



Seismic 2024 - TechByte

Considerations of 4D Preplot Design for Effective Acquisition

May 2024

Seismic 2024 – 4D Preplot Design

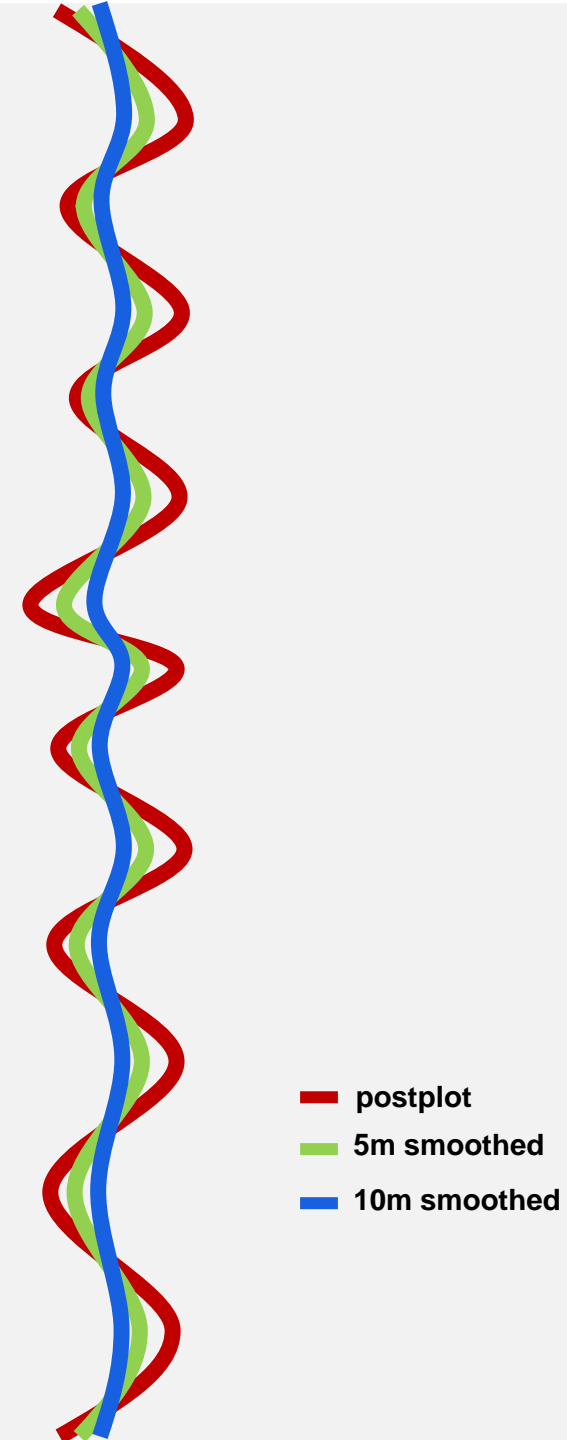
Introduction

- The application of feather apertures to optimize 4D towed streamer surveys has been utilized for 14 years.
- What improvements can be applied to source positions in a 4D preplot?
- **What is the problem with repeating source positions?**
 - Ineffective = reduced data quality
 - Inefficient = reduced survey efficiency
 - Inflexible = repeat of previous mistakes and increased HSE exposure
- Preplot design “sets the stage” for the entire 4D survey = important to get it right!
- This presentation will outline 3 strategies applicable to preplot design to aid effective 4D acquisition.

