



ANNEXURE "A1"

SCOPE OF WORK

ENQUIRY NO: CTT25718

DESCRIPTION: PROVISION OF NON-DESTRUCTIVE TESTING (NDT) FOR PetroSA IN MOSSEL BAY

1. DESCRIPTION OF THE SERVICES – GENERAL

- 1.1 The Supplier shall supply all labour, supervision, consumables and equipment necessary for the satisfactory execution of Non-destructive Testing Service for and at all PetroSA Facilities, both onshore and offshore Production Platform facilities (hereinafter referred to as the "Services"). PetroSA shall require the Supplier's services on a planned as well as on a breakdown basis.
- 1.2 The Service shall not only be limited to maintenance work, but will also include any **Shutdowns, Turnarounds and Special projects** within the duration of the contract. The Rates for the Shutdown, Turnaround and Special Projects shall be based on the Additional Personnel, Additional Equipment and Disbursement rates as per Sections 2.2.3, 2.2.5 and 2.2.4 of Annexure A. The contractual conditions for these Shutdown, Turnaround and Special Projects will be drawn and agreed upon, with the Supplier and specific addenda to this contract issued prior to the start of the of any Shutdown, Turnaround and Special Projects. No work shall commence on these Shutdown, Turnaround and Special Projects without the applicable contract addenda.
- 1.3 From time to time and at the written direction of the Appointed PetroSA Representative, the Supplier shall be required to supply Specialised NDT Services

2. DESCRIPTION OF SERVICES – SPECIFIC

Unless otherwise stated in writing the Service shall include the following:

2.1 MANPOWER REQUIREMENTS:

The supply of the following competent and skilled personnel:

- Radiographers
- Ultrasonic Technicians

- Wall thickness/ Hardness
- Magnetic Particle/ Liquid Penetrant Technicians
- Assistants, where required

Note: All Wall thickness technicians must be also qualified to perform Hardness testing.

2.2 FACILITY REQUIREMENTS:

2.2.1 The Supplier shall supply all the necessary equipment, consumables and personnel to undertake these services and shall as a minimum comprise of, but not be limited to:

- Fully equipped Darkroom for the PetroSA sites.
- Automatic processors
- Manual processors
- Automatic dryers
- Viewers and
- Developing chemicals
- Industry (DOH) approved Isotope containers (The supply of radiographic sources may include a medium/strong iridium source /or possibly also an X-ray machine of suitable capacity).
- Radiographic film viewers
- All radiographic testing equipment and consumables, including technicians full RT toolbox kits.
- All the necessary equipment to conduct all other NDT techniques specified under this contract.
- Vehicles to transport personnel and equipment on site.

2.2.2 PetroSA will provide the following utilities free of charge to the Supplier unless specifically excluded elsewhere:

- Supplier's laydown area
- Scaffolding
- Cranes
- Electrical distribution board in laydown area
- Water
- Telephone line only, payment for calls will be to the Suppliers account
- All Magnetic particle and Dye penetrant inspection consumables.
- Toilets

2.3 PERMANENT OFFICE ACCOMMODATION

2.3.1 PetroSA shall provide ground space for the establishment of offices, for which the Supplier shall be wholly responsible to erect and furnish.

NB: PetroSA will supply additional facilities during Turnarounds, Shutdowns and Special Projects.

2.3.2 The Supplier shall equip the Office accommodation with the required office equipment to ensure they are capable of providing the service. This shall include computers, printers and scanners for reporting and

general administrative duties such as timesheets.

2.4 EXECUTION OF SERVICES

2.4.1 The Service shall include an Auditable System that ensures that the personnel's IR/HR issues are addressed.

2.4.2 The Supplier shall assign a Contract Manager to manage all aspects of its service as required by this contract.

2.4.3 For the supply of a full NDT service the following minimum personnel are required for the duration of the contract:

