CHACO OBSERVATORY

ASTRONOMY VOLUNTEERS

Chaco Observatory was donated to Chaco Culture National Historical Park as a private gift and unpaid volunteers to the Park operate it. The Observatory provides astronomy and archeo-astronomy programs for Park visitors, including:

- slide shows featuring information about astronomy as it was practiced by the Ancestral Puebloans who are believed to have inhabited Chaco Canyon during the period from 800 to 1200 A.D.;

- computer image shows built around images of celestial objects taken at Chaco Observatory by the volunteers past and present; and

- night sky and solar observing opportunities using the Observatory's mounted binoculars and five telescopes and, in some cases, private instruments brought by some volunteers.

Observatory volunteers are asked to commit to a minimum of six weeks during the Park's principal season, April 1 to November 1 each year, and must provide their own recreational vehicle suitable for their housing during that period. The Park will make available at no charge a full hook-up in the Park maintenance area, adjacent to a VIP campground that has running water toilets, showers and a kitchen facility with refrigerator and stove. While housing at the Park is extremely limited, arrangements for a room in a shared mobile home or "dormitory" may be available for volunteers making a commitment longer than the minimum. Depending on the Park's needs during any particular period, volunteers may, in some cases, be accepted for shorter periods. Due to space and facilities limitations, the Park will limit the number of volunteers accepted for any particular dates and will accept a particular volunteer only if the dates during which that volunteer is willing to participate coincide with Park needs. In general, dates will be filled from qualified volunteers on a "first come, first served" basis, with a preference given for returning volunteers.

Although all Park user fees are waived for volunteers and their families, no stipend, pay or reimbursement of expenses is available for observatory volunteers. Expenses incurred, including travel expenses, in connection with the provision of voluntary services to the Park, as a unit of the federal government, are generally deductible from an individual's income for federal income tax purposes. Each taxpayer should consult his or her own tax preparation professional with respect to the availability of such a deduction, the record

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keeping necessary to obtain the deduction and any state or local income tax deductions that may be available.

Public night sky programs are generally given four nights per week, on Tuesday, Thursday, Friday and Saturday starting at approximately dusk, and open solar observing occurs during the day on Tuesday, Thursday, Friday, Saturday and Sunday. On holiday weekends, an additional night sky program may be added on Sunday night and solar observing may be available on Monday. Except as prior arrangements may have been made and except in cases of illness or other unforeseen event, volunteers are expected to work at all night sky programs during their tenure at the Park and to serve at least four two-hour stints per week operating the solar telescope. This approximates a twenty-hour per week commitment to the Park's public programs. During all public programs, volunteers are expected to wear insignia identifying them as National Park Volunteers. This may include a uniform hat, vest or shirt, each of which will be provided by the Park.

Volunteers arrive for programs one-half hour before the public and are responsible for opening the dome and setting up the telescopes, arranging the public areas for slide show presentations or image shows, operating the telescopes during public viewing (including finding and interpreting objects for viewing), presenting image programs and assisting with take-down at the end of the evening. The volunteers also manage and maintain the observatory facilities. Depending on each person's physical ability, skills and inclination, some help with regular maintenance and special projects at the observatory may be requested.

Volunteers should be experienced amateur astronomers who are capable of manually operating telescopes on Dobsonian and equatorial mounts, equipped with Telrad finders, to locate a reasonable selection of objects for observation during public viewing sessions. They should be familiar with and able to comfortably discuss the Solar System, single and multiple star systems, the Milky Way and external galaxies, nebulae, galactic ("open") clusters, globular clusters, constellations, and asterisms. They must be able to deal politely, competently and enthusiastically with a public that will include a broad cross section of Park visitors including young children, ufo buffs, "New Agers," Native Americans, retired astrophysicists, and active professors of astronomy.

Volunteers should be familiar with the current scientific astronomical literature such as is available to the non-specialist public through magazines such as "Sky and Telescope" or "Astronomy Magazine." It is highly recommended that all volunteers take advantage of Park tours, hikes, videos, and general training sessions to familiarize themselves with the culture and history of the Park. Many visitors will ask general questions about recommended trails to hike or ruins to see or may want to discuss theories of early human adaptation to the environment. As a first contact person operating in front of the Park visitors center, the solar telescope volunteers will receive many such questions and can be best prepared to answer them by participating in the interpretative programs offered by Park rangers.

It is expected that all persons representing the Observatory, and, through it, the Park, will present generally accepted scientific information and explanations in a form and manner that is consistent with federal policies affecting separation of church and state, treatment of genders and minorities, and the sensibilities of Native Americans, especially those whose ancestors have occupied Chaco Canyon from time to time. Use of Park facilities for the aggressive presentation of personal views or in violation of these standards may cause a volunteer's status with the Park to be terminated.

