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Mauna Loa Solar Observatory Observer's Log  
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Fri Feb 28 17:07:53 GMT 2003

Year: 03 Doy: 059

Observer: yasukawa

WEATHER COMMENT: Fri Feb 28 17:08:19 GMT 2003

Cool, clear, south wind.

Fri Feb 28 17:13:21 GMT 2003 CHIP Start Patrol

Fri Feb 28 17:13:31 GMT 2003 PICS Start Patrol

PSPT COMMENT: Fri Feb 28 17:22:22 GMT 2003

Starting daily observations.

Fri Feb 28 17:22:52 GMT 2003 MKIV Start Patrol

MKIV COMMENT: Fri Feb 28 17:37:42 GMT 2003

Centered a manually pre-centered O1.

A NEW TAPE HAS BEEN PUT INTO KAIEE DLT DRIVE, Fri Feb 28 17:55:29 GMT 2003

Fri Feb 28 18:01:47 GMT 2003 CHIP LSD

Fri Feb 28 18:03:42 GMT 2003 CHIP End LSD

Fri Feb 28 18:03:50 GMT 2003 CHIP BiasLSD

Fri Feb 28 18:04:09 GMT 2003 PICS Flat

Fri Feb 28 18:04:48 GMT 2003 CHIP End BiasLSD

Fri Feb 28 18:05:01 GMT 2003 CHIP Bias

Fri Feb 28 18:06:00 GMT 2003 CHIP End Bias

Fri Feb 28 18:06:30 GMT 2003 PICS End Flat

Fri Feb 28 18:22:07 GMT 2003 MKIV End Patrol

Fri Feb 28 18:22:17 GMT 2003 MKIV Start Cal

Fri Feb 28 18:41:57 GMT 2003 MKIV End Cal

Fri Feb 28 18:42:07 GMT 2003 MKIV Start Patrol

MKIV COMMENT: Fri Feb 28 19:05:40 GMT 2003

Centered O1.

\*\*\*\* EVENT COMMENT \*\*\*\*: Fri Feb 28 19:07:44 GMT 2003

CME at PA 130-150 from around 1815.

\*\*MLSO PROBLEM\*\* : Fri Feb 28 20:00:46 GMT 2003

Declination reset. Dome shutter needs reconfiguring. Taking care of all that right now.

COMMENT: Fri Feb 28 20:05:35 GMT 2003

ADR turned on for the day.

MKIV COMMENT: Fri Feb 28 20:22:06 GMT 2003

Centered O1.

\*\*PICS PROBLEM\*\* : Fri Feb 28 20:39:08 GMT 2003

David put in a program earlier this morning that left the H-alpha pre-filter in the beam to check the camera and its shutter.

It was determined that the shutter and the camera is not the cause of the changes in image intensity nor the horizontal banding that they were seeing. I will next be checking the filter wheel for flaky microswitches or a loose shaft. David reinstated the filter wheel changes back into the program -- moving between clear and H-alpha.

\*\*PICS PROBLEM\*\* : Fri Feb 28 20:46:12 GMT 2003

PICS domed out, one last manual shutter azimuth adjustment before ADR sensors are in optimum position.

\*\*PICS PROBLEM\*\*  
Fri Feb 28 21:25:46 GMT 2003

After watching 7 normal patrol cycles, I just observed that upon transition from Boulder.alr (limb image) to H-alpha.disc, KCC drive module leds stayed on an extended time (until timeout?) and KCC monitor buttons went from "filter wheel" being GREEN to it being RED, "clear" going from GREY (off) to it being YELLOW, and "6563" remaining WHITE. Disk image was noticeably darker for the duration than previous disk images.

\*\*PICS PROBLEM\*\*  
Fri Feb 28 21:31:54 GMT 2003

I don't recall the state of the status LEDs. I'll watch some more.

\*\*PICS PROBLEM\*\*  
Fri Feb 28 21:36:43 GMT 2003

OK problem occurred again. KCC filter wheel status display remains at HOME and at BIT 0 (indicating 6563 filter is in) and remained unchanged while Drive status indicated element was driving or attempting to drive until it timed out. KCC monitor buttons behaved as described earlier.

MKIV COMMENT: Fri Feb 28 21:44:36 GMT 2003

Centered O1.

\*\*PICS PROBLEM\*\*  
Fri Feb 28 21:54:48 GMT 2003

Stopping PICS to exercise the filter wheel with KCC gui.