Categories and Minimum Qualifications

Job Category	Qualification	Experience
Senior Technician NDT	Qualified to SAQCC, PCN, and ASNT Level II in MT, PT, WT, RT, and UT (or Level I RT with Interpreters Qualification). Qualified as a UT level 2 in plates (2.3) & pipes (2.4). Certification in nozzle welds (2.5) and T-pieces (2.6) will be an added advantage. All technicians must be in possession of a valid driver's license.	Must have NDT knowledge with at least 4 years working experience as an NDT Level 2(RT, MT, PT, and UT) Technician.
NDT technician	Qualified to SAQCC, PCN, and ASNT Level II in MT, PT, WT and RT (or Level I RT with Interpreters Qualification). All technicians must be in possession of a valid driver's license	Must be authorised, certified and have at least 3 years' experience as a Level 2 Technician in all specified disciplines.
Wall Thickness/Hardness technician	Certified and authorised to perform Wall thickness and hardness Testing. An external qualification in WT techniques would be an added advantage. Preferably be in possession of a valid driver's license.	Experience on Petrochemical Plants, in reading of isometric drawings and the ability to co-ordinate other plant services such as removal of lagging and scaffolding.
Assistants (Assistants to technicians, Dark room assistants, Film Runners)	Preferably matric or equivalent, and good communication skills, with relevant. Preferably be in possession of a valid driver's license	N/A

NOTE: Senior NDT Technician will be responsible for co-ordinating all NDT activities, planning and allocation of jobs to technicians, review, approval and issuing of all NDT results to PetroSA, as well as perform NDT as and when required.

2.4.4 The following categories will be for **additional personnel**.

Job Category	Qualification	Experience
NDT Supervisor	Qualified to SAQCC, PCN, and ASNT Level 2 in MT, PT, WT, RT, and UT (or Level I RT with Interpreters Qualification). Must be in possession of a valid driver's license.	Must have NDT background with at least 5 years working experience as an NDT Level 2(RT, MT, PT) Technician or alternatively an Inspector with NDT knowledge.
WT/HT coordinator	Certified and authorised to perform Wall Thickness and Hardness Testing. An external qualification in these techniques would be an added advantage. Must be in possession of a valid driver's license.	Must have NDT background with at least 4 years' working experience as a Wall Thickness technician
Film interpreters	Qualified to SAQCC, PCN, and ASNT RT Interpretation or RT Level 2.	Must have RT level 2 and RT interpretation certificate with 4 years' experience in interpreting films
Surface Technician (MT & PT level 2)	Qualified to SAQCC, PCN, and ASNT Level 2 in MT& PT. All technicians must be in possession of a valid driver's license.	Must be authorised ,certified and have at least 3 years' experience as a Level 2 Technician
RT level 1 Technician	Qualified to SAQCC, PCN, and ASNT Level 1 RT. All technicians must be in possession of a valid driver's license.	Must be authorised, certified and have at least 3 years' experience as a RT Level 1 Technician.
RT level 2 Technician	Qualified to SAQCC, PCN, and ASNT Level 2 RT	Must be authorized,,certified and have at least 3 years' experience as a Level 2 Technician

2.4.5 Personnel's CV's, qualification certificates must be submitted to PetroSA Inspection Management for screening before the Inspectors are accepted on PetroSA site.

2.4.6 Any mandatory training required for the proper execution of the services in specialised areas, will be provided by PetroSA. (for example, survival training for Offshore)

2.4.7 Personnel files containing Certification and CV's must be provided for all personnel. PetroSA reserves the right to independently test any or all technicians, using PetroSA specific test blocks prior to allowing them to work at PetroSA facilities.

2.4.8 No personnel NDT In-house qualifications will be accepted by PetroSA except for Wall thickness and Hardness testing. This needs to be authorized by NDT Level 3 person.

The Supplier shall have access to additional NDT Personnel (min 2 x Level 2 NDT technicians) which they must be able to mobilise within 24 hours under emergency conditions, unless not within the control of the Supplier.

