



Monitoring and Instrumentation

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Summary

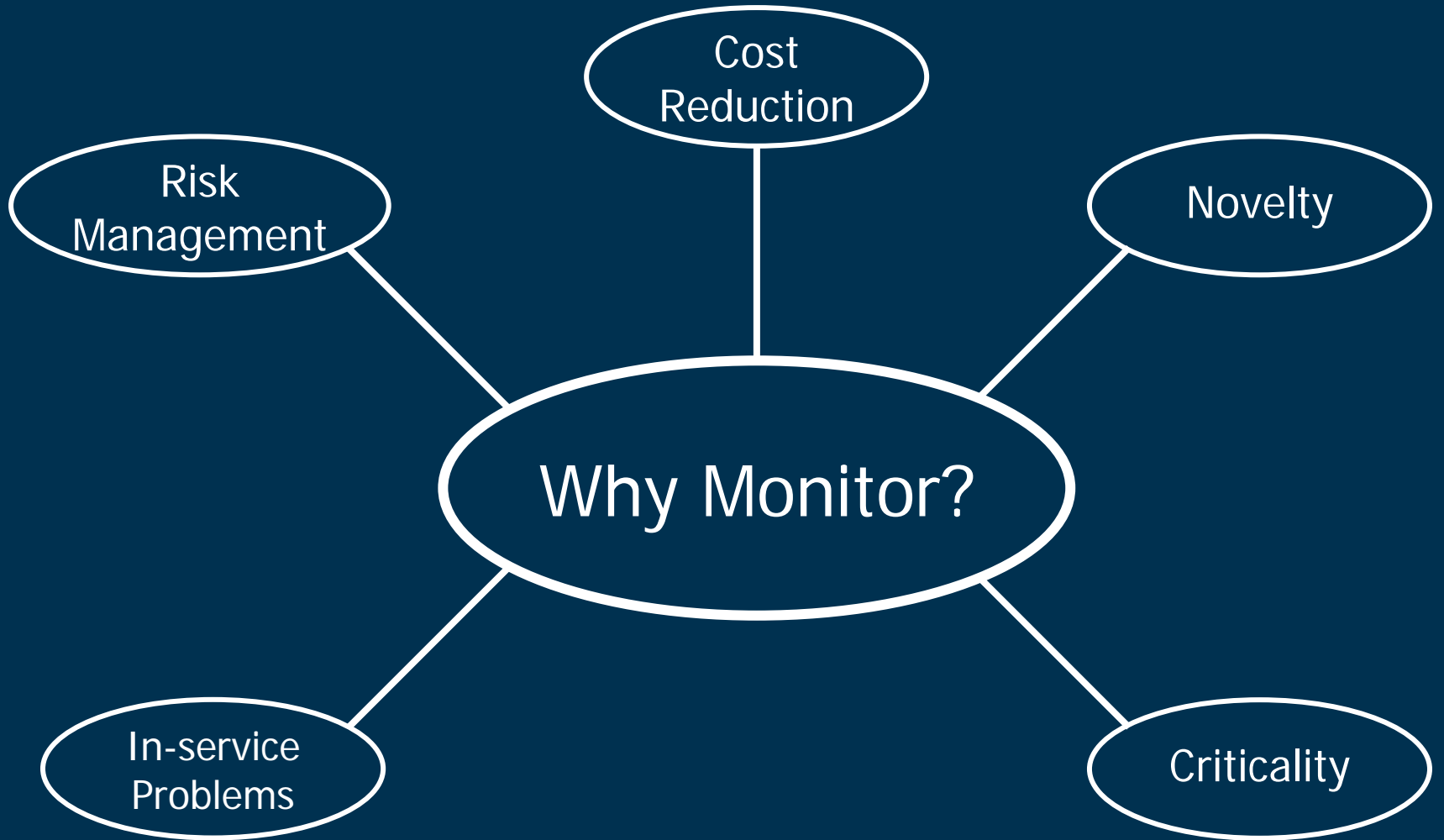
- Historical view
- Why monitor
- Monitoring methods

