

REQUEST FOR PROPOSAL

**TENDER DOCUMENT
(NO. ARIES-DOT-PN-002-R0)**

**DESIGN, MANUFACTURE, INTEGRATION,
TESTING, SUPPLY AND INSTALLATION
OF
A 3.5 METER CLASS OPTICAL TELESCOPE**

**ARYABHATTA RESEARCH INSTITUTE OF
OBSERVATIONAL SCIENCES (ARIES), NAINITAL**
(An Autonomous Institute of Department of Science & Technology, Government of India)

Place: Nainital
Date : 1 December 2006

Aryabhata Research Institute Of Observational Sciences (ARIES), Nainital, Uttaranchal, India plans to acquire and install a 3.5-meter class optical telescope at Devsthal site near Nainital.

Description of telescope site

The 3.5 m class Devsthal Optical Telescope will be set up at Devsthal site (Lat: 29 deg 38 min N, Long: 79 deg 68 min E, Alt: 2540 m), situated in the Himalayan region having a median seeing of around one seconds of arc. The telescope with a clear aperture of around 3.6 meter and will be used for carrying out high resolution (60000) optical spectroscopy and a high quality (0.7 arc sec FWHM) imaging at optical-near infrared bands in a moderate (~ 10 arc min) field of view. It will have an effective focal ratio of f/9 with Cassegrain focus and Ritchey-Chretien Configuration.

Science Drivers

Some of the key science drivers for the installation of this telescope are outlined below.

1. Studying magnetic field structure of stars
2. Studying chemical evolution of Milky Way galaxy via stellar ISM abundance
3. The searches for extra solar planets.
4. Kinematics of stars in the outer regions and the halo of the Milky-way
5. Polarization properties of BL-Lacs and other active galactic Nuclei.
6. NIR spectroscopy and narrow-band imaging of the galactic HII regions and star clusters to understand the formation of stars and their evolution in different environment.
7. Optical spectroscopy and deep time-resolved imaging of galactic X-ray binaries to understand the kinematics of accretion disk and reprocessing of x-ray from the disk.
8. NIR spectroscopy of debris disks around stars to understand planet formation.
9. NIR spectroscopy of Cataclysmic Variables and AGB stars.

THERE ARE **THREE** OPTIONS FOR SUBMITTING THE BIDS

1. Design, manufacture, integration, testing, supply and installation of the entire telescope at Devsthal site. (Bidder should specify the mirror material for the primary and secondary mirrors)
2. Design, manufacture, integration, testing, supply and installation of the entire telescope excluding procuring and figuring of primary and secondary mirrors, at Devsthal site. However, the mirrors shall be made as per the design specifications and acceptance tests specified by the bidder. The bidder shall ensure the quality of the finished mirrors before acceptance.
3. Design, manufacture, integration, testing, supply and installation of the entire telescope excluding procuring and figuring of primary and secondary mirrors, at Devsthal site. However, the mirrors shall be made as per the design specifications and acceptance tests as specified by the bidder. In addition, the non-critical components like telescope tube, fork and base etc shall be manufactured in India as per the specifications and quality certification of the bidder. The bidder shall ensure the quality of the finished mirrors and the non-critical components before acceptance.

The bid will be considered even if the bidder is interested in submitting the offer for any one of the above options.

SECTION - A: INVITATION TO BID AND BIDDING CONDITIONS

SECTION - B: GENERAL CONDITIONS OF CONTRACT

SECTION - C: SCOPE OF WORK AND TECHNICAL SPECIFICATIONS

SECTION - D: FORMAT FOR SUBMISSION OF PART-I

(TECHNICAL AND COMMERCIAL BID EXCEPT PRICE)

SECTION - E: FORMAT FOR SUBMISSION OF PART-II (PRICE BID)

SECTION –A

INVITATION TO BID AND BIDDING CONDITIONS

A1.0 INVITATION TO BID

Sealed Bids are invited in triplicate (one original plus two photo copies) for Design, Manufacture, Integration, Testing, Supply and Installation of a 3.5 Meter Class Optical Telescope as per the enclosed specifications and conditions of contract.

A2.0 FORMAT AND SIGNING OF BIDS

A2.1 The Bidder shall prepare the Bids in TWO PARTS:

- (A) PART-I (Technical and Commercial Bid Except Price) and
- (B) PART-II (Price Bid).

A2.2 The Bidder shall prepare original and two (2) copies of the Bid, clearly marking each as "Original Bid" and "Copy of Bid," as appropriate. In the event of any discrepancy between them, the Original shall govern.

A2.3 The Bidder shall also prepare an un-priced copy of Part-II (Price Bid) clearly marking as "un-priced copy of Part-II Bid".

A2.4 Both the Original and Copies of the Bid shall be signed by the Bidder or a person or persons duly authorized by the Bidder. The latter's authorization shall be indicated by written Power of Attorney

accompanying the Bid. All pages of the Bid (except for unamended printed literature) shall be initialed by the person or persons signing the Bid.

A2.5 The Bidder's name stated on the proposal shall be the exact legal name of the firm.

A3.0 SUBMISSION OF BIDS

A3.1 The Bidder shall submit the Bid in TWO PARTS viz. PART-I (Technical and Commercial Bid Except Price) and PART-II (Price Bid). The price in USD should be on FOB basis.