- 2.4.9 Unless it is an emergency situation, additional personnel shall be supplied as per a schedule agreed between PetroSA and the Supplier.
- 2.4.10 Additional personnel must only be provided on an approved written request by PetroSA. The request will include a description of the work, number of personnel required, expected duration and a purchase order number.
- 2.4.11 No Mobilisation charges shall be applicable to local personnel (within a 100km radius of PetroSA GTL Refinery).
- 2.4.12 No additional personnel will be allowed on site without prior submittal and approval of the Names, Qualification, Certification and Experience records by the PetroSA NDT Technologist. All records shall comply with the approved Contract's Written Practice.
- 2.4.13 Changes / Substitutes in personnel:
All changes to each Work Assignment and in particular to each/NDT request shall be discussed and agreed with PetroSA Management before implementation.
- 2.4.14 Employment of local personnel:
 - 2.4.14.1 Wall thickness/hardness technicians:
80% of personnel under these categories must be sourced locally:
 - 2.4.14.2 All assistants:
100% of personnel under these categories must be sourced locally
 - 2.4.14.3 First preference for the NDT Technician's category must be given to local personnel.
- 2.4.15 Accommodation Meals, and Transport
 - 2.4.15.2 PetroSA shall not be responsible for the accommodation, meals and transport of any permanent local personnel.
 - 2.4.15.3 All the Supplier's personnel residing outside the Mossel Bay / George area (non- local) called for additional work, shall be accommodated by the Supplier at the agreed rate with PetroSA. Transportation to and from work of personnel will not be for PetroSA account.
 - 2.4.15.4 No meals will be provided to any permanent local personnel or any additional personnel by PetroSA.
- 2.4.16 Badging, Medical Examinations And Safety Induction
Badging, medical examinations and safety induction of the Supplier's Assigned Staff will be done on Site by PetroSA, by appointment only. All new Assigned Staff shall be accompanied by the Supplier's site agent.

PetroSA will pay for the time spent on site during this induction process, as well as for the time for the exit medical test.

3. DESCRIPTION OF THE SERVICES – PROCEDURE

3.1 All NDT performed work shall meet the requirements of PetroSA Specifications, applicable PetroSA procedures and the approved Supplier's procedures.

The following procedures must be used as a standard practice:

- Radiographic Testing Procedure
- Radiation Safety Procedure
- Magnetic Particle Procedure
- Liquid Penetrant Procedure
- Ultrasonic testing procedure
- Hardness testing procedure

3.2 These must be authorised and approved by the Suppliers' NDT Level 3 specialist and by the Supplier's management. Subsequent to that, the final approval will be done by PetroSA management before usage.

3.3 Procedure review period must be clearly indicated on the procedures. All Supplier procedures must, as a minimum, meet the requirements of ASME V. All procedures must be approved by PetroSA prior to commencing any NDT work.

3.4 The Services described in Clauses 1 and 2 of this Scope of Service shall include, but not be limited to the following:

From time to time and at the written direction of the Appointed PetroSA Representative, the Supplier shall perform all the Services released to it.

Work Assignments released by PetroSA shall include the following:

- A description of the Services.
- Required start and completion dates.
- Applicable NDT request.
- Purchase Order number for relevant Projects.

3.5 No services (including additional work) shall be performed without a Work Order / NDT request issued by the Appointed PetroSA Representative. In the case of additional work, no invoice will be paid without the corresponding Purchase Order no and the service description appearing on the invoice.

3.6 All Services on any Work Assignment -

- Performed prior to the effective date of the written PetroSA approval, and
- Performed in excess of the approved estimates, shall be for the account of the Supplier (additional approval must be sought).

4. REPORTING REQUIREMENTS

4.1 The Supplier shall keep accurate record of tasks done. These records

shall comprise NDT Requests, NDT reports and time sheets and shall be approved by the Supplier's technical specialist. This will subsequently be approved by the authorised PetroSA personnel.

- 4.2 Films and NDT reports must be delivered at the Inspector's offices as soon as possible after the jobs have been completed, accompanied by the appropriate NDT Request stipulating request number, time and films(if applicable).
- 4.3 All the films must be collected from the Inspection Viewing room on weekly basis for proper filing and safe storage at the PetroSA main documentation centre.

