

ASSAM POWER GENERATION CORPORATION LIMITED
OFFICE OF THE GENERAL MANAGER, LTPS, APGCL,
Maibella, P.O. Suffry, Dist. Charaideo, Assam -785689
e-mail: gm-ltps@apgcl.com
Tele-Fax: 03772-254322



TENDER NO: 14 of 2017-18 of LTPS:

NAME OF WORK:
INTEGRITY AND HEALTH ASSESSMENT SURVEY OF THE 12 INCH LAKWA - MAIBELA PIPELINE
UNDER APGCL JURISDICTION

Serial No. _____

.....
Signature and Seal of the Issuing Officer

Price: Rs.1,000/- (Rupees One thousand only)

(A) Objective:

Lakwa Thermal Power Station (LTPS) is a gas based Power Station consisting of three powerhouses (Ph-I, Ph-II & Ph-III) with total installed capacity of 142.2 MW. The Ph-I power house comprises of 02 nos. WCL make and 01 no. Mitsubishi make Gas Turbine Units, each of capacity 15 MW. The Ph-II power house has 03 nos. of GE/BHEL make gas Turbine Units, each of capacity 20 MW. The fuel used is Natural Gas. The thermal energy produced by burning natural gas is used in gas turbine for generating power. The power station is having both open & combined cycle power generating units. The Natural Gas is supplied to LTPS by transporters, M/S GAIL and M/S AGCL, via 02 nos. 12" underground pipelines from Lakwa to Phase-I & Phase-II LTPS Filtering & Metering Stations, Maibella.

GAIL Lakwa NG Terminal is having 1.2 KM dedicated pipeline through which it is transporting a gas volume of 0.4 MMSCMD daily to the Power Plant at Maibella under Charaideo district of Assam. The schematic and line diagram of the existing pipeline is given in figure 1 for the bidders to have an insight of the existing Pipeline.

This Pipeline originates from GAIL Terminal Lakwa and traverse first 200 meters to a T-Point (Open pit). One Gate type Isolation Valve (IV) exists in the open Pit. Downstream of the Isolation Valve (IV), a 12" insulation gasket is available. Thereafter, till 1.0 KM the pipeline traverse through a common pipeline route. At the end of 1.2 KM, the pipeline ownership transfers from GAIL to M/s APGCL.

APGCL pipeline is 7.8 KM and at the APGCL end, one insulation gasket is installed at the raiser bend of the 12" pipeline before the isolation valve inside APGCL Gsa receipt terminal at Maibella.

The present tender is floated to execute the pipeline health survey for the 7.8 KM portion that belongs to APGCL only. Schematic of the pipeline is provided in figure 1.

(B) Intent of Tender:

The intent of this tender document is to furnish supply and work scope that shall be required to execute and complete the work in full as well as other techno-commercial requirements to be furnished and fulfilled by the bidder participating in the tender.

(C) Eligible Bidder:

- (I) The bidder shall not be under a declaration of ineligibility by APGCL for corrupt or fraudulent practices.
- (II) The bidder is not "Blacklisted" by any Government Department/ Public Sector Enterprise.

(D) One Bid per Bidder

A firm/bidder shall submit only one [01] Bid in the bidding process. No firm can be sub Contractor while submitting the Bid. A bidder who submits or participates in more than one bid, the bidder will be disqualified.

(E) Cost of Bidding

The bidder shall bear all costs associated with the preparation and submission of the bid, and APGCL will in no case, be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

(F) Site Visit

The bidder is advised to visit and examine the site of works and its surroundings and obtain for itself the necessary information that may be required for preparing the bid and entering into a contract for the required job. The cost of visiting the site shall be borne by the bidder.

(G) Experience Of Bidder

The bidder should have executed at least one single work of Gas pipeline Integrity Survey and associated works for Hydrocarbon Pipelines.

(H) General:

APGCL intends to carry out Pipeline Integrity Assessment based on the various Inspection surveys. With regards to external corrosion management, following surveys are intended to be conducted to assess the effectiveness of CP system and condition of the pipeline coating.

- Close Interval Potential Survey (CIPS)
- Current Attenuation Test (CAT) Survey
- DCVG/CAT with 'A' Frame survey

The main objectives of CIPS survey:

- To know the effectiveness of CP system.
- To identify Anodic and Cathodic regions of the Pipeline, as existing.
- To study whether the entire pipeline is cathodically protected.
- To predict the interference areas due to Transmission Lines, Traction & foreign pipelines etc for further detailed interference survey & mitigation if any.

The main objectives of CAT survey:

- To identify the pipeline coating condition along the Pipeline based on the Current distribution.
- To measure the depth of cover over the Pipeline

The main objectives of DCVG/ CAT with 'A' frame survey:

- To pinpoint coating defect in pipeline sections identified during CAT Survey/ CIPS Survey
- To categorize the Coating defects for their repairs
- To give accurate coating defect locations for future coating repairs
- Classify defects as Anodic or Cathodic

Soil Resistivity survey for this non-piggable pipeline has to be carried out to enable further health assessment through ECDA and ICDA. The main objective of this survey shall be:

- To measure the depth of cover over the Pipeline with respect to surface elevation referenced to MSL.

