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Mauna Loa Solar Observatory Observer's Log  
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Sat May 28 17:52:00 GMT 2022

Year: 22 Doy: 148

Observer: mlso

WEATHER COMMENT: mcotter: Sat May 28 17:56:27 GMT 2022

Temp: 57.5f, Humidity: 7%, Pressure: 28.653in, Wind: 3mph from 5degs, Skies: The skies are completely overcast in all directions with high altitude Cirrus and Cirrostratus clouds. A very dark blue gray inversion layer is visible on the horizon just below the very top of Haleakala. VOG is very prevalent at lower elevations and the skies are hazy in the Saddle Valley, while the Kohala Coast and Kohala Mountains are for the most part totally obscured by the VOG.

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WEATHER COMMENT: mcotter: Sat May 28 18:01:50 GMT 2022

Satellite images show a long spread out storm system making its way toward the Big Island and the rest of the Hawaiian Islands from the southwest. The high altitude Cirrus and Cirrostratus that I am currently seeing stretched across the sky appears to be the leading edge of this storm system. By the appearance and size of the storm in the satellite images this weather system will be with us for the rest of the day and most likely tomorrow.

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WEATHER COMMENT: mcotter: Sat May 28 19:12:25 GMT 2022

Cloud coverage is increasing as there is now a large halo around the Sun and the Cirrostratus clouds have gotten heavier and are completely covering the sky.

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\*\*UCoMP PROBLEM COMMENT BY mcotter\*\* : Sun May 29 01:58:24 GMT 2022

When I came in this morning the Ucomp instrument was not operational (a problem that started yesterday). I read Lisa's email notes and log entries to determine at what state the instrument was left in. I thought it best to restart the instrument computer and start off as if it were a normal instrument startup. When I restarted the computer I put the command at "Shut Down". Interestingly enough the computer started back up by itself.

When I engaged the Ucomp start up Icon on the desktop labview started as normally but then it went into a mode of updating software that I don't recall seeing before. When Labview came up a GUI immediately came up and said the following:

Standa stage:Cal Pol Rot was not found.

To continue running UCoMP with this stage in simulation mode press OK. If this is a real problem press Cancel to Quit now.

I pressed Cancel and the Ucomp-Controller GUI came up and the Mech-Controller GUI came up. The Instrument Status box displayed the following:

Error occurred at Standa stage: Col Pol Potis missing from the system.

Check hardware config file and usb connections. message Error - 10 occurred at Standa Stage. Col Pol Potis missing from the system.

Check hardware config files and usb connections.

This error code is underdefined. Underdefined errors might occur for a number of reasons. For example, no one has provided a description for the code, or you might have wired a number that is not an error code to the error code input.

After that the Instrument Status reads:

Waiting for filterwheel to move ABS\_9

Meanwhile on the Mech-Controller the Status page is reading out the status' for all of the items with the exception of the Occulter. I can manually cycle the Diffuser (I can see it move in the Yawcam Preview image), Cover, Shutter but the Occulter does not have either the in or out LED's lit. I went to the dome and took off the Ucomp cover and while watching it I tried to manually move the occulter but it was un-responsive. It appears that the Mech-Controller does not know what status of the occulter, whether it is in the beam or out of the beam. Mechanically, the occulter is in the position of the beam. I verified that the microswitch was operating correctly that tells the system when the occulter is in the beam and it checked out good. As a matter of form I checked all the connectors in the instrument box and on the bottom outside bulkhead. I went to the back of the instrument rack and checked every single connector. Everything appeared to be good. I engaged the Clouds button on the Ucomp-Controller screen and then went to the Mech-Controller screen and moved the Diffuser out of beam and Cover out of beam. I then went to the Shutter and moved that out of beam. When doing this if the Controller thinks the occulter is out of beam it should immediately put the shutter back into beam as

a protective measure, but it did not and the shutter stayed out of beam.

I believe mechanically the instrument is performing as it should, but the software is confused as to what is going on with the Occulter; it does not know where it is located.

Ben has written some trouble shooting procedures for the Occulter which includes some software trouble shooting guides. I have not needed to use this software trouble shooting procedure, so I am going to read through it and see what I can come up with.

I have tried several times to follow Bens instruction for trouble shooting the "Occulter not going into the beam properly". In following these instructions I am asked to locate the "instrument -configuration files and then to select "recent older version of the file". The directory as it is stated in the procedure does not exist. I have tried several times to search around and see if I could find the files he is referencing but I cannot seem to do it properly. Once I thought I maybe had done the procedure properly but after restarting the computer and the controller I am still getting the same fault of the Mech-Controller not knowing where the occulter is located.

