



(REGISTRATION NO: 1990/000900/06)

**TENDER No. TPL/2023/08/0002/40686/RFP**

**THE PROVISION OF INLINE INSPECTION SERVICES: MAGNETIC FLUX LEAKAGE (MFL)  
WALL LOSS/ CORROSION DETECTION SURVEY OF TWO SECTIONS OF 8inch REFINED-  
PRODUCT (DJP) ONSHORE PIPELINE.**

**PROJECT SPECIFICATION**

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## 1. INTRODUCTION

TRANSNET PIPELINES (a pipeline operating division of Transnet SOC Limited) invites bids from eligible Pipeline Inspection service providers for the inline inspection of their sections of 8-inch diameter onshore pipeline network employing an in-line High Resolution/ Definition Magnetic Flux Leakage Wall Loss or Corrosion Detection inspection tool.

The inspection works and final reporting is to be completed within a period of 12 months.

This works includes only two sections of the pipeline as tabulated below:

Item	Diameter	Length (km)	Start (launch)	Stop (receive)
1	8"	137,9	Sasolburg (Free State)	Klerksdorp (North-West)
2	8"	62,3	Tarlton (Gauteng)	Rustenburg (North-West)

The Pipeline Operators Forum (POF) document "Specifications and requirements for intelligent pig inspection of pipelines" 2016 (or latest revision) shall form minimum conditions for this works.

## 2. DEFINITIONS AND ABBREVIATIONS

2.1 In this contract, unless inconsistent with the context:

**"Calliper"** tool means a pigging tool used to measure the geometry of a pipeline, including identifying dents, wrinkles, bore and bend configurations, etc.

**"Dummy"** tool means a pigging tool of same shape, size etc of a smart tool used to confirm that the respective required smart tools can pass through the pipeline.

**"Mobilisation Period"** means from the start date, or establishment (mobilisation) date or such date as agreed to, to the end date, or dissolution (demobilisation) date or such date agreed to, of a substantially continuous period, excluding any breaks associated with the periods during Easter and Festive season (16 December and 8 January) holidays, during which the Contractor mobilises with the aim of executing an agreed to portion of Works. Such portion of Works can be subject to additions and exclusions under the conditions defined under the General Conditions of the contract or herewith in.

**XYZ** – Latitude, Longitude and Altitude

**INS** – Inertial Navigational System

**IMU** – Inertial Measurement Unit

**POF** – Pipeline Operators Forum

**USB** – Universal Serial Bus

**AGM** – Above Ground Marker

### 3. SCOPE OF WORKS

This contract covers the provision of inline inspection of two sections of 8-inch nominal diameter pipeline hereinafter referred to as the "Works", and any other work arising out of or incidental to the above, or required of the Contractor for the proper completion of the Works in accordance with the true meaning and intent of the contract, and shall include the following:

