



# Receiver Motion Correction Test

## NZ 3D Processing

*28 October 2020*

[cgg.com](http://cgg.com)



INSTITUTE FOR GEOPHYSICS



Passion for Geoscience



1. Convert to CGG internal format
2. Nav merge / trace edit
3. Low cut filter
4. Time Variant Scaling (TVS) & Resample to 4ms
5. Swell noise attenuation (SNA)
6. Debubble
7. Linear noise attenuation (LNA)
8. Tidal statics correction
9. Water column statics correction
10. Shot & channel scaling
11. Receiver motion correction (RMC)

- **Objective:**

To remove the time difference caused by receiver movement during data acquisition.

- **Procedure:**

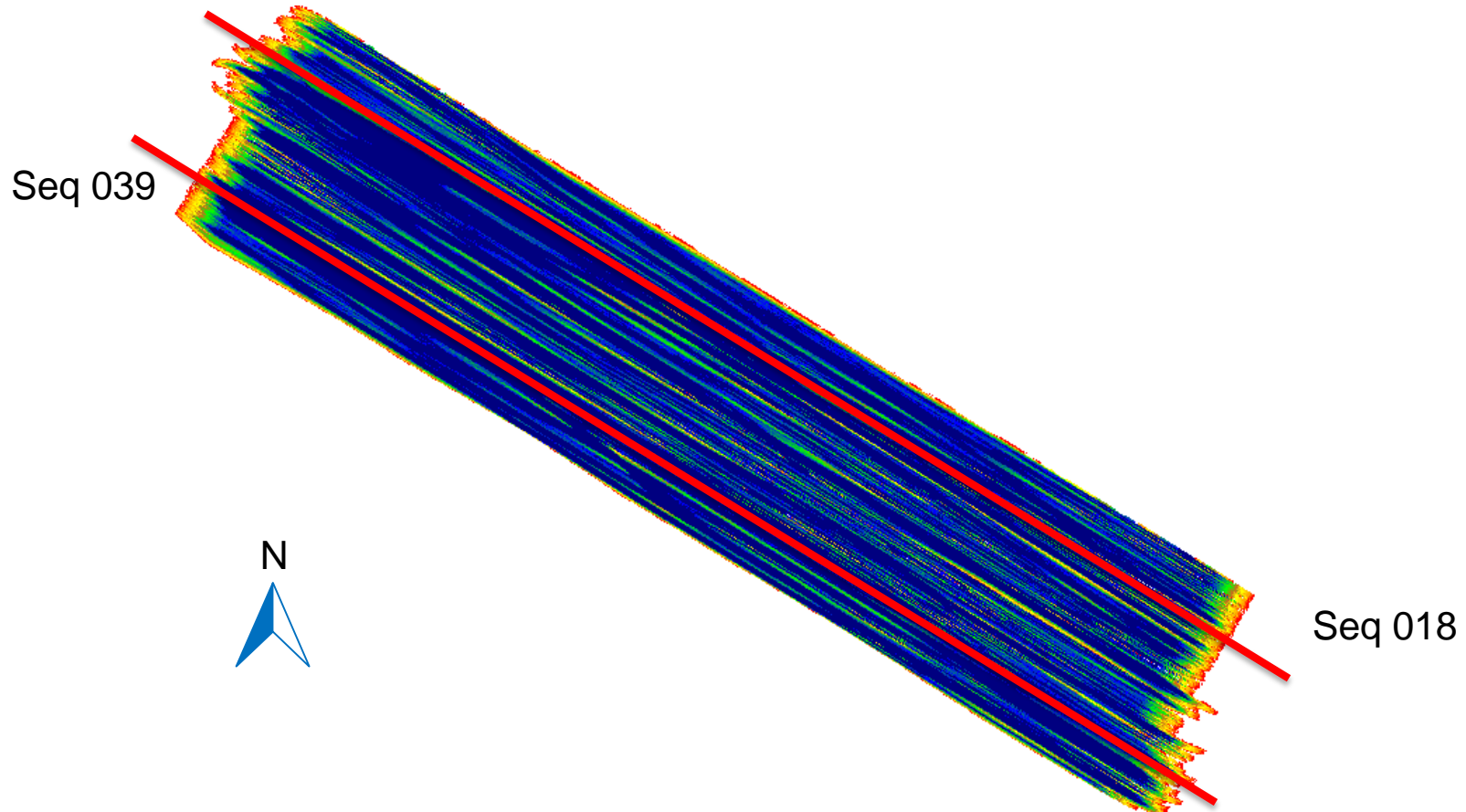
- This is accomplished by applying a time-variant spatial shift related to the boat speed in Tau-P domain.
- The correction is a lateral shift in offset towards smaller offset.

- **Display:**

Selected shot gathers (zoom in shallow), wiggle traces display and stack.

- **Observation and Recommendation:**

The traces were repositioned to compensate the effect of receiver motion. Hence, it is recommended for production.



# Shot gathers wiggle traces display

– zoom in shallow

Seq 018

Seq 039



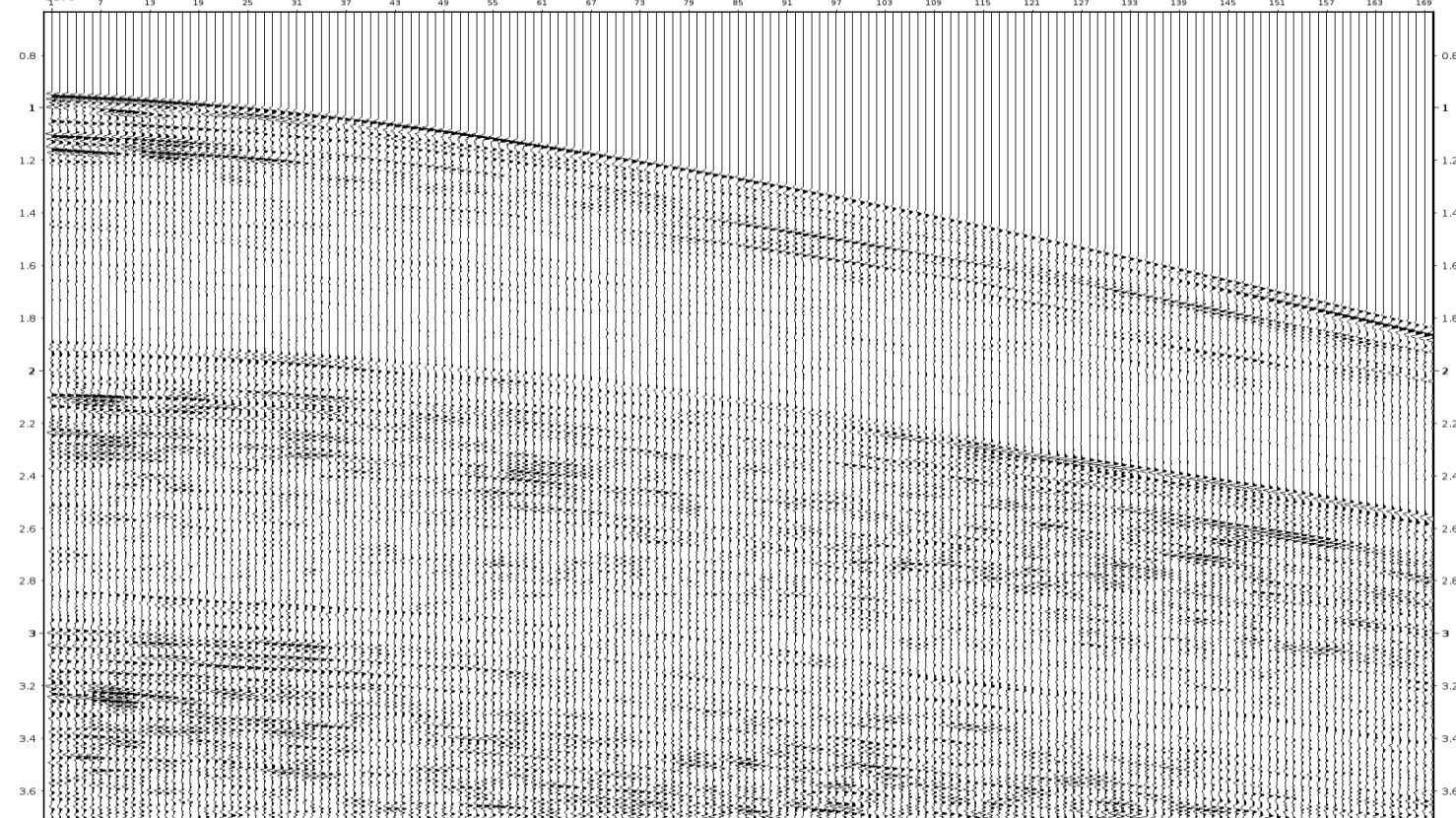
# Seq018 Shot Gather before RMC (zoom in shallow)

6

Boat speed  $\approx 2.203$  m/s

NAVSHOT 3179 / CABTR

3179



■ Boat speed for this shot is around 2.203 m/s

■ After correction, traces are horizontally shifted towards near offsets.

