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# Disk Sector Production

Pixel Local Supports  
Production Readiness Review

# Overview

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- All production of disk sectors will be done at Lawrence Berkeley National Laboratory.
- Critical tooling
  - concepts validated by prototype construction
  - production tooling under final design
- Critical materials
  - Carbon-carbon - sample testing in progress to see if meets specs.
  - Densified foam - all in hand for production
  - Aluminum tubes - all in hand for production
- Critical personnel(two people) - in place
- Ready to begin preproduction this month.

# Schedule Summary

- Prototype phase is complete.
- Production materials in hand or on order. This was largely required by minimum order requirements and to reduce NRE costs.
- Preproduction
  - Minimum of 10 sectors, one complete disk + at least 2 more for “sacrificial” testing.
  - Will mount on preproduction ring.
- Some production steps can start before preproduction complete(eg. faceplates, tube bending..)

Task Name	2001												2002				
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
<b>Materials Fabrication / Procurement</b>	[Blue bar from May to Aug]																
<b>Prototype</b>	[Green bar from May to Jul]																
<b>Pre-Production</b>													[Red bar from Aug to Mar]				
<b>Production</b>													[Purple bar from Jan to Sep]				

# Assembly Summary

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- Will summarize materials and the sector assembly sequence in next slides.
- Photos are of most recent prototypes
  - Note that tubes for these prototypes were not production length
- QC/QA steps are defined (but won't say much about them in this talk)
  - ATLAS document and interface to production database
  - Draft LBNL travellers in place.
  - Sample testing planned

# Materials

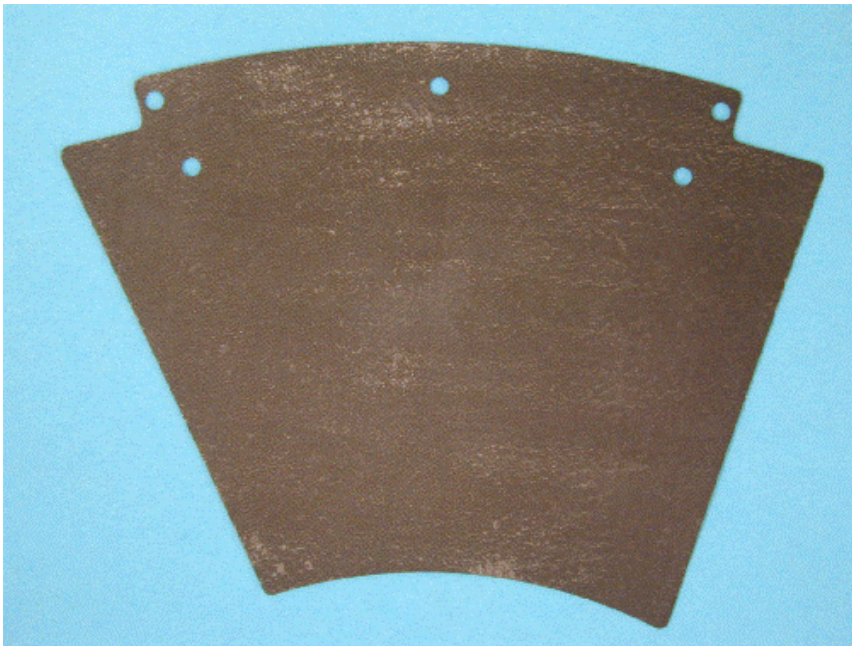
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- Carbon-carbon panels from Allcomp, Inc
  - Sector faceplates
  - Facings of disk support rings
- Extruded aluminum tubes from TW Metals
  - 4.7mm x 2.3mm OD with 0.305mm wall
- Reticulated vitreous carbon foam, CVI densified(0.15 g/cc) from Allcomp, Inc
- Thermal compound AIT CGL-7018
- Bryte cyanate ester film adhesive
- Carbon-carbon plate(hardpoints) - in hand from BFG
- PEEK mounting buttons