A3.2 The Bidders shall enclose a Crossed Demand Draft of US \$500/- (US Dollar Five Hundred only), for all the bids, in favor of ARIES, Nainital (India) on a Nationalized Bank in India towards the cost of this tender document. This must accompany PART-I Bid. The Bids without this demand draft will be rejected.

A3.3 The Bidder shall seal the original and two (2) copies of the Part-I Bid in two separate envelopes, duly marking as "Original: Part-I Bid" and "Copies: Part-I Bid". These two envelopes shall be sealed in a separate envelope, duly marking as "Part-I Bid". Similarly, the original and copies of the Part-II bid shall be sealed.

A3.4 The Bidder shall also submit an un-priced copy of Part-II (Price Bid) along with the Part-I Bid in a separate sealed envelope, duly marking as "Un-priced Copy of Part-II Bid".

A3.5 The Bidder shall submit a Bar Chart indicating his work plan for design, manufacture, integration, testing, supply and installation of the telescope along with the Part-I Bid.

A3.6 The envelopes for PART-I Bid and PART-II Bid shall bear the following.

- (i) The Project Name "DESIGN, MANUFACTURE, INTEGRATION, TESTING, SUPPLY AND INSTALLATION OF A 3.5 CLASS METER OPTICAL TELESCOPE"
- (ii) Invitation for Bids, Tender No. ARIES-DOT-PN-002-R0 and

(iii) The words "DO NOT OPEN BEFORE 17.00 HRS IST on 15th JANUARY 2007"

and addressed as follows:

**THE DIRECTOR,
ARYABHATTA RESEARCH INSTITUTE OF OBSERVATIONAL SCIENCES (ARIES), MANORA PEAK,
NAINITAL – 263 129
UTTARANCHAL, INDIA**

A3.7 The inner and outer envelopes shall indicate the name and address of the Bidder.

A3.8 If the outer envelope is not sealed and marked as required, the Owner (ARIES) will assume no responsibility for Bid's misplacement or premature opening.

A3.9 The Bidder has the option of sending the Bid by registered post or submitting the Bid in person so as to reach the ARIES (Owner) by the date and time indicated. The Owner will not be responsible for late, delayed Bids and loss of Bids in transit.

A3.10 Bids submitted by Tele-fax or E-Mail and unsigned will not be accepted.

A3.11 The Owner reserves the right to reject any Bid without assigning any reason.

A4.0 BID PRICES

A4.1 The Bidder shall submit completely filled price schedules as per the format given in the Section E (Schedule of Prices).

A4.2 The Bid prices should be firm for the complete work covered in this specification. All applicable taxes, duties, levies etc. should be indicated separately and will be paid extra at actuals.

A5.0 BID SECURITY AND PERFORMANCE GAURANTEE

- A5.1 The Bidder shall furnish, as part of his Bid, a Bid security of US \$ 160, 000/- (US Dollars One Hundred Sixty Thousand Only) in favor of ARIES, Nainital, India in the form of a Crossed Demand Draft on a Bank acceptable to State Bank Of India. This must accompany the Technical Bid viz.: PART-I (Technical and Commercial Bid Except Price).
- A5.2 The Bid security is required to protect the Owner against the risk of Bidder's conduct that would warrant the security's forfeiture.
- A5.3 The Bid security shall be valid for 210 days from the due date of Bid submission closing date.
- A5.4 The Bid Security will be forfeited if a Bidder withdraws his Bid during the period of Bid validity specified in clause 6.1 below.
- A5.5 Any Bid not secured in accordance with Bid security will be treated as non- responsive and may be rejected.
- A5.6 Unsuccessful Bidder's Bid security will be discharged/ returned as promptly as possible but not later than thirty (30) days after the expiry of the period of Bid validity prescribed by the Owner.
- A5.7 On award of contract, the Successful Bidder will be required to submit a Security Deposit (Performance Guarantee) of 5% of the Contract Price (refer clause 1.1 of Schedule of Prices in Section E) in the form of a Demand Draft or Bank Guarantee acceptable to State Bank of India till continuance of the contract. The Performance Guarantee should remain valid for a period of sixty days beyond the date of defect liability period.
- A5.8 The successful Bidder's Bid Security will be returned on receipt of the Security Deposit as mentioned in clause 5.7 above.

A5.9 The Owner reserves the right to reject any Bid/ all Bids without assigning any reason whatsoever. In case any Bid is rejected, the ARIES is not committed to pay any costs incurred in the preparation and submission of the Bid.

A6.0 PERIOD OF VALIDITY OF BIDS

A6.1 Bids shall remain valid for 180 days from the due date of Bid submission closing date prescribed by the Owner. A Bid valid for a shorter period will be rejected as non-responsive.

A6.2 In exceptional circumstances, the Owner may seek the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing. The period of validity of Bid security shall also be suitably extended. A Bidder granting the request is not required or permitted to modify his Bid.

A6.3 Prior to the expiry of the period of Bid validity, the Owner will inform the successful Bidder in writing by registered letter or by tele-fax and confirm that his Bid has been accepted.

A7.0 DEADLINE FOR SUBMISSION OF BID

A7.1 Bids for PART-I and PART-II must be received by the Owner, at the address specified, not later than **17.00 HRS IST on 15 January 2007.**

A7.2 The Owner may, at his discretion, extend this deadline for the submission of Bids by amending the Bidding Documents, in which case all rights and obligations of the Owner and Bidder previously subject to the deadline will thereafter be subject to the deadline as extended.

