0 Hz) Gained by 15 dB

17



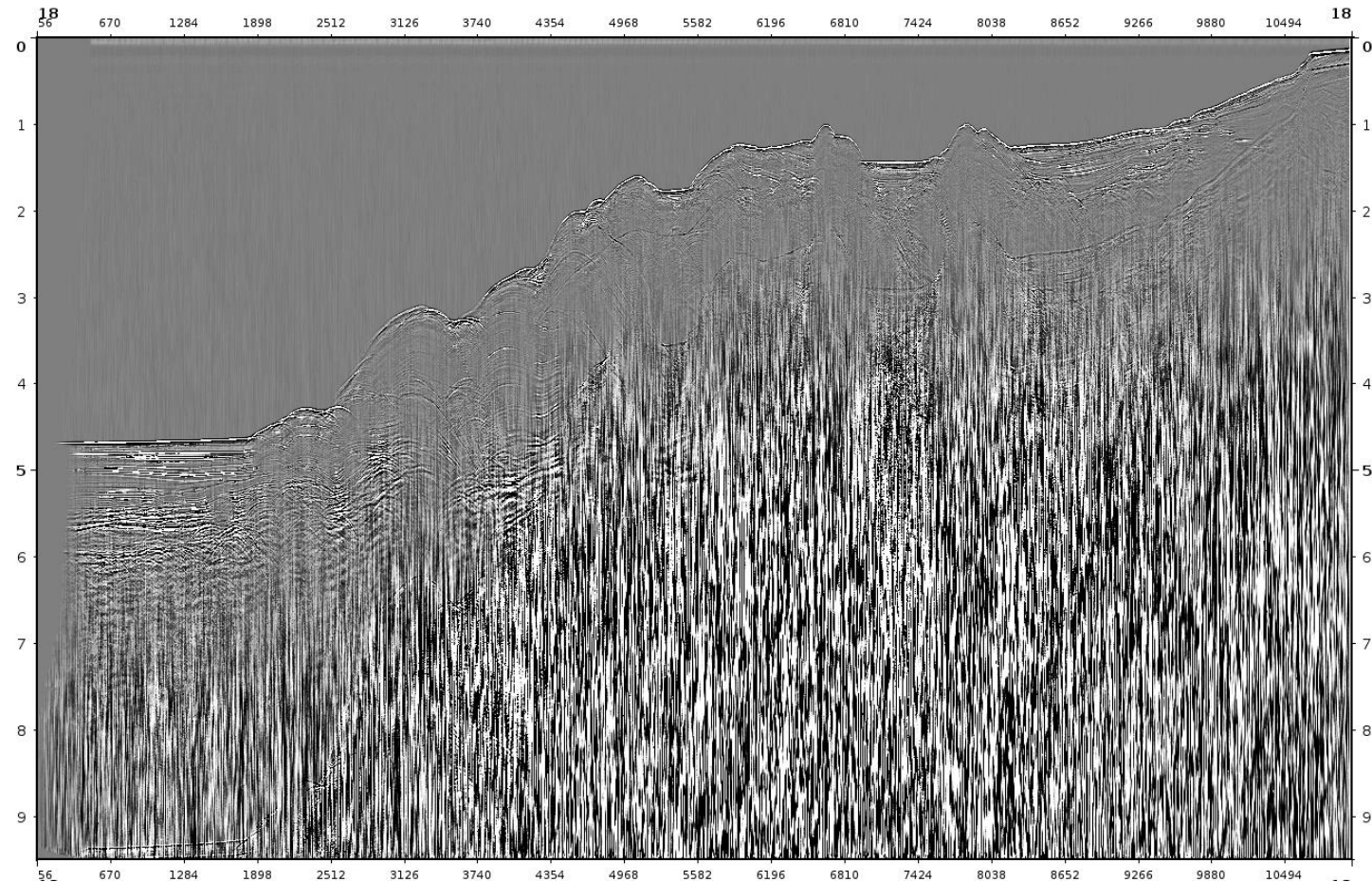
2D Stack



Seq 018: 2D Stack Before LCF

19

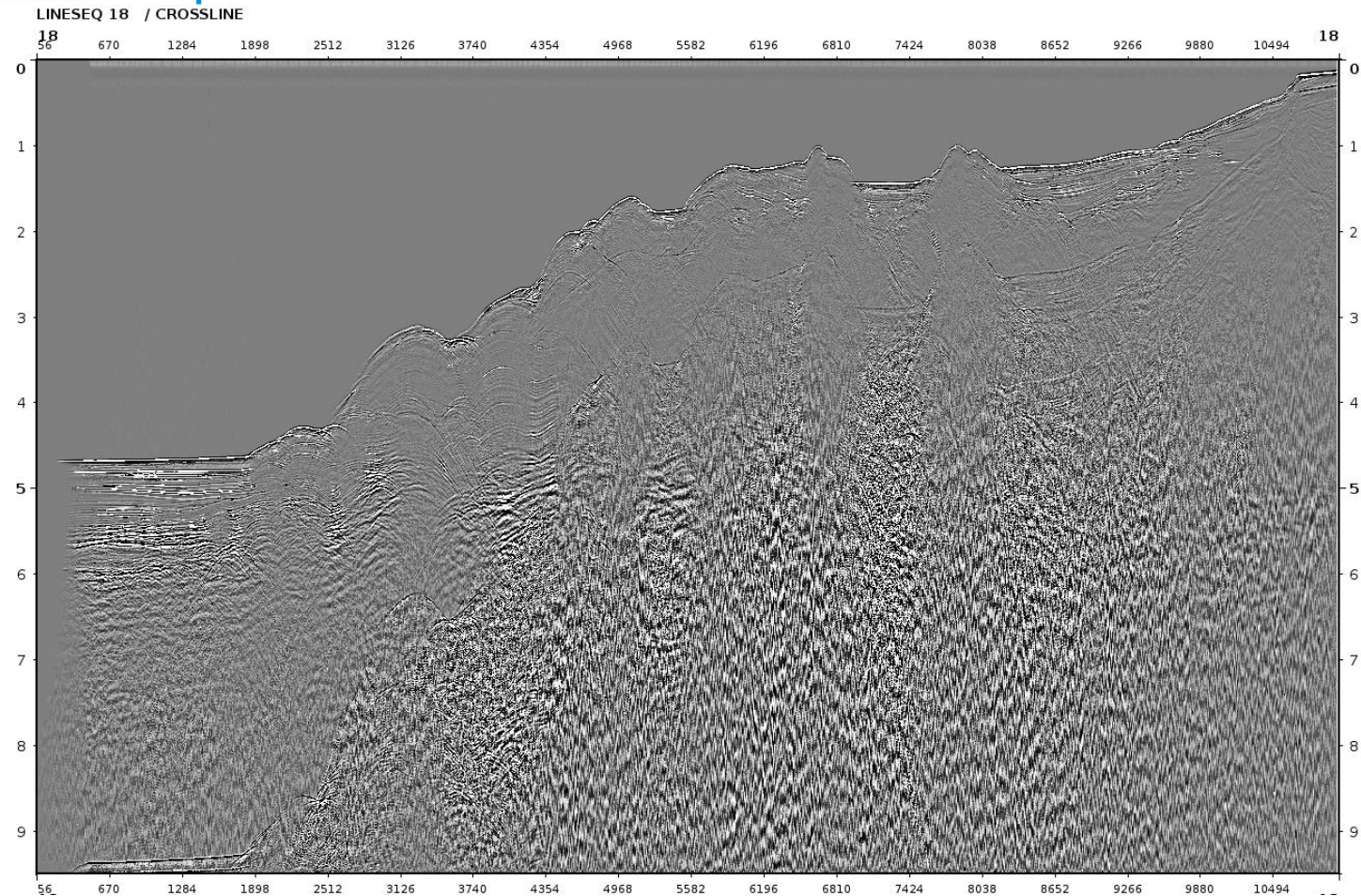
