Velocity Analysis

NZ 3D Processing

07 April 2021

INSTITUTE FOR GEOPHYSICS

cgg.com

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Processing flow

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)
12. Joint Deghost & Designature
13. Residual Bubble Removal
14. Source Sensor Datum Correction
15. Shallow Water Demultiple
16. Surface Related Multiple Elimination (3D SRME)
17. Simultaneous Subtraction of MWD & SRME
18. Residual linear noise attenuation (residual LNA)
19. Trace regularization & interpolation
20. Velocity Analysis

Outline

- **Objective:**

  To update NMO RMS velocity.

- **Procedure:**

  Velocity is picked based on latest depth interval velocity from VMB.
  - Convert depth interval velocity from VMB to time RMS velocity.
  - Pick velocity on CDP gathers (after NMO).

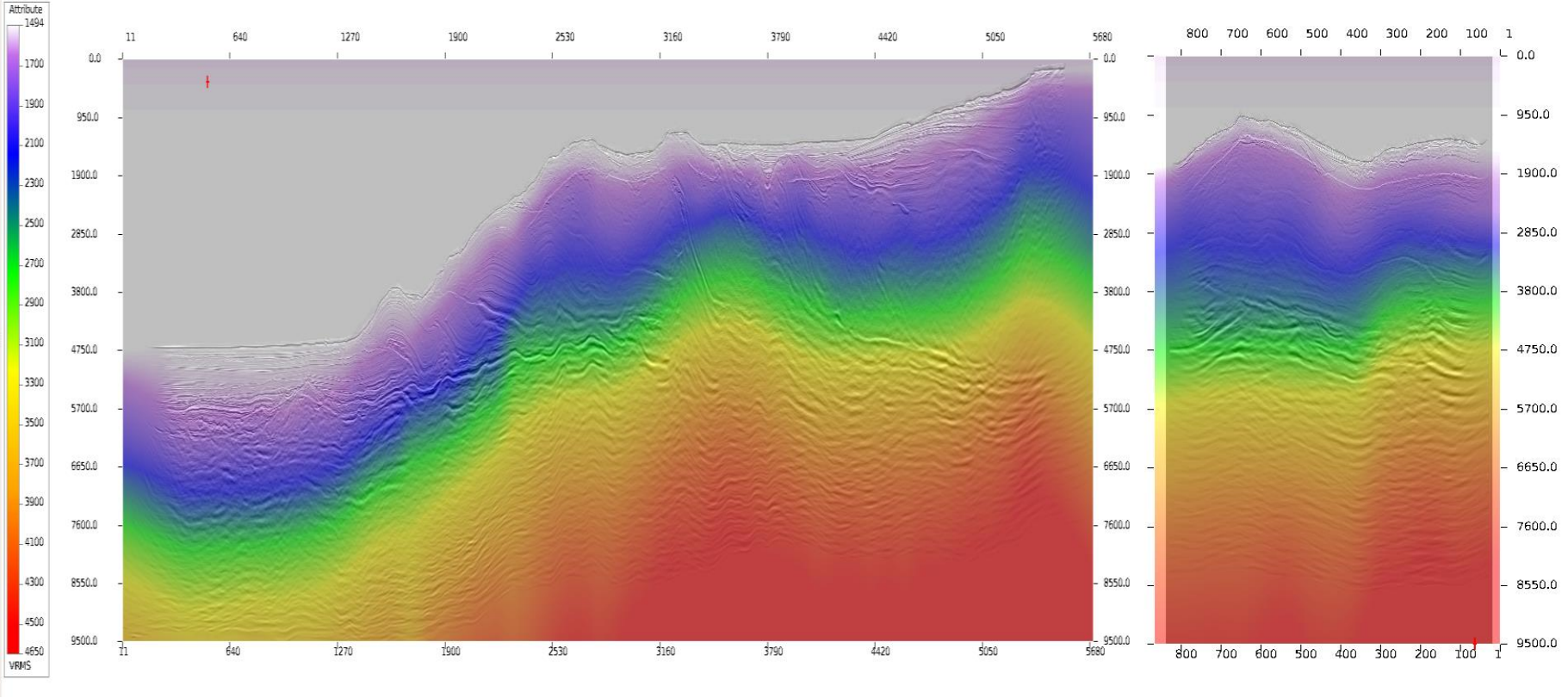
- **Display:**

  Velocity, CDP gathers.