A8.0 MODIFICATIONS AND WITHDRAWAL OF BID

- A8.1 The Bidder may modify or withdraw his Bid after the Bid's submission, provided that written notice of the modification or withdrawal is received by the Owner prior to the deadline prescribed for submission of Bids.
- A8.2 The Bidder's modification or withdrawal notice shall be prepared, sealed, marked and dispatched in accordance with the provisions for sealing and marking of Bids. A withdrawal notice may also be sent by telefax but followed by a signed confirmation copy, post marked not later than the deadline for submission of Bids.
- A8.3 No Bid may be modified subsequent to deadline for submission of Bids.

A9.0 BID OPENING/ CLARIFICATION OF BIDS

- A9.1 Bids for PART-I shall be opened first on **22 January 2007 at 11.00 Hrs. IST** at ARIES, Nainital. Bidders or their authorized agents can be present at their own interest when the Bids are being opened. The PART-II Bids of the Bidders whose PART-I Bids are acceptable shall be opened at a later date with due intimation.
- A9.2 To assist in the examination, evaluation and comparison of Bids, the Owner may at his discretion ask the Bidder for a clarification of his Bid. The Owner may call for meetings with Bidders to seek clarifications to the Bids at appropriate times at Nainital. The request for clarification and the response shall be in writing.
- A9.3 Any effort by a Bidder to influence the Owner in the Bid Evaluation, Bid Comparison or Contract Award decisions may result in the rejection of his Bid.

A10.0 CLARIFICATION OF BIDDING DOCUMENTS

A10.1 Any clarifications pertaining to this tender document shall be obtained by the Bidders in writing from the Owner at the following addresses:

Dr. B B Sanwal, Scientist D,
Aryabhatta Research Institute of Observational Sciences (ARIES),
Manora Peak, Nainital – 263 129,
Uttaranchal, India
Tel. +91 5942 235583, Fax +91 5942 233439,
Email: sanwal @aries.ernet.in

A10.2 A prospective Bidder requiring any clarification on the Bidding document may notify in writing at the above mailing address, latest by 1 January 2007. All such clarifications shall form a part of the tender specifications/ documents and shall be referred to in the Bid.

A11.0 AMENDMENT OF BIDDING DOCUMENTS

A11.1 At any time prior to the deadline for submission of Bids, the Owner may, for any reason, whether at his own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding documents by amendment.

A11.2 The amendment will be notified in writing to all prospective Bidders who have received the Bidding documents and the amendment will be binding on them.

A11.3 In order to allow reasonable time to the prospective Bidders for taking the amendment into account in preparation of their Bids, the Owner may, at his discretion, extend the deadline for the submission of Bids.

A12.0 DOCUMENTS/ REPORTS

The Bidder shall ensure that all the required documents/ reports as mentioned in this tender document are attached with the Bid. All necessary catalogues / drawings / technical literature data, as may be considered essential for full and correct evaluation of the Bids, shall invariably accompany the PART-I of the Bid.

SECTION – B

GENERAL CONDITIONS OF CONTRACT

B1.0 DEFINITIONS OF TERMS

- B1.1 'Owner / Purchaser' shall mean the Aryabhata Research Institute of Observational Sciences (ARIES), an Autonomous Institute of Department of Science & Technology, Government of India acting through the Director, ARIES, Nainital.
- B1.2 'Engineer / Consultant' shall mean any person/ firm nominated by the Purchaser to carry out all engineering functions concerning the contract including approval of manufacturing drawings, post contract follow up, technical follow up.
- B1.3 'Bidder' shall mean the firm / party who quotes against tender inquiry.
- B1.4 'Vendor / Contractor / Fabricator' shall mean the successful Bidder whose Bid has been accepted by the Owner / Purchaser and on whom the 'Contract' or 'Purchase Order' is placed by the Owner / Purchaser and shall include his heirs, legal representatives, successors and permitted assignees.
- B1.5 'Sub-Vendor / Sub-Contractor / Sub-Purchaser' shall mean the person named in the 'Contract' undertaking a part of the work or any person to whom a part of the 'Contract' has been sublet, with the consent, in writing, of the Owner / Purchaser and shall include the latter's heirs, legal representatives, successors and permitted assignees.
- B1.6 'Manufacturer' refers to a person or firm who is the producer and furnisher of material or designer and fabricator of equipment to either the Owner / Purchaser or the Vendor / Contractor or both under the 'Contract'.

- B1.7 'Inspector' shall mean the authorized representatives appointed by the 'Owner / Purchaser' or the 'Engineer / Consultant' for purpose of inspection of materials / equipment / works.
- B1.8 'Site' shall mean the actual place of the proposed 'Project' as detailed in the 'Specification' or other place where work has to be executed under the Contract.
- B1.9 'Bid' shall mean the proposal / document that the Bidder submits in response to Bid invitation by Owner / Purchaser / Consultant.
- B1.10 'Parties' to the Contract means the Contractor named in the Contract and the Purchaser.
- B1.11 'Contract' or 'Purchase Order' shall mean the order and associated specifications executed by the Owner / Purchaser and the Vendor including other documents agreed between the parties or implied to form a part of the 'Contract'.
- B1.12 'Contract Price' shall mean, if there is a formal agreement, the prices referred to in the agreement or if there is no formal agreement, the price agreed to be the value of the 'Contract'.
- B1.13 'Date of Contract' shall mean the calendar date on which the Owner / Purchaser and Vendor / Contractor / Fabricator have signed the 'Contract'. 'Effective Date of Contract' shall mean the calendar date on which the Owner / Purchaser have issued to the Vendor the 'Letter of Intent' or as otherwise mutually agreed to between the Owner / Purchaser and the Vendor.
- B1.14 'Contract Period' shall mean the period during which the 'Contract' shall be executed as agreed between 'Vendor / Contractor / Fabricator and Owner / Purchaser'.
- B1.15 'Stores' shall mean and include what the Contractor agreed to supply under the Contract.

