

antiope

Antiope Associates LLC

VENDOR :

Antiope Associates LLC
18 Clay Street
Fair Haven, New Jersey 07704
USA

Quotation number: 090720-001
Quotation date: 20 July 2009

Federal Tax ID: 13-4259566

Payment terms: Net 30

CUSTOMER :

Prof. Chris Martin
Wright Laboratory of Physics
Oberlin College
110 North Professor Street
Oberlin, Ohio 44074
USA

NOTES :

Dear Prof. Martin:

Antiope Associates is pleased to submit the following quotation for the control electronics and drive system of the Atacama Submillimeter Telescope and Robotic Observatory.

Included are drive motors and telescope control electronics, time and frequency distribution electronics, an operator interface computer and basic software for pointing the telescope, time and position stamping instrument data and controlling the secondary and tertiary mirrors. Local area network infrastructure and a firewall for secure remote access are included. Equipment will be supplied assembled and tested in two 19 inch racks.

The quoted price includes integration of customer supplied equipment into the control electronics. The customer will supply the following items to Antiope Associates:

- Secondary mirror translation stage and controller
- Tertiary mirror motor and controller
- Limit switch control interface
- Azimuth and elevation encoder interfaces

The secondary and tertiary mirror movers will be returned to the customer after system testing at Antiope Associates for reinstallation in the telescope. Unless other arrangements are made, the secondary and tertiary mirror control electronics, limit switch controller and encoder interfaces will be integrated into the electronic racks shipped to the customer as part of the delivered system.

Telescope drive motors and control electronics will be designed to meet the same pointing accuracy specification as the Antarctic Submillimeter Telescope and Remote Observatory, portions of which will be reused in the Atacama Submillimeter Telescope and Robotic Observatory.

For questions and assistance with quotations and payment terms, please contact the sales department at:

Antiope Associates LLC
Attn: Sales
18 Clay Street
Fair Haven, New Jersey 07704
USA

sales@antiope.com
1 (732) 924-4549
1 (732) 345-8738 [fax]

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Antiope Associates will provide the customer with mechanical drawings of the motor assemblies. Fabrication of mounting hardware for attaching the motors to the telescope structure is not included.

The customer must specify the cable length needed from the electronics racks to the azimuth and elevation drive motors. The system price quoted is valid for specified cable lengths equal to or less than 50 feet.

Meals and incidental expenses for travel are calculated using the GSA 2009 per diem schedule for domestic trips and the State Department 2009 per diem schedule for foreign trips.

The customer must supply documentation showing that their organization is exempt from paying sales tax. Otherwise, the applicable New Jersey sales tax must be added to the final invoice.

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NOTES :

Project: Telescope control system and drive electronics

| Description | Unit Price | Count | Amount (US\$) |
|--|------------|-------|---------------|
| Telescope control system and drive system consisting of: | 242360.00 | 1 | 242360.00 |
| 1. Brushless motor pairs for azimuth and elevation axes, one fully assembled spare per axis. Motors supplied with with brakes, tachometers and permanently lubricated planetary gearheads with dust seals. Power and control cables included; | | | |
| 2. Drive amplifiers for motors, with one spare per axis. Amplifiers will be packaged for mounting in standard 19 inch racks; | | | |
| 3. Redundant control computers with motor and encoder interfaces; | | | |
| 4. Control computer software to point telescope in azimuth and elevation, and track in celestial coordinates. Includes software to provide time and position stamping of SuperCam II data. Control software will be based on the Bell Laboratories/SAO OBS program ported to the Linux operating system; | | | |
| 5. Control computer software to operate secondary and tertiary mirror movers; | | | |
| 6. Telescope limit switch interface; | | | |
| 7. Operator interface computer with customer specified operating system; | | | |
| 8. GPS clock, time and frequency distribution system. System to provide network time protocol (NTP) synchronization for computers and (minimum) 8 buffered 10 MHz signals for frequency synchronization; | | | |
| 9. Redundant managed gigabit ethernet switches; | | | |
| 10. Redundant network firewall configured for secure remote access; | | | |
| 11. Above items to be packaged in two 19 inch racks. | | | |

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NOTES :

| | | | |
|--|---------|---|------------------|
| Travel to telescope assembly and test location, 3 trips, 3 days each | 1223.00 | 3 | 3669.00 |
| Travel to telescope installation site, 1 trip, 14 days | 6214.00 | 1 | 6214.00 |
| Subtotal Goods and Services | | | 252243.00 |
| Subtotal Telescope control system and drive electronics | | | 252243.00 |
| <hr/> | | | |
| Sum Goods and Services | | | 252243.00 |
| <hr/> | | | |
| Total | | | 252243.00 |

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NOTES :

Yours Truly,



Gregory Wright
Chief Technology Officer
Antiope Associates LLC

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