



Life Extension of Subsea Pipelines

14 March 2019

Life Extension Assessments for Subsea Pipelines

What is a life extension assessment?

Why perform a life extension assessment?

How is an assessment carried out?

When should the assessment process start?

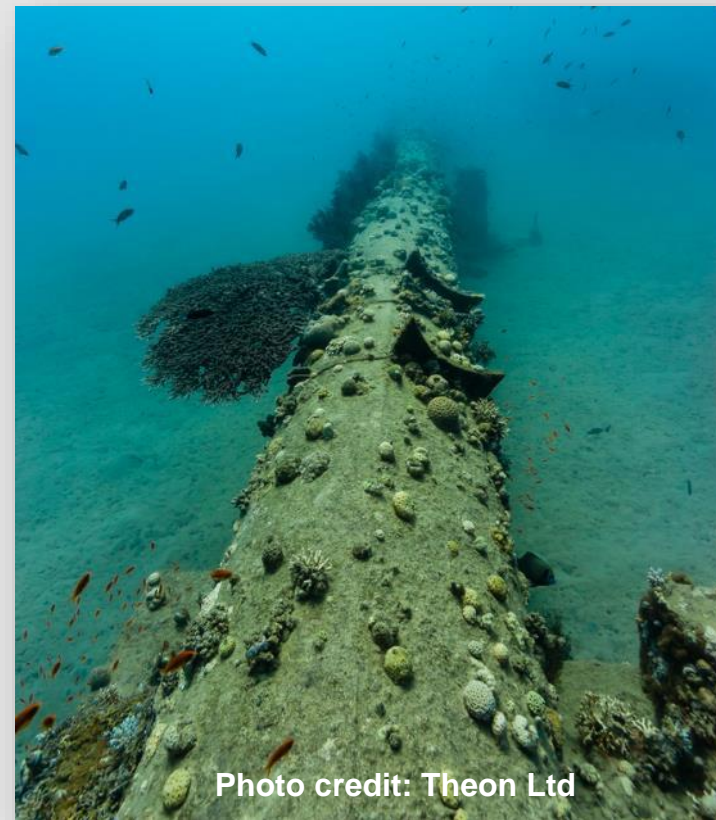


Photo credit: Theon Ltd

The background of the slide is a grayscale illustration of an underwater scene. A large, dark pipeline runs diagonally from the foreground towards the background. In the background, there is an offshore oil or gas platform structure. A shark is visible swimming in the water above the pipeline. The seabed is covered with rocks and sparse vegetation.

What is a Life Extension Assessment?

What is a Life Extension Assessment

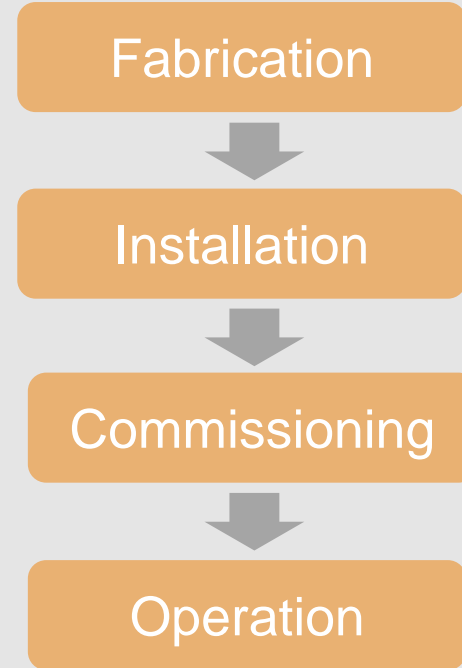
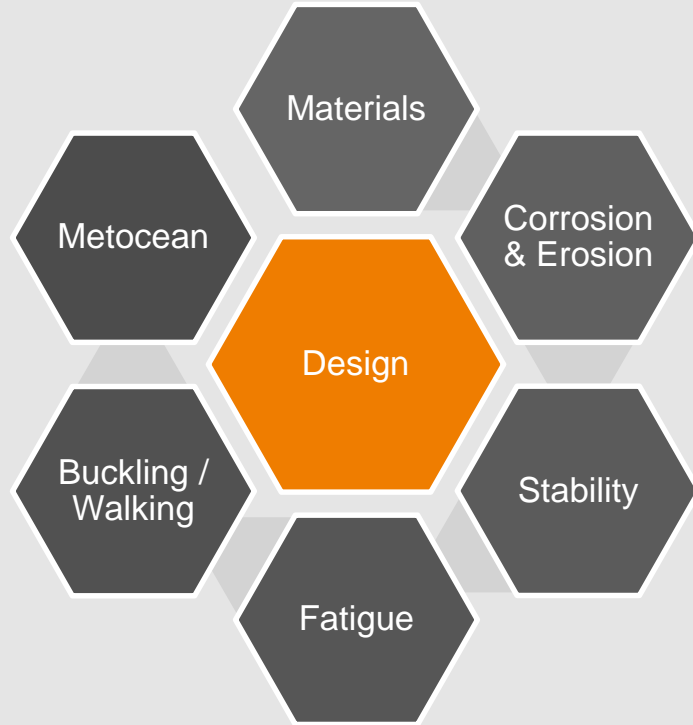
An engineering assessment to determine the **feasibility** of extending the **service life** of a pipeline system beyond its **specified design life**



The background of the slide is a grayscale underwater scene. A large, dark pipeline runs diagonally from the bottom left towards the upper right. The seabed is covered with rocks and sparse, low-lying vegetation. In the background, there is a large, complex structure, possibly an offshore platform or wellhead, with various pipes and scaffolding. A shark is visible swimming in the upper right portion of the frame.