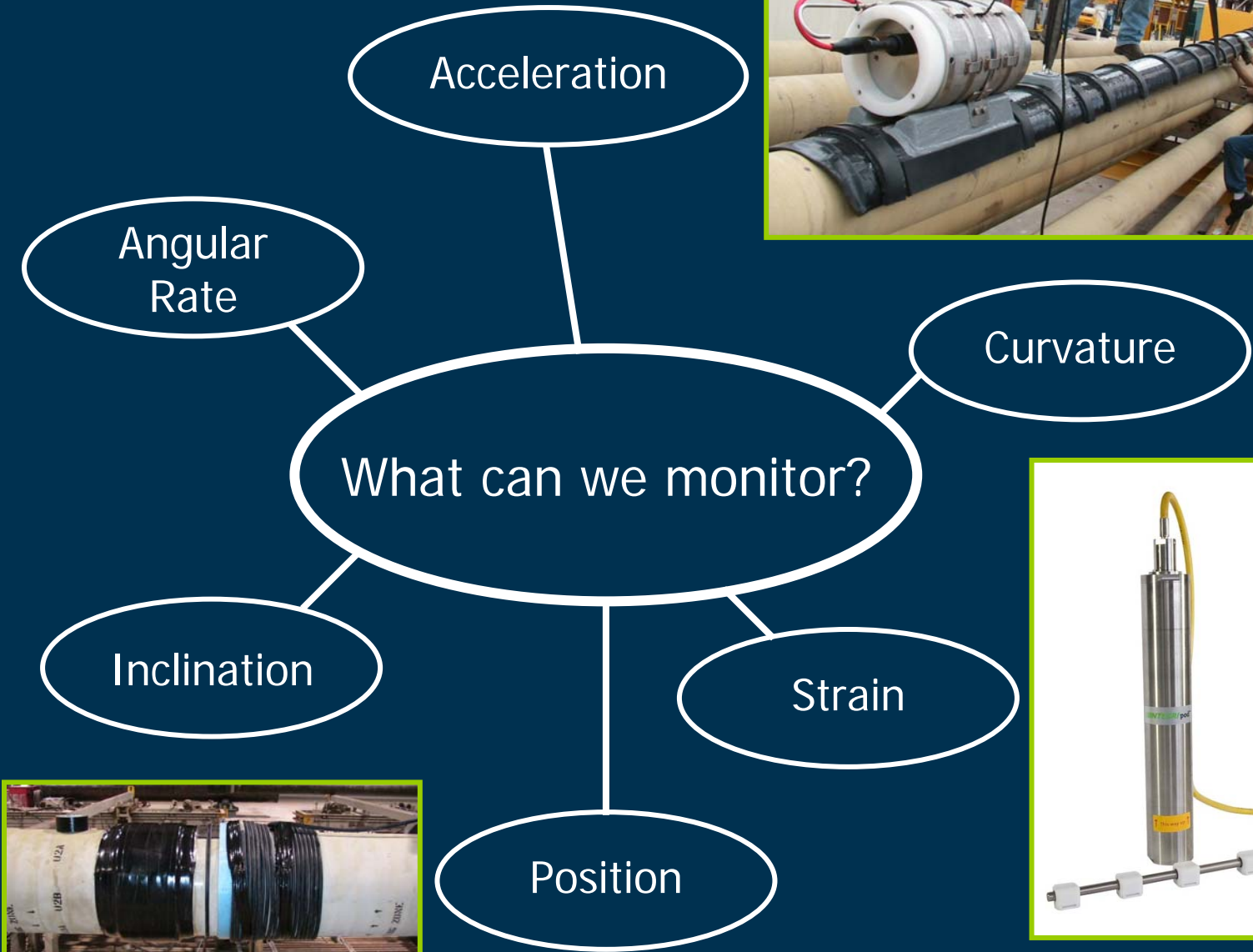
- Applications

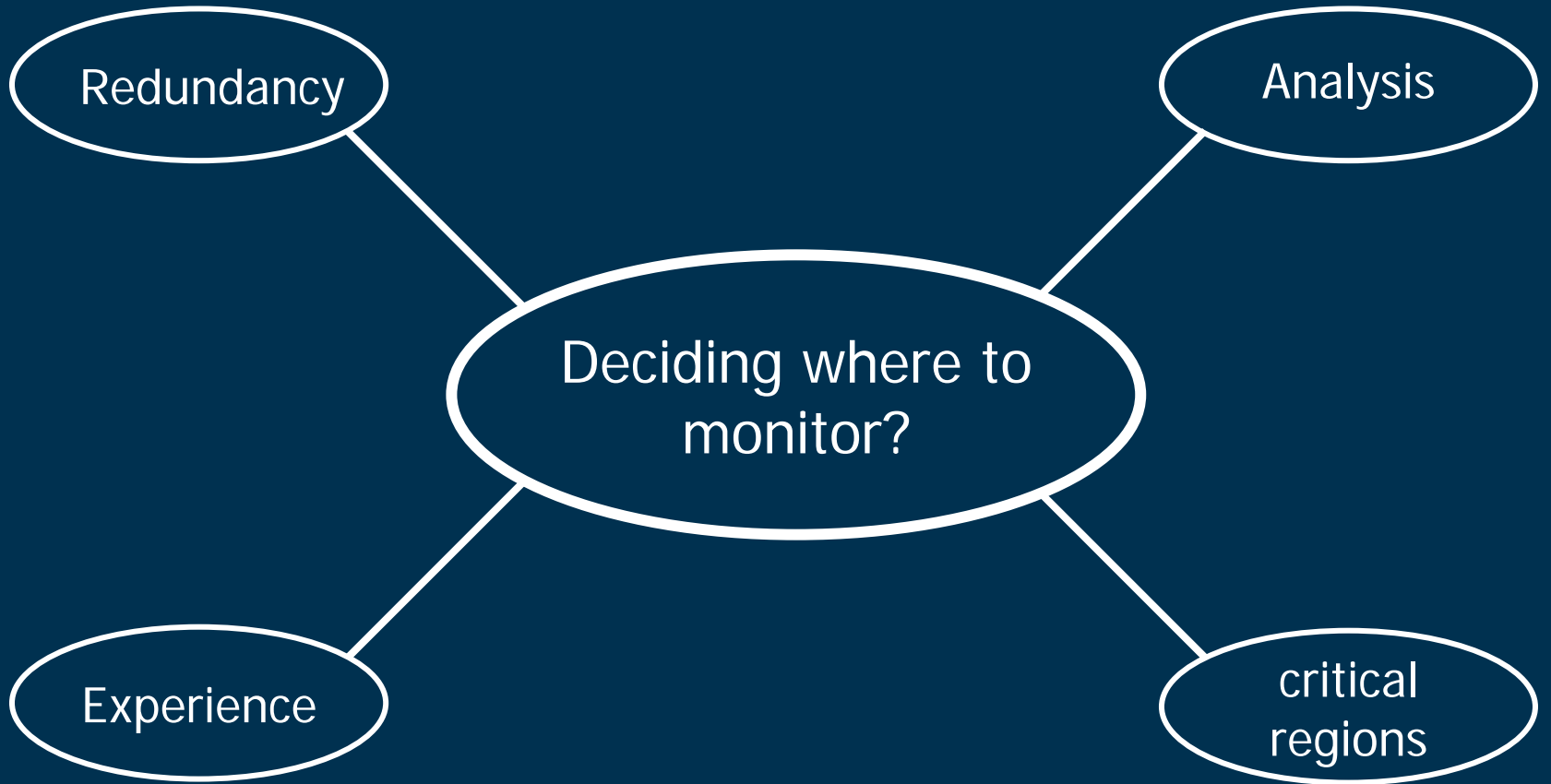
Historical View of Monitoring

- Expensive
- Not necessary from design perspective
- Will not work – unreliable
- Only used when there is a problem

