

# Old Updates

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## Older and expired updates, change notes and such. (2023, 2022, 2021, 2020, 2019, 2018, 2017)

### 2023 (Back to top)

UPDATE: The 2024A LDT Schedule has been released. (2023Dec08)

UPDATE: Check with staff about the upcoming Pypelt Workshop on December 15. (2023Nov20)

UPDATE: The new version (v1.8 – 16 November 2023) updates to the Pypelt instructions and introduces the LDT Observer Tools python package. It is available on the LDT Observer Information Confluence page.

UPDATE: The 2024A LDT Call for Proposals has been released. (2023Oct12)

UPDATE: The 2023B LDT Schedule has been released. (2023Jun08)

UPDATE: The 2023B LDT Call for Proposals has been released. (2023Apr08)

UPDATE: Check with staff about the upcoming Pypelt Workshop on April 17. (2023Apr08)

## 2022 ([Back to top](#))

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**UPDATE:** The 2023A LDT schedule has been released. (2022Dec08)

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**UPDATE:** The 2023A LDT Call for Proposals has been released. (2022Oct11)

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**UPDATE:** The 2022B LDT schedule has been released. (2022Jun10)

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**UPDATE:** A minor update to the DeVeney User Manual has been released. The new version (v1.7.1 – 10 May 2022) includes corrected confluence links and updates to the Pypelt instructions. It is available on the LDT Observer Information Confluence page. (2022May10)

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**UPDATE:** The 2022B LDT Call for Proposals has been released. (2022Apr08)

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**UPDATE:** The change over to the new confluence server <https://confluence.lowell.edu> has happened. Please let us know if you run across problems with these pages. (2022Mar07)

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**UPDATE:** Lowell will be updating this confluence installation in the next few weeks. When that happens, the root path for these pages will change to <https://confluence.lowell.edu>. (2022Feb25)

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**UPDATE:** The DeVeney Spectrograph User Manual has been updated. The new version (v1.7 – 15 February 2022) includes instructions for using the python data reduction pipeline Pypelt with DeVeney data. It is available on the LDT Observer Information Confluence page. (2022Feb15)

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## 2021 ([Back to top](#))

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**UPDATE:** The 2022A LDT schedule has been released. (2021Dec07)

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**UPDATE:** DeVeney Image Quality Issue: See the [DeVeney Instrument Page](#) for more information. (2021Nov15)

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**UPDATE:** NIHTS is back in operation. (2021Nov14)

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**UPDATE:** The 2022A LDT Call for Proposals has been released. (2021Oct12)

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**UPDATE:** The new VPN platform is now required for connection to the Lowell network. All [remote observers](#) MUST update their VPN settings: [Watchguard SSLVPN Installation](#). (2021Sep06)

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**UPDATE:** Lowell Observatory is shifting to a new VPN platform. All [remote observers](#) should update their VPN settings: [Watchguard SSLVPN Installation](#). (2021Jul01)

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**UPDATE:** NIHTS is offline until further notice. (2021Jun10)

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**UPDATE:** The 2021B LDT schedule has been released. (2021Jun07)

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**UPDATE:** The dome mounted flat lamp bulbs (typically used for LMI dome flats) were replaced today. One of the previous three was burned out. (2021Jun01)

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**UPDATE:** The DeVeney spectrograph GG495 filter has been removed from the instrument; replacement plan TBD. Order-blocking filters GG420 and OG570 are still in service. (2021Apr29)

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**UPDATE:** [NIHTS User Manual updated](#). (2021Apr26)

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An updated version of the NIHTS User Manual (v1.7) has been released and is available on the LDT confluence pages. Per the authors, NIHTS User Manual v1.7 includes a couple of revised figures from the NIHTS Commissioning paper.

