

Return Evaluation Comments

This unit was problematic during assembly with a defective bellows discovered during final testing. operated for 1 month then 1 tip link broke. It operated at HCO for 4 months and was then afflicted with another bellows failure. It was repaired on site and worked for another 1 year 5 months until returned for this evaluation. Vacuum system is good, but diaphragm pump is noisy, and cryo system is good. Four tip links are broken and rexolite is abraded by lots of vibration. This tip damage may have occurred prior to on site bellows repair.

History from Data Sheet

Serial Num: 5C4-015-A

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, Cryo pump with suspension system, Metal flex.

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, 3rd attempt turbo made it to full speed (2hrs). (vac 90K rpms/12w & cryo 268K/85w)

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 & *cooldown*, turbo at 90K at 64min mark, cryo started at 74min mark, at 90min mark cryo & turbo shut down????

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 Started pumpdown, Turbo stalled out at 11k, turned off Turbo & set Feed to manual mode, leaving Roughing Pump all night at high speed.

2016-11-15 Started Turbo but keeps stalling out at 11k rpms, can hear hissing from bellows area, shutdown system. Attached leak tester to complete Feed through foreline outlet on Turbo, large leak & leak tester can't pumpdown. Disassembled Feed front end & leak tested SS Base plate, large leak at bellows.

2016-12-22 Removed SS Base plate, new bellows (PO 2986) adapter installed, bellows/Base plate passed leak testing.

2017-01-02 Installed Base plate, Turbo, Cryo, Pyramid assemblies & Glass Dome installed & Feed ready for pumpdown/cooldown. Started pumpdown & cooldown, turbo at 90K at 64min mark, cryo started at 77min mark, at 120min turbo shut down???? Turned off Cryo & let Feed warm-up, started Turbo, running at 3800rpm/ 35watts, shutdown. Hooked up leak tester to Feed at foreline KF flange, gross leak tester could not pumpdown.

2017-01-(04+11) Disassembled Feed & removed SS Base plate. Confirmed gross leak at Bellows, had Bellows removed from Base plate. New Bellows (Metal Flex 2016 PO) welded in, passed leak test, reassembled Feed.

2017-01-13 Started pumpdown& cooldown, turbo at 90K/16watts at 62min mark, cryo started at 74min mark, Turbo watts going up 90k/23watts, shutdown Cryo, see if Vac system can get watts back down below 20watts. Turbo started losing rpms after 50mins, Turbo shutdown at 53mins (81k/76watts). Shut power off, hooked up leak tester to Feed at foreline KF flange, after 40mins the leak tester was able to pumpdown to the test range He 10^{-10} , no leak found. Disconnected leak tester, reinstalled foreline & started manual mode pumpdown with only the roughing pump at high speed for 2hrs. Started normal pumpdown & cooldown, turbo at 90K/9watts in 4mins, Cryo started in 15mins.

2017-01-17 Vac & Cryo fine, 90k/14watts, 65/68K/176watts, both LNA's biasing properly but X poles Id is moving around 5-9mA, maybe oscillating.

2017-01-19 Losing ground on Turbo watts, changed roughing pump to high speed, 90k/9watts, 65/68.4K/182watts.

2017-01-20 Started noise testing, vac & cryo good, X poles working fine, Y pole working but can't get Id above 21ma, gain low, best gain at 16ma? (data recorded), may have to change y pole LNA.

2017-01-27 Replaced cable that runs from PAX (biasing)/cryo board/control board to Dewar, though that the biasing problems may be due to cross talk in that cable, hooked up PAX & tried to adjust biasing, no change Y pole Id not changing with Vg increases, Feed ready to deliver to HCRO.

2017-02-01 Delivered to HC (3of4), installed on antenna 3C, 24 + 48v power supply up-dates added to Rim Box. Turbo, Cryo & LNAs working properly, Noise test preformed for X & Y(data saved), left rs-232 adapter cables at Minex, they will not be able to communicate with the Control board, need to send adapter cables to HC for them to install, cable sent on Friday Feb 3rd. (data saved).

2017-02-03 Can't communicate with Control board, rs-232 cable from Feed (old ion pump control) was left plugged into the 24v power distribution board, may have

caused problems, 24v power supplies failing, may have caused problems with the Turbo's controller, tried to communicate with the Control board with Elin & Marks help but inconsistent results.

2017-02-08 Feed Test Report sent to HCRO (Elin).

