HSCC/Medical Equipment/SJH Date: 14th Feb 2017

AMENDMENT-VI

Ref.: IFB No. HSCC/SJH/Medical Equipment/2016/25 Dated 23.12.2016

Sub.: Procurement of Medical Equipment for New Emergency Block & Super-Specialty Block at Safderjung Hospital, New Delhi.

It is informed that Technical Amendment have been received from Safdarujng Hospital item No. 1,2 Gamma Camera and PET CT respectively in view of the pre bid meeting queries submitted by the prospective bidders it is to be uploaded on the website today and it proposed to revise the bid submission date from 14.02.2017 to 21.02.2017. for item No. 1 , 2

For item No. 10 (Blood Gas Analyzer) all technical specification remain unchanged it proposed to revise the bid submission date from 14.02.2017 to 21.02.2017 No further extension will be given

Due to inadequate response for item no 8, 3 the bid submission date extend from 14.02.2017 to 21.02.2017. No further extension will be given.

Item No. 1 Gamma Camera

Revised / amendedTechnical Specifications for DUAL HEAD GAMMA CAMERA INTEGRATED WITH SPECT AND MULTI - DETECTOR, MULTI - SLICE CT SCANNER TO BE INSTALLED ON TURNKEY BASIS in Department of Nuclear Medicine, Super Specialty Block, V.M.M.C. &Safdarjung Hospital, New Delhi.

Sealed tenders (sealed separately as the Technical Bid' & the 'Price Bid'- in duplicate) are invited on CIF/CIP basis, directly from the Manufacturers/Principals for the supply of a "state-of-the-art" and latest technology DUAL HEAD GAMMA CAMERA SYSTEM INTEGRATED WITH SPECT AND MULTI-SLICE CT SCANNER (16 OR MORE SLICE) AND HAVING GATED CARDIAC AND CT IMAGING ACQUISITION CAPABILITY.

The tendersalongwith all the commitments, claims, specifications, clarifications, guarantee. warrantyetc pertaining to these equipments shall be submitted directly by the Manufacturer! Principals (also referred to as vendors or suppliers) through their local subsidiary office, who shall be wholly and solely responsible for all such statements/commitments in this connection.

Offers submitted by local agents, other than the direct subsidiaries of the Principals, shall NOT be entertained. Such offers shall be summarily rejected with forfeiture of their EMD.

The equipments offered by the vendor must be extremely durable and with the highest quality performance. These should be sturdy, stable and reputed machines having high performance status all over the world and particularly in India.

The equipments offered should be based on the latest technology of detectors, hardware and software. These should be, solid state and fully digital. Designs of the equipments should be compact, with all the parts and components neatly enclosed inside covers. These should be new models — not more than three years old in the international market, with proven performance record in various clinical centres. Years of launch of the models alongwith their years of installations with satisfactory performance report at various centres, especially in India, must be attached for the equipments offered. Any equipment not having any installation base in India shall be considered only after technical specification committee's special approval, if other terms and conditions are fulfilled.

The vendor should have a strong and reliable technical and service support network in India. The installation and maintenance of the systems shall be carried out through an established service department of the supplier, employing factory-trained, BARC certified field service engineers. Vendors unable to provide on-site service by such engineers need not respond to this tender.

DETAILED TECHNICAL SPECIFICATIONS FOR THE SYSTEM

PART A: GENERAL

1. GENERAL:

(i) A latest technology Dual Headed variable angle SPECT Gamma Camera systemcapable of performing all planar, SPECT, WB SPECT and Whole Body imaging applications with sixteen or more slice diagnostic capability CT.

(ii) CT based attenuation correction for Gamma Camera.

(iii) Diagnostic CT image acquisition and fusion with nuclear medicine images.

(iv) Image fusion software & hardware.

(v) System should be independently capable of acquiring multi-slice CT Scan of full diagnostic quality.

(vi) Vendors shall provide a comprehensive list of users of dual head SPECT-CT gamma camera installation base in India and their performance profile.

PART B: GAMMA CAMERA

1.GANTRY:

(i)Gantry design should be wide open and image acquisition capability with

clockwise and anticlockwise movement.

(ii) Height, width and depth should be adequate to conveniently locate the gantry in

existing space available in the department. In order to access this, tenders are required to mention the dimensions.

(iii) Auto contouring: The detectors should be equipped with automatic body countering (ABC).

(iv) Gantry should have emergency stop buttons.

(v) Persistence scope mounted on the gantryor wall for continuous display of patient position and gantry parameters (with LCD Colour Display)

2. DETECTORS:

a. Dimensions:

(i) Large field of view with UFOV of 45 X 35 cm or more to enable adequate patient breadth coverage and diagonal field of view of 50 cm or more

(ii) Should have facility for automatic correction for energy, linearity and uniformity

b. Crystal:

c. Photomultiplier Tubes:

d. Intrinsic Spatial Resolution:

e. Intrinsic Energy Resolution:

f. Intrinsic Flood Field Uniformity:

g. System Spatial Resolution (LEHR at 10 cm):

h. Intrinsic Spatial Linearity:

(b. to h. above as per -NEMA NU1-2007 Standards)

i.Collimator Specification:

(i)Low Energy High Resolution (LEHR) — One pair

(ii) High Energy General Purpose (HEGP) for ^{131}I— One pair

j. Patient Bed specifications:

(i)Length 190 cm or more

(ii)Width: 40 cm or more

(iii) Range of vertical motion 50/60- 120 cm

(iv) Pallet Material: Carbon fiber/high modulus carbon fibre

(v)Pallet thickness: 35 mm or less

(vi) Attenuation at 140 keV: less than 10%

(vii) Weight bearing capacity: 170 kg or more

(viii) Maximum deflection of patient pallet: less than 0.5 mm

(ix) Scan length in Whole body mode: 190 cm or more

(x)Adjustable head holder for brain scan.

Part C: CT

1. The system should be the fastest available slip ring technology/contemporary technology

allowing full rotation multi-slice scanning of **16 slices** or more per rotation with true isotropic volume acquisition and high spatial resolution of at least 0.5 mm or less. Give details of Z axis resolution and the pitch at which this resolution is achieved.

2.**X-RAY GENERATOR:**

Should be high frequency inverter type with power output of 50 KW or more to support

sustained and continuous X-ray generation.

3.**X-RAY TUBE:**

a)High performance CT X-ray tube is essential for uninterrupted long spirals. Givedetails of anode temperature monitoring system. Give details of tube current range and mA rating at peak generator power. Is there a mA modulation mechanism for dose regulation? Give details.

b) Tube voltages: 80-130 KV or more if available

c) Filter and beam limiting devices and other specific features to reduce radiation dose to the patient.

d) Give details of Anode heat Storage capacity, heat dissipation and tube assembly heatstorage and cooling details of the tube offered.

e) Specify the focal spot size and number according to IEC recommendations.

f)Automatic selection of focal spots should be possible.