Current View

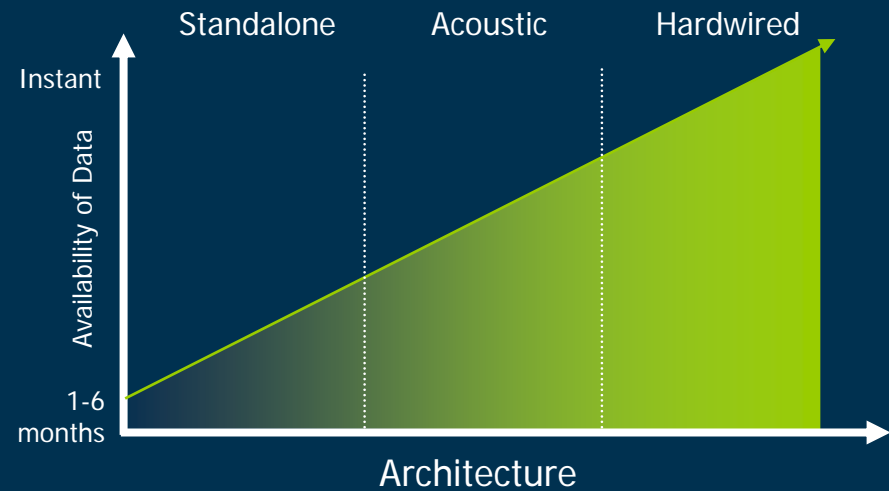
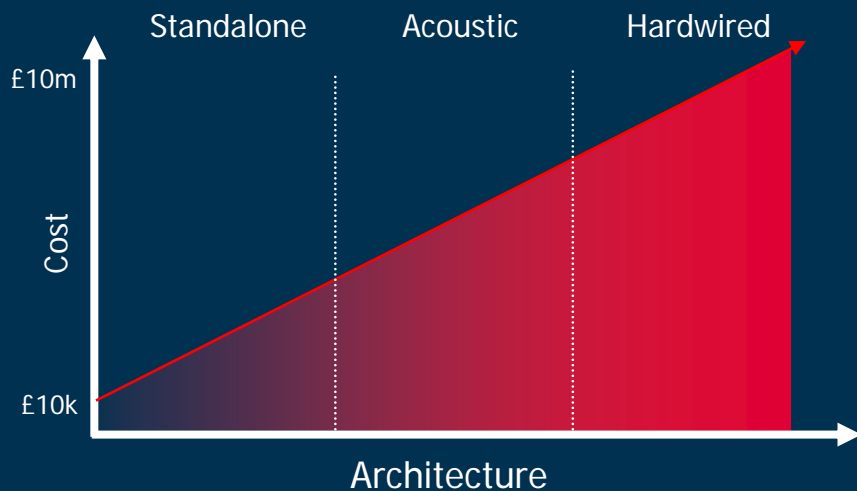




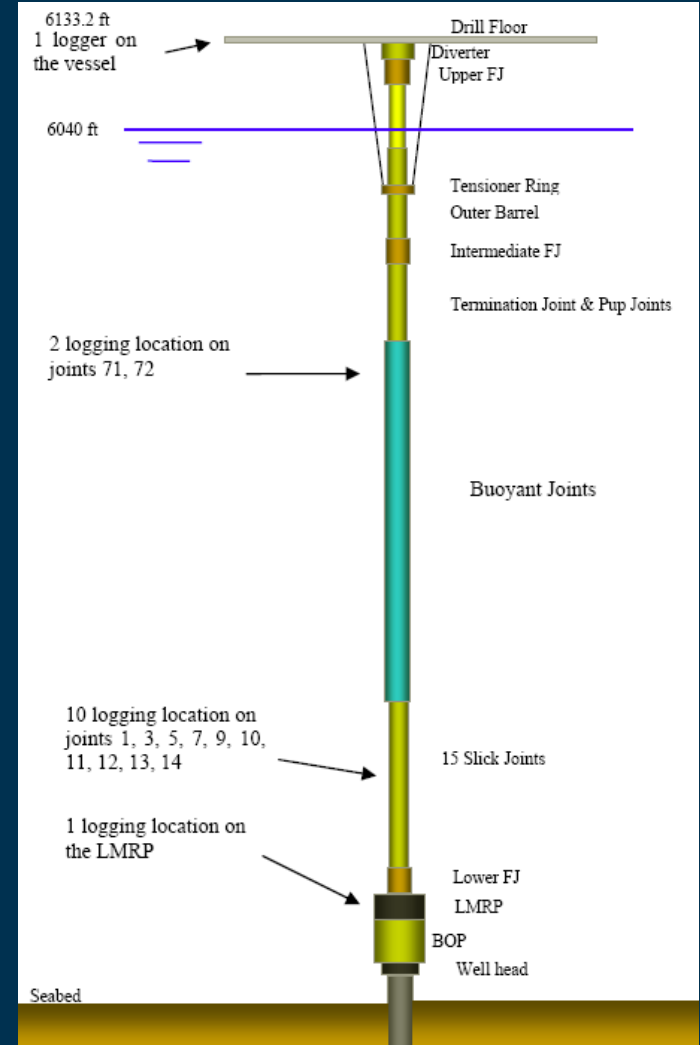


Gathering the Data

- Data stored locally and retrieved later (Standalone)
- Data sent continuously (Hardwired)
- Data sent occasionally (Acoustic)

