

GS M2 shutdown notes 2013 March 25- April 04

Monday 25

Shutdown coordinator: Gustavo Arriagada

Safety coordinator: Sandra Romero

M2 removal: Pablo Diaz, Claudio Araya, Hector Figueroa, Laridan Jeria, Hector Swett, Pedro Ojeda, Rolando Rogers, Alejandro Gutierrez.

NICI partial power down: Ramon Galvez.

Seeing Monitor cabling upgrades: Herman Diaz, Hector Swett

Chronological

9:00 Coordination meeting. Scientists left calibrations running, it was necessary to call Bernadette to stop them, otherwise there is no access to telescope or 4th floor.

9:15 Activities on the fourth floor start

9:28 Mechanical crew meeting

9:34 scaffolding installation starts

Ramon working with Tom powering NICI down

Telescope to PL

9:56 NICI powered down.

10:42 Assembly of the scaffolding is taking longer than expected... Yellow platform is preventing the upper scaffolding from sitting on top of the bottom one.

The delay was caused by the fact the scaffolding was disassembled... this is the first time we have to assemble the scaffolding.

Rolando getting ready to override the GIS in case we need to adjust telescope position in AZ.

The LSE makes the whole maneuver more complex. We should not have moved the telescope in AZ prior installing the scaffolding.

11:05 Picking yellow crane to put it on top of scaffolding.

11:24 Yellow crane and platform on scaffolding

11:40 Telescope to horizon AZ pos 90.76

11:50 Telescope at horizon.

12:29 Scaffolding tag lines and auxiliary platform installed. M2 at -10 and baffles extended. Electronics start their test.

1:38 Electronic tests done. Confirmed the problem is in the sensors. Starting system disconnection.

2:15 M2 system disconnection done. Starting removal

2:35 M2 acrylic cover installed.

3:10 M2 system detached from telescope.

3:23 M2 system hanging from 50 ton crane to be deposited onto M2 handling cart.

3:50 M2 system in its way to the lab.

4:05 CEM off the telescope in its way to instrument lab. 5 tons crane ready to pick up the dummy weight.
4:25 dummy M2 installed on the telescope. M2 mirror removal on hold for few minutes, awaiting for missing bolts...
4:27 M2 mirror removal resumed. Auxiliary platform being retracted.
4:42 scaffolding tag lines removed.
5:02 Telescope ready to be moved to zenith. CEM counterweight installed.
5:10 Telescope at zenith, locking pins in.
5:20 M2 mirror detached from M2 tip tilt system.
6:17 M2 mirror in coating chamber.
6:23 M2 tip tilt system bolted to the floor
6:30 End of the day. Pending: Install dummy mirror and cables reconnection. 77% of the planned work done

Tuesday 26

Shutdown coordinator: Gustavo Arriagada

Safety coordinator: Sandra Romero

M2 maintenance: Rolando Rogers, Gabriel Perez, Laridan Jeria, Claudio Araya, Hector Swett, Roberto Rojas, Alejandro Gutierrez.

Canopus repair: Ramon Galvez, Gaston Gausachs, Pedro Ojeda

Seeing Monitor cabling upgrades: Herman Diaz, Hector Swett (Still more work to do on Wednesday)

IMPORTANT NOTE: Since we are on generator power we have been forced to modify the shutdown plan.

- M1 in situ wash was cancelled. We cannot operate the large air compressor. Tomi has agreed to perform this task once the commercial power is restored.
- As a result of that is no longer necessary to remove the M1 baffle neither to install all the hardware required for the wash.
- Canopus repair has been initiated, the telescope will remain at zenith until Canopus is fixed or until its mechanisms are left on a safe state.
- P1 RT inspection will be carried once Canopus fix is finished, it might not happen today.
- M2 wash will be performed today.

Chronological

9:30 Canopus repair starts. Telescope is fixed at zenith.

10:00 Dummy M2 installed. We start cabling the entire system, the idea is to first run tests in the lab before disassembling it.

11:30 M2 system cables connected in the lab. Getting ready to connect Glycol and then power it up for testing.