4.GANTRY:

a) Aperture should be 70 cms or more to facilitate guided interventions.

b) Specify the entire range of rotation times for full 360 degrees.

c) Lesser rotation times will be preferred.

d) Minimum scan field of view (FOV) should be 50 cms. or more.

e)Laser alignment light should control the isocentric position of the patient in all planesand isocentre should be maintained even when the gantry tilts.

f) Controls should be located on both sides within easy reach of the operator.

5.SPIRAL CT:

a) Scan time for complete 360 degree scan should be 0.5 sec or less.

b) Minimum slice thickness should be less than one mm. Slice thickness should be freely selectable for prospective and retrospective reconstruction.

c) Gapless spiral length 150cms or more.

d)Specify range and selectable slice thickness available.

e)Pitch factor (volume pitch) should be variable between 0.5 to 2.0 or more andshould be user selectable. Give details of all pitch selections.

f) Rotation times: specify the minimum and maximum with the range of pitch. Combinations of pitch, slice thickness and spiral length should be easily selectable by the user. The system should optimize the radiation dose and resolution for each selection.

g) Bolus triggered spiral acquisition should be possible.

h) Single continuous spiral acquisition time "spiral on time should be minimum 100secs or more.

i) Gated Cardiacacquisition capabilityshallbeprovided.

6.TOPOGRAM:

a) Specify the range of length.

b) Scan time: Give details.

c) Views: should be possible in frontal and lateral views.

d) Should be possible to interrupt acquisition manually once the desired anatomy isobtained.

7. DATA ACQUISITION SYSTEM:

a) Detector: Please specify the detector design and type of detector used.

b) Give details of the detector electronics, number of rows with their thickness, number of elements, channels per slice, number of projections, maximum number of discrete slices/rotation.

c) Give details of real time tube current, geometric and absorption efficiency of the detectors in percentage.

d) Display of radiation dose per examination is essential.

e) Acquisition protocols should have in built mechanism for adapting the tube current according to body shape during the examination for dose regulation.

f) Specify the mechanism used in the system quoted.

g) There should be in-built protocols for all pediatric applications in order to reduce the effective dose. Give details.

8. IMAGE RECONSTRUCTION:

a) Real time reconstruction speed of 16 images/sec or more for any slice thickness with full cone beam reconstruction at 512 x 512 matrix.

b) Specify the reconstructed slice width, scan field and reconstruction field.Slice thickness should be freely selectable.

c) Specify the scan time and length.

9. IMAGE DISPLAY MONITORS (common with the Gamma Camera):

a) Monitors should be flat screen to last full life of the scanner with continuous and uninterrupted use without significant deterioration of display quality.

b) Minimum numbers of monitors to be provided are 3. One for the examination

room, one for the control room and one for post processing console/work station.

c) Size of monitors should be more than 18": Full flat screen LCD display withresolution of 1024 x 1024 or more.

d) Pixel size should be minimum 0.3 mm or less.

e) Afterglow persistence is undesirable. Please give details.

10. CONSOLES (common with the Gamma Camera):

a) Operator console should perform all functions such as registration, scheduling,protocol selection, all standard evaluation applications, volume measurements,volume rendering MPR etc.

i_ Should have raw data storage with at least 100 GB hard disk having a

minimum of 100,000 image storing capacity in 512 x 512 matrix.

ii. Real time 3-D reconstruction and display should be possible during acquisition.

iii. Please specify all post processing software which will run on the workstation and not on the operating console.

iv. Acquisition software for SPECT quality control

v.Compatible ECG gating device with accessories for gated data acquisition.

b) Independent Advanced Workstation/Console X 2 Nos with permanent licences

i. Capable of simultaneous acquisition and post processing, preferably swappable with the main console should be provided. These should have hard disk storage of 100 GB or more with options for provided enhancement of storage capacity and future upgrades. Give details of the hardware of workstations/consoles to be provided.

ii. The following software is to be provided:

Complete Software for brain and body perfusion studies.

iii. Real time reconstruction and immediate display of images in 1024x1024 matrix parallel to acquisition in spiral mode to be provided.

iv. Facility for direct 3D image formatting in any plane during acquisition as planned on scout images.

v. Lung perfusion defect detection. Software for VQ mismatch

vi. Characterization of liver & kidney lesions.

11.<u>IMAGE EVALUATION TOOLS:</u>

a. Parallel evaluation of multiple regions of interest in circle, irregular and polygonal form.

b. Profile cuts, horizontal, vertical, oblique.

c. Annotation, labeling, online measurements, ROI etc.

d. Dynamic evaluation of contrast enhancement in organs and tissue, calculation of time density curves, peak enhancement images, time to peak images, image subtraction etc.

e. 2D image zoom, pan, manipulate, averaging reversal of grey scale values, mirroring, image filter functions, advanced imaging algorithms.

f. Real time MPR of all secondary views.

g.CTA, MIP, 3D, SSD advanced 3D applications and colour coding.

h.All above functions should be instantaneous and interactive.

i.On line patient registration facility, transfer of information from HIS/RISvia DICOM and emergency registration.

12.IMAGE QUALITY:

a.Parameters for the following must be specified clearly as these are

considered crucial for system comparison.

b. Low contrast Resolution/ detectability should be at least 5mm at 3.0 HV with20 cm CATPHAN. Specify surface dose, mAs, slice thickness and HU used to determine the low contrast resolution.

c. High Contrast Resolution:

i.Specify at 0% and 10% MTF with full FOV.

ii.Specify the phantom used, scan time, mA, KV, slice thickness andtime.

d. Please give details of the radiation dose per scan and per standard spiral volume.

PART D: GENERAL CONDITIONS & REQUIREMENTS

1.In the above specifications wherever the word 'shall' is mentioned, it is taken inthe meaning that the required feature/facility/procedure/specification/standard is mandatory.

2. The vendor, on behalf of the consignee institution, shall keep the entire equipment**comprehensively insured**alongwith the building, fittings/fixtures/accessories etc. against any kind of loss, mishaps, delays, demurrages, penalties etc. due to any reason whatsoever (either during shipment, local transportation, during/after installation or during maintenance), from the time of receiving the confirmed order till as long as the equipments are under guarantee &/or AMC.

3. All claims regarding compliance with the specifications shall be duly supported byappropriate, latest and technical catalogues/brochures from the manufacturer. Simply stating that the equipment meets the specifications is not sufficient and any such quotations will be summarily rejected.

4. During the warranty period, software up gradation shall be provided free of cost,wherever applicable

5. The vendors shall submit point-wise compliance statement in regard to thespecifications asked for in the tender and should mention corresponding page numbers matching with the technical details in the compliance statement and the technical brochure - reciprocally.