Scope of Work – Requirements

1. It is preferred that the minimum qualification/experience of the persons deployed for the survey at site shall be NACE CP Level-1 certified or ITI/Diploma in Electrical with 10/5 Years of Experience in the field of Cathodic Protection surveys. Also, the survey team shall be led by site in-charge during the survey at site, having the minimum NACE CP Level-2 certification. Survey data shall be reviewed by experienced personnel with NACE certification. Both Site in Charge as well as Reviewing Authority shall have minimum 5 years of experience in the Cathodic Protection system.
2. Before starting the survey, contractor shall submit the bio-data along with certificates of the personnel.
3. All the materials, equipment, instruments, manpower (skilled, unskilled), consumables, tool-tackles required to carry out the jobs are in the scope of Contractor including their mobilization & demobilization, lodging, boarding, fooding etc. The contractor will furnish the details of the tools tackles/equipment, instruments etc. to be deployed at the site.
4. A minimum set of Tools/ Tackles, Equipments and measuring instruments which are to be maintained during the survey shall be as per list at **Annexure-A**.

5. All the Measuring instruments should have the valid calibration certificate traceable to NABL/International standards.
6. One master portable reference electrode shall be maintained at the site with its valid calibration certificate. The other portable reference electrodes to be used for survey shall be calibrated on daily basis with the master reference electrode before the start of the survey and records are to be maintained for the same. If the potential difference is more than 10mV and it cannot be adjusted, then the same shall be replaced.
7. The Survey reports shall be submitted as per sample format annexed at **Annexure-C**.

Methodology

CIPS Survey:

1. The detailed site procedure to carry out CIPS survey has to be prepared and submitted along with calibration certificates of the equipment and formats to be used, for approval prior to starting of the work. The procedure qualification will be done at site before commencement of work. During procedure qualification, a sample survey to be performed in presence of Engineer/Site in Charge and only after satisfactory report approved by the EIC, further survey shall be allowed.
2. While preparing the procedure, following guidelines to be considered. Before commencing the CIPS Survey, contractor shall identify the TRU / CPPSM, Grounding Cells provided at IJ / IF, Sacrificial Anodes, bonding locations of the pipeline section considered for the CIPS survey.
3. All bonding with foreign pipeline, if any, Grounding Cells of IJ, Valve earthing (in protected section) and sacrificial anodes shall be disconnected. After completion of survey contractor shall restore all disconnected CP bonding and anodes to original condition.
4. Pipelines Sections which are cathodically protected through Sacrificial Anodes, CIPS ON Survey shall be conducted. Further DCVG & CAT Survey shall be performed for whole length of the section. In such cases, effectiveness of CP system shall be ensured by installing (if not available already) and monitoring Polarization coupons at the Sacrificial Anode stations, midpoint of two Sacrificial Anode / Far end of pipeline from Sacrificial Anode station.
5. The Contractor has to remove the bonding between two insulating joints and shall keep the CPPSM/ TR units in manual mode output control (AVCC).
6. The Contractor shall note down the CP Unit parameter, and put the CP Unit in AVCC mode and set the current so that the OFF PSP at the CP Unit Location should not be more negative than (-) 1200 mV and at far end location, should not be less negative than (-) 850 mV.
7. In case of multiple CP units in same section, PSP at mid location should not be less negative than (-) 850 mV. A set of ON & OFF PSP record of the pipeline shall be noted as compliance of the above and if required CP Unit is to be re-adjusted to get the OFF PSP within (-) 850 to (-) 1200 mV. For SRB areas, OFF PSP shall be maintained within (-) 950 to (-) 1200 mV. Following parameters of CP Unit shall be noted down on daily basis and shall be maintained till completion of the CIPS survey:
 - (a) AC/DC input voltage
 - (b) AC/DC input current
 - (c) DC output voltage
 - (d) DC Output/Anode current
 - (e) Pipe to Soil Potential (PSP)
 - (f) Target Pipe to Soil Potential

8. The required no. of GPS based current interrupter required for the survey has to be arranged by the contractor.
9. The ratio of the ON & OFF shall be set at 4:1 (i.e. if 4 second ON & than 1 second OFF), the OFF time shall not be less than 0.4 seconds. If more than one CP Unit is feeding the current to a section of the pipeline (IJ to IJ) identified for CIPS survey, then all CP Units shall be synchronized for current interruption.
10. A synchronization test shall be conducted lasting for 48 hours duration to check that the timers stay sync without error that may subvert the purpose of the survey. This test may be repeated as per instruction of EIC/SIC during the survey period if it is observed that sync is deviating or at any time a new timer need to be in place of a faulty one.
11. Before commencing the survey, the exact route of pipeline shall be located with a pipeline locator and marked so that survey operator follows the route exactly over the pipeline. Pipeline alignment shall be fixed by pipeline locator at regular intervals not more than 10 meters apart, for accuracy over the line of survey. Both peak and null modes of pipeline identification shall be used for accurate pipeline alignment fixation. A Rope line shall be laid on the alignment which shall have knots at every 1 meter interval for CIPS survey.
12. Potentials shall be measured on ground surface exactly over the pipeline to minimize error due to inclusion of lateral soil potential drops in the measured values of pipe-to soil potentials. However for all Coal Tar coated Pipelines, lateral CIPS survey shall be also performed to identify the anodic and cathodic areas.
13. Measure pipe to soil potential (ON/OFF) and other details at start test point of Pipeline Section and same may be recorded in data logger.
14. The data logger should have the capability to record the GPS coordinates along with survey.
15. CIPS survey shall be carried by logging (ON/OFF) potential measurement in data loggers at an interval of not more than 01 meter by leap frog / long leap technique over the per-determined route of pipeline. Also other readings such as foreign line PSP, casing to soil potential, AC voltages shall be recorded at respective locations.
16. Survey at river crossings and water crossings may be carried out with the help of a boat if required and silver / silver chloride (Ag-AgCl) half-cell (in case of saline water). A special procedure shall be prepared based on the specific site requirement. If CIPS survey has been performed with Ag-AgCl half-cells, than same needs to be converted with reference to Cu-CuSO₄ ref. in the final report.
17. Distance traversed and physical features such as pipeline route markers, roads, rivers, canal / nala crossings, HT crossings, Valves etc. shall be recorded to assist with locating specific areas after processing the data.
18. Pipeline Chainage shall be considered starting from point 1.2 KM from GAIL Terminal, Lakwa towards LTPS, Maibella up to Isolating Valve at LTPS, Maibella. In case Non-Piggable Pipelines, Chainage consideration shall be from the Isolation valve before IJ to Isolation valve at the terminating point (after IJ).
19. Contractor shall download the data into the PC/ Laptop of EIC/SIC/Representative on daily basis. The daily records shall get verified/ signed by APGCL representatives on daily basis.