11:53 M2 testing in the lab passed. Oscillations present due to differences in mass distribution between real mirror and dummy and also due to system orientation (looking up instead of down). The system will be re-tuned to assure stability before the disassembly starts.

12:17 M2 working fine, no oscillations. New tuning in place, it will be left like this. More testing before turning the system off for disassembly.

1:36 M2 system tests done. Full range (+9mm to -9mm). Left at zero mm as reference, system powered down.

2:00 M2 wash started

2:15 M2 mechanical disassembly started.

3:29 Old uEs being removed. M2 wash already done

3:45 M2 outer black ring installation.

4:17 M2 disassembly of metal blocks to be machined tomorrow is 90% done.

Stopping for today.

4:20 Canopus: P2 internal coupling was found disconnected from threaded shaft as it may have been moved to a higher than allowed mechanical limit. Fixed.

P1 case was found loose (unthreaded) from base. Will be fixed early tomorrow.

4:30 M2 wash done. Seeing monitor cabling upgrade almost done. End of the day.

Wednesday 27

Shutdown coordinator: Gustavo Arriagada

Safety coordinator: Sandra Romero

M2 maintenance: Rolando Rogers, Gabriel Perez, Claudio Araya, Hector Swett, Roberto Rojas, Alejandro Gutierrez, Pedro Ojeda.

Canopus repair: Ramon Galvez, Gaston Gausachs,

Seeing Monitor cabling upgrades: Herman Diaz, Hector Swett (expected to be finished today)

IMPORTANT NOTE: Depending on Canopus progress we will attempt today a P1 RT inspection later in the day.

Chronological

9:15 M2 disassembly continues. Rolando starts modifying the electronics to accommodate the system to the new sensors. Pedro working on cables modifications.

10:50 First machined piece ready, sensor being assembled. Canopus P1 still being fixed, good progress.

11:55 First new uE sensor installed and adjusted.

1:51 Second uE installed.

2:20 Second uE calibrated

3:00 Third uE installed and calibrated.

3:15 Getting ready to power CEM back up.

3:54 All 3 uEs sine/cosine signal present in the CEM electronics. New cables dressing in progress.

4:23 All 3 uEs cables properly dressed. Seeing monitor cabling upgrade almost done. GSAOI detachment preps started. Canopus LGSWFS has been fixed. End of the day.

Thursday 28

Shutdown coordinator: Gustavo Arriagada

Safety coordinator: Sandra Romero

M2 maintenance: Rolando Rogers, Gabriel Perez, Claudio Araya, Hector Swett, Roberto Rojas, Alejandro Gutierrez.

GSAOI detachment: Ramon Galvez, Pablo Diaz, Hector Figueroa, Laridan Jeria, Pedro Ojeda,

Seeing Monitor cabling upgrades: Herman Diaz, Hector Swett (expected to be finished today)

IMPORTANT NOTE: Tomorrow Friday we will be working, Saturday and Sunday there will be no shutdown related activities.

Tomorrow a crew will come up at 7:00 AM.

Flamingos 2 warm up starting today. Rolando and Ramon staying behind to make sure the process is properly started...

Chronological

9:20. M2: Rolando and Alejandro started adjusting the uE electronic gains.

10:10. M2: Completed the gain adjustment of uE sensor 0. Set to +/-10 V.

11:04 M2: Completed gain calibration for three uE sensors.

11:10. GSOI: Completed dismounting GSAOI from the ISS, with the assistance of Ramón, Pablo, Claudio A., Héctor F. , Alejandro, Herman. A&G optics was inspected by the Optical Systems Group.

12:35 M2: Completed the installation of the Tip-Tilt covers.

12:50 M2: Flexure links installed back.

2:10 M2: Dummy mirror installed back.

2:40 M2: Performed Sine/cosine signals tests for sensor 0. Tests stopped for the moment.

3:00 Attend to Director's presentation

4:30 M2 was tested OK, we even managed to move 200 microns. GSAOI was left secured on the 4th floor. End of the day.