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**UPDATE:** The 2021B LDT Call for Proposals has been released. (2021Apr08)

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**UPDATE:** The DeVeney Spectrograph User Manual has been revised and updated. The new version (v1.6 – 22 March 2021) includes updated operating instructions, a reorganized structure, and more ancillary data and information on the instrument. It is available on the LDT Observer Information Confluence page. (2021Mar22)

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**UPDATE:** The new LDT Observer Information Pages were released, replacing the prior DCT Observer Information Pages. (2021Mar22)

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## **2020 ([Back to top](#))**

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**UPDATE:** The LMI User Manual has been updated. (2020Dec20)

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**UPDATE:** The 2021A LDT schedule has been released. (2020Dec01)

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**UPDATE:** The DeVeney spectrograph is back in operation. (2020Nov06)

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**UPDATE:** The DeVeney spectrograph will be off-line until next week while a filter wheel is added to the slit viewing camera assembly. (2020Oct27)

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**UPDATE:** The 2021A LDT Call for Proposals has been released. (2020Oct09)

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**UPDATE:** NIHTS is back in operation. (2020Oct08)

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**UPDATE:** The GG495 blocking filter has been replaced in the DeVeney spectrograph. (2020Oct02)

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**UPDATE:** The LMI User Manual has been updated to reflect modified focusing instructions and information about fringing when using the z' filter. (2020Sep30)

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**UPDATE:** In an effort to improve its vacuum and thermal regulation, NIHTS will be unavailable for the next few weeks as it is pumped and warmed. It should be back in service before its next scheduled use. (2020Sep14)

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**UPDATE:** The DeVeney spectrograph is back in operation. (2020Sep10)

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**UPDATE:** The DeVeney spectrograph warmed up enough during the hot weather here that it became necessary to fully warm and pump it. It will be back in operation early next week, in time for its next scheduled run. (2020Sep04)

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**UPDATE:** Due to the very warm weather, LMI was unable to maintain proper thermal regulation and began to warm up. It got far enough that it needs to be warmed and pumped. LMI will not be available until after the next summer shutdown period which finished up on August 09. (2020Jul30)

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**UPDATE:** LDT resumed 7 night per week operations the week of June 22, 2020. We plan to continue full operations during semester 2020B, assuming things go smoothly. (2020Jun25)

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**UPDATE:** The 2020B schedule has been finalized and released. (2020Jun01)

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**UPDATE:** LDT has restarted science operations; the first night was Monday May 18th. Weather permitting, we will be open for observing Monday through Thursday nights through at least the end of the 2020A semester. (2020May19)

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**UPDATE:** Work is underway for restarting science observations at LDT. All observing will be done remotely and we will be supporting a reduced science schedule, with observing Monday through Thursday nights only. The expected first night of science operations will be Monday May 18. These plans are subject to change as needed to maintain safe operations. (2020May05)

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**UPDATE:** The Call for Proposals for 2020B for LDT has been sent out. (2020 Apr 03)

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**UPDATE:** **Effective March 31, 2020, 5pm MST, LDT will cease night time observing operations until further notice.** (2020Mar31)

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**UPDATE:** Starting Monday, March 23, 2020 MST, LDT resumed night time observing operations. All observing will be done remotely. The only people on-site will be the LDT and Lowell staff, and access to the site will be restricted for safety. We are planning for a full observing schedule, unless something comes up (e.g. someone comes down sick). Because the broader situation is still in flux, we hope that you will understand if we need to make last minute changes (though we will do our best to avoid that). (2020Mar27)

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**UPDATE:** The LDT is closed at least through Monday March 23, 2020. We are currently evaluating what to do after that. (2020Mar18)

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**UPDATE:** The Discovery Channel Telescope (DCT) name has been changed; it is now the Lowell Discovery Telescope (LDT). (2020Feb19)

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**UPDATE:** TCS has been updated, ephemeris tracking is again working. The telescope control system (TCS) has been updated, and several issues fixed. One item of particular note to observers is that ephemeris based pointing and tracking is now functioning again. If you plan to use an ephemeris, please be in touch with staff ahead of your run to ensure that things work as expected. The ephemeris file format has changed slightly. For ephemerides extracted through the TCS, there shouldn't be an issue; if you generate your own ephemeris file, then you will need to make sure it conforms to the revised format. (2020Feb19)

