**Feed Status**

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| Document last update | 2019-02-21 |
| Feed ser. num. (rev) | 5C4-012-A |
| Last worked on | 2019-02-21 |
| Antenna (previous/current) | Ant. 1K |
| Original build date | 2016-03-01 |
| Number of cooldown cycles | 6 (2017-06-14) |
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**Critical Component Summary**

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| ATA Feed  Control Board | S.N. 20a |
| Sunpower CryoTel GT  Cryocooler | S.N. GT15-86 |
| Sunpower GT Gen II  Cryo Controller | S.N. 50031064054 |
| Pfeiffer Hi Pace 80  Turbo Pump | S.N. 15795434 |
| Pfeiffer TC 110  Electronic Drive Unit | S.N. 73039921 |
| Pfeiffer MVP 006-4  Diaphragm Pump | S.N. 28405382 |
| H.S. Martin  Borosilicate Glass Radome | S.N. 018 |

**LNA Summary**

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| --- | --- |
| X Pole LNF LNA | S.N. C-0037A |
| Biasing | Vm -.50v / Vg .38v / Vd 1.20v / Id 24.5ma |
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| Y Pole LNF LNA | S.N. C-0056A |
| Biasing | Vm -.50v / Vg .42v / Vd 1.20v / Id 24.5ma |

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| **Chassis Up-Dates** | **Vac & Cryo Up-Dates** |
| 15 pin Hermetic Feedthur Filter | RTD Wire Routing |
| 48v Through Control Board | Buna-n O-Rings |
| Vibration System (Metal Flex) | Turbo Centering Ring w/Screen |
| Control Board 12v Jumper |  |
| Control Board Firmware 3.12 |  |
| Foreline/Valve Layout Change |  |
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**HISTORY**

2016-03-01 Started Chassis & sub-assembly build-up.

2016-04-13 Enclosure assembled with SS base plate, honeycomb vents, ducts & fan.

Wiring, board tray, diaphragm pump & foreline assemblies ready

2016-04-(18-22) Installed Turbo/Diaphragm pumps, Cooler vibration system, Metal Flex bellows 347/304ss.

2016-04-28 Installed temp sensors, wiring harnesses & foreline valve assy.

2016-06-24 Enclosure & PAX case 99% completed.

2016-09-01 Started working on LNA‘s & Group Assy.

2016-10-11 Systems test & firmware & jumper up-dates on to Control board, did Control Board reset & set board to auto mode, 3rd attempt turbo made it to full speed (2hrs).

(vac 90K rpms/11 watts & cryo 272K/75 watts)

2016-11-(08-09) Installed Pyramid assembly on SS Base Plate, wiring & coax hooked-up. Glass Dome installed & Feed ready for pumpdown/cooldown. Started pumpdown, can’t get turbo power below 20 watts.

2016-11-10 At low vac & room temp powered up Test PAX box, LNA bias turned on, both LNA’s working & biasing normally.

2016-11-14 Removed Pyramid Assy

2016-12-(05-06) Installed Pyramid assembly on SS Base Plate, wiring & coax hooked-up. Glass Dome installed & Feed ready for pumpdown/cooldown. Started pumpdown auto mode, Turbo Pump reaches 90k/26watts at 65min mark, Cryo won’t start to high a watts, Turbo watts going up (46watts), switched to manual mode & continuous running of the roughing pump for 24hrs, has small leak somewhere, bellows?

2016-12-(07-08) Started Turbo Pump but only able to get to 64k/76watts, ran Turbo at reduced power 64k/60watts, tried running Roughing Pump overnight again, no change, ran Turbo & started Cryo Pump to see if cryo vibration could induce a failure at the bellows, Turbo went up to 83k/76watts during cooldown. Stopped Cryo & Turbo Pumps, Turbo is cryo pumping! Shut everything down.

2016-12-(09-13) Leak tested Feed through foreline on Turbo pump, no leak found, tried various things, manual mode, changed set-up & running parameters, no change.

Changed out Turbo pump, no change, changed out roughing pump, that worked!

Turbo running at 90k/10watts, found moisture in roughing pump. Feed ready for Pyramid install.