While working with the Mech-Controller I saw that when I would select the Occulter in the engineering tab it would revert back to filterwheel within a few moments. I provided a command for the filter wheel and at first it appeared to move as requested. I performed the command again and the Mech-Controller is now hung up.

I restarted the computer and the same error messages came up as before. I acknowledged there was a fault with the Labview GUI and then proceeded to continue to see if there was anything I was missing. I removed the cover from the Ucomp Standa and USB bus box. This is the same box Lisa had taken a video of the day before. All the Standa's were energized but each one of them had a flashing Yellow LED unknown status light flashing on them. I manually moved each of the Linear slide stations (Occulter, Optic and Cal stages) and they all moved. I also noticed that this is the same USB Hub port that the filter wheel plugs into. Earlier when I was looking at the Mech controller there were issues with the filterwheel. When I gave it a command it appeared to move but it did not know where it was. The Cal stage showed signs of confusion. So in the beginning even though I was able to operate the various items on the Mech-Controller it seemed like too much of a coincidence that the filterwheel, Cal stage and Occulter could all not know where they were at. I traced out the USB cable that came out of the USB Hub and in the bundle it connected to an extension. I further followed the cable back toward the Ucomp Computer opening the cable bundles and harnesses as was required to follow the cable into the control room and into the back of the computer rack. When I finally got to the end of the cable I found the USB connector disconnected and laying in the bottom of the rack. I searched the back of the Ucomp Computer to see where it went to and almost hidden behind another USB cable I finally found the port.

I reinserted the cable then manually powered down the Ucomp computer when the computer came back and I started the Ucomp-Controller the Mech-Controller came up in a confused state I went to the dome so I could hear the stages and I sent a command to the Occulter to go into the beam and it did. Once the Occulter was back in the beam the numbers for the Occulter position returned to the Mech-Controller Engineering Tab. I did the same thing for the Cal stage and homed the filterwheel and everything seemed to be back to normal.

The only outlier was the LED for the camera' did not come up. This is now an apparent different issue than the original problem, so I believe that all the problems that we were having previously was because a USB cable somehow came out and fell to the bottom of the rack unit. Looking at the back of the computer you would never know that a cable came out unless you were looking for that specific cable because the port is buried beneath cables.

I would recommend that we try to clean up some of the cabling and wires at the back of the rack units to help us in the future identify problems like this more quickly. Also,

I would suggest we reassess all the cable for both instruments and make up proper length cables for our requirements and not rely on inline daisy chains and extensions.

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\*\*UCOMP PROBLEM COMMENT BY mcotter\*\* : Sun May 29 02:12:41 GMT 2022

The Camera became unresponsive when I was troubleshooting the instrument for the previous problem. I went to Ben's notes on Camera issues and he states that the Camera has lost synchronization between the computer and the camera.

I followed his instruction of power cycling the cameras by manually unplugging the 115V AC Orange Camera power cable, waiting 30 seconds, then plugging back in the Cameras. I also shut down the Ucomp Controller program and restarted it as well. When I did this the Mech-Controller came up as normal and all items were in their correct states. Also,

the LED's for the various units of the Ucomp instrument have come up in the "Green" as well, including the Camera, signaling that everything is a go for the Ucomp instrument.

Everything with Ucomp now appears to be resolved, though I am unable to run the instrument at this time due to poor sky conditions.

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UCoMP COMMENT BY mcotter: Sun May 29 02:35:52 GMT 2022

I was trying to think how the USB from the Multi-port HUB could have gotten loose, and loose enough to fall out of place to the bottom of the rack. Maybe when the Ucomp Computer was pulled forward on its slide mechanism, which is done in order to access the inside of the computer, it caused enough of a strain on the cables at the back of the unit that the USB cable pulled out. There are a lot of cable running in all directions at the back of the racks where this scenario doesn't seem doesn't seem implausible.

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GENERAL COMMENT BY mcotter: Sun May 29 02:36:59 GMT 2022

The skies were overcast from the first thing this morning. I spent almost the entire day troubleshooting the problems with the Ucomp unit detailed in the log.

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GENERAL COMMENT BY mcotter: Sun May 29 02:37:46 GMT 2022

The Ucomp instrument appears to be ready of observing.

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ONSITE STAFF: mcotter