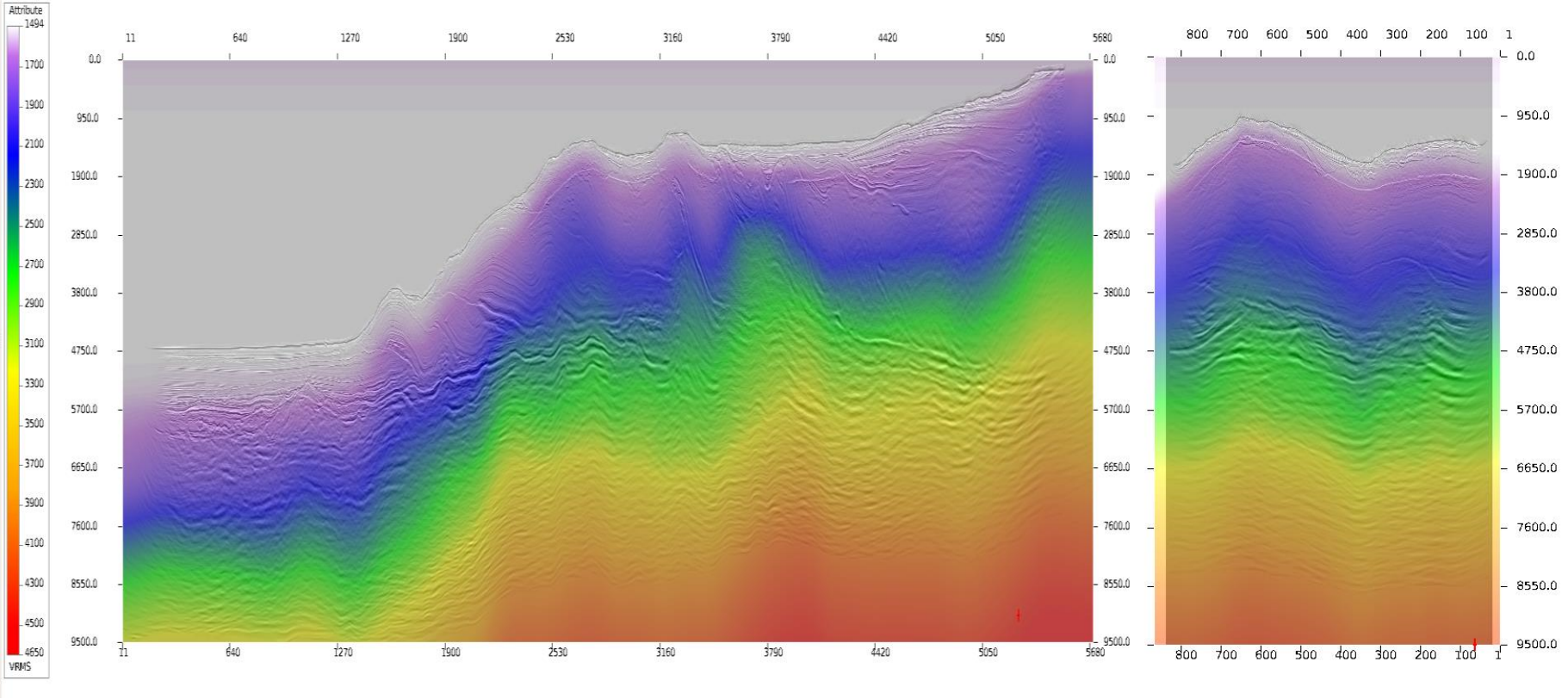
- **Observation & Recommendation:**

  Primaries are flatter on CDP gathers, which it's beneficial for later radon demultiple. It's recommended to apply for production.

