

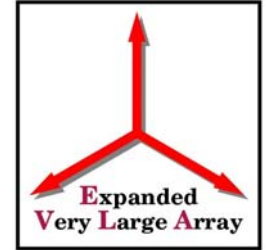
Fabrication and Mass Production Plans for Laminated Feeds

L-Band

S-Band



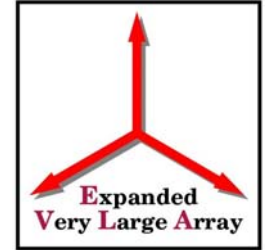
Lamination vs Machining



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- To Laminate or Not to Laminate, that is the question
 - Cost effectiveness for large feeds
 - Weight Reduction
 - Proven effective with VLBA L-Band



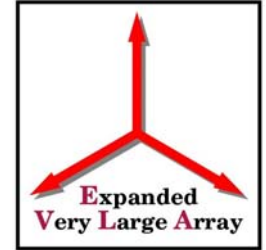
Laminated Feed Assembly Overview



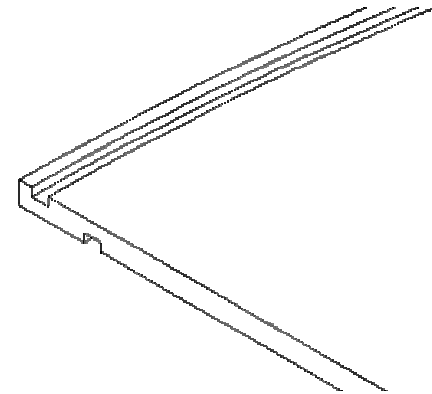
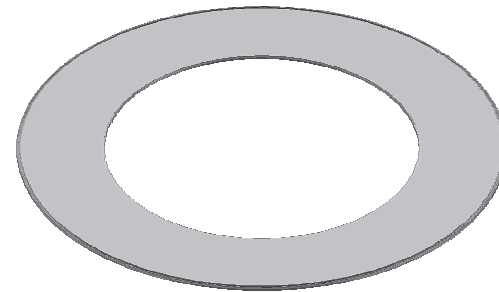
- Cut the rings and bands
- Assemble the rings and bands on a Christmas Tree
- Laminate the assembly
- Apply surface finish to the inside of the feed after lamination



Rings

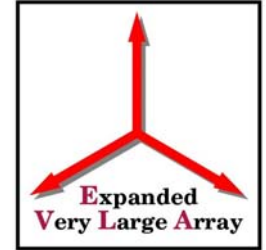


- Made of 6061T6 Aluminum Sheet
- Cut at the VLA site by a custom build ring machine
- Grooved on the edges to accept the bands