The suggested format for CIPS survey shall be as per Annexure-C.

CAT Survey:

1. CAT Survey shall be carried out by Pipeline current mapping survey at all the pipeline sections as mentioned in the Annexure-C.
2. Procedure of the survey shall be submitted for approval of APGCL before the start of survey. The procedure shall be in line with the NACE/ OISD standards and Equipment manufacturers operating instructions, however minimum activities as mentioned in the SCC shall be performed invariably.
3. The survey along the pipeline should be carried out after duly identifying the pipeline alignment using the Pipeline Locators peak and null modes of operation. The pipeline ROU should be identified using temporary markers, at defined distance intervals. This shall facilitate retracing back high current attenuation locations for DCVG/CAT-'A' frame survey.
4. Distance of survey traverse-survey Chainage shall be accurately measured with tape for accurate demarcation.
5. The measurement by CAT survey shall be done at an interval of every 10 meters for Non-piggable Pipelines along with depth measurement.
6. The contractor has to arrange for field computer/Laptop for downloading data from the CAT instrument. Field data analysis should be done at every 500-meter interval to identify places of high current attenuation, by plotting Pipeline Map current v/s Distance on graph sheets / Field computer for immediate on site review to undertake the DCVG/ CAT 'A' frame survey at close intervals.
7. The CP system shall be switched off for pipeline section (from one Insulation Joint to next insulation Joint) for the purpose of the survey.

The progress and data report shall be submitted to APGCL on daily basis

DCVG/CAT with 'A' Frame Survey:

As the pipeline is 7.8 KM, DCVG for the entire pipeline has to be carried out by the contractor.

1. A detailed procedure to carry out DCVG/CAT with 'A' frame survey shall be submitted along with formats for recording the data, etc. For approval prior to starting the work.
2. Contractors shall carryout analysis of CIPS &/or CAT survey data and identify the probable defect locations for carrying out DCVG/CAT with 'A' frame survey at these locations after consultation with the EIC/SIC for finding the exact size and location of the coating defects, for non piggable pipeline section, DCVG survey has to be performed for entire length of the pipeline section.
3. For carrying out DCVG survey high sensitivity mili voltmeters and current interrupters shall be used to get accurate result.
4. In sections of high current attenuation, current mapping at closer intervals should be done to demarcate the coating damages and pipeline shorts accurately and precisely if survey is performed by CAT'A" frame survey.
5. Contractor shall ascertain locations with GPS coordinates and some referenced physical features like Markers, TLP, Road etc. and magnitude of coating defect throughout the periphery of the pipeline and shall summarize interpretation and recommendation for repair of the coating.
6. In sections of high current attenuation, current mapping at closer intervals using the CAT instrument and accessory 'A' frame should be

done to demarcate the coating damages and pipeline shorts accurately and precisely.

7. Accurate location identification drawings should be prepared for each and every coating fault located with suitable survey equipment and permanent markers available around that area for subsequent coating repair activity along with details of nearest pipeline marker/TLP and Chainage.
8. All coating defects shall be peg marked on surface using temporary markers with specific nos. and their start /end Chainage with GPS coordinates shall be recorded.
9. After completion of the survey and analysis of the report, size and location of the defects are to be categorized as Minor/Moderate/Severe and anodic / cathodic in accordance with NACE standard and criteria.
10. Contractor shall provide two sets of the Coating defects:
Coating defects with 80% confidence level. In case of mismatch of reported defects and dig/field verification, found more than 20% for a particular pipeline section, Contractor has to re-survey the entire section without any extra cost to APGCL. However, such type of reported defects shall be minimum 10% of the no. of total probable coating defects of all sizes. Probable coating defects for which defects shall not be verified by dig verification.
11. EIC/SIC of the respective region shall witness the coating defect during dig verification with respect to the defects reported in the survey and accordingly the report will be signed jointly by the contractor and EIC /SIC. The coating defect shall be photographed with proper numbering of the defects before and after carrying out coating repairs. Copy of the same shall be a part of the final report.

The suggested format for DCVG/CAT with 'A' frame survey shall be as per Annexure-C.

Terrain survey & Soil resistivity Survey

1. Contractor shall carry out the terrain survey of the entire pipeline. Before starting of the work, the successful Contractor shall submit the procedure for approval of the EIC.
2. The terrain survey must include detail of all the crossings, water bodies, drainage system, change of soil strata etc. as per direction the EIC.
3. The entire pipeline shall be divided in to the various zone based on the type of the soil, different type of crossing, water logged area, drainage system.
4. Normally soil resistivity (four pin wenner methods) shall be carried out at every 500-meter interval with pin spacing equivalent to depth of the pipe, however, if any change of soil strata is observed in less than 500 meter interval, then soil resistivity of every change in soil strata shall be measured & recorded. If the length of pipeline section is less than 500 meters, then soil resistivity shall be measured at minimum two locations. Also minimum two measurements shall be taken irrespective of the length of the pipe.
5. Soil resistivity shall also be also measured at different water bodies (both sides) & drainage system.
6. Soil pH along with other soil sample chemical tests like SRB, Sulfates, Sulfides, Chlorides ions, Carbonates etc. shall be also measured at every 5 KM along the pipeline at a lateral depth of top & bottom surface level

of Pipeline. These shall be also carried out at water bodies & effluent/drainage system.