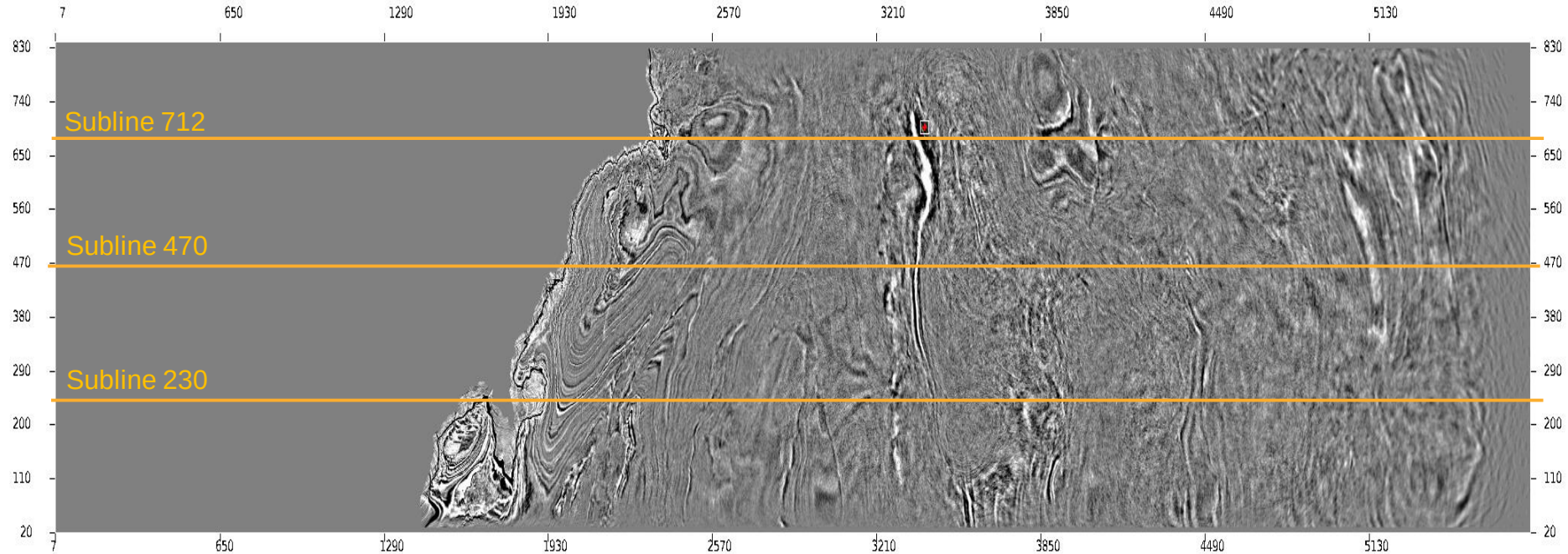
Previous Velocity



Latest Velocity



Test location



Subline

Crossline

CDP Gathers

- subline 230
- subline 470
- subline 712

