

## Annexure A

### **SERVICE REQUIREMENTS**

#### **SCOPE OF WORK**

#### **NON- DSTRUCTIVE TESTING**

### **1. INTRODUCTION**

- 1.1. The scope of works covers maintenance and project related activities to be undertaken by the NDT contractor. The nature and type of works to be carried out can be assumed from the description of rates listed in the Schedule of Rates, although this list is not exhaustive. Works will include all inspection requirements and may be on maintenance, projects or shut down work performed at the SANPC Refinery site.
- 1.2. The contractor shall supply all labour, supervision, consumables, materials, equipment, instruments, tools, services and transport required for performing the works. Materials must conform to the SANPC Refinery standards. Except for the works that may deviate from this norm, the scope of that work will be more specifically described in each work order.
- 1.3. Work performed will be measured and remuneration shall be based on the Schedule of Rates.
- 1.4. The contractor shall not, without the prior written consent of SANPC Refinery make any alteration or addition to this Scope of Work.
- 1.5. All work carried out at the SANPC Refinery site shall comply with the Rules and Regulations pertaining to this activity, including to those relating to Hazardous Substances and the Hazardous Substances Act 15 of 1973 as amended.

### **2. SCOPE OF WORK – PARTICULAR**

- 2.1. The NDT methods to be used shall include Digital/ Conventional Radiography using Gamma Rays(RT) or X-Rays, Ultrasonic(UT) (Compression and Shear Wave Technologies), Magnetic Particle Testing(MT), Positive Material Identification (PMI), Delta Ferrite Testing, Liquid Dye Penetrant Testing(PT) and Hardness Testing.
- 2.2. The contractor shall provide dark room/ viewing room facilities when required.
- 2.3. The contractor shall supply a “Written Practice” compiled by SAQCC/AST/ASNT Level II person and approved by a SAQCC/PCN/ASNT Level III person. The signatures of both the Level II and Level III persons to appear on each page. The “Written Practice” is the Quality Assurance (QA) manual defining the contractor's practice for Training qualifications and Certification of his NDT personnel. All NDT Procedures shall be included in the “Written Practice”, including ad-hoc specialized NDE techniques (eg. ToFD, C-Scan, Phased Array, etc). The written practice is subject to approval by the SANPC Refinery appointed Level III.
- 2.4. The contractor shall provide a safety plan which must include certified copies of Registration with the Department of Health and the appointment of two responsible Persons in relation to Radiography. They

- must be residing and working in the Durban area, that is, within 50km radius from SANPC Refinery.
- 2.5. In addition to SANPC Refinery stipulated PPE, the contractor shall supply reflective bibs with appropriate radiation signage that are to be used while execution work.
  - 2.6. The contractor shall provide Curriculum Vitae, including supporting certificates or documents, of all NDT Technicians who may be involved with NDT work for SANPC Refinery. NDT Technicians shall have SAQCC Level II or equivalent qualifications (ASNT Level II) in the disciplines of UT, RT, MT& PT. The technicians shall also be certified to operate the Microdur hardness tester or equivalent.
  - 2.7. The contractor shall supply NDT technicians with the following general requirements:
    - 2.7.1. Qualification/ Skills/ Tools
    - 2.7.2. Level II certified in UT Digital/ onventional RT, MT, HT, PMI & DP
    - 2.7.3. Level II Interpreter's for RT
    - 2.7.4. Minimum of 3 years refinery experience
    - 2.7.5. Good communications skills
    - 2.7.6. Will have a cell phone (for out of plant communication)
  - 2.8. The contractor shall ensure that vehicles brought on to SANPC Refinery site are roadworthy.
  - 2.9. NDT reports are to be of an acceptable quality and have the required authorisations and signatures.
  - 2.10. NDT Technicians shall ensure timesheets are completed with the correct hours and brief description of the work that was done. All time sheets to be signed by the designated SANPC person/s.
  - 2.11. Contractor to ensure that all equipment is in good working order and calibrated as required.
  - 2.12. All safety violations or incidents to be reported within 24 hours to the SANPC Refinery designated persons including the SANPC Refinery MSFP.
  - 2.13. All work pertaining to NDT will be all inclusive labour rates. Work must be performed to the required standard and using qualified technicians
  - 2.14. Any work that is rejected due to not meeting the acceptance criteria must be redone at the cost of the contractor.
  - 2.15. Radiography on site shall be done using phosphor screens (digital radiography) and film/ chemicals (conventional). Equipment must be of a reputable make(Kodak or AGF etc). Back up scanners are required in the event that the primary instrument fails.
  - 2.16. Technicians must be trained to use and interpret results of radiography.
  - 2.17. Assessments of wall thickness and welding defects will be electronically processed and permanently stored by the contractor in a readable format, retrievable at any time for refence.
  - 2.18. The contractor shall ensure that all technicians training and certification are kept up to date with the latest changes and requirements of the relevant codes.
  - 2.19. Iridium and Selenium isotopes with minimum strength of 10 curie for one and 20 curie for the other will only be allowed onto SANPC Refinery site. At such time as the isotopes decay below the above values they will be removed from site. The following shall also be supplied; Ionising Radiation Accessories namely: radiation monitor, pentrameters, lead numbers and stencils, collimator to control radiation, ropes, fil marking pencils, radiation