LINESEQ 18 / CROSSLINE



- TVS applied for display

Seq 018: 2D Stack After LCF of 2.5 Hz

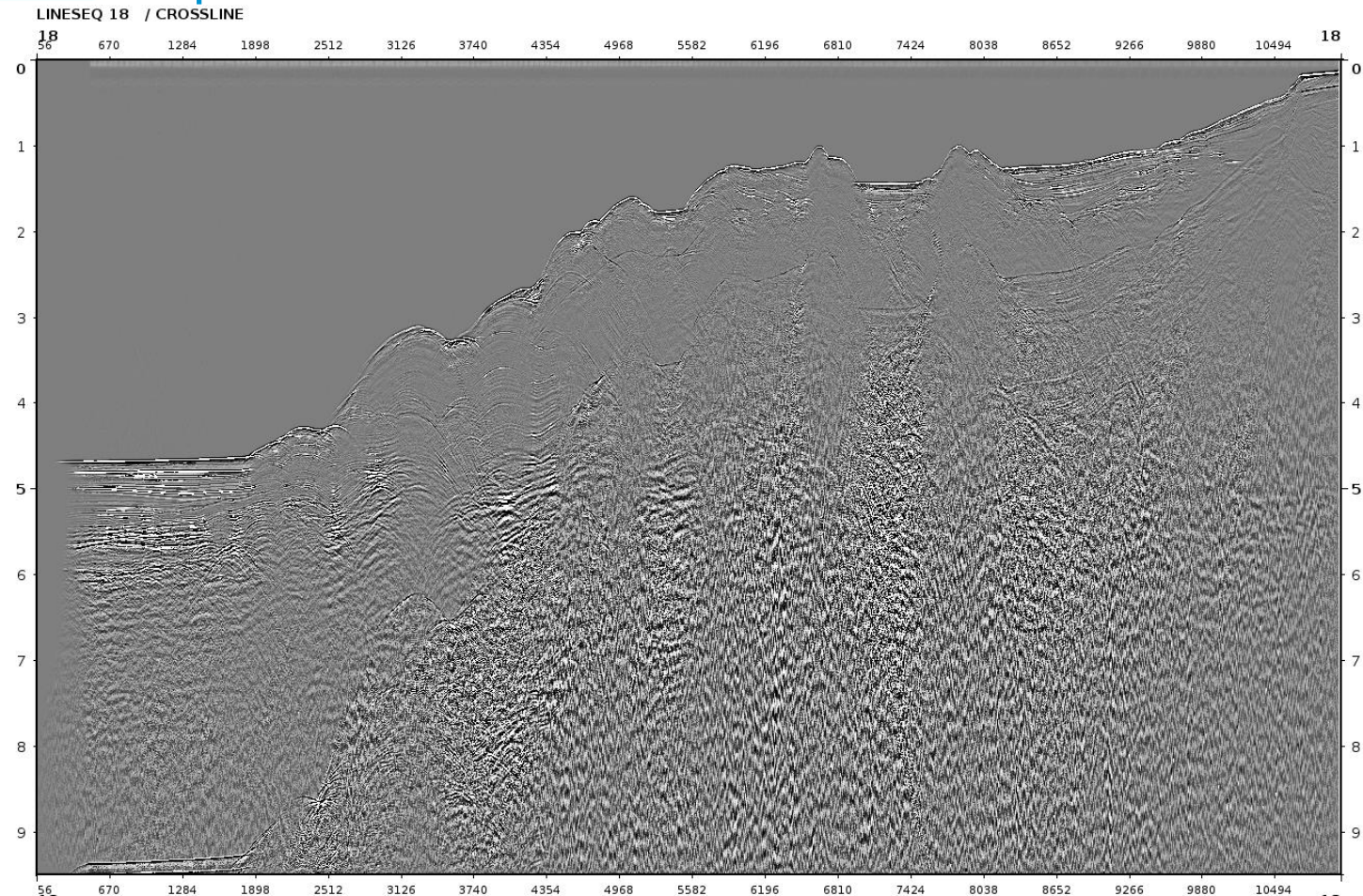
20



- TVS applied for display