5. TECHNICAL REQUIREMENTS AND QUALITY OF SERVICE

- 5.1 All NDT work shall be to the satisfaction of the PetroSA Inspector and will generally be in accordance with the ASME, AWS, API and BS codes and IIW standards.
- 5.2 All NDT work shall meet the requirements of the design codes as specified by PetroSA and all pre-approved Supplier procedures.
- 5.3 PetroSA reserves the right to independently test/verify the ability of any or all technicians using PetroSA specific test samples with known mapped flaws. Any personnel that do not pass such a test may, at the discretion of PetroSA, be removed from site. Any personnel that are found deliberately performing inferior quality work will immediately be dismissed.
- 5.4 As a minimum, the NDT Supplier shall have a certified ISO 9001(latest edition) Quality Management System in place. SANAS accreditation to SANS/ISO 17020 or SANS/ISO 17025 (latest editions) shall be acceptable to fulfil the ISO 9001 requirement. Any NDT Supplier with only ISO9001 certification at the time of appointment, shall be required to attain SANAS accreditation to SANS/ISO 17020 or SANS/ISO 17025 within six months of the publication of the updated Pressure Equipment Regulation.
- 5.5 All Services on each NDT Work Assignment shall be performed in accordance with the PetroSA Specifications and Standards. In addition to other rights or remedies of PetroSA, all Services not performed in accordance with this Sub-clause shall be for the Supplier's account.
- 5.6 The Supplier's performance of its obligations pursuant to this agreement and each Work Assignment shall not be deemed complete until PetroSA has approved the final reports thereof.
- 5.7 The PetroSA Inspection Manager shall be at liberty to object to any person employed on the site by the Supplier who shall be found to be unsuitable in respect of qualification, workmanship, safety, equipment

and/or machinery, behaviour, misdemeanours, and negligence.

- 5.8 The Supplier shall immediately replace the person(s) so objected to upon valid written or verbal notice from PetroSA requiring them to do so. PetroSA shall not be liable for any demobilisation costs of personnel demobbed due to misconduct.
- 5.9 The Supplier must familiarise all its personnel with the details of these documents (Scope of work).
- 5.10 Work that does not meet the minimum requirements will be rejected and re-work will be to the Supplier account.

6. SAFETY

6.1 SUPPLIER'S SAFETY FILE REQUIREMENTS

In addition to the legal requirements and regulations applicable to the Services, the following safety procedures shall also apply:

- 6.1.1 Suppliers' safety file shall be submitted to PetroSA Safety Department (an index of all requirements will be provided to the Supplier).
- 6.1.2 No Services shall be carried out unless a work permit has been issued.
- 6.1.3 No assignment shall be carried out without a proper risk assessment being conducted by personnel and copies risk assessment forms to be submitted to PetroSA production personnel before the work is executed.
- 6.1.4 All electrical equipment used is to be checked and approved by the PetroSA Electrical department before usage.
- 6.1.5 All equipment calibration certificates must be readily available and valid.
- 6.1.6 No personnel will be allowed to enter PetroSA site if their alcohol level is above the required limit as per PetroSA procedure.
- 6.1.7 A maximum of 45km/hr speed shall be adhered to at all times while driving on PetroSA site.
- 6.1.8 The supplier shall ensure adherence to all PetroSA security requirements.
- 6.1.9 Strict control will be enforced on hours worked in accordance with the Minerals Act, Act 50 of 1991

6.2 RADIATION SAFETY

- 6.2.1 The Supplier shall at all times be responsible for and strictly adhere to the provisions of the Radiation Safety Precautions as prescribed in terms of :

- Mine Health and Safety Act No 29 Of 1996
- Minerals Act no 50 Of 1991
- Department of Health regulations
- Government Gazette Code of practice for Gamma Radiography
- PetroSA Specifications

6.2.2 Safety Precautions:

In addition to the legal requirements and regulations applicable to the Services, the following safety procedures shall also apply:

6.2.2.1 No Services shall be carried out unless a hot work permit has been issued to the radiographer. For Offshore services a cold work permit is required. Risk assessment must be done before every job performed on site.

6.2.2.2 The Radiographer shall not commence with radiography until the area has been roped-off properly. That is, a suitable nylon rope with cloth or plastic made radiation signs attached to it at every 2m, shall be used to roped-off the area at a height of approximately 0,8 – 1,2m above ground level. This roped-off area shall include any area where the radiation is higher than 0,25 mR/h (2.5µSV).

6.2.2.3 When the Services are carried out on a level where the radiation can reach persons at another elevation, that elevation must also be roped-off.