■ The receiver motion effects is more visible in deeper part.

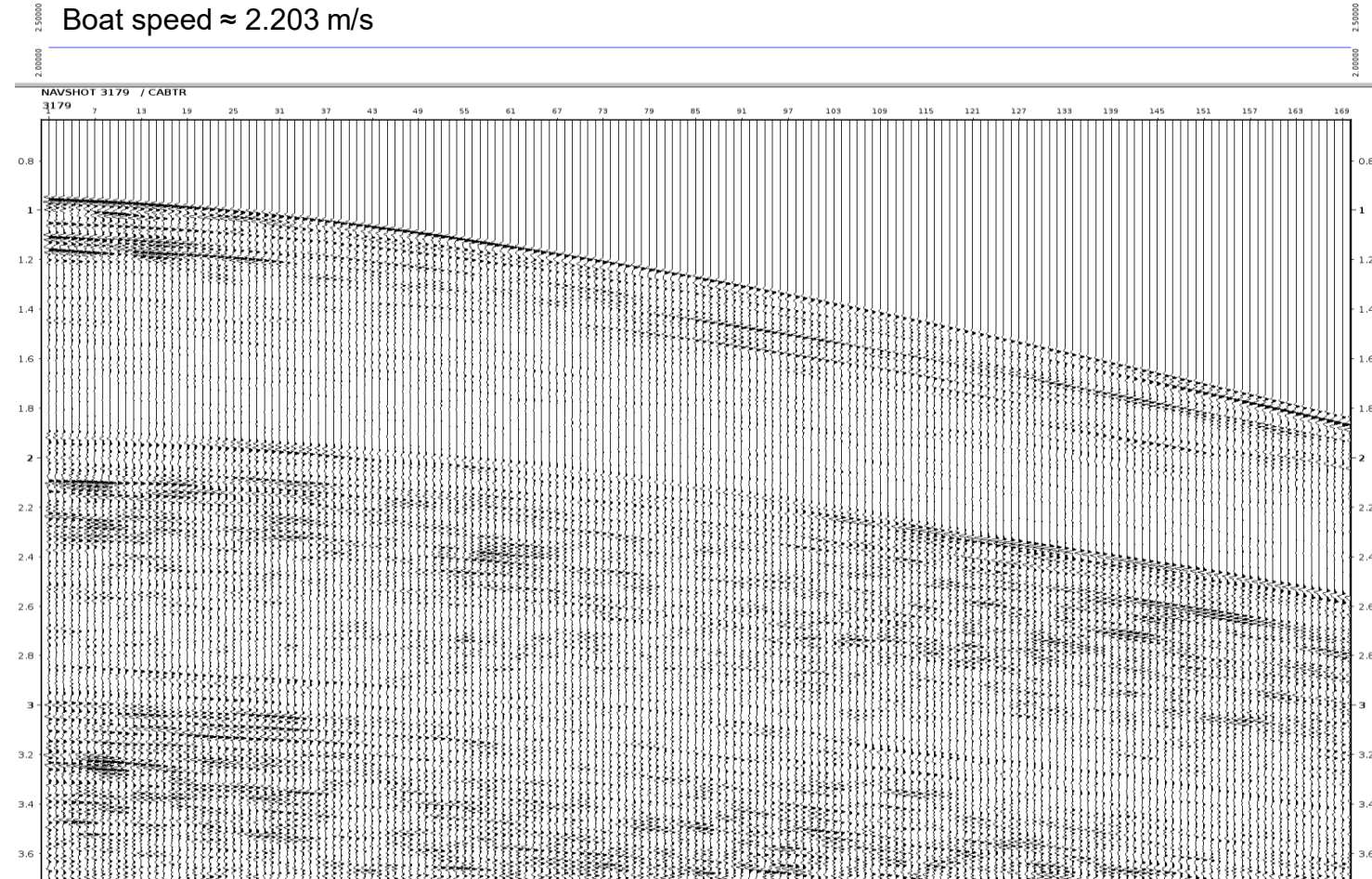




# Seq018 Shot Gather **after** RMC (zoom in shallow)

7

Boat speed  $\approx 2.203$  m/s

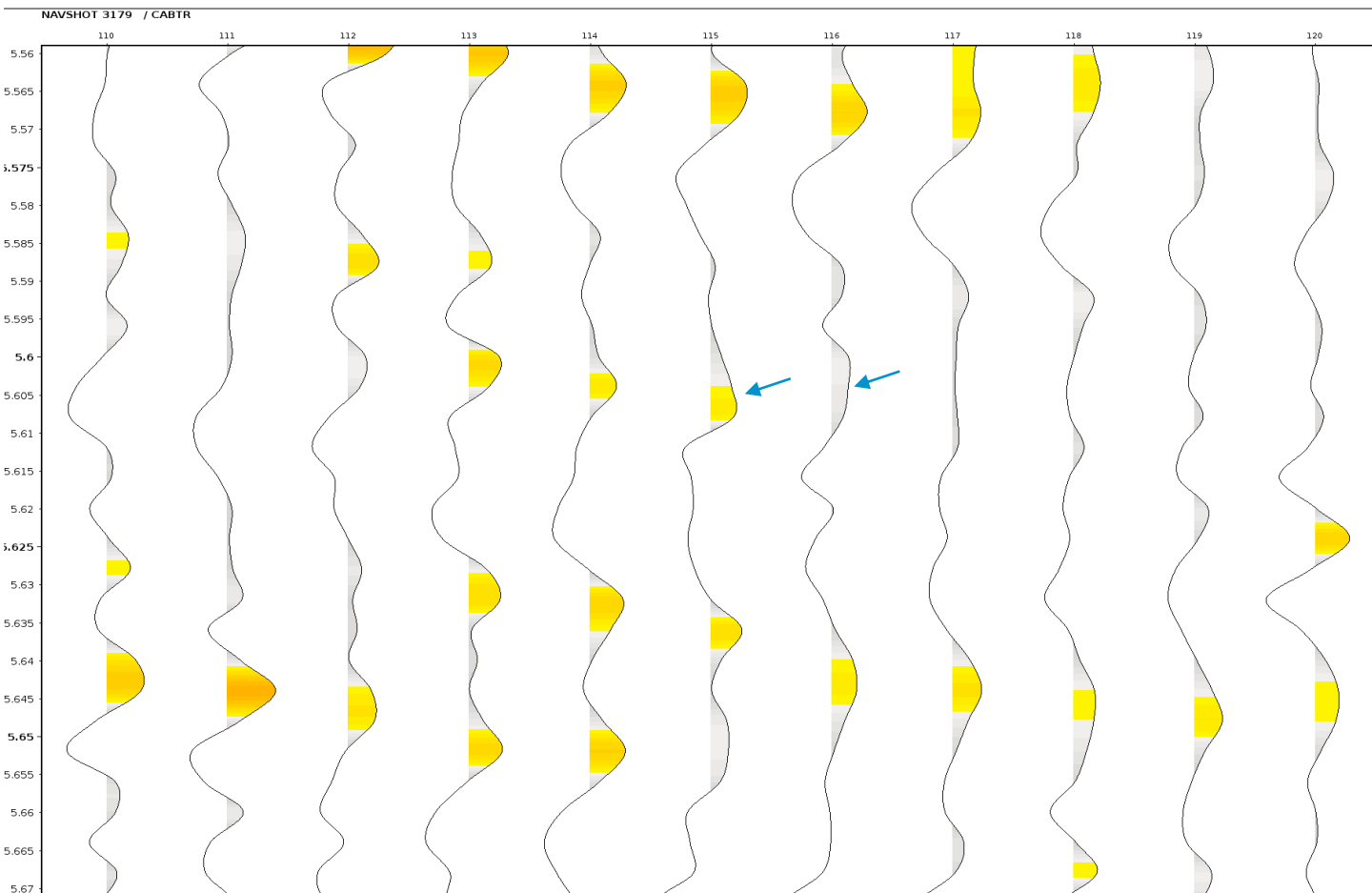


- Boat speed for this shot is around 2.203 m/s
- After correction, traces are horizontally shifted towards near offsets.
- The receiver motion effects is more visible in deeper part.