B1.16 'Guarantee Period' or 'Warranty Period' or 'Defect Liability Period' shall mean the period during which the Contractor shall remain liable without any extra cost to the Purchaser for repair, replace or rectify any defective part or performance of the Stores supplied under the Contract.

B1.17 'Performance Tests' shall mean all operational checks and tests required to determine the performance parameters of the Stores as specified in the Contract, before the 'Stores' is taken over under guarantee by the Owner / Purchaser.

B1.8 'Virtual Completion' shall mean that all work is completed as directed and the 'Stores' is supplied to the satisfaction of the Owner / Purchaser or the Engineer / Consultant.

B2.0 EXECUTION OF CONTRACT – TIME SCHEDULE

The design, manufacture, integration, testing, supply and installation of the telescope components / systems shall be carried out by the Contractor with in a total maximum period of 48 (forty eight) months from the date of issue of the Purchase Order (P.O.), whichever is earlier.

B3.0 DELIVERY DESTINATION

The destination of the stores (Optical Telescope) is Devsthal site (latitude 29 deg 22 min 46 sec north, longitude 79 deg 40 min 57 sec east, altitude 2540 meters above sea level) about 60 kms from Nainital (India).

B4.0 COMPENSATION FOR DELAY/ LIQUIDATED DAMAGES

Period of delivery of the Stores stipulated in the Contract is the essence of the contract and the Contractor must ensure time bound completion of the work. The Contractor shall be bound to pay

Liquidated Damages to compensate the Owner for delay in supply of the Stores at the rate of 1% of the total Contract Value for each week's delay, subject to a maximum of 5 %.

B5.0 EXTENSION OF TIME

The Contractor's request for extension of time for completion of work can be entertained only on the ground of his work having been unavoidably hindered. The time of the completion may be suitably extended if in the opinion of the Owner it is justified. The decision of the Owner in this regard shall be final and binding.

All works under or in course of execution or executed in pursuance of the contract shall at all times be open for inspection and supervision of the Owner. The Contractor and his subordinates shall at all times during the usual working hours be present to receive directions from the Owner and the same will have to be implemented.

B6.0 TERMS OF PAYMENT

Vendor is requested to propose the milestone payment plan (MPP) for the entire project.

B7.0 ASIGNING OF CONTRACT

B7.1 At the same time as the Owner notifies the successful Bidder that his Bid has been accepted, the Owner will send the Bidder the Contract Form incorporating all agreements between the parties.

B7.2 Within thirty (30) days of receipt of the Contract Form, the successful Bidder shall sign and date the Contract and return it to the Owner.

B8.0 SUB CONTRACTING / SUBLETTING

The Bidder in the event of his Bid being accepted by the Owner shall not assign / sublet or delegate the contract or any part thereof without the prior written consent of the Owner. The Contractor shall be responsible for the satisfactory execution of the contract irrespective of the fact whether a part or a portion of a contract has been assigned or sublet by him to subcontractor with the prior written consent of the Owner.

B9.0 PERMITS AND LICENSES

The Contractor shall secure and pay for all permits and licenses which he may require to comply with in respect of all laws, ordinances and regulations of the Government or Public Authorities in connection with the performance of his obligations under the Contract. The Contractor shall be responsible for all damages and shall indemnify and save the Owner harmless from and against all claims for damages and liability, which may arise due the Contractor's failure to comply with what is stated above.

B10.0 VESTING OF TITLE AND ASSUMPTION OF RISK

On each item to be delivered in this Contract, including an item of work in progress, in respect of which payments have been made in accordance with clause C6.0, the Owner shall have security interest in such items which shall be deemed to be released only at the time when the applicable deliverable item is finally accepted and delivered to the Owner in accordance with the terms of the contract.

B11.0 TERMINATION OF CONTRACT

If in the opinion of the Owner, the Contractor has abandoned the work without any serious reason or deliberately delayed the work or is not carrying out the work under the terms and conditions of the contract, the Owner reserves the right to terminate the contract at any time by giving written notice and the Contractor shall not be eligible for any compensation for the same.

B12.0 SUBMISSION OF PROJECT SCHEDULE

The Bidder shall furnish in his Bid the Bar Chart / Project Schedule indicating various phases of the project work viz. Procurement of raw materials, manufacturing, inspection & testing, packing, transportation to site indicated by the Owner.

B13.0 PROGRESS REPORTS

The Contractor shall provide from time to time or when asked the statement of work accomplished during the report period including drawings / photographs of the Stores, test and performance reports, statement of problem areas, proposed corrective actions, plan of work to be completed during the next reporting period etc.

B14.0 QUALITY SURVEILLANCE, INSPECTION AND ACCEPTANCE

B14.1 The Stores covered by the Contract shall be subjected to quality surveillance and inspection by the Owner / Owner's authorized representative, who shall have free access at all times to the Contractor's works where the work pertaining to this Contract is being carried out. The Contractor shall provide all facilities for inspection and testing at no cost to the Owner / Owner's representative.