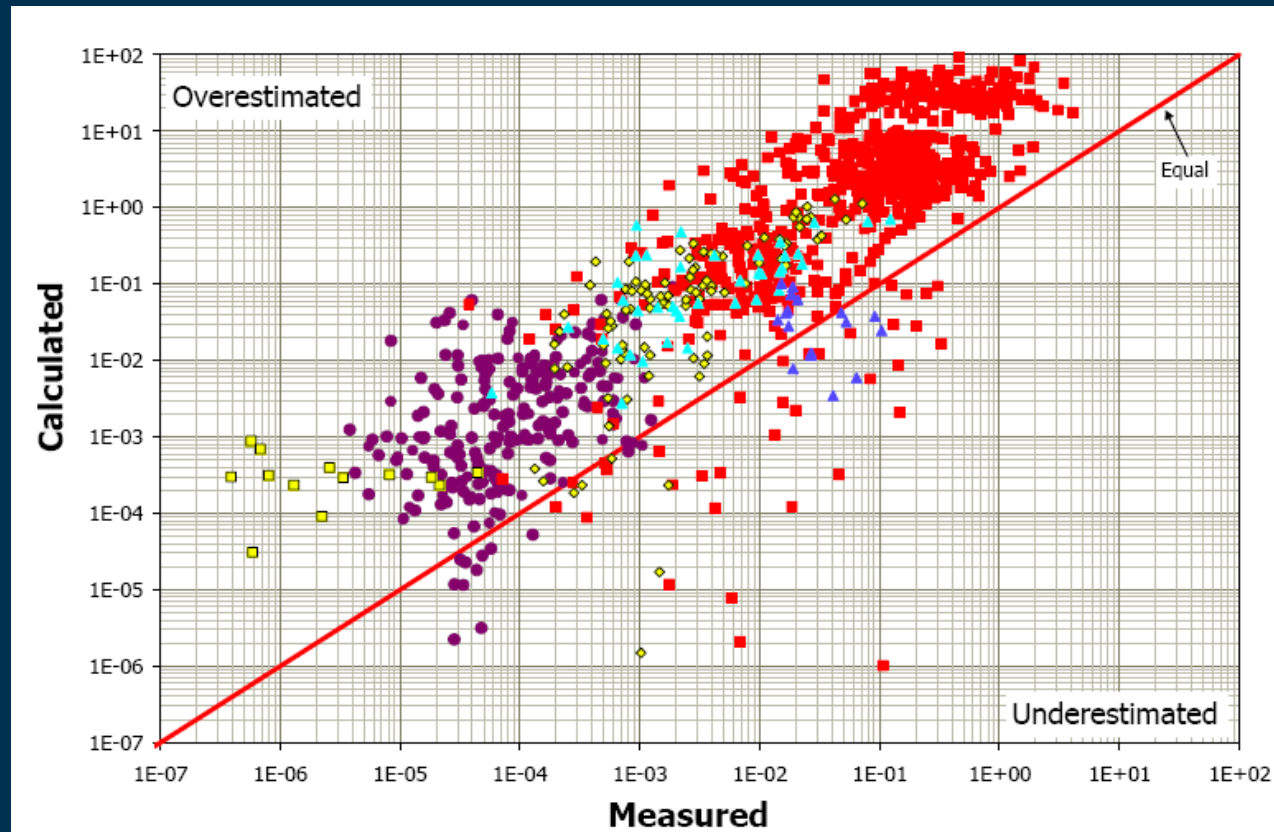


Drilling Riser VIV - Standalone



Drilling Riser VIV

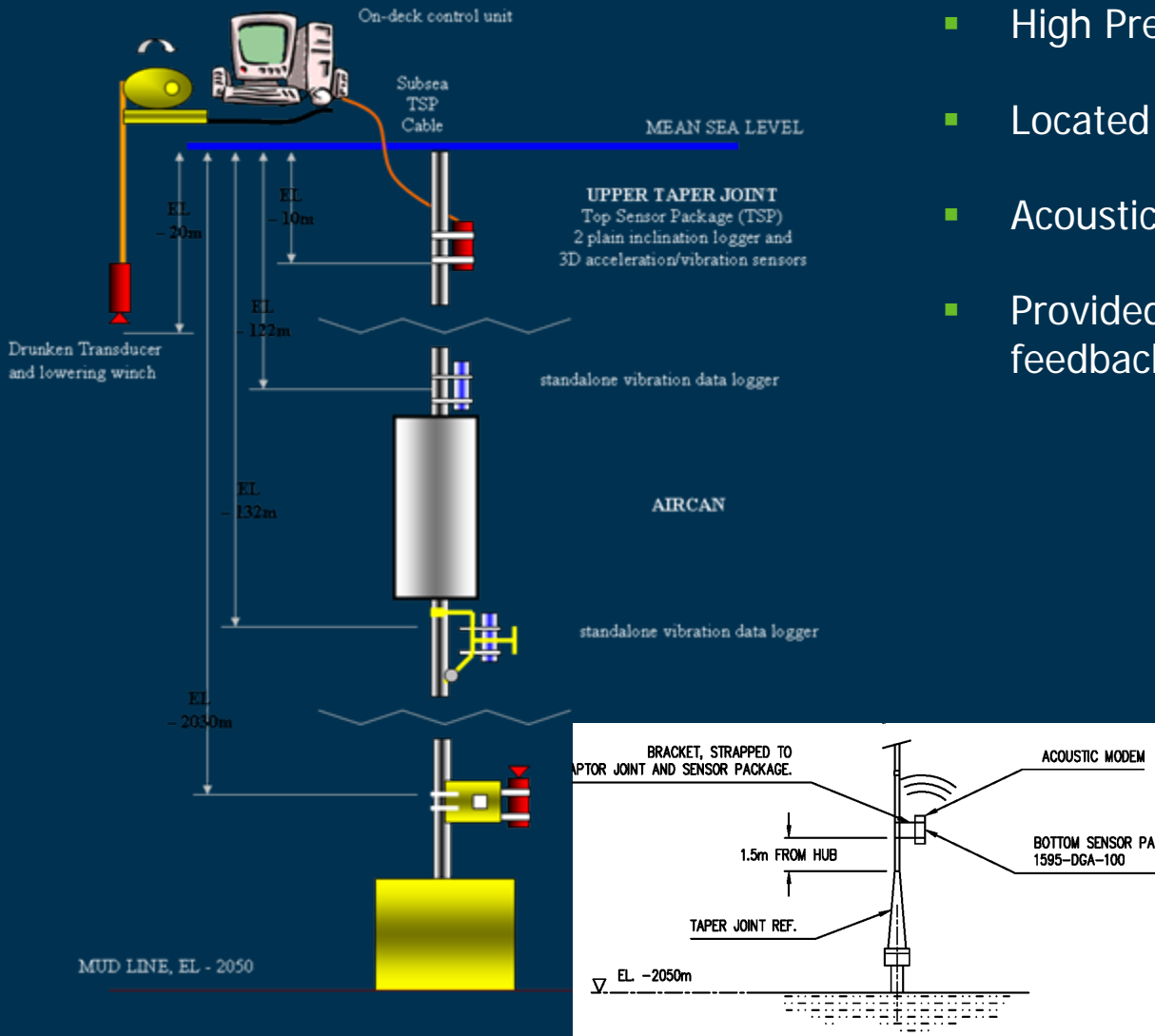
- Results used to calibrate analysis model
- Demonstrates conservatism in fatigue prediction by a factor of 20