Seq 018: 2D Stack After LCF of 3.0 Hz

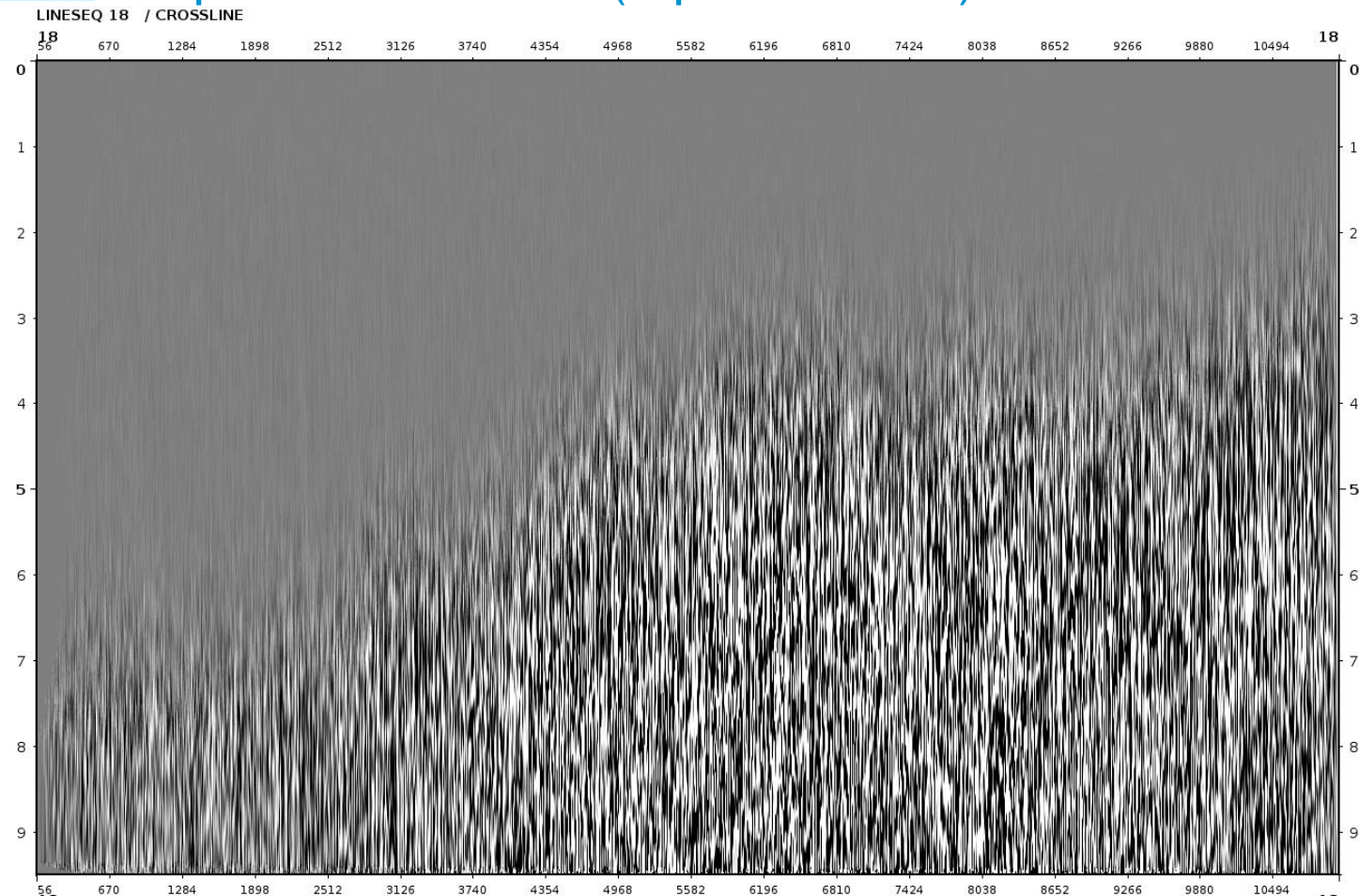
21



- TVS applied for display

Seq 018: Difference (Input - 2.5 Hz)

