

# **PROJECT MEETING**

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## **VACUUM VESSEL SEGMENTATION**

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# Segmentation Considerations

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- **RF Heating**

  - Area on the inside of the vessel at the oblate section for antenna.

- **VV Flange**

  - 6 Sealing Surfaces

- **Assembly of Coils Over Vessel**

  - Coils have to fit over vessel during installation

- **Modular Coil Configuration**

  - 21 coils or 18

- **Shell Configuration**

  - How will the shell be segmented

- **Port Access**

# Locations for Segmentation

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## How Many Segments

Can't have flange at  $\phi=0$  because of nbi

Can't have flange at  $\phi=60$  because of Thomson scattering.

Therefore 6 segments are required.

## Options for Segmenting the VV

Option 1 - 3 inches on either side of  $\phi = 60$

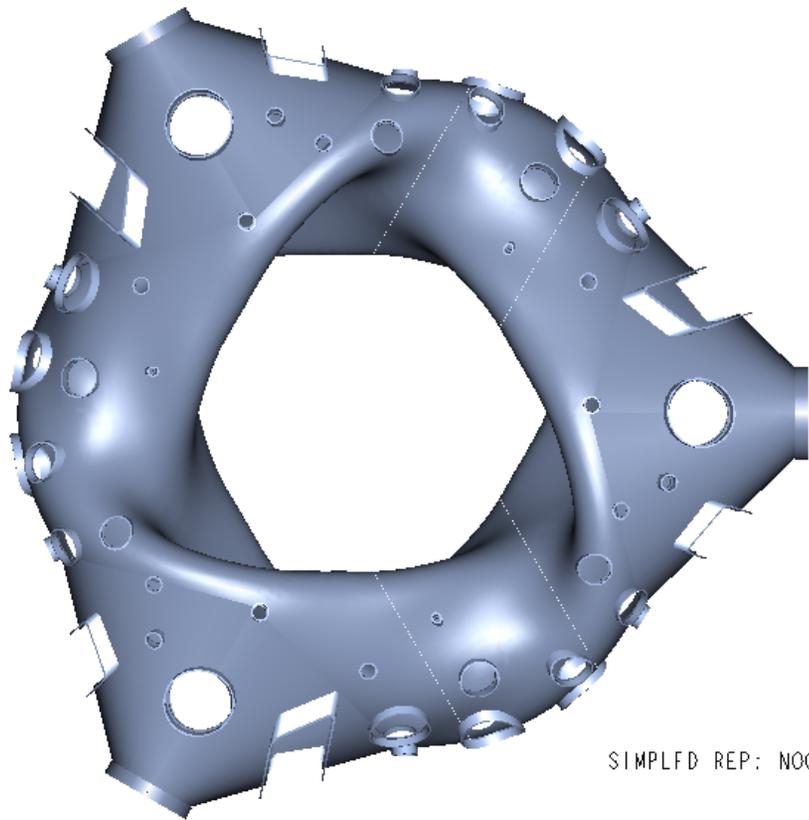
Option 2 - 16" offset from  $\phi = 60$

Accommodates RF Antenna

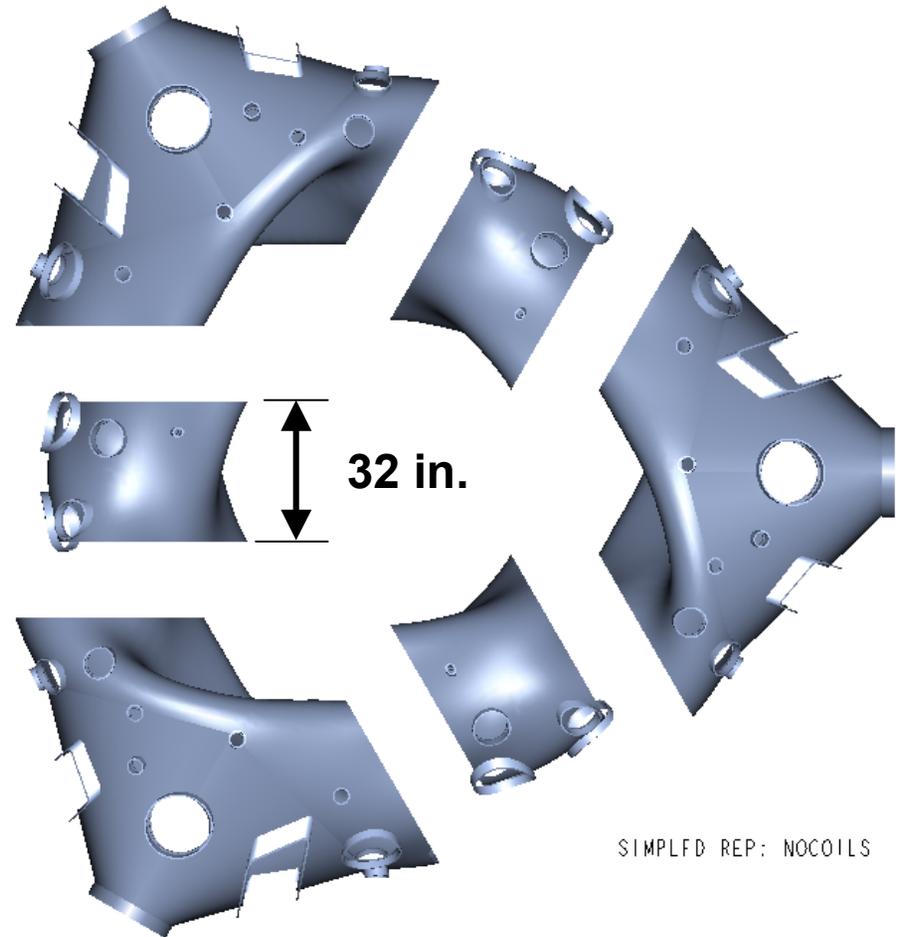
Option 3 – 6 x  $60^\circ$  segments

# Alternate VV Segmentation

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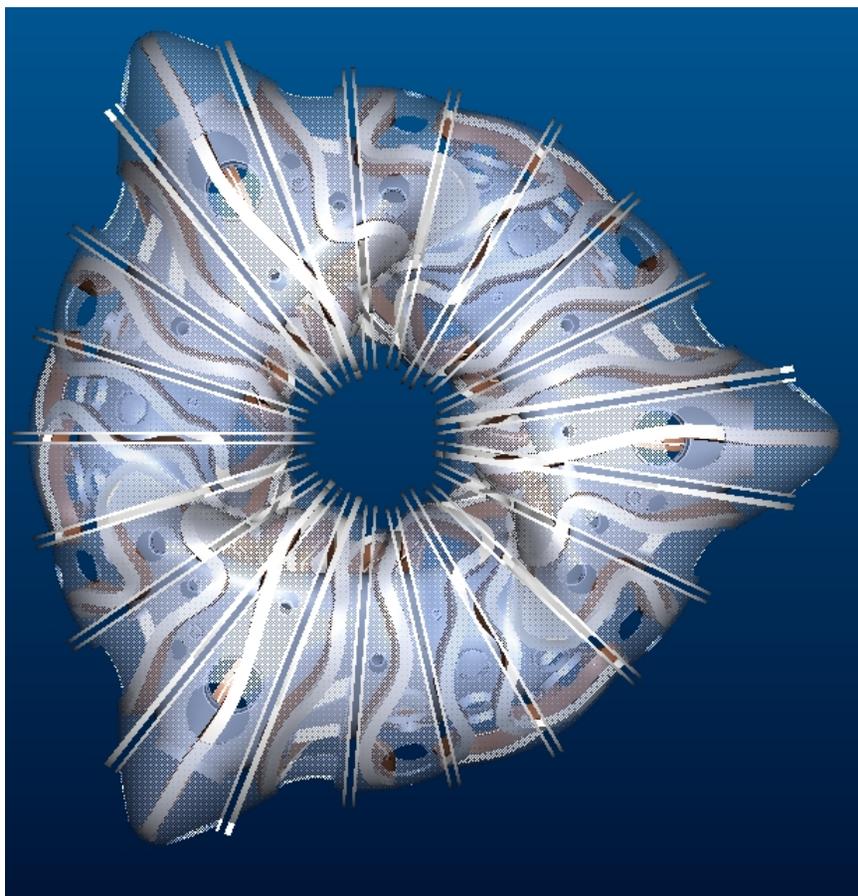
All segments assembled