Alternative Mounting Methods



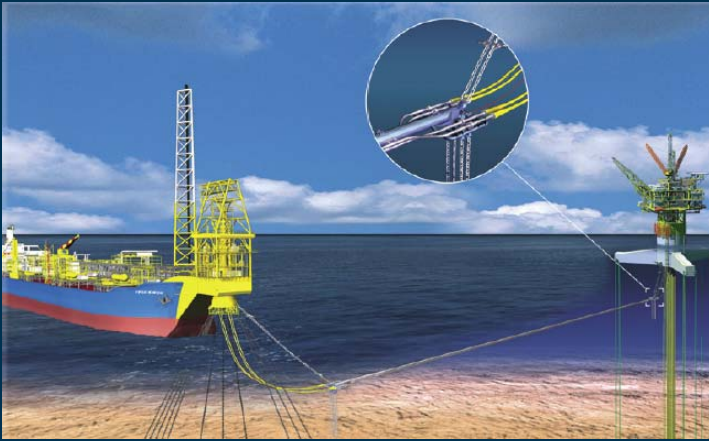
Stress Joint Angle - Acoustic



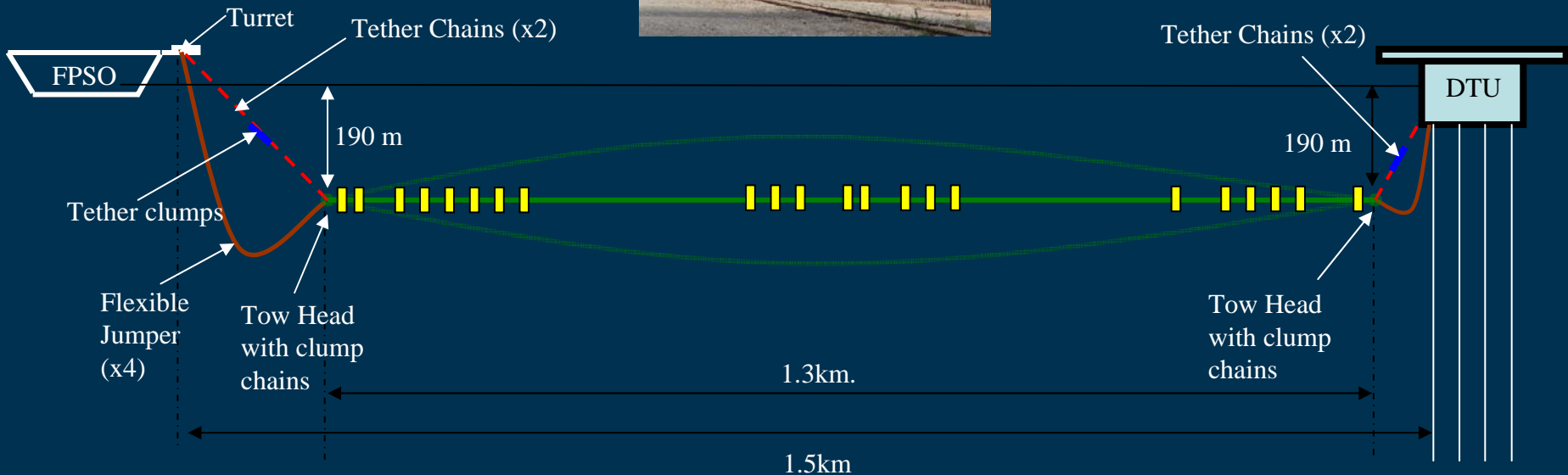
- High Pressure Drilling Riser
- Located Offshore Indonesia
- Acoustic Architecture
- Provided inclination data feedback to control wear



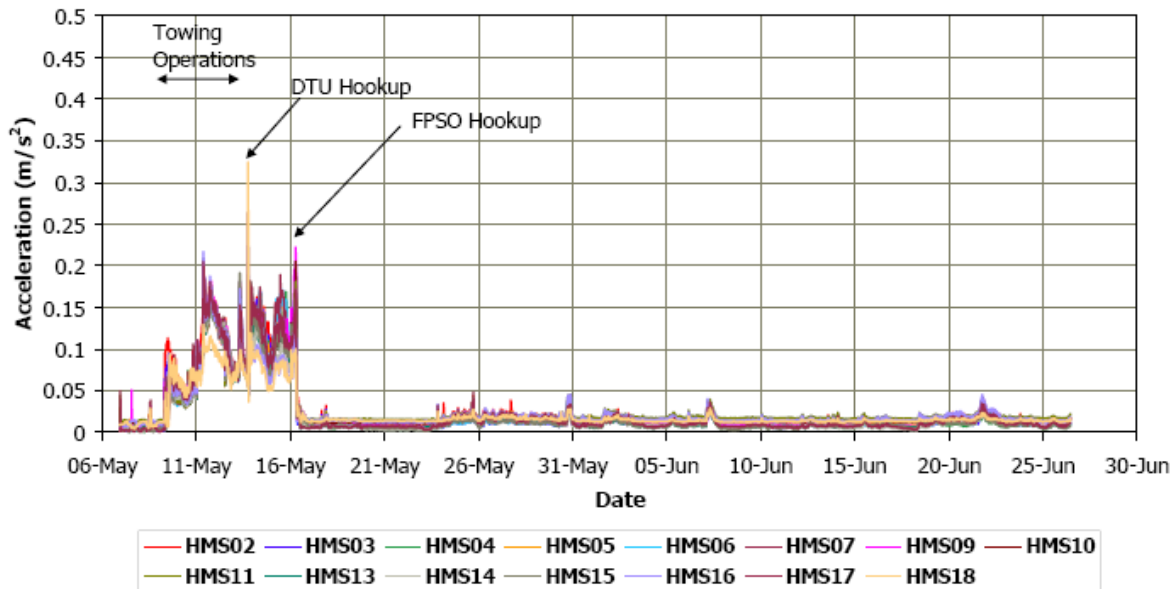
Pipeline Span - Standalone



- 1.5km Horizontal Pipeline span, located at mid depth
- Located Offshore Malaysia
- New design concept
- Concerns about the response during launch and tow out