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**UPDATE:** Ephemeris based pointing and tracking is not currently functional. The cause is understood and it will be fixed with the next release of the telescope control system. Until that happens, we recommend observers who need non-sidereal tracking prepare target lists that include both positions and offset tracking rates, and if the object(s) move quickly enough, consider multiple entries per night. JPL's Horizons and the MPC ephemeris service can provide the necessary rate information. (2020Jan02)

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## 2019 ([Back to top](#))

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**UPDATE:** The 2020A staffing schedule for January through March is up. All remote requests for that period are covered. (2019Dec26)

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**UPDATE:** The 2020A schedule has been finalized and released. (2019Dec02)

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**UPDATE:** Winter has set in. DCT has already seen its first large storm. Be prepared for winter conditions. (2019Dec02)

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**UPDATE:** The 2020A Call for Proposals has been released. (2019Oct11)

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**UPDATE:** A correction to the correction. The DeVeny grating DV2 is actually blazed at 4000A, not 5000A. This was a long standing mistake here. The grating has been identified as a copy of KPNO #09, which is 300g/mm, 4000A blaze. (2019Sep18)

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**UPDATE:** There are a few fires in the northern part of Arizona that might cause enough smoke to impact DCT operations. Check with your TOs regarding fire status. (2019Sep18)

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**UPDATE:** A typo in the table of DeVeny gratings has been fixed. DV2 is 300g/mm, blazed at 5000A, not 4000A. (2019Aug26)

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**UPDATE:** [Back on-sky - Lightning damage \(2019Aug14\)](#)

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DCT has been back on-sky since initial repairs were completed Wednesday 2019 August 14.

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**UPDATE:** [Lightning damage \(2019Aug13\)](#)

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DCT was struck twice last week by lightning resulting in damage to several of the transient voltage surge suppression units (TVSS), including the one connecting the site to the main power lines. DCT has been out of normal operations while work has progressed to diagnose and fix the resultant issues. Today (Tuesday) the mains have been disconnected to allow for replacement of the TVSS units. Some of the parts needed are expected late today, and we are cautiously hopeful of being able to operate tomorrow night (Wednesday).

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**UPDATE:** Please be aware that fire season has begun (for both natural and controlled burns). Check with your TOs regarding fire status. (2019Jun10)

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**UPDATE:** The 2019B DCT Schedule has been released, and posted under the Science Schedule page. (2019Jun01)

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**UPDATE:** The 2019B DCT Call for Proposals has been released. (2019Apr06)

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**UPDATE:** [NIHTS User Manual updated. \(2019Jan30\)](#)

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An updated version of the NIHTS User Manual (v1.4 - 2019013) has been released and is available on the DCT confluence pages. Per the authors, NIHTS User Manual v1.4 adds a description of blind target acquisition using LMI.

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## 2018 ([Back to top](#))

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**UPDATE:** [LMI shutter delay. \(2018Dec05\)](#)

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We have looked into quantifying the delay between when a user requests an image with LMI, and when the shutter actually opens. Details can be found in the write up under the LMI link about the [shutter delay](#). The bottom line is that:

1. The exposure times are as recorded to within a few hundredths of a second, based on the star streaks.
2. The shutter throw time in each direction is between roughly 0.1 and 0.2 seconds, meaning that there is also a temporal gradient across all the images.

3. Formal uncertainty on the measured time offsets are an underestimate of the true variation. The shutter throw time alone means the mid-time varies across the frame systematically by at least 0.1second (added as the systematic uncertainty below).
4. The shutter opens 2.05 +/- 0.06 (ran) +/- 0.1 (sys) seconds later than the UTCSTART in the image header.
5. The shutter closes 0.19 +/- 0.06 (ran) +/- 0.1 (sys) seconds earlier than the UTCEND in the image header.