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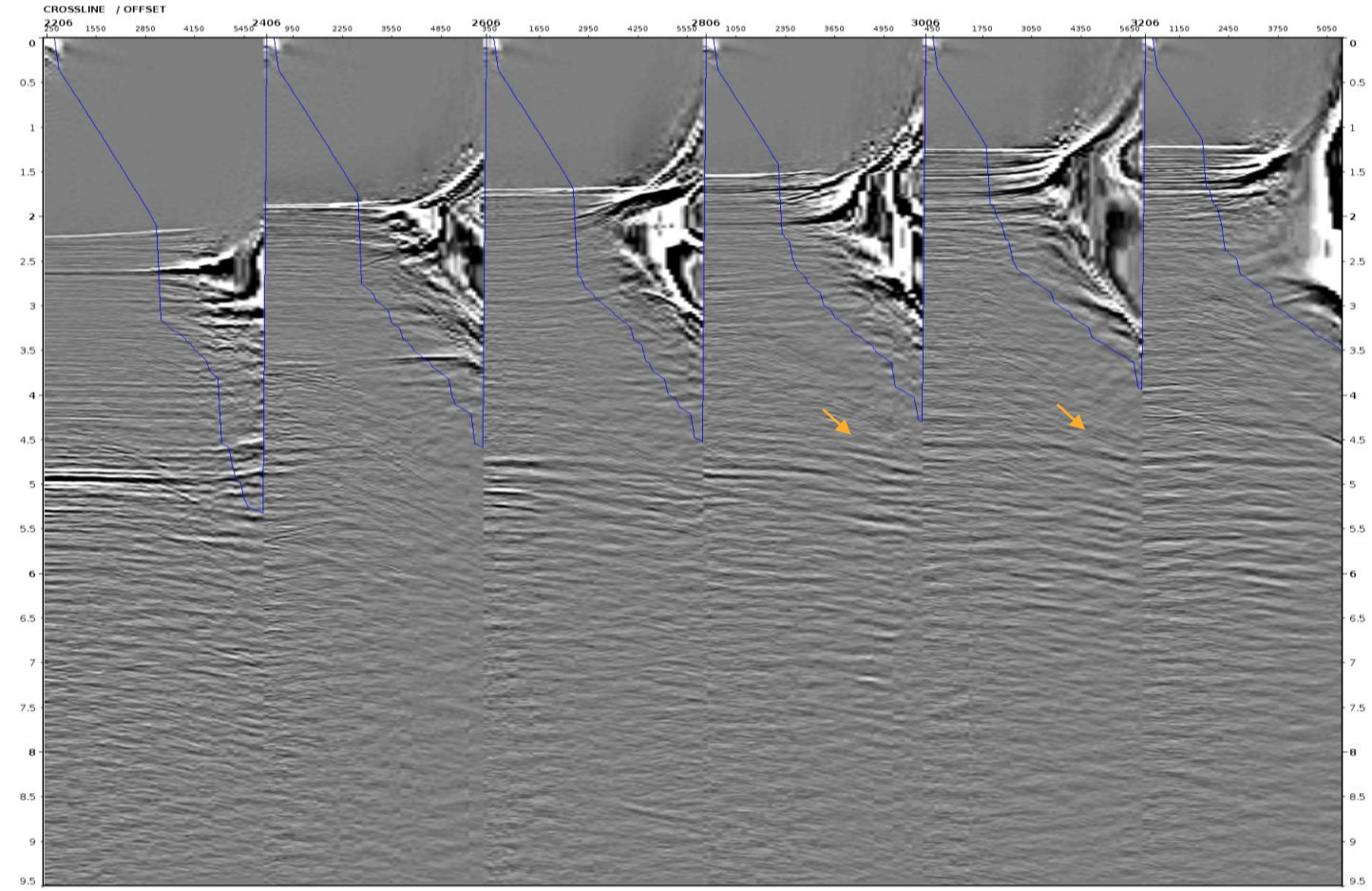
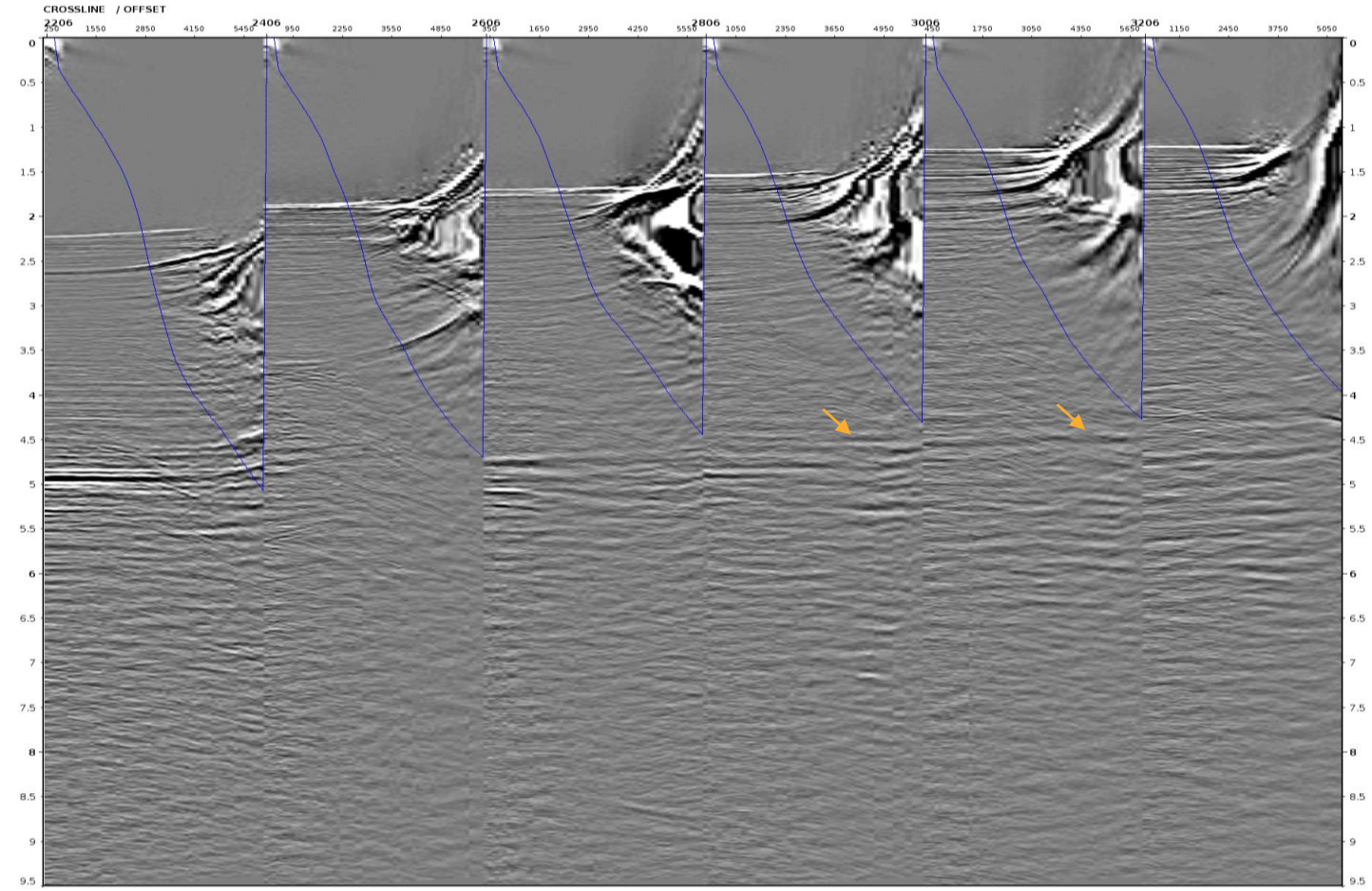
CDP Gathers with Previous Velocity