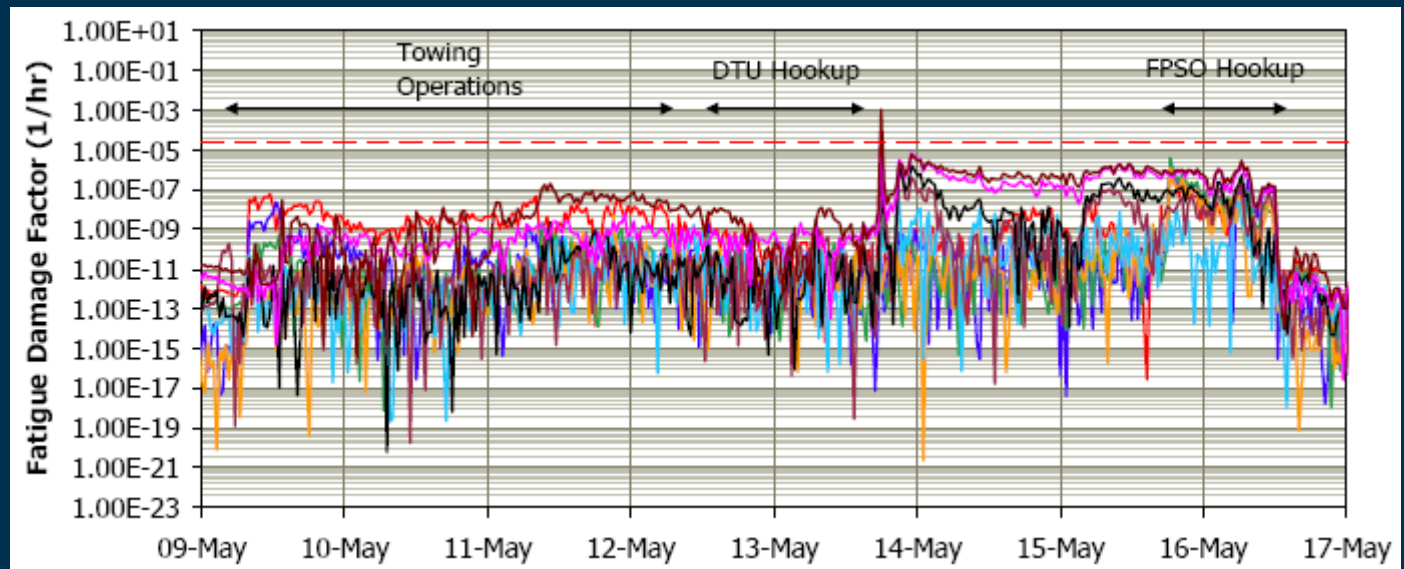


Pipeline Span

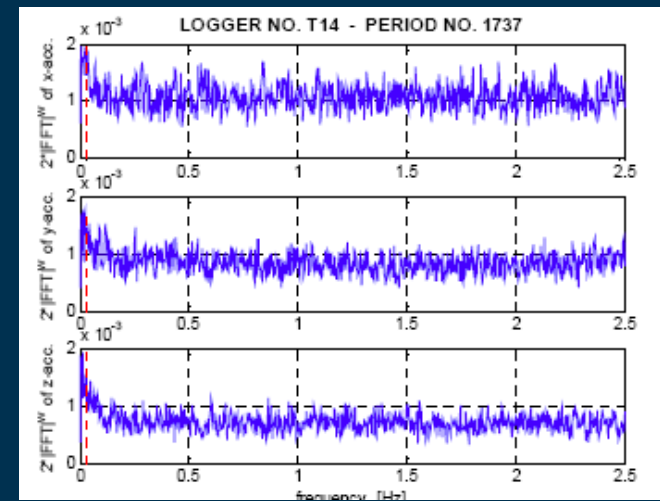
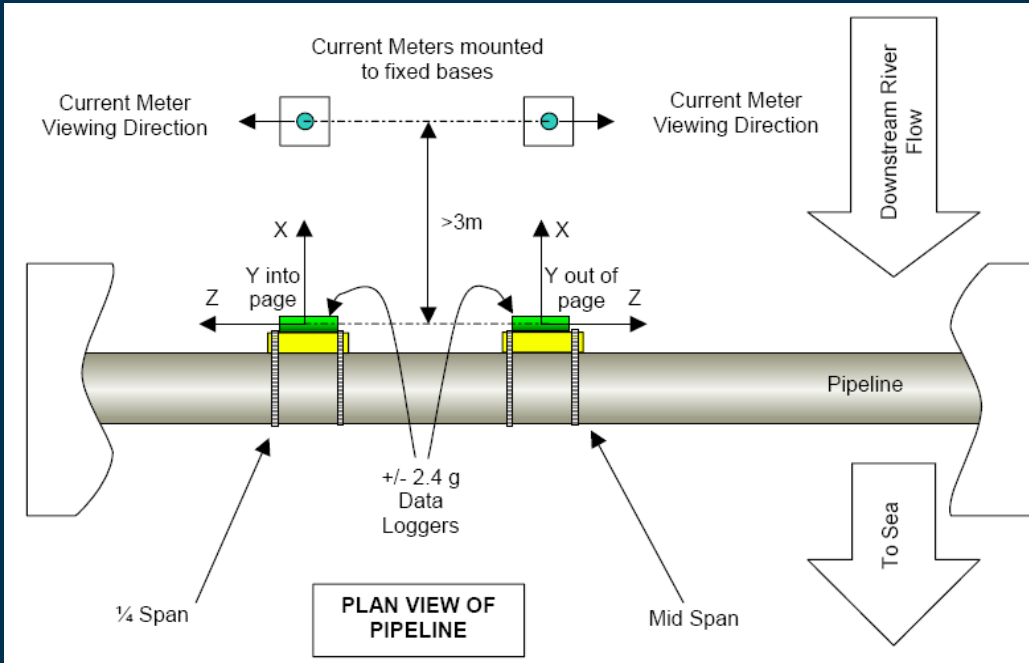