2016-12-(15-16) Installed Pyramid assembly on SS Base Plate, wiring & coax hooked-up. Glass Dome installed & Feed ready for pumpdown/cooldown. Powered up Test PAX box, LNA bias turned on, both LNA’s working & biasing normally, started *pumpdown auto mode*, Turbo Pump reaches 90k/12watts at 65min mark, Cryo started at 75min mark. Feed running fine, Turbo at 90k/9watts, Cryo 65/68K/173watts, powered up Test PAX box, LNA bias turned on, both LNA’s working & biasing normally, Feed ready for testing.

2016-12-(20-22) During testing both poles show structure, broken leads and/or grounded problem, removed Pyramid from Feed, found problem with center section of the Tip Arm Link, repaired successfully, re-assembled Pyramid on Feed & started *pumpdown & cooldown*. Feed running fine, Turbo at 90k/9watts, Cryo 65/68K/156watts, Checked LNA’s in Screen Room Hot Load, X pole fine, Y pole some structure in the high freq end(8-18dB), Feed ready for testing.

2017-01-20 Feed Vac & Cryo good, 90k/10watts, 65/68K/159watts, started noise testing, cryo temp & power changing every few seconds, 50+watts, 3-4 degrees.

X & Y poles working well, 4+dB (data recorded), ColdHd temp sensor problem.

2017-01-24 Replaced ColdHd RTD temp sensor & secured its wire lead around the nearest ti-standoff. Started pumpdown & cooldown, Turbo reaches 90k/9watts at 65min mark, Cryo started at 73min mark, Feed cryo temp headed to 65K, Feed ready to deliver to HCRO.

2017-02-01 Delivered to HC (1of4), installed on antenna 2M, 24 + 48v power supply up-dates added to Rim Box. Turbo & Cryo working properly, Noise test started, X pole has large amount of structure (broken tip trace?), removed Feed from antenna & returned to Minex for repairs.

2017-02-09 Removed Pyramid for tip inspection & repair in clean room.

2017-02-28 Installed dumpy Pyramid (heat load) on Flex/Base plate assembly, started *Vac pumpdown & Cryo cooling* for bellows run-in test (90k/14w, 65K/134w), new RTD sensor wire length & routing.

2017-03-09 Found all (4) Tip Arm Links broken, large amount of movement at front of Arms, front (A0) stand-off too loose, lots of Rexolite powder at all Arm contact points, removed Arms & prepped for repair work.

2017-03-14 Replaced all Links, checked all solder joints, reinstalled Arms & ultrasonic cleaned Tip area, Pyramid ready to install in Feed. Bellows run-in test completed (2wks), Vac 90k/13w & Cryo 65K/169w working fine.

2017-03-15 Installed Pyramid assembly on SS Base Plate, wiring & coax hooked-up, Glass Dome installed, powered up Test PAX box, LNA bias turned on, both LNA’s working & biasing normally, started *Pumpdown & Cooldown*.

2017-03-16 Vac & Cryo good (90k/7w, 65/68+K/204w), checked LNA’s at 68K, X & Y poles biasing fine, Feed ready for Noise tests.

2017-04-(03-04) Power was off over weekend, restarted Feed, Turbo at 21watts, next morning *Vac & Cryo good (90k/13w, 65/68+K/180w)*, Feed ready for Noise tests.

2017-05-01 Rotated Feed to vertical position.

2017-05-10 Feed lost power last night, restarted *Pumpdown & Cooldown*.

2017-05-18 Quick check of LNA’s in the hot load, both poles look fine, Feed ready for Noise tests.

2017-06-10 Started noise testing, Vac & Cryo good, X & Y poles working fine, 4dB+ (data recorded), Feed ready to deliver to HCRO.

2017-06-14 Delivered to HC (1of3), installed on antenna 1K, 24 + 48v power supply

up-dates added to Rim Box. Turbo, *Cryo* & LNAs working properly, Noise tests preformed for X & Y (data saved).

2017-06-19 Feed Test Report sent to HCRO (Elin).

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2018-08-16 Feed has a failed cryo pump, Vacuum good 90k/10watts, 48v PS off, will replace the Cryo pump when we return in the fall to install new Feeds.

2019-01-07 Cryo Cooler’s 48v power cable arching & damaged at the Cooler’s power inlet pins (photos), error code 000001/over current, Cooler shuts down after a few hours in to cooling, Coolers power cable ar.

2019-02-11 Repair parts & tools sent to Mark at HC, repairs made, temperamental start-up, but Vac & Cryo recovering.

2019-02-21 Vac & Cryo working fine, 65K/180w, 90k/15w.