B14.2 The Contractor shall establish a Quality surveillance and Inspection Plan in consultation with the Owner and have it approved by the Owner before start of manufacture of the Stores.

B14.3 The Contractor shall record and document the findings/results during various phases of the manufacturing of the Stores.

B14.4 The Contractor shall verify the conformance of the Stores to the contractual requirements before offering the same for inspection and approval of the Owner.

B14.5 The Contractor shall give notice of readiness of Stores for inspection to the Owner and shall perform all tests and inspection in presence of the Owner / Owner's authorized representative as per the terms of the Contract and approved inspection plan.

B14.6 The Owner on completion of satisfactory completion and testing of the Stores as per the Contract shall issue the shipping release.

B14.7 Quality Surveillance by the Owner or his authorized representative shall not relieve the supplier from the responsibility of meeting the specifications or inspection duties called in this document.

B15.0 INSTRUCTION MANUAL

The Contractor shall furnish necessary Instruction Manual along with the Stores to enable the Owner to put the Stores to proper use and maintenance in future.

B16.0 PACKING AND MARKING

The packing of the Stores for shipment shall be appropriate depending upon the nature of transportation and handling hazards. The stores shall be packed securely to avoid any damage to the consignment in transit, loading, unloading and storage. The package shall contain a Packing Note quoting Contract number and date, Copy of Shipping Release and one set of test certificates. The Package shall be marked with name and address of the Contractor, lifting points and special handling instructions, if any.

B17.0 TRANSPORTATION AND INSURANCE

Transportation and insurance will be managed by ARIES.

B18.0 INDEMNITY

The Contractor shall at all times indemnify the Owner against all claims which may be made in respect of Stores against infringement of any right protected by Patent Registration of Designs or Trade Marks and shall indemnify any risk of accidents or damage to the Stores and continue to indemnify the Owner against all patent and latent defects, till the satisfactory completion of the warranty period.

B19.0 RESOLUTION OF DISPUTES AND ARBITRATION

In the event of any dispute or difference arising out of or in connection with this Contract, the matter shall be referred to the Arbitrators, one each nominated by the Owner and the Contractor from their organizations. In case the said Arbitrators are not able to settle the dispute by themselves, the matter shall be referred to the Arbitrator mutually nominated by the Owner and the Contractor and whose decisions will be final and binding on both the parties. The venue of the arbitration will be ARIES, Nainital (India). Subject to the aforesaid, the Indian Arbitration and Conciliation Act, 1996 and the rules there under and any statutory modification thereof for the time being in force shall be deemed to apply to the Arbitration proceedings under this Contract.

B20.0 DEMURRAGE / WHARFAGE

All demurrage, wharfage and allied expenses incurred by the Owner, if any, due to delayed clearance of Stores in view of non-receipt, incomplete or delayed receipt of document by the Owner, shall be recovered from the payment due to the Contractor unless satisfactory explanation is provided by the Contractor.

B21.0 DEFECT LIABILITY AND PERFORMANCE GUARANTEE

Twelve months from the date of the installation of the Telescope at site will be deemed to be the "Defect Liability Period". In case any defect in the work due to bad materials, and / or bad workmanship develop in the Telescopes before the expiry of this period, the Contractor, on notification by the Owner, shall rectify or remedy the defects at his own cost and shall make his own arrangements to provide materials,

labour, equipment and any other appliances in this regard. The retention amount will be returned to Contractor only after the expiry of this defect liability period, without interest.

B22.0 WORKMEN COMPENSATION POLICY

The Contractor may please note that such insurance policy document needs to be submitted to the Owner for his records before commencing the work at site. The Contractor should also promptly report in writing to the Owner all cases of accidents and damages. However, irrespective of the cause and place of occurring during the execution of the work, the Contractor should make adequate arrangements to render all possible aid to the victims of all such accidents and damages.

B23.0 LAW GOVERNING THE CONTRACT

The contract shall be construed and shall be governed by the Laws of India for the time being in force and the Contractor shall be required to comply with all the applicable laws with regards to performance of the Contract.

B24.0 JURISDICTION

The Courts of Nainital (India) shall have jurisdiction to deal with and decide any legal disputes arising out of this Contract.

B25.0 BANK CHARGES

The Contractor shall meet the bank charges for any transaction pertaining to this contract in the Contractor's country.

B26.0 FORCE MAJEURE

Neither party shall be held responsible for any losses, if the fulfillment of any terms and conditions of this Contract are delayed or prevented by acts of lawful Government, revolutions and other disorders, wars (declared or undeclared), acts of enemies, strikes, fires, floods, acts of God and, without limiting the foregoing, any other cause not within the control of the party whose performance is interfered with and which, by the exercise of reasonable diligence, he is unable to prevent. The Owner may grant relief from performance of the contract if the Contractor is prevented from compliance to the Contract due to the above force majeure causes. However, the responsibility for providing proof for the need of such relief shall rest on the Contractor. To obtain relief based on force majeure, the Contractor shall file a written request with Director, ARIES.

