Ref. no.: NRB/INPRPD/APG/MFW/2020/ Date: 05/11/2020

To,

Sub: Creating and providing a 3D walk through and process animation, including exterior of buildings, remote handling operations of Head end systems, interior of auxiliary & process sub-blocks with equipment’s and piping for Reprocessing Blocks 102A and 102B of Project INRP Tarapur.

Dear Sirs,

You are requested to submit your quotation in a sealed cover for the under mentioned job as per the specifications attached. The "QUOTATION" and ref. number given above shall be clearly mentioned on the sealed cover containing quotation.

Quotation shall be complete in all respect with regard to the specifications, price, taxes, delivery, and validity of the offer and must reach the following address on or before 26.11.2020. Tenders from bidders will be accepted upto 2 pm on 26.11.2020 and opened by NRB Accounts at 3 pm on 26.11.2020.

Kind Attention: Shri. Ashish P Ghosalkar, SA/E, INRPRD
OTF, Room No 206, PP Complex.
Nuclear Recycle Board, BARC, Trombay
Mumbai- 400085.

The work requirement is stated below. The specification, terms & conditions, information required to be given with offer are also given below.

1. Scope of work:

Creating and providing 3D walk through in HD format, complete with voice over and music for Reprocessing blocks (Block 102A & 102B) of Integrated Nuclear Recycle Project Tarapur. All low resolution still images of the walk through to be created by the Supplier, for approval by the NRB, BARC. Before starting of rendering of the walkthrough a gray scale version of the walk through preview to be submitted for approval by the NRB, BARC. Script for the voice over of the walk through shall be provided by NRB BARC.
1. **3D - Exterior Modeling:**
   Developing exterior of the RP Blocks (102A & 102B) including main building, surrounding roads fencing, vegetation and connectivity with nearby blocks
   ✔ 3D Panoramic/bird eye view of the entire INRP facility
   ✔ Exterior of the main buildings (102A & 102B) with entrance
   ✔ Building terrace, roof, and over head raw water storage tanks.
   ✔ Overhead SBT and Product transfer corridors
   ✔ Pipe rack along the road to carry utilities/auxiliary services from utility block
   ✔ Air supply plenum connecting Supply air block with RP 1 and RP2 block
   ✔ Air exhaust plenum connecting RP1 and RP2 block with exhaust air block.
   ✔ Air exhaust plenum connecting Exhaust air block with stack
   ✔ Fencing around the building and vehicle parking spaces
   ✔ Connectivity with nearby blocks with roads
   ✔ Tree lined roads, pedestrian pathways, and lighting poles.

2. **3D - Interior Modeling:**
   The interior area of the RP block (102A & 102B) is divided into three sub-blocks, namely
   - Head End Sub-Block,
   - Process Sub-Block
   - Filter Bank Sub-Block

2.1. **Head End Sub-Block**
Each Reprocessing block (102A & 102B) has independent head end sub block. The Head end sub block consist of fuel handling area (FHA) and dissolver cell. FHA has on overall dimension of 27.3 m(L) x 60.35 m(W) x 12 m(H) & is a single floor area. Dissolver cell area has on overall dimension of 28.9 m (L) x 54.5 (W) x 35 m (H) & is distributed in 6 floors. FHA and dissolver cell are connected by underground tunnel for transfer of hull drums. The fuel receipt, underwater handling, storage and charging operation is carried out in FHA. Fuel chopping, dissolution and hull separation is carried out in dissolver cell.
Making process animation /3D visualization for following remote handling operations of Fuel handling area (FHA) & dissolver cell with following activities.

➢ **Fuel handling area (FHA)**

1. FHA vehicle air lock area along with shutter
2. Entry and exit movement of truck trailer along with shipping cask inside FHA
3. Shipping cask unloading /loading operation using FHA EOT crane and yoke.
4. Decontamination of the shipping cask followed by radiation survey.
5. Shipping cask top lid cover unbolting / bolting manual operation with impact wrench.
6. Lifting and lowering operation of the cask inside the fuel pool using EOT crane & yoke
7. Underwater shipping cask handling and unloading/loading of fuel tray cage.
8. Underwater fuel handling operation using pool bridge and pneumatic tongs.
9. Fuel charging operation using ADPTS (Primary mode)
10. Fuel charging operation using Charging cask and ACF (Alternate mode)

➢ Dissolver cell
1. Charging of fuel bundles inside fuel feed magazine of Spent Fuel Chopper (SFC)
2. Positions the fuel bundle between the shear blades using CTA
3. Chopping of fuel bundles into pieces by forward motion of cutting blade.
5. Dissolution operation in dissolver with nitric acid.
6. Lifting and placing the dissolver basket inside tilting flask using cell crane
7. Tilting operation of the flask using drive system
8. Transfer of hulls from basket to hull drum.
9. Collection of hulls in drum loaded on electrically operated hull dolley
10. Transfer of hull drum in FHA through underground tunnel by operating hull dolley
11. Transfer the hull drum inside hull transfer cask for its disposal
12. Loading of hull transfer cask on the truck trailer using FHA EOT crane & yoke
13. Transfer of dissolver solution to hold up tank using feed clarification/ filtration system

2.2. Process Sub-Block (Cell 0 to Cell 04)

The process sub block houses thick wall shielded process cells for separating heavy metals by extraction cycles. The Process Sub Block have an overall dimension of 97m (L) X 31 m (W) X 35m (H), distributed in 5 floors, of height 6 m each. The process sub block is divided into two parts.