Exposure times should be computed as:

1. Start time = UTCSTART + 2.05sec
2. End time = UTCEND - 0.19sec
3. Mid-time = UTCSTART + 2.05 + EXPTIME/2 or
4. Mid-time = [(UTCSTART + 2.05) + (UTCEND-0.19)] / 2

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**UPDATE:** The 2019A DCT Schedule has been released, and posted under the Science Schedule page. (2018Dec01)

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**UPDATE:** NIHTS User Manual updated (2018Nov27)

An updated version of the NIHTS User Manual (v1.3 - 20181127) has been released and is available on the DCT confluence pages. Per the authors, "NIHTS User Manual v1.3 includes an update to the NIHTS calibrations procedure. We now advise observers to collect a full Long Arcs sequence at the beginning of the night, and Short Arcs (<2 min) at each target pointing to account for flexure in the instrument."

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**UPDATE:** Post-summer shutdown (2018Aug27)

The 2018 summer shutdown is over. A variety of things were done. Most will be transparent to most observers. I mention here things that might cause changes you might notice. We repositioned the secondary mirror, and changed the default piston of the primary mirror. As a result the nominal focus offsets for all instruments will have changed. The TOs will have up to date new values. All the LMI filters were removed, examined and if needed cleaned. The dome following algorithm has been modified so that the dome will now make longer, less frequent moves. The occultation warning is being updated to account for this. Work continues on NIHTS and a new User Manual was recently released. We are in the process of rebuilding the pointing and optics models. Please include any observations related to pointing and image quality that strike you in your night reports. Thank you.

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**UPDATE:** NIHTS User Manual updated (2018Aug11)

An updated version of the NIHTS User Manual (v1.2 - 20180808) has been released and is available on the DCT confluence pages.

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**UPDATE:** DeVenly slitviewer GUI (2018Jul11)

Tom has released an updated version of the DeVenly slit viewing camera GUI. Changes are documented and appear in the new release of the DeVenly Users Manual (v1.5), available below.

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**NOTICE:** National Forest Closures (2018May26)

The USFS has begun closing parts of the National Forest in northern Arizona due to the very high fire danger. So far, DCT is NOT in the closure area, but the telescopes at Anderson Mesa are. Lowell will be working to get USFS permission to access the telescopes during this closure. USFS Coconino National Forest closure orders and information can be found on the [Coconino National Forest Web Page](#). Please keep an eye on this situation. Safety is our number one concern, and the fire danger is very real.

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**UPDATE:** DeVenly User Manual updated v1.4 (2018May18)

The DeVenly Spectrograph Reference and Operations Guide has been updated. Version v1.4 (2018 May 16) of the manual is now available on the Observing at DCT confluence page.

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**NOTICE:** 2018Apr28 - We had some trouble with one of the machines that hosts the confluence data. If you notice problems with these pages, please let us know. Thank you.

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**UPDATE:** NIHTS User Manual Released (2018Apr14)

The first version of the NIHTS User Manual has been posted to the Observing at DCT confluence page. Please have a look if you are thinking of using NIHTS. Any feedback would be welcome.

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**UPDATE:** USFS Controlled Burn Week of 16-20 April 2018 (2018Apr14)

We have been advised that the USFS is planning more controlled burns this coming week as part of their Upper Beaver Creek project. They have indicated that they aim to begin on Tuesday with aerial ignitions. Per their note, winds "are predicted to be SW which will push smoke across power line corridor to the NE. Overnight smoke could drain down Beaver Creek into central Verde Valley." On Tuesday they plan to ignite 1,500 acres. On Wednesday they will begin a 4,000 acre block, and may need to finish some ignitions on Thursday. At this point, we don't know what impact this will have on DCT.