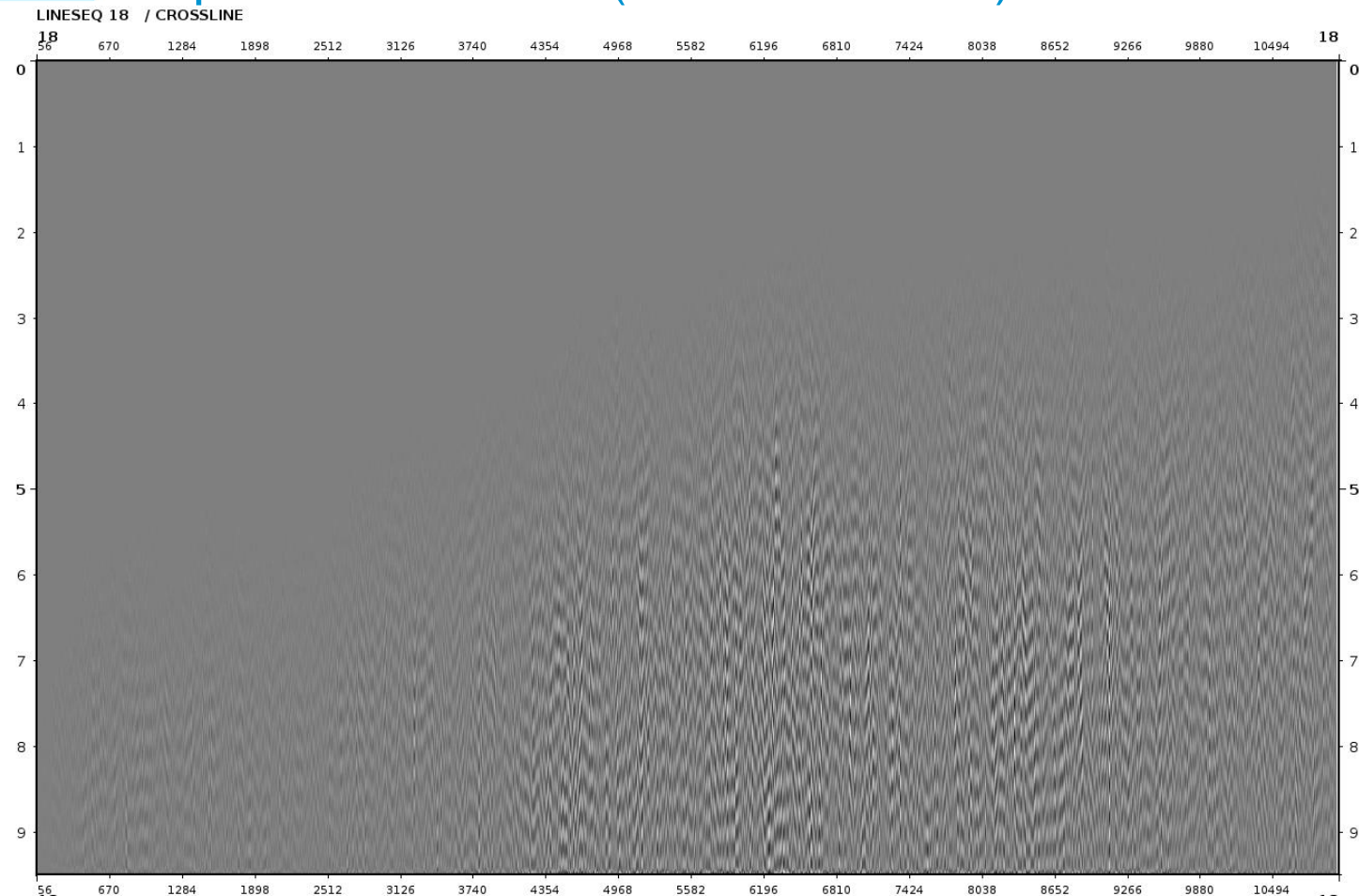
22



- TVS applied for display

Seq 018: Difference (2.5 Hz - 3.0 Hz)

23



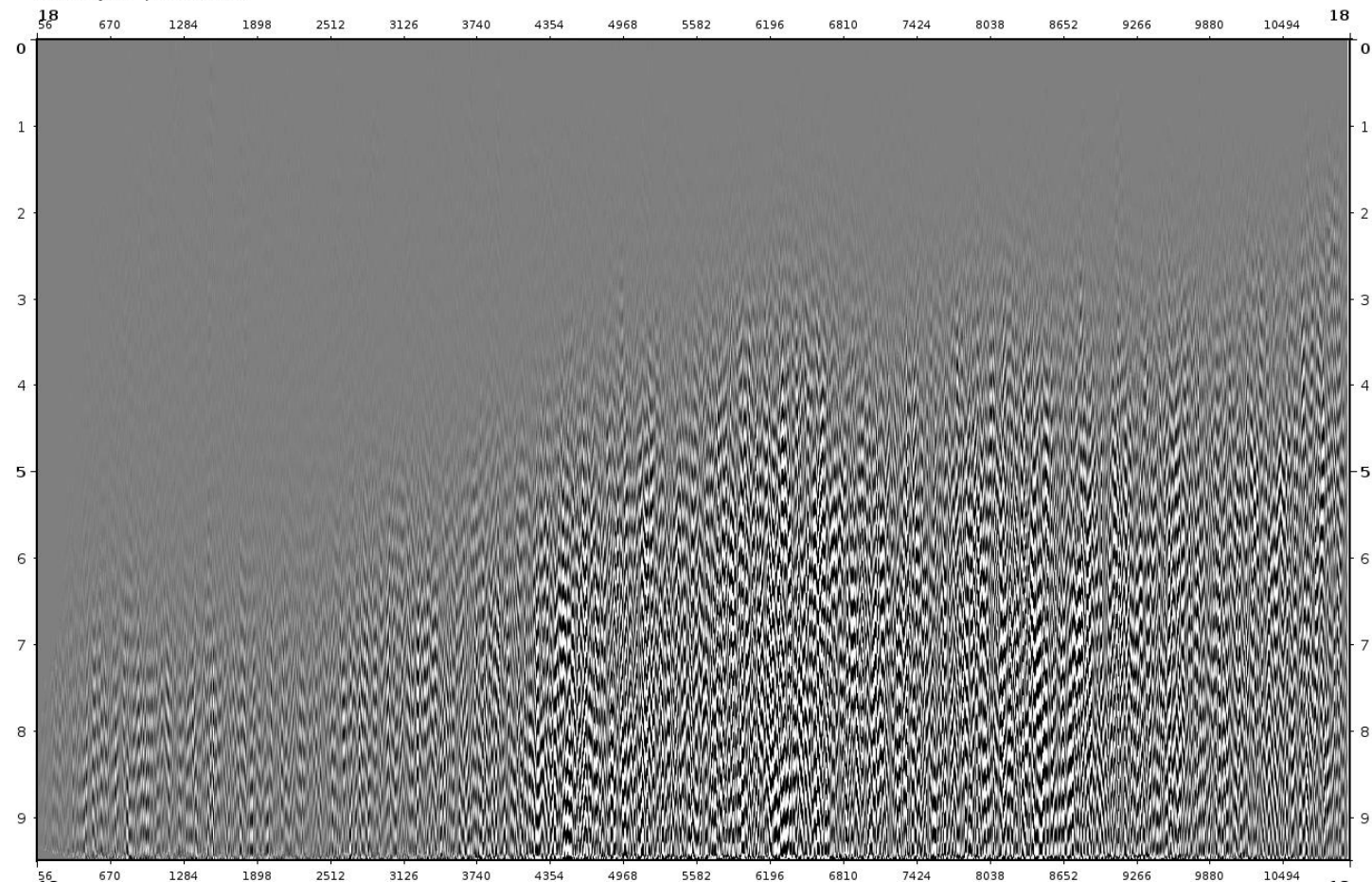
- TVS applied for display
- No Sign observed below 3Hz