6. ALL THE EQUIPMENTS/ACCESSORIES/SOFTWARE OFFERED AGAINST THIS TENDERSHALL HAVE APPROVAL OF THE FDA AS WELL AS THAT OF THE REGULATORY BOARD OF THE COUNTRY OF ORIGIN OF THE EQUIPMENTS AND THE AERB, INDIA.

7. THE RADIATION EQUIPMENTS OFFERED AGAINST THIS TENDER SHALL DULY CONFORM TO THE PRESCRIBED INTERNATIONAL/NATIONAL STANDARDS AND NORMS OF RADIATION SAFETY. VENDOR SHALL BE

RESPONSIBLE FOR ALL APPROVALS FROM AERB AS PER THE REQUIREMENTS FOR SITE PLAN,TURNKEY WORKS, IMPORT OF EQUIPMENTS, INSTALLATION CALIBRATION & COMMISSIONING OF EQUIPMENTS AFTER MEETING ALL STATUTORY NORMS.

8. A list of installations existing in the county with 'satisfactory service certificate', ifavailable from the user, may be submitted to support the claim of a good performance of the equipment. The supplier shall mention the number of installations in India and worldwide, for the quoted model only. **Such installations should have been supplied directly by the quoting firm itself.** Current performance and status report from the user departments for the model quoted shall be provided.

9 A blank '*Acceptance Test Protocol'* for the offered model should be enclosed with the

technical bid. In addition to the procedures mentioned in this manufacturer's protocol, it shall be binding on the manufacturer to agree for satisfactorily meeting the other acceptance requirements as defined by the Competent Authority.

10. Additional items not included in the essential items of the tender, if available, may also

be quoted by the firms as optional features, separately with individual prices. These may include advanced features/special features/advanced clinical applications. The vendors should quote their optional items in a separate sealed cover (technical and price separately) which will not be used for comparison of the basic system. However if the Institute wants to purchase anyone of the optional items in future, the quoted price can be taken as the maximum applicable or the prevailing price at that time, whichever is less, until the expiry of 10 years period from commissioning.

11.INTERFACING:

The Supplier shall maintain a direct international communication channel with

the Principals/other centres for on-line maintenance of the system as well as for joint multi-centric treatment & research protocols.

12. INSTALLATION:

Installation of all these equipments/accessories shall be free of cost and should be completed in the specified time-frame manner. The vendor shall demonstrate all the acceptance and calibration tests, to the satisfaction of the user as well as of the Regulatory Authorities, as required for the safe use of the equipments.

13. ADDITIONAL SOFTWARE: The software, apart from other state of the art applications, should also provide following applications:

(i) Clinical processing software and comprehensive protocols for wide spectrum ofSPECT.
(ii) SPECT reconstruction, motion correction, whole body and whole body SPECT. The software should also encompass organ specific protocols for kidneys, lungs, thyroid, parathyroid, brain gall bladder, liver, osteology, oncology etc.
(iii) Apart from inbuilt SPECT software separate software for fusion of imported CT/MRIdata with SPECT is also to be provided
(iv) NeuroQ or a similar software for brain quantification studies.
(v) Latest ultra-low dose technology for attenuation correction. a). Automated organ definition on SPECT/CT. Quantification of SPECT SUV on patient demographics tracer information,b)Application enabling dosimetry& quantification of changes in radiopharmaceutical absorption at multiple body organs through SPECT & SPECT/CT for help on isotope / radiotherapy planning.c) Collimator-detector response-resolution recovery algorithm (software and hardware) that allows half dose and half acquisition time in SPECT including bone, cardiac SPECT and planar images should be standard feature.

14. QUALITY ASSURANCE ACCESSORIES:

(i) Quality assurance phantom for radiation safety image uniformity and pixelnoise etc.
(ii) QC software for verifying alignment of the table position.
(iii) SPECT phantom, point sources, to permit comprehensive quality assurance program both for SPECT

(iv)Intrinsic and System resolution phantom

(iv) System count rate performance phantom
(v) QC software package (NEMA NU1-2007 or latest protocol) with documentation
(vi) Quadrant bar phantom and ^{57}Cobalt flood source of 15mCi at the time of supply

PART E: WARRANTY & AFTER SALES SERVICE

The vendor shall give a comprehensive, on-site warranty from the Principals for the first five years from the date of commissioning of the entire system (inclusive of vacuum and non-vacuum parts and all the locally supplied items including consumables like batteries of the UPS, printer cartridges etc). **However, the Digital detectors, crystals, PM Tubes and the X-ray tube (for the Gamma Camera and for the CT), shall carry comprehensive warranty for 10 years from commissioning.**

Free labour warranty shall be provided for the next five years. Rates for comprehensive annual maintenance for the second five years' period SHALL be quoted separately on annual basis (covering for the components not already covered under 10 years warranty). Pro-rata warranty is not acceptable. Maintenance Contract offered by the local agents is also not acceptable.

A written agreement valid for five years for complete unit, signed by the manufacturer, shall be provided to guarantee that failures in materials and workmanship that occur within the warranty period will be corrected. Such failures will include those attributable to abnormal aging. Such warranties will not reduce or otherwise limit any other rights to correction which the purchaser may have.

Warranty, guarantee and service are considered as part of the bid specification. The contractor shall provide complete and specific details of maintenance operations performed under service contracts. The contractor shall provide estimated costs for yearly renewal and extended length (multiple years) contracts beyond the warranty period.

The service engineer, representing the vendor shall be thoroughly familiar and experienced with all aspects of systems, control systems and workstation environment. The, engineer should be able to diagnose problems and effect repairs. The service engineer shall be at the facility and available on Telephone

The manufacturer shall give an unqualified commitment that the maintenance and guarantee of the equipments shall in no way be affected by any change in itsadministrative or trade set

up like the change in the authorized agent or any merger, amalgamation or separation of the company or any of its constituents etc. for that matter.

During the period of maintenance warranty, the supplier shall give a commitment for 95% uptime of the equipments as well as the accessories, calculated on annual basis.If the specified uptime mentioned above is not achieved, the warranty period will be extended by double the number of days for which guaranteed up-time period criteria was not met. However, if the machine lies non-functional for a period of more than one week continuously at any stage, the same penalty will be imposed even if 95% uptime clause is being met with for the given calendar year. **ANY BID WITHOUT AGREEING TO THIS WARRANTY AND PENALTY CLAUSES WILL BE SUMMARILY REJECTED.**

The supplier shall provide an unconditional Bank guarantee valid for five years equivalent to 10% amount of the final price negotiated for the order *(including the turnkey price).* The bank guarantee shall

be released after obtaining satisfactory completion report from the user after the 5 years guarantee period. After 5 years, the supplier shall give a fresh bank guarantee valid for the next five years equivalent to half of the amount of the initial bank guarantee(s).

Errors in the technology in the equipment (both in hardware as well as in software), if any detected anywhere in the world at any time, shall have to be rectified/replaced at this institution by the vendor immediately, free of costs, whatsoever.