Fri Feb 28 21:55:33 GMT 2003 PICS End Patrol

\*\*PICS PROBLEM\*\*  
Fri Feb 28 22:04:46 GMT 2003

Set up PICS with Video running. Changed Lyot filter to IN and Occulting Wheel to CLEAR once Video was running. Alternately selected CLEAR and 6563 with Filter Wheel buttons. I did get the wheel to "stick" on several occasions, not every time, and I did notice that the images remained in the 6563 state when wheel "stuck". I also noticed that when requesting 6563 after being "stuck" that the drive status leds did not go on--the KCC apparently knows that the Filter Wheel is already at 6563 and does not attempt to go there. I have not seen any instances of the wheel getting stuck at the CLEAR station.

\*\*PICS PROBLEM\*\*  
Fri Feb 28 22:12:48 GMT 2003

I'll be opening up PICS to troubleshoot the Filter Wheel mechanism next.

Spar may get jostled, balance may get upset during the tests.

\*\*PICS PROBLEM\*\*  
Fri Feb 28 22:36:45 GMT 2003

Tested Filter Wheel mechanism with covers open, using the hand-held terminal. I can generally move wheel back and forth between CLEAR and 6563. When wheel does fail to move from 6563 to CLEAR, the MOTOR DOES NOT TURN, it doesn't appear to try to turn. Command times out and terminal displays FILTER WHEEL (mechanism), CLEAR (where it was commanded to go to), 6563 (where encoder says it's at), and TIMEOUT (after CW displayed--what it was trying to do). I now suspect Driver card is not supplying power to motor intermittently on CW command. Swapping out Drive card.

MKIV COMMENT: Fri Feb 28 22:50:25 GMT 2003

Centered O1.

\*\*PICS PROBLEM\*\*  
Fri Feb 28 23:06:28 GMT 2003

With cards swapped, I still get a non-response from the motor, ONLY IN CW DIRECTION. I can get motor to not move between any two stations so long as it is trying to get there in the CW direction. This tells me that the HOME and the ENCODER microswitches are OK. I cannot get the motor to stall in the CCW direction.

When pulling out the "spare" card, the upper guide rail fell out. I previously noticed that C2 on the original F.Wheel card appeared scorched. the guide rail is also blackened above where the capacitor (C2) is located.

Upon further inspection, There are blackened areas on the adjacent (Occulting wheel drive) rail but not on the card, and blackened areas on the rear aluminum frame with a thumbprint-size area scrubbed clean. The evidence is from an historic fire, not due to C2 on the filter wheel card.

**\*\*PICS PROBLEM\*\***: Fri Feb 28 23:28:52 GMT 2003

Tried one more swap. Put dust cover card into filter wheel slot. Experienced the same problem. Stalled intermittently when moving in CW direction, did not stall in CCW direction, any station combination.

**\*\*PICS PROBLEM\*\***: Fri Feb 28 23:34:13 GMT 2003

Uh.... I've been referring to KCC on this troubleshoot but I really mean MCC.

**\*\*PICS PROBLEM\*\***: Fri Feb 28 23:48:30 GMT 2003

Checked voltage at the motor side of the connector for the filter wheel mechanism. 22.something volts appear there each time a move is requested. Voltage appears even when there is a stall.

**\*\*PICS PROBLEM\*\***: Fri Feb 28 23:57:06 GMT 2003

Checked motor/geneva mechanism. I found that I can get the motor to turn in the CW direction when it stalls (non-start) if I nudge the motor-side wheel of the geneva mechanism (the "arm") before the command times out. Looks like the problem might be a binding or lubrication problem that is worse in one direction over the other or a flaky 1N6282C SCR(?) internal to the globe motor that does not provide enough current at the CW polarity. I will remove the mechanism and examine it on the bench for mechanical binding.

COMMENT: Sat Mar 1 00:50:15 GMT 2003

Reconfiguring dome shutter.

Sat Mar 1 01:39:41 GMT 2003 PICS Start Patrol

**\*\*PICS PROBLEM\*\***: Sat Mar 1 01:24:58 GMT 2003

Sorry about the guiding, I had to swing spar over to east in order to get a flat cable that was in the way of the PICS insulating cover to hang in a good direction so I could reinstall the cover.

It looked like there was some very slight scraping of the mount plate by the screw assembly that engages and swings the geneva. I filed down the nut and the end of the screw very slightly so that I could see daylight between the end of the screw and nut and the mounting plate. Tested motor again and I still got a sluggish CW rotation and occasional stall both

with the motor assembly unmounted and mounted onto the rest of the filter wheel assembly.