Seq 018: Difference (2.5 Hz - 3.0 Hz) Gained by 15 dB

24

LINESEQ 18 / CROSSLINE



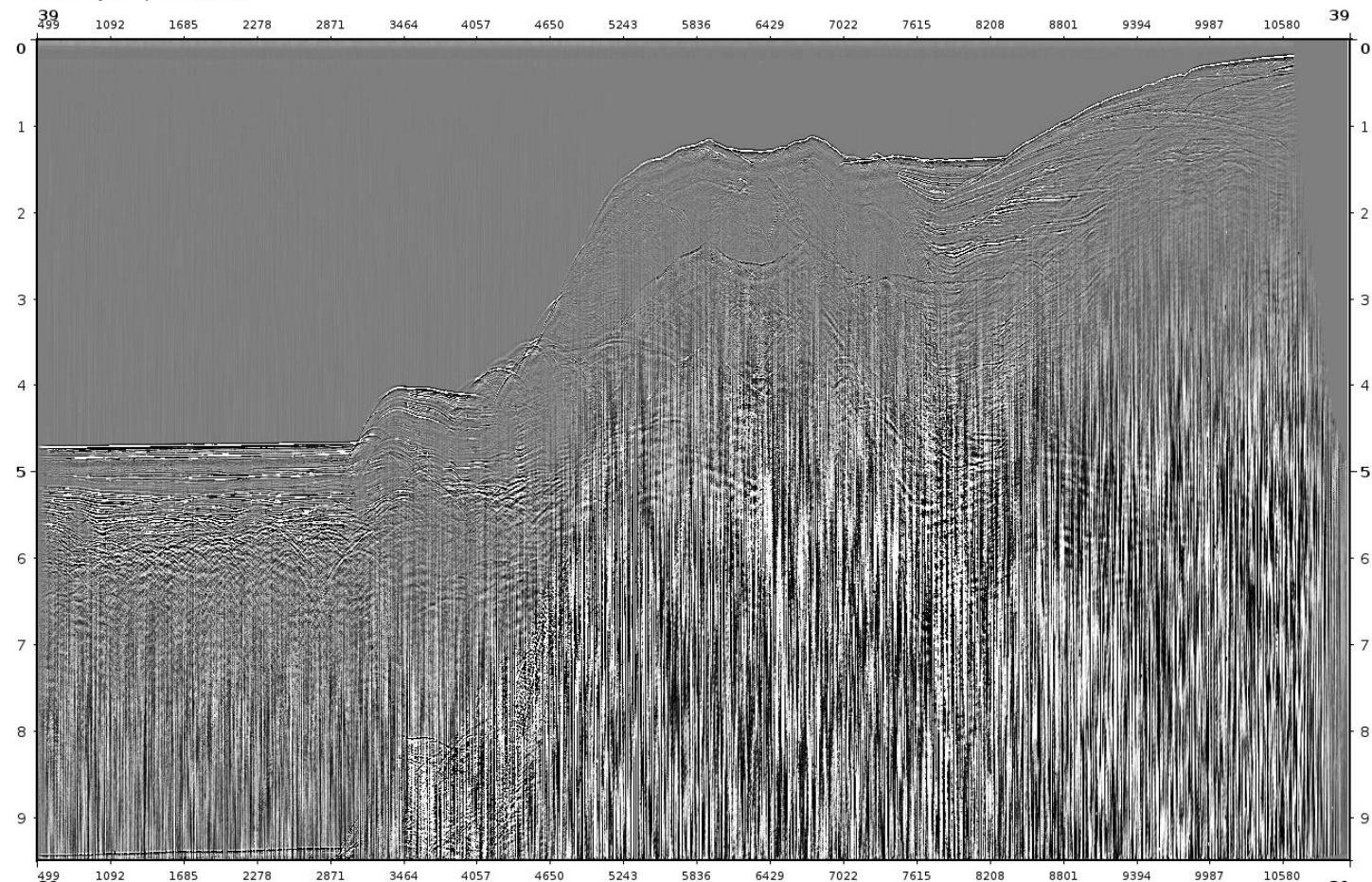
- TVS applied for display
- No Sign observed below 3Hz