- Some primaries might present as curling down event with old NMO velocity.

---- 45^0 angel mute with old velocity

CDP Gathers with Latest Velocity



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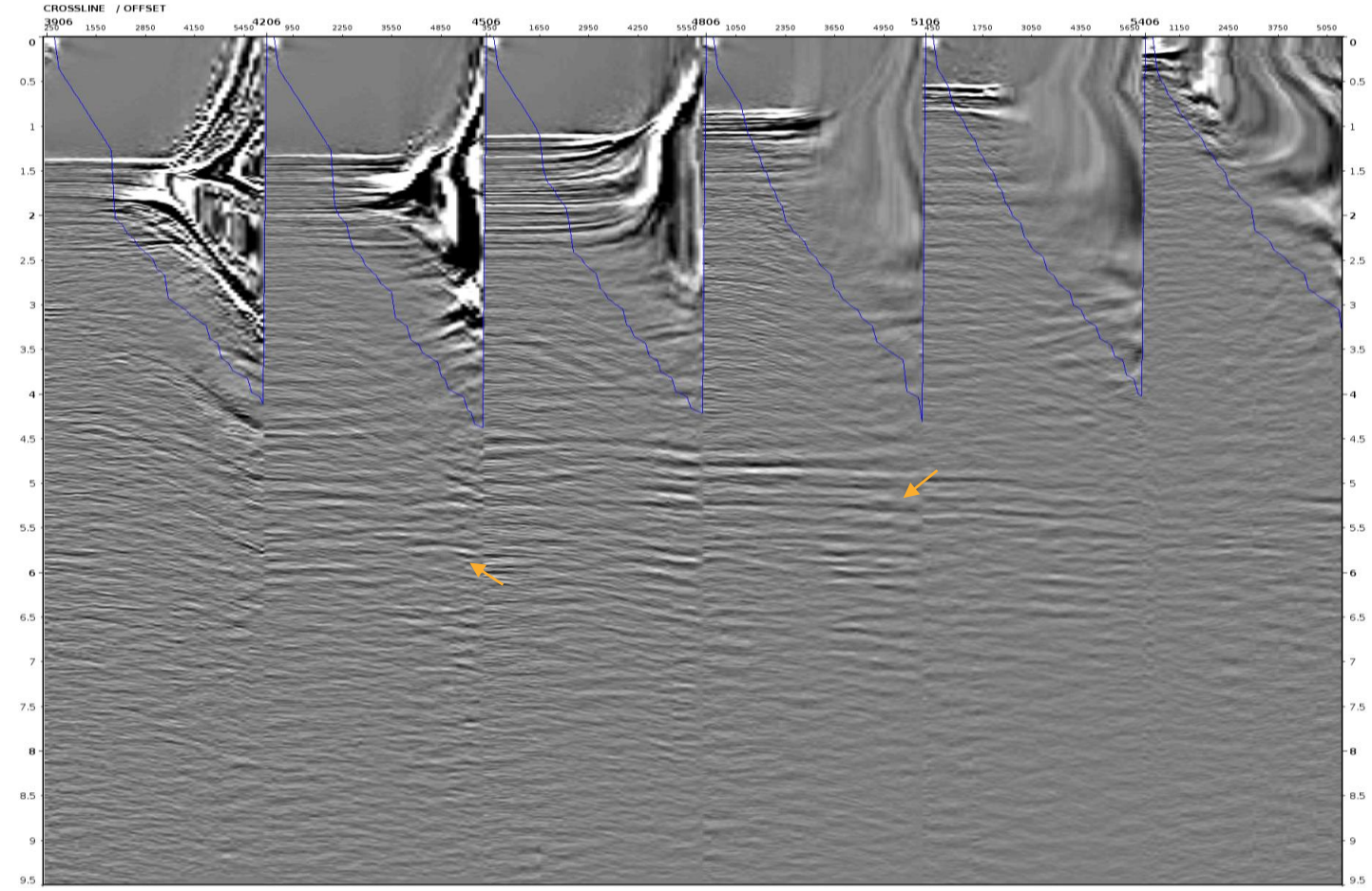

