T E N D E R S P E C I F I C A T I O N

No.-BHE/PW/PTRU/PUR/HLD/ACC-1/260

FOR

Scope of Work: HELIUM LEAK DETECTION TEST OF AIR COOLED CONDENSER (ACC) AT UNIT#1 OF 3X800MW BHEL-PATRATU PROJECT

VOLUME I – TECHNICAL BID

THIS TENDER SPECIFICATION CONSISTS OF:

Notice Inviting Tender	
Volume-IA	**Technical Conditions of Contract**
Volume-IB	**Special conditions of Contract**
Volume-IC	**General conditions of Contract**
Volume-ID	**Forms & Procedures**
~~**Volume-IE**~~	~~**Technical Specifications**~~
Volume II	**Price Bid**

Bharat Heavy Electricals Limited
(*A Government of India Undertaking*)
Power Sector - Western Region
3X800 MW PVUNL Patratu-829119

Registered Office: BHEL House, Siri Fort, New Delhi – 110 049, India
Website: www.bhel.com

2.0 SCOPE OF WORK:

A. BROAD SCOPE OF WORKS

1. Carrying out Helium leak detection test (hereby referred to as "HLD" test) in complete vacuum system including Air cooled condenser (ACC) for identifying points of Air Ingress in Unit #1.
2. Arrangement of Rope Access for inaccessible locations during Test.
3. Identification and categorization of air-ingress points
4. Marking of identified air-ingress points by distinctly contrasting paints.
5. Submission of detailed test reports (02 sets) including photographs of all identified leakage points

B. DETAILED SCOPE OF WORKS

1. Bidder to submit documents detail method statement, Job Safety Analysis (JSA) and Hazard Identification & Risk Assessment (HIRA) prior to commencement of work.
2. Bidder also has to submit the document for the detection process, methodology and formulae used, documentation process, analysis process and reporting process followed.
3. The bidder to conduct Helium leak detection test in the entire vacuum system and provide detailed recommendations, markings of areas of leakage and provide detailed report in soft and hard form.
4. Bidder may familiarize with possible air leakage points by visiting site to broadly understand the scope of work and exact locations.
5. Air ingress in system prior to start of HLD test to be measured in Rotameter for records.
6. The bidder to provide helium leak detector equipment's along with accessories, consumables, standard calibration blocks, cables to detect the air ingress points in specified location
7. Bidder to provide 99.99% pure helium grade gas (Helium gas analyzer to be provided by bidder at the site) during testing
8. Scaffolding in multiple locations if required to be arranged by the bidder.
9. Rope Access Method in Multiple locations required at inaccessible locations in ACC portion or any other area to be arranged by the bidder.
10. Bidder to ensure to work in General Shift Timings from 0900 HRS to 1730 HRS in clear daylight conditions.

C. HELIUM LEAK DETECTION TESTS ARE TO BE CARRIED OUT BROADLY IN THE FOLLOWING AREAS:

1. End shield of LP Turbines
2. CEP Suction Condensate tank along with deaerator
3. LP Bypass, Hotbox, Drain Tank, Drain pump Circuit
4. Flash Tank, LP-HP Heater, Various stand pipes, Drains, Parting planes, C&I LIR`s connected to the vacuum system.
6. TDBFP Exhaust areas
7. ACC: 08 Streets each with 9 fans, having 72 fans in total including location of Tube bundles and elevation of bursting diaphragms to be covered.
8. In the ACC system the following broad areas to be covered:
    a. Main steam duct

b. Steam distribution tube bundle
c. Condensate heater
d. Condensate pipe
e. Extraction pipes
f. Drain piping etc.
g. ACC Manholes – Including main extraction steam duct manhole steam distribution manifold manhole, condensation tank manhole etc.
h. Rupture discs
i. Expansion bellows- stitching weld of expansion bellows and main exhaust steam pipeline
j. Splicing weld of joint and exhaust steam duct
k. Tube bundles
l. Isolating valves
m. Condensate pipe valve, vacuum pipe valve
n. Weld at condensate collecting manifolds and on top of the fin tube bundles.
o. Main welds on Turbine exhaust ducting, risers, and steam distribution manifolds Air intake on vacuum equipment.
p. Field stitching weld of steam distribution pipe skirt plate and upper pipe plate
q. All field stitching welds of Main exhaust steam duct

D. REPORTING FOR THE HELIUM LEAK DETECTION TESTS TO BE AS UNDER:

1. Post leakage detection, categorization of leakage as – very small, small, medium, large, very large to be done and detailed Tags to be hung around the leakage spot for easy identification.
2. Marking of the location with distinct contrast Paint to be done for ease of rectification of leakage point in opportunity shutdown.
3. Bidder to take photographs of leakage areas using digital camera and include the same as part of Report with proper labelling.
4. The agency will furnish all detailed data in a minimum 2 sets of helium leak detection test report with analysis and recommendation.