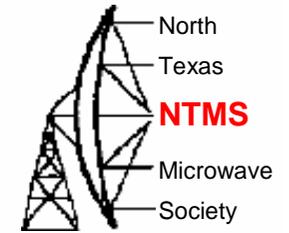North
Texas
NTMS
Microwave
Society

78 GHz W2IMU Feed
for Offset Fed Dishes

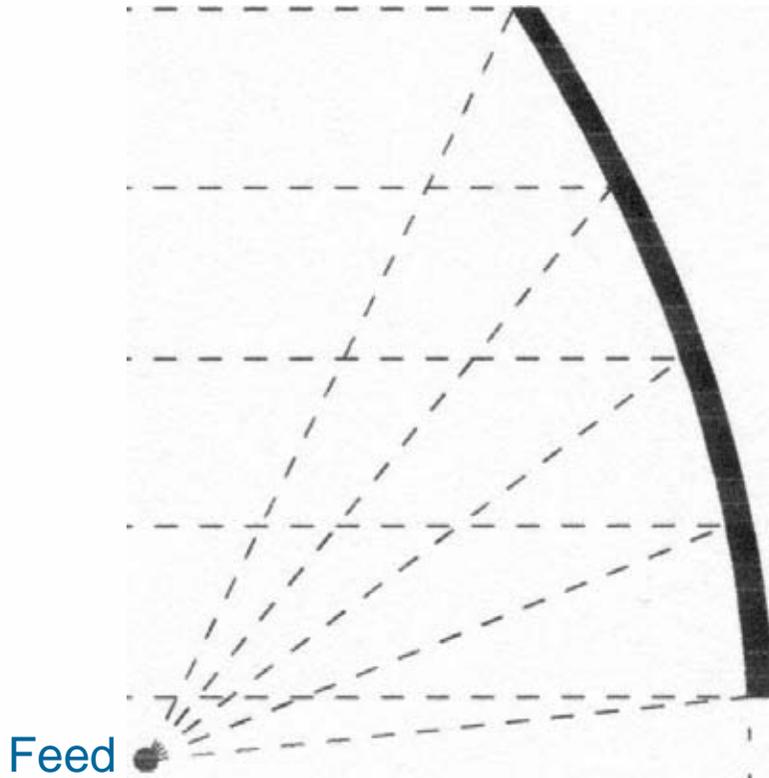## Jim Hudson WA5JAT
May 2006

78 GHz Dish Feed

- W5LUA Design Requirements
  - Dish Focal Length/Diameter = .7
  - Offset Feed
  - Round Waveguide Input
    - WR-10 Flange Hole Pattern
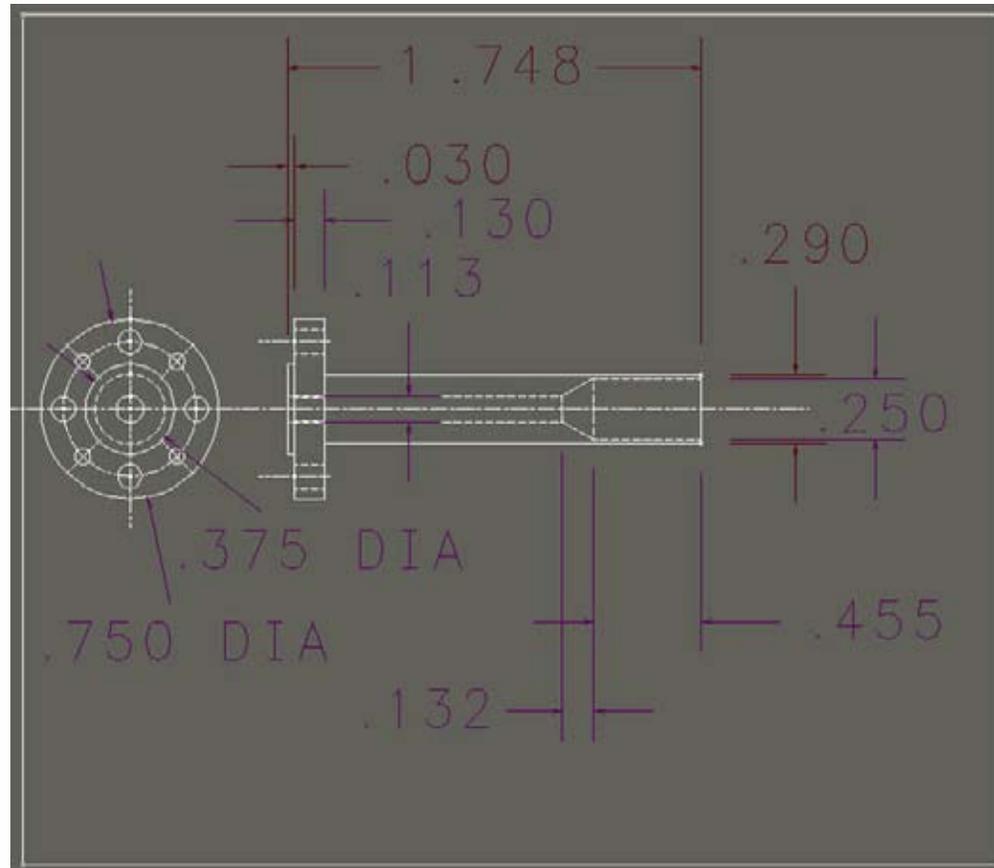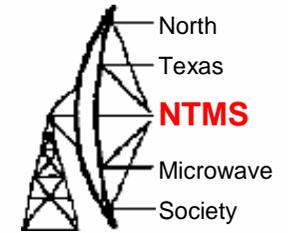 - W2IMU "Dual Mode" Configuration