- a) The bore proving survey of the two sections of pipeline by a gauge plate tool and or profile tool 'dummy' tool of the same configuration as the live tool to ensure free and safe passage of the live tool.
- b) The pre-inspection cleaning of the sections by an appropriate cleaning tool(s) to ensure unhindered data collection and successful inspection. This shall be a maximum of three runs per section.
- c) The Deformation/ Geometry survey of the two sections of pipeline by an electronic Calliper tool. This inspection must determine clear and precise identification, location and visualisation (detection and sizing) of deformations/ geometric conditions such as dents, wrinkles, ovalities, bore reductions and bends including their respective bore, radii and angles.  
The Calliper tool shall identify all other pipeline features and installations, such as girth welds, valves, tee-pieces, etc. and shall measure distance.
- d) The condition survey of the two sections of pipeline by an in-line High Resolution/ Definition Magnetic Flux Leakage Wall Loss/ Corrosion Detection inspection tool.  
The inspection shall be for the full pipe wall and joint conditions seeking out any imperfections, internal & external metal loss/ corrosion, wall thinning, mill anomalies, weld anomalies, gouges/ third party damage and dents.  
The inspection shall also be for pipe tally, longitudinal seam weld positions and wall thickness proving.  
Ability to detect axial and/ or circumferential cracks and mid-wall events including laminations, inclusions, etc will advantage the contractor.  
The tool should also detect pipeline installations and fittings.
- e) The XYZ profile/ mapping survey of the two sections of pipeline by an in-line inertial navigation system (INS)/ inertial measurement unit (IMU) device coupled to an inspection tool.
- f) Noting that POF document does not cater for pin holes and illegal taps, the Contractor must specifically calibrate their tool to locate and detect pin holes and illegal tapping.
- g) The supply of reports and digitised survey data formats, including the respective data visualisation software indicating the type, location and severity of pipe geometry defects and events, pipe wall and weld features, as associated with the above-mentioned surveys. The survey shall reference all defects and illegal fittings to known above ground markers and/or existing block valves installed on the pipeline. Digital reports should preferably be 'Data Integration' friendly/ ready, such as would be used by a pipeline integrity (data) management system.
- h) The supply of Inspection Data Viewer and Presentation Software to be able to observe, analyse and edit the digitised survey data. This shall include training in the use and interpretation of digitised survey data, data evaluation software and log reports.

#### **4. SURVEY PROGRAMME**

The anticipated period of contract shall be twelve (12) months. Scheduling of inspection tools shall be by mutual agreement and pipeline operational requirements.

- 4.1 TRANSNET PIPELINES intends to survey Two (2) sections totalling 200.2km in length of 8-inch diameter pipeline system. Each section can be inspected in a single pass.
- 4.2 Approximate in-field works execution period, i.e., the actual times including runs and travel but excluding any extensive tool(s) refurbishment time is sixteen (16) weeks.
- 4.3 TRANSNET PIPELINES anticipates that the works will commence within one (1) calendar month of the award of tender and/ or the Contractor being so ordered to commence.
- 4.4 The Contractor shall verify the quality, completeness, and adequacy of the recorded data for each pipeline section to ascertain the success or failure of the run. Initial verbal and/ or written field report must be issued within 48 hours of completion.
- 4.5 The Contractor shall furnish the preliminary inspections report within two (2) weeks of the successful completion of in-field works for each pipeline section inspected surveys.
- 4.6 The Contractor shall furnish the final inspections report within one (1) calendar month of the successful completion of in-field works for each pipeline section inspected surveys.
- 4.7 TRANSNET PIPELINES shall review and accept final report within two (2) weeks of its receipt.

#### **5. PORTION OF WORKS SUPPLIED BY TRANSNET PIPELINES**

- 5.1 TRANSNET PIPELINES will furnish personnel where required for assisting the Contractor's survey crew with the loading and retrieving their survey tool(s).
- 5.2 TRANSNET PIPELINES will further provide personnel to assist with inspection tool tracking procedures.
- 5.3 TRANSNET PIPELINES shall be fully responsible for the control and management of the pipelines and for the running of the survey tools through the pipeline, including launching and receiving procedures.
- 5.4 TRANSNET PIPELINES shall provide Technical Information as Annexure 2 regarding the various sections to be surveyed. Additional information required by Contractor will be made available as per requirements stated in tender, at the time of signing the contract, or as per agreement between parties.

## **6. DUTIES OF CONTRACTOR**

The Contractor shall perform the works with due diligence, efficiency, and in accordance with generally accepted techniques and practices used in the industry and shall observe sound management and technical and engineering practices, and employ appropriate advanced technology, and supply field personnel of the same standard as also guided by Pipeline Operators Forum's (POF) latest version of document on specifications and requirements for intelligent pig inspection of pipelines.

