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No. I&P/Sialkot/Radar/24-25

Government of Pakistan

Ministry of Aviation

PAKISTAN METEOROLOGICAL DEPARTMENT

(Indent and Purchase Section)

Sector H-8/2, Post Box No. 1214, **Islamabad, Pakistan**

URL: <http://www.pmd.gov.pk/>

REQUEST FOR PROPOSALS (RFP)

1. Pakistan Meteorological Department (PMD) invites Technical Proposals for **“Repair of Quantitative Precipitation Measurement (QPM) Radar, Sialkot”** from Shortlisted firms through prequalification process.
2. Method of Single Stage Two Envelope Bidding Procedure under Rule 36(c) of Public Procurement Rules, 2004 will be used.
3. Bidding documents having detailed TORs are available free of cost at the website www.pmd.gov.pk PPRA EPADS www.eprocure.gov.pk as well as www.ppra.org.pk
4. Proposals, prepared in accordance with the instructions in the TORs, must reach at **Director (I&P), Pakistan Meteorological Department, Pitras Bukhari Road, H-8/2, Islamabad** on or before **05/12/2024** till 1030 hrs. PST.

Terms & Conditions:

- a. Two (02) million Rupees bid security, in shape of Bank Draft, Pay Order, in favor of D.G. Met. Services must be attached with the Financial Proposal.
- b. Quoted Prices Will Remain in force during contract period.
- c. The Bid validity will have a minimum 120x Days from The Last Date of Submission of The Bids.
- d. The Bidder shall be responsible for all New Taxes, if any, Levied by the Government until Completion of the Project.
- e. Competent authority reserves the right to accept / reject single Bid or the whole tender without assigning any reason as per clause 33 of PPRA Rules.
- f. If at any stage the successful bidder withdraws from providing services or goods due to market fluctuation in the cost of goods and services legal action shall be taken against the defaulter i.e. Forfeiting bids security / performance guaranty, amount of already executed works and also the firm will be black listed on PPRA website.
- g. Bidding Process shall be conducted on Single Stage Two Envelope Bidding Procedure. Technical proposals shall be opened on the same date of closing at 11:00 hrs. PST in the presence of participants or their authorized representatives.
- h. The successful bidders will furnish performance guarantee in the shape of CDR/Pay Order/Bank Draft/ Bank Guarantee @ 5% of his supply order in favor of D.G. Met. Services till the completion of work.
- i. Time period for completion of the task shall be at least one year after signing of the contract.

Note: All Firms are directed to quote their Bids online through PPRA E-PADS as well as original Bids must be submitted in hard forms to I&P Section, PMD Headquarters office, Islamabad

(Dr. Irfan Ur Rashid)

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TECHNICAL SPECIFICATIONS
ESSENTIAL REPAIR OF SIALKOT WEATHER RADAR

I. Introduction

The purpose of these specification is to outline the requirements for the repair of the PMD's Sialkot weather radar by repairing/replacing its parts/segments with latest available technology. This radar system is critical for monitoring and forecasting the floods in catchments of river Chenab, Tawi, and nullah deg, and require both maintenance and technological enhancements to ensure optimal performance and reliability.

II. Objectives

- (i) To repair the radar system by replacing the parts/segments having latest technology to improve performance and capabilities.

III. Proposal Submission Requirements

- (i) Detailed proposal outlining approach, methodology and timeline.
- (ii) Budget breakdown and pricing structure.
- (iii) Diagnostic evaluation of the current radar systems to identify faults and areas for improvement.
- (iv) Calibration and testing of the replaced equipment/segments to ensure they meet specified performance criteria.
- (v) Training & involvement of PMD personnel on the use and maintenance of said system.
- (vi) Radar parts replacement and transmission room alteration/renovation as per equipment requirements should be treated as single solution. The base structure of dish antenna and radome is to be built with a steel structure separately at the same height along with the existing building. The dismantling of old dish antenna and radome shall be part of the work. The project should be delivered on turn-key basis.