78 GHz Dish Feed

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Feed

Offset Fed Parabolic Reflector

Example of Offset Feed
This one on 10 GHz

Example of Offset Feed
This one on 10 GHz

78 GHz Dish Feed

W2IMU Dual Mode "Scaled" Feed Dimensions

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78 GHz Dish Feed

- **Manufacturing Steps**
  - Rough Machine
    - Saw Stock with Excess Length For Chucking
    - Turn Ends to Clean Up
    - Center Drill
    - Drill Through - 7/64 Diameter
    - Counter Drill to .455 Depth – 15/64 Diameter

Center Drilling

W5HN

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78 GHz Dish Feed

- Manufacturing Steps
  - Final Machining
    - Install Tail Stock & Center
    - Turn Outside to .290 Diameter
    - Cutoff

Outside Turning

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78 GHz Dish Feed

- Manufacturing Steps
  - Final Machining – Cont'd
    - Remove Center and Install Tail Stock Drill Chuck
    - Ream Output .250 Diameter to .455 Depth

Output Reaming

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78 GHz Dish Feed

•Manufacturing Steps

•Final Machining – Cont'd

– 60 Degree Countersink Output to .455 Depth

– Ream Input .113 Diameter Through

– Countersink with Shop Made Reamer to .455 Depth
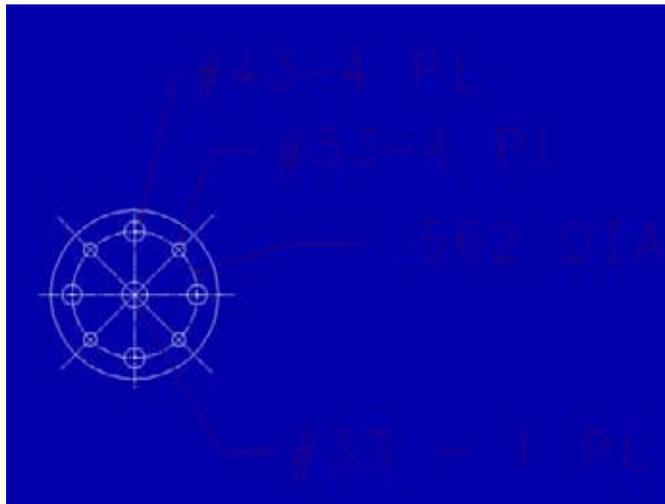
– Reverse in Chuck & Cutoff to Length

– Turn Flange

Machined Feed

W5HN

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78 GHz Dish Feed

- ## Manufacturing Steps
  - ### Final Machining – Cont'd
    - Apply Commercial Flange & Transfer 8 Holes
    - Tap 4-40 Four Places
      - Index Pins Not Needed