Why is a Life Extension Assessment needed?

Why perform a Life Extension Assessment



Why perform a Life Extension Assessment



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How is an Assessment carried out?

How is an assessment carried out?

NORSOK STANDARD

Y-002
Edition 1, December 2010

Life extension for transportation systems

Revision: 2010

Risers and pipeline transportation systems (metallic pipe, bonded and unbonded flexible pipe)

**TECHNICAL
SPECIFICATION**

**ISO/TS
12747**

First edition
2011-04-15

**Petroleum and natural gas industries —
Pipeline transportation systems —
Recommended practice for pipeline life
extension**

Revision: 2011

Rigid metallic pipes

Oil & Gas UK
the voice of the offshore industry 

**Guideline on Ageing and Life
Extension of Subsea Pipelines
and Risers**

**Issue 1
January 2016**

Revision: 2016

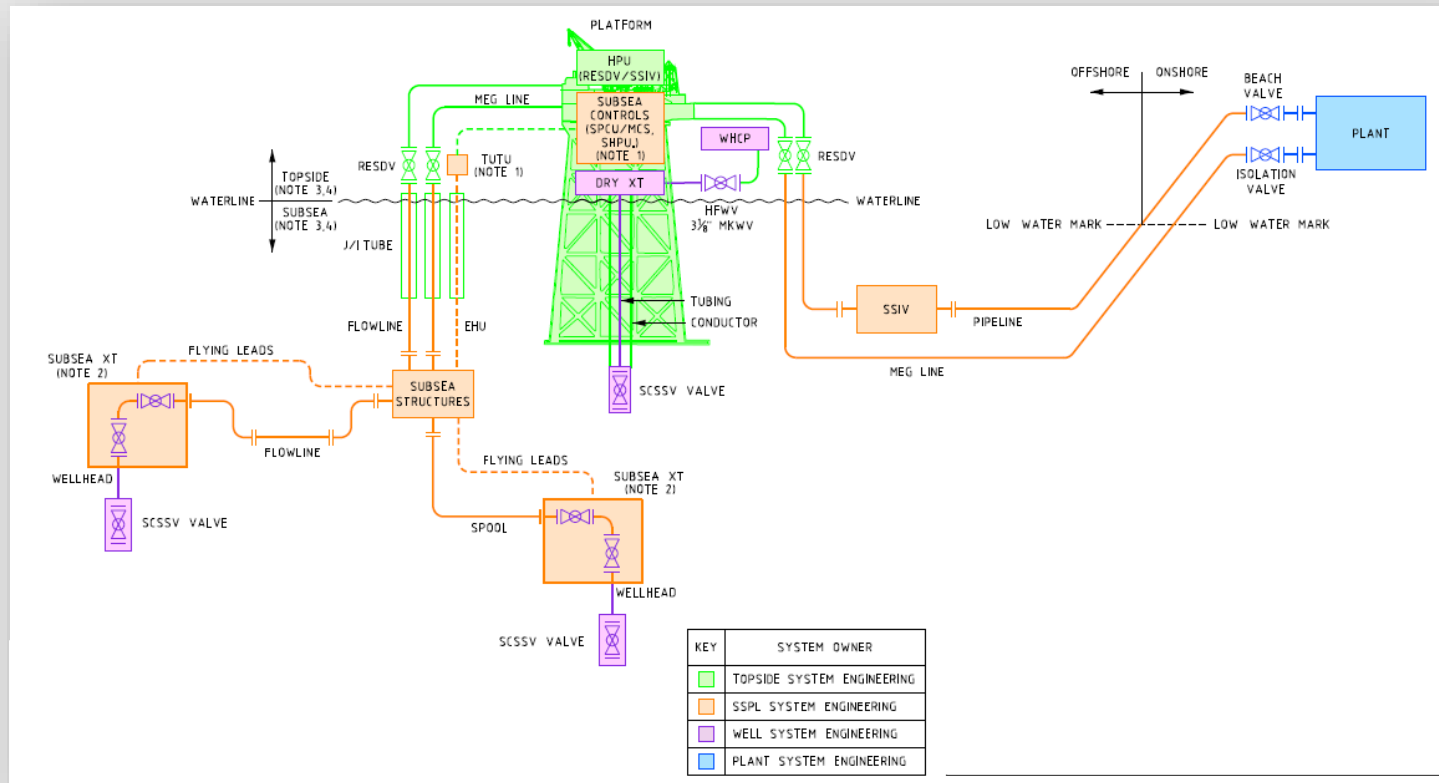
Rigid and flexible pipelines and flowlines and associated manifolds, skids, risers, tie-in spools, jumpers, subsea control systems that connect them

How is an assessment carried out?