B27.0 GENERAL INSTRUCTIONS TO BIDDERS

- B27.1 This specification is intended as a general description of quality envisaged for materials, workmanship and the finished work. It is not intended to cover minute details. The work shall be executed in accordance with the best modern practices and to the complete satisfaction of the Owner.
- B27.2 The Bidder will attach a list of customers and attach performance certificates for such orders executed earlier for supply of Telescopes/Telescope components as per this tender document. Complete details of such assignments shall be submitted along with their contact addresses, telephone numbers etc.
- B27.3 The Bidder is expected to examine all the terms and conditions of this tender document. After review of the tender document, the Bidder shall indicate clause-by-clause compliance with the requirements specified therein. Any deviations from these requirements shall be clearly stated. Incomplete/ unfilled Schedules of Deviations shall render the Bid liable for rejection.
- B27.4 If no deviations are stated, it will be assumed that the Bid conforms in all respects to the specification and the Owner reserves the right to evaluate the Bid as such without further reference to the Bidder.

B27.5 The Bidder shall bear all costs associated with the preparation and submission of the Bid (including the costs for site visits, if any) and the Owner will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the Bidding process.

B27.6 It is not the intent to specify completely herein all the details of the works involved. However, the work shall conform to high standards of engineering design and workmanship and shall meet the anticipated requirements / performance in a manner acceptable to the OWNER who will interpret the meaning of the tender document and the enclosed specifications and shall have the power to reject any work or materials, which in his judgment, are not in full accordance with requirements of the specifications.

SECTION – C

SCOPE OF WORK AND TECHNICAL SPECIFICATIONS

C1.0 INTRODUCTION

The Aryabhata Research Institute of Observational Sciences (ARIES), Nainital (An Autonomous Institute of the Department of Science & Technology, Government of India) is planning to set up a 3.5 meter class Optical Telescope at Devsthal (latitude 29 deg 22 min 46 sec north, longitude 79 deg 40 min 57 sec east, altitude 2540 meters above sea level) about 60 kms east of Nainital, Uttaranchal, India by road. The telescope will be operated in the wavelength range of 0.35 to 5.0 micrometer for astronomical observations.

The mirrors of this telescope will be of Cassegrain-type in Ritchey - Chretien configuration. The telescope will have a clear aperture of about 3.6 meters and a focal length of ~32.5 meters. The scope of work covering various phases of the activities required for realizing the telescope and the specification for various components / systems of the telescope are given in the subsequent clauses.

C2.0 SCOPE OF WORK

The scope of work covered in this specification document includes the following phases of the activities.

C2.1 Preliminary and detailed design of the

- (a) Telescope Structure including Tube, Fork, Base, Azimuth Bearing & Drive, Azimuth Control System, Altitude Bearing & Drive, Altitude Control System, Cable Wrap, pier design along with seismic analysis and any other necessary component.
- (b) Telescope optics primary and secondary mirrors, mirrors support system, mirror cells, M2 Hexapod, mirror control system.
- (c) Cassegrain Corrector, Rotator and Adaptor.
- (d) Service & Test Equipment: Vendor shall provide handling tools for AIV & maintenance and specify the equipments that shall be delivered along with the stores.

- (e) Telescope software for telescope control and observation control.
- (f) Spares required for 5 years after installation.

C2.2 Preparation of manufacturing drawings supported by F.E.M. analysis for deflection of optical system and specifications of telescope components / systems as mentioned in the clause C2.1.

C2.3 Manufacture of various telescope components / systems including the following.

- (a) Telescope tube, base and fork
- (b) Mirror supports, cells, M2 hexapod mechanism,, azimuth and altitude bearings, Cassegrain corrector, rotator, adaptor, cable wrap and any other necessary component.
- (c) Hardware for telescope control system

C2.4 Assembly, Integration & Verification (AIV) including a sky test of the complete telescope at manufacturer's factory.

C2.5 Packing and forwarding

C2.6 The Owner will arrange for the transports and insurance from the manufacturers site to the Telescope site (Devsthal). The Owner will provide the necessary installation equipments at site i.e. crane etc. Vendor to specify the requirement.

C2.7 AIV and commissioning the complete telescope at Devsthal site and the acceptance by the Owner.

C3.0 FREE ISSUE ITEMS

The following items shall be supplied by ARIES to the Telescope supplier as free issue items.

- (a) Mirror M1 -M2 (primary and secondary mirrors in the bid option 2 and 3), telescope enclosure including dome, basement, enclosure control system and crane.
- (b) Telescope Basement/ Pier as per telescope supplier's design and drawings.
- (c) Back-end instruments.

C4.0 DELIVERABLES

All the telescope components, systems, software etc as covered under Scope of Work given clause 2.0 above for satisfactory installation of the telescope.

C5.0 DOCUMENTS

The telescope supplier shall furnish the following documents to ARIES.

- (a) Preliminary Design Reports (PDRs).
- (b) Concept Design Reports (CDRs).
- (c) Final Design Reports (FDRs).
- (d) Manufacturing drawings including components and assembly drawings.
- (e) Manuals – User Handbook, Technical Manual, Installation Manual, Maintenance and Repair Manual, Software Manual.
- (f) Part Catalogues, List of spares & Test equipment
- (g) History Docket – consisting of all inspection records and as made drawings

C6.0 Technical Specification / requirements of the Telescope

C6.1 OPTICAL SPECIFICATIONS:

- a. Size of Primary Mirror** : 3.6 m (clear aperture)
- b. Material of Primary & Secondary mirrors** : Sitall-CO115M (in case of the bid option 2 & 3)
- c. Primary focal ratio** : f/2.5 or a bit faster
- d. Configuration** : Ritchey-Chretien with Cassegrain Focus