IV. Scope of Work

(1) Replacement of Parts in Antenna/Servo Controller System

- (i) Antenna System
 - Mechanical
 - Pre-Amplifier
 - Servo motor
- (ii) Antenna waveguide
- (iii) Antenna Radome
- (iv) Servo control Unit
- (v) Dehydrator
- (vi) Other segments that are deemed necessary by the solution provider

(2) Repair/replacement of Parts in Transmitter Unit

- (i) C-Band Magnetron replacement.
- (ii) Transmitter Power Supplies repair/replacement
- (iii) Modulator unit repair/replacement
- (iv) Other segments that are deemed necessary by the solution provider

(3) Replacement of parts in Receiver/RSP/RCP

- (i) Radar Signal Processor replacement
- (ii) Radar Control Processor replacement
- (iii) Other segments that are deemed necessary by the solution provider.

(4) Replacement of Radar control, Display and Networking Components

(A) Radar Control Software//Hardware:

Hardware (Standard OEM Warranty)

CPU : Should be latest available Xeon series/generation

Main memory (RAM) : 32GB or higher

Storage :5 TB Usable with hot-swappable RAID configuration (RAID 5)

Optical media drive : DVD±RW multi drive

Networking interfaces according to system requirements

Monitor display : FHD LED at least ~ 21" inches

Accessories All included

Software/operating system

Operation system: as per OEM (Linux/windows) with support

[Radar control and monitoring]

- Antenna scanning and radiation control
- BITE/Fault monitoring including temperature alarm inside of the equipment
- True north confirmation

[Observation scheduling]

- Antenna scanning mode (PPI, RHI, Volume Scan)
- Elevation angle setting
- Selection of pulse width
- Resolution of the azimuth and range
- Data elements (Reflectivity (Z), Doppler velocity (V), Spectrum width (W).
- Setting for the clutter filter level.
- Selection of PRF and processing mode.
- Selection of customized catchment areas/contours by combining grids with output availability in csv, binary formats.
- Grid data extraction with output availability in csv, binary formats.

(B) Data Display, Product generation System:

Hardware (Standard OEM Warranty)

CPU : Should be latest available Xeon series/generation with GPU

Main memory (RAM) : 32GB or higher

Storage :5 TB Usable with hot-swappable RAID configuration (RAID5)

Optical media drive : DVD±RW multi drive

Networking interfaces according to system requirements

Monitor display : FHD LED ~ 42" inches

Accessories All included

Software

Operation system: as per OEM (Linux/windows) with support.

[Weather product processing]

- PPI (plan position indicator)
- RHI (range height indicator)
- CAPPI (constant altitude PPI)
- RTI (range time indicator)
- Maximum value on X-Y axis
- Rainfall near surface
- VIL (vertically integrated liquid)

- 3-dimensional data display
- Warning output of heavy rainfall
- Rainfall and strong wind warning output of specified district
- Horizontal wind profile (wind direction and speed)
- Wind shear and microburst detection
- Multi window feature
- Z-R parameter registration
- Setup of display overlay on map of Pakistan with political boundaries of international borders, provinces and district boundaries, river catchment etc. using shape files.
- The base data (output of Radar processor) shall be stored automatically on Product generator workstations in compressed form. At least three-month past data shall be available on the local computer disk at a time. Data converter should be available on the system for automatic conversion of Radar base data to other common formats such as NetCDF, HDF5, KML, KMZ, gridded binary and NEXRAD-Level II. Base data product images to be archived in different image formats like GIF, JPEG, PNG.

[Product display & retrieval]

- Automatic updating of the received product
- Observed date and time
- Site code
- Name of product
- Product range information
- Legend (colour code)
- -Data display area
- Map overlay feature
- Indication of information of a location pointed by pointing device (Location, radar echo value, distance of specified span)
- Zooming display, 2 or 4 times selectable for the desired area
- Animation
- Animation displays of selected product
- Retrieving period
- Retrieving speed
- Retrieving direction (Forward and Reverse)

(C) Networking system with API , ftp and web interfaces

Hardware (Standard OEM Warranty)

CPU : Should be latest available Xeon series/generation
 Main memory (RAM) : 32GB or higher
 Storage :5 TB Usable with hot-swappable RAID configuration (RAID5)
 Optical media drive : DVD±RW multi drive
 Networking interfaces according to system requirements
 Monitor display : FHD LED ~ 42" inches
 Accessories All included

Software

Operation system: as per OEM (Linux/windows) with support.