Define the Boundary of the Assessment

Pipeline system constitutes the:

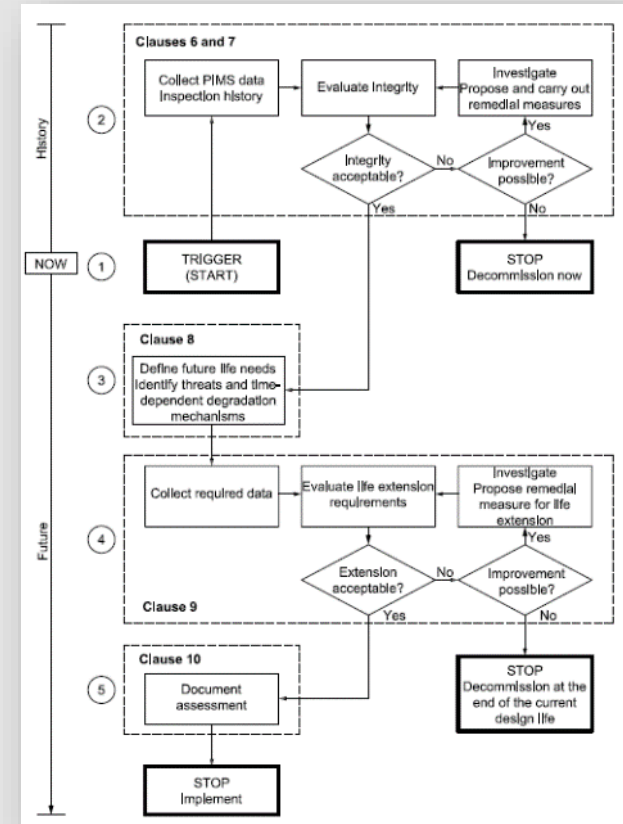
- Pipeline
- Components
- Systems
- Interfaces



How is an assessment carried out?

Assessment Work Flow

1. Collect Pipeline Integrity Management System (PIMS) data
2. Evaluate integrity of Pipeline System
3. Define future life needs
4. Identify threats and degradation mechanisms
5. Collect additional data (if required)
6. Evaluate against life extension requirements
7. Investigate remedial measures for life extension
8. Document life extension assessment



How is an assessment carried out?

The assessment focusses on determining **remaining life** of the pipeline, given **known condition** and **future operating conditions**.

The threats that are assessed may include:

- *internal corrosion – erosion – external corrosion –*
 - *fatigue – buckling / walking – stability –*
 - *physical damage (denting / impact) –*
- *condition of valves – condition of control systems –*
 - *condition of pig launchers and receivers –*

Will the metocean / geotechnical conditions remain the same?

How is an assessment carried out?



Photo credit: Saltel

Assessment Outcomes

The pipeline can continue operating....

for X number of years under [...] service
conditions

as long as...

[...] remedial action is taken

[...] inspection and monitoring activities are
carried out

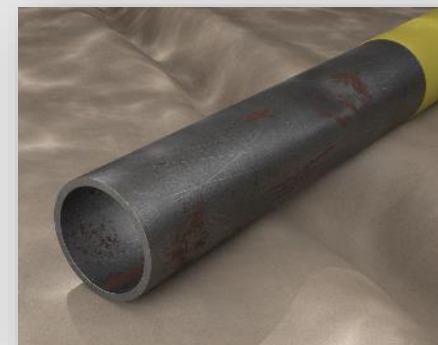
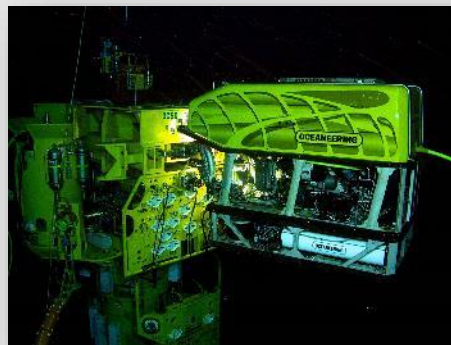
to manage XYZ future threats

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When to perform a Life Extension Assessment?

When to perform a Life Extension Assessment

- End of design life is approaching + continued service need is identified
- How early the process should start depends on:
 1. Level of confidence in existing data
 2. Clarity on future service conditions
 3. Regulatory review and approvals timeframe



The background of the slide is a grayscale underwater scene. A large, dark, cylindrical object, possibly a pipe or a piece of machinery, lies diagonally across the frame from the bottom left towards the upper right. The seabed is covered with rocks and sparse, low-lying vegetation. In the background, there are some vertical structures, possibly part of an offshore platform, and a shark is visible swimming in the water.

Key Advice for Success

Key Advice for Success



- Start the process early
- Integrity management system
- Historic inspection, monitoring, maintenance and repair data
- Clear definition of future operating conditions
- Dedicated resources (and the right ones)

Questions?
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