Detailed Technical Catalogues (Service Manuals & User's Manuals-original sets) shall be provided for all the equipments including accessories.

All vendors shall quote their bids **showing the break up prices instead of a composite price, both for the equipments as well as for the turnkey work**. The break up prices of the equipments, and their major components/accessories/ spares shall be clearly and unambiguously stated to facilitate comparison of prices on a common platform.

PART F: AFTER SALES SERVICE

Besides, the supplier shall also provide complete on-site training to all the staff of the department.

PART G: GENERAL TERMS & CONDITIONS

1. The supplier shall also give a commitment that the price quoted for the equipmentsin the tender is the minimum price quoted to any institution in the country for similar terms& conditions; whether Government, semi-Government, autonomous or non-/ Government; in the recent times (preceding six months) and shall remain so for a least the next six months subject to variations in the foreign exchange rates, if applicable. The Government of NCT of Delhi shall be free to initiate any action, as deemed fit against the supplier, in case a violation to this commitment is detected at any stage subsequently.

   The Vendor should give a break up price and also quote an all inclusive price including clearance, transport, custom duties, levies, taxes, any other expense etc. for comparison of total cost liability upon the Government.

2. Set of manuals explicitly related to preventative maintenance procedures,potential problems and repair of systems. These are to be in addition to the manuals described previously. At least one of those manual sets to be provided in computer readable format, preferably as Word for Windows format document.

3. **CERTIFICATION: Vendor shall get No Objection Certificate** from AERBMumbai on the format given by AERB complying to all requisite radiation safety regulations.

4. **QUALIFICATIONS:** Manufacturer must have a demonstrated history ofmanufacturing cyclotron systems of similar size and scope. Equipment materials, devices and components shall be those that are routinely manufactured, produced and delivered. Devices, equipment or Component for which only a design or concept is available will not be acceptable. Vendor shall provide installation by a company with demonstrated background of at least five installations of cyclotron systems of similar size and scope.

5.**DELIVERY, STORAGE AND HANDLING:** Vendor shall pack and otherwise protect

each unit to avoid damage during shipping and handling.During delivery,contractor shall keep materials dry at all times, and protect them from exposure to weather and contact with damp or wet surfaces.

6. **CONDITIONS OF DELIVERY**: Vendor shall co-ordinate activities with the generalcontractor (employed by purchaser) to ensure, that installation of the system will not be compromised. other construction activities or adversely affect the work of the general contractor.

7. **OTHER CONDITIONS**: Vendor shall notify Purchaser of any manufacturingchanges, modifications. or product substitutions that occur in the equipment (hardware or software) prior to shipment. The purchaser shall have the right to Cancel the order and to receive a full rebate, of any payment made if the changes or modifications are unacceptable.

8.**SCHEDULING**: A tentative schedule will be established and will be discussed indetail at the pre-proposal conference. Nonetheless it is absolutely required that thesystem be delivered, installed, and accepted within 4months of acceptance of the successful proposal

9. **IMAGE TRANSFER/NETWORK:**

a). System should be fully DICOM 3 compatible for DICOM send/receive/query/retrieve, basic print connectivity to any network, and minimum 5 PC's. It should be possible to integrate the system to any PACs, HIS & RIS for transfer of CT images to the Departments/sections (like OPD chambers, Board Room, doctors rooms etc) at Hospital and should be carried out by the vendor at their cost.

b)Vendor should enable live image display in the conference area of the depth, directly from the system using slave monitors.

c) Global modem to allow on-site connectivity and maintenance.

d). All necessary interconnecting interfaces, cables, modules and other hardware and software to fully integrate the system and seamlessly merge the new facility with the current and future workflow of the Institute_

10. **ESSENTIAL ACCESSORIES TO BE SUPPLIED**

a) Two Suitable Dual Head pressure injector with set of 200 syringes and tubings. Itshould be possible to trigger the scan from the Injector Head.

b) Patient positioning accessories and restraining devices to be provided(2 completesets)

c) A complete set of operator manuals incorporating the newer applications should be supplied along with service manuals for prompt corrections by the onsite engineer,

d) Lead Glass Window: 100 x 150 cm separating the scanner and console.

e) **<u>WORK STATIONS:</u>**

(i) One main console work station, one mainly oncology workstation and one mainly cardiac workstation to be provided in the department with permanent licences.

(ii) Operator control functions: registration scheduling; protocol selection;reconstruction, standard evaluation applications; 3D display, MPR CMPR reconstruction during acquisition. Image fusion facility should also be incorporated on all workstations.

(iii) Minimum size: Minimum 18 inch or more diagonal LCD display for all work

stations.

(iv)Superior quality furniture to be provided for all work stations – minimumof two chairs and one table with shelves for each work station.

(v) Steel almirahs for storagegodrej or equivalent– two no.

f) **IMAGE TRANSFER / NETWORKING:**

i.DICOM send/receive with hospital PACS.

ii.Query/retrieve

iii.Basic print

iv. HIS/RIS work list

g)**IMAGE STORAGE SERVER AND PROCESSOR:**

i) Hardware to include 2 Dual Quad x 3 GHz processor, 3_terabytes ormore storage. 4 GB RAM, with automatic archival systems & High speed volume rendering graphics card with 2 GB RAM.

ii)The server should have either proprietary or reputed software (e.gTera Recon), capable of advanced 3D processing and high end applications.

iii) Archiving: a. Automatic Digital archiving of Data/ studies DVD DICOM recorder with facility for quick retrieval of images should be provided along with compatible drives and 1000 CD-RW and 1000 DVD-RW to be provided.

The archiving system should have a patient data base to track archived images. Include PC i3 or later, at least 1TB hard disk, minimum19" TFT screen.

h)Comprehensive central area radiation monitoring system. (FDA/ European CE approved)

i) One set of sources for calibration to last for at least 10 years - to be replaced as and when required.

j) Dose Calibrator (Atomlab 400 Dose Calibrator / Capintec CRC 25 R) including radioactive reference/ quality control sources and Dose calibrator shielding rings (2.25” thick lead)

k) One digital µSv/hr range GM based survey-cum-contamination monitors (FDA/ European CEapproved)

l) One Survey meter for monitoring beta and gamma. Range 0-2R/hr with cable. (FDA/ European CE approved)

m) Four pocket digital pocket dosimeters.- Gamma & Beta. (FDA / European CE approved)

n) Lead syringe shield for 2ml and 5ml syringes- 2 each.

o) Shielded syringe carrier (lead shielding 3mm or more) - Two

p) Table top L-bench for safe dispensing of radioactive material (standard size & lead shielding).

q) Fume hood (standard size with 6mm lead on all sides) with sliding lead shield with lead window for radio pharmacy room. Interlocking lead bricks(with at least 2” lead thickness) 12”h x 48”w

r)Interlocking painted lead bricks (for making 3 walled cave of 15”w x 17”d x 15”h or more with at least 2” lead thickness).

s)Three Stainless steel foot operated lead lined waste bins with minimum 4mm lead on all sides.

t)One Lead lined decay drums with minimum 6mm lead on all sides.

u)One decontamination kit including Niptong& forceps.
v) High resolution color laser printer for color hardcopy on paper with 5 sets of all cartridges- two no.

w) A complete computerized treadmill system (FDA approved) with non-invasive BP monitoring. 100 rolls of ECG paper with boxes.

x) Resuscitation trolley with defibrillator (FDA/ European CE approved) & vital signs monitor (FDA /European CE approved).

y) Three phase Modular Uninterrupted power supply (UPS) of reputed firm for the whole system (SPECT and CT including accessories), with maintenance free batteries of reputed make, having at least one hour back-up time. One extra set of batteries of reputed make (for the UPS) to be supplied after 2-3 years.

