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No. I&P/Repair/Radar/Mangla/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 Doppler Weather Surveillance Radar (DWSR), Mangla”** 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 **06/11/2024** till 1130 hrs. PST.

Terms & Conditions:

- a. Bid Security 2% of Total Cost of Proposal, 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 For FY 2024-25.
- 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/ duties, if any, Levied by the Government until Completion of the Project (Fiscal Year 2024-25).
- e. Competent authority reserves the right to accept / reject single Bid or the whole tender 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 12:00 hrs. PST in the presence of participants or their authorized representatives.
- h. Competent Authority reserves the right to reject or accept any or all the proposals without assigning any reason under PPRA Rule.
- i. 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.
- j. Time period for completion of the task shall be six months 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 MANGLA WEATHER RADAR

I. INTRODUCTION

The purpose of these specification is to outline the requirements for the repair of the PMD's Mangla weather radar by repairing/replacing its parts/segments with latest available technology. Mangla radar is critical for addressing weather forecasting challenges, notably for flood prediction in the river Jhelum basin.

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 strengthening of Antenna foundation as per equipment requirement should be treated as single solution, and 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
 - Foundation/Ring
 - Drive module
 - Servo motor
- (ii) Pedestal Unit
- (iii) Antenna Radome
- (iv) Servo control Unit complete

(2) Repair/replacement of Parts in Transmitter Unit

- (i) Modulator unit repair/ replacement

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

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

(4) Replacement of workstation, Software/Networking Components

(A) Radar Control Software

Hardware (5 years replacement 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 ~ 21" inches
Accessories All included

Software

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 (5 years replacement 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
- Image file output as JPG PNG, GIF file format

[Product display & retrieval]

- Automatic updating of the received product
- Observed date and time

- Site code
- Name of product
- Product range information
- Legend (color 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
- 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 generation 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.

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

Hardware (5 years replacement 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
- Pre-configured FTP data transfer
- Pre-configured API data transfer
- The networking system should provide utility/program to integrate radar system via web and produce mosaic display of all PMD radars.
- Cool 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 (5 years replacement Warranty)

- 20KVA hybrid solar system (IP65 hybrid solar inverter with A-Grade solar panels) and commissioning with the existing diesel generators
- Radar 10KVA online-UPS (1-hour backup), workstations 1KVA online-UPS (1-hour backup) (Power Factor 0.9 or above with pure sinewave)
- Air Conditioner (2x Transmitter/2x Receiver observational rooms)
- Lighting and Surge Protection for Transformer + shifting to shelter room

(6) Training

- Radar daily/weekly/monthly/quarterly/annual maintenance
- 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.

Existing Parameters of Mangla radar

S.no.	Parameter	Specification/Value
1	Transmitter Frequency	2800MHz (2700MHz - 2900MHz)
2	Pulse width	Short ($0.8\mu\text{s} \pm 10\%$); Long ($2\mu\text{s} \pm 10\%$)
3	PRF	Short ($1011 \pm 1\text{Hz}$) ; Long($253 \pm 1\text{Hz}$)
4	Peak RF Power	850Kw
5	Wavelength	10.71cm
6	Antenna Gain	45dB
7	Antenna Beamwidth	1 degree
8	Linear Dynamic Range	104 dB
9	Receiver IF	$60.0 \pm 0.5\text{ MHz}$

Evaluation Methods (QCBS)

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

Technical Weightage (70%) + 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.	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 & OS 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 Marks (Weightage 70%)		

FINANCIAL EVALUATION CRITERIA

<p>Financial Proposal</p> <p>a. First Lowest (30 Marks)</p> <p>b. 2nd Lowest (20 Marks)</p> <p>c. 3rd Lowest (10 Marks)</p>	<p>Total 30 Marks</p> <p>(Weightage 30%)</p>
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