The terrain survey shall be plotted with the GPS coordinate.

The format for terrain survey & soil resistivity survey shall be shall be as per Annexure-C.

Excavation & backfilling:

1. After the inspection surveys & analysis of reports, locations for excavations shall be identified jointly with APGCL for dig verification of Coating defects.
2. Soil pH shall be also measured from the Soil at Pipe top, Bottom and at Soil directly attached to the Pipe at the Coating defect location.
3. The Contractor is warned that while excavation job is carried out, the pipeline, which is carrying highly explosive natural gas, should not be damaged and chiseling, hammering etc. shall not be allowed on the pipeline surface in any case. The Contractor shall be responsible for all necessary fire hazards precautions and for taking actions to prevent any damage whatsoever to the pipeline. All preventive measures such as keeping adequate number of APGCL provided fire extinguishers near the work site should be taken.
4. The Contractor shall provide suitable dewatering arrangement (dewatering pump and generator) in case of water logging in the excavated pit with no financial implication to APGCL.
5. The Contractor shall exercise care to see that the fresh soil recovered from trenching operation intended to be used for backfilling over the laid pipe in the trench is not mixed with loose debris or foreign matter. The excavated earth shall be deposited sufficiently away from the trench sides, in such a manner so as not to collapse on the trench sides and also not to obstruct other operations.
6. Maximum unsupported length of pipeline shall not exceed 10 Meter. If the same exceed 10 Meter, the Contractor has to provide support at every 5-8 Meter with gunny bags, sand bags, wooden support etc.
7. Permission from the farmers/ persons in whose land the work is to be carried out shall be obtained by APGCL. However, necessary assistance & follow up as directed by EIC/SIC shall be done by the contractor.
8. After the coating repair, the pit shall be backfilled with soft soil around the pipeline and sand up to the soil cover. Before backfilling checking shall be done to observe coating defect & defect observed in the shall be repaired.

Thickness Measurement:

1. Thickness measurement of the all the location shall be done by using UT meter at the dig verification locations and recorded with other coating defect details.
2. Coating removal of the pipeline at dig verification locations shall also be done by the contractor & rate quoted in this SOR shall be including of coating removal and associated activities.
3. Thickness measurement shall be under Contractor's scope using UT meter (normal probe) as well as by UT flaw detector equipment, angular probe whenever required (as directed by APGCL) along with requirement of minimum ASNT Level-II qualified personnel for carrying out the same. Minimum number of locations is 40 nos.

4. Thickness measurement of the all the location shall be done by using UT meter at the dig verification locations and recorded with other coating defect details.
5. Coating removal of the pipeline at dig verification locations shall also be done by the Contractor & rate quoted in this SOR shall be including of coating removal and associated activities.

Coating repair:

After the verification of the defects, coating shall be repaired as per standard practice and direction of EIC by the experienced Coating applicator, including the surface preparation and holiday detection as per procedure. Coating material shall be provided by the Contractor and repairing shall also be done by the Contractor.

Coating condition/possibilities of disbandment, if any, at the coating repair location shall be recorded.

Report Analysis & Deliverables:

CIPS Survey:

Report shall include Pipeline section overlaid on a satellite imaginary and all the pipeline features & survey data depicted in the alignment sheet style format. Same to be also presented in soft copy along with the software tools to view the same.

One no. of editable soft copy and one no. non-editable soft copy should be submitted to the maintenance bases. Further, Hard copy Reports should be submitted in triplicate to the maintenance base falling in the pipeline section along with a copy to Head office of the Pipeline region.

DCVG/CAT with 'A' Frame Survey:

DCVG/CAT with 'A' Frame Survey analysis shall be done to pin point the coating fault with its orientation & size and should be peg marked.

Location identification drawings should be prepared for each and every coating fault with GPS coordinates referenced with physical features like permanent markers etc. available around that area for subsequent coating repair activity. As the pipeline is 7.8 KM, DCVG for the entire pipeline has to be carried out by the contractor.

DCVG % IR Calculation:

The Calculated Pipe to remote earth Potential (P/RE) are calculated using the following formula.

$dx (S1 - S2)$

$P/RE = S1 + \frac{dx(S1 - S2)}{(d2 - d1)}$

Where:

P/RE = Pipe to remote earth DCVG signal magnitude (mV)

S1 = DCVG signal amplitude to remote earth at Test Station-1 (downstream TS, in mV)

S2 =DCVG signal amplitude to remote earth at Test Station-2 (upstream TS, in mV)

d1= Distance of Test Station-1 (m)

d2 = Distance Test Station-2 (m)

dx = Distance of defect location from Test Station 1 (m)

% IR Calculation:

Once a Coating defect is located, its % IR is estimated by measuring the potential difference from the epicenter of the coating defect to remote

earth (OL/RE). This potential difference is then expressed as a percentage of the total calculated potential shift on the pipeline at the Coating defect location (P/RE), as shown in the Equation below.