Pipeline Span

- Fatigue damage was accumulated during tow out
- Response was found to be within limits
- Proved analysis model was fairly accurate



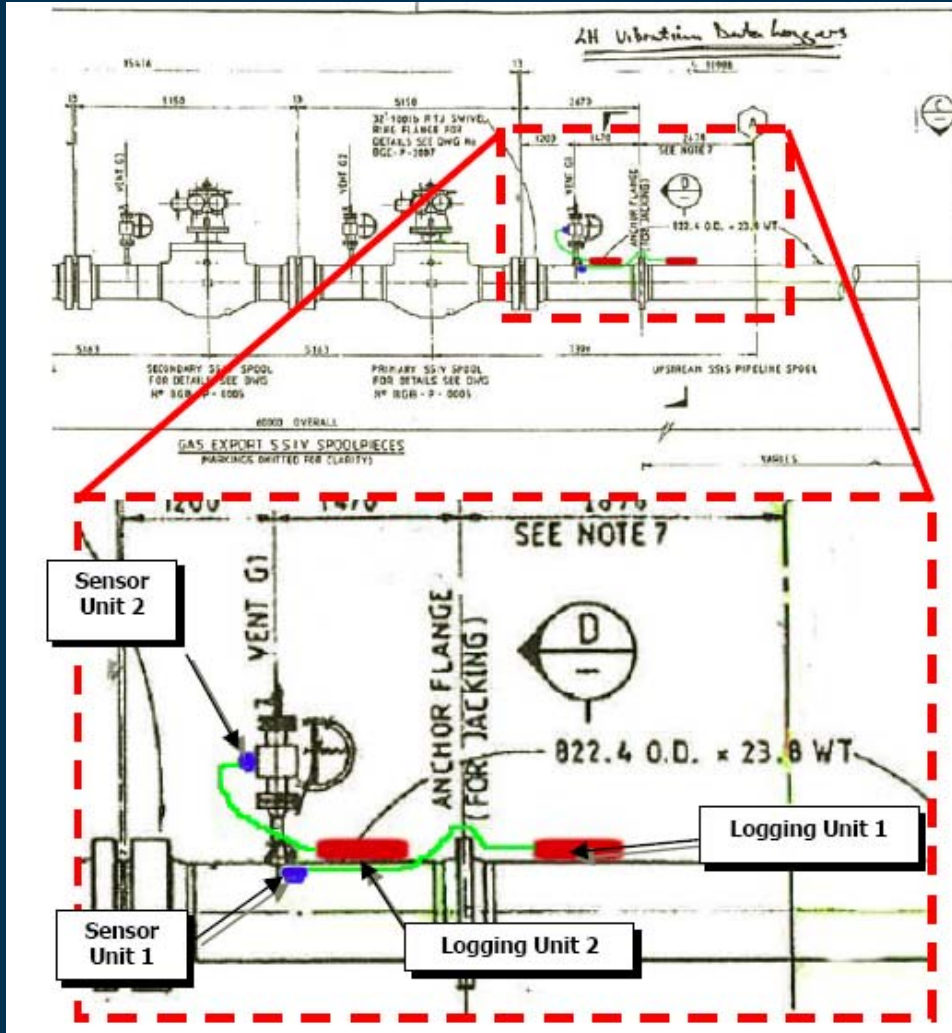
Humber Estuary Pipeline Span



Flexjoint - Online



Vibration

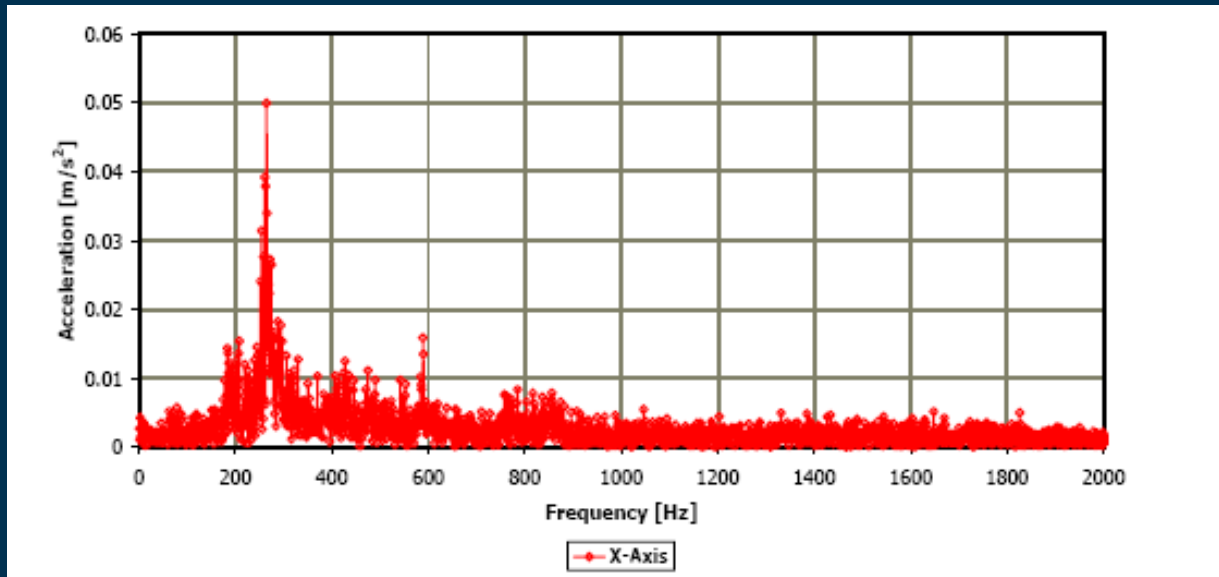


- Gas Export Pipeline
- Located In North Sea
- Concerns with mechanical vibration due to a trapped plug tool