1. In-cell systems are housed in D. Cell, Cell 0, Cell 1 Cell 2 Cell 3 & Cell 4.
2. Auxiliary process/out-cell system housed on Floor 0, 1, 2, 3, 4 & 5.

The In-cell system houses equipment's includes process tanks, extraction columns, evaporators, condensers, scrubbers, cyclone separators, etc and piping system for Dissolution & extraction cycles. The out cell area provides utilities and services required for the In-cell process cycles and mainly consist of operating gallery, chemical preparation and feeding systems, sampling and steam gallery, condensate collection & disposal system etc. on both sides (north & south) of the process cells.

Making Process Animation/ 3D visualization walk-through for different areas/floors (north & south side) of process sub block with the following equipment's/systems

1. Main entrance gate, security cabin, lobby area, waiting room.
2. Exterior/interior of staff room, change room, HP room, office space and corridor
3. Civil structure of the process block including process cells (Cell 0 to Cell 04), acc. to gallery & operating corridor around the process cells at different LVL.
4. In cell view of the process system showing the major critical equipments with supporting structure and piping.
5. **Basement (+5.5 LVL):**
   Civil structure of basement area (B01 to B06) including column, walls, process cells, dyke for SS storage tanks, supporting structures & platforms, SS lining of floors & walls, piping system connecting SS tanks with the process cells.
6. **First floor (+10.5 LVL):**
   Access gallery & operating corridor, personal entry doors and RSW embedded in cell walls, pump & valve cubical.
7. **Second floor (+16.8 LVL):**
   Access gallery and operating corridor.
8. **Third floor (+22.8 LVL):**
   Sampling gallery along with blisters/cubicles, structure & platforms, tank space area (U4+ Production area), SS tanks, centrifugal pumps.
9. **Fourth floor (+28.8 LVL):**
   Sampling gallery along with blister/cubicles, structure & platforms, tank space area (NO2 Reactor area), SS tanks, centrifugal pumps.
10. **Fifth floor (34.8 LVL):**
    Steam gallery, tank space area along with SS tanks, pumps, ALP control station, cell top area of process cells with plugs.
11. Sixth floor: Terrace and overhead Raw & DM water storage tanks.
12. Connectivity of process cells with the out cell equipment’s/tanks located at all floors.
13. Equipment block diagram and process stream entering the equipment and leaving the equipment.
14. Piping system with fittings, manual & remote operating valves, Instrumentation gadgets etc.
15. Utility main headers and sub headers located at different elevation.
16. Staircase, entry and exit route signboards for all floors.
17. Lighting, CCTV, electrical panels, cable trays located at all floors.
18. Ventilation air supply metallic ducts.
2.3. Filer Bank Sub-Block

Filter bank sub-block is provided to ensure safe release of air from the facility to the atmosphere through the stack. The block houses three tier filter bank housings and each housing will have three compartments of pre-filters bank, HEPA filter bank and sub plenum. The overall size of this sub Block is 40M (L) x 18M (W) x 12M (H). Making Process animation /3D visualization walk-through for filter bank sub block with the following equipment’s/systems
1. Entry gate/Door
2. RCC plenums
3. RCC filter bank housings
4. Transit spent filter storage area
5. Air sampling room
6. Hand wash & monitor room

3. Animation and Rendering:

3.1. Total duration of the walk through shall be of 15 minute which shall consist of 3D animation including of exterior and interiors of facility. However, these are tentative time-frames. The actual time-frame of interior/exterior animation may vary within the total stipulated duration as per requirement and direction of Officer in charge. The process animation/walk through shall be done for following.
   • Exterior of the Reprocessing blocks
   • Fuel handling area, Head end systems & dissolver cell area
   • Cell 0 to Cell 4 showing major Incell equipment’s & piping of process sub block.
   • All the floors (Basement & floor 1 to 5) of Auxiliary /Outcell area.
   • Filter bank sub block area

3.2. The inputs necessary for the above scope e.g. All relevant drawings which includes plans, elevation & sections and sketches would be provided by the NRB, BARC.