6.2.2.4 A yellow flashing warning lamp must be placed as close as possible, but no further than 2m away from the object being radiographed. When radiographs are taken inside a furnace or vessel, the warning lamp shall be placed at a spot where maximum warning can be achieved.

6.2.2.5 This lamp may only be switched off when the area is safe for entering, but only after permission is obtained from the Radiographer. The Radiographer must make the area safe for entering when so requested and then the lamp must be switched off.

6.2.2.6 The maximum allowable radiation shall be less than 0,25 mR/hr(2.5µSV) at any place a person can normally pass, stand or work, where one or more radio-active sources are used or stores in the PetroSA Works or F-A Production Platform, except inside a properly roped-off and marked-off area.

6.2.2.7 An isotope holder shall not radiate more than 200mR/h (2mSv/h) in the closed position and 10 mR/h (100 µSv/h) at a distance of one meter.

6.2.2.8 The storage bin on site shall not radiate more than 2,5 mR/h when measured against the lid and not more than 0,25 mR/h(2.5µSv/h) when measured at the chain boundary marked with radiation signs.

6.2.2.9 An isotope holder, if unlocked, shall not under any circumstances be left unattended. It shall also have the proper radiation sign on it with the words:

**“DANGER – RADIO ACTIVITY /
GEVAAR – RADIO AKTIWITEIT”**

6.2.2.9.1 A roped-off area shall never be left unattended even if the radioactive source is removed.

6.2.2.10 A calibrated radiation monitor shall at all times be available on the spot where radiographic work is carried out so that PetroSA officials can satisfy themselves that these safety precautions are adequately taken.

7. SPECIAL CONTRACT CONDITIONS

- 7.1 The Supplier's NDT Level III inspector shall be on site during the start of the contract to perform surveillance audits and job observations as per his letter of appointment. Additionally PetroSA requires that continued surveillance audits and job observations be conducted by the NDT Level III inspector on a six-monthly basis and he must be available to assist with technical NDT related plant challenges as and when required by PetroSA Inspection management. The NDT level III must be qualified as a level III in all four NDT techniques i.e. (UT, MT, PT, and RT).
- 7.2 The Senior NDT Technician will be required to attend daily Inspection meetings to note the planned NDT daily activities and give feedback to the Inspection team.
- 7.3 PetroSA requires emergency telephone numbers for the management of standby personnel, which should be available 24 hours a day. The standby personnel shall be always available after normal working hours (8 hour shift), over weekends and on Public Holidays.
- 7.4 Quarterly audits will be conducted by PetroSA and may include detailed technical and financial audits by either external auditors or PetroSA personnel. These audits will be to PetroSA account.
- 7.5 PetroSA and the Suppliers Radiation Protection Officer (RPO) shall conduct radiographic observations in line with the Code of Practice for Gamma Radiography and Government Gazette, on all technicians on a quarterly basis. Should negligence regarding radiation safety be observed, PetroSA will take a firm stand such that the relevant technicians will be asked to leave PetroSA site.
- 7.6 Supplier is to submit a detailed training philosophy/programme on how its local personnel will be effectively employed, trained and developed during the contract period.

- 7.7 Permanent site based NDT Technicians will be required to work as co-ordinators/supervisors during periods of peak activity such as Shutdowns and Turnarounds and will be paid an acting allowance equivalent to 25% of their in-pocket rate for the period they are required to work as co-ordinators/supervisors.
- 7.8 The Contract manager shall be available and contactable after normal working hours, over weekends and on Public Holidays to address all emergency service & contract issues/queries.
- 7.9 Quarterly feedback meetings between PetroSA and the Supplier are required and shall be documented. Minutes will be sent to the attendees, whereby each person must acknowledge and sign acceptance. The venue shall be alternated between PetroSA's offices in Mossel Bay and the Supplier's facilities. Please note that there will be no reimbursement for any travel or accommodation costs by PetroSA for the purpose of attending meetings, neither reimbursement for time spent at the meeting.
- 7.10 The supplier shall be responsible for continuously evaluating its level and quality of Service to PetroSA and shall recommend and implement improvements to its processes that results in increased efficiency and quality of service to PetroSA over the duration of the contract. These improvements shall not result in any additional costs to PetroSA.