# Seq018 Shot Gather before RMC (zoom in @ 5.6ms)

8

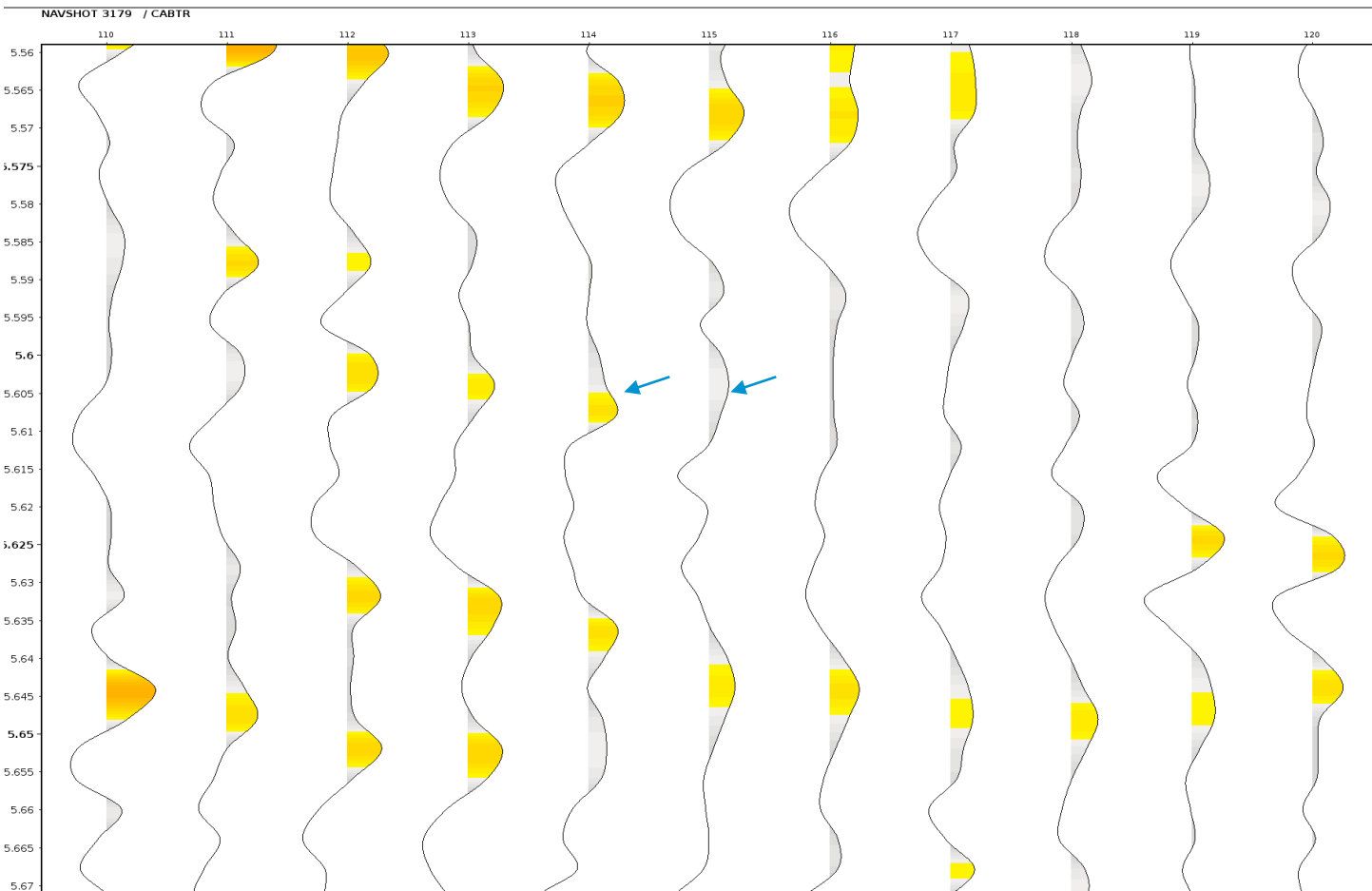


- At time  $t \approx 5.6$  seconds = 12.5 meter (channel interval) / 2.203 meter per second (boat speed), the wavelet signal will shift 1 trace toward the shot location.





# Seq018 Shot Gather after RMC (zoom in @ 5.6ms)

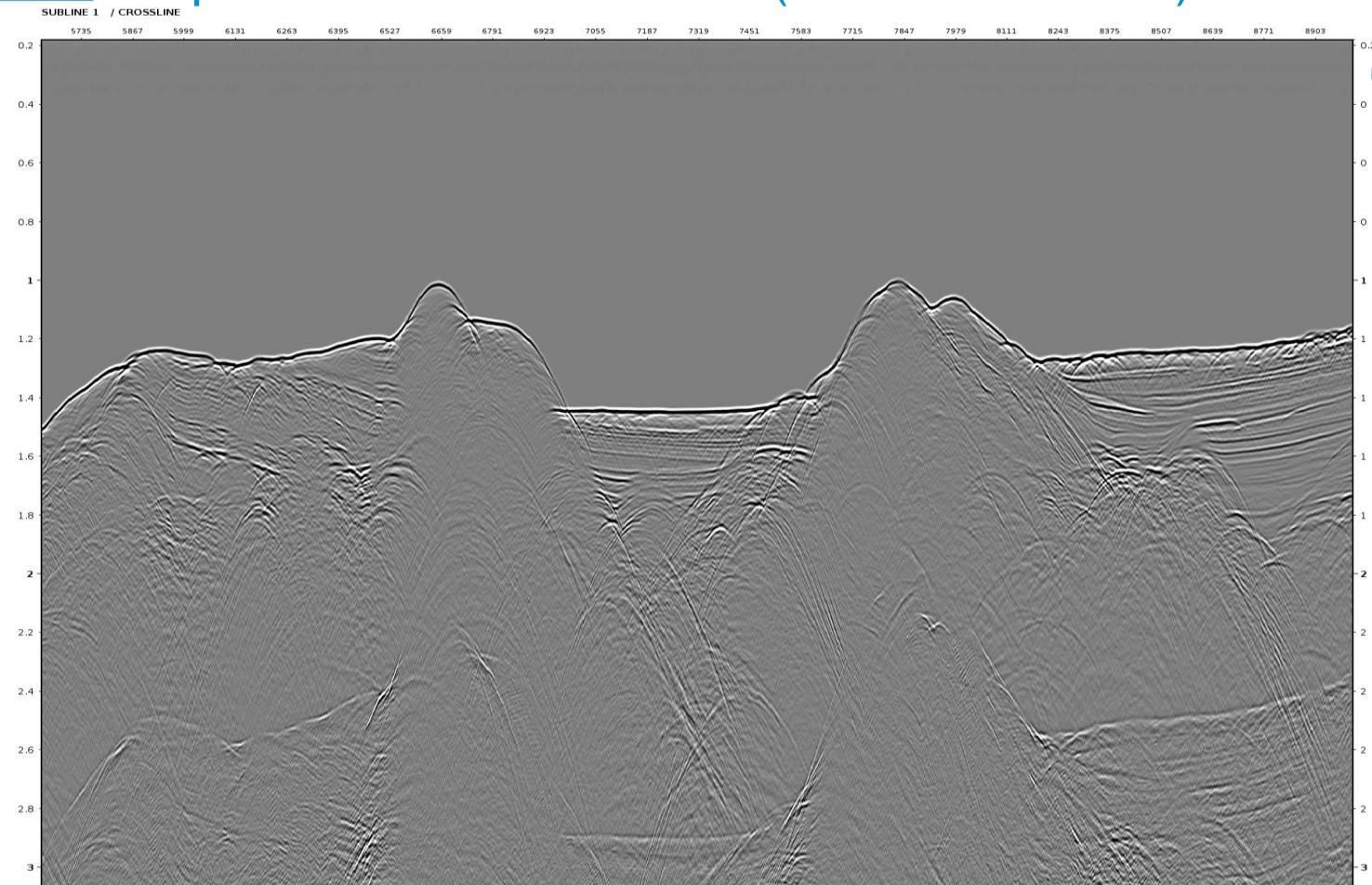


- At time  $t \approx 5.6$  seconds = 12.5 meter (channel interval) / 2.203 meter per second (boat speed), the wavelet signal will shift 1 trace toward the shot location.