Seq 039: 2D Stack Before LCF

25

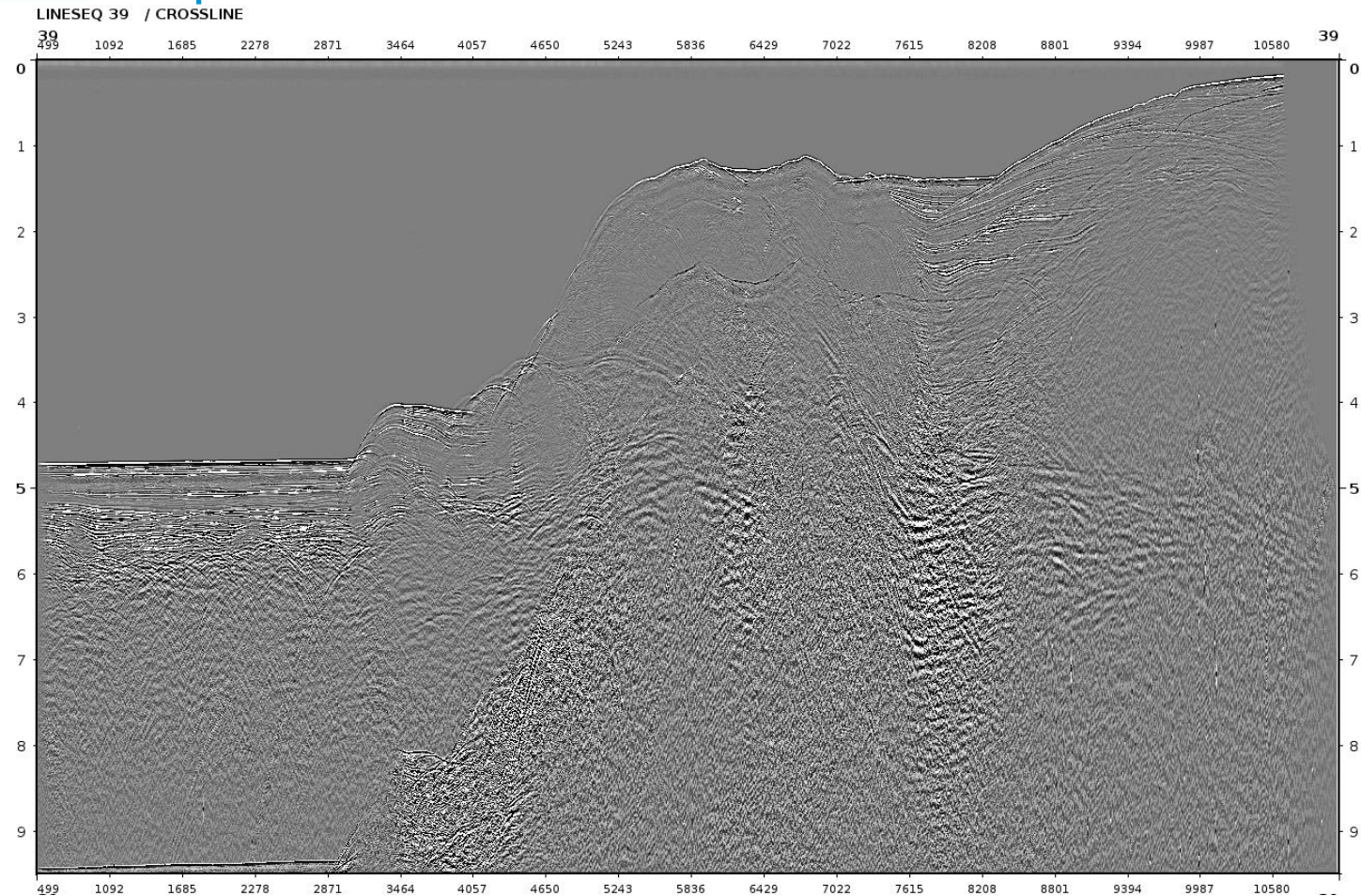
LINESEQ 39 / CROSSLINE



- TVS applied for display

Seq 039: 2D Stack After LCF of 2.5 Hz

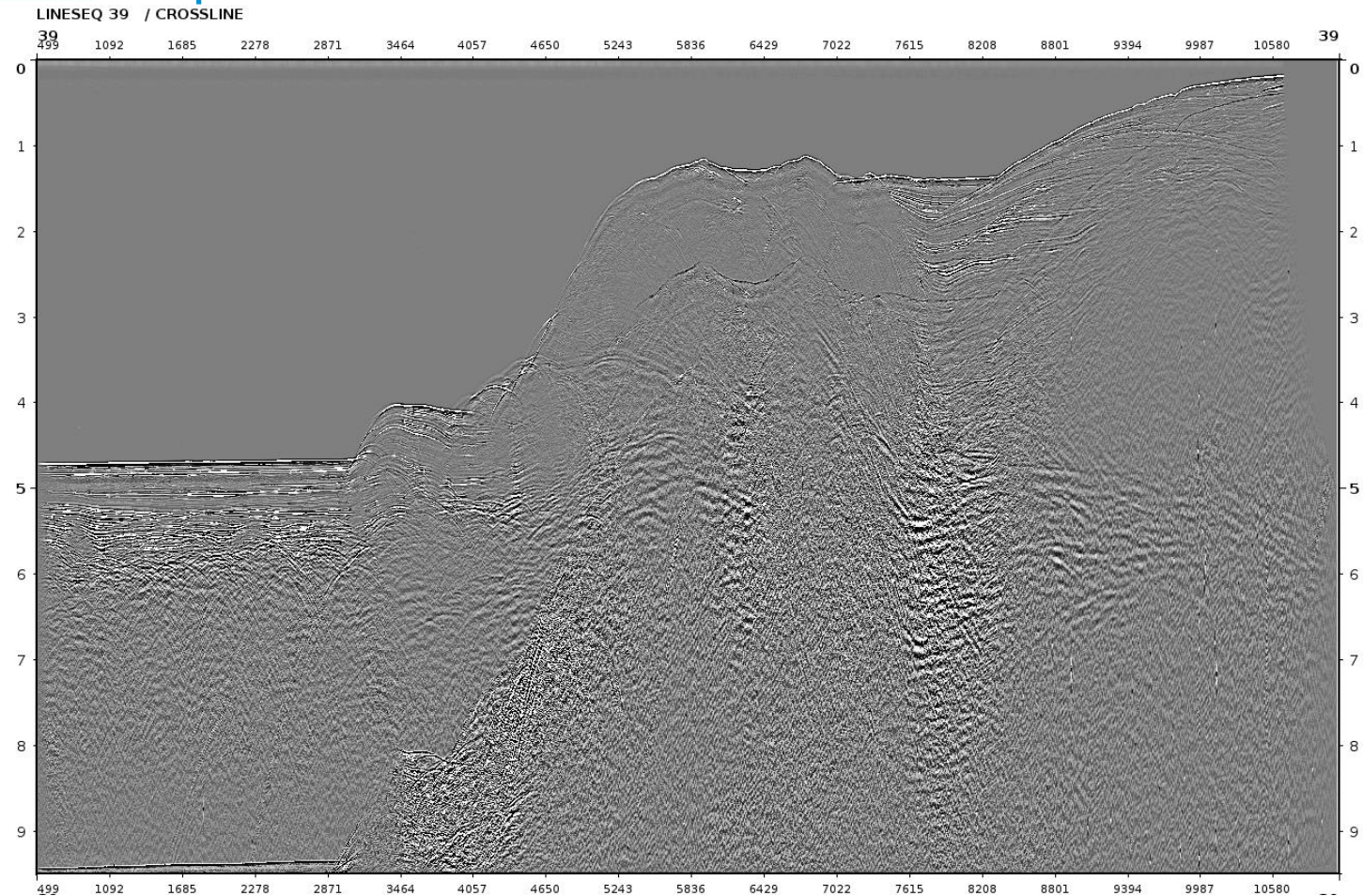
