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To all CP Service Providers

RE: GUIDE TO CATHODIC PROTECTION SERVICE PROVIDERS IN SOUTH AFRICA

The Electrolysis Commission is a co-ordinating body for pipeline operators, owners and service providers involved in cathodic protection of pipelines, tanks and structures in South Africa.

One of the primary tasks of the Commission is to provide a forum for the sharing of knowledge and the resolution of problems specific to South Africa, particularly in respect of stray current interference.

Although the Commission originally comprised only pipeline owners, in recent years the involvement of service providers has become increasingly important as many pipeline owners / operators rely on outside companies for cathodic protection design and maintenance.

Recently, concern has been expressed by pipeline owners that cathodic protection (CP) service providers are acting as both consultants and contractors, thereby compromising the commercial integrity of the industry. This letter is therefore a request for service providers in the CP industry to state their capabilities and preferred area of service.

It is not the intention of the Commission to restrict the commercial operations of any company, and the Commission will not become involved in any commercial or contract negotiations. The proposed list of service providers will be available as a guide to infrastructure owners in terms of the availability of expertise, services, materials and equipment suppliers within South Africa. The listing is not exclusive and any *bona fide* company or individual may submit details for inclusion.

To assist in defining capabilities, the scope of work for CP consultants drawn up by the Department of Water Affairs and Forestry has been has been utilized and is appended to this letter.

The proposed categories for service providers are as follows:

A. Standard Consulting Services (based on DWA&F outline)
    1. Budget estimates & work programme
    2. Monitoring points & electrical continuity
    3. Soil resistivity and SRB survey
    4. Pipe insulation / coating & IF's
    5. Coating inspections
    6. Temporary CP system design
    7. Stray current and potential survey
    8. Current drainage survey
    9. Permanent CP system design (incl BoQ & dwgs)
    10. Tender documentation
    11. Evaluation of installation tenders
    12. Contract supervision and control
    13. Commissioning Survey
    14. Interference testing with foreign structures
    15. Compile O&M Manuals
    16. Project co-ordination & liaison
B. Specialised Surveys & Consulting Services
    1. Direct Current Voltage Gradient (DCVG)
    2. Close Interval Polarized Potential (CIPS)
    3. AC attenuation (C-Scan, PCM)
    4. In-Line Current measurement (CPS)
    5. AC voltage gradient (Pearson, PCM A-frame)
    6. Combination surveys
    7. ECDA
    8. GPS/GIS integration
    9. Integrity Management
C. Installation contractors
    1. Continuity bonding
    2. Test points / posts
    3. Monitoring cabinets
    4. Insulating flanges / joints
    5. Sacrificial Anode systems
    6. Impressed Current systems
    7. Remote monitoring systems
D. Material & Equipment Manufacture and Supply
E. Rectifier manufacturers
F. Monitoring services
G. Maintenance services

The following information is therefore requested:

- Company (or individual) name:
- Registration (or ID) number:
- Professional Indemnity Insurance:
- CIDB Registration details:
- ISO certification:
- Professional person & affiliation:
- NACE Certification
- Contact person:
- Contact details:
- Major services offered(not more than 2):
- Minor services offered:
- Years of experience in CP:
- Fields of expertise
    - Pipelines
    - Tanks
    - Reinforced concrete
    - Process plant
    - Networks
    - Hazardous installations

The proposed listing of service providers will be available on request from the secretary of the Electrolysis Commission. It will be the responsibility of the service providers to ensure that their details are kept up to date.

We look forward to your co-operation in this regard.

Yours faithfully,

N C WEBB
Chairman, WECC

SCOPE OF WORK / SERVICES TO BE CARRIED OUT ON THE PIPELINES

(Courtesy DWA&F)

1. Give budget estimates / guestimates of :

a. Consultants cost for Cathodic Protection (CP) and Coatings System (CS) investigation / surveys (estimates);
b. Installation cost of a temporary CP system done by contractors (guesstimate);
c. Installation cost of a permanent CP system done by Contractors (guestimate).

2. Advise on the location of electrical continuity bonding, monitoring / bonding facilities and coupons for coating survey :

2.1 Electrical continuity bonding (for CP);

a. Inside valve chambers and pump stations;
b. Around reservoirs and surge tanks;
c. Underground flexible and flange couplings.

2.2 Monitoring point facilities (for CP);

a. chamber monitoring points approximately 500m apart along the pipeline and at insulating flanges, pump-stations and reservoirs;
b. Concrete monitoring cabinets approximately 5km apart and at critical corrosion locations.

2.3 Bonding facilities to (for CP);

a. concrete bonding cabinets at other service's pipeline, railway-lines and any other metal structures crossings or parallelling.

2.4 Coupon monitoring facilities (for CS);

a. metal coupons installed close to pipe with a cable connected inside chamber to the monitoring point stud.

3. Carry out Soil Resistivity, Sulphate Reducing Bacteria (SRB) surveys, Anode Groundbed and Power Supply Point locations :

3.1 Soil Resistivity;

a. along pipeline route approximately every 100metres;
b. at soil borrow pits approximately 4 tests per 250m square,
c. possible anode-bed sites at approximately the beginning and end.

