

# WHERE IS YOUR BORE GOING

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## Guidance system selection – key issues

- What is the nature of the project?
  - Bore characteristics – length, depth, profile, geology, etc.
  - Site details – entry/exit constraints, impediments, XXXX
  - Contractual issues – restrictions, tolerances, permitted systems
- What type of system meets the demands of the project
  - Walkover
  - Magnetic wireline tools
  - Gyro wireline tools
- How best to deliver the required system
  - Buy
  - Rent
  - Contract for services vs in house personnel



## Guidance tool selection – Project characteristics

- Bore length
- Bore depth
- Bore profile
- Site limitations
- Contract requirements
- Site obstructions
- Entry and exit conditions
- Magnetic interference
- Existing pipeline infrastructure
- Hand experience
- Availability of service providers



# Guidance system options

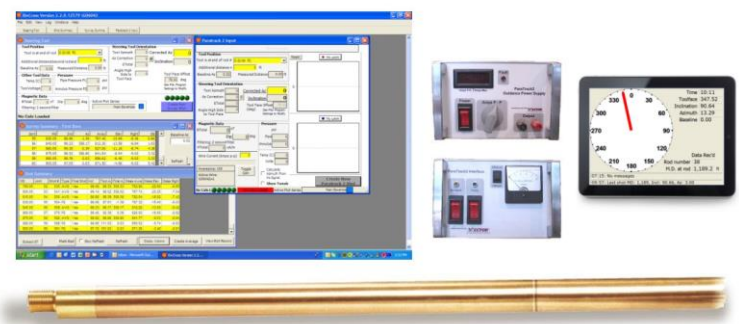
## Walkover systems

- Handheld system used in conjunction with a sonde



## Magnetic Wireline

- Wireline tool composed of accelerometers and magnetometers



## Gyro Wireline

- Wireline tool using gyroscopes for locating

# Walkover Systems

## Benefits

- Relatively low cost
- Ease of use
- Ease to deploy
- Readily available
- Short training period

## Considerations

- Depth limitations
- Magnetic interference
- Not suitable for complex bore profiles
- Obstructions hard to navigate



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# Magnetic Wireline Systems

## Benefits

- Long track record of use
- Secondary means of locating
- Highly accurate
- Can be purchased if desired
- Can be contracted for use through multiple guidance service companies
- Specialty features available (pressure, beacon, intersect, ABIA, etc).

## Considerations

- Impacted by magnetic interference
- Requires surface coil to achieve full system benefits
- Higher cost vs. walkover
- Longer training time



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# Gyro Wireline Systems

## Benefits

- Highly accurate
- Not affected by magnetic interference
- Feasible option for jobs with large “blind” sections
- Short set up time

## Considerations

- Highest cost alternative
- Not available for sale
- Limited number of service providers
- Inclination bias
- No secondary means of locating
- Relatively new to HDD market



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## Purchase a guidance system if...

- You plan to use the system on a regular basis – 100 days over a 3-5 year time period
- You are comfortable dedicating the time and personnel to learn a system, or
- You are planning to hire an engineer on an as needed basis
- Want the financial benefits of owning vs. renting



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# Questions?



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