- warning signs, RT film cassettes, supply and maintenance of chemicals, film dryer, RT film viewer, cassette clamping magnets, handling tongs for isotopes(emergency) and densitometer.
- 2.20. All equipment that requires calibration shall have valid calibration certificates, which are traceable to National Standards. Calibration status must be indicated on the equipment. Decay chart for isotopes used must be displayed in the Dark Room. The NDT contractor shall supply or have available the following equipment when the need arises at SANPC Refinery:
    - 2.20.1 All NDT equipment and consumables as per contractor's "Written Practice".
    - 2.20.2 A written set of NDT procedures, approved by SANPC Refinery designated Inspection Authority.
  - 2.21. The following targets and milestones shall be imposed upon the contractor:
    - 2.21.1. Approved updated procedures for UT, RT, MT, PT/ Hardness in accordance with "Written Procedures".
    - 2.21.2. Contractor shall comply with all SANPC Refinery requirements including ISO 14001, ISO 9001, ISO 17020/5 and SANS 10227. Radiography is categorised as a significant environmental aspect within SANPC Refinery precinct.
  - 2.22. The contractor shall provide HSSE management plans regarding the following aspects:
    - 2.22.1 Management of isotopes.
    - 2.22.2 Management of chemical spills during testing and transporting.
  - 2.23. The contractor shall be subjected to HSSE Quality internal and external audits.
  - 2.24. The contractor shall carry out quarterly internal Quality audits, the results of which must be shared with SANPC Refinery. The contractor representative shall meet with the SANPC Refinery designated persons to discuss any issues arising.
  - 2.25. The following information shall be the minimum requirement on the NDT report:
    - 2.25.1. Date of examination.
    - 2.25.2. The contractor's name.
    - 2.25.3. Equipment/ Line number (Near sketch).
    - 2.25.4. NDT equipment used.
    - 2.25.5. NDT technician's name and signature.
    - 2.25.6. NDT technician's qualification.
    - 2.25.7. Level II interpreter's signature will be required for RT films. No film will be accepted if there is no valid Level II authorisation stamp.
  - 2.26. Prior to bringing any radioactive sources onto site the contractor shall prepare and submit the following:
    - 2.26.1 The company authority number together with the department's recognised inventory resources.
    - 2.26.2 The company's appointed current radiation protection officer and alternative responsible radiation protection officer's details and contact numbers.
    - 2.26.3 The contractor's Radiation Emergency Plan.
    - 2.26.4 Contractor's internal rules/ isotopes control procedure.