PART H: UPGRADING REQUIREMENTS

Upgrades: A free comprehensive software update guarantee for five years from commissioning of the scanner must be provided free of cost.

PART I: TURNKEY

Turnkey (The supplier shall be required to undertake all the interior work in the SPECT/CT rooms as per the regulatory requirements) **(Copy of AERB approved Map in annexure-A)**

i. Civil work: In the civil work following works are to be undertaken.

a. The walls should be finished with acrylic / plastic emulsion as per AERB requirement. The walls in the patient's waiting area should be finished with vitrified tiles up to 6 feet level.
b. The flooring in the SPECT/CT room and SPECT radio chemistry should be as per AERB regulations. Flooring of other rooms shall be of vitrified tiles of 60 x 60 cm size of reputed make like Johnson / Kajaria / Naveen.
c. Demarcated SPECT/CT area shall be finished with fire resistant metallic false ceiling (Armstrong/Lindner/Dexume) (ISI/BIS)
d. All the doors (with lead sheet wherever required as per AERB approved map) should be provided with necessary fittings. Other doors with hydraulic type door closures (DORMA / equivalent Make) and with Mortised locks of Godrej / equivalent reputed make.
e. Proper signage both external and internal

ii. Plumbing work has to be carried out as per requirement.

The waste pipes and accessories should be of centrifugally cast iron of ISI make and the connection of existing main hole in the public health shafts shall be done. All water pipes shall be Galvanized iron of TATA / equivalent make and filling shall be SUW / UF/ UNIK make. The grating shall be chrome plated. All CP fittings shall be of EBONY / Jaguar / ESSCO.

iii. Electrical work:

a. The firm is required to specify load requirement i.e., required for the SPECT/CT, air conditioning, room lighting and for the accessories, if any.

b. Suitable air conditioner(s) (carrier/ Hitachi/ voltas/Daikin/Ogeneral/ Emerson/ Bluebox/ Stulz/ Hiross) to be provided in SPECT/CT equipment room and console room to maintain ambient temperature and humidity as per equipment(s) requirements. Extra air conditioner(s) of same strength as above to be provided as back up for SPECT/CT equipment room and console room.
c. Only ducting of central air conditioning to be done in rest ofthe rooms of SPECT/CT facility.
d. Earthing with copper plates/ strip is to be provided for the main equipment as per requirements.
e. A distribution panel of standard make and appropriate capacity shall be provided for main equipment with complete cabling, terminal, earthing etc. and any other items to complete the work.
f. The switch gears (MCBs / ACBs / MCCBs) should be of Siemens / Hager (L&T) / ABB make. L.T. distribution board for MCBs etc. should be of Siemens / Hager (L&T)/ ABB make

g. Electrical wires (ISI/BIS approved) should be of copper of different capacity as per the international load requirement and should be of Finolex / polycab / L&T make.

h. Modular range Switches / Sockets of MK / North West / Ancor (wood) should be provided and fixed as per requirement (ISI/BIS).

i. General lights (in adequate number for providing LUX as per NBC) should be of LED mirror optic reflector type of Philips / wipro / Cromptom make. Light dimmers (down lighters) should also be fixed in the SPECT/CT equipment room. (ISI/BIS)
j. CCTV system (Honeywell/Seimens/Scheider electric/Bosch)for patient waiting areas with control in console room. Music and Public Address system (Sony /Philips/ Harmon/ Bosch) for calling / informing the patients in the patients in the waiting areas.

iv. Miscellaneous (The vendor should also include the following in the scope of work)
a. Ultrasonic Pest repellents to be provided and installed.
b. Furniture and fixtures for all the area should be provided as per requirement. Furniture and other items, mentioned should be of Godrej / equivalent reputed make.

v. Room Layout

A typical layout plan (with dimensions) showing the placement of all specified hardware, including SPECT /CT, consoles, data acquisition / processing workstations, any imaging table(s) and rails along with details of computer furniture, conduiting and earthing etc. would have to be provided to the hospital /appropriate authority. Renovation of room(s) would have to be done as mentioned above after the obtaining the approval of the plan by the hospital / appropriate authorities

vi. Defect liabilityof turnkey works

a. The turnkey work including installation / commissioning of all the turnkey items should be completed within 3months of handover of site and power.
b. Certification to the effect that the work has been executed as per the specifications incorporated in the above document will be by the HSCC Ltd. / and Safdarjang Hospital.
c. The warranty and AMC of air Conditioners will form part of main equipment.
d. Comprehensive maintenance contract for whole system for a period of FIVE years after the expiry of warranty period at **Part E** shall include CMC of air conditioners also.

PART J: DISPUTES, IF ANY Disputes of any nature from either side, arising out of any situation in this matter, shall be restricted to the legal jurisdiction of Delhi. The Principals shall commit to proceed with/defend their case within the legal jurisdiction of Delhi, if the situation arises.

Item No. 2 PET CT

Revised / Amended Technical Specifications for PET/CT TO BE INSTALLED ON TURNKEY BASIS in Department of Nuclear Medicine, Super Specialty Block, V.M.M.C. &Safdarjung Hospital, New Delhi.

