

PHOTOGRAMMETRY MEASUREMENT OF 32 M ANTENNA REFLECTOR

REQUEST FOR PROPOSAL (RFP)

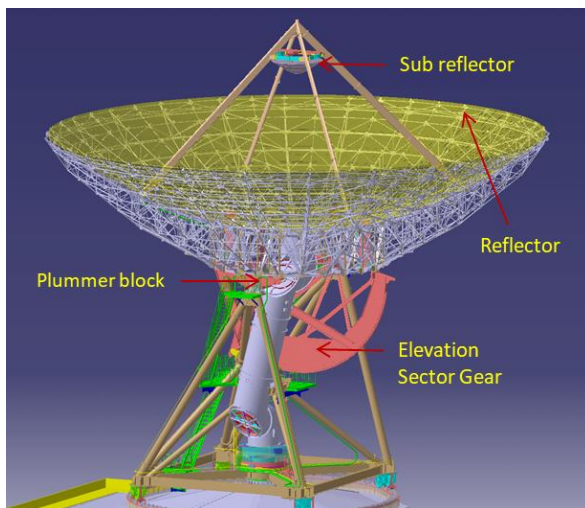
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1 INTRODUCTION

32m IDSN Antenna system is installed at ISTRAC, Byalalu (~40km from Bangalore city). Antenna reflector panels are already aligned in Zenith condition (EL: 90 Deg) using laser tracker for best surface accuracy. This Request for Proposal (RFP) invites qualified service providers to submit bids for the photogrammetry measurement of a 32-meter Deep Space Network (DSN) antenna reflector located at a height of 40 meters from the ground.

S.No	Description	Specification
1	Diameter of reflector	32 m
2	Number of measurement points on overall surface	~ 2000 on antenna reflector
		~ 100 on antenna elevation sector gear and Plummer face
		~ 50 on antenna subreflector & quadripod
3	Height of reflector from Ground at EL 90deg	~ 40 m



2 ELIGIBILITY CRITERIA:

Photogrammetry measurements on large antenna require necessary expertise and experience to execute such precision activities accurately. The bidder must meet the following eligibility requirements in order to be considered for the activities:

- a. **Technical Expertise:** Technical experience in performing high-precision 3D photogrammetry measurements, specifically for antenna systems, large-scale infrastructure, aerospace equipment and post processing and analysis of measured data. The bidder shall provide work references or testimonials from previous photogrammetry projects to demonstrate their expertise.
- b. **Relevant Projects:** Successful completion of photogrammetric measurements and post processing of measured points at different elevation angle for surface RMS computation of large antenna systems. Documentary proof in terms of work completion certificate of the same shall be submitted along with the proposal.

3 SCOPE OF WORK

The scope of work details about activities required to be carried out for photogrammetric measurements:

- a. Surface measurement has to be carried out by photogrammetry method. All the engineering manpower, retro reflective photogrammetric targets, camera, reference bars etc. required for complete set of measurement. The co-ordinate measurement accuracy of photographic camera used should be better than 5 microns + 5microns/m.
- b. Fixing of 2000 high-contrast photogrammetry target points uniformly across the surface of the 32m antenna reflector, 100 targets along beam and 50 targets on the sub-reflector and quadripod.
- c. Setting up photogrammetry equipment at various angles and heights to capture the entire reflector and sub-reflector. Photographic measurement of reflector surface and sub-reflector at Zenith (**EL: 90 Deg**), Elevation **45 deg** and Elevation **0 deg**.
- d. Photographic measurement of elevation sector gear and plumber face at Elevation 90° , 75° , 60°,45°,30°,15° and 0°.

- e. Arrangement of necessary crane/material handling and tools for carrying out the measurement.
- f. RMS measurement shall be carried out during early morning/evening / night hours.
- g. Ideal surface (.stp / *.stl format) will be provided by ISTRAC. After complete set of measurement the bidder has to post process the data based on ISTRAC provided ideal surface and submit the following in soft copy :
 - The raw photogrammetry data for all measured angles (EL: 90°, 45°, 0°) including point clouds (X, Y, Z coordinate of measured points) in *.csv format , images, calibration files and any other measurement data collected during the activity for each measurement angle.
 - Best fit paraboloid (3D model) generated using cloud of measured points with respect to ideal surface (*.stp / *.stl format).
 - Final surface RMS report for the measured points with respect to ideal surface of antenna reflector at all measured angles (EL: 90°, 45°, 0°).
 - Report containing elevation sector gear plane variation at different measured angle (Elevation 90° , 75° , 60°,45°,30°,15°,0°) with respect to Plummer axis.
 - Report containing subreflector tilt and eccentricity with respect to main reflector , quadripod deflections with respect to theoretical profile at all the measured elevation angles (EL: 90°, 45°, and 0°).

4 TERMS AND CONDITIONS:

- a. Bidder may plan a site survey to assess and have clear understanding of the scope of activities and any challenges associated with the measurement.
- b. The project must be completed within **7 days from the date of clearance from ISTRAC after release of PO.**
- c. The bidder must be certified or accredited by OEM for photogrammetry measurement system.
- d. All personnel involved in the photogrammetric measurement at height must comply with applicable safety regulations related to working at heights.

- e. All data generated during the project, including raw data, models, and reports, shall be the property of the ISTRAC-ISRO. The bidder will not retain any rights to use the data for any other purpose unless explicitly authorized.
- f. ISTRAC will support in identifying the photogrammetric target location and fixing the targets.
- g. Site is located at 40km from Bangalore. Bidder shall be responsible to arrange their logistics support for carrying out the activities.

5 COMPLIANCE TABLE

COMPLIANCE (Scope of Work)			
Section		Compliance(Yes/No)	Remarks
1.	INTRODUCTION		
2	ELIGIBILITY CRITERIA		
2.1	Technical Expertise		
2.2	Relevant works		
3.	SCOPE OF WORK		
4.	TERMS & CONDITIONS		