

# Liquid Pipeline Industry Low Stress Pipelines

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# What is a Low Stress Pipeline?

- Operates at or less than 20% SMYS
  - Examples (std wall thickness, Gr B yield)
  - Typically 150 ANSI flanges (275 psig MOP)
- Downstream of production facilities

Size	20% MOP	Bbl / mile
4	737	83
8	523	327
10	475	515
18	292	1526
30(x60)	300	4388

# Low Stress Pipeline Operating Characteristics

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- Very often short length
  - Often less 1 mile
  - Rarely more than 25 miles
- Wide range of hazardous liquids
  - Crude
  - Refined products including Highly Volatile Liquids
- Sometimes operated by persons not familiar with 49CFR Part 195
- Often between manned sites
- Batch transfers common

# Low Stress Pipeline Operating Characteristics

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- Operation and Maintenance
  - Often regulated by 49CFR Part 195
    - HVL's, not rural, Commercially Navigable Waterway
    - Operators may chose to apply regulatory guidelines
  - If not, often done to **ASME B31.4** “Pipeline Transportation of Liquid Hydrocarbons and other Liquids” Allowed differences from Part 195
    - Design
      - Mitered bends, orange peel fittings, supports welded to pipe
    - Construction
      - Weld radiography not required, pneumatic leak test accepted
    - Operation & Maintenance
      - requalification of MOP changes not required
      - Weld patches and dents > 6% allowed

# Low Stress Pipeline Failure

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- Low stress crude leaks 1999-2004
  - **Pipe or welds** 284 incidents/ 18,555 bbl
  - Valves, pumps and traps 9 incidents / 1760 bbl
  - Other 8 incidents / 208 bbl
  - Total including regulated 301 incidents / 20,523bbl
    - (regulated only) 29 Incidents / 1672 bbl
    - (>8" only) 24 Incidents / 2489 bbl

# Low Stress Pipeline Risks

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- Corrosion
  - External
    - Old lines without effective coating or Cathodic Protection
  - Internal
    - Water
    - Microbiologically Influenced Corrosion
      - (primarily with low flow crude oil lines)
- Outside force damage
  - Expect to be low likelihood
    - Near manned facilities or in very remote areas
    - Short length of total mileage