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Improving 4D Data Quality

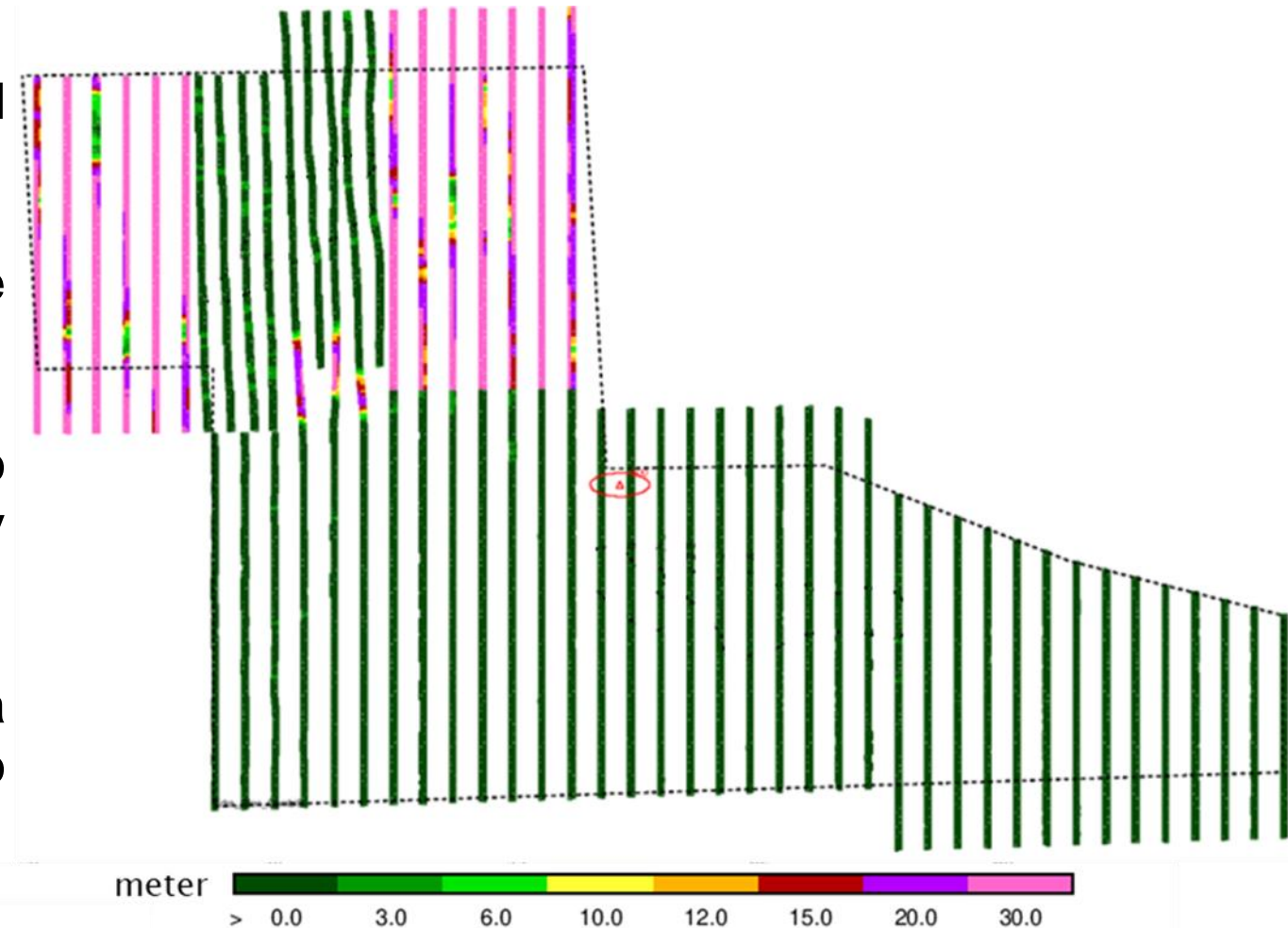
- When source tracks are highly dynamic, source smoothing can be utilised.
- Smoothing aims to remove noise from the movement of the sources in the water or as a result of steering.
- Mitigates against the tendency for oversteering.
- Source smoothing does not affect the inline position.
- Smoothing is only applied to sections that require smoothing.



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Improving Survey Efficiency

- The overall line count can be reduced through line merges.
- On a recent 4D campaign, two 4D areas were combined into one acquisition programme.
- Merging preplots allowed the operator to efficiently maximise geometric repeatability over the priority area.
- Two 4D programmes were completed with a single set of preplots and no need to reconfigure.