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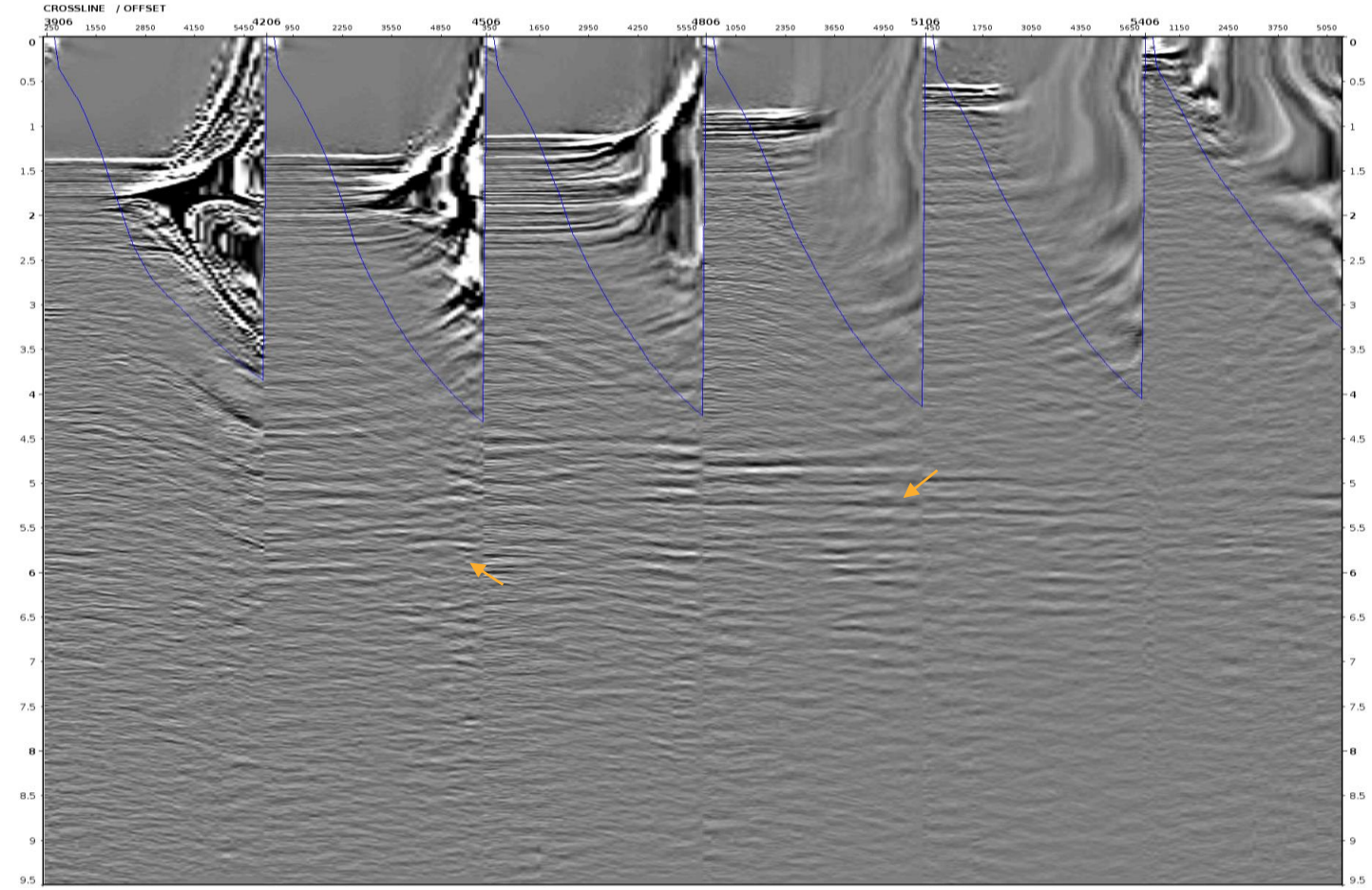

