



Kitt Peak National Observatory Facility Operations

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Tenant Newsletter September 2003

In lieu of a meeting, KPNO is providing this newsletter to inform Tenant Organizations of the ongoing activities on Kitt Peak and to expand on current operations or issues.

New Tenant Operations and Updates

VERITAS (Very Energetic Radiation Imaging Telescope Array System)

This new ground based Observatory has negotiated a lease with the NSF for a site within the natural bowl area near the Horseshoe Reservoir below the West Ridge. At completion (projected in 2007), this observatory will consist of seven 12M optical telescopes with an operations center building. This Observatory is one of the high priority projects identified in the recent decadal survey. They are shifting their site from the controversial Montosa canyon site below Mt. Hopkins to the Kitt Peak area.

SOLIS (NSO Synoptic Optical Long-term Investigations of the Sun)

This new NSO telescope is undergoing checkout and instrument testing at a test site in Tucson. Current plans are for the Vacuum telescope to be shut down and SOLIS installed on the top of the present Vacuum telescope the last quarter of 2003.

UA 12M Radio Telescope

The University of Arizona has completed negotiations with the NSF to acquire full operational authority over the NRAO 12M radio telescope. They have finalized their lease with the NSF and are now operating the facility as part of the Steward Observatory Operations.

KPNO 4M - Maryland Partner

Kitt Peak National Observatory has entered into an agreement with the University of Maryland as a partner in operation of the Mayall 4M telescope. This should not result in any major changes to the telescope operations, but will enable provision of new major instruments and needed upgrades.

Kitt Peak – Long Term Operations

Telescope Operations

The NOAO Long-Range plan calls for KPNO operations continuing at approximately the current level of effort. Plans are already being considered for renewing NOAO's role in the WIYN partnership when the first term expires in 2010.

Radio and Cell Phone Operations

Please remind your staff, visitors and contractors that the Observatory sites have been designated radio-free zones to protect the observations of the radio telescopes located on the West Ridge. Cellular phones should be turned off while on the mountain unless emergency usage is required. For the same reason, wireless LANs should not be utilized either. Usage of the small handheld radios on the assigned Kitt Peak frequency is the only exception to this policy.

Tohono O’odham Information

Tribal/District Administration Change

The Tohono O’odham have elected new leaders for their nation and districts. Vivian Juan-Sanders is the first female Chairperson of the nation. Ed Norris, Jr. was elected as her Vice-Chairman. The Schuk Toak district, which Kitt Peak is in, has also elected a new Chairman, Ambrose Encinas. Kitt Peak staff will be meeting with them in the coming months to help maintain the open dialog that has been developed with the Tribe.

TERO (Tohono O’odham Employment Rights Office) Compliance

KPNO wants to remind all tenant organizations that construction and employment within your facilities on the mountain should be in compliance with the TERO guidelines. This has always been a condition of your lease agreement and we continue to encourage you to work with them on all construction and recruiting issues for your facility. The primary contact number is (520) 383-3304.

Emergency Response

Kitt Peak Staff continue to maintain close contact with the Tribal Emergency Services group. Through annual meetings, regular contact and joint meetings, their staff is very familiar with our site and they will provide primary response for all issues (fire, medical and police). We encourage their police staff to patrol the KP road system. In addition, our phone system has been configured to go to their emergency response center when 911 or 9-911 is dialed from a KP phone. For KP staff response, dial 444.

KP Security, Fire Response and Mitigation Issues

Kitt Peak Security Issues

Kitt Peak staff works very closely with the Tohono O’odham Police Department regarding potential issues for the mountain top site. At a previous meeting we agreed to explore the possibility of implementing an automated security gate at the base of the mountain. At this time, implementation is being deferred but we continue to evaluate the need. We have also been informed that within our sector over 1,500 individuals are crossing the border each day. As a result the Border Patrol has implemented a high enforcement zone along Highway 86, please advise your staff and request their co-operation during routine traffic stops.