3.3. The screen shall be offered for checking and correction, if any, shall be incorporated.

4. Editing, scripting & voice over:

4.1. Mixing of voice over and animation.
4.2. Animation for logos, addition of text and other effects.
4.3. Script in English (provided by NRB, BARC after presentation is finalized)
4.4. Voice over in studio by expert artist (English)

5. Output Format:

The output shall be made available to Officer in charge, INRPRD, NRB, BARC in any of the following format as per the direction given by the client

5.1. File Resolution: 1920 x 1080
5.2. Frames per second: 25.
5.3. Output format: Full HD film in mp4 (1080p)
5.4. The final output shall be submitted in CDs/DVDs/Pen drive.
The film is to be displayed on the large watch out screen 32 ft x 16 ft or equivalent. The resolution of the animation film should be adequate for display on such large screen without compromising on visual qualities

6. Hi-Resolution Images:
The supplier shall provide 4–5 nos. high resolution views/images from the walkthrough animation as selected by the Officer in charge on CD suitable for proper display on hoardings of size at least 20 ft x 10 ft.

7. Inspection
The preview animation shall be offered for inspection by the supplier to the Officer in charge for the approval on every stage of work. Inspection may also be made at any time during the process of development of the animation film, if felt necessary by the competent authorities of NRB, BARC. Any defect pointed out/ modification suggested during such inspections has to be promptly rectified/ incorporated to ensure desired quality of work. It would be mandatory on the part of the supplier to arrange inspection and obtain approval at every stage of the work. The decision of NRB, BARC in this regard shall be final and binding on the contractor.

8. Completion period:
The work assignment shall be completed and submitted to NRB, BARC within 180 days of issue of the work order.

9. Place of delivery
   Assistant Store Officer, NRB
   Anushaktinagar, BARC,
   Trombay -400094

10. General Instruction for submission of Quotation
10.1. The Supplier should have capability of making highly detailed HD animation with smart features to give realistic look.
10.2. The Supplier shall quote the price after reading the instructions, notes, and specifications thoroughly.
10.3. Taxes, duties, levies etc. may please be mentioned clearly in quotation.
10.4. Copies of PAN, GST registration, contact details of the registered office may be forwarded along with quotation.
10.5. The Supplier shall mention the time required for completion of the above job in days after placement of order.
10.6. Full payment will be given only after completion of the work in accordance with the rules in force regarding the Minor Fabrication Works.
10.7. The bidder should provide the copies of the relevant supporting documents for the above as proof for fulfilling the above conditions.
10.8. The validity of the offer shall be 30 days.

10.9. Quotation shall be sent as per format given below (Annexure –II)

<table>
<thead>
<tr>
<th>Sr No</th>
<th>Description</th>
<th>Qty</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Creating and providing a 3D walk through and process animation, including exterior of buildings, remote handling operations of Head end systems, interior of auxiliary &amp; process sub-blocks with equipments and piping for Reprocessing Blocks 102A and 102B of Integrated Nuclear Recycle Project (INRP) Tarapur.</td>
<td>01</td>
<td>No</td>
</tr>
<tr>
<td>02</td>
<td>Taxes (CGST 9% &amp; SGST 9%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

11. Payment Terms:

- Income Tax and other taxes as applicable shall be deducted from Supplier’s bill.
- Taxes, duties, levies etc. may please be mentioned clearly. Copy of PAN card may be forwarded along with invoice.
- No advance payment shall be made by NRB, BARC under any circumstances. 100% Payment shall be released after satisfactory completion and acceptance of the entire job. The payment will be made through Assistant Accounts Officer, NRB Accounts within 30 (thirty) days from the date of receipt of Tax Invoice duly supported by receipted delivery challan and satisfactory inspection/work completion certificate issued by the competent authority.
- The supplier shall submit an advance stamped receipt indicating receipt of payment from Govt. of India, Nuclear Recycle Board. The payment towards the bill will be sent to the Supplier by ECS. The Supplier is required to submit GST compliant invoice in triplicate, bank details for ECS payment & GST registration certificate. GST will be reimbursed on production of documentary evidence in receipt of payment of GST to concerned authority.

12. Sub-Contract Clause:

The supplier shall not sub contract any part of the work without a written consent from the purchaser. The supplier shall be responsible to the purchaser for all the work of subcontractor if allowed by purchaser.

13. Penalty Clause:

In the event of grant of extension of time, Government shall be entitled to recover at its discretion from the contractor agreed liquidated damage at 0.5 % (half percent) per week of the value of the work in areas subject to ceiling of 10% of the total value of the contract whether any loss is suffered by the Government on account of such delay or not.
14. Confidentiality Clauses:

Confidentiality
No party shall disclose any information to any third party concerning the matters under this contract generally. In particular, any information identified as "Property" in nature by the disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any third party without the prior written consent of the original disclosing party.
This clauses shall apply to the sub-contractors, consultant, advisors or the employees engaged by the party with equal force.

Any contravention of the above mentioned provisions by the contractor, sub contractor, consultant advisor or the employee of the contractor will invite penal consequences under the aforesaid legislation

Prohibition against use of NRB, BARC name without permission for publicity purpose.
The contractor, sub contractor, consultant advisor or the employee engaged by the contractor shall not use NRB, BARC name for any publicity purpose through any public media like press, radio, TV or Internet without the prior written approval of NRB, BARC.