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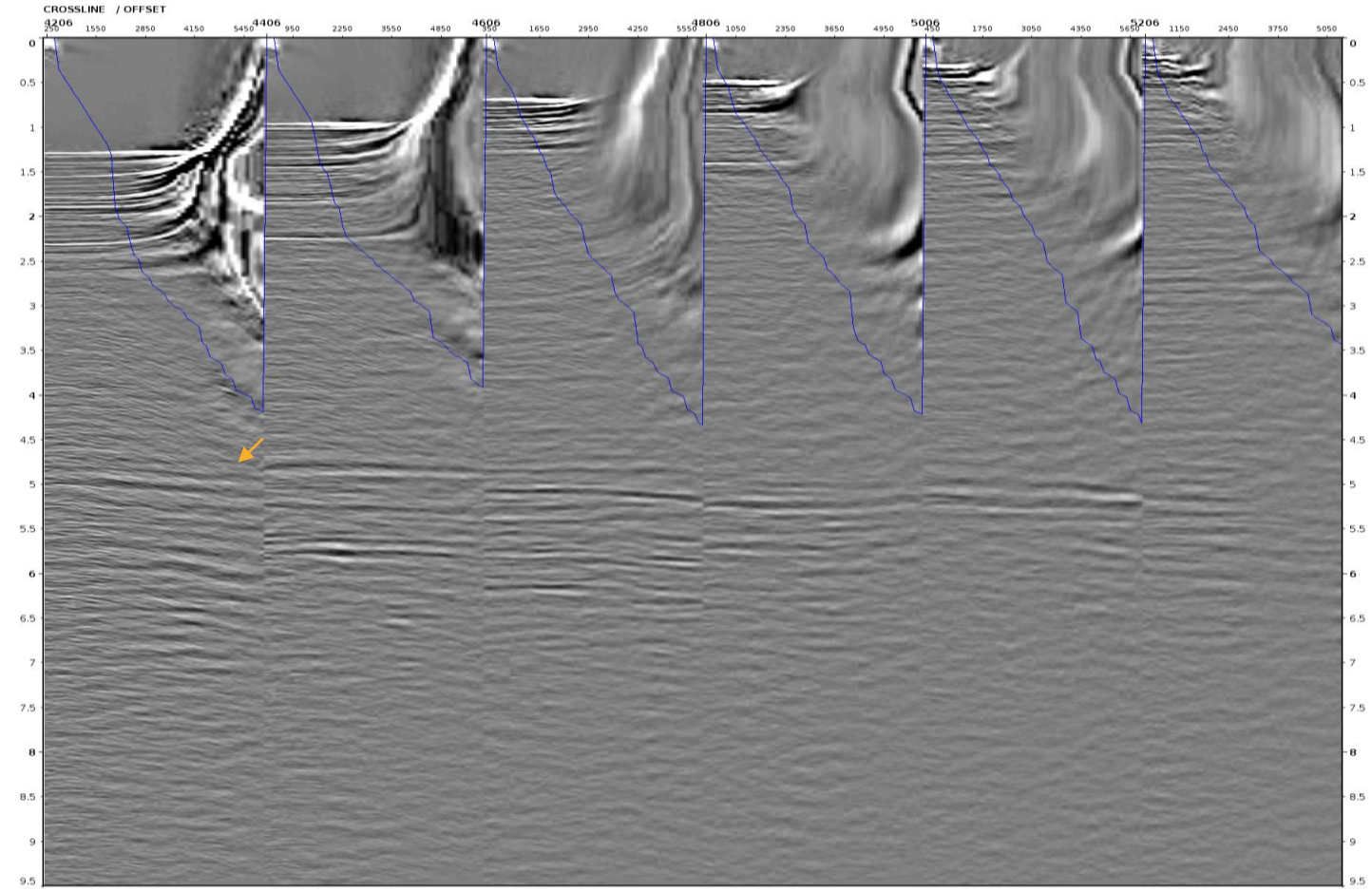