- 2.26.5 Contractor's competency training records regarding the use and retrieval of sources.
- 2.26.6 The personal dosimeter BIN numbers of all the radiation workers who wish to carry out activities involving radioactive isotopes on the SANPC Refinery site.
- 2.26.7 The current source types and numbers and the associated decay charts.
- 2.27. The maximum calculated safety distance for each source i.e. the distance calculated to reduce the dose rate to 10 microSieverts per hour or 1 mR/h emitted from the unshielded sources at its maximum authorised strength. (Should an incident occur it is more likely to give maximum radiation exposure).
- 2.28. The contractor will be required to maintain and make available (to SANPC Refinery or acting RPO) at any given time and updated source register at all times indicating the source identification, when the source was booked out, the contractor's radiation technician using the source, where specifically it is being used and when the source has been returned to safe storage (the isotope storage area unless otherwise indicated by SANPC Refinery RPO or acting RPO in writing).
- 2.29. The contractor will be required to supply reflective vests or other easily visible attire to be worn by all personnel working in a cordoned off radiation-controlled area.
- 2.30. The contractor shall submit updated copies of source numbers, decay charts and maximum distance calculations as and when the sources are changed.
- 2.31. The contractor shall submit copies of monthly dosimeter reading reports and over exposure reports should this be identified by the testing authority, for bin numbers of all radiation workers who act on behalf of the contractor regarding the use, transport or storage of any radioactive isotopes at SANPC Refinery.
- 2.32. Any incidents relating to radiation or radioactive isotopes must be, without exception, reported to the SANPC Refinery RPO or designate. In the case where the incident involves an "escaping" source or due to malfunction or defect in equipment which could result in uncontrolled radiation emission then the area is to be barricaded at the maximum calculated safe distance.
- 2.33. No radiation workers may attempt to retrieve an uncontrolled and exposed source unless they have authorised by the SANPC Refinery RPO or designate on the basis that they are certifiably trained and competent to do so.
- 2.34. The NDT Technician shall adhere to the Safety Regulations of the Department of National Health and Population Development (NHPD). The NDT technician shall adhere to all SANPC Refinery rules and regulations and obey all orders given by SANPC Refinery personnel. In the case of interference/ contradiction with Dept. of NHPD regulations, the NHPD regulations shall govern.
- 2.35. The NDT technician shall adhere to the Department of NHPD regulation No. R.247(Hazardous Substances Act No. 15 of 1973 in Government Gazette No. 14596 of 26 February 1993, pages 29 to 51 as amended)

whenever ionising radiation work is performed.

- 2.36. **The contractor is expected to have a standby crew to respond to call-outs after hours and weekends for emergencies. The response time from the time of request is expected to be 4 hours.**

### 3 SCOPE OF THE WORKS - GENERAL

3.1 The description given below defines the general requirements particular to the scope of the works and is to be read in conjunction with the other documents forming the Tender and/or the agreement as the case may be. Procedures for job card shall follow the sequence of events as per Central the Planning Workflow and as outlined in 3.1.1 to 3.1.10 below:

- a) SANPC Refinery normally uses individual job card numbers to apportion the works. The contractor will be required to use the job card system for call-offs (pricing) and the SANPC Refinery job card system for progress reporting of the works in conjunction with the duly authorised SANPC Refinery Zone Supervisor. SANPC Refinery will provide the level 1 schedule (overall schedule – early start and late finish) for the contractors planning and execution.
- b) The contractor is required to provide man-hours expended to execute the work from the schedule of prices and compare against those listed in the man-hour norms for the job. The overall schedule will be compared against the initially agreed schedule.
- c) This information will be used in the KPI measures.

3.1.1 The Area Engineer or the duly authorised person, together with the Zone Supervisor identifies the required maintenance work, where after a priority is placed against each maintenance activity.