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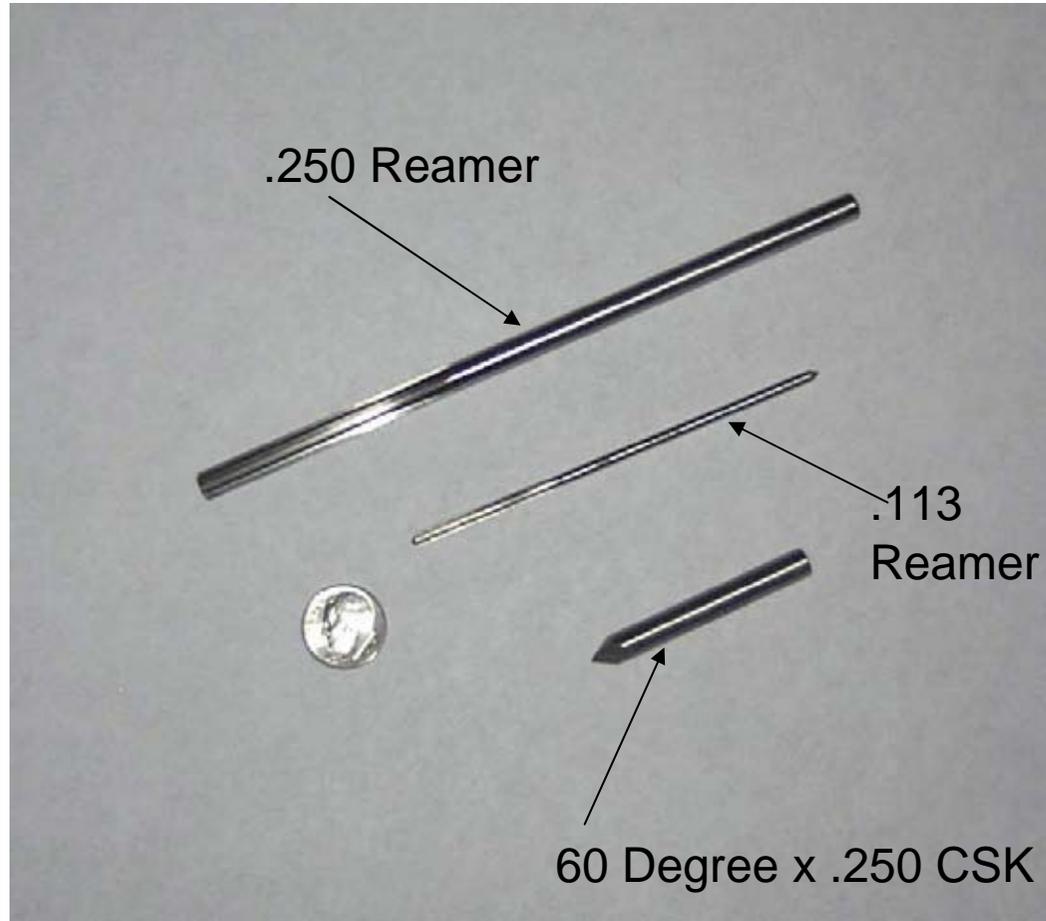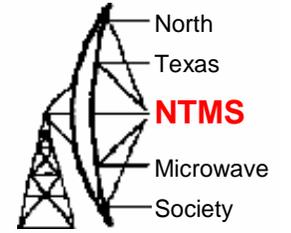Microwave
Society

78 GHz Dish Feed

- Comments
  - Better Tooling Needed For:
    - Flange Drill & Tap
      - Need A Way To Assure Centered Hole Pattern on Waveguide
    - Inside Diameter Transition
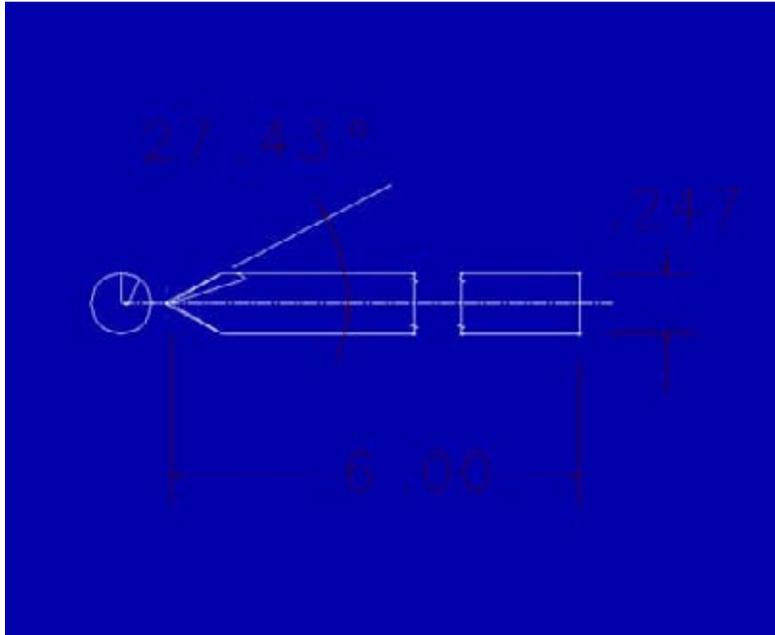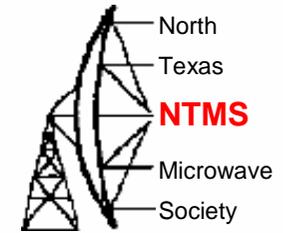   - Existing Tool Leaves Rough Surface
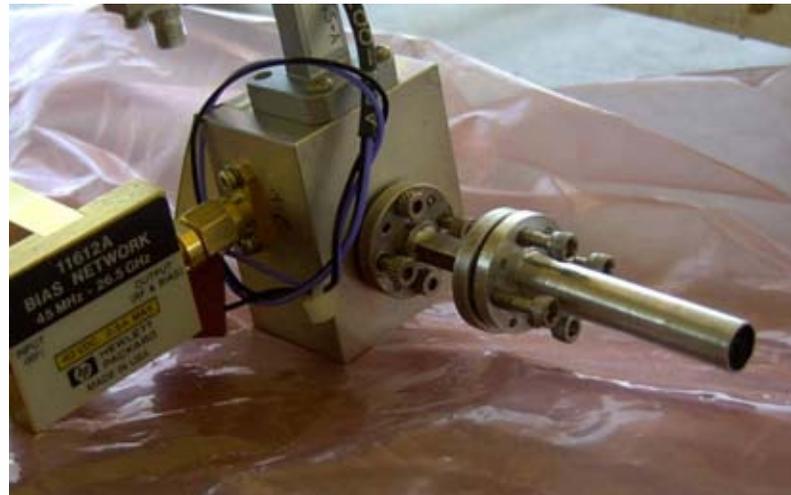
Feed Installed on Mixer

