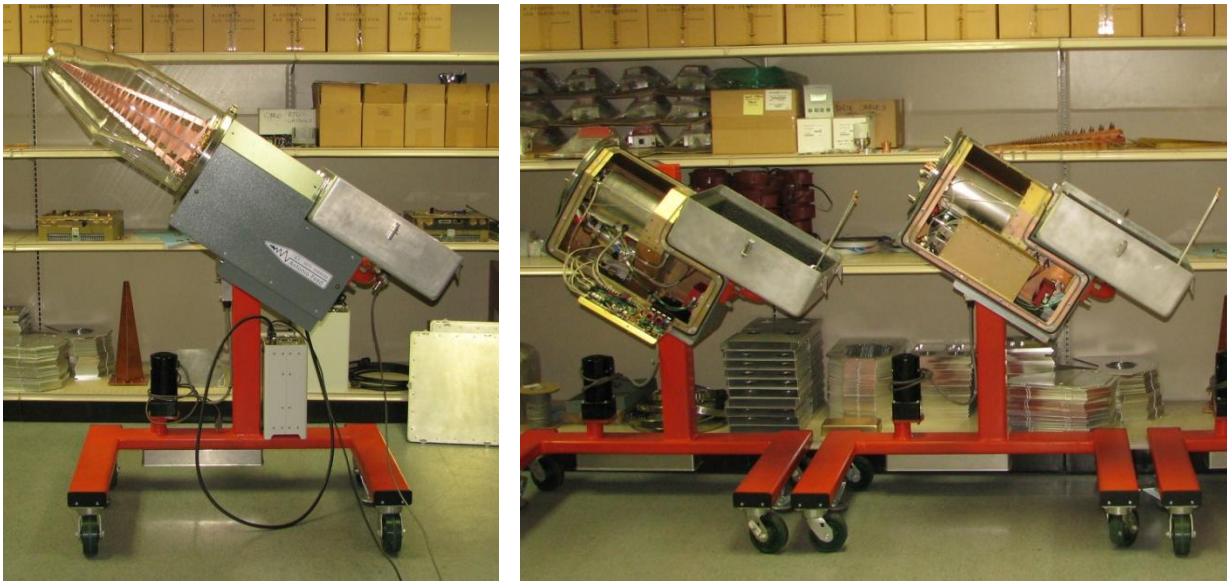
Status Antonio Cooled Feed Fab & Testing

2015-05-05, Matt Fleming

Contents:

Summary:

This document will be prepared periodically to communicate progress on design, fabrication and testing of the Antonio Feed also called the ATA Cooled Feed. Although we have begun the production of 44 feeds we still have the some lingering design issues as well as continual testing of various features. Progress has been made since the last report of 2015-03-05. Three currently in final assembly. Two of these feeds are headed to Hat Creek soon. The third feed will stay at Minex for long term lab testing. Five prototype borosilicate glass domes have been ordered and two have arrived. One dome was returned for rework. Glass dome source is now secure, feed tip components are secure, and LNA preparation is secure. Tip circuit assembly, although difficult has gone well. The new tip design in feed 001 will begin lab testing this week.



Feed 001, 002, 003 on stands.

Status of Production, Grouped by Section:

Administrative Activities: (no changes in this section)

- Contract: Minex and SETI are operating under a contract, extending through Oct 31, 2015. This contract is an extension of Phase 2 production of the Antonio Feed.
- Staffing: Matt Fleming, Peter McMann & Rob Spencer are primary full time staff working on the feed. Richard Barcellos is providing part time help with welding of housings and frames. No other major subcontractors are engaged at this time. Chris Munson is providing project oversight and reviewing daily progress approximately 4 times a week.
- Schedule: The first 2 delivery dates have slipped 30 days. Effect on the remaining delivery dates is unclear at this time.
- Financial: SETI has paid all outstanding Minex invoices. The delayed delivery schedule is a concern for cash flow. Funds are tight but appear adequate for projected spending.