#### **MAINTENANCE PRIORITISATION TABLE**

<b>PRIORITY</b>	<b>PRIORITY/RISK LEVEL</b>	<b>START DATE</b>	<b>INITIAL COMPLETION PERIOD</b>
C	Routine	Request Date + 30 days	3 Months
B	Routine	Request Date + 14 days	1 Month
A	Schedule Breaker	Request Date + 1 days	1 Week
E	Emergency	Immediate	ASAP + Overtime

Priorities A, B, C & E are scoped by the respective Zone Scooper or the discipline Artisan.

A job card number is assigned to the scope and job card is issued to the contractor. Emergency Status Classification will be the 'A' and 'E' priority jobs. In such a case the Area Engineer agrees upon the staffing and general planning requirements with his execution Team (Scooper, Planner, Zone Supervisor and the Contractor). The Area Engineer confirms the release of the works and identifies which lower priority job(s) can be postponed to accommodate the Emergency priority job.

- a) An 'E' priority job is supposed to commence immediately and shift work is to be effected, and an 'A' priority job will require the contractor to commence within 24hrs of receiving the scoping form and order number. An 'A' priority job may require extended hours to be undertaken by the dayshift crew.
  - b) In the event that the contractor resources in the Zone are insufficient for the Emergency Job, then the Area Engineer is to be consulted as he/she has overview of all resources and is in the position of suggesting what jobs across site could be postponed to accommodate the 'E' priority job.
  - c) For an 'E' priority job after hours, the Planner is to immediately issue a Manual job card for the work to start. In the event the 'E' priority job occurs outside of normal working hours, the system generated job card with a valid job card number will be issued at the beginning of the next normal working day.
  - d) The contractor is expected to obtain the necessary permits and proceed with the works. The workflow from here shall proceed in the same manner as for normal priority works.
- 3.1.2 For (A, B, C & E) priority work a scope of work package, in the form of a Contractor Work Request (CWR), is generated in SAGE by the Area Scoper. A job card is generated by the Zone Scoper and followed up with a manual scoping form to the contractor. The contractor estimates the cost and man hours for a CWR, in accordance with the Schedule of Rates, and returns the estimated CWR in electronic format to the Area Engineer. The Area Engineer evaluates and awards the contractor's estimated CWR.
- a) When awarded, the contractor compiles a Work Pack which includes the relevant drawings and Material Take-off's (MTO's) etc.
  - b) The Contractor's supervisor is required to facilitate the generation of the Safety Certificate.
- 3.1.3 The contractor presents the compiled work pack to SANPC Refinery, which must be reviewed and verified in writing by the respective SANPC Refinery authorities. SANPC Refinery shall, at the same time, ensure that the material required is in stock or ordered. Central Planning draws up a 30-day look-ahead schedule, for review by the Area Execution Team including the contractor. From time to time, SANPC Refinery may impose a limit to contractor numbers on site.
- 3.1.4 After confirmation with all relevant parties in the Weekly planning meeting, the Planner issues a seven day look-ahead level 1 schedule. From that schedule, job cards will be issued to the relevant contractor. The seven day schedule will be extracted from the monthly schedule.
- a) The contractor is to ensure that the relevant QCP, Work-pack is approved and that the permits are obtained at the latest by close of business of the day prior to the planned start date.
  - c) Thereafter the contractor is to get daily clearances for each activity from the respective Maintenance Services Focal Point (MSFP) before commencing with the works.
- 3.1.5 In the event of any variations to the scope of the works, SANPC Refinery Authorised person (Area Engineer, the Zone Planner, the

Zone Scoper) and the contractor shall identify such variation/s and this must be recorded. The contractor shall include such variations into the work pack. A variation order (VO) shall be raised and approval by the Area Engineer before the extra work commences. Execution of works without a job cards will not be accepted.