Reassembled everything after dusting off the filters.

My recommendation is we replace the Globe Motor, part number 5A2316-8, with a new or known-working spare. I could not find a spare motor here. There is a similar-looking 24VDC Globe motor in our inventory, part # 5A546-2, but I'm not sure if it is compatible with the filter wheel.

Restarting Patrol after shutting PICS down to clear a crash -- probably from all the stuff I was doing to it.

MKIV COMMENT: Sat Mar 1 01:43:52 GMT 2003  
Centered O1.

WEATHER COMMENT: Sat Mar 1 01:55:46 GMT 2003  
sky very noisy, bright.

Sat Mar 1 02:29:24 GMT 2003 PICS End Patrol

Sat Mar 1 02:29:23 GMT 2003 CHIP End Patrol

Sat Mar 1 02:30:02 GMT 2003 MKIV End Patrol

\*\*MKIV PROBLEM\*\* : Sat Mar 1 02:34:46 GMT 2003

"Bright sky" and "noise" late in the afternoon may be due to piece of dust, larger than your normal dust or lint particle" on the center of the mk4 O1. May have fallen on there while bouncing around on PICS or when reconfiguring dome late in the afternoon--I did not move the slot out of the way as I normally do when lowering and raising the dome shutter.

\*\*MKIV PROBLEM\*\* : Sat Mar 1 02:38:32 GMT 2003

I removed the particle, by the way.

Sat Mar 1 02:38:56 GMT 2003

MkIV

00_00.rawmk4	01_53.rawmk4	18_50.rawmk4	20_39.rawmk4	22_29.rawmk4
00_03.rawmk4	01_56.rawmk4	18_53.rawmk4	20_42.rawmk4	22_32.rawmk4
00_06.rawmk4	01_59.rawmk4	18_56.rawmk4	20_45.rawmk4	22_35.rawmk4
00_09.rawmk4	02_02.rawmk4	18_59.rawmk4	20_48.rawmk4	22_38.rawmk4
00_12.rawmk4	02_05.rawmk4	19_02.rawmk4	20_51.rawmk4	22_41.rawmk4
00_15.rawmk4	02_11.rawmk4	19_05.rawmk4	20_54.rawmk4	22_44.rawmk4
00_18.rawmk4	02_15.rawmk4	19_08.rawmk4	20_57.rawmk4	22_47.rawmk4
00_21.rawmk4	02_17.rawmk4	19_11.rawmk4	21_00.rawmk4	22_50.rawmk4
00_24.rawmk4	02_20.rawmk4	19_14.rawmk4	21_03.rawmk4	22_53.rawmk4
00_27.rawmk4	02_23.rawmk4	19_17.rawmk4	21_06.rawmk4	22_56.rawmk4
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00_33.rawmk4	17_22.rawmk4	19_23.rawmk4	21_12.rawmk4	23_02.rawmk4
00_36.rawmk4	17_25.rawmk4	19_26.rawmk4	21_15.rawmk4	23_05.rawmk4
00_39.rawmk4	17_28.rawmk4	19_29.rawmk4	21_18.rawmk4	23_08.rawmk4
00_42.rawmk4	17_31.rawmk4	19_32.rawmk4	21_20.rawmk4	23_10.rawmk4
00_45.rawmk4	17_34.rawmk4	19_35.rawmk4	21_23.rawmk4	23_13.rawmk4
00_48.rawmk4	17_37.rawmk4	19_38.rawmk4	21_26.rawmk4	23_16.rawmk4

00_50.rawmk4	17_40.rawmk4	19_40.rawmk4	21_29.rawmk4	23_19.rawmk4
00_53.rawmk4	17_43.rawmk4	19_43.rawmk4	21_32.rawmk4	23_22.rawmk4
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00_59.rawmk4	17_49.rawmk4	19_49.rawmk4	21_38.rawmk4	23_28.rawmk4
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01_05.rawmk4	17_55.rawmk4	19_55.rawmk4	21_44.rawmk4	23_34.rawmk4
01_08.rawmk4	17_58.rawmk4	19_58.rawmk4	21_47.rawmk4	23_37.rawmk4
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01_35.rawmk4	18_31.rawmk4	20_25.rawmk4	22_13.rawmk4	c18_35.rawmk4
01_38.rawmk4	18_38.rawmk4	20_27.rawmk4	22_16.rawmk4	
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01_50.rawmk4	18_48.rawmk4	20_36.rawmk4	22_25.rawmk4	