Larger segments retracted  
20 inches radially

# Alternate VV segmentation, w/coils

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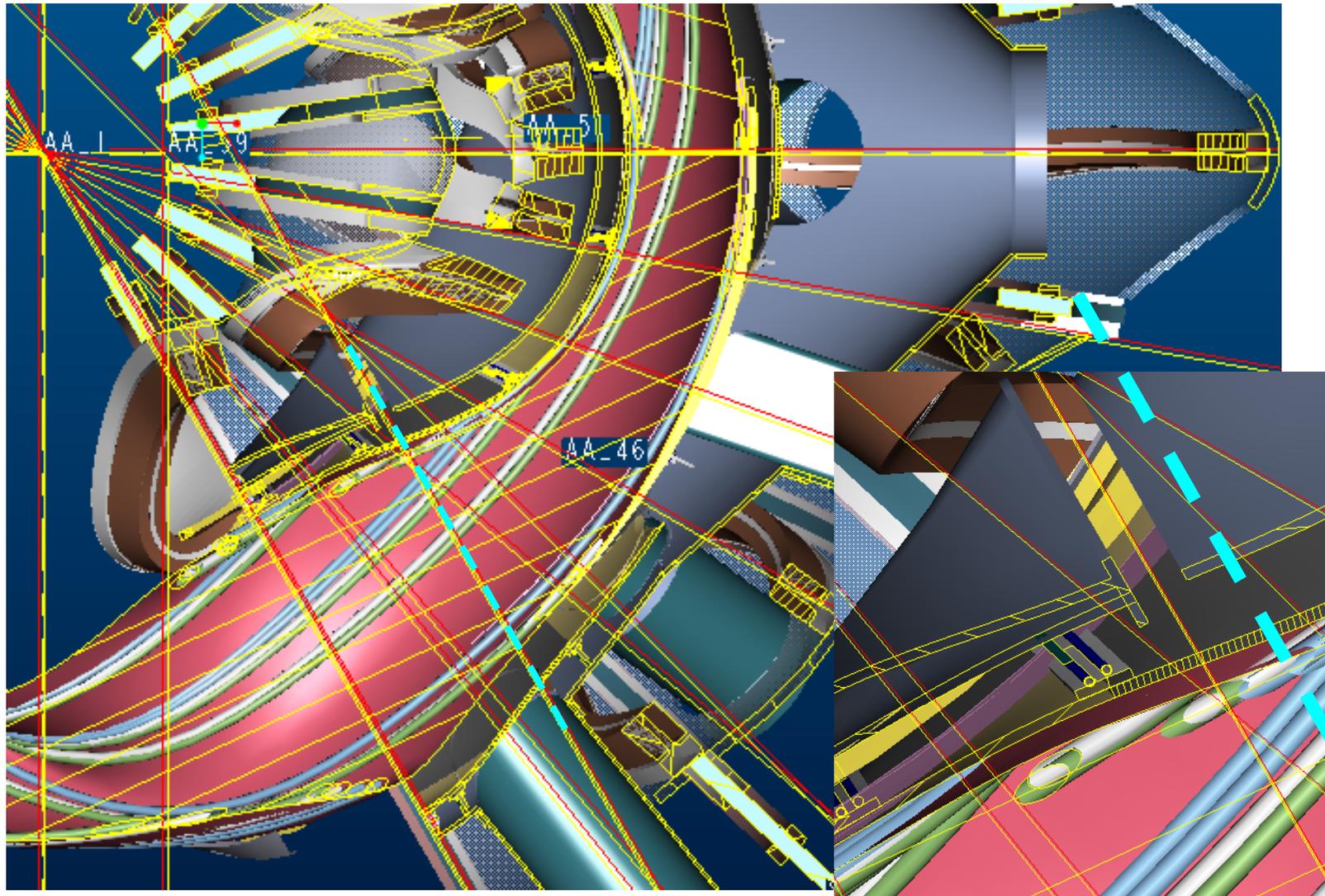
All segments assembled