Over the Line to Remote Earth mV (OL/RE) * 100

% IR (Coating defect Severity) =-----

Calculated Pipe to Remote Earth at indication mV (P/RE)

Coating defects are to be analyzed and categorized as Minor/Moderate/Severe as given below:

Coating Defect Severity (% IR)	Recommendations
0 – 15%	Characterized as 'Minor' or small coating faults. Such coating faults can usually be left unrepaired provided the pipeline cathodic protection is good and there are not too many small coating faults in close proximity. However, if such area is falling in probable AC interference zones, same needs to be rectified within normal scheduled maintenance activities as such defect sizes are prone to AC Corrosion
15 – 35%	Characterized as 'Moderate' or medium coating faults. These coating faults needs repair usually within normal scheduled maintenance activities.
35 – 100%	Characterized as 'Severe' or large coating faults. These coating faults need to be repaired at earliest.

Any Anodic & Cathodic area for the Pipeline sections are also to be identified. The DCVG/CAT with 'A' Frame survey to be produced in the tabulated form (As per **Annexure – C**)

Report should be prepared from Isolation valve to Isolation valve (before and after IJ's)

03 nos. hard copies of Reports should be submitted to GM, LTPS, APGCL, Maibella.. Along with this, one no. of editable soft copy and one no. non-editable soft copy should be submitted to GM, LTPS, APGCL, Maibella.

Terrain & Soil resistivity Survey:

The Terrain & Soil resistivity Survey to be produced in the tabulated form (As per Annexure–C) including terrain physical features.

Report should be prepared from Isolation valve to Isolation valve (before and after IJ's) on a Pipeline section.

Categorizing the Sole Resistivity in less corrosive (above 10000 Ohm–Cm), Moderate Corrosive (2500 to 10000 Ohm–Cm) and Highly Corrosive (below 2500 Ohm–Cm) segments. Soil pH along with other soil samples like SRB, Sulfates, Sulfides, Chlorides Ions, and Carbonates etc. shall also be reported.

Excavation (Dig Verification) & backfilling /Thickness Measurement / Coating Repair:

Minimum Photos should be taken and incorporated in the report along with Dig Verification report for Coating Defect location at the time of 1st exposor of the pipe coating defect, removal of coating, surface preparation, thickness measurement and during Coating repair.

Record of Soil pH in tabulated form with Chainage & GPS Coordinates from the Soil at Pipe top, Bottom and at Soil directly attached to the Pipe at the

Coating defect location for further analysis. Record of Thickness measurement & Coating repair should be also incorporated in the report

Reference and Standards:

NACE SP 0207– 2007, Performing CIPS & DC Surface Potential Gradient Survey on Buried or Submerged Metallic Pipelines.

NACE SP 0169–2013, Control of External Corrosion on Underground or Submerged Metallic Piping Systems.

NACE TM0109–2009, Aboveground Survey Techniques for the Evaluation of underground Pipeline Coating Condition.

NACE SP 0502–2010, Pipeline External Corrosion Direct Assessment Methodology.

NACE SP 0177 – 2014, Mitigation of Alternating Current and Lightning Effects on Metallic Structures and Corrosion Control Systems.

IS 8062 – Part II – Code of Practice for Cathodic Protection of Steel Structures –Underground Pipelines.

Any other relevant and latest International standards and practices.

Annexure – A

List of Minimum set of Measuring Instruments/ Equipment/ Tools and Tackles		
Sl. NO.	Equipment/ instruments	Make
1	Pipeline locators (with CAT-A frame accessories)	Reputed Make
2	Portable computerized data collector/ logger	Reputed Make
3	Two numbers of reference cell sticks and multiple reference cell connectors	Reputed Make
4	Current Interrupters with synchronized timer circuits and adjustable time settings	Reputed Make
5	Portable calibrated Cu-CuSO4 reference cells	Reputed Make
6	Rodometer/ Measuring tape	Reputed Make
7	Insulated wire roll	Reputed Make
8	Computer loaded with companion software for data logger	Reputed Make
9	Digital multimeter with leads	Reputed Make
10	DCVG Meter along with reference cell sticks	Reputed Make
11	GPS Receiver	Reputed Make
12	Digital Camera of min. 20 MP	Any Reputed Make
13	UT meter with normal probe and UT Flaw detector equipment with angular probe	Any Reputed Make
14	Power Source (DEG) and Dewatering pump	Any Reputed Make
15	Holiday Tester	Any Reputed Make
16	Coating Removal tools	Any Reputed Make
17	Litmus Paper/ pH kit	Any Reputed Make
18	Sterile Plastic Pouches	Any Reputed Make
19	Cleaning tools/ Degreasing Sprays/ Markin Cloth	Any Reputed Make
20	Msarking Devices	Any Reputed Make
21	Wire Mesh	Any Reputed Make
22	Steel Ruler	Any Reputed Make
23	Magnetic Ruler	Any Reputed Make
24	Micrometer Depth Gauge/ Digital Pit Gauge	Any Reputed Make
25	Magnifying Glass	Any Reputed Make
26	Ultrasonic D Meter	Any Reputed Make
27	Ultrasonic Flaw Meter	Any Reputed Make

Soil Sample Survey Report Template

Pipeline Section Code and Name:

Sr. No	Chainage/ Location	Soil Sample Depth	Easting (X Coordinate)	Northing (Y Coordinate)	Altitude (Z Coordinate)	Soil pH	SRB	Sulfates	Sulfides	Chlorides	Carbonates	Remarks (if Any)

Note: Any other related works apart from the above which might be required to complete the work in full shall be under bidder's scope without charging additional cost to APGCL.

