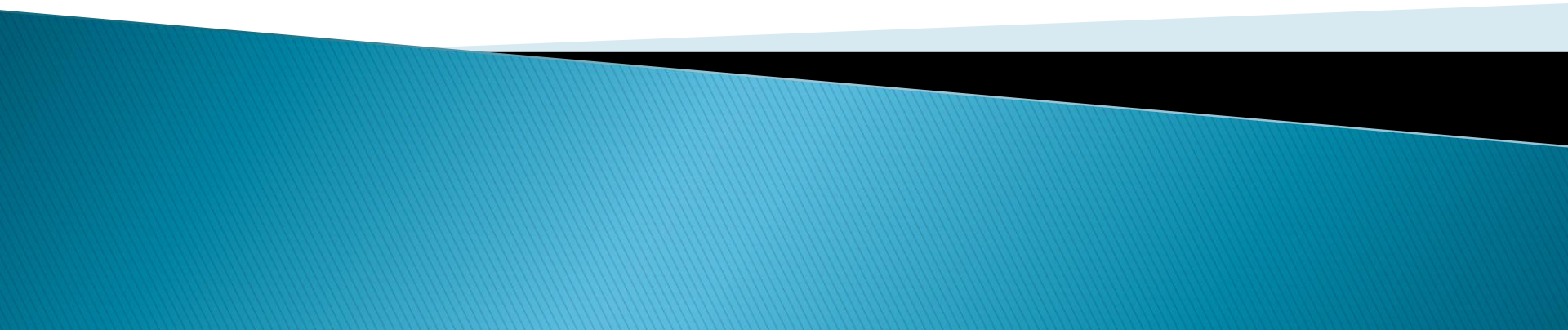
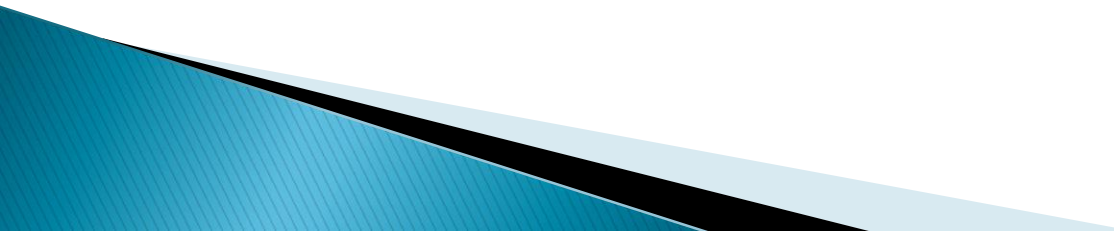


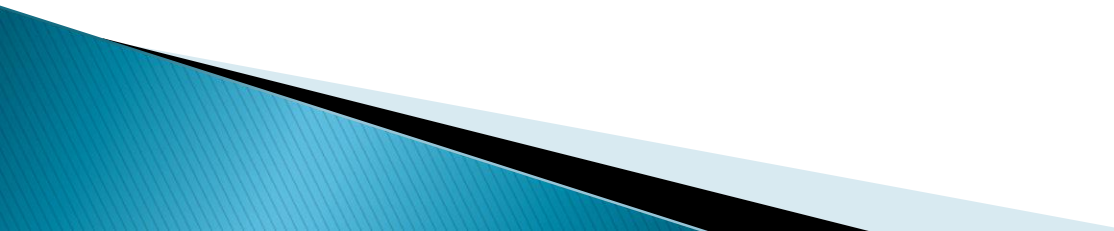
Non Destructive Material Testing



The Aims

- ▶ To check if the material meets its requirements.
 - ▶ Reveal defects before they can do serious damage.
 - ▶ To improve design
- 

The Types

- ▶ Visual
 - ▶ Ultrasonic
 - ▶ X-ray
 - ▶ Liquid penetration
- 

Visual

Most commonly used testing method.

Used tools:

- Fiberscopes
- Robotic Crawlers
- Magnifying Glasses



Fiberscope in use



Advantages:

- Can be done while the machine or structure is in use.

Disadvantages:

- Only reveal major surface defects.
- 



1 Crack filled with dirt



2 Ideally cleaned



3 Application of penetrant



4 Intermediate cleaning



5 Application of developer



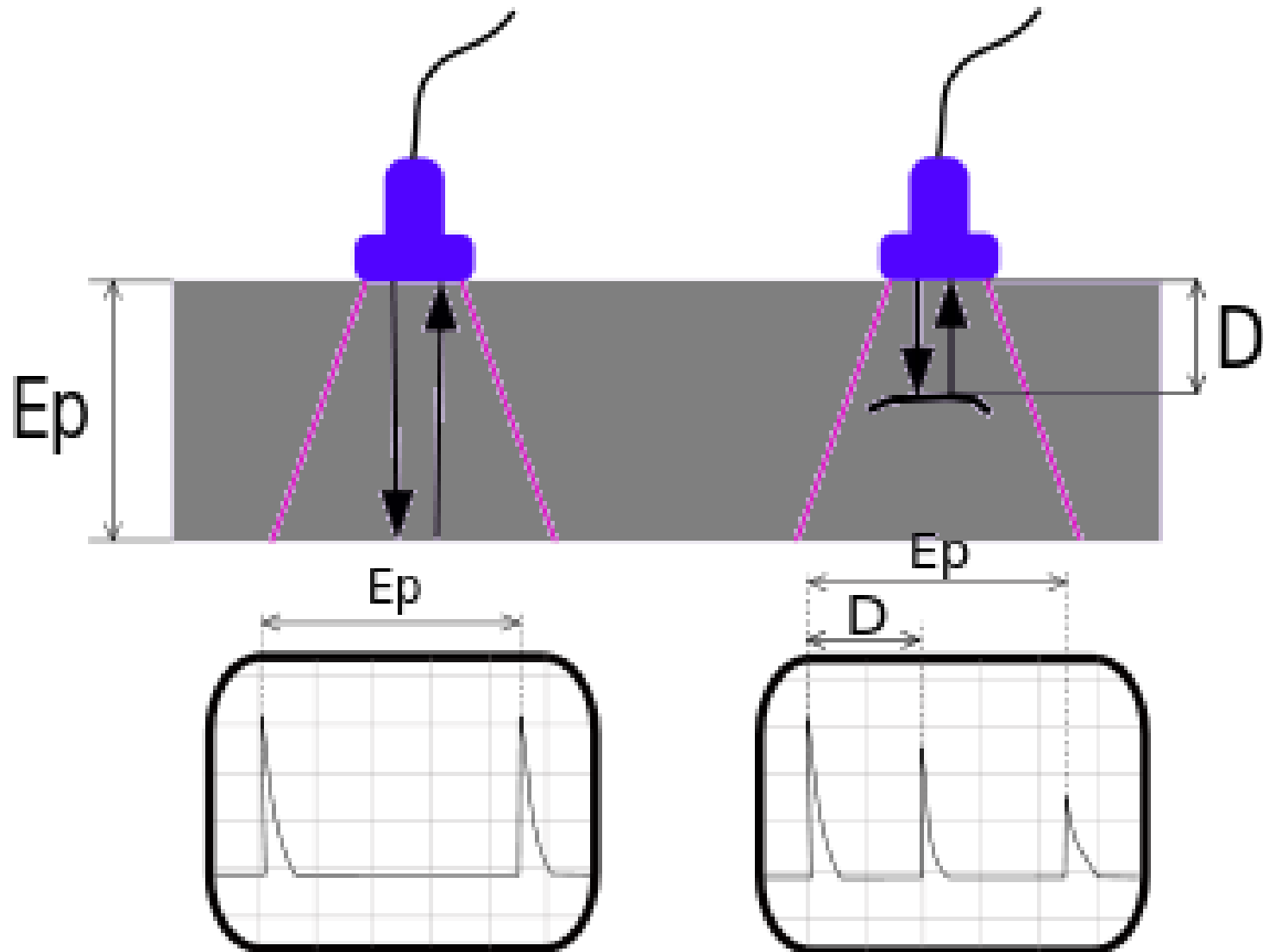
6 Crack indication

Liquid
Penetration
Test





Ultrasonic Testing



X-ray testing chamber

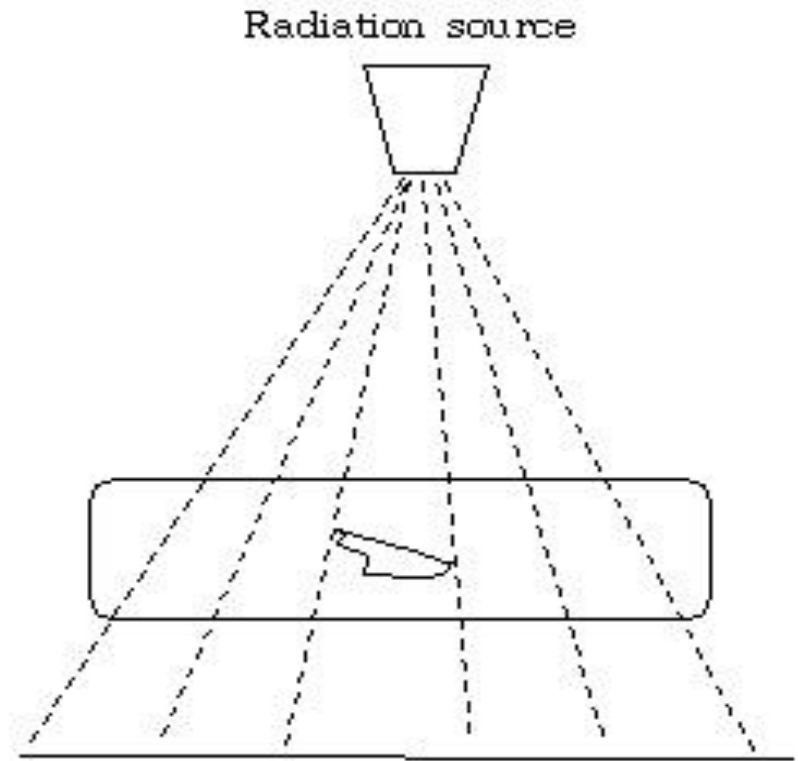
Digital



X-ray testing

Analog

Photographic film



Fault shown on exposed film

Expensive And Dangerous



Pipeline Inspection

Robotic Crawlers



Thank you for Your Attention!