3-coil segments retracted  
20 inches radially

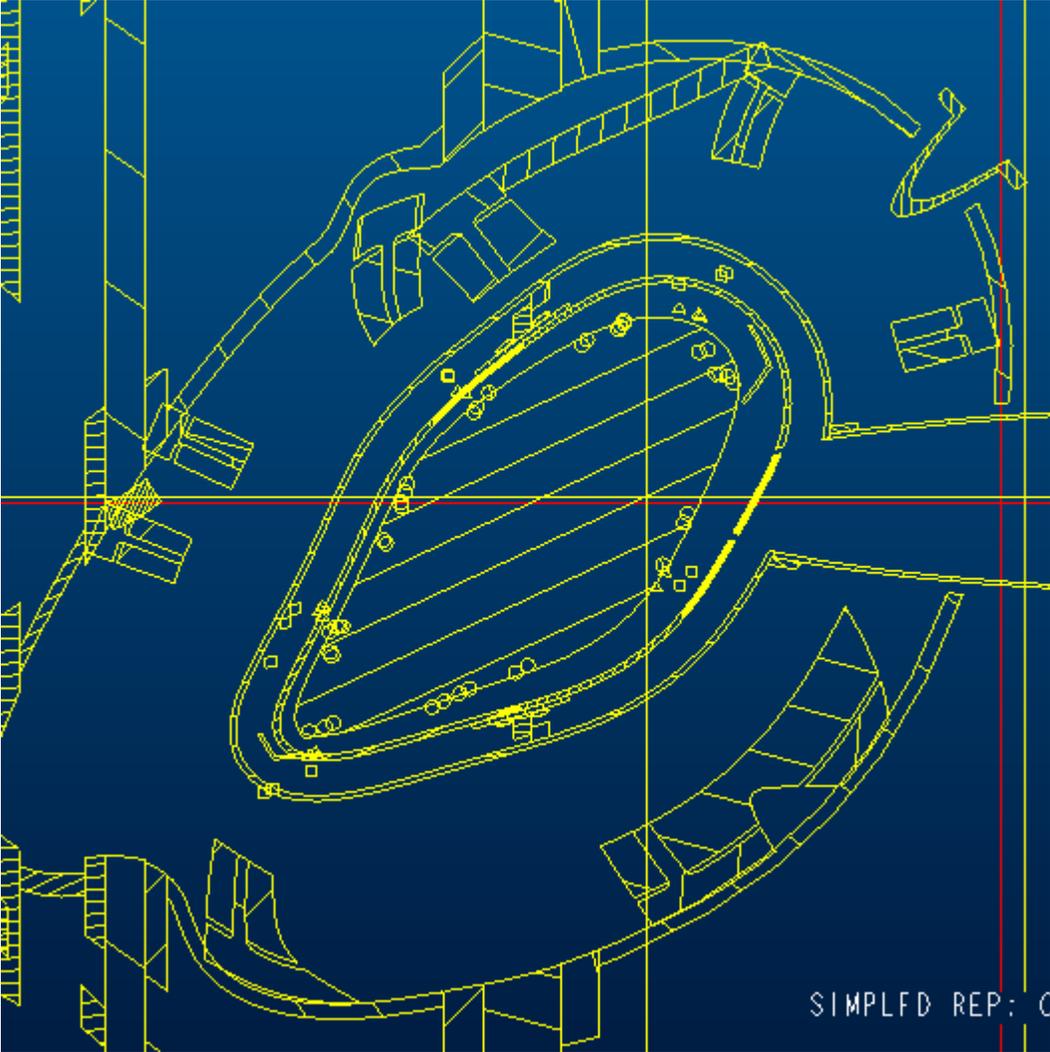
# 16 inch offset from 60 deg - plan