26



- TVS applied for display

Seq 039: 2D Stack After LCF of 3.0 Hz

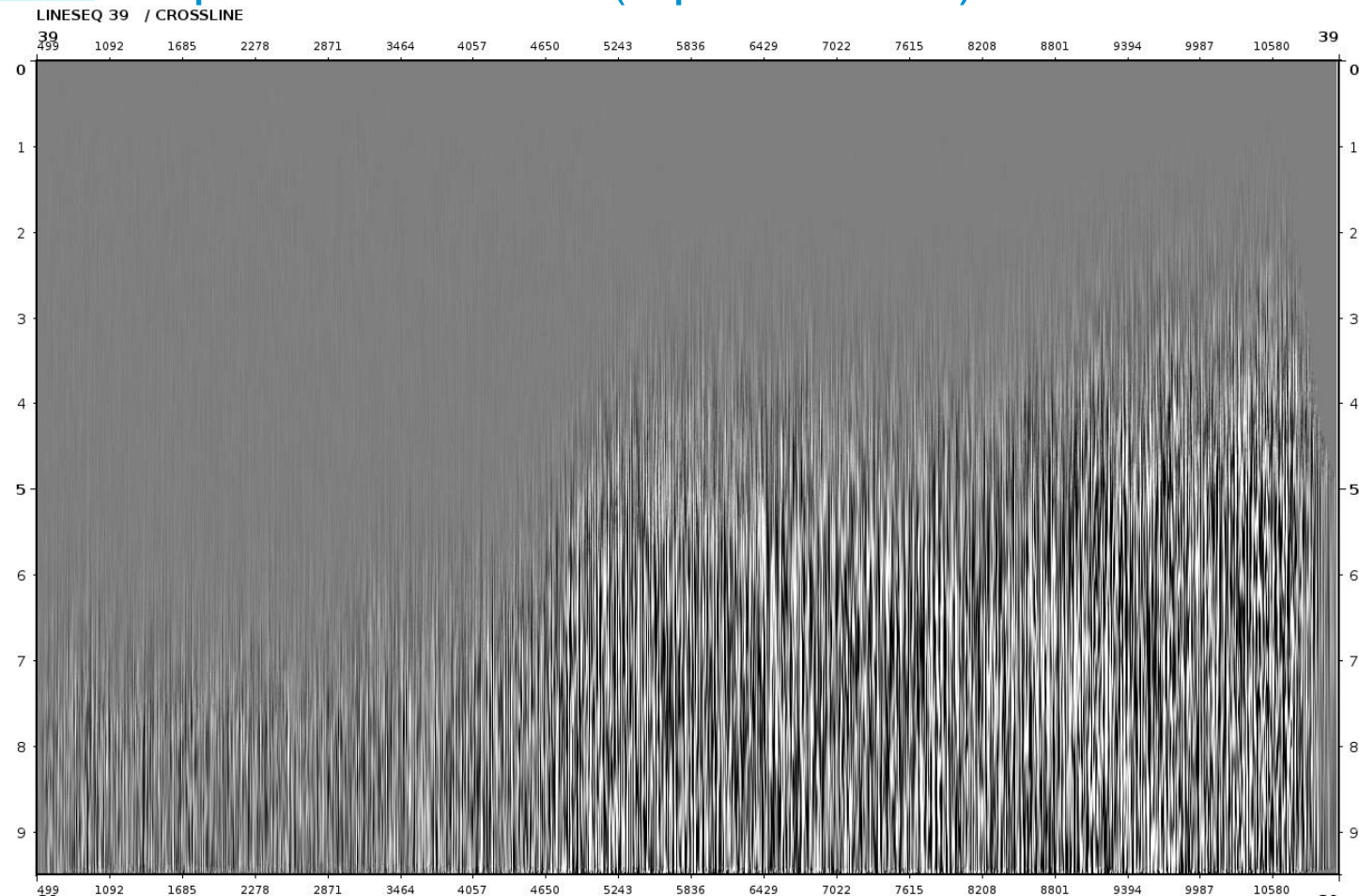
27



- TVS applied for display

Seq 039: Difference (Input - 2.5 Hz)