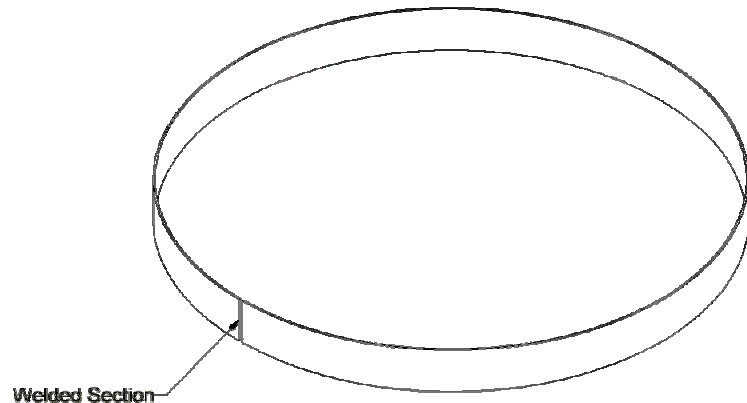




Bands

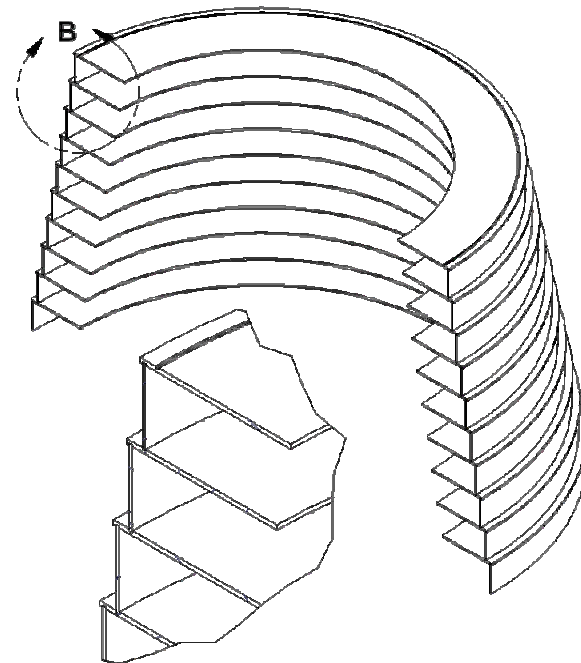
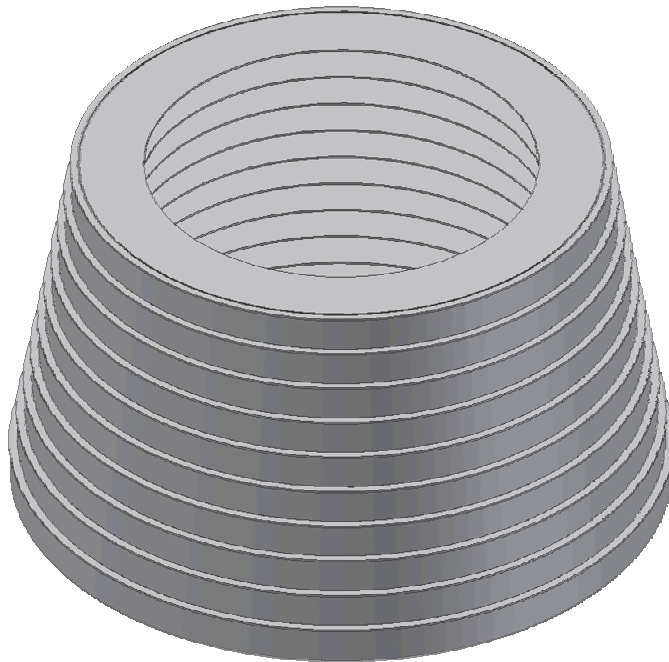
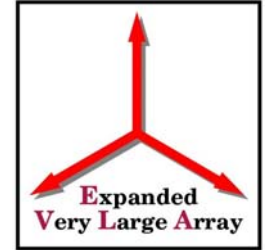


- Bands are made of 5053H34 Aluminum Strap
- Cut to length and welded at the VLA site