3.2 Sulphate Reducing bacteria (SRB);

a. along pipeline route approximately every 1 km and more frequent in vlei/suspect areas,
b. at soil burrow pits approximately 4 tests per 250m square or per soil sample.

3.3 Burrow pits or backfill material selection;

a. give advise on the selection considering corrosiveness;
b. carry out soil resistivity survey as described under soil resistivity.

3.4 Anode groundbed;

a. locate all possible anodebed sites (with or without power available)
b. carry out soil resistivity survey as described under soil resistivity.

3.5 Locate possible power supply points, 380V to 22kV 3 phase AC for CPS;

a. power supply point reference numbers,
b. power supply location and land owner’s name,
c. voltage rating and number of phases,
d. overhead line or stepdown transformer,
e. power supply line / point owner’s name.

4. Give advice on pipeline coating system and electrical insulation

4.1 Coatings systems;

a. appropriate coating for athe soil conditions,
b. cost analysis of coatings,
c. life expectance of coatings,
d. concrete encasements.

4.2 Electrical insulation;

a. insulating flanges at pump-stations,
b. insulating flanges at other service's off-takes / branches,
c. insulation of earthing systems without causing interference corrosion (pump-stations, TRU's flowmeters, elec.–substations, etc.)
d. insulation between pipe and concrete encasements and reservoir walls.

5. Carry out pipeline coatings systems (external/outer) inspections and surveys.

5.1 Coating System Inspections;

a. carry out coating system inspections of pipes at the factory / supplier,
b. carry out coating inspections of pipes on site during laying,
c. carry out coating inspections of pipe defects repairs after pipe laying.

5.2 Coating System Surveys;

a. carry out a coating survey after the completion of the pipeline, soil survey, stray-current survey, current drain survey and just after the first raining season. First carry out a quick coating survey on the whole pipeline length and then together with the CP survey results identify the critical corrosion pipe sections that needs to be investigate in detail.
b. Identify pipe defect locations that needs to be opened up and repaired by the contractor.

6. Design a temporary CP system

a. after the soil survey has been completed and before the pipeline is back-filled,
b. do a schedule of quantities and cost guesstimate of the temporary CP system if required.

7. Carry out a pipe potential and stray current survey

a. instant / spot potentials at each recommended monitoring facility,
b. minimum of 12 hour pipe potential recordings at recommended locations,
c. more than one month after pipelaying is completed,
d. provide temporary electrical continuity of the pipeline.

8. Carry out a pipeline current drainage survey

a. directly after the stray current survey is completed,
b. instant / spot pipe potentials at each recommended monitoring facility,
c. minimum of 12 hour pipe potential recordings are recommended locations,
d. more than one month after pipelaying is completed,
e. provide temporary electrical continuity of the pipeline,
f. locate more possible anodebed sites if any,
g. update anodebed servitude information (land owner and land name),
h. update electrical power supply point information.

9. Design a permanent CP system

a. a detail permanent CP system design after CP surveys are completed,
b. give anodebed sites,
c. give anodebed servitude information (land owner and land name),
d. give electrical power supply point information,
e. give drawings and detail schedule of quantities,
f. give a cost estimate for the installation of the CP.

10. Compile a tender document

10.1 For Supply and Installation of CP system (After CP system design is approved);

a. excluding electrical equipment specifications
b. compile tender to DWA&F standards (pg no's, contents pg's, scope),
c. include all the latest and relevant legal / ST forms / requirement,
d. include standard conditions of contract,
e. include standard specifications,
f. include final schedule of quantities,
g. include final schedule of drawings.

10.2 For Manufacture and supply of electrical equipment (One year supply contract – only when requested as a further instruction);

a. compile tender to DWA&F standards (pg no's, contents pg's, scope),
b. include all the latest and relevant legal / ST forms / requirements,
c. include standard conditions of contract,
d. include standard specifications,
e. include final schedule of quantities,
f. include final schedule of drawings.

11. Evaluate tenders

11.1 only when requested (temporary restricted(,

a. for supply and installation fo CP system,
b. for manufacturing and supply of electrical equipment.

12.. Supervise & Control (Contract management)

12.1 Supply & installation of CP system;

a. do administrative / control / contract management of CP contract,
b. do supervision of CP installation (allow for approximately 3 visits).

12.2 Manufacture and supply of electrical equipment (One year supply contract – only when requested as a further instruction)

a. do administration / control / contract management of CP 1 year contract,
b. do inspection / test of CP equipment (allow for approximately 10 visits).

13. Do a commissioning survey (start four weeks after completion of CP system installation)

13.1 Supply and installation of CP System

13.2 Manufacture and supply of electrical equipment (one year supply contract – only when requested as a further instruction);

14. Compile operating and maintenance manuals (O&M for CP systems / installation;

14.1 One original and four copies.

15. Liaison / negotiate with Department's staff local authorities (Project Co-ordination).

15.1 Liaise with Department's staff;

a. notify Department's site representative and site engineer of site visits at least one week in advance;
b. remain updated by contracting the Department's Representative on this project.

15.2 Negotiate with local authorities;

a. for foreign pipe and / or railway line crossings,
b. to conduct interference tests,
c. for application of bonds.

16. Reports