(I) TERMS & CONDITIONS:

The bidder must adhere to all the below mentioned clauses of this tender document and also, the tender must be submitted as per instructions given in clause J(3) below, in the absence of which the submitted tender of the bidder may not be considered for evaluation at this end. The bidder must state clearly his acceptance of the clauses of this tender in the Proforma, the format of which is given herewith. However, in case of deviation of any tender clause by the bidder, the same must be stated clearly in the same Proforma.

In case the bidder fails to state the deviation(s) clearly in the Proforma, it will be presumed that the bidder has accepted all terms and conditions of this tender document. In addition, acceptance/rejection of bidder's deviation(s) shall be at sole discretion of the Undersigned/APGCL.

The clauses under the head – 'Terms & Conditions' are given below:

1. Firm Price:

The basic price(s) quoted by the bidder shall be firm without any variation in any way until completion of the work in full. The bidder must state all the taxes & duties, freight, etc., as applicable, clearly in the Price-Bid of the submitted tender.

2. Terms of Payment:

100% payment including all taxes and duties shall be made after completion of the work in full to the satisfaction of APGCL.

3. Mobilization period:

As the job has to be carried out in the shortest possible time, hence Contractor is requested to depute their personnel within minimum time. However, mobilization period of shall be considered as 10 days from the date of LOI/WO whichever is earlier.

4. Work Completion Period:

The work completion period is 45 (forty-five) days from the date of LOI/Order.

5. Liquidated Damage:

In case of delay in completion of the work in full beyond the work completion period as mentioned, a penalty @1% (one percent) of the total order value for per week delay subjected to maximum of 10% (ten percent) of the total order value will be imposed upon the successful bidder. This is, however, subject to Force Majeure clause as given in "General Condition for Supply & Erection of APGCL 2014". The payment of liquidated damage shall not in any way relieve the Contractor from any of its obligation to complete the work or from any other obligation and liabilities of the Contractor under the Contract.

6. Validity of the Offer:

The Offer shall be valid for a period of 180 (one hundred eighty days) from the date of opening of the technical bid.

7. Equipment, Tools and Consumables: All equipments, tools, consumables, safety equipments, power & water supply, etc. shall be under bidder's scope.

8. Existing Services:

Drains, pipes, cables, overhead wires and similar services encountered in the course of the works shall be guarded from injury by the contractor at this own cost, so that they may continue uninterrupted.

Any damage be done by the contractor to any pipes and lines (above or below ground), etc should be rectified by the contractor immediately at his own cost.

9. Safety Health and Environment:

The contractor during entire duration of the contract shall adhere to the requirement of safety, health and environment management as per standard specification.

10. Document/Report:

The Contractor must maintain and submit the following as mention below:

- a. All records and relevant documents as required.
- b. Detailed report of the entire survey works.
- c. To summarize of the total report and recommendation for repair of coating, if any.
- d. Submission of the Final Report: Two sets of hard copy in the binding form along with the softcopies and field diaries, daily progress report, drawing etc within fifteen days after completion of the job.

11. Mandatory documents:

The bidder must submit copies of the following mentioned documents along with the technical part of the submitted tender without which the submitted tender will not be considered for evaluation at this end:

- a. Signed & sealed copy of APGCL Tender Document.
- b. Copy of PAN Card.
- c. Copy of GST Registration Certificate of the bidder's Firm.
- d. Documents related to bidder's eligibility and past experience.
- e. Documents related to bidder's Firm: Certificate of registration of the Firm (in case of Sole Proprietor)/ Partnership Deed (in case of LLP)/ Certificate of Incorporation' together with Memorandum / Articles of Association (in case of Company), whichever is applicable.
- f. Any other document as sought in this tender document of APGCL.

12. Clarification and Additional Information:

During bid evaluation, APGCL may request bidder for any clarification on the submitted bid and/or additional documents related to the tender. Bidder shall submit the sought clarifications and/or document(s) within stipulated time as determined by the undersigned. However, seeking clarification and document(s) during bid evaluation shall be on sole discretion of APGCL.

13. Tender fee & Earnest Money Deposit (EMD):

The bidder must submit the requisite TENDER FEE and EMD. Bid received without requisite tender fee and EMD will be rejected.

TENDER FEE of Rs.1,000.00 (Rupees One thousand only) must be paid in the shape of Demand Draft in original of any Nationalized Bank/Scheduled Bank of RBI duly pledged in favor of the **Assistant Manager (F&A), LTPS, APGCL, Maibella-785 689.**

EMD @ 2% of the quoted value subjected to maximum of Rs 15,000/- (Rupees Fifteen Thousand only) in the shape of Demand Draft in original of any Nationalized Bank/Scheduled Bank of RBI shall be submitted as Earnest Money, duly pledged in favor of the **Assistant Manager (F&A), LTPS, APGCL, Maibella-785 689.** APGCL will refund the Earnest Money of the unsuccessful bidders directly to the bidders within a reasonable period of post work commencement without any interest and on submitting written request to the undersigned

for EMD release. The EMD of the successful bidder shall be released, without interest, after submission of PBG.

14. Tests and Inspection:

The contractor shall carry out the various tests as enumerated in this tender document. After completion of entire tests as per specification, the whole work will be subject to final inspection by APGCL to ensure that the entire work has been done as per specification/requirements. If any defect noticed in the work are attributable to the contractor, the contractor has to attend the same at his own cost, as and when the owner (APGCL) brings them to notice.

15. OWNER'S RIGHT TO ACCEPT OR REJECT A BID:

APGCL reserves the right to accept a bid other than the lowest and to accept or reject any bid in whole or part, or to reject all bids with or without notice or reasons. Such decisions by APGCL shall bear no liability whatsoever consequence upon such decisions.