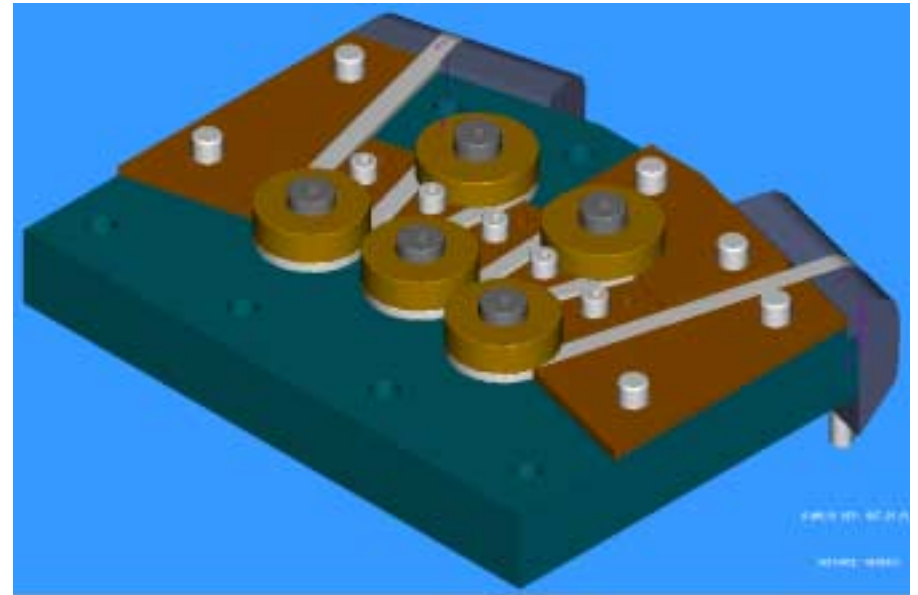
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# Summary of Assembly

# Cut Faceplates and Bend Tubes



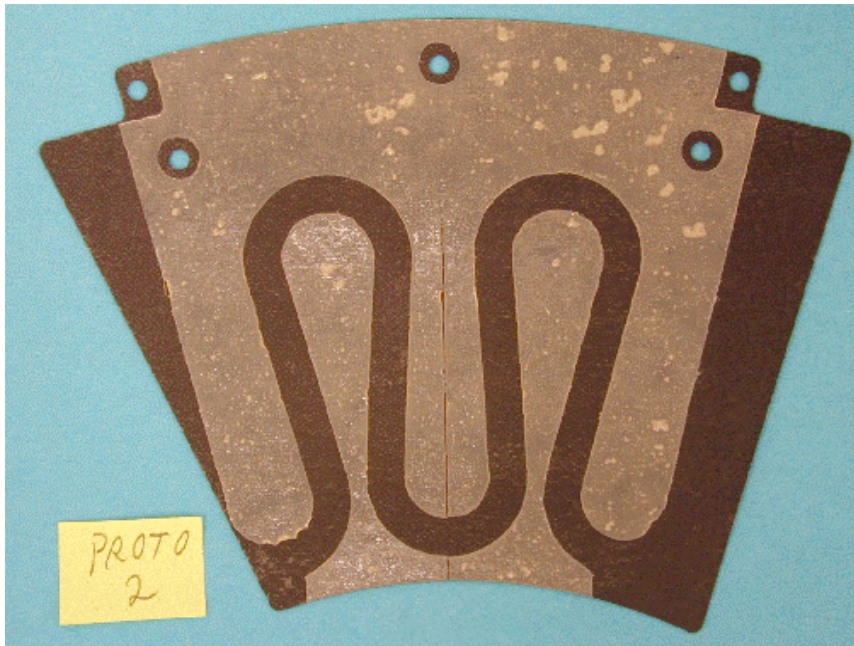
Faceplates are cut from carbon-carbon plates. Holes cut.



Tube bending tooling model.



# Film Adhesive and Foam



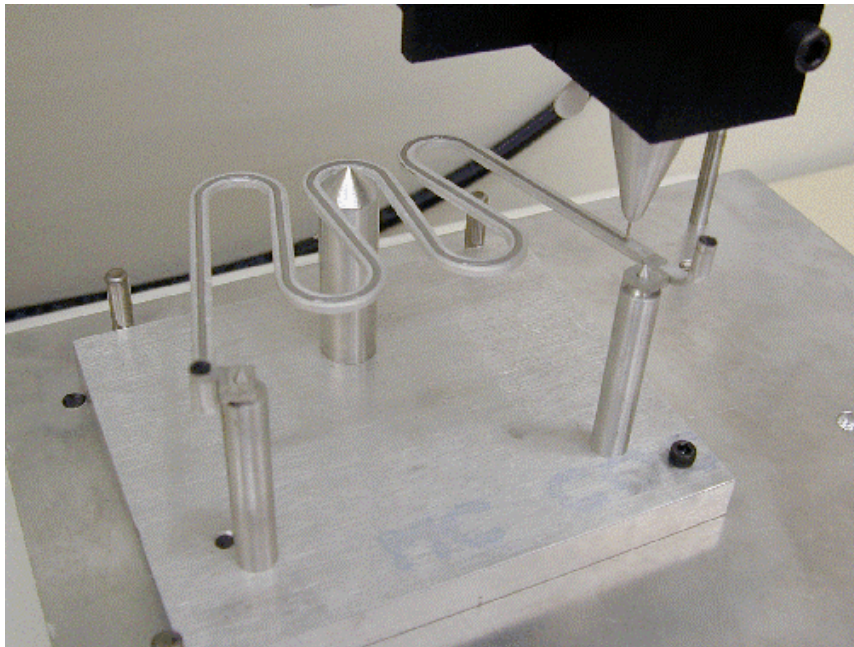
Cyanate ester film adhesive is cut and applied to faceplate.



Rough-cut foam is attached.



# Thermal Compound and Cut Foam



Thermal compound is applied by glue robot to tube.



Tube profile is cut in foam.

# Insert Tube and Bond Faceplate



Tube with thermal compound in half of sector.



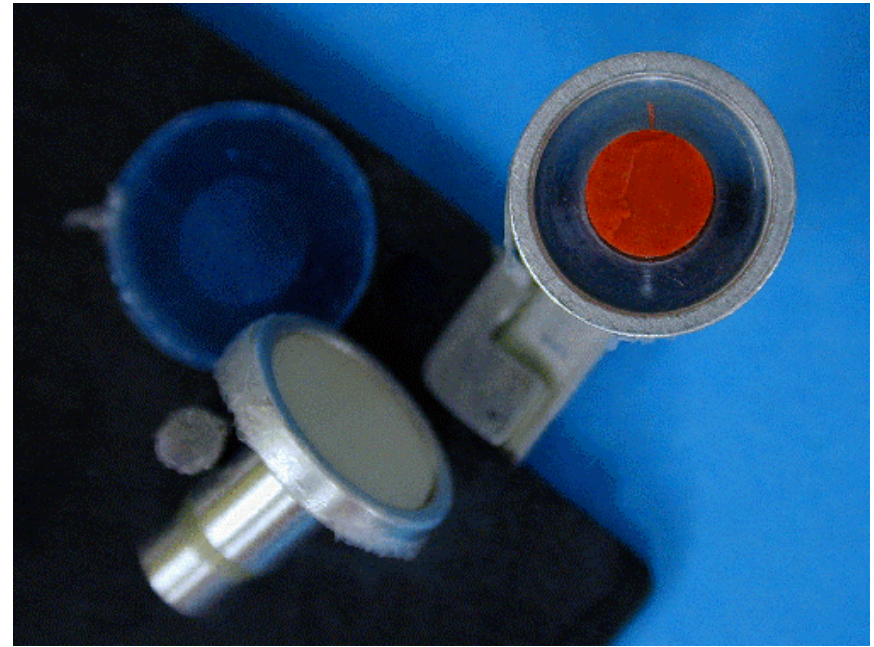
Second faceplate bonded.



# Buttons/Fittings and Prep for Parylene



Support buttons and coolant fittings added.



Plug holes, cover for 8-12 $\mu$  parylene coating.

# Finished Sector

- QC/QA steps for parts and during assembly are specified.
- Testing after final assembly
  - Visual inspection
  - Thermal QC will be done with vacuum fixture to bring Pt-on-kapton heaters into contact with sector. IR thermography. This will be done for all sectors.
  - Sample testing (using procedures developed for prototypes) planned, particularly early in the production.

