



SARA-KP OBSERVATORY DIRECTOR'S REPORT

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by

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I. Introduction

The October 2025 – March 2026 observing period suffered from a 2+ months downtime for the ARC ccd imaging camera due to failure of the external cooler compressor. The compressor failed in late September and was not repaired and replaced until 10 December. January and February suffered from winter storms with several instances of poor weather stretching for several days to ~week in extent. March conditions improved with just a few technical issues. The observatory is currently fully operational although observers should be aware of potential guide camera and main telescope focus glitches.

II. Telescope Usage

Table 1 on the next page illustrates the statistics for use of the telescope compiled from the observer's report archive. The format remains simple percentages for the hours used for data acquisition versus the hours lost due to either weather or technical issues from the nightly observer reports. The last column lists the number of nights for which a report was not filed for each month. Statistics for October and November are not relevant as the main imaging CCD was offline for both months. December statistics are impressive given the CCD did not come back online until the 10th and there were several days of closure for the Christmas and New Year's holidays. January and February experienced significant winter storms and weather losses are likely much worse as **continued under-reporting of scheduled nights** remains a problem with typically one third of the nights each month having no observer's report in the archive. It also appears from the reports that potentially a few nights each month go unused as a scheduled observer misses the night or a night released by the scheduled observer is not able to be utilized by another observer.

Acknowledging the extended downtime for the imaging CCD, ~400 hours were used for observing over an ~3.5 month period. This represents only ~1/3 of the total time available on the observing calendar for that period. Even if pessimistically weather losses averaged to 50% for the same period, this implies potentially 20% of “usable” observing time is unaccounted for from the reports.

Table 1: Telescope Usage Statistics for October 1, 2025 through March 31, 2026

| Month | Hours Worked | Clear | Weather Losses | Tech Losses | Unreported Nights! |
|-----------|--------------|-------|----------------|-------------|--------------------|
| *October | 12 | 50% | 50% | 0% | * |
| *November | 29.5 | 100% | 0% | 0% | * |
| December | 106.5 | 85% | 15% | 0% | 10 |
| January | 82 | 48% | 50% | 2% | 11 |
| February | 39 | 33% | 59% | **8% | 12 |
| March | 112 | 67% | 24% | **9% | 11 |

* CCD cooler failure on or about September 24; A few observers attempting spectroscopy until December 10 back online date.

** Autoguider camera and main telescope focus issues primary reason for lost time

III. Observatory Issues

At the time of this report, the observatory is fully operational for both photometry and spectroscopy. There are two issues that were more frequently reported in observer’s reports, particularly in February and early March. One is the stability of the main telescope focus. I have observed this most noticeably when making large changes in focus between photometry and spectroscopy focus positions. Although a good focus is eventually achievable, it appears that at times the focus does not physically change even though encoder values do change (on a large scale). I will suggest ACE try to inspect the system while the telescope is disassembled for the mirror resurfacing in May. The second issue is connection failure with both the main and spectra guide cameras. While guiding for long exposures, the connection fails with no reported error. This problem is inconsistent but may be happening more frequently than in past years. It is more likely a software rather than hardware issue (possibly internal camera firmware) and potentially a Maxim-Windows-port control conflict as 3 cameras are connecting through Maxim (2 guide cameras and spectra camera). I have suggested to ACE that the QSI camera is aging and we should look to replace it with an inexpensive CMOS camera. This should

not require any major modification to the guide camera mount but further discussion with Peter needed to confirm. Power recycles and software restarts currently bring everything back into operational readiness with minimal loss time in most cases. However, the occurrences are still quite annoying to observers.

Given the age and complexity of the ARC CCD and cooler system, the backup Andor CCD at CTIO was shipped up to Tucson in December. Thus, should the ARC system fail again, we do have a backup camera with which to replace it. ACE may need to fabricate a mounting plate, but downtime would most likely be only days and not weeks! An agreement with NOIRlab to resurface the mirror was finally reached in February. The mirror is now scheduled for the resurfacing to take place in early May. If all goes well the entire process should be completed within one week and observers have already been notified of expected downtime window.

No issues have been reported for the spectrograph (other than guider connection issue above). Telescope pointing/tracking are ok. The telescope might need move commands to be repeated if slew seems to stall. This could be due to major temperature changes and need to adjust worm gears. This is part of normal ACE maintenance schedule. PTZ camera is working fine, weather station should be accessible but frequently requires a software restart, sometimes power recycle to awaken it. I note most observers still make use of KP provided weather monitoring services (including the all-sky camera) which is recommended given several incidences of “dust” closure in March which our SARA instruments do not monitor but which the KP weather page does announce.