16. Award of Supply:

a) The bidder whose bid is accepted by APGCL shall be issued formal Work Order prior to expiry of bid validity. Bidder shall confirm acceptance by returning a signed copy of the Order within 07 (Seven) days from the date of issue of formal Work order.

b) APGCL shall not be obliged to furnish any information / clarification / explanation to the unsuccessful bidders as regards of non-acceptance of their bids. Except for refund of EMD (without interest) to unsuccessful bidder, APGCL shall correspond only with the successful bidder.

17. Arbitration Clause:

All disputes or differences whatever so arising between the parties out of or relating to this Order shall be settled by arbitration as per clause 33.00 of "General Conditions for Supply and Erection of APGCL". The venue of arbitration shall be at Guwahati.

18. Jurisdiction:

Subject to arbitration clause, all questions, disputes of differences arising under out of or in connection with the contract shall be subject the exclusive jurisdiction of Courts of Guwahati.

(J) GENERAL INSTRUCTIONS TO BIDDER:

- 1) One set of Biding document (Tender document) will be issued to intending bidder on submission of Rs. 1000/- (Rupees one thousand only) in the shape of Demand Draft duly pledged in favour of the **Asstt. Manager (F&A), LTPS, APGCL, Maibella**. The Tender document may also be downloaded from the APGCL's website (www.apgcl.org) in which case the Tender fee has to be submitted along with the Technical Bid in the shape of Demand Draft duly pledged in favour of the Asstt. Manager (F&A), LTPS, APGCL, Maibella. **Bidder shall submit tender document duly signed and stamped on each page of tender in token of his acceptance along with his bid.**

- 2) The bid shall be completed in two bid system as directed below:

Technical & un-priced commercial part - Technical bid.

Priced commercial part - Price bid.

Technical and Un-priced Part - Technical Bid:

This part shall contain technical and commercial (Un-priced) bid and shall have to contain the following as mentioned below.

Techno-commercial bid disclosing price shall be summarily rejected.

- Signed and sealed copy of LTPS, APGCL Tender document along with Earnest Money Deposit (EMD) in original.
- Technical and Commercial part of bidder's Offer.
- All requisite documents as per Clause 'I' of this tender document.
- Any other relevant document as required for this tender.

Priced Commercial Part – Price Bid:

Priced commercial part shall contain "Offered Price" dully filled in two copies i.e. one ORIGINAL COPY and one DUPLICATE COPY, shall be submitted. Priced part shall have to include all taxes and duties, freights, etc. No stipulation, deviation, terms and conditions, presumption, etc shall be stipulated in Priced part of bid. APGCL shall not take cognizance of any such statement and may at their discretion reject such price bids. **Also, price quoted by the bidder must be in INR.**

3) **Submission of Bid:**

Technical & Un-priced and Priced part must be submitted in two separate **sealed** envelopes. The two sealed envelopes of both un-priced and priced parts shall have to be put to an outer cover which is also to be sealed. The outer cover should duly bear the Tender Number, date and time of opening of the bid along with address of the office.

Part-I: Technical and un-priced part:

The envelope shall have following information clearly written on the outside of the envelope, failing which APGCL will assume no responsibility for the misplacement or premature opening of the bid.

(Part - I: Sealed Technical and un-priced part – Technical Bid)

Tender Name.

Tender No.

Due date & time of opening.

Name & address of Bidder.

Note: Original Earnest Money Deposit (EMD) must be enclosed in this part without which the submitted tender shall be rejected

Part-II: Priced Part:

This part of the bid shall contain the Price bid with Offered Price of the item filled in all respects and other information specially requested for submission of price part. The following information shall have to be clearly written on outside of the envelope, failing which APGCL will assume no responsibility for the misplacement or premature opening of the bid.

(Part-II: Priced Part – Price Bid)

Tender Name.

Tender No.

Due date & time of opening.

Name & address of Bidder.

Note: This part of Bid will be submitted in original plus one copy in duplicate.

4) **Date, Time & Place of Submission:**

i) Bid must be submitted by the due date and time mentioned in the Notice Inviting Tender or any extension thereof as duly notified in writing by APGCL at the following address. Address to which bids are to be sent (by Speed Post/Courier/Regd Post/By Hand, etc):

The General Manager, LTPS, APGCL, Maibella,

P.O.-Suffry, Dist. Charaideo, Assam, PIN-785 689.

ii) **Bid received after the time and date fixed for receipt of bid is liable for rejection.**

5) BID Opening:

a) Opening of Techno-commercial & Un-priced Part of Bid:

i) On the date and time mentioned in 'Notice Inviting Tender', the Technical and Un-priced Commercial Part will be opened in the office of the General Manager, LTPS, APGCL, Maibella, P.O.-Suffry, Dist. Charaideo, Assam, Pin-785 689.

ii) In the event the specified date of bid opening is declared a holiday for APGCL, the bid shall be opened on the next working day at the specified time and location.

iii) Bid of the bidder who submits the required EMD shall be taken up for detailed evaluation.

b) Opening of Priced part of the Bid:

Price Commercial Part will be opened of only those bidders whose bids are considered Techno-commercially acceptable.

6) During pre bid discussion, Techno-commercial discretions with bidder shall be arranged. If needed, bidder shall depute authorized representative(s) for attending the discussion. The representative(s) attending the discussions shall produce authorization from the organization to attend the discussions and sign the minutes on behalf of the organization. The authorized representative(s) must be competent and empowered to settle all technical and commercial issues.