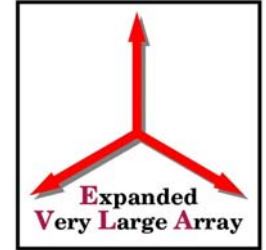


Rings and Bands Interface





Christmas Tree

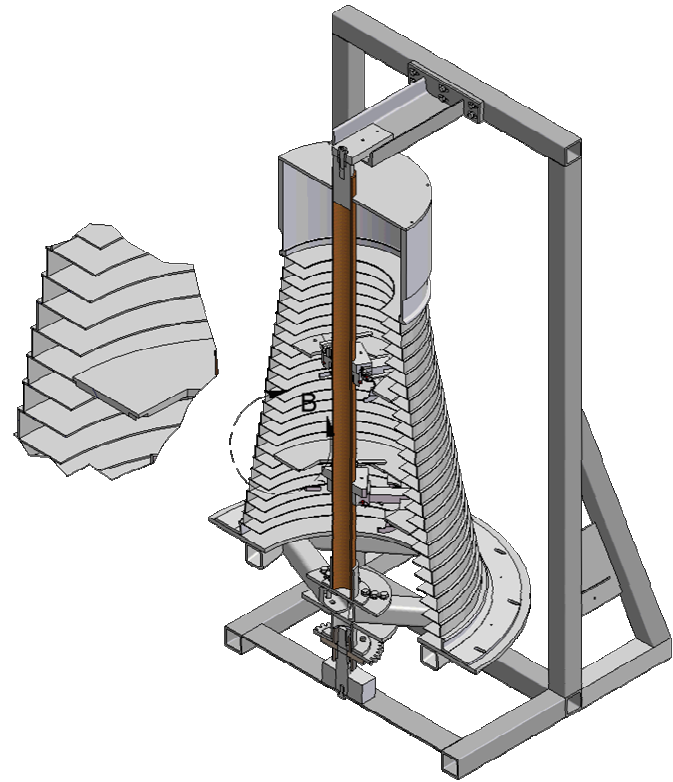
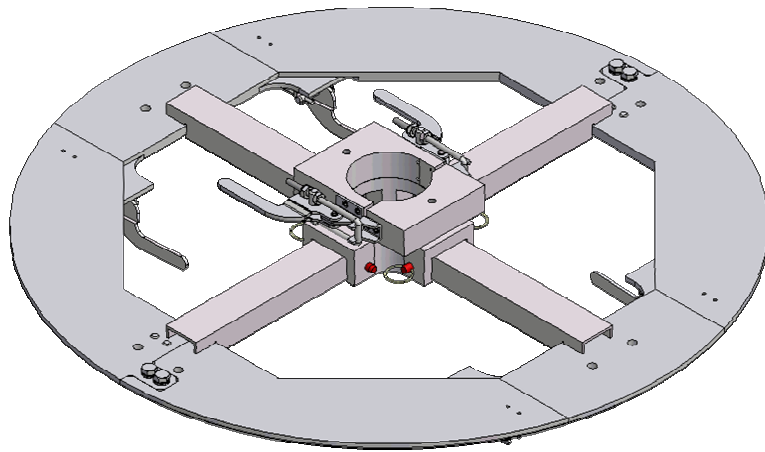
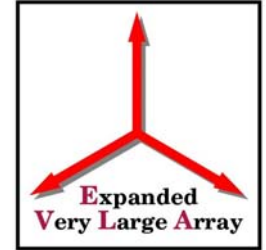


- Feed assembly jig
- Centers rings and bands
- Applies pressure during lamination
- Rotates during the laminating process



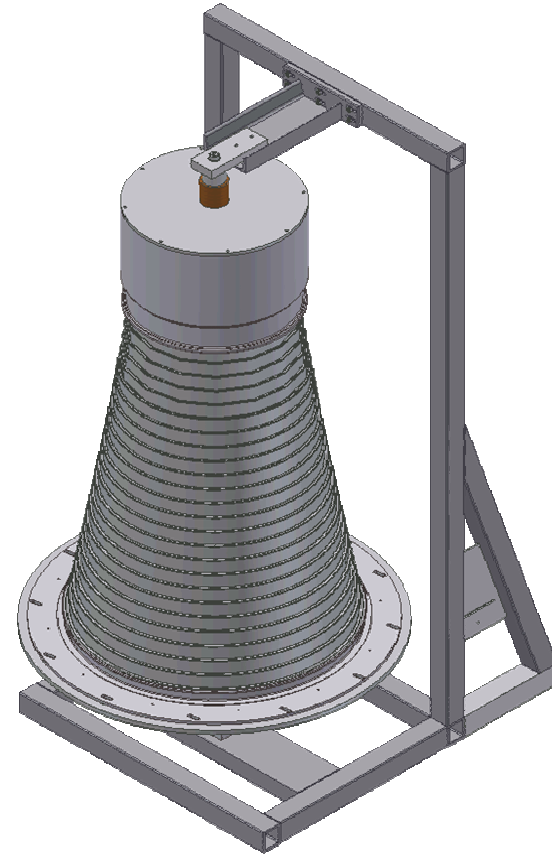
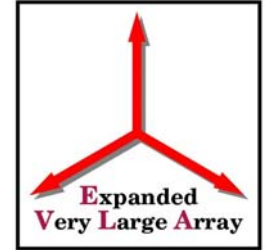