- 3.1.6 The contractor must submit the job cards to the Planner for progress reporting. These job cards must be signed by the Discipline Supervisor as verification that the work is completed to the required standard and to process payments.
- 3.1.7 The Planner updates all progress and also closes off the work upon issue of the handover/takeover certificate from the contractor .
- 3.1.8 Quality of workmanship must be verified by duly appointed persons for all categories of work which will be on record as part of the contractor workpacks.
- 3.1.9 All material specifications must be as per SANPC Refinery /ISO standards. If at any instance the specifications are not clear then the SANPC Refinery Area Engineer is to be consulted for guidance and resolution.
- 3.1.10 SANPC Refinery may require the contractor to prepare a workpack prior to commencement of the works, which may include:
  - a) Health, Safety and Environment Action Plan;
  - b) Method Statement;
  - c) Quality Plan;
  - d) Completion of the SANPC Refinery integrated Risk Assessment Method Statement ("RAMS")

#### **4 SAFETY**

- 4.1 The contractor and contractor personnel must, as far as reasonably practical comply with requirements prescribed by the OHS Act and OHS Regulations- Act 85 of 1993.
- 4.2 The contractor will also comply with the SANPC Refinery rules and regulations
- 4.3 The contractor safety officer will ensure that regular audits are done on site to identify and intervene on unsafe situations and near miss acts during work execution. Any findings to be reported and recorded in the SANPC Refinery incident management system
- 4.4 All incidents to be reported to the relevant clearance issuers and maintenance supervisors

#### **5. ADMINISTRATION PROCEDURES**

##### **5.1 Meetings**

- 5.1.1 The following meetings are compulsory for contractor's representative to attend when any work is in progress:
  - a) Daily planning and progress meetings as directed by Area Engineer and/or the Zone Planner.
  - b) Weekly look-ahead meetings as directed by Area Engineer and/or the Zone Planner.
- 5.1.2 The following meetings are compulsory for the contractor Site Manager

to attend:

- a) Monthly KPI review meeting
- b) Quarterly performance and safety review meetings or as directed by the CCM.

## 5.2 Planning and Progress

- 5.2.1 SANPC Refinery shall provide the contractor with a 30 day look-a-head schedule outlining planned windows for activities. The contractor is to manage and administer the manpower resources as such to enable him to comply with the defined service levels and meet the required works order completion dates, irrespective of absenteeism or leave. The contractor must ensure these objectives are fully understood and that management structures and procedures are in place to ensure timeous and successful execution under the above-mentioned constraints.
- 5.2.2 The contractor is responsible to plan, supply, coordinate and manage his manpower, logistics, equipment and materials resources for the works in accordance with the schedule from Central Planning as a guide. The coordination, progress monitoring and reporting is the responsibility of the contractor and shall take place at the daily progress meetings. These meetings shall be recorded (as per respective meeting's criteria) by the Zone Planner and agreed to or signed by the contractor. The contractor shall update his plan, provide progress at the daily and weekly progress meetings.
- 5.2.3 The contractor is to arrange and coordinate with the required SANPC Refinery personnel, all RAMS sessions in order to ensure that work starts timeously.
- 5.2.4 The operations of SANPC Refinery and interconnecting facilities in outlying areas will be carried out continuously during the period of this agreement, and the contractor shall allow for working in close proximity to and in liaison with other contractors in order to minimise inconvenience and shall plan for flexibility in labour resources input and any other factors in complying with these restrictions.
- 5.2.5 Restrictions may be imposed upon the contractor in his execution of the works as a result of SANPC Refinery 's operations. The contractor is to immediately notify SANPC Refinery (Area Engineer and the CCM in writing, of such an interruption. The contractor along with the Area Engineer shall re-coordinate the manpower to other available sections, areas, items of equipment in order to minimise standing time.
- 5.2.6 All priority "E" and "A" work to be clearly defined by the Area Engineer and closely coordinated with the CCM. The Planner/Planning Manager will ensure that the necessary job cards are raised within 24 Hrs (or the next normal working shift). The contractor Supervisor and the Supervisor will both sign the Job Card for progressing purposes.
- 5.2.7 The contractor shall, at all times, demonstrate positive and proactive participation in the efficient execution of the works in order to achieve satisfactory levels of productivity.
- 5.2.8 The contractor is to note that whilst the overall scope of works must be completed in the required time, the contractor must ensure that by proper preparation and quality execution the planned man-hours are not exceeded.

