

## **INTRODUCTION**

Propipe have been testing the piggability of pipeline pigs for several years at their dedicated test facility in Hartlepool, UK.

Testing is regularly undertaken at the request of Operators, Installation Contractors, Pre-commissioning companies and Design organisations to confirm the piggability of a pipeline system in various scenarios.

Testing can vary from a simple differential pressure holding test for an isolation pig through to full piggability testing of multi-diameter pipelines including pipeline features such as valves, wye pieces, tees, bends, reduced pipeline sections, etc.

Piggability testing provides confidence to the Asset Owner/Operator/Contractor that the chosen pig design will not only pass through the pipeline system but will also do what is expected of it, i.e. flood, clean, gauge, dewater or maintain a pipeline in operational conditions, for example dewaxing.

## **TEST RIG MANUFACTURE**

Bespoke test rigs are manufactured for each pipeline project. Each test rig is unique and often includes special simulated features such as reduced/oversized pipe section, check valves, bends, wye pieces, tees and other features found in pipelines.

The test rig replicates the pipeline geometry and features as close as is practical to ensure accurate and meaningful test results. In addition to establishing the correct geometry and feature configuration, pipe spools can be internally coated with Polyurethane, wax of varying hardness, oil, etc. to closely simulate the actual pipeline conditions.

From receipt of an order a detailed engineering drawing of the test rig is developed and sent to the Customer for approval prior to commencement of manufacture.

Prior to use the test rig is dimensionally verified and Hydrotested to ensure safe operations.

## **PUMPING EQUIPMENT**

Pumping equipment is sized to provide an appropriate pigging speed and pressure relevant to the application.

Where liquids are used as a pumping medium, the liquid will be continually re-circulated to minimise waste and avoid any potential environmental impact.

Piggability testing with air is often required to simulate dewatering activities or operational pigging. Air testing will only be carried out after full verification of the pig design using water as a pumping medium.



## **DATA RECORDING**

Test rigs are fully instrumented for flow, pressure and pig location. A multi-channel data logger is utilised to record data for analysis and subsequent inclusion into test reports, etc. Typically data is logged at a rate between 2Hz and 5 Hz with the frequency being adjusted to suit the pig speed.

## **SITE AND FACILITIES**

Testing is undertaken at Propipe's dedicated outdoor test site which is located adjacent to Propipe's main office and manufacturing facility in Hartlepool, UK. The test site is approximately 8000m<sup>2</sup> bounded by security fencing. The site is supplied with water and 240V electric.

Full test site equipment/facilities are provided. Typically this would include:

- Site office
- Storage container
- Site workshop
- Fork lift truck and/or crane as required
- Pig handling equipment, loading trays, etc.
- Site and inspection lighting
- Hand/power tools

Testing activities, unless agreed otherwise, are performed between 0900hrs and 1600hrs Monday to Friday during excluding public holidays.

During testing the test site is accessible to authorised personnel only. Site inductions and project familiarisations are given to all new/visiting visiting personnel.

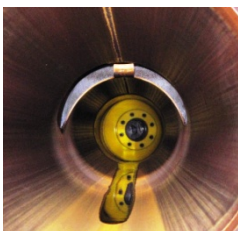
## **PERSONNEL**

Each project is supported, as a minimum, by the following personnel;

- Project Manager
- Project Engineer
- Test Supervisor
- Test Technician(s)

Suitably trained/experienced test personnel are allocated to the project to ensure the work is undertaken in a professional and safe manner. A full site induction is provided for all personnel attending the test site.

During testing a qualified First Aider will be in attendance at all times.



## **PROJECT MANAGEMENT & ENGINEERING**

Testing and development projects are administered by the Project Manager; the single point of contact.

All communications are routed through the Project Manager to ensure clear and concise communication between Propipe and the Customer.

A Kick off meeting is generally recommended at contract award to clearly agree the work scope, facilitate the sharing of ideas, agree schedule and define expectations of the project.

A weekly project progress report is issued, by the Project Manager, clearly identifying the progress made during the previous week and work planned for the coming week. In addition the report also details any concerns or delays and any accidents or incidents (QHSE) relating to the project that may have occurred. During testing activities a daily progress report is issued to all project personnel.

## **PROJECT DOCUMENTATION**

During execution of the contract various documents will be produced and issued to the project for review/approval.

Typically project documentation includes the following;

- Pig design/engineering reports/studies
  - Evaluation of the piggability of a system
- Project progress reports
  - Issued weekly, daily reports issued during testing
- Test rig fabrication drawings
  - Sufficiently detailed to allow fabrication of the test rig
- Testing Philosophy Report
  - Detailing test rig, test facilities, logging and pumping equipment, etc
- Method statements
  - Detailing the methodology to be applied during testing
- Risk assessment report
  - Assessment of risk during testing and mitigating measures to be undertaken
- Report of Testing
  - Outcome of testing including recommendations and conclusions