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DCT 2018B Call for Proposals released (2018Apr10)

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#### UPDATE: USFS Controlled Burn Week of 2-6 April 2018 (2018Apr03)

We have been advised that the USFS is planning a controlled burn this week, now scheduled for Wednesday through Friday. Depending on the weather, they are planning to burn up to 1000 acres per day. Longer term, they are expecting to burn 8000 acres over the next several weeks. The location for this first burn is almost due south of DCT, and may impact operations at the telescope.

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#### UPDATE: USFS Controlled Burn Week of 2 April 2018 (2018Mar30)

We have been advised that the USFS is planning a controlled burn next week, probably to start on Tuesday April 3rd, 2018, as part of the Upper Beaver Creek project. The acreage they will burn depends upon weather conditions, but is expected to be between 1000 and 2000 acres. In the longer term, they are expecting to burn 8000 acres over the next several weeks. The location for this first burn is almost due south of DCT, and may impact operations at the telescope.

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#### UPDATE: DeVeney Spectrograph is back in operation (2018Jan22)

The work on the DeVeney CCD camera noise has been completed, and the DeVeney is once again in operation. Many thanks to Tom Bida for the hard work on what has been a persistent intermittent problem. In Tom's words: "The baneful and pucky pattern noise of image readouts past has been largely squelched, through isolation of all ground and shield lines that pass through the hermetic connector."

The improvement may be seen in the attached 4 panel image that Tom provided, along with his caption.

- *Lower left:* beat pattern of pickup noise before modifications,  $\sigma=3.07$  DN (4.65 e- noise). The peak-to-peak amplitude of this pattern example is about 4.5 DN.
- *Upper left:* bias frame in lab following mods,  $\sigma=2.75$  DN (4.15 e-)
- *Upper right:* unshuttered out of focus pinhole image in lab (the greyscale bar comes from this image)
- *Lower right:* bias frame on DCT post-mods,  $\sigma=2.73$  DN (4.12 e-)

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Gain and readout noise were measured in the lab with the current controlled source, at 1.5 e-/DN and 4.0 e-. According to the detector data sheet, this noise level is close to what is expected at our CCD clocking rate.

A very low level partial noise pattern has been observed in a few bias frames on the DCT, so we will keep an eye out for those. Bias images taken on the DCT also appear a little more mottled and streaked (for lack of better words) than in the lab, but this doesn't affect the stddev's. Also, noise was seen to increase about 0.1-0.2 counts in biases taken while DeVeney motors were in motion. Hopefully the overall noise performance won't change during on-sky operations.

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**UPDATE: DCT operations resumed (2018Jan14)** All but one of the dome track bolts have been pulled and replaced. DCT is back in operation. Staff will be keeping a close eye on the bolts to make sure things are ok. A big round of thanks to the engineering staff who took care of this so professionally and efficiently.

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#### UPDATE: DCT Closed - Dome trouble (2018Jan13)

The DCT closed up early on Friday night (12 January) and will not be operating tonight (Saturday), and most likely not Sunday night either. I would put Monday in the possibly column. The issue in question is that some of the bolts that hold the dome track to the main ring beam have broken. The track is the bearing surface that rides on the bogeys as the dome rotates. There are several hundred 3/4inch diameter bolts that hold the dome ring beam to the track, and the rest of the dome rides on that. Two bolts were found broken during the day Friday. The pieces were removed, the shims replaced and new bolts inserted. Unfortunately, another bolt was found broken that evening, and a fourth bolt was found Saturday morning. We decided to cease any dome movement until all the bolts and associated shim can be inspected, and any that are found damaged be replaced. Bill, Frank and Ben are in the process of removing, cleaning, inspecting and replacing the bolts that hold the dome track to the ring beam. Ben has procured 280 new bolts out of a maximum possible need of 394 (if we have to replace all the bolts). As of 4pm MST Saturday, when I talked to Bill, there were a total of 4 broken bolts (3 from Friday, 1 found Saturday morning), and they had pulled and replaced another 25. The shanks of two of the broken bolts are frozen in the holes and will need to be extracted, and the holes re-tapped. The bottom line is that this is a time consuming and tedious process, but essential. At this point, we do not know what has caused the bolts to fail. Presumably after the bolts have been replaced we will have more information, and maybe a better idea about what happened.