78 GHz Dish Feed

.250 Reamer

.113 Reamer

60 Degree x .250 CSK
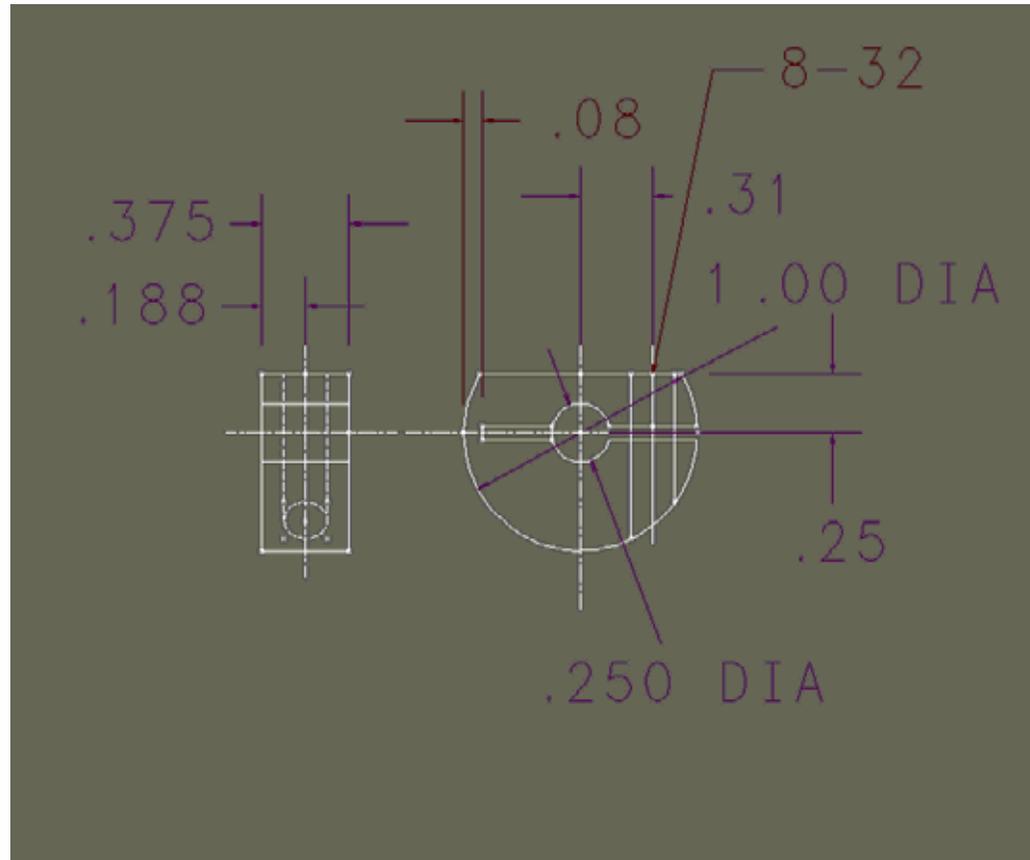
Commercial Tooling

78 GHz Dish Feed

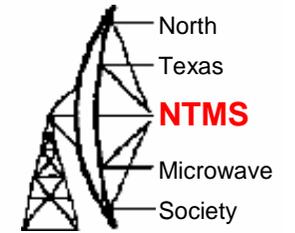Shop Made Finish Reamer
for Transition Area

Temporary "Tool Post" Grinder

78 GHz Dish Feed

Drill, Ream & Countersink "Depth Stops"