# Seq018 Stack before RMC (zoom in shallow)

10

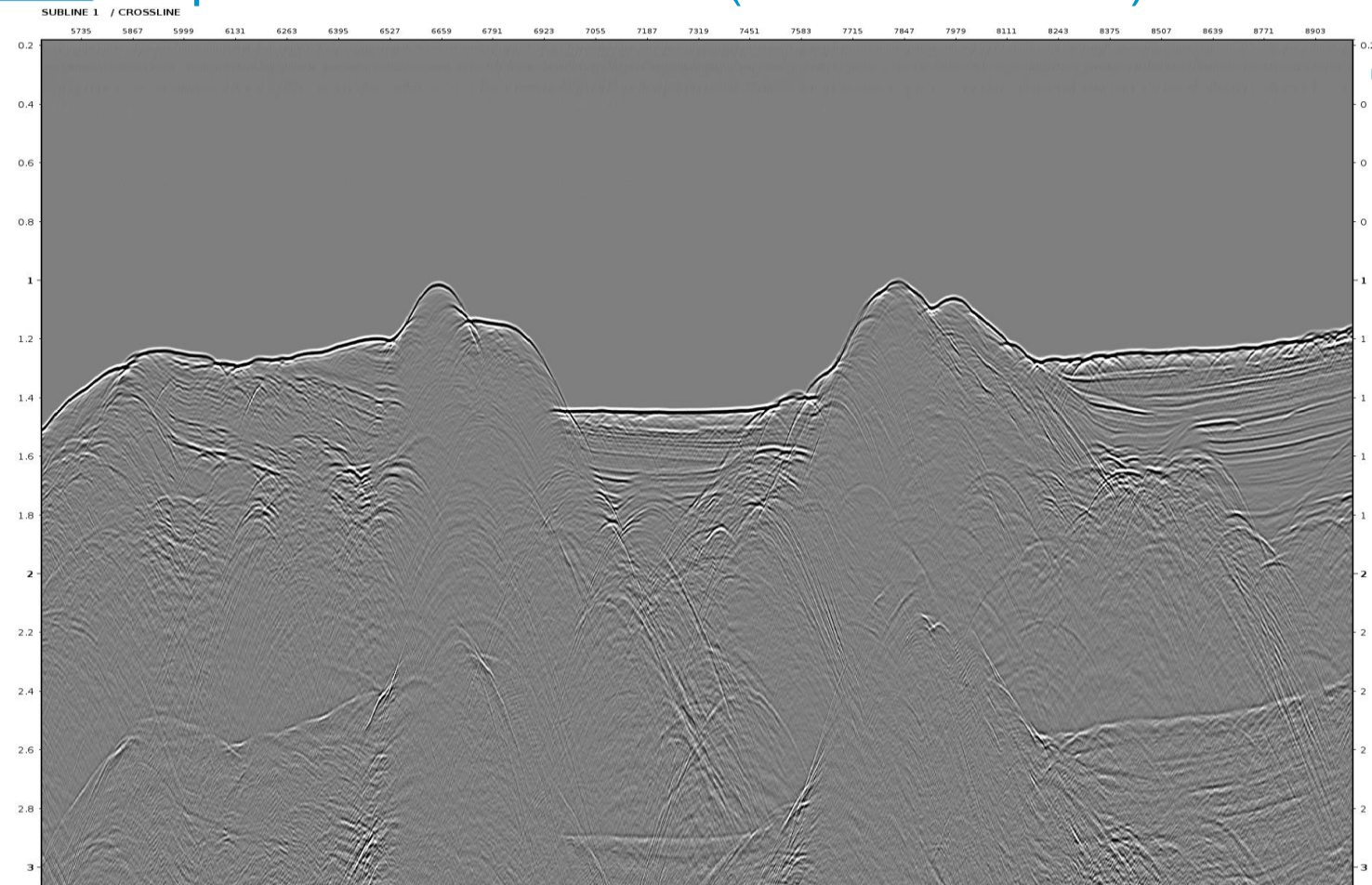


- Shallow zoom in stack keep consistent



# Seq018 Stack **after** RMC (zoom in shallow)

11



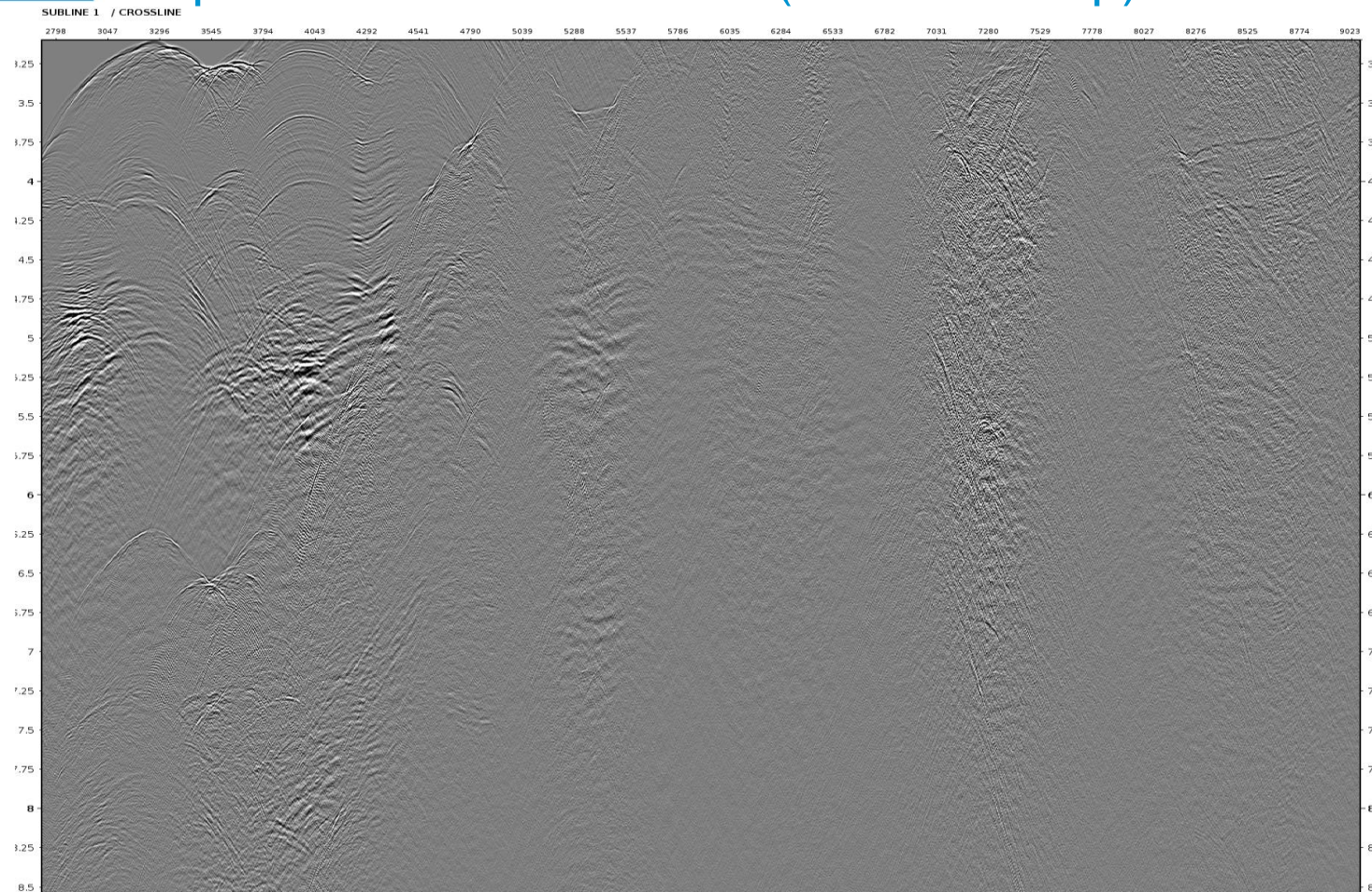
- Shallow zoom in stack keep consistent





# Seq018 Stack before RMC (zoom in deep)

12



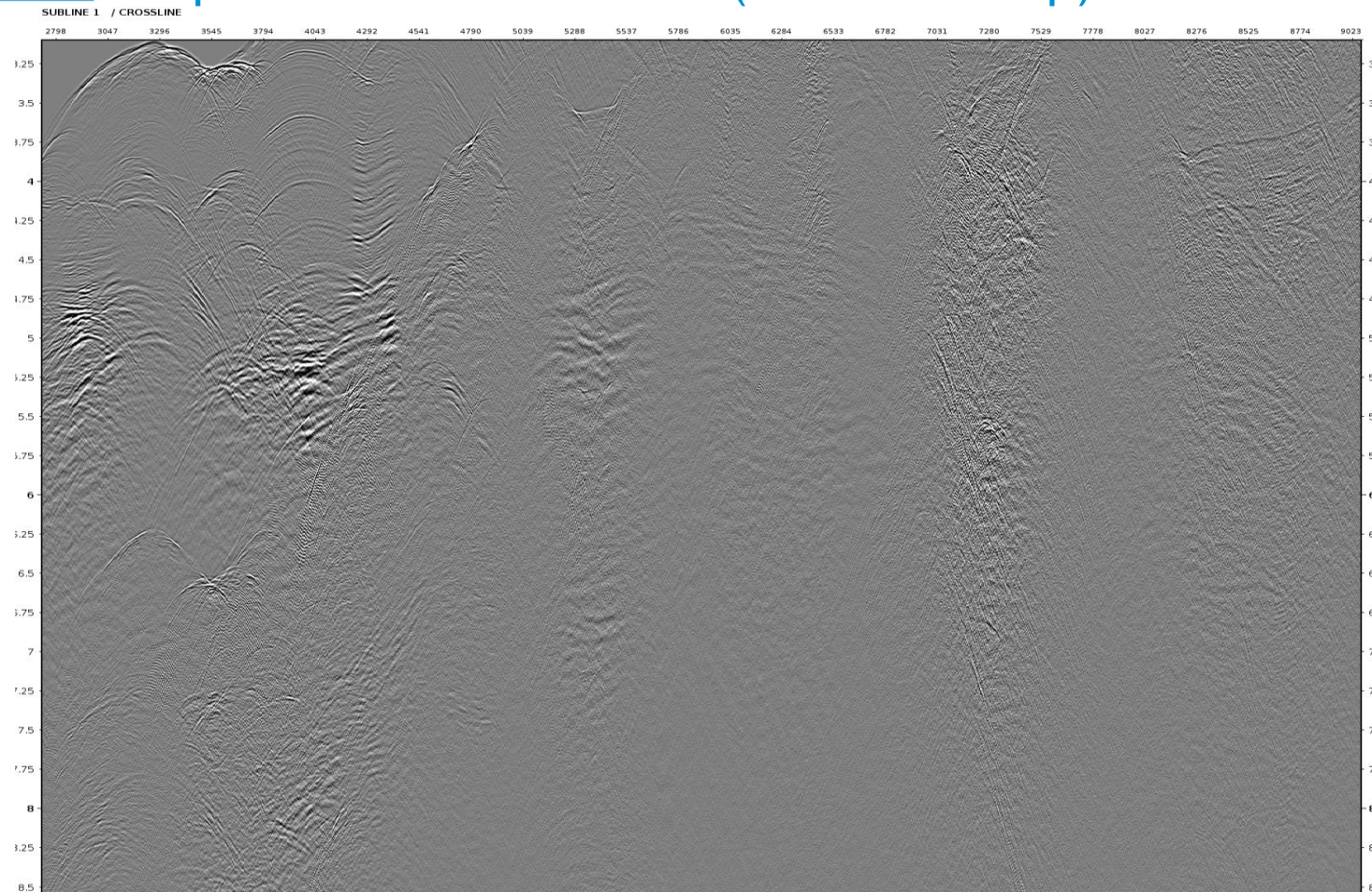
- Primary keep consistent in deep zoom in stack





