**Feed Status**

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| --- | --- |
| Document last update | 2021-06-28 |
| Feed Ser. Num. (Rev) | 5C4-013-A |
| Last worked on | 2017-06-14 |
| Antenna (previous/current) | 1H |
| Original Build Date | 2016-03-01 |
| Number of cooldown cycles | 8 (2017-06-14) |
|  |  |

**Critical Component Summary**

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| --- | --- |
| ATA Feed  Control Board | S.N. 18a |
| Sunpower CryoTel GT  Cryocooler | S.N. GT15-80 |
| Sunpower GT Gen II  Cryo Controller | S.N. 50031064021 |
| Pfeiffer Hi Pace 80  Turbo Pump | S.N. 15861450 |
| Pfeiffer TC 110  Electronic Drive Unit | S.N. 73061809 |
| Pfeiffer MVP 006-4  Diaphragm Pump | S.N. 28377474 |
| H.S. Martin  Borosilicate Glass Radome | S.N. 024 |
| Pyramid | S.N. 013 |

**Retrofits**

|  |  |
| --- | --- |
| Temp S. Isolation | X |
| New Wire Harness | X |
| Bellow Removed | X |
| Cryo Tuned | X |
| Firmware 5.4 | X |

**Vibration Measurements**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Before Tuning | Tuned | Re-tune #1 | Re-tune #2 | Re-tune #3 |
| X | NA | 0.12 |  |  |  |
| Y | NA | 0.06 |  |  |  |
| Z | NA | 0.22 |  |  |  |

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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.

2016-10-13 Systems test & firmware & jumper on to Control board, did Control Board reset & set board to auto mode, 4th attempt turbo made it to full speed (2hrs). (vac 90K/11w & cryo 272K/75 w)

2016-11-(14-15) Installed Pyramid assembly on SS Base Plate, wiring & coax hooked-up. Glass Dome installed & Feed ready for pumpdown/cooldown. Started pumpdown auto mode, at 65min point Turbo running at 90k, Cryo started at 86min point. Turbo shutdown somewhere around the 3hr mark? Shutdown cyro & ran roughing pump until Feed at room temp, Restarted Turbo several times but rpm’s stall out at 11k like Feed -015, hissing coming from bellows area, shutdown system. Attached leak tester to complete Feed through foreline outlet on Turbo, large leak & leak tester can’t pumpdown.

2016-11-16 Disassembled Feed front end & leak tested SS Base plate, large leak at bellows.

2016-12-08 Installed SS Base Plate with new bellows adapter (passed leak test), mounted copper base plate to Coldhead/Flex plate assembly & installed Glass Dome. Started pumpdown, at 60min mark over shot Turbo rpm(90645), turned off Turbo(p023=0), restarted Turbo(p023=1).   
Turbo running at 90k/16watts, Cryo Pump failed to start within 20min, P023 entries may have change “auto” mode, turned off power to Feed, turned power on to Feed, Turbo running at 90k/11watts. Cryo will still not start “auto”, started cryo with program command, *Cryo pump working properly*, reached 65K in 54min, Vac & Cryo working fine 90K/10watts, 65k/70watts, shut everything down to let Feed warm-up for Pyramid install. Used Super Glue “Gel” on front stand-off (going back to liquid).

2016-12-09 Installed Pyramid assembly on SS Base Plate, wiring & coax hooked-up. Glass Dome installed & Feed ready for pumpdown/cooldown. Started pumpdown auto mode, at 60min point Turbo running at 90k, *Cryo started* at 70min point.

2016-12-12 Feed running fine, Turbo at 90k/12watts, Cryo 65/67K/188watts. Powered

up Test PAX box, LNA bias turned on, both LNA’s working & biasing normally, Feed ready for testing.

2016-12-22 Vac problem may have leak at bellows, disassemble.

2017-01-02 Removed Pyramid/LNA assembly for install on another Feed.

2017-02-15 Leak at bellows adapter, replaced with new Bellows adapter (347 SS mat’l), passed leak test, reassembled Enclosure & had successful pumpdown, Vac 90k/16watts.

2017-03-01 Installed dumpy pyramid (heat load) on Flex/Base plate assembly, started Vac pumpdown & *Cryo cooling* for bellows run-in test (90k/11w, 65K/139w), new

RTD sensor wire length & routing.

2017-03-15 Bellows run-in test completed (2wks), Vac 90k/10w & Cryo 65K/162w working fine. Restarted Vac & *Cryo* to continue Bellows testing.

2017-04-03 Power was off over weekend, restarted Feed, Turbo at 13-18watts?

2017-04-(06-10) Installed Pyramid assembly from Feed -016, lna’s ok at 280K, pumpdown & *cooldown*, at 70K Y pole oscillating, X pole ok when Y pole shutdown(data saved), e-mailed back & forth with Niklas (e-mails saved), shutdown Cryo & Vacuum, removed Pyramid assy, found one Y coax center conductor & dielectric retracted/broken (photo saved), will replace both LNA’s.

2017-04-20 New LNA Module installed in Pyramid, Pyramid assembly installed on SS Base Plate, wiring & coax hooked-up. Glass Dome installed, both LNA’s working &

biasing normally, Feed ready for pumpdown/cooldown. Started pumpdown auto mode, at 64min point the Turbo got to 90k/13w, *Cryo* started at 75min point.

2017-04-(26-28) Vacuum & Cryo working fine, 90k/11w, 65/68K/208w. Moved Feed into screen room for LNA check in hot load, Vac, Cryo & lna’s working fine (data saved). During the wrap-up of the hot load test lost vacuum & the Turbo shut off, turned off Cryo, most likely bellows failure, start disassembly for Bellows replacement on SS Base plate, moved Pyramid/LNA assembly to Feed -016. Replaced SS

Base plate/bellows assembly (bellows 347 SS), installed dumpy pyramid (heat load) on Flex/Base plate assembly(x2), started pumpdown & *cryo cooling* for bellows run-in test (90k/10w, 65K/151w).

2017-06-02 Stopped bellows run-in test, starting LNA module & Pyramid build-up.

2017-06-(06-07) Installed Pyramid assembly on SS Base Plate, wiring & coax hooked-up, Glass Dome installed, with Feed in screen room hot load, both LNA’s working & biasing normally, started Pumpdown & Cooldown, *Cooldown completed* 90k/10w 65.7/68K/240w, cryo all night at 240w can’t get to 65K, set ttarget to 67K, 90k/10w 67/68K/214w, started Noise test, found both pole had structure, Tip problem (data saved), PAX box running hot (48c), found TEC + & - leads reversed on Pax Case wiring 9db connector, shutdown Feed & inspect tip after warm-up.

2017-06-(08-09) Can’t find anything wrong with the Tip, checked Feed in hot load, both LNA’s working & biasing normally? Disassembled Feed & replaced LNA module assy with new LNA module assy, Pyramid assembly installed on SS Base Plate, wiring & coax hooked-up. Glass Dome installed, both LNA’s working & biasing normally, Feed ready for pumpdown/cooldown. Started *Pump & Cooldown* auto mode.

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

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2017-06-14 Delivered to HC (2of3), installed on antenna 1H, 24 + 48v power supply

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

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