2017-02-13 Went to HCRO to sort out rs-232/24v/Turbo/C-board problems, 24v ps replaced, rs-232 cable adapter installed, turned on 24 & 48v power supplies, Feed Control board auto started, system has little or no vacuum, seems to have no damage to Control board or vacuum components, Turbo reached stalled out at 10k rpms, 44 watts, 1hr+, by mid-afternoon no change, most likely a vacuum leak at the bellows, shutdown Feed, needs to go back to Minex for repairs.

2017-06-(13-14) Repaired Feed at HCRO, removed Feed from Antenna 3C, disassembled & replaced SS Base plate/bellows assy (MetalFlex 347 SS) in shop, reassembled Feed & installed in Antenna 2M, Vac (<10w) & Cryo (240w) working fine.

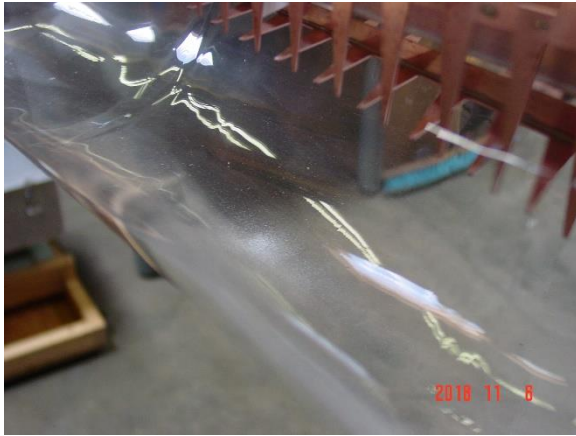
2018-01-01 Weather stripping missing for Cover on Enclosure, repair on next trip.

2018-10-26 Feed returned from Hat Creek by Jon Richards (4of4).

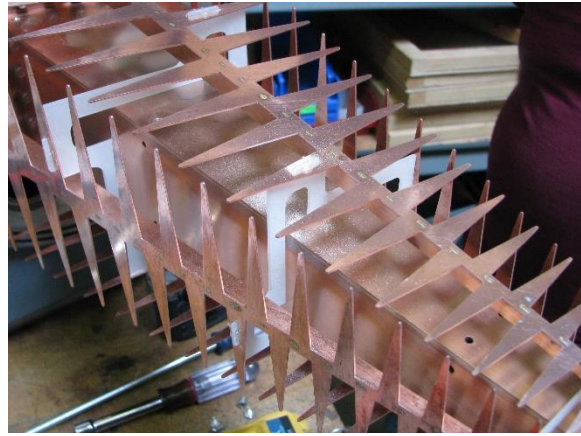
2018-10-31 Removed Feed from transport box into Screen room, checked LNA's condition, both poles have structure (data saves), biasing working properly (x -.50_.08_1.20_39.1)(y -.50_.08_1.20_37.7), started pumpdown, Diaphragm pump very loud hi-speed, 2nd try completed pumpdown, Diaphragm pump loud low speed (90k/18watts), started cooldown but stopped once it looked correct (272K/281K/76watts)(data saved). Turned off Feed & set aside for inspection of tip.

2018-11-06 Removed Glass to inspect Pyramid & Tip, lots of vibration, lots of Rexolite dust (stand-offs), signs of moisture, all 4 sides of the Tip have damage (data saved), over heating damage to PAX case foam, air supply conduit to PAX case may have been disconnected, inside of enclosure dusty.

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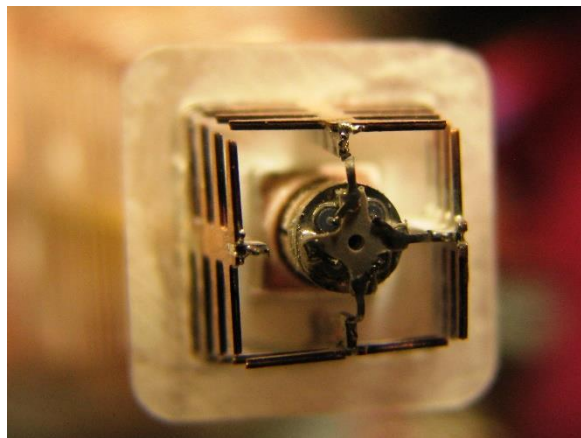
Rexolite dust on glass interior.



More dust on Arms & Pyramid.



HCO dirt on interior of enclosure ?



Tip view.