7) BID Evaluation Criteria:

a) Techno-commercial Part:

i) The Techno-commercial Part of bid shall be evaluated as per clauses stipulated in this tender document and as per instructions laid down in the document "General Instruction for Supply and Erection of APGCL, 2014".

The bid must be accompanied with EMD as specified in the tender.

ii) Bidders must ensure that complete bid along with all details as sought are submitted as per requirements of this tender document.

iii) If any clause of this tender contradicts with that in the document "General Instruction for Supply and Erection of APGCL, 2014", in that case the clause of this tender document shall prevail.

b) Price Part:

The 'Offered Price' and its break up quoted by the bidder shall be taken up for evaluation on overall basis. The bidder must clearly specify all taxes & duties levied in the absence of which the same shall be at bidder's scope. Price bids containing additional qualifications not mentioned in Techno-commercial Part of the bid shall be summarily rejected.

8) Exceptions and Deviations:**EXCEPTION AND DEVIATION PROFORMA**

Sl.No.	Ref of Bid Document		Subject	Deviations
	Page No.	Clause No.		

NOTE: Bidders are advised to confirm compliance to tender conditions in toto. However, in the event of bidder seeking any deviation(s), the same

should be submitted separately in the technical section strictly as per the format given above, otherwise, the same shall not be considered and it will be presumed that the bidder has accepted all terms and conditions of the tender.

Signature:

Name of Tender:

Bidder's Name:

Company Seal:

9. Consignee:

The Asstt. General Manager (Material Management),
Lakwa Thermal Power Station,
Assam Power Generation Corporation Ltd,
Maibella, P.O. Suffry-785 689,
Dist. Charaideo, Assam,
Ph: 03772 - 254322/+91-943559754
Email: gm-ltps@apgcl.com

The undersigned reserves the right to accept or reject any or all of the bids without assigning any reason thereof. He is not bound to accept the lowest rate also.

-Sd-

**General Manager,
LTPS, APGCL, Maibella**

ANNEXURE - 1**TECHNICAL BID**

The bidders are requested to ensure that the following points/aspects in particular have been compiled within their offer failing which the offer is liable to be rejected.

1. Please tick (✓) the box, whichever is applicable, and cross (X) the box(es), whichever is/are not applicable (NA).
2. Please sign on each sheet.
3. This "Bid Information Sheets" duly filled in must be submitted along with the offer.

(A) COMMERCIAL

1.0 Whether requisite tender fee has been paid?

YES	NO	NA
-----	----	----

If so, furnish the following

- i) Demand Draft no. & date:.....
- ii) Name of the Bank:
- iii) Value:
- iv) Period of Validity:
.....

2.0 Earnest Money Deposit (EMD):

Whether requisite EMD has been enclosed?

YES	NO	NA
-----	----	----

If yes, furnish the following

- i) Demand Draft no. & date:.....
- ii) Name of the Bank:
- iii) Value:
- iv) Period of Validity:
.....

3.0 Whether the period of validity of the offer is as required in the tender document?

YES	NO
-----	----

4.0 If not, mention the extent of variation:
(You can use extra sheet also)

Extent of variation

5.0 Has the bidder given the details of parties to whom the bidder has executed order in past:

YES	NO	NA
-----	----	----

6.0 Is the offer being sent by Regd. Post, Courier Services or proposed to be dropped in Tender Box?

Sent by Regd. Post

YES	NO
-----	----

Sent by Courier Services

YES	NO
-----	----

Dropped in Tender Box

YES	NO
-----	----

7.0 Has it been ensured that there is no overwriting in the tender? Have corrections been properly attested by the person signing the tender?

YES	NO
-----	----

8.0 Has the tender been prepared in sufficient details clearly so as to avoid post tender opening clarifications?

YES	NO
-----	----

9.0 Bidder's acceptance of the following clauses:

i) Terms of Payment clause:

YES	NO
-----	----

ii) Work completion period:

YES	NO
-----	----

iii) Arbitration clause:

YES	NO
-----	----

(B) TECHNICAL

1.0 Whether necessary technical literature/catalogue has been attached with the offer?

YES	NO
-----	----

2.0 Whether the work scope being offered fully conform to the tender technical specifications?

YES	NO
-----	----

3.0 If not, specify the extent of deviation and how it is suitable to APGCL's requirement:
(Use separate sheet to explain)

YES	NO	NA
-----	----	----

(C) BIDDER'S PAST WORK PROFORMA

Sl. No.	NAME AND ADDRESS OF CLIENT(S)	BRIEF DESCRIPTION OF PAST WORK	ORDER VALUE	REMARKS
---------	-------------------------------	--------------------------------	-------------	---------

--	--	--	--	--

NOTE: Relevant documents from client to be enclosed along with the above proforma.

.....

Signature and Seal of the Bidder

PRICE BID

1. Tender No.:
2. Tender Name:
3. Due Date:
4. Validity of the Bid:
5. Work Completion
Period:.....
6. Payment Terms:

Quoted Price:

Sl. No.	Particulars	Amount (in figures) (INR)	Amount (in words) (Rupees)	Remarks
1.	Total Quoted Price:			
2.	Taxes (if any):			
3.	Other Charges (if any):			

(Show item-wise price break-up. Use separate sheet if required)

NOTE:

1. The above prices shall be firm without any variation in any way till completion of the work in full.
2. Statutory charges/taxes & duties, freight, etc. which will not be borne by the bidder must specifically be indicated in the above format, failing which the bidder shall bear the same and APGCL will not be liable for payment of such charges.
3. Use additional sheets if required.

.....

Signature and Seal of the Bidder