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#### UPDATE: LMI has been pumped 2018 Jan 08 (2018Jan08)

LMI was pumped on Monday, January 08th, 2018. It began cooling again before 4:30pm MST. Initial reports are that things went smoothly. It will be ready for Tuesday. Any ToO's triggered on Monday night might find LMI cold enough to be usable. Check with the TOs for the temperature.

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#### UPDATE: LMI to be pumped 2018 Jan 08 (2018Jan07)

LMI will be warmed and pumped on Monday, January 08th, 2018. It will begin cooling again at the start of night time operations. It will be ready for Tuesday. Any ToO's triggered on Monday night should not expect LMI to be ready (though it might be cold enough).

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#### UPDATE: DeVeney Spectrograph - work has begun (2018Jan03)

As planned in the DCT 2018A schedule release email, On 2018Jan03, we removed the DeVeney spectrograph from operations for the next several weeks to work on the detector pattern noise issue. No programs requesting DeVeney were scheduled during January, so this will primarily impact ToO programs. The exact return dates will depend upon how the work goes. This note will be updated as we know more.

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UPDATE: DeVeney Spectrograph - planned work Jan 2018 (2017Dec09)

As noted in the DCT 2018A schedule release email, we are tentatively planning to remove the DeVeney from operations for several weeks during January 2018 to work on the detector pattern noise issue. No programs requesting DeVeney were scheduled during January, so this will primarily impact ToO programs. Exact dates have not yet been finalized. This note will be updated as we know more.

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DCT 2018A Schedule released (2017Dec06)

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UPDATE: Prescribed Burn Week of 11 Dec 2017 (2017Dec09)

## The USFS is planning a prescribed burn near DCT the week of 11 Dec 2017

The Forest Service has listed a controlled burn project for the week of 11 Dec 2017, the Blue Ridge Interface Project. Smoke from these may impact DCT operations.

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DCT 2018A Call for Proposals released (2017Oct18)

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CHANGES: LMI manual updated (2017Oct27)

The LMI User Manual has been updated. The new version is dated 2017 October 27.

From Phil: "There have been some minor updates to the LMI manual: (a) revision of starting focus value, (b) addition of filter curves for the WR filters (thanks, Amanda, for the reminder!), and (c) reorganized where some of the data files (filter curves, etc) are kept on the web and changed the links.

As always, the manual may be found at: <http://www2.lowell.edu/users/massey/LMIdoc.pdf>"

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UPDATE: Prescribed Burns Week of 23 Oct 2017 (2017Oct24)

## The USFS is planning two prescribed burns near DCT the week of 23 Oct 2017

The Forest Service is planning for two related prescribed burns near DCT during the week of 23 Oct 2017. Because of the heavy fuel load, and slower planned ignition, they say that there could be heavy smoke for several days. How this will impact DCT is TBD. One burn areas is north of DCT, just east of Hutch Mountain. This is the Sawmill project (probably the same one referenced for last week, 1,200 acres total). This will probably make the drive down slow and smoky as well. The second burn includes the Munds Park and Coyote Park Projects (1,900 acres total) which are south of Flagstaff on the east side of I-17. Because of the heavy fuel load, the USFS has said they plan to ignite during the evening hours. Ignition is planned for Tuesday 24 October.

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UPDATE: Prescribed Burns Week of 16 Oct 2017 (2017Oct14)

## The USFS is planning two prescribed burns near DCT the week of 16 Oct 2017

The Forest Service is planning for two related prescribed burns about 6 to 7 miles north of DCT during the week of 16 Oct 2017. Because of the heavy fuel load, and slower planned ignition, they say that there could be heavy smoke for several days. How this will impact DCT is TBD. The burn areas are on both sides of Lake Mary Road a little bit north of the turn off for Stoneman Lake. This will probably make the drive down slow and smoky as well. See the description of the [Sawmill and Roundup Gash projects](#) on inciweb.