# Seq018 Stack **after** RMC (zoom in deep)

13



- Primary keep consistent in deep zoom in stack

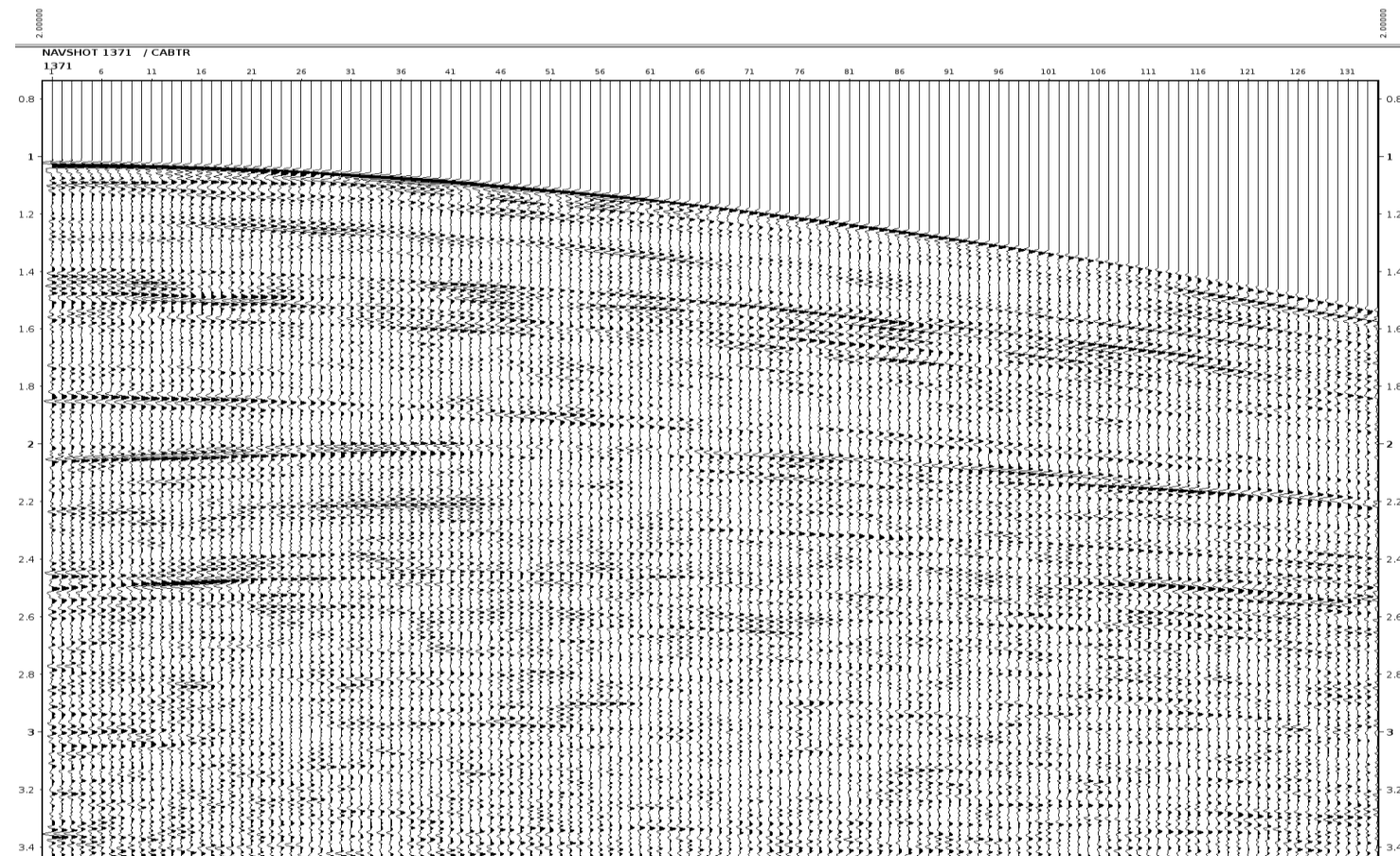




# Seq039 Shot Gather before RMC (zoom in shallow)

14

Boat speed  $\approx 2.06$  m/s



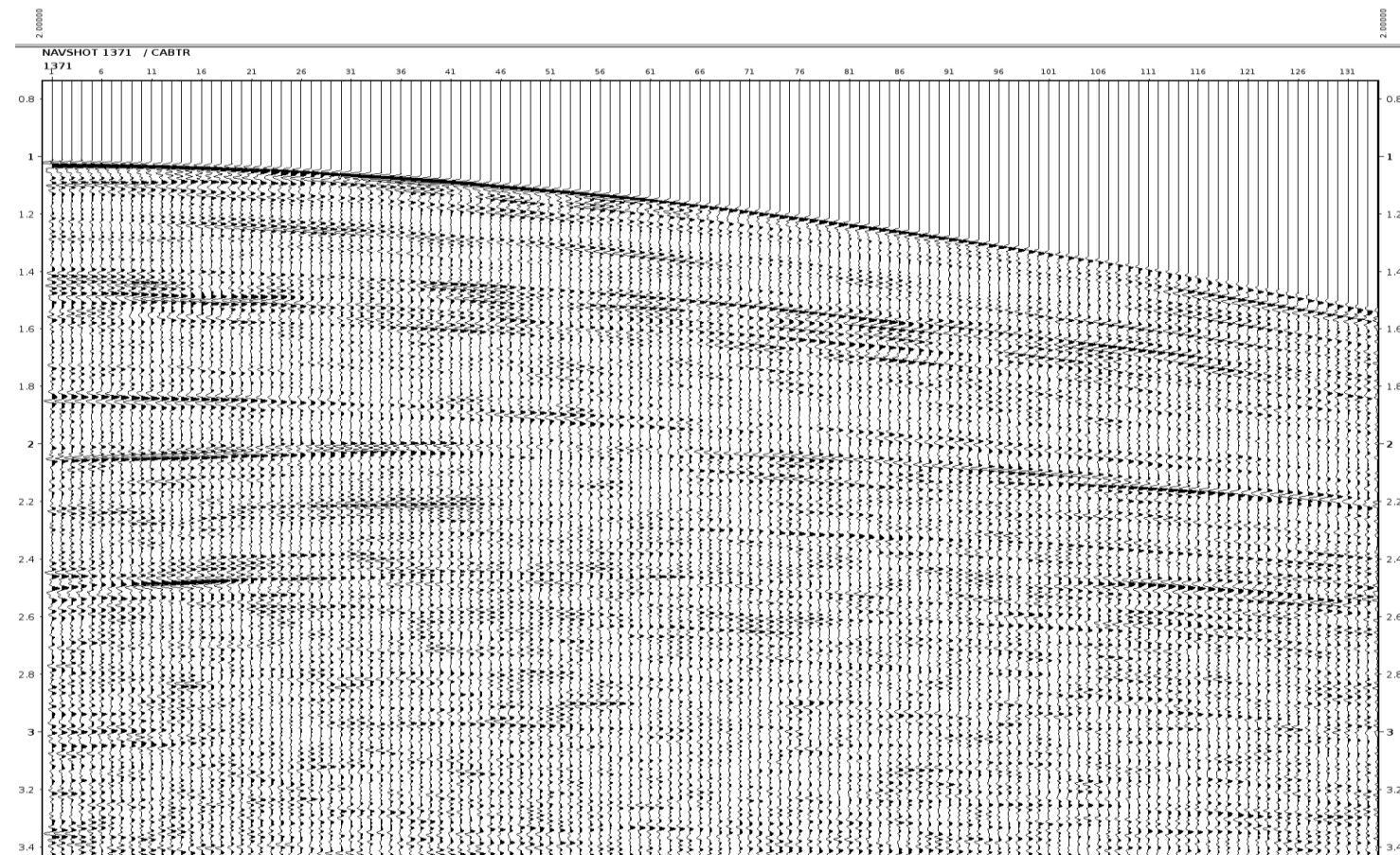
- Boat speed for this shot is around 2.06 m/s
- After correction, traces are horizontally shifted towards near offsets.
- The receiver motion effects is more visible in deeper part.