Friday 29

Shutdown coordinator/Duty Officer: Gustavo Arriagada

M2 maintenance: Rolando Rogers, Gabriel Perez, Hector Swett, Roberto Rojas, Alejandro Gutierrez.

P1 RT repair: Pablo Diaz, Laridan Jeria, Pedro Ojeda, Vanessa Montes

IMPORTANT NOTE: Today at 4 we will have the visit of Chris Smith and Monica Rubio. The visit did not take place

Chronological

9:15 P1 RT work preps start. It is necessary to relocate GSAOI to be able access A&G from IPL.

10:10 Preps done, P1 RT assessment starts
9:15 M2 system positioning using old software version tests start.
10:15 M2 positioning in Z verification using micrometers is successful. With the old version of the software M2 moves 2/3rds of what it should move. Loading new software to continue checking.
10:50 M2 Z positioning tests begin using new software version loaded from a diskette onto the CEM hard drive.
11:00 P1 RT is fixed. We are testing it. The problem was a loose coupling in one of the two motors. No broken parts found.
11:10 On M2 front we are adjusting followers position to be able to better test the system.
12:07 P1 RT tests at zenith done. Installing GSAOI
2:30 GSAOI installed on the telescope. Cables dressing starting
3:00 Off loaders motor assembly maintenance done. Telescope being moved in elevation to test P1 RT at different positions.
3:50 Fine adjustment to uE 1 needed.
3:54 P1 RT tests successfully finished, P1 RT is operational now.
4:10: M2: Fine adjustment of uE 1 completed.
5:15 M2: All covers installed back. Digital gauges installed back.
5:30 M2: Completed full range motion tests. Working well.
5:50 M2: CEM strapped down to the bench.
6:00 M2 team departing from Cerro Pachón.

Summary of the M2 day:

- Test new CEM software version for grating period of 20u: DONE.
- Readjustment of new microE actuator 1: DONE.
- Mechanical maintenance of off-loader screws: DONE.
- Got new lookup table for follower.
- Test of full range of motion (+/-9.9 mm) done O.K with new sensors: DONE.
- Check full range of motion with digital dials and Kaman absolute encoders: DONE.

Monday 01

Shutdown coordinator: Gustavo Arriagada

M2 maintenance: Rolando Rogers, Gabriel Perez, Hector Swett, Roberto Rojas.

Power outage: Rolando Rogers, Diego Maltes, Paul Collins, Gustavo Alarcon, Hector Swett, Ramon Galvez, Vanessa Montes, Alejandro Gutierrez, Pedro Ojeda, Claudio Marchant, Jose Varas, Roberto Rojas, Chris Morrison, Claudio Araya.

Night Time generator watch: Alejandro Gutierrez, Gustavo Alarcon

IMPORTANT NOTE: Today we had a major power outage, at the moment (4:17 PM) we recovered the majority of the systems, but there are still people working on it, especially GSAOI.

We do not understand why the generator failed, there is no obvious reason for it. Tonight there will be a crew of two people checking generator and plant room systems, in the event of a generator failure they have been instructed to call a predefined group of engineers that shall tell them what to do.

Chronological

8:30 Arrived on Pachon, no power all systems down including UPSs.

9:00 Generator electrically checked everything looks good. We also got in touch with Finning, mainly to inquire about few doubts we had with respect to impedance values to be measured.

9:30 Generator started and loaded with dummy load. All looks good.

10:00 Generator now loaded with most of the support building load, still all looks good.

10:30 We start UPSs, this is a bit tricky so it took us until 1:30 to have them all on line.

2:00 We start recovering the computer room and communications. Note: We desperately need a better way to communicate when these situations occur.... What about having the cell phone extender connected to an independent little portable generator?

3:00 We start booting systems and restoring everything back to normal.

4:00 Rolando and Ramon trying to recover GSAOI. We haven't touched GMOS.

4:00 M2 system gains were restored to its original values, system stability and positioning tested OK.

4:45 After swapping a helium compressor Rolando and Ramon are attempting to recover GSAOI.