- e. Effective focal ratio** : f/9
- f. Operational waveband** : 350 nm to 5000 nm
- g. Science field of view** : 10 arc min without corrector and 30 arc min unvignetted field
- h. Optical image quality** : 50 % energy in less than 0.3 arc sec diameter; 90 % energy in less than 0.6 arc sec diameter (for 10 arc min field without corrector with elevation range 15 to 87 degree, for full operational waveband)
- i. Location of Cassegrain Focus** : 40 cm (approx) from the instrument flange

C6.2 MECHANICAL SPECIFICATIONS:

- a. Mounting** : Alt-Azimuth
- b. Zenith blind spot** : Less than the five degree Conical diameter
- c. Instrument Envelope:** Cylindrical space of Minimum 2.5 meter along axis and approximately 3.0 meter diameter around optical axis
- d. Pointing accuracy** : < 2 arc sec RMS for any point in the sky with elevations greater than 10 degrees.
< 0.1 arc sec RMS for 10 arc min offset.
- e. Tracking accuracy** : < 0.1 arc sec RMS for less than one minute open loop.
< 0.1 arc sec RMS for less than one hour in closed loop (with star-tracker)
< 0.5 arc sec peak for less than 15 min in open loop
For all elevations greater than 15 degrees but less than 87 degrees. For normal operating conditions mentioned in C6.4 (a) as seen in any of the focal planes at any point of 30 arc min field.
- f. Slew/set/guide rate** : 6 degree/sec, 2 arc min/sec, 10arcmin/sec, 1arcsec/sec, 0.1arcsec/sec in both altitude and azimuth.
- g. Retargeting time** : < 30 sec for 2 degree move
- h. Non-sidereal track capability** : > 5 arc sec/sec
- i. Instruments mounting cube** with one port for the main instrument and four side ports for smaller instruments with about 10 arc min FOV. Cassegrain instrument mounting end to have a load bearing capacity of 2000 kg for astronomical instruments in addition to acquisition and guiding unit and image de-rotator. Provision should be provided for balancing the telescope for various instrument weights.
- j. The rotation freedom:** in azimuth +/- 270°
in altitude 10 to 87.5°
The vendor should suggest best alternative if not feasible.

- k.** Motor driven protective covers for both primary and secondary mirrors to seal the mirrors against dust when closed and to protect against blunt impacts.
- l.** Automatic focusing with temperature change.
- m.** Acquisition and guiding unit to be provided. The sensitivity of star-tracker, for closed loop guiding to be such that for full moon night (at around 45 degree from moon), with seeing 1.5 arc sec, a bright enough star is found with 95% probability near poles of the Galaxy to provide the tracking accuracy required in "6.2 (e)" (excluding minimal errors implied due to seeing), with exposures of around 2 sec on the star tracker, for any elevation greater than 30 degree.
- n.** Five-axes motion (centering, tip/tilt and focus) of secondary mirror to be provided with the resolution of 2 micron in translation and a few arc sec in rotation. It should be remotely controlled from control console. Range of focus arrangement in secondary by 20 cm from mean position in 20 sec.
- o.** Capacity to take imbalances (50 kg. m torque on Cassegrain and 50 kg mass at the farthest end of the main Cassegrain instrument) on Elevation and Cassegrain axes without affecting the tracking.
- p.** Automatic correction for collimation of the secondary with change in elevation and temperature, to keep the image quality as specified in "6.1 (h)".

C6.3 CONTROL SYSTEM:

- a.** Suitable control system for operating and controlling the telescope under all possible observing situations.
- b.** Complete computer control of the telescope, with network operation capability.
- c.** A computer-linked weather station.
- d.** A user interface providing information on the telescope, including important diagnostic information, and weather information.
- e.** Detailed event logs generated to help subsequent trouble -shooting.
- f.** Software architecture to suit communication with other computers to obtain status information on instruments, dome etc.
- g.** Software for generating and updating pointing model and other lookup tables, as an integral part of the controls.
- h.** Capability for obtaining information from major catalogs, and computing current local coordinates.
- i.** All the necessary software, source code required for normal operation, function libraries for future development and integration with third party instruments.
- j.** Computers for controlling and operating the telescope.

C6.4 ENVIRONMENTAL CONDITIONS FOR THE TELESCOPE:

a. Normal Operating Conditions:

| | |
|--|------------|
| Temperature | 0° to 25°C |
| Relative Humidity | 0 to 95% |
| Wind | < 3 m/s |
| Peak gusts | < 13 m/s |
| Variation in temperature during the night | < 2° C |

b. Marginal operating conditions:

| | |
|-------------|-------------|
| Temperature | -5° to 30°C |
| Steady wind | < 15 m/s |
| Peak gusts | < 20 m/s |

For these marginal conditions the tracking requirement can be relaxed by a factor of three.

c. Non-operating survival conditions:

| | |
|----------------|--|
| Temperature | -10° to 40°C |
| Steady Wind | > 20 m/s |
| Peak gusts | 30 m/s |
| Hail, snow | 4-5 feet on ground for a few days in a year. |
| Seismic zone V | 3.6 m/sq sec (average acceleration) |

6.5 GENERAL:

- a. The specifications can be modified marginally at the concept and detailed design stage.
- b. The telescope is to be installed at Devsthal Peak (79 deg 41 min E, 29 deg 23 min N, altitude 2540m) near Nainital, India. Installation, operation and maintenance manual has to be prepared by the supplier.
- c. The supplier should specify nature of local support / help needed to install/commission the telescope at site.
- d. Suitable procedure, tools and training to be provided by the supplier for maintenance and alignment of the telescope optics after re-aluminization of the mirrors.
- e. Detailed operation and maintenance manuals to be provided by the supplier.
- f. Size and weight of the major components of the telescope, which need to be transported in a single piece to be provided by the supplier.
- g. The bidders may like to give their suggestions in order to provide the telescope as a state of art instrument.
- h. Recommended spares to be provided by the supplier for five years after the installation of the telescope.