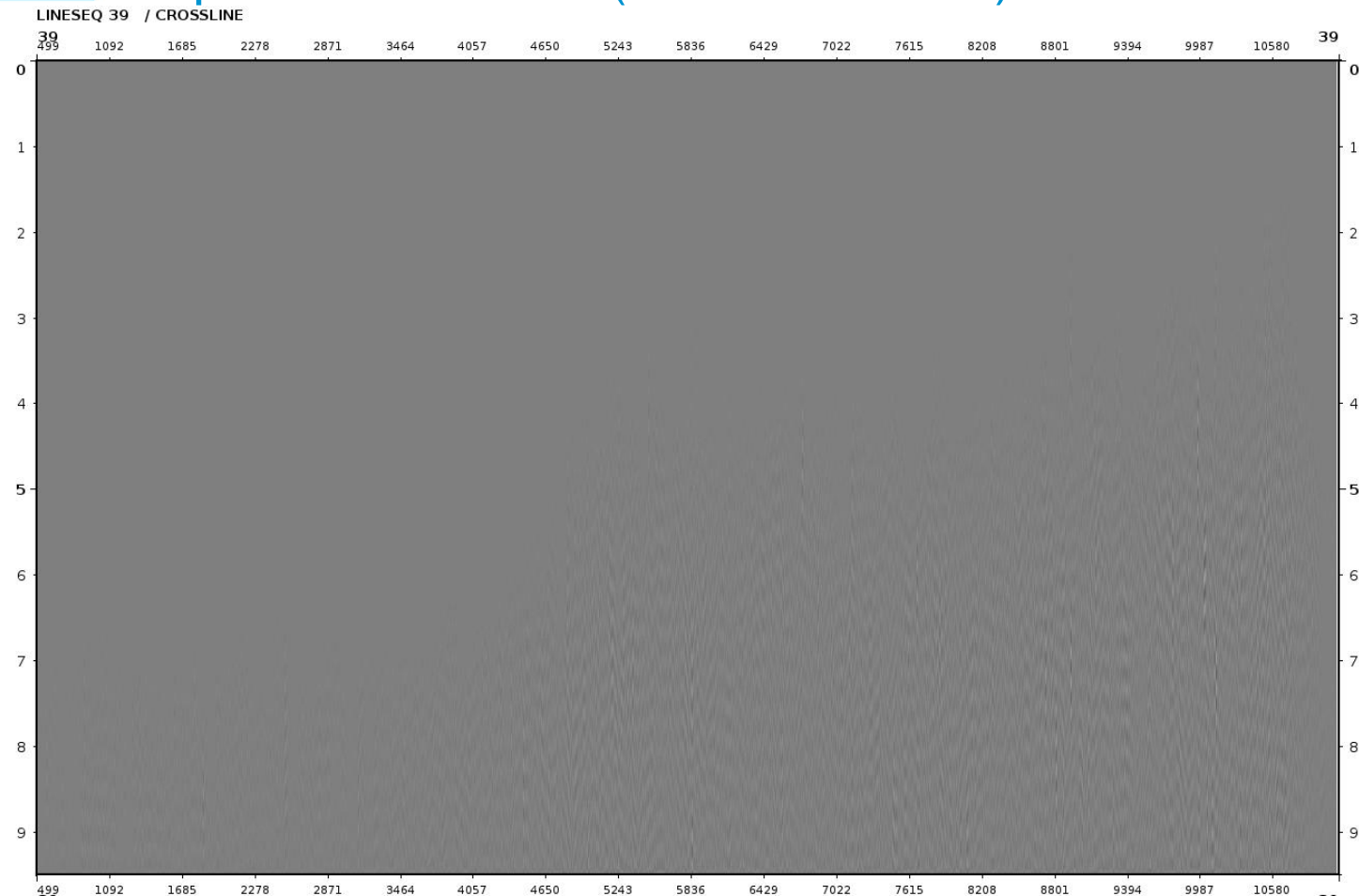
28



- TVS applied for display

Seq 039: Difference (2.5 Hz - 3.0 Hz)

29



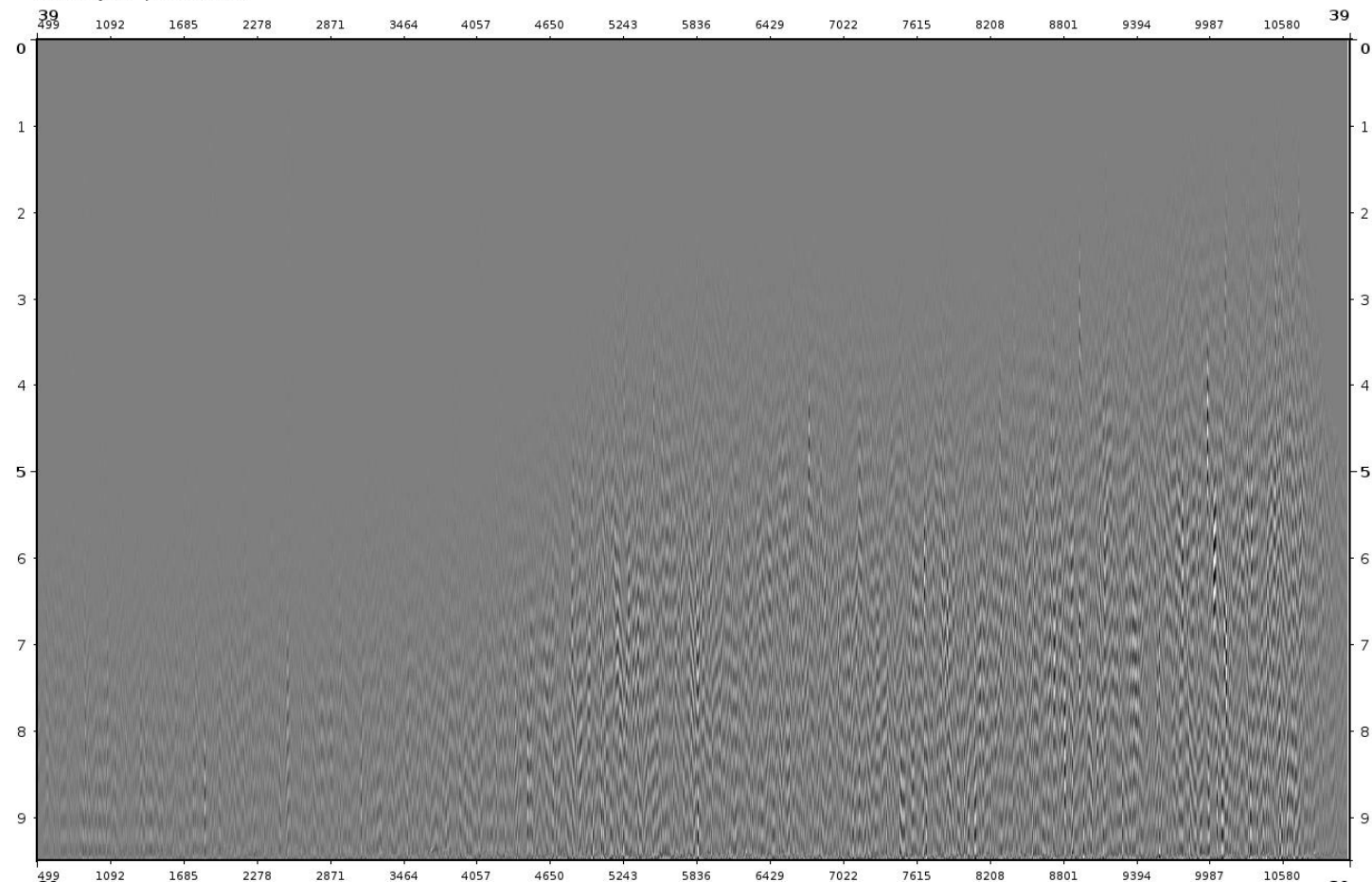
- TVS applied for display
- No Sign observed below 3Hz



Seq 039: Difference (2.5 Hz - 3.0 Hz) Gained by 15 dB

30

LINESEQ 39 / CROSSLINE



- TVS applied for display
- No Sign observed below 3Hz