- 5.2.9 The contractor's attention is drawn to the fact that the works to be executed may be in the vicinity of insulated pipework, equipment and electrical and instrument installations. The contractor shall be held responsible for any damage caused to these or any other installations by his operations. If damages are identified prior to commencing work, the Area Engineer or the Supervisor must be notified of such damages immediately.
- 5.2.10 Access to and from the worksite is by means of existing hard roads or temporary access roads and will be through such gates and by such routes as will be defined by SANPC Refinery. The contractor is to operate his own vehicles with minimum of inconvenience to other traffic at the refinery sites.
- 5.2.11 All electrical equipment brought on site for work execution must be inspected and approved by the SANPC Refinery electrical department.

### **5.3 Contractor Organisation and Training**

- 5.3.1 All workers are to undergo training through a SETA approved Training facility. For the manning of strategic positions the contractor may present proposals for trainee-ships, for approval by the CCM.
- 5.3.2 In the event that the candidate is found to be not coping with the work, SANPC Refinery reserves the right to insist on change for a more suitable candidate.

### **5.4 Staff Issues**

- 5.4.1 As a control system the contractor is to supply a full organogram with functions and names of resources to SANPC Refinery. labour pool. SANPC Refinery reserves the right to assess all contractor supervisors before they report for work at the SANPC Refinery sites.
- 5.4.2 SANPC Refinery shall have the right to assess the contractor's core resources and performance on a continuous basis for the duration of this agreement.
- 5.4.3 Only approved resources may be used by the contractor. Changes in core resource staff shall be justified to and approved by the SANPC Refinery CCM, whose approval will not be unreasonably withheld. (This includes non-recoverable resources).

## **6. DIVISION OF RESPONSIBILITIES**

### **Definitions:**

E	Execute
P	Participate
A	Approve
S	Supply
M	Maintain

### **6.1 Division of Responsibilities - Work Descriptions**

The following work descriptions define the division of responsibilities with respect to the work required and exclusions from the agreement scope of work:-

Work Description	By CONTRACTOR	By Others	By SANPC Refinery
Timeous Application for Work Permit	E		P
Issue of daily work permits			A/E
Gas Testing			E
Quality Checking	E		P/A

### 6.2 Division of Responsibilities - Provision of Construction and associated Equipment

The following defines the division of responsibility with respect to the provision of construction and associated equipment for the implementation of the agreement work:

Equipment Description	By CONTRACTOR	By Others	By SANPC Refinery
Transportation	S		
Site huts, ablution facilities, storage where required services	M		S
Lighting – General			S/M
Required protective clothing and equipment include. E	S/M		
Compressor			
Cranage		S/M	
Lifting gear, ropes, slings and shackles			S/M
Safety Equipment	S/M		
Fire fighting facilities			S/M
Resuscitator			S/M
Standby B.A. set			S/M

### 6.3 Division of Responsibilities - Supply of Installed Equipment and Materials

The following defines the division of responsibility with respect to the supply of installed equipment and materials required for the agreement work:

Task Description	By CONTRACTOR	By Others	By SANPC Refinery
Identify work and raise Job card			E/A
Prepare and issue detailed scope work	S/P		A
Price	E		A
Rates for non bill items	E		A
Plan sequence of work	E		A

<b>Task Description</b>	<b>By CONTRACTOR</b>	<b>By Others</b>	<b>By SANPC Refinery</b>
Carry out the work	<b>E</b>		
Progress reporting	<b>E</b>		<b>A</b>
Prepare V.O	<b>P</b>		<b>E/A</b>
Handover (ready to use)	<b>E</b>		<b>A</b>

The above noted items are intended to be indicative of the categories of work to be undertaken. They are not intended as a comprehensive list of the same.

## **7. DRAWINGS**

- 7.1 Drawings/ sketches may be issued by SANPC Refinery as required to clarify written instructions given.