- i. The components should be of such dimensions that can come in standard container of length less than 20 feet, except the primary mirror and primary mirror cell which will need special transport arrangement. This point is to be considered at the stage of design of the telescope.
- j. The supplier to provide guarantee for three years for trouble free running of the telescope. The guarantee is to be backed by an irrevocable Bank Guarantee of 5% of the project cost to be provided prior to withdrawal of final payment.

7.0 PACKING

The telescope components / systems shall be packed securely in strong sturdy transport boxes, suitable for handling and transportation by all transport means, to avoid any damage to the telescope components / systems during transit, loading, unloading and storage.

SECTION – D

FORMAT FOR SUBMISSION OF PART – I
(TECHNICAL AND COMMERCIAL BID EXCEPT PRICE)

The Bidder shall submit the PART-I of his Bid as per the 'Tender Form' format given below, on his letterhead.

TENDER FORM

PART-I (Technical and Commercial Bid except Price)

Tender No. ARIES-OT-PN-002 (R0)

Last Date for Receipt of Part-I & Part-II of the tender : 15 January 2007 upto 17.00 Hrs.

Due Date for Opening of Part-I of the tender : 22 January 2007 at 11.00 Hrs.

Bidder's Offer No. -----

Dated -----

FROM

M/s -----

To

The Director,
Aryabhata Research Institute of Observational Sciences (ARIES),
Manora Peak, Nainital – 263 129,
Uttaranchal, India

Dear Sir,

1. We have gone through the tender conditions pertaining to your two Part Tender and are submitting herewith our PART-I Bid.
2. We hereby agree to supply the Stores (Telescope components/ systems) conforming to the tender specifications incorporated in Section – C of the Tender Document.
3. We hereby agree to keep the price validity for your acceptance for a period of 180 days from the due date of Bid submission.
4. Compliance / Deviations to the General Conditions of Contract and Technical Specifications as given in Section –B of the tender document is detailed in Annexure – 1 of our PART-I Bid.
5. Compliance / Deviations to the Technical Specifications as given in Section - C of the tender document is detailed in Annexure – 2 of our PART-I Bid.
6. We have enclosed herewith an un-priced copy of our PART-II Bid as per clause 3.4 of Section – A of your tender document.
7. We have enclosed herewith our Project Delivery Schedule as per clause 3.5 of Section-A of your tender document.
8. We have enclosed herewith a Demand Draft of US \$500/- towards cost of the tender document as per clause 3.2 of Section – A of your tender document.
9. We have enclosed herewith a Demand Draft of US \$ 160,000/- towards Bid Security as per clause 5.1 of Section – A of your tender document.

Yours faithfully,

Stamp and Signature of the Bidder

SECTION – E

FORMAT FOR SUBMISSION OF PART - II (PRICE BID)

The Bidder shall submit the PART-II of his Bid as per the 'Tender Form' format given below, on his letterhead.

TENDER FORM

Bidder's Offer No. -----

Dated -----

PART-II (Price Bid)

Tender No. ARIES-OT-PN-002 (R0)

FROM

M/s -----

To

The Director,
Aryabhata Research Institute of Observational Sciences (ARIES),
Manora Peak, Nainital – 263 129,
Uttaranchal, India

Dear Sir,

1. In response to your invitation to the tender and as per the tendering conditions, we attach herewith our Price Schedule in the format given in Annexure -1 for PART-II (Price Bid), for the Scope of work as per PART-I (Technical and Commercial Bid except Price).
2. We hereby agree to keep the price and other commercial terms and conditions valid for your acceptance for a period of 180 days from the due date of Bid submission.

Yours faithfully,

Stamp and Signature of the Bidder

Annexure – 1
(Annexure to format for Part-II Bid)

SCHEDULE OF PRICE

1.0 Bidder shall indicate FIRM prices for the supply of the telescope components / systems for the complete work covered by this tender document, as per the format given below,

1.1 The total Contract Price refers to a sum of prices under clauses 1.2, 1.3 and 1.4 below.

1.2 Ex-factory Price of all the telescope components (please quote FOB price for each of the major components separately) / systems including manufacturing, shop testing / inspection, and packing charges

: (US \$)

1.3 Charges for Marine cum Storage Insurance valid till completion of work and taking over of the telescope by the Owner

: (US \$.)

1.4 All applicable taxes, duties, levies etc. with individual break-up

: (US \$.)

4. Price Break-up including taxes, duties, levies etc.

(a) Design of the telescope components : (US \$)

(b) Manufacture of the telescope components : (US \$)

(c) AIV : (US \$)

Signature of the Bidder :

Name & Designation :

Name & Address of the Company :

Company Seal

Date :

DELIVERY SCHEDULE

BIDDER TO INDICATE HIS WORK PLAN CONSIDERING VARIOUS PHASES OF THE WORK AND DELIVERABLES.