1 Description of Function
1.1 It combines two scanners -- the PET (Positron Emission Tomography), which shows metabolism and the function of cells, and the CT (Computed Tomography), which shows detailed anatomy -- into one. For example, the PET scanner can provide critical information about the metabolic function of cancer cells, and can detect very small tumors, but not the exact location. The CT scanner, however, provides that anatomic information. So the combination PET/CT scanner gives doctors a powerful new system for detecting and diagnosing conditions like cancer earlier and more accurately, increasing the patient's chances of a good outcome
2 Operational Requirements
2.1 1. Integrated PET and multi-slice spiral CT scanner designed to provide accurate registration and fusion of high-resolution PET and CT images. 2. Should be capable of functioning as a CT scanner or PET scanner alone as required. 3. The CT component should comprise a whole body Multi slice CT scanner, at least 64 rows of detector with 128 slice acquisition per rotation 4. The PET component should be capable of imaging all applicable PET radio-pharmaceutical agents.
3 Technical Specifications
3.1 PET SPECIFICATIONS: Tunnel length: specify length (short to avoid claustrophobia) Type: specify: LSO/LYSO Size of crystal: thickness > 20mm No. of detector rings: please specify No. of crystals per ring : please specify Total No. of crystals : please specify Gantry aperture: at least 70 cm SYSTEM PERFORMANCE Should follow NEMA NU2-2007or later recommendations Axial FOV (cm): at least 150mm Transaxial FOV (cm): > 65cm No. of Image Planes: please specify Plane Spacing (mm): please specify Transverse resolution (mm): <5 mm Axial resolution (mm):< 5 mm Uniformity: < 5%(optional) Scatter fraction < 40% Sensitivity (cps/KBq): at least 5 cps/kBq& above Count rate NECR Peak (kcps): please specify Coincidence window (nsec): less than 6 ns Reconstruction time : please specify

Acquisition must include static, dynamic. whole body and respiratory gated acquisition
a. Volume acquisition
b. Combined PET/CT operation
c. Automated multi-bed acquisitions
d. Automatic PET initialization following CT

Combined PET/CT whole body protocols
a. Store function for multiple user-defined combinations of CT and PET protocols
b. Capability for arbitrary combination of Multiple CT and PET Protocols

PET Exam planning
a. PET bed planning based on Spiral CT acquisitions
b. Selection and positioning of PET examination ranges on CT topogram should be possible

Data Corrections and Reconstruction- to start simultaneously with acquisition
a. CT based attenuation correction
b. Scatter correction
c. Decay correction
d. Dead time correction
e. Detector efficiency normalization
f. FORE/OSEM/LORS reconstruction

Image Display
a. Whole body viewer with standing MIP views
b. Number of orthogonal views should be possible
c. PET-CT image fusion of co—registered data
d. Color management with gamma correction, color maps
e. SUV analysis

Maintenance and Quality control
a. Automated calibration of PET and CT detectors and electronics.
b. Automated daily quality assurance of PET acquisition system
c. Acquisition of normalization and well counter calibration data

3.2 CT SPECIFICATIONS
1.GANTRY
Aperture: 70cms or more
Rotation Mechanism
Scan Field: 40 mm or more
Rotation Time: less than or equal to 0.4 sec
Bi-way Patient Communication System : in multiple languages
Integrated cooling system with heat dissipation outside the Gantry Room Must have light field localizer
2.GENERATOR
Type: please specify
Maximum Power: $\geq$ 70KW
3.TUBE (DUAL FOCUS)
Type: please specify (stationary/rotating)
Focal Spots size: please specify
mA range: 40-600 mA

Tube Voltage kV range: 80- 140 kV
Anode heat storage capacity: at least 6MHU
Computer Control anode temperature monitoring

4.DETECTOR SYSTEM
At least 64 rows of detector with 128 slice acquisition per rotation.
Type of detector: please specify (scintillator/photodiode or scintillator/PM tube)
Type of scintillator: please specify
Number of elements: at least 42000
Number of Projections: at least 128
Number of Detector Channels: at least 64

5.PATIENT TABLE
Flat table top
Minimum table top height: please specify
Scanable length (Metal free): at least 180cm
Maximum Patient Weight: 190 kg or more
Indexing Accuracy : please specify
Random feed: please specify
Remote control table feed in steps of 1 mm: please specify
Scout film, topogram or scanogram length : please specify
Longitudinal table movement: please specify
Longitudinal table speed: please specify

6.IMAGE ACQUISITION AND RECONSTRUCTION
Option for acquisition in List mode must be there
Volume acquisition: please specify
Real time reconstruction : please specify (it should be faster)
Slice thickness (mm): please specify
Scan field (cm): please specify
Reconstruction field (cm): please specify
Reconstruction matrix: please specify
Reconstruction: Iterative type
Option for reconstruction using T.O.F must be there
Must have automatic patient dose reduction facility

7. IMAGE DISPLAY
Monitor (at least 19" Flat Screen)
Monitor resolution: 1024x1024 or better
Image display matrix: multiple options including 512 x 512 and 1024X1024
Pixel size (mm) : please specify
CINE display
Cine image rate : please specify
Filming (Interactive and automatic)
Window width: please specify

8.PERFORMANCE OF SYSTEM (IMAGE QUALITY)
Spatial resolution (High resolution) : please specify
Low contrast resolution for full FOV: please specify
Noise: please specify

9.COMPUTER AND ARCHIVING CAPCACITY
Capacity of system disc (GB) 2Terabyte, at least 10 TB image storage server Raw data (GB) 2 Terabyte
Image data (No. images at 512 x 512 matrix): please specify
Long Term storage (Preferably on CD-R)

I0.SPIRAL SCANNING FACILITY
Longest continuous spiral scan time (at least 100 sec)
Fastest rotational speed: please specify
Minimum slice width: please specify
Length of continuous spiral scan (cm): please specify
Maximum spiral scan time (sec): please specify
Image quality (should be constant for the complete length of the spiral scan)
Pitch factor (volume Pitch): please specify
Max. number of ranges in Auto range: please specify
Number of scans per range: please specify
Max. number of images per range: please specify
Scan cycle time (sec): please specify

11.CLINICAL APPLICATION — FOLLOWING SOFTWARES REQUIRED
In addition system should have facility for
(These functions should be possible from Main console 1024x1024matrix/workstation 3D Reconstruction and Display)
a. Shaded surface display
b. Maximum intensity projection
c. Minimum intensity projection
d. Volume rendering technique
Cine Display
Bone Mineral Density
CARE Bolus / Smart prep./ Any other equivalent facility
Real time Multiplanar Reconstruction and display
Volume measurements of tissues and organs
Quantitative lung evaluation
Pre and post processing filter functions
CT angiography with rotation facility
CT perfusion
Advanced vessel analysis for vessel and lesion quantification
Fly-through image software for airways, bowel (colonography) and vessels
Multi-modality image fusion (CT/MR, CT/PET)
Pediatric protocols

3.4 DICOM CONNECTIVITY

Connectivity to RIS/ PACS system, DICOM query, send, retrieve, modality work-list, store, print, DICOM-RT (connectivity to SYSTEMS LIKE Varis&Lantis networking systems: Cadplan/Eclipse [Varian], Brainscan [BrainLab], PLATO-Sunrise [Nucletron], Coherence [Siemens] etc.)