Fire Response

Kitt Peak staff work very closely with the Tohono O’odham Fire Department and BIA Wildlands department to maintain communications and ensure a prompt response should it be necessary. In addition we have set up response teams and run drills on a monthly basis. We work to provide basic training for our staff and encourage tenant organization staff to also attend and participate. While KP will respond to a fire situation, our staff’s effort will be directed toward preventing a fire from spreading and containment until the Tohono O’odham Fire Department can respond.

Fire Mitigation

The ongoing drought continues to create extreme fire conditions on Kitt Peak. This has always been a concern for us and the destruction of Mt. Stromolo and the fires on Mt. Lemmon continue to focus our attention on this issue. Kitt Peak staff are working with local Wildlands agencies to explore opportunities to reduce the vegetation and associated fire loading. In addition KPNO hired a contractor to significantly reduce growth within 30 feet of its building and critical structures. We continue to encourage all tenant organizations to evaluate their areas and initiate or continue mitigation efforts.

KP Fire Alarm System

We continue to encourage all tenant organizations to install and maintain some type of fire detection system within their facilities and report alarms to the KPNO central station. The key to preventing major fire damage is early detection and response. Organizations just need to have a digital communicator attached to their systems that can communicate in the standard radionics format. Contact KP Facilities staff if you have any questions.

KP Telecommunications Information

PBX Upgrades

In accordance with the consortium approval, the KP PBX system was upgraded from version 4.0 to the latest software version 11.0. This enables the PBX to remain state of the art and upgrades the technology available. As part of this upgrade, the PBX was made IP compliant which will help to maintain its usage by everyone should the underground wires deteriorate beyond acceptable limits. IP soft phones will require a small license fee for activation in the PBX.

Fund Balance

The telecommunications fund was sufficient to pay for the recent PBX upgrades. There is a current balance of approximately \$19K with buy-in fees due to come from VERITAS.

New DS3 Fiber optic cable

This DS3 (28 T1s) fiber cable was placed in to use during March 2002 and the previous T1 circuit connections were disconnected. In April 2003, TOUA completed a build out with Qwest and the circuit was shifted to another fiber along highway 86. Since activation, data transmission rates have continued to increase with a recent peak of 245,000 MB per week. This new cable has significantly improved data transmission quality, allowed for the increasing growth in telescope data rates and has been able to accommodate the required **peak** data burst rates. TOUA and Qwest have built in the capability to add two additional DS3 circuits.

Voice/Data Fees

The high-speed networking grant that NOAO obtained for the data link has helped to keep tenant costs down and absorbed a portion of the new fiber optic cable costs. This grant paid for the Kitt Peak equipment at each end of the link and will support a portion of the monthly costs for 5 years. The SOLIS project is projected to use a large share of this bandwidth when it reaches operational status next year.

Visitor Center/PAEO updates

New Tribal Food Vending Outlet

Kitt Peak Facilities has worked with the local Tohono O'odham District office to make a food vending facility available for Tribal Vendors. This facility is located adjacent to the main parking lot near the Public Restroom facility. We are working with the District office to encourage usage by Tribal Food Vendors and to schedule the usage with the Kitt Peak Visitor Center.

Another Public Program Telescope

The Kitt Peak Visitor Center has expanded their public evening program to use the existing 16" telescope near WIYN. Their program has been very popular with the public and is often booked up months in advance.

KP Joint Use Fee (JUF) and Shuttle Information

Joint Use Fee

The FY03 JUF was established at \$3.56, which was up slightly from the FY02 amount of \$3.51. In FY04 the rate is tentatively projected to range from \$2.50 to \$3.00 per sf. This reflects the efforts by KPNO to hold down costs on KP and the reduced KP staffing levels which impact general support efforts. It is anticipated that with the addition of new tenant facilities, the fee will continue to remain at these levels.