Further to any other duties required of the Contractor in carrying out the WORKS he/she shall be responsible for the following:

- 6.1 The Contractor or their agent shall be responsible for forwarding, clearing customs and excise procedures, or other such items related to the clearance of materials, plant and equipment through customs upon entry into and exit from the Republic of South Africa.
- 6.2 The Contractor shall be responsible for the loading (insertion) of the inspection tool into and retrieval of such from the respective traps and shall effectively monitor TRANSNET PIPELINES personnel if this function is jointly executed.
- 6.3 The Contractor shall be responsible for the cleaning of their inspection tools.
- 6.4 The contractor shall provide benchmarking units (above ground marker units) adequate for placement at 2km intervals. These may also be buried where opportunity exist. The Contractor shall offer necessary on-site training for operation of marker units to Transnet Pipelines personnel.
- 6.5 The Contractor shall verify the quality, completeness, and adequacy of the recorded data for each pipeline section to ascertain the success or failure of the run. Initial verbal and/ or written field report must be issued within 48 hours of completion.
- 6.7 The Contractor shall analyse the inspection data and supply a Preliminary Report indicating the most severe of the events (i.e., 80% and above peak depth) and alert of all suspected illegal taps within a period of two (2) weeks of completion of the run.
- 6.8 The Contractor shall deliver and present the Final Inspection Report indicating the extent of events as required under clause 8 herewith or as agreed, within a period of four (4) weeks of successful completion of each section of pipeline.

## **7. DETECTION SPECIFICATION**

General tool specifications: detailed tool specifications for all tools to be employed and or envisaged in successful performance of this works are requested at the time of bidding.

Transnet shall use such specifications as basis to perform evaluation of the proposed system with regards to detection ability and sizing accuracy.

- 7.1 The system must detect and identify girth (circumferential) welds, fittings, illegal hot tap, and other such installed features.
- 7.2 The system must inspect girth welds for completeness of welding and/ or any imperfections.
- 7.3 The system must detect, identify, and size pipe wall anomalies including metal loss, pitting, thinning, general corrosion, gouging, dents and mill/ mechanical features.
- 7.4 The system must detect and identify any metal addition or metal in close proximity of the pipe wall.
- 7.5 The system must detect anomalies propagating from either internal or external surface and must be able to differentiate between them.
- 7.6 It is *desired* that the system may be able to detect axial and/ or circumferential crack-like features (discontinuities), pin holes and mid-wall features (laminations, inclusions, etc.).
- 7.7 The system must detect any other feature(s) straddling the longitudinal seam and/ or girth welds including any features in the parent pipe that may impact on structural integrity, the fitness-for-purpose and fatigue life of the pipeline system.

### Notes

- a) The Contractor must provide tool performance specifications declaring its detection and sizing accuracy including probability of detection for features at time of tender.
- b) The Contractor must provide tool data sheet detailing its dimensions, operational requirements, etc. at time of tender.

## **8. REPORTS, SURVEY REPORTS AND SOFTWARE REQUIREMENTS**

Reporting requirements as recommended and listed in POF's document on specifications and requirements for intelligent pig inspection of pipelines shall form minimum basis of reporting.

- 8.1 The Contractor shall analyse and grade the indications per pipe-length (spool/ joint) on final data and submit detailed reports on these indications.
- 8.2 Each survey conducted must have the following Reports and Software supplied to TRANSNET PIPELINES:
  - (i) Two hard copies of every survey report.
  - (ii) Two electronic copies of every survey report.
  - (iii) One copy of any down loadable USB's, for example:
    - (a) System Software – Installation USB.
    - (b) Annotation Files USB
  - (iv) Two copies of any non-down loadable USB's, for example:
    - (a) Data Graphics USB.