Kit Parts Vacuum Chamber Section:

- Base Plates: About 7% complete. (up from 6%) Three stainless base plate assemblies have been completed. The design was modified. Material for 43 more has been ordered. This includes cooler and turbo mounting flanges.
- Flex Plates: About 65% complete. (no change) The Flex Plate Assy connects the end of the Cryo-cooler to the base of the pyramid. Each soldered unit has about 60 copper sheet components in the design. All parts are complete and cleaned and two fixtures for soldering the assemblies have been completed. The soldering process has been used 3 times now.
- Pyramid: About 75% complete. (no change) All Pyramid base and all pyramid wall parts have been completed. Pyramid soldering is 55% complete. Pyramid tip parts are 60 % complete and pyramid tip final soldering remains. All items require extensive cleaning.
- Arm Assemblies: About 55% complete (no change) All component parts are complete. Cleaning and deburring is 20% complete. Soldering is 4% complete with improvements to fixtures and techniques. This activity may be done in conjunction with Feed final assembly.
- LNA Mount Group: About 58% complete. (up from 55%) About 95% of all component parts are complete. All parts have been cleaned. Only tip guide parts remain for fabrication. This activity may be done in conjunction with Feed final assembly.
- Dewar Glass Domes: About 4% complete. (no change) Only 2 borosilicate glass dome vendors remain engaged; one dropped out. Greatglas of Delaware, has delivered one unit, but it did not meet the dimensional specs especially related to thickness. That unit was sent back for rework and they promise it can be fixed. We received 1 unit from H. S. Martin of New Jersey and it meets dimensions well and two more are on the way. This would give us 2 sources for the production order of 40 additional units. No formal price has been given for production, however informal estimates seem to be a little higher than figures used in our budget estimates.
- Lens: About 5% complete. (no change) Jack completed the new lens design. Final drawings and vendor selection and fabrication remain to be done. Previous lens cannot be used.
- Foam & Fabric Covers: About 15% complete. (up from 10%) Foam has arrived, final design is complete and the vendor has been contacted to arrange a prototype.

Kit Parts Housing Chassis Section:

- Welded Housings: About 62% complete. (up from 60 %) Three aluminum chassis housings have been welded, pained and used. About 98% of all parts needed for housing fabrication have been completed and are ready for welding. Welding will continue for some time.
- Other Housing Parts: About 95% complete. (no change) Most all internal housing related parts have been fabricated. Some require anodizing. Tube covers, vent screens and dust filter parts are the only remaining parts needing attention.
- Vacuum System: About 90% complete. (no change) Low vacuum system parts are detailed some additional parts must be ordered.
- Cryo-Cooler System: About 85% complete. (no change) Modifications to the heat rejection disc is 10% complete and will be ongoing.
- Blower System: About 50% complete. (from 30%) All Mount plates are complete, About 60% of blowers are now in stock.
- Electronics Module: About 50% complete. (no change) All Control Boards are complete. Mounting plates, pins & bushings are 100% complete. Assembly remains.
- Wiring Harnesses: About 10% complete. (no change) Harnesses have been prototyped and 3 completed. Additional connectors and wiring components have been identified & 80% have been ordered. Assembly remains.
- Pax Case Modifications: About 5 % complete. (no change) Three units are modified. Others will be addressed during feed final assembly.

Feed Final Assembly & Testing:

- Feed 000: About 100% complete. (no changes) Installed on antenna 2e. Special fused quartz radome and preliminary housing. Testing at Minex and Hat Creek has been completed. Feed communication to the main lab has not been established. At some point this feed will need to return to Minex for an updated Housing and Base Plate and other parts.
- Feed 001: About 96% complete. (up from 80%) The remaining parts are Lens and Fabric Cover. Vacuum looks good and cooling looks good. Testing will begin this week. (quartz dome on this one)
- Feed 002: About 90% complete. (up from 90%) Unit is mounted on an assembly stand. Most major components are installed. The remaining parts are, feed arms, LNA group, lens and fabric cover, glass dome. (borosilicate glass on this one)
- Feed 003: About 90% complete. (up from 60%) Unit is mounted on an assembly stand. Most major components are installed. The remaining parts are, feed arms, LNA group, lens and fabric cover, glass dome. (borosilicate glass on this one)