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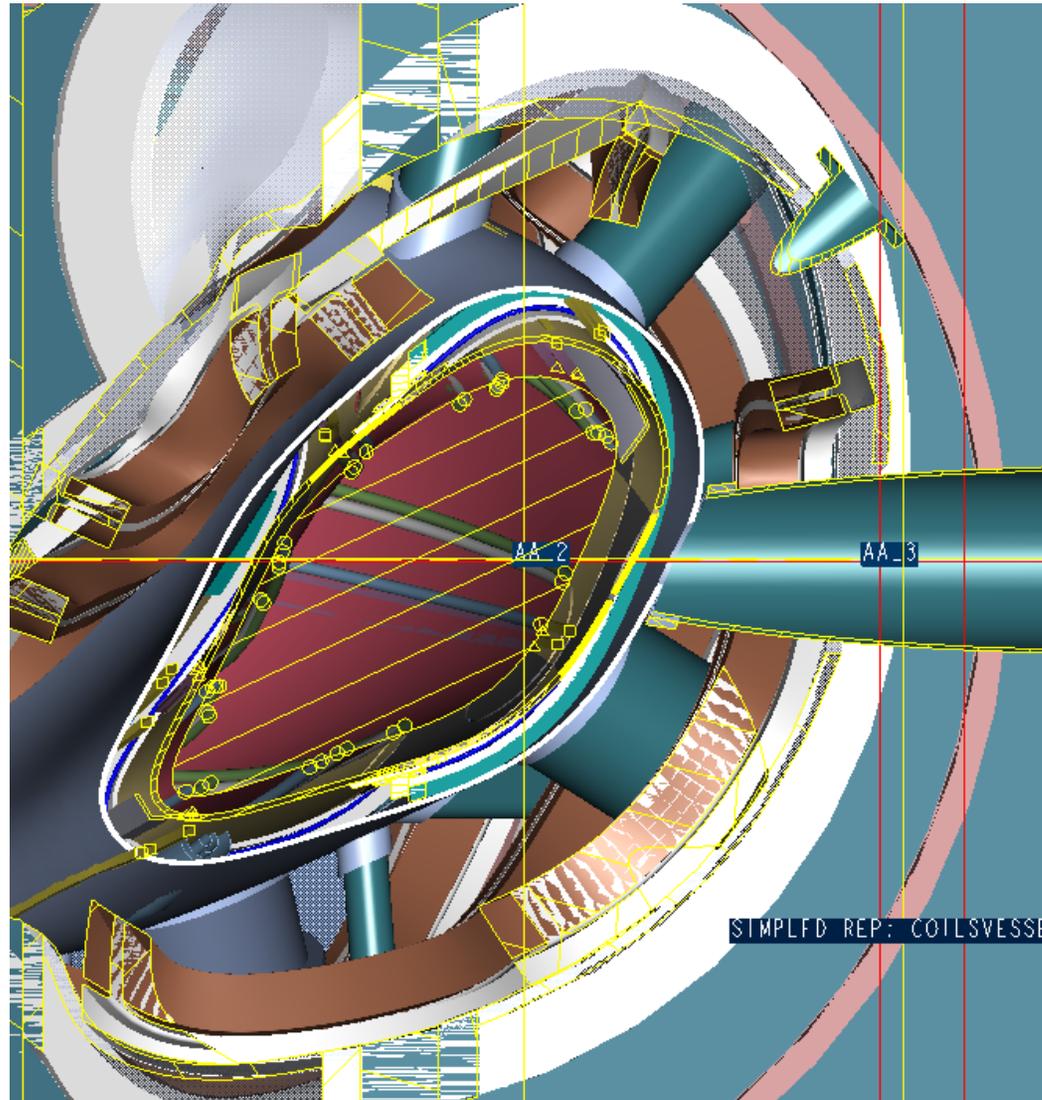
# 16 inch offset from 60 deg