# Seq039 Shot Gather **after** RMC (zoom in shallow)

15

Boat speed  $\approx 2.06$  m/s

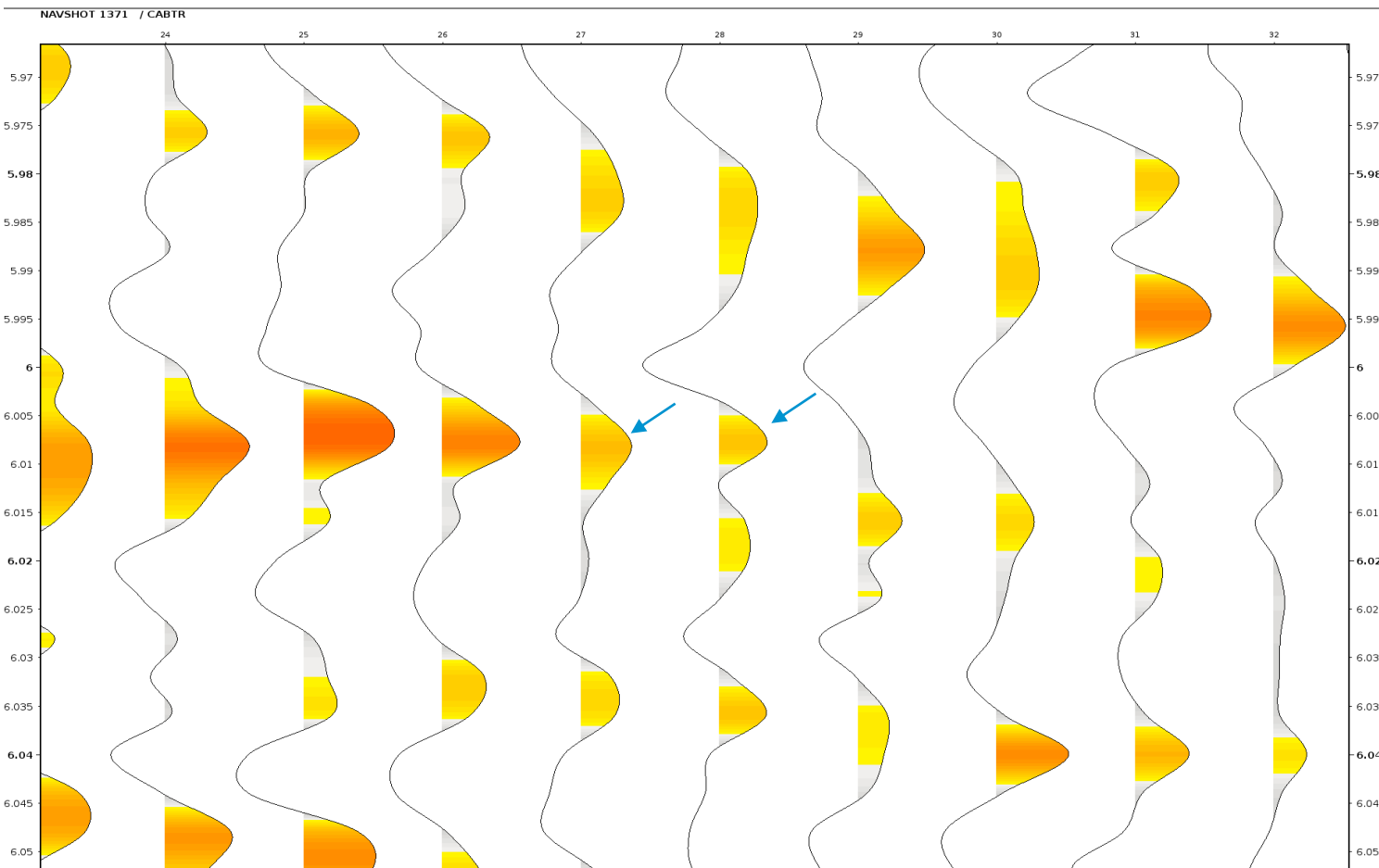


- Boat speed for this shot is around 2.06 m/s
- After correction, traces are horizontally shifted towards near offsets.
- The receiver motion effects is more visible in deeper part.



# Seq039 Shot Gather before RMC (zoom in @ 6.0ms)

16

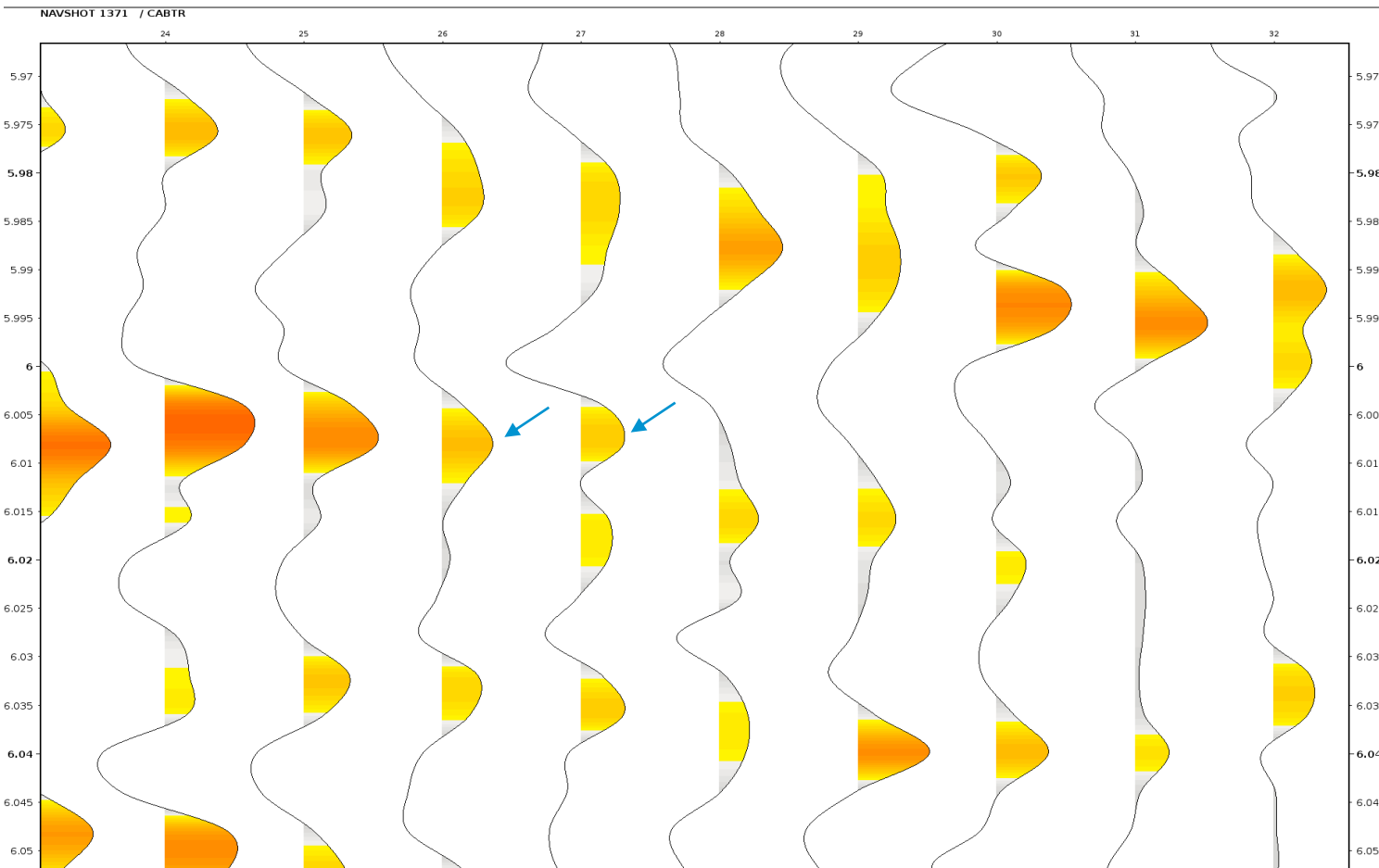


At time  $t \approx 6.06$  seconds  
= 12.5 meter (channel  
interval) / 2.06 meter  
per second (boat  
speed), the wavelet  
signal will shift 1 trace  
toward the shot  
location.