Shuttle Transportation Fee

The FY03 Shuttle fee was established at \$2.42, which was down from the FY02 amount of \$4.48. In FY04 the rate is projected to approximately \$4.00 per sf. Efforts are ongoing to hold down these costs and make this service cost effective for the participants. Remember that the shuttle transportation fee is based upon the actual scientific square footage of the organization with no minimum size. We attempt to maintain safe vehicles with regular schedules to accommodate mountain transportation requirements. We encourage all tenants to consider participation, as their participation would help to reduce this cost and provide increased benefits to all.

Tenant Support Services

Labor Support

During the past fiscal year, a few tenants utilized KP labor in support of their operations. This support involved both building/facility maintenance and some minor construction projects. The FY03 usage was approximately 519 total man-hours. Support in several areas could also be provided in FY04, so please contact the following individuals. For building or facilities support contact J. Dunlop or M. Hawes, for telescope or technical support contact J. Glaspey and for engineering and design support contact T. Abraham.

Heavy Equipment Usage

Kitt Peak has a range of heavy equipment (with trained operators) based on the mountain that is available for tenant support and during FY03 several tenants utilized this service. With advance notice, we can provide support to tenant organizations for equipment or materials lifting, loading or unloading needs, or excavation projects. Upon request, a listing of our available equipment and various rental rates can be provided. There is no transportation or delivery fee and rental costs are on a time used basis. Operator labor is per NSF approved recovery rates for their total support time on an hourly basis.

Facility Changes and Proposed Projects

Dorm Room Key Card System

During the past fiscal year, Kitt Peak implemented a key card system for the dormitory usage. This keycard system is similar to those used in various hotels and enables improved recording keeping regarding the usage of these rooms. This system is proposed for expansion to a few of the telescope and common access buildings on the mountaintop. With expansion of the lock systems, tenants will be provided with card keys to enable access to the common areas (such as the dining facility). This system will also help us to maintain security to several of the areas.

Dining Facility Point of Sale System

With the implementation of the dormitory key card system, a point of sale (POS) system is being installed within the Dining Facility that will also utilize the same card. This POS system is similar to those used in hotels and cafeteria systems and it will help KP reduce costs through improved recording keeping. As this system is brought in to operation, KP will be providing tenant facilities with cards for usage in the dining facility.

Proposed FY04 Road Project

During FY04 Kitt Peak is anticipating an asphalt-sealing project for the mountain roadway systems. If you would like for us to include your roadways within the bid package, please advise J. Dunlop. Per the AURA services agreement you would be responsible for the costs of the asphalt surfaces serving your facility. By including your areas within this bid, the costs should be reduced.

Tenant Information Requests

Questions or requests from Tenants

- 1) Veritas is finalizing their plans for construction within the Horseshoe Reservoir area. They are looking at the possibility of extending a fiber optic line from their site to the top of the mountain for connection to the Kitt Peak Data link. They would like to know if the Southwest Ridge tenants would like to share the usage and costs by locating a router and fiber connections on the ridge in lieu of a fiber straight from their site to the mountaintop.
- 2) Spacewatch is requesting Advice on How to Coat the 1.8-meter Telescope Dome. Like the UA 0.9M telescope, they have a similar problem of daytime overheating inside the dome of their 1.8-meter telescope, which is made of zinc-aluminum coated steel called Galvalum (R). They are asking if someone from MDM would talk to them about the shiny coating on the Hiltner 2.4-meter telescope dome? Their questions are; what is the material, what surface preparation was required, and how was the material (tape?) applied? Alternatively, what about the paint job on the CWRU Schmidt dome?

Tenant Information (submitted by their organizations)

Spacewatch Project (<http://spacewatch.lpl.arizona.edu>): submitted by Bob McMillan Principal Investigator

This group from the University of Arizona searches for asteroids that might hit the Earth, as well as comets and other exotic asteroids. Since 1983 they have been using the 0.9-meter (36-inch) telescope of Steward Observatory that is south of the Steward 2.3-meter telescope. To date they have discovered 301 Earth-approaching asteroids (EAs), made more than 8,100 supporting astrometric positional measurements of other EAs, and discovered 50 objects in the outer solar system, including 21 comets and Minor Planet Varuna, one of the largest Trans-Neptunian Objects.