### **8.3 Dig sheet requirements**

Dig sheets shall meet the following requirements:

- (i) The dig sheets must be graphical representations of defects identified in the survey.
- (ii) The following information must be shown on any dig sheet:
  - (a) Pipeline section details
  - (b) Distance from defect to nearest upstream & downstream welds.
  - (c) Distance from defect to nearest upstream & downstream above ground markers (AGM's) or location reference point.
  - (d) Relevant AGM or location reference point descriptions.
  - (e) Pipe length on which defect occurs and adjacent pipe lengths.
  - (f) Tool travel direction.
  - (g) Defect details, including orientation.
  - (h) Orientation of longitudinal (seam) weld

#### 8.4 Survey report requirements

Notwithstanding the reporting provisions in the POF version 2016 or in a current version's specifications and requirements for intelligent pig inspection of pipelines, reporting shall include:

Each Inspection survey shall have Log Reports that contain at least the following:

- (i) Covering letter / Introduction
- (ii) Table of Contents
- (iii) Tool Reports
  - (a) Dummy / Sizing Tool Run Report
  - (b) Inspection Tool Run Report
  - (d) General Description of High Resolution Equipment
- (iv) Excavation Reports
  - (a) Correlation Excavations
- (v) Graphs
  - (a) Velocity Chart
  - (b) Distribution Chart of number of events vs. Distance
  - (c) Scatter plots of depth verses length including allowable line
- (vi) Summary Reports and Spreadsheets
  - (a) List of Known Locations (location reference point).
  - (b) List of Accessories Attached to Pipeline
  - (c) Summary of Anomalies, indicating a minimum of: type, size, location, & orientation.
  - (d) List of Indications Associated with the long seam weld, indicating a minimum of: type, size, location, & orientation.
  - (e) Dig sheets for the 10 most severe events plus for all calibration digs required.
- (vi) Detailed Reports and Spreadsheets
  - (a) Full pipeline consecutive listing of all features, welds, Known Locations, etc.

- 8.5 All items listed in the reports are to be identified relative to the launch distance, and it shall be possible to reference all events to the pipe upstream weld and the upstream and downstream location reference points.
- 8.6 All references to Known Locations (location reference points) such as block valves and above ground markers AGM's are to be labelled correctly using the defined identifier for that item as indicated on the relevant alignment sheet supplied to the Contractor.
- 8.7 The Contractor shall supply information in his tender relating to Inspection Reports indicating the details of reports proposed by him and the assumptions made in terms of the number of defects reported on per defect type, as well as how he proposes prioritising the listing of these.
- 8.8 The Contractor shall aim to grade events in terms of severity and should thus be able to differentiate between injurious and non-injurious events of the long seam weld.
- 8.9 The electronic / digital data presentation shall include the continuous inspection graphics (**not** the 'viewer / client / read-only') software. TRANSNET PIPELINES must be able to freely operate the presentation's database e.g. add / delete / edit details, print any dig information sheet, etc.



## **9. CONTRACTOR TO STATE**

- 9.1 In additions to any requirement of the Contractor in submitting his proposal he shall supply details on the following at time of tender: -
- 9.2 The Contractor shall give the names and addresses of all proposed subcontractors if applicable.
- 9.3 The detection specifications of the Tools proposed by the Contractor are to be stated identifying the features that are detected, the detection ability per feature, and the accuracy or sizing capability for each Tool proposed.
- 9.4 The Contractor shall state any deviation to the requirements of this tender. In particular, the Contractor should respond to:
  - Clause 4 on the scheduling of the proposed works and tool velocity requirements,
  - Clause 5.4 relating to information required from TRANSNET.

## **10. HEALTH AND SAFETY COMPLIANCE**

- 1. Valid Letter of Good Standing with the Compensation Fund
- 2. Signed Occupational Health and Safety Act 85 of 1993: 37 (1&2) agreement.
- 3. Task-based risk assessment
- 4. Method statement linked to identified risks.
- 5. Applicable appointment letters (non-construction related)
- 6. Police clearance – criminal record screening (NKP requirement)
- 7. ID copies of individuals who will be on site.
- 8. HSE plan
- 9. Equipment list
- 10. Valid medical certificates of fitness
- 11. Flame retardant PPE for working in operational areas.