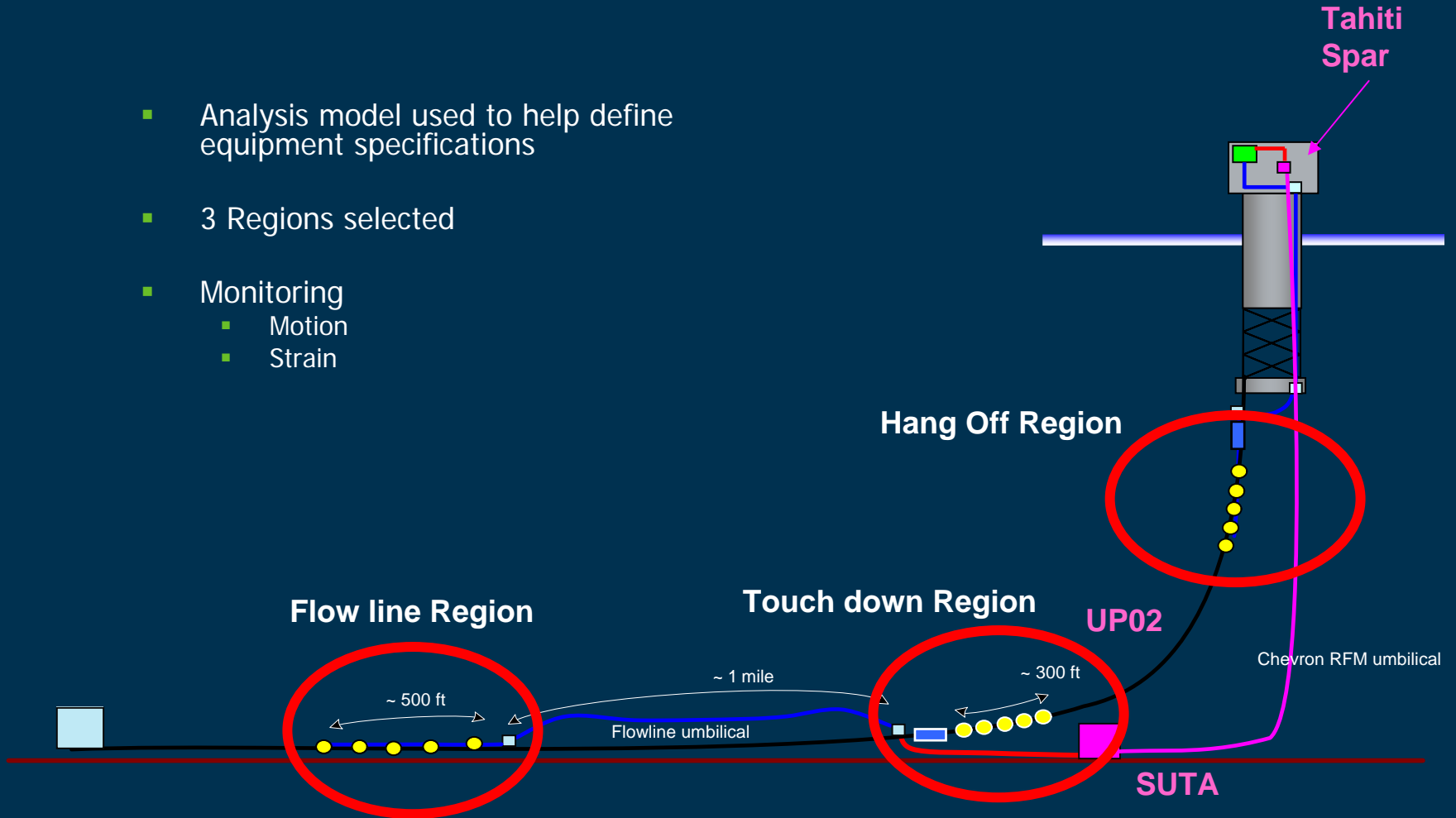
Applications – Vibration

- Found high frequency vibration was present
- Aided the operator to select a safe flow rate



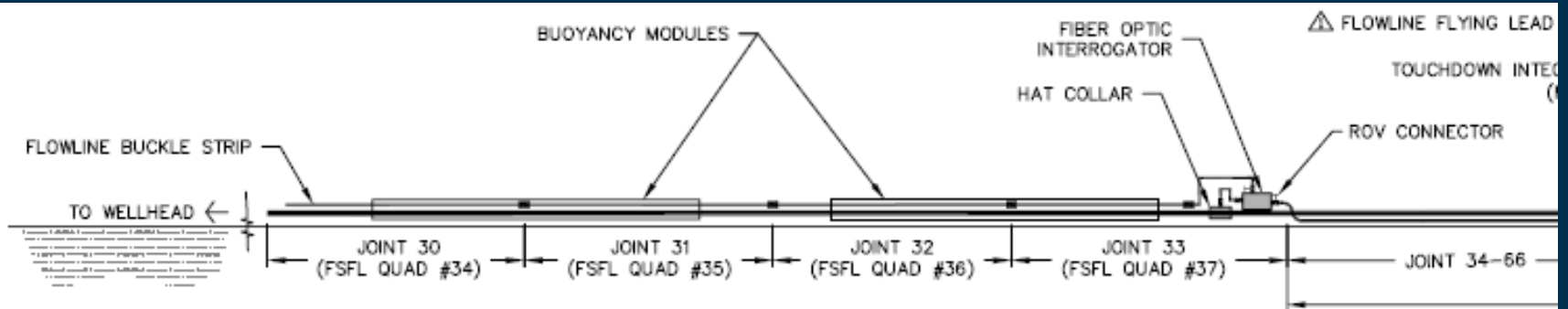
Chevron Tahiti SCR Monitoring

- Analysis model used to help define equipment specifications
- 3 Regions selected
- Monitoring
 - Motion
 - Strain



Chevron Tahiti SCR Monitoring

- Flow line Monitoring



Chevron Tahiti SCR Monitoring

- Hang Off Region Monitoring