Use of the 1.8-meter Telescope:

In the year 2000 the new 1.8-meter (72-inch) telescope went into operation. This square shiny metal building sits on stilts adjacent to the driveway leading from the main highway to the Steward residences and dormitory. On Oct. 13, 2001, at the urgent request of the Spaceguard Central Node in Italy, the unusually faint asteroid 2001 SB170 was recovered with the 1.8-m telescope at V magnitude 23.3 resulting in the elimination of some predictions of future collisions of this object with the Earth. In August 2002 at NASA's request it detected the fragmented remnants of the CONTOUR spacecraft that exploded in interplanetary space during a rocket maneuver. About 1,692 positional measurements of 255 EAs have been made with the 1.8-m telescope to date, including the discovery of 28 EAs. In June 2003, the 1.8-m primary mirror was re-aluminized by Gary Rosenbaum of Steward Observatory for the first time in 4 years. Presently the closed-cycle cooling system of the CCD on this telescope is being improved.

Help from KPNO:

On Feb. 6, 2003, John Scott et al. of the KPNO mountain staff kindly brought over their crane to help us with a problem we had with the lower panel of the shutter of the dome of the 1.8-m telescope building. Thanks to John, as well as Bill Wood of Steward for their help that day!

Painted 0.9-meter Telescope Dome:

Bob Peterson and Bill Wood of Steward Observatory supervised the painting of the 0.9-m telescope dome and building during the summer of 2002. This steel dome had always been painted an aluminum color and would get quite hot inside on sunny days, even in the winter. With its new white coat the temperature inside is not much warmer than outside during the day. With that and the two new exhaust fans mounted in the dome, we're getting better seeing at night. Thanks, Bob and Bill!

Mosaic of CCDs on 0.9-meter Telescope:

The 0.9-m telescope itself was completely redone in 2002 with all new optics and a mosaic of four 2048x4608 EEV/Marconi thinned CCDs. These CCDs cover 2.9 square degrees of sky area, larger than the field of view of the 1888-vintage Alvan Clark refractor finder scope on that telescope, and nine times larger than the old CCD we'd been using since 1992. With it we've already discovered a dozen Earth-approaching asteroids and two comets.

Use of High Speed Data Link:

Our work on asteroids requires constant contact with the Minor Planet Center in Cambridge, MA as well as the Spaceguard Central Node in Italy. The improved data link is a great help to us.

KPNO Dorm Use:

On a few occasions an over subscription in the Steward Observatory dormitory has driven us to rent rooms in the KPNO dormitory. It had been 25 years since I slept in one of those rooms and my return to them was very nostalgic. They're as comfortable and quiet as ever!

WHAM Submitted by Ron Reynolds

The Wisconsin H-Alpha Mapper (WHAM) is a remotely controlled, large aperture Fabry-Perot observing facility, funded by the National Science Foundation and dedicated to the detection and study at high spectral resolution of faint optical emission lines from the diffuse ionized gas permeating the disk and halo of the Milky Way. WHAM began operation on Kitt Peak in January 1997 and has been used nearly every clear, dark-of-the-moon period since then. WHAM's first major mission was a 37,000+ spectra H-alpha survey of the northern sky, which has provided the first picture of the large-scale distribution and kinematics of the ionized hydrogen comparable to earlier 21 cm surveys of the neutral hydrogen. The subsequent detection by WHAM of even fainter emission lines from trace atoms and ions has provided new insights into the principal ionization and heating mechanisms within the interstellar medium. In addition to its interstellar program, WHAM is making unique contributions to our understanding of the nature of intergalactic HI clouds, the metagalactic ionizing flux, comets, the kinematics of the zodiacal dust, and the outermost part of the earth's atmosphere, the geocorona. For addition information, see <http://www.astro.wisc.edu/wham/>

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