3.5 WORK STATIONS- 3 workstations/5 server based workstations with 5 permanent licenses
Should have display matrix of 1024x1024, with colour monitor
Software for Multiplanar and 3D image reconstruction in Gray scale and colour, CT angiography

Having maximum and minimum intensity projection, volume rendering, multi-modality image fusion, and fly-through image software
Facility for multimodality image fusion including PET, SPECT,CT,IVIRI
Reporting monitor resolution: please specify

3.6 OTHER CAPABILITIES:
3D PET Imaging capability
Different type of acquisition mode for PET/CT: Static, Dynamic and Whole Body
scan-dynamic imaging also must be possible for assessing tracer kinetics
Gated — ECG and Respiratory gated Static and Dynamic acquisition mode on PET/CT

4 System Configuration Accessories, spares and consumables

4.1 System as specified

4.2 PERIPHERALS

a. Automatic dual/triple headed Syringeless pressure injector for intravenous contrast injection- 2 in number
b. Clinical Application software for Cardiac PET/CT, Brain PET/CT with normal databases.
c. Dry laser camera on LAN with facility of taking printout on film sizes at least 14"x17". One thousand films (14"x17" size) per year to be provided for five years.
d. High resolution color laser printer on LAN for color hardcopy on paper with 5 sets of all cartridges- Two no.
e. Advanced robotic positioning for PET / CT guided interventions (tissue biopsy/FNAC) ROBIO EXor equivalent.
f. Hardware and tools for PET/CT biopsy.

4.3 ESSENTIAL SPARE PARTS (Provide detailed list of spare parts supplied must include at least one X-ray tube)

a. Various positioning aids including Head Rests, Head straps, set of two body straps, arm support and leg support, steps for patient to climb on the bed
b. Infant immobilizers/positioning aid
c. Quality Assurance phantoms & Tools for CT & PET including CATPHAN phantom
d. Head phantom, Body phantom and associated accessories to measure CTDI and DLP.
e. Jasczczk phantom for PET/CT performance evaluation must have hollow spheres (each individually removable and tillable)
f. NEMA phantom and associated accessories to perform QA as per NU-2007 and associated software to analyze QC parameters
g. Multiple number of users definable scanning protocols
h. Extended patient scheduling facility
i. Manuals & other charts

4.4Imagestorage serverandprocessor:

i) Hardware to include 2 Dual Quad x 3 GHz processor, 3_terabytes ormore storage. 4 GB RAM or more, with automatic archival systems & High speed volume rendering graphics card with at least 2 GB RAM.
ii) The server should have either proprietary or reputed software (e.gTera Recon), capable of advanced 3D processing and high end applications.
iii) Archiving: Automatic Digital archiving of Data/ studies on CD-R, CD-RW, DVD-R, DVD-RW along with compatible drives and 1000 CD-RW and 1000 DVD-RW to be provided.

4.5 The Chiller system,if required,shall be provided along with the machine by the principals. No

local system shall be accepted. This will also have a warranty of 5 years

5. Radiation Measuring, Safety Accessories

i. Two dose calibrators for PET radio pharmaceuticals (Atomlab 500 dose calibrator or equivalent) including radioactive reference \ quality control sources and dose calibrator shielding rings (2.25" thick lead).
ii. Two L- bench with lead glass for handling PET RPS.
iii. One PET dose drawing system \ module for drawing F-18 /FDG from a **vial** in to a syringe (FDA / European CE approved)
iv. One hundred no. painted Lead bricks and 8 lead corners for F- 18 handling
v. One waste bin with minimum 12 mm lead on all side with sliding door for PET RPS waste
vi. Two waste bins with minimum 6 mm lead on all side with hatch door for PET RPS waste
vii. Lead vial shields for 10ml and 30ml vials - Two numbers each
viii. Tungsten syringe shield (for PET RPS) (≥9mmtungsten) -2cc & 5cc -2 no. each.
ix. Shielded syringe holders for PET RPS -Two no. (Two each for 2ml, 5ml & 10ml)
x. One digital µSv/hr range GM based survey –cum – contamination monitors.(FDA/ European CE approved)
xi. Comprehensive central area radiation monitoring system) (FDA/ European CE approved)
xii. Six digital pocket dosimeters: easy to readwith loud alarm and if required one dosimeter charger- Gamma & Beta. (FDA/ European CE approved)
xiii. PET sharps container with lead shielding – 2 no.
xiv. One decontamination kit for PET RPS with SS Niptong& SS forceps.
xv. Digital temperature and humidity control system- two no
xvi. Light weight radiation protection aprons(FDA/ European CE approved)- Two no
xvii. High energy shielded decay drum (shielded with 0.5" lead for high energy isotopes) -two no.
xviii. PET shipping system for VIAL PIG including vial pig (Lead shielding: sides & bottom:1", Top:1.75") should meet DOT II type A packaging requirements- two no. (FDA/ European CE approved)
xix. Portable Shielded Barrier Laminar Flow Isolator**:**Full view shielded window, stainless steel inside and out, motorized height adjustable, for use with blood work, electric outlets in work area, HEPA air filtration, 0.25" inch Lead shielding. Exhaust transition kit for connection to external exhaust system. (FDA / European CE approved)
xx.One Survey meter monitoring beta and gamma. Range 0-2R/hr.(FDA/European CEapproved)

6Environmental factors

6.1 Shall meet IEC-60601-1-2:2001(Or Equivalent BIS) General Requirements of Safety for Electromagnetic Compatibility. or should comply with 89/366/EEC; EMC-directive.

6.2 The unit shall be capable of being stored continuously in ambient temperature of 0 -50deg C and relative humidity of 15-90%

6.3 The unit shall be capable of operating continuously in ambient temperature of 10 -40 deg C and relative humidity of 15-90%

6.4 Completeinstallationshouldinclude:
1.Sitestudyinadvancepriortosubmittingthebid.
2. Electrical Requirements to be specified and substation to be made. Site visit a must beforesubmittingthebid.
3. All AERB Clearances and Environmental clearances to be arranged with local authorities.Institutewillprovideallthedocumentations and coordination.
4. All other regulatory clearance will be coordinated by the supplier.

7. Turnkey

Turnkey (The supplier shall be required to undertake all the interior work in the PET/CT rooms and PET laboratory area as per the regulatory requirements) (Copy of AERB approved Map in annexure-A)

7.1 **Civil work**: In the civil work following works are to be undertaken.

a. The walls should be finished with acrylic / plastic emulsion as per AERB requirement. The walls in the patient's waiting area should be finished with vitrified tiles up to 6 feet level.

b. The flooring in the PET/CT room and PET radio chemistry should be as per AERB regulations. Flooring of other rooms shall be of vitrified tiles of 60 x 60 cm size of reputed make like Johnson / Kajaria / Naveen.

c. Demarcated PET/CT area shall be finished with fire resistant metallic false ceiling (Armstrong/Lindner/Dexume) (ISI/BIS)

d. All the doors (with lead sheet wherever required as per AERB approved map) should be provided with necessary fittings, hydraulic type door closures (DORMA / equivalent Make) and with Mortised locks of Godrej / equivalent reputed make.

e. Proper signage both external and internal

7.2 **Plumbing work** has to be carried out as per requirement.

