Antennas & Feeds
Mechanical Design

Feed Cone
Feed Mounting
Horn Fabrication
Feed Cone

• Why?
  – More Frequencies
  – RFI Containment
  – Reduced clutter at antenna vertex

• How?
  – Similar to existing K/Q segments
  – Monolithic
Feed Circle
The L-Band horn is not contained in the feed cone.
Feed Cone

SECTION THROUGH WALL PANEL JOINT
(ROOF SIMILAR)
Feed Cone

- **Unresolved Questions**
  - Aluminum or Polycarbonate core?
    - Aluminum cores are stiffer
    - Polycarbonate cores are better thermally
  - Service Access
    - Receiver heights vary greatly
    - Space will be at a premium
Feed Mounting

• Features:
  – Based on VLA X-Band
  – Continuous metal-to-metal for RFI containment
  – Simple horn installation and alignment
  – Convenient receiver swapping

• Which Bands?
Feed Mounting

Feed Cone Roof

Feed Horn (Weather Window Not Shown)

Flange – Welded Or Machined Into Feed Horn

Angular Adjustment Rings

Transition Piece

Clamp Ring

Section Thru Roof Mount
Feed Mounting

TURNBUCKLES (NOT SHOWN)

FEED HORN

ADAPTER WITH ANTI-COCKING FLANGES

RECEIVER BRACKET

WALL BRACKET

SECTION THRU RECEIVER MOUNT

RECEIVER

Jim Ruff

Antennas & Feeds PDR

2/12/02
Feed Mounting

FEED HORN

ANTI-COCKING FLANGE

WALL BRACKET

RECEIVER

SECTION THRU RECEIVER MOUNT
Horn Fabrication

• Laminated Horns (L, S and C)
  – Similar to VLBA L-Band horns
  – Reduce weight and simplify construction
  – Tooling
Laminated Horns

VLBA LAMINATED L-BAND HORN

C-CAST TOP & BOTTOM FLANGES

UNISTRUT TIE-OFFS

58.1/16
[1479]

85
[2158]
Laminated Horns
Ring Loaded Horns

• A Proposal for Ring Loaded Horns
  – Simplify assembly
  – Simplify receiver mounting
  – Improve flange mate-up reliability
  – Reduce manufacturing cost
Ring Loaded Horns