In exchange, after suitable training or demonstration of competence, volunteers may have access to the Observatory and its equipment at times when it is not in use for public programs. This includes all nights when public programs are not scheduled and nights with programs after the public has left. Cooperation among volunteers for limited resources, taking into account weather and Moon phases has, to date, been smooth and informal. An inventory of the principal Observatory resources, as of October, 2001, is attached.

Volunteers may also be invited to participate in special training events that allow them to see parts of the Park or to attend lectures by visiting specialists that are not open to the general public. They are encouraged, but not required, to participate in aspects of Park operations other than astronomy. For example, a good way to see ruins that are not open to the public is to volunteer to spend a day as a laborer for the Preservation Crew when they are working on such a structure.

Chaco is within a few hours drive of Albuquerque, Santa Fe and the Four Corners area where New Mexico, Arizona, Colorado and Utah meet. There are many national parks and scenic areas within a half days drive. It is expected that volunteers may want to take advantage of regional tourist attractions while volunteering for the Park. However Chaco, set in a desert terrain, is a remote and isolated park with no amenities and few residents. Volunteers will have access to laundry facilities, pay telephones, and office computers on a limited basis. Television and radio reception is poor. Access is by a sixteen-mile rough dirt road, full grocery stores are ninety minutes away, cellular phones don't work and mail delivery is periodic rather than daily. There is no food concession in the Park, not even a coffee shop. Total staff in residence is often less than twenty. But, it is at 6,000 feet, has long open horizons, is quite free of light pollution and sometimes has early morning transparency and seeing conditions that rival any. And, it has the Observatory with its opportunity for astronomy volunteers.

The Park will is currently accepting application from interested persons for the 2002 and 2003 seasons. Through March, 2002, contact Tommy Taylor, volunteer coordinator, at 978-263-0904; email: thomas.w.taylor@att.net; or by mail at 737 Main St., Acton, MA 01720. After April 1st, contact the Park directly at 505-786-7014 and ask for the astronomy coordinator or Interpretive Ranger G. B. Cornucopia or Head of Interpretive Services Russ Bodnar.

INVENTORY OF ASTRONOMY EQUIPMENT

1.) Telescopes: All scopes have Telrad view finders

1.) In permanent 16' dome, 25" Obsession Newtonian Reflector on a Dobsonian Mount with an equatorial tracking platform and a Bushnell 4.5" F4 reflector telescope with cradle mount (mounted on the 25" as a finder scope/large field of view scope);

2.) On permanent pier, 14" Schmidt-Cassegrain on an Astro-Physics German equatorial mount with a Sky Commander telescope computer and underground wiring to Image Room for remote slow motion, focus and CCD camera control;

3.) 17.5 Coulter Newtonian reflector on a Dobsonian Mount;

4.) 13.1" Coulter Newtonian Reflector on a Dobsonian mount; and

5.) 70mm Coronado Helioscope with tripod

2) Eyepieces for scopes (unless otherwise noted, 1.25")

A.) TeleVue PanOptic **35mm** (2"), **27mm** (2"), **22mm** (2"/1.25");

B.) TeleVue Plossl **40mm, 32mm,** two **25mm** (one on solar scope w Orion shorty Barlow), **15 mm;**

C.) Brandon **20mm;** and

D.) TeleVue Nagler **9mm, 7mm**

They are supplemented with a 2X TeleVue Big Barlow (2"), a Paracor Coma Corrector (2"), a 2X 1.25 Barlow and a 2X 1.25" Orion Shorty Barlow.

(Other eyepieces ranging from 5mm to 27mm are in the observatory but are not modern pieces with wide apparent views and good eye relief. Several of those are not of a quality consistent with the telescopes.)

3.) Filters: (for 1.25" eyepieces unless noted)

A.) two lunar filters;

B.) one nebula filter;

C.)12 piece Pro-Optic color filter set (planetary detail), 8 (light yellow),11 (yellow-green),12 (deep yellow), 15 (deep yellow), 21 (orange), 23 (red), 25A (red), 47 (violet), 56 (light green), 58 (green), 80A (light blue), 82A (pale blue) ;

D.) 48mm (for 2" eyepieces) Lumicon Oxygen III (nebula) filter; and

E.) 48 mm (for 2" eyepieces) Lumicon UHC Premium Deep Sky (nebula) Filter

4) Binoculars: one pair of Orion Ultraview 10x50 Binoculars with a Virgo parallelogram mount (on a borrowed tripod)

5.) SkyPointer: One Howie Glatter green laser pointer

6.) Laser collimator: One Pro-optic Holographic Collimator

7.) ST7-E CCD Camera made by Santa Barbara Group with AO-7 Adaptive Optics and Color Filter Wheel

8.) Computer Equipment:

A.) Two IBM Computers with keyboards, a Nokia and a Sony monitor, and one set of speakers (no internet connection at observatory; internet available for observatory business in Park offices);

B.) Epson Color printer, Model P158A;

C.) Iomega Zip drive; and

D.) Micro Solutions CD Writer