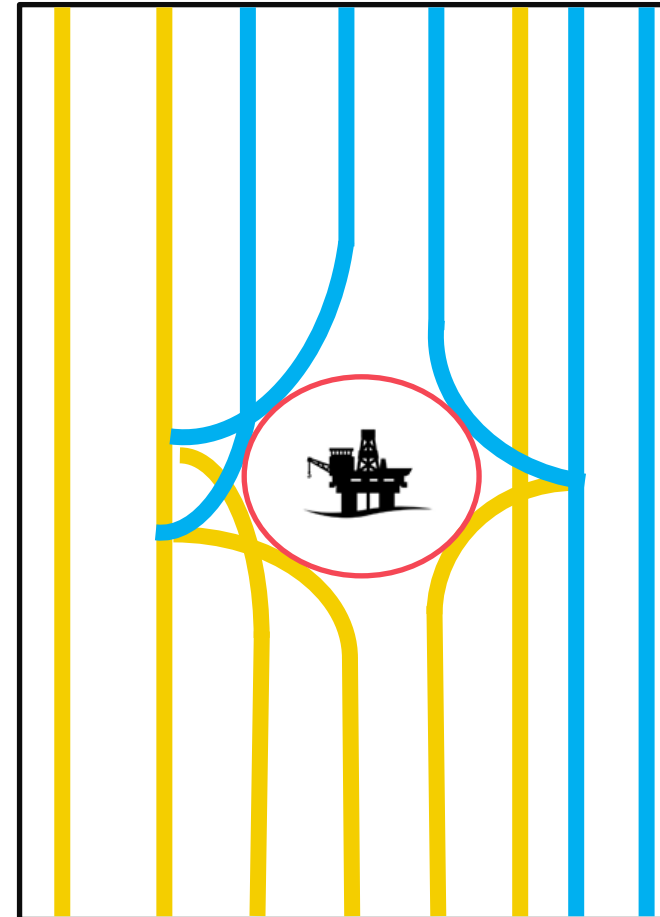
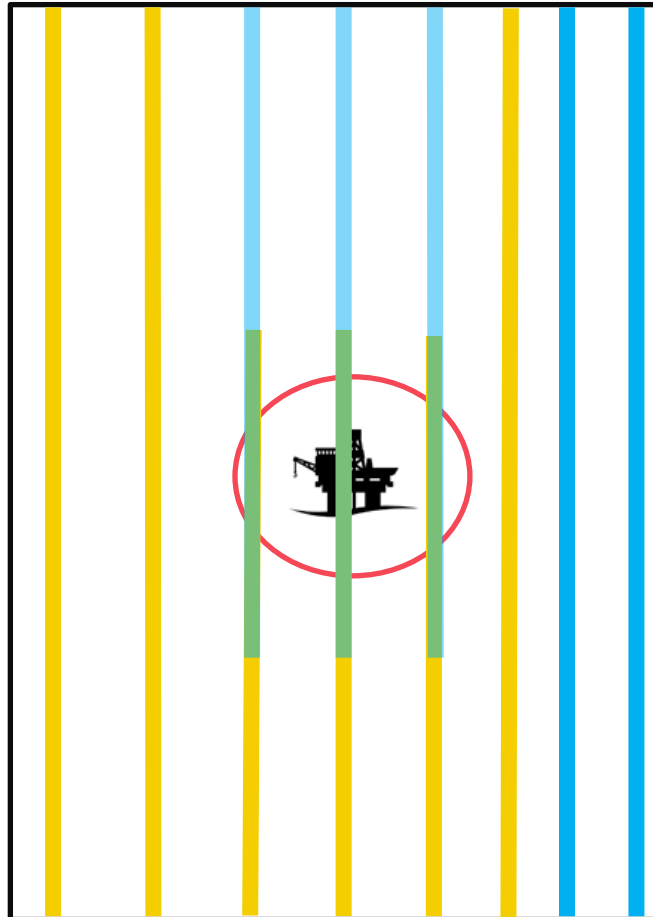
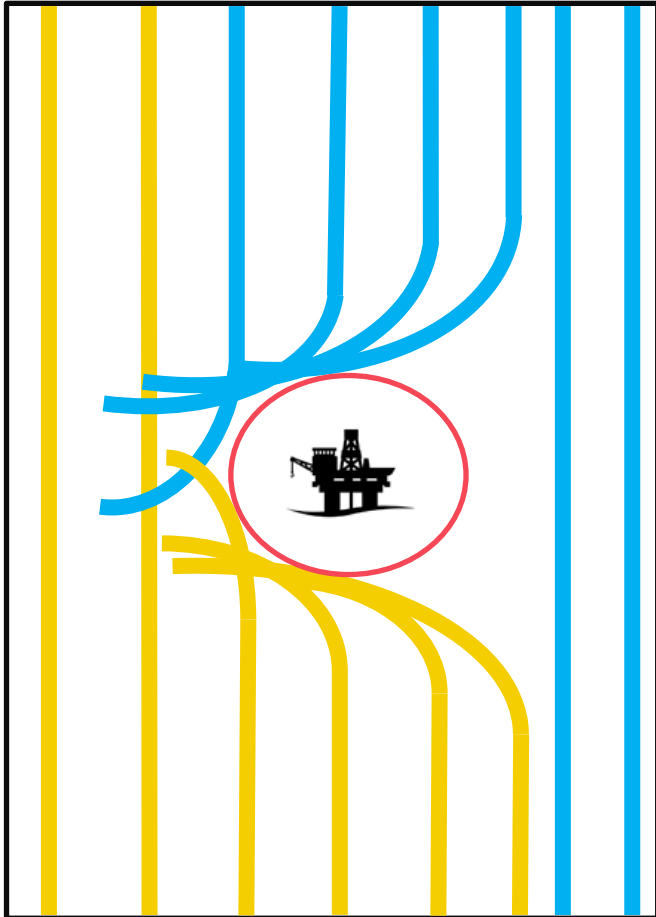
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Reducing HSE Risk/Exposure

- It worked before then why not simply repeat?
- This approach risks repeating mistakes that were made previously.
- Could you improve this time?
- No close pass is ever the same.
- Allowing the crew the flexibility to design and complete the safest and optimal pass based on the variables and conditions experienced at the time is important when designing 4D preplots.

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Reducing HSE Risk/Exposure



-  Exclusion Zone
-  North Heading
-  South Heading