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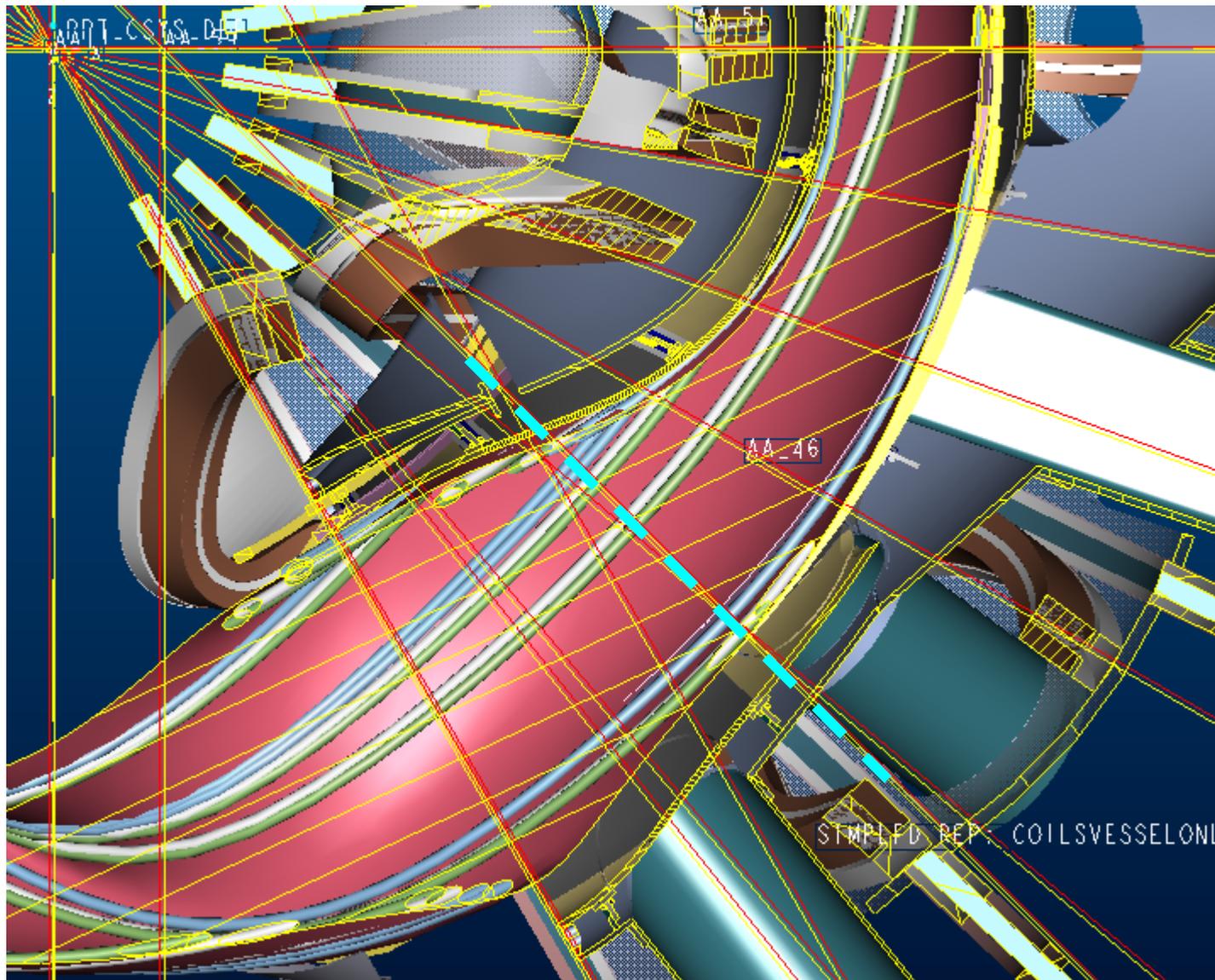


# 16 inch offset from 60 deg

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