Other Tasks:

- Improved Screen Room Test Facilities: (no change) Improved lighting is still needed. New coax cables have been identified but the cost is outside our current budget, so we will wait a bit longer.
- Feed Tip Assembly Fixture & Testing: About 90% complete. (up from 30%) Tip design is now complete. Testing will determine if we have a successful design. Both capacitor board and flex boards are in stock. The assembly fixture is very useful, but a microscope vision system is needed.
- Coax Stripping Tool: (unclear) Purchased stripper was found to be inadequate. A new custom unit was built at Minex. It works fine.
- Software: Some minor improvements to software are needed. Fan speed adjustment and diaphragm pump control need attention.

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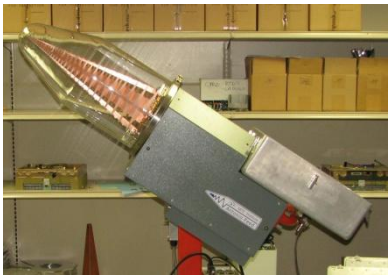
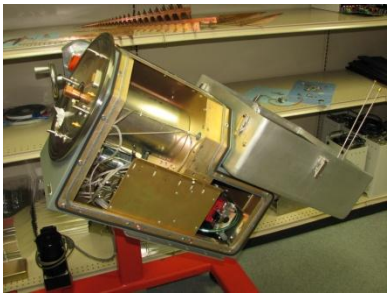
Photos of Production



Feed 001 on stand.



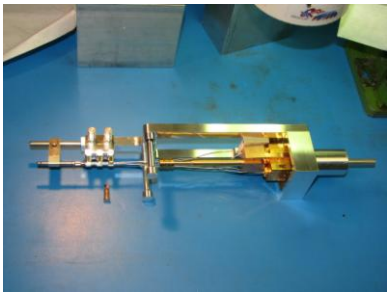
Feed 002 on stand.

Feed 003 on stand.

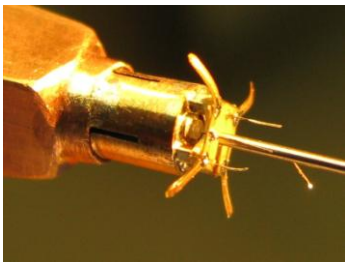
New glass dome.

View of new decal.

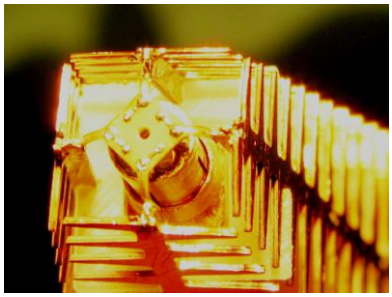
Bake out blanket.



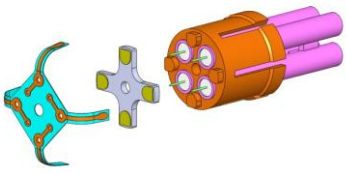
LNA module assy fixture.



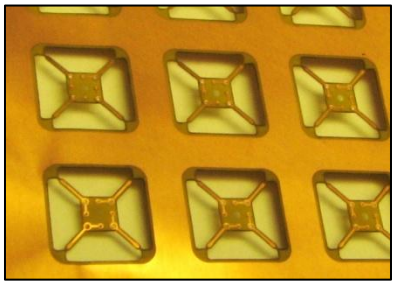
Flex circuit installation.



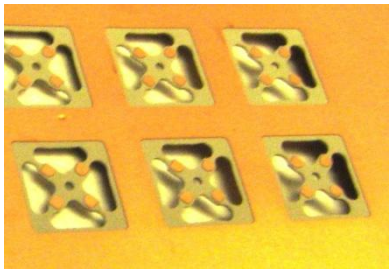
Finished tip.



New Tip Final Design.



New Flex Circuits.



New Capacitor Boards.

Ratio (3 x 4)(1.5 x 2.0) End.