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UPDATE: Road construction delays (As of 11 Oct 2017)

## Road Status as of Oct 2017

Lake Mary Road construction is mostly completed. The speed limit between the south side Mormon Lake turnoff and Stoneman Lake Road is still posted as 25 mph. Occasionally people are still seen working on the side of the road.

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CHANGES: Focus & Optics Tuning (2017Oct10)

2017 Sept 21: Because of the differences in the re-installation of the secondary mirror, there are two key items that impact observing:

1. The nominal focus offsets for each instrument have changed, some of them significantly. Please, please, check with your TOs for current nominal focus offsets before setting them yourself, at least until you are comfortable with the current range of settings.
2. The actual performance of the optics has changed. The predictive model that keeps the optics tuned is in the process of being re-built, but will take some time. In general,
  - a. If you have had the optics tuned up recently, near where you are observing, things should be ok.
  - b. If you have not tuned recently, or have slewed a significant distance, or the temperature has changed drastically (by more than 5 degrees C or so), then you should ask the TO to re-tune.
  - c. If you think your focus needs to be checked, then you should consider asking the TO to re-tune the optics.

- d. In particular, we are recommending that on split nights, the optics be tuned at minimum at the night start, and at turn over in the middle of the night.

2017 Oct 10: Change to all focus offsets:

1. In addition to the changes, as of 10 October 2017, we are moving the primary down, which will change the M2 focus offsets by a roughly constant value. This is necessary because of the limitations in M2 piston in extension. Without the shift to M1, we will not be able to focus DeVeney and NIHTS as it gets colder. The M1 offset will reduce the M2 offsets by roughly 1000microns. Again, check with your TOs for the latest values.

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#### Backdoor access during winter (2017Oct06)

As part of an effort to address safe access to the DCT, we have added an alarm keypad by the backdoor of the telescope building. This means that you can enter through either the normal front door, or if the steps are icy, you can enter through the backdoor. We are also in the process of installing an overhead shield above the backdoor to protect against snow and ice falling off of the dome. The same alarm code that works for the front door will work for the back one.

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#### CHANGES: DeVeney Manual Updated (2017Sep25)

2017 Sep 21 - The DeVeney Spectrograph Manual has been updated. The new version is v. 170921. One item in the new manual that has changed from what was in earlier versions of the manual is in the step where you log into vishnu to start up the slit viewing camera (manual version 170420, page 22). The ssh command should be changed slightly to:

```
ssh -Y lois@vishnu
```

The -Y replaces the -X that is listed.

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#### CHANGES: Obs machine is now dct-obs1 (2017Aug)

For LMI, DeVeney, and NIHTS, the primary User Interface machine has shifted to [dct-obs1.lowell.edu](http://dct-obs1.lowell.edu). This is instead of [baggins.lowell.edu](http://baggins.lowell.edu). The user name and password for dct-obs1 are different from those on baggins. See your TO when you are on-site for this information. If you will be observing remotely, please contact either your TO or Stephen Levine (sel .at. lowell) to get the updated credentials. Observing should otherwise look pretty much the same as before. If you notice a problem, please let us know.

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#### CHANGES: LMI VR filter shifted to lower wheel (2017 Aug 29)

The LMI VR filter has been moved from the upper filter wheel to the lower wheel. In late August 2017, I took a quick look at the VR filter dome flats in the upper and lower wheels. The letter-boxing effect is less pronounced when it is mounted in the lower wheel (images and normalized row plots attached - the plots have been shifted to separate them on the plot). In the row plots, the upper wheel shows about 2.5 to 3% peak to valley variation, and the lower show about 1 to 1.5% on the rows through chip center. They are worse towards the corners. I have moved it to the lower wheel. VR should be added to the list of filters used in the lower wheel only. The VR filter was used mostly in the upper wheel prior to Summer 2017, though it was not mounted there exclusively.

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