

## Return Evaluation Comments

This unit operated at HCO for 1 year 5 months until returned for this evaluation. Vacuum system is good, and cryo system is good. Four tip links are broken and rexolite is abraded a little by vibration.

## History from Data Sheet

Serial Num: 5C4-017-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

2016-06-(22-24) Installed Turbo/Diaphragm pumps, Cryo pump with suspension system, temp sensors, wiring harnesses & foreline valve assy.

2016-06-24 Enclosure & PAX case 80% completed.

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

2016-10-17 Systems test & firmware & jumper on to Control board, did Control Board reset & set board to auto mode, 3<sup>rd</sup> attempt turbo made it to full speed (2hrs). (vac 90K rpms/10 watts & Cryo 288K/62 watts)

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 reaches 90k/12watts at 65min mark, Cryo started at 73min mark, Feed cryo temp headed to 65K. Used Super Glue "Gel" on front stand-off (going back to liquid).

2016-12-07 Feed Vac & Cryo working properly, Vac 90k/7watts, Cryo 65/68/180watts. Checked LNA's, both X & Y poles working but Y LNA maybe oscillating, Id constantly changing. Feed ready for testing.

2017-01-20 Started noise testing, 90k/6watts, 65/68.4K/191watts, cryo temp & power changing every few seconds, 25+watts, 3-4 degrees. Both X & Y poles working well, 4+dB (data recorded), coldhd temp sensor problem.

2017-01-24 Replaced Coldhd RTD temp sensor & secured it's wire lead around the nearest ti-standoff. Started pumpdown & cooldown, Turbo reaches 90k/12watts 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 (4of4), installed on antenna 3D, 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 3<sup>rd</sup>. (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 sorted out rs-232/24v/Turbo/Control board problems, 24v P.S. replaced, rs-232 cable adapter installed, turned on 24 & 48v power supplies, Feed Control board auto started, system still has vacuum, seems to have no damage to Control board or vacuum components, Turbo reached 90k/10watts in 10min, Cryo started 5min later, by late afternoon Cryo was 65K/68K/148w, all systems working fine.

2017-05-01 RTD ColdHd temp sensor fluctuating +/- 5K, power fluctuating, sensor now reading 400K some of the time.

-----  
2017-06-(13-14) Went to HCRO, shutdown Cryo & Turbo, once Feed warmed-up, bleed off vacuum, on the antenna removed glass dome, installed Coldhd temp sensor with up-dated wire length & support, re-installed glass, started pump & *cooldown*, vac & cryo working fine.

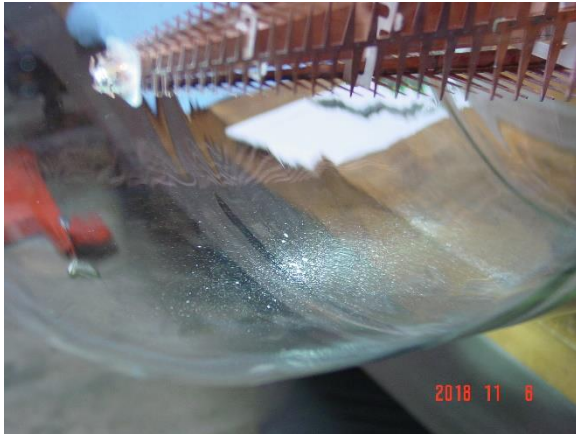
-----  
2018-10-26 Feed returned from Hat Creek by Jon Richards (1of4).

2018-10-29 Removed Feed from transport box into Screen room, checked LNA's condition, both poles have structure (data saves), biasing working properly

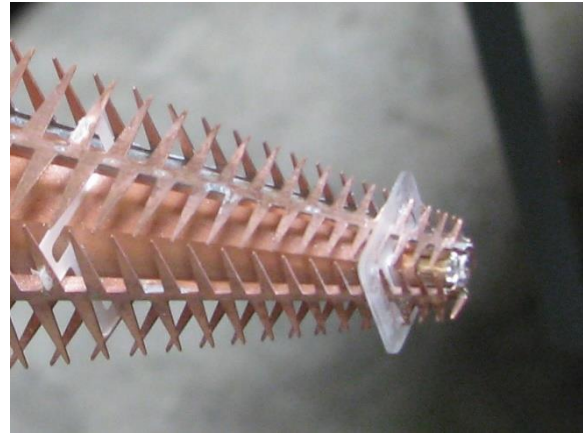
(x -.50\_.08\_1.20\_39.6)(y -.50\_.07\_1.20\_39.0), started pumpdown & completed, vac great (90k/9watts), started cooldown but stopped once it looked correct (270K/282K/77watts)(data saved). Turned off Feed & set aside for inspection of tip.

2018-11-06 Removed Glass to inspect Pyramid & Tip, signs of some vibration, some Rexolite dust (stand-offs), all 4 sides of the Tip have damage (data saved), no signs of moisture, inside of enclosure dusty.

~



Rexolite dust on glass interior.



More dust on Arms & Pyramid.



Note dust collected on Base Plate lower ?



Tip view, note gap to rexolite frame.