[Data receiving, converting and transfer]

- Collection of ingested data
- Compression processing of raw data

- Dissemination of raw data over the network
- FTP data transfer
- API data transfer
- The networking system should provide platform to integrate radar system via web and produce mosaic display of all PMD radars.
- Graceful shutdown of the system.

[product selection]

- Setting environment for dissemination of data sets via ftp and API.
- Selection of products to be disseminated in GIS recognizable formats.

(5) Repair/Replacement of Power Conditioning Equipment (Standard OEM Warranty)

- (i) 20 KVA hybrid solar system (IP65 hybrid solar inverter with A-Grade solar panels) and commissioning with the existing diesel generators
- (ii) Radar 10 KVA online-UPS (1-hour backup), workstations 1 KVA online-UPS (1-hour backup) (Power Factor 0.9 or above with pure sinewave)
- (iii) Air Conditioner (2x Transmitter/2x Receiver observational rooms)
- (iv) Lighting and Surge Protection for Transformer + shifting to shelter room
- (v) Complete Electrical wiring of entire building along with proper earthing, Lighting & surge protections.

(6) Training

- (i) Radar daily/weekly/monthly/quarterly/annual maintenance
- (ii) OEM training for at least 15 days on RADAR operations, maintenance and troubleshooting.
- (vi) Mandatory involvement of PMD technical staff/engineers during entire repair/replacement work.

(7) Deliverables

- (i) Detailed schematic of the radar systems.
- (ii) List of repaired components and backup.
- (iii) List of single point failure components with unit price.
- (iv) User manuals, technical documentation and software for the repaired/replaced systems.
- (v) SAT documentation and execution.
- (vi) Three years OEM after sales warranty and support for all RADAR components.

Existing Parameters of Sialkot radar

S.no.	Parameter	Specification/Value
1	Transmitter Frequency	5625MHz (5500MHz - 5700MHz)
2	Pulse width	Short (0.8µs ± 10%) ; Long(2µs ± 10%)
3	PRF	Short (1080± 1Hz) ; Long(250 ± 1Hz)
4	Peak RF Power	250Kw
5	Wavelength	5.3 cm
6	Antenna Gain	45 dB
7	Antenna Beamwidth	1 degree
8	Antenna Diameter	14 ft
9	Linear Dynamic Range	110 dB
10	Receiver IF	60.0 ± 0.5 MHz
11	VSWR	1.005:1

Evaluation Methods (QCBS)

Evaluation will be quality and cost based. The formula/Weightage for technical and commercial evaluation will be as:

Technical Weightage (70%). 50 % of the technical weightage points will be qualifying criteria
+
Commercial Weightage (30%)

TECHNICAL EVALUATION CRITERIA

S. No	Description	Max. Number	Number	
1	Bidder has supplied proposal of clear methodology of integration with existing Radar system including schematics, integration equipment and complete workflow. In case the complete replacement/alternative equipment is proposed; full marks shall be awarded in this criterion.	30	30	Complete compliance.
			15	Partial compliance
			0	Non-Compliance
2	Bidder has provided the installation of the software on the latest version of OS.	10	10	Complete compliance.
			0	Non-Compliance
3	Bidder has provided Software without Hardware binding.	10	10	Complete compliance.
			0	Non-Compliance
4	Bidder has provided assurance to supply upgradable software on latest OS version without any charges.	10	10	Complete compliance.
			0	Non-Compliance
5	Technical evaluation as per Point#04 "Replacement of Radar control, Display and Networking components".	10	10	Complete Compliance
			5	Partial-Compliance
6	Technical evaluation as per Point#5 "Repair/Replacement of Power Conditioning Equipment"	20	20	Bidder has provided superior technical specifications
			10	Bidder has compliance with technical specifications
7	Bidders has compliance with Point#6&7 "training and deliverables".	10	10	Complete Compliance
			5	Partial-Compliance
TOTAL		100		

FINANCIAL EVALUATION CRITERIA

<p>Financial Proposal</p> <ul style="list-style-type: none">a. First Lowest (30 Marks)b. 2nd Lowest (20 Marks)c. 3rd Lowest (10 Marks)	<p>Total 30 Marks (Weightage 30%)</p>
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