The waste pipes and accessories should be of centrifugally cast iron of ISI make and the connection of existing main hole in the public health shafts shall be done. All water pipes shall be Galvanized iron of TATA / equivalent make and filling shall be SUW / UF/ UNIK make. The grating shall be chrome plated. All CP fittings shall be of EBONY / Jaguar / ESSCO.

7.3 **Electrical work:**

a. The firm is required to specify load requirement i.e., required for the PET/CT, air conditioning, room lighting and for the accessories, if any.

b. Only ducting of central air conditioning to be done in all rooms of PET/CT facility.

c. Suitable air conditioner(s) (carrier/ Hitachi/ voltas/ Daikin / Ogeneral/ Emerson/ Bluebox/ Stulz/ Hiross) to be provided in PET/CT equipment room and console room to maintain ambient temperature and humidity as per equipment(s) requirements. Extra air conditioner(s) of same strength as above to be provided as back up for PET/CT equipment room and console room.

d. Earthing with copper plates/ strip is to be provided for the main equipment as per requirements.

e. A distribution panel of standard make and appropriate capacity shall be provided for main equipment with complete cabling, terminal, earthing etc. and any other items to complete the work.

d. The switch gears (MCBs / ACBs / MCCBs) should be of Siemens / Hager (L&T) / ABB make. L.T. distribution board for MCBs etc. should be of Siemens / Hager (L&T)/ ABB make

e. Electrical wires (ISI/BIS approved) should be of copper of different capacity as per the international load requirement and should be of Finolex / polycab / L&T make.

f. Modular range Switches / Sockets of MK / North West / Ancor (wood) should be provided and fixed as per requirement (ISI/BIS).

g. General lights (in adequate number for providing LUX as per NBC) should be of LED mirror optic reflector type of Philips / wipro / Cromptom make. Light dimmers (down lighters) should also be fixed in the PET/CT equipment room. (ISI/BIS)

h. CCTV system (Honeywell/Seimens/Scheider electric/Bosch)for patient waiting areas with control in console room. Music and Public Address system (Sony/Philips/Harmon/Bosch)for calling / informing the patients in the patients in the waiting areas.

7.4 Miscellaneous (The vendor should also include the following in the scope of work)

a. Ultrasonic Pest repellents to be provided and installed.

b. Furniture and fixtures for all the area should be provided as per requirement. Furniture and other items, mentioned should be of Godrej / equivalent reputed make.

7.5 Room Layout: A typical layout plan (with dimensions) showing the placement of all specified hardware, including PET CT, consoles, data acquisition / processing workstations, any imaging table(s) and rails along with details of computer furniture, conduiting and earthing etc. would have to be provided to the hospital /appropriate authority. Renovation of room(s) would have to be done as mentioned above after the obtaining the approval of the plan by the hospital / appropriate authorities

7.6 **Defect liability of turnkey works**

a. The turnkey work including installation / commissioning of all the turnkey items should be completed within 3months of handover of site and power.

b. Certification to the effect that the work has been executed as per the specifications incorporated in the above document will be by the HSCC Ltd. / and Safdarjang Hospital.

c. The warranty and AMC of air Conditioners will form part of main equipment.

d. Comprehensive maintenance contract for whole system for a period of FIVE years after the expiry of warranty period at T.S.No.:9.3 shall include CMC of air conditioners also.

8.Power Supply

8.1 Power input to be 220-240VAC(Single Phase),/400-440 V (3 Phase)/ 50Hz as appropriate fitted with Indian plug at least160 kvA UPS with batteries, other accessories and manuals, to be installed and commissioned with a 5 year warranty

8.2 Rescuable over current breaker shall be fitted for protection

9Standards, Safety and Training

9.1 Should be FDA, CE,UL or BIS approved product

9.2 Performance parameters should as per latest NEMA NU2 2001 (National Electrical Manufacturers Association (NEMA)

9.3 Comprehensive warranty for 5 years and 5 years CMC after warranty from 6th to 10th Year inclusive of all parts including X-ray tubes and detectors

The vendor shall give a comprehensive, on-site warranty from the Principals for the first five years from the date of commissioning of the entire system (inclusive of vacuum and non-vacuum parts and all the locally supplied items including consumables like batteries of the UPS, printer cartridges etc). **However, the Digital detectors, crystals, PM Tubes and the X-ray tube (for the PET and for the CT), shall carry comprehensive warranty for 10 years from commissioning.**

Free labour warranty shall be provided for the next five years. Rates for comprehensive annual maintenance for the second five years period SHALL be quoted separately on annual basis (covering for the components not already covered under 10 years warranty). Pro-rata warranty is not acceptable. Maintenance Contract offered by the local agents is also not acceptable.

A written agreement valid for five years for complete unit, signed by the manufacturer, shall be provided to guarantee that failures in materials and workmanship that occur within the warranty period will be corrected. Such failures will include those attributable to abnormal aging. Such warranties will not reduce or otherwise limit any other rights to correction which the purchaser may have.

Warranty, guarantee and service are considered as part of the bid specification. The contractor shall provide complete and specific details of maintenance operations performed under service contracts. The contractor shall provide estimated costs for yearly renewal and extended length (multiple years) contracts beyond the warranty period.

During the period of maintenance warranty, the supplier shall give a commitment for 95% uptime of the equipments as well as the accessories, calculated on annual basis.If the specified uptime

mentioned above is not achieved, the warranty period will be extended by double the number of days for which guaranteed up-time period criteria was not met. However, if the machine lies non-functional for a period of more than one week continuously at any stage, the same penalty will be imposed even if 95% uptime clause is being met with for the given calendar year. **ANY BID WITHOUT AGREEING TO THIS WARRANTY AND PENALTY CLAUSES WILL BE SUMMARILY REJECTED.**

9.4 Five new sets of sources for PET QC and calibration shall be provided on demand. Responsibility of disposal of the old sources shall lie with the vendor company

9.5 Shall comply with AERB and BARC guidelines including NEMA testing, CT QA and other machine related quality control parameters that the regulatory authority may additionally come up with in the next 5 years.

9.6 At the time of installation PET/CT QA test as per AERB requirement has to be performed by the provider.

10 Documentation

10.1User/Technical/Maintenance manuals to be supplied in English.

10.2 Certificate of calibration and inspection with validity of at least two years and recalibration free of cost till 5 years.
FDA and CE approval certificate
AERB type approval certificate for CT

10.3 Compliance Report to be submitted in a tabulated and point wise manner clearly mentioning the page/para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered.

10.4 List of Equipment available for providing calibration and routine maintenance support as per manufacturer documentation in service / technical manual.

Amendment to be issued will be uploaded on websites www.tenderwizard.com/HSCC & www.hsccltd.com.

All other tender terms and conditions remain unchanged.

Medical Superintendent
VMMC& Safdarjung Hospital