# Seq039 Shot Gather after RMC (zoom in @ 6.0ms)

17



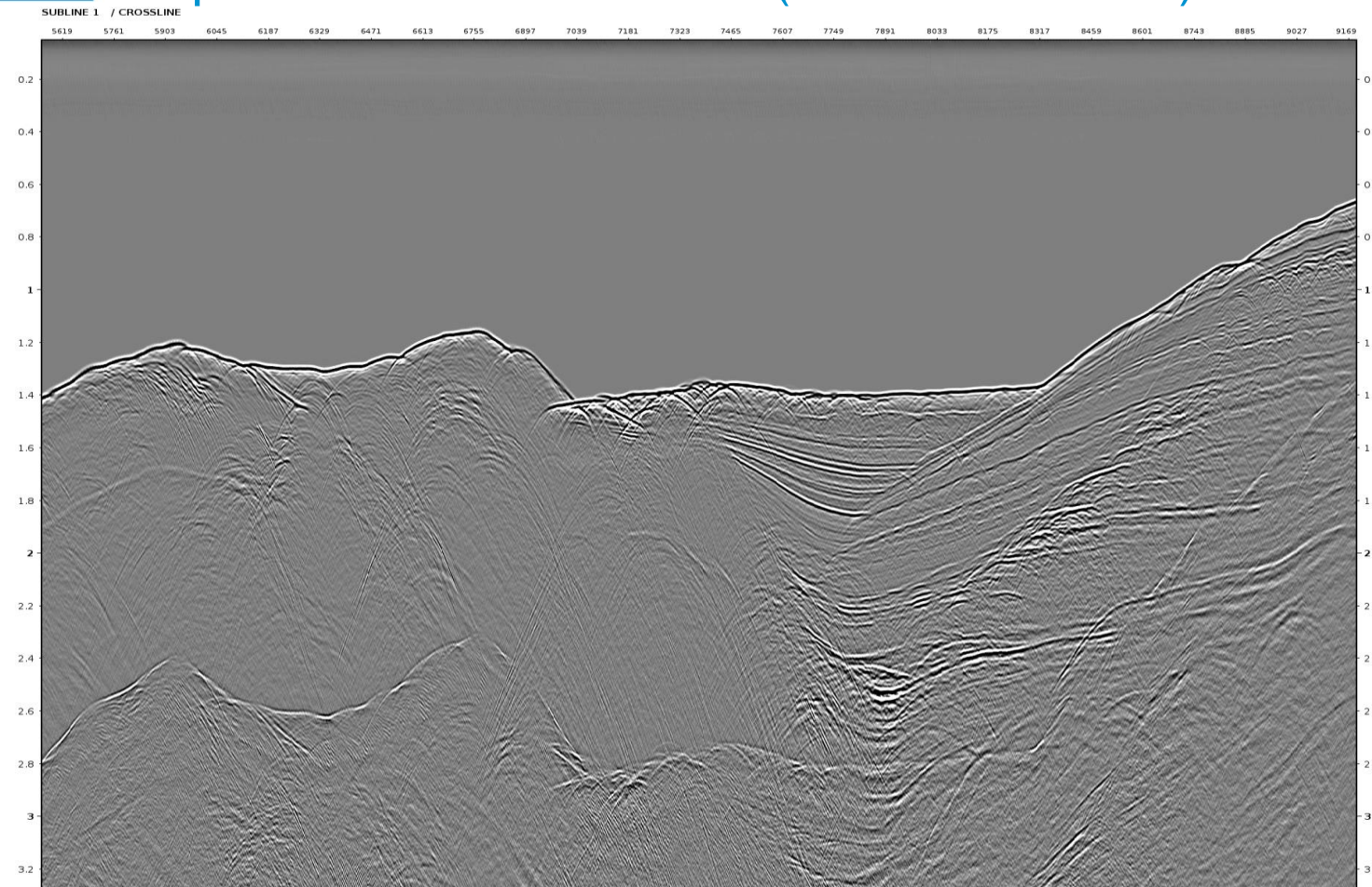
At time  $t \approx 6.06$  seconds  
= 12.5 meter (channel  
interval) / 2.06 meter  
per second (boat  
speed), the wavelet  
signal will shift 1 trace  
toward the shot  
location.