Tuesday 02

Shutdown coordinator: Gustavo Arriagada

Night Time generator watch: Alejandro Gutierrez, Gustavo Alarcon

M2 maintenance: Rolando Rogers, Gabriel Perez, Roberto Rojas.

Power outage: Rolando Rogers, Diego Maltes, Paul Collins, Gustavo Alarcon, Hector Swett, Vanessa Montes, Pedro Ojeda, Jose Varas, Chris Morrison, Claudio Araya, Leonardo Toledo.

Instruments cooldown preps: Ramon Galvez, Rolando Rogers, Alejandro Gutierrez

Cell phone extender: Vanessa Montes, Herman Diaz

Seeing monitor cabling upgrade: Herman Diaz, Hector Swett

IMPORTANT NOTE:

Chronological

9:00 coordination meeting.

9:30 generator truck arrived. Ordering small general purpose gens to make our lives easier when the main gen is off. Also asking for cell range extender. Rolando, Ramon and Alejandro working at the hotel documenting instruments cool down process.

10:00 struggling starting the crane.

11:00 generator being unloaded. Hector pumping fuel to be used later.
11:30 generator in place. We start adding fuel. Checking fluids. We will start it unloaded to check phase rotation. It is necessary to use our own battery; the batteries in the gen are discharged.
12:35 backup gen started. Warming it up. Test with no load. The starter solenoid was stuck.
12:50 backup gen connected, getting ready to test it loaded.
12:59 we have lights! We have cell phone range extender!
2:15 starting m2 work, final fine tuning. There is one sensor gain that needs to be modified to have them all identical.
2:47 Getting ready to rotate the dome, after dome rotation we will start the network equipment
3:00 General purpose generators arrived, Vanessa and Hector working on getting them ready to be used in case of an emergency.
4:00 All uEs gains adjusted so we read +/- 10V now. Update meeting

Wednesday 03

Shutdown coordinator: Gustavo Arriagada

M2 maintenance: Rolando Rogers, Gabriel Perez, Roberto Rojas, Gustavo Arriagada, Pedro Ojeda

Power outage: Diego Maltes, Paul Collins, Gustavo Alarcon, Jose Varas, Chris Morrison, Leonardo Toledo, Cristian Silva.

F2 work: Rolando Rogers

Night Time generator watch: Alejandro Gutierrez, Claudio Araya

Cell phone extender: Vanessa Montes, Herman Diaz

IMPORTANT NOTE: Back up generator has worked well the entire night. Finning working on recovering our generator. IS group members came up to finish up rebooting few servers that were pending from yesterday.

Chronological

9:30 Hector, Gustavo, Rolando and Pedro working on changing the 5 fans in the CEM, this requires disassembly, therefore testing will be required afterwards.

12:00 Finning techs arrive, they start working on our generator.

1:00 CEM fans changed. Heat exchanger pressurized with 60PSI to leak test it. Rolando testing M2 system. Tests went well.

2:00 Rolando working on F2. Preparing it to take images with detector warm.

3:00 CEM heat exchanger leak test done. Glycol reconnected.

4:15 Turning F2 off. Finning techs, Diego and Paul are staying behind to finish the job on generator.

7:00 Generator up and running, we are leaving it running the whole night.

Thursday 04

Shutdown coordinator: Gustavo Arriagada

M2 maintenance: Rolando Rogers, Gabriel Perez, Pedro Ojeda

Power outage: Diego Maltes, Paul Collins, Gustavo Alarcon, Gustavo Arriagada
GMOS cooldown preps: Ramon Galvez, Rolando Rogers.
Night Time generator watch: Hector Swett, Claudio Araya

IMPORTANT NOTE: The generator survived the entire night running loaded with dummy load. At 7:00 AM the generator was turned off, to continue with the corrective maintenance today.

We will attempt to install M2 on the telescope tomorrow. It is expected to have our generator up and running by the end of the day today (7:00 PM)

Chronological

9:30 CEM cables dressing. F2 pre-cooling system leak check started. This activity was not finished, will continue tomorrow.