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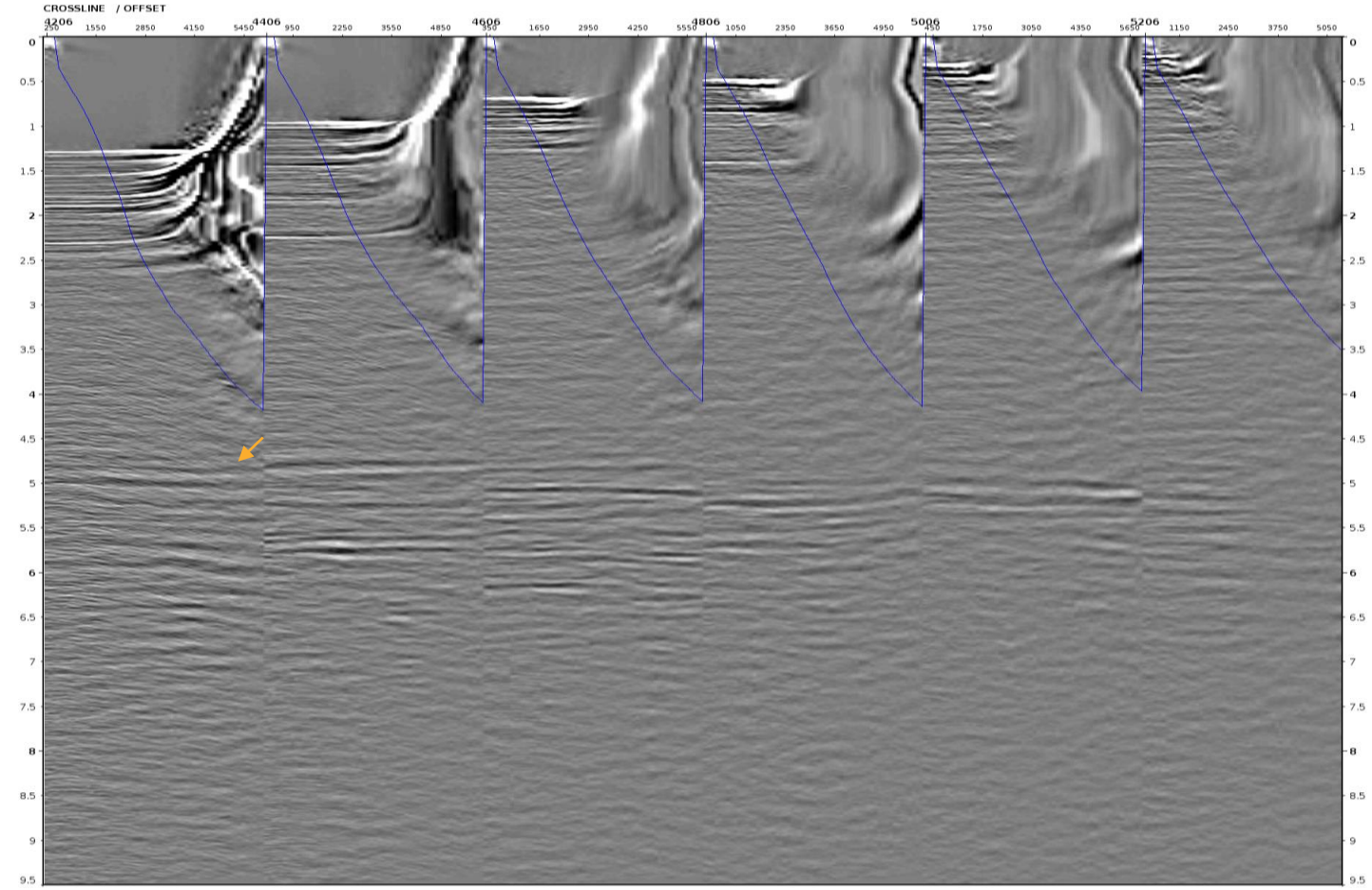

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Summary

- Primaries are flatter with new NMO velocity, which is beneficial for later Radon demultiple.
- We recommend to update old NMO velocity before Radon demultiple.