# Seq039 Stack before RMC (zoom in shallow)

18



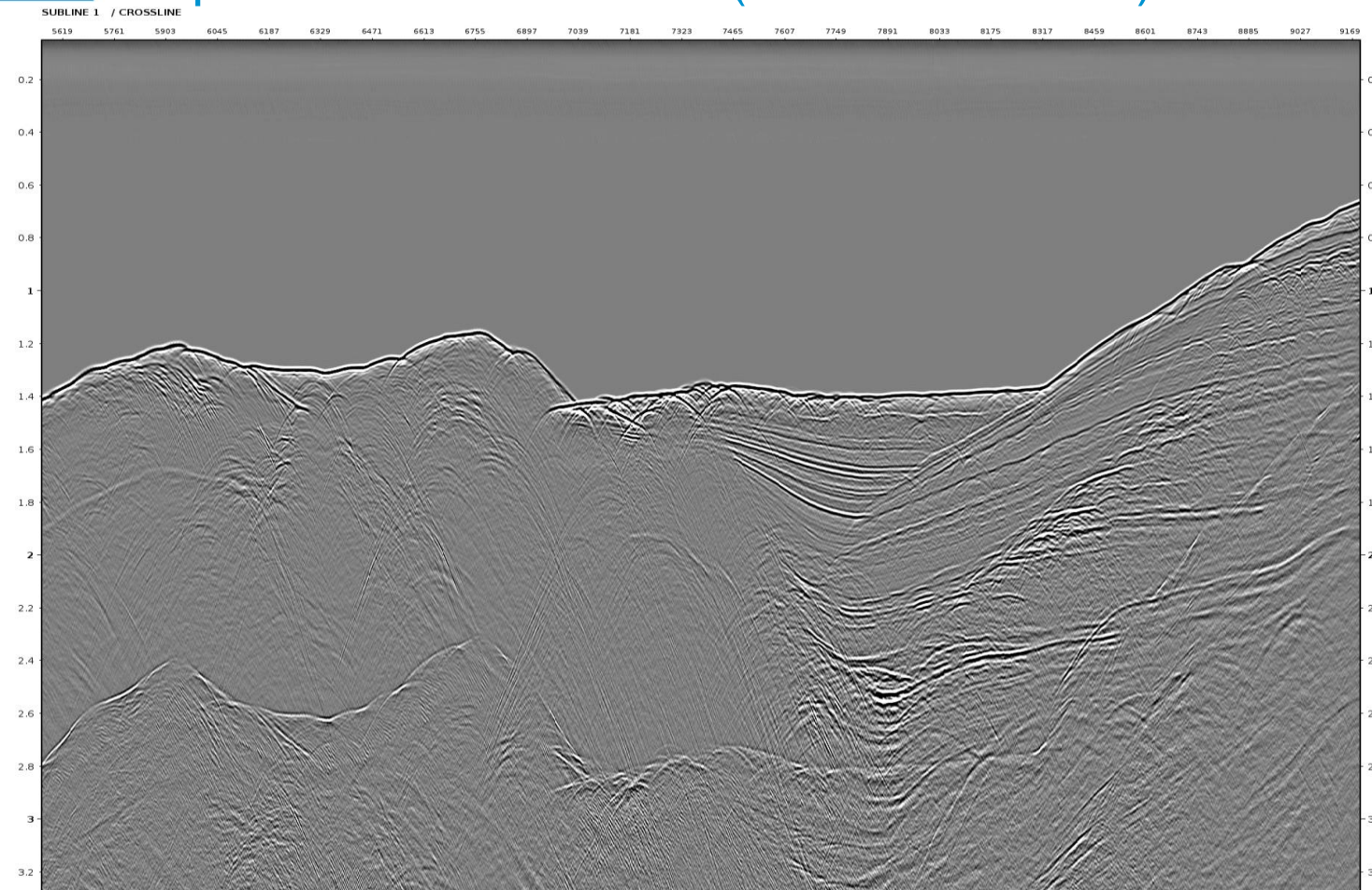
- Shallow zoom in stack keep consistent





# Seq039 Stack **after** RMC (zoom in shallow)

19



- Shallow zoom in stack keep consistent



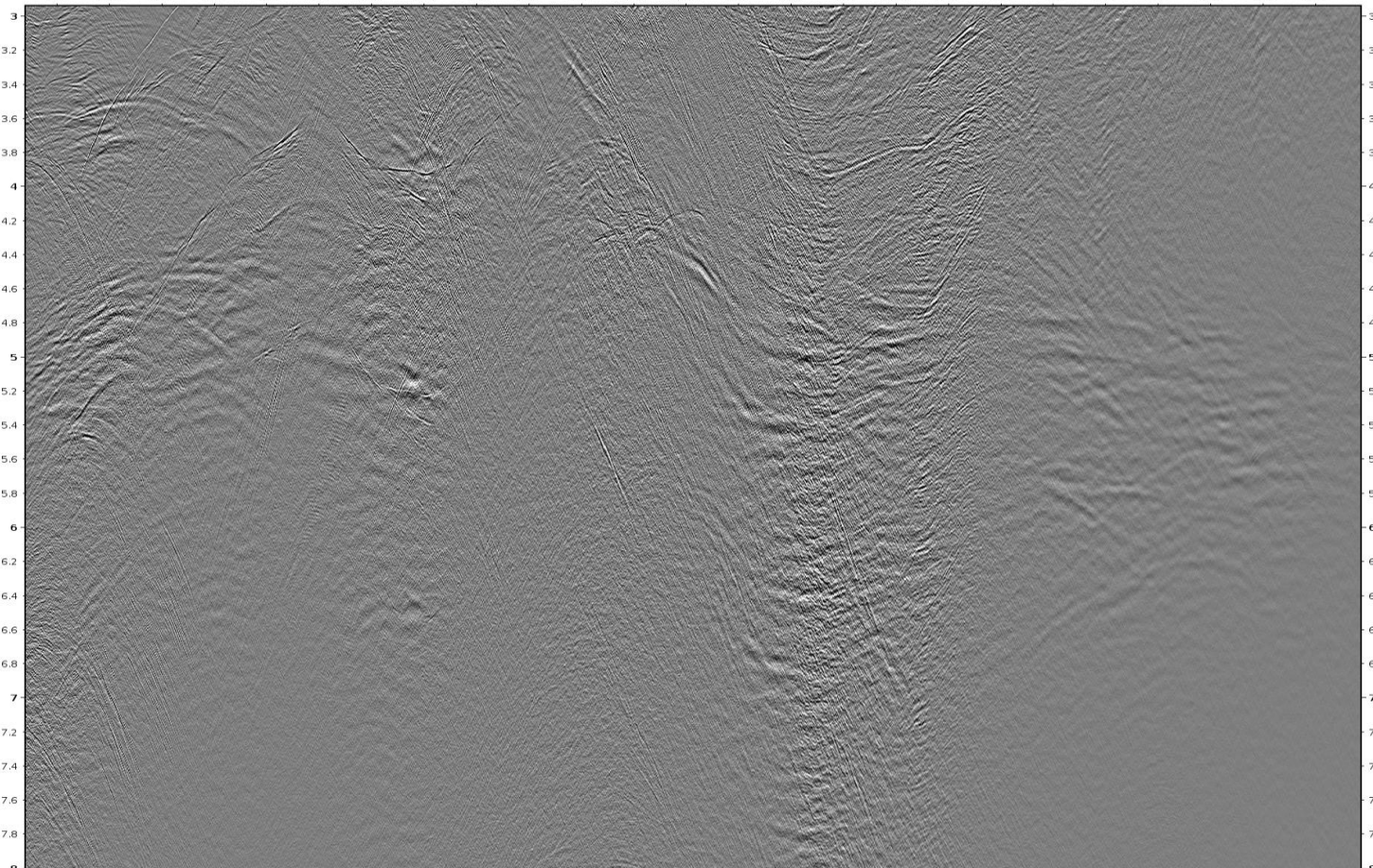


# Seq039 Stack before RMC (zoom in deep)

20

SUBLINE 1 / CROSSLINE

4929 5130 5331 5532 5733 5934 6135 6336 6537 6738 6939 7140 7341 7542 7743 7944 8145 8346 8547 8748 8949 9150 9351 9552 9753



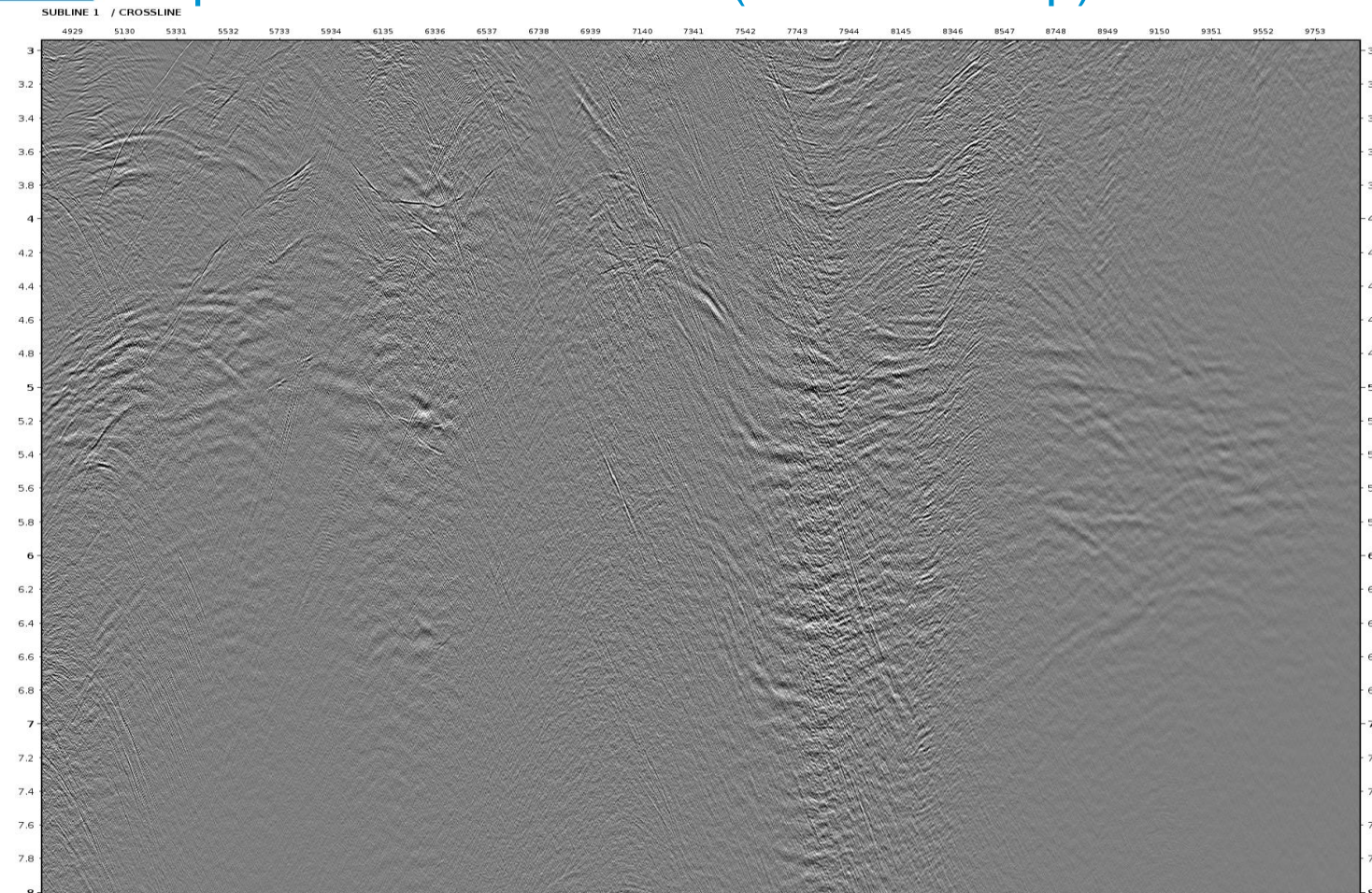
- Primary keep consistent in deep zoom in stack





# Seq039 Stack after RMC (zoom in deep)

21



- Primary keep consistent in deep zoom in stack