10:00 tip tilt system testing in the lab after cables dressing.

10:30 M2 system cables disconnected, ready for installation on handling cart.

11:30 started working on GMOS cooldown preps. Turning elevator on, to transport vacuum pump to 4th floor.

12:30 Started turning telescope systems on

1:00 GMOS being vacuumed. FINNING techs arrive start working on generator.

3:00 Working on automatic transfer sequence between generators.

4:00 GMOS being cooldown. All relevant telescope systems working fine. Paul figured out the way to transfer the load from one generator to the other, it has to be tested.

4:50 M2 tip tilt system on handling cart. Chiller 1 online

Friday 05

Shutdown coordinator: Gustavo Arriagada

M2 maintenance: Rolando Rogers, Alejandro Gutierrez, Roberto Rojas, Tomislav Vucina, Cristian Moreno, Pablo Diaz, Laridan Jeria, Hector Figueroa

Power outage: Diego Maltes, Paul Collins, FINNING, Gustavo Arriagada

GMOS cooldown: Ramon Galvez, Rolando Rogers.

Night Time generator watch: Hector Swett, Claudio Araya

Telescope systems and telescope movement: Vanessa Montes, Pedro Ojeda

IMPORTANT NOTE: The generator survived the entire night again running loaded with dummy load. We will switch over to it this morning before starting the re assembly of M2 system.

Tomorrow we will be back on the telescope at 6:30 PM.

Chronological

9:30 We have switched to our generator, it is working fine. We left the backup running for about an hour just in case.

9:35 We start moving M2 mirror from coating chamber to instrument lab.

9:45 Checking systems to be able to move the telescope

9:47 GMOS helium compressor restarted. It failed due to overheat protections activated while the generator was off.
9:50 We have elevator and power to coating chamber area. We are also now working on removing vacuum pump and tools plus IPL from mount base.
10:15 M2 mirror in the lab
11:40 M2 mirror on tip tilt, being bolted down to it.
11:52 preparing tel to take it to horizon. Preparing scaffolding.
11:58 M2 ready to be taken to 4th floor.
12:09 M2 system on 4th floor, waiting 10 mins for the crane...
Note: Generator is working fine. Be aware we don't have automatic transfer available in the back up generator, it can be done but it has to be done manually. Manual generator startup.
12:15 Getting ready to bring CEM up.
12:36 Telescope at horizon, rotating the dome to pick-up the M2 system
1:31 Dummy M2 removal starts. Mechanical guys stopping at this point for lunch. E&IG starts installing boxes.
2:03 Electronic boxes installed, installing now CEM and removing CEM counterweight.
2:27 Mechanical guys are back, CEM installed.
2:56 Dummy M2 removed.
3:52 M2 system picked by crane
4:26 M2 system bolted to the telescope
4:37 M2 system cables reconnection in progress
4:59 All bolts properly torqued. Getting ready to install periscope.
5:14 Periscope installed. All cables connected. Getting ready to power it up
5:30 M2 mirror protection cover off.
5:40 M2 system on, testing now. Still at horizon.
6:00 Hector Swett doing the night shift arrives.
6:17 M2 system tested OK. Testing baffles and periscope
6:40 All working at horizon! Getting ready to take the telescope to zenith.
7:03 Telescope back to zenith. END OF THE DAY!

Saturday 06

Shutdown coordinator: Gustavo Arriagada

Crew supporting the eng part of the night: Rolando Rogers, Vanessa Montes, Alejandro Gutierrez, Roberto Rojas, Hector Swett, Gustavo Arriagada

Telescope systems and telescope movement: Vanessa Montes, Pedro Ojeda

IMPORTANT NOTE: Scaffolding was removed from PL and properly stored on 4th floor.

Last night generator worked well, no issues.

Tonight SOS and astronomer will be on site so nobody from engineering is staying to watch the generator.

GMOS was tested OK, all mechanisms were indexed.

GSAOI vacuum is good too.

Chronological

It will be reflected in the nightlog.

9:05 PM all looks good.