The Christmas Tree



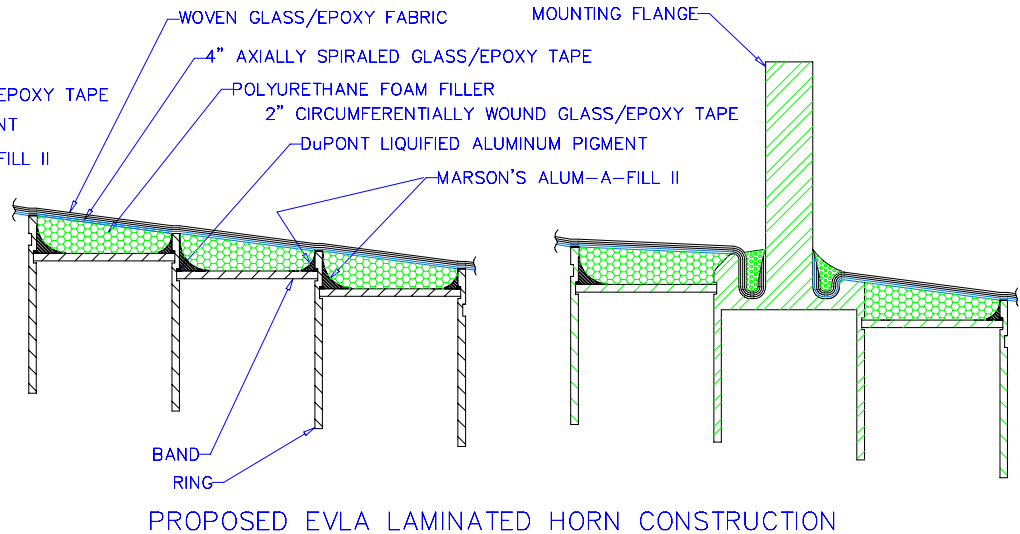
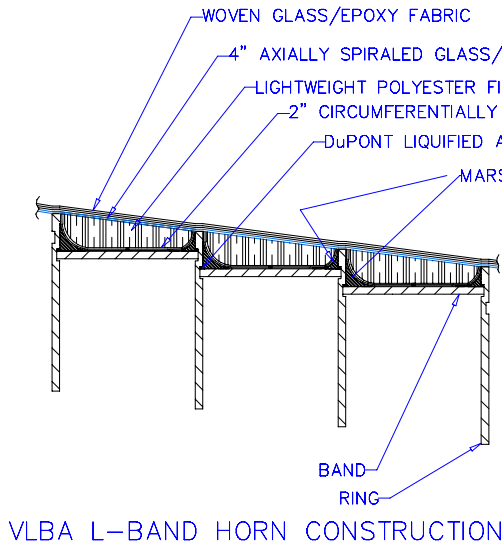
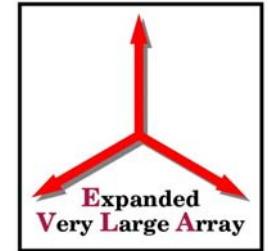


Christmas Tree



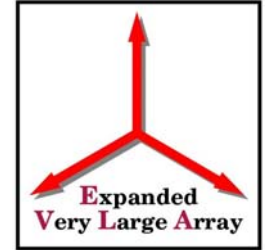


Laminated Horns



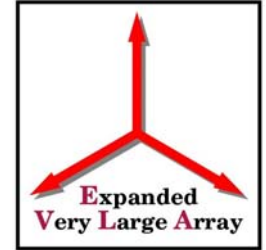


Before and After





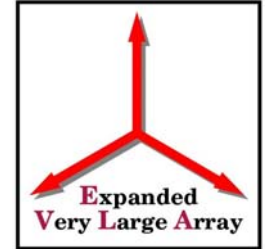
Laminated Feeds to Date



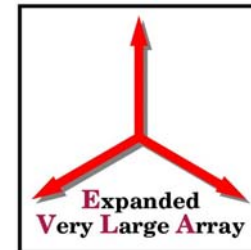
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- VLBA L-Band Feeds
 - GBT - 2 Laminated Feeds (S and L Band)
 - EVLA - 2 L-Band Feeds
 - EVLA - 2 C-Bands Feeds
 - Currently Laminating 3rd L-Band



The Lamination Experience



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- C-Band has a break even point between lamination vs machining from c-cast material
 - L-Band feeds are easier to handle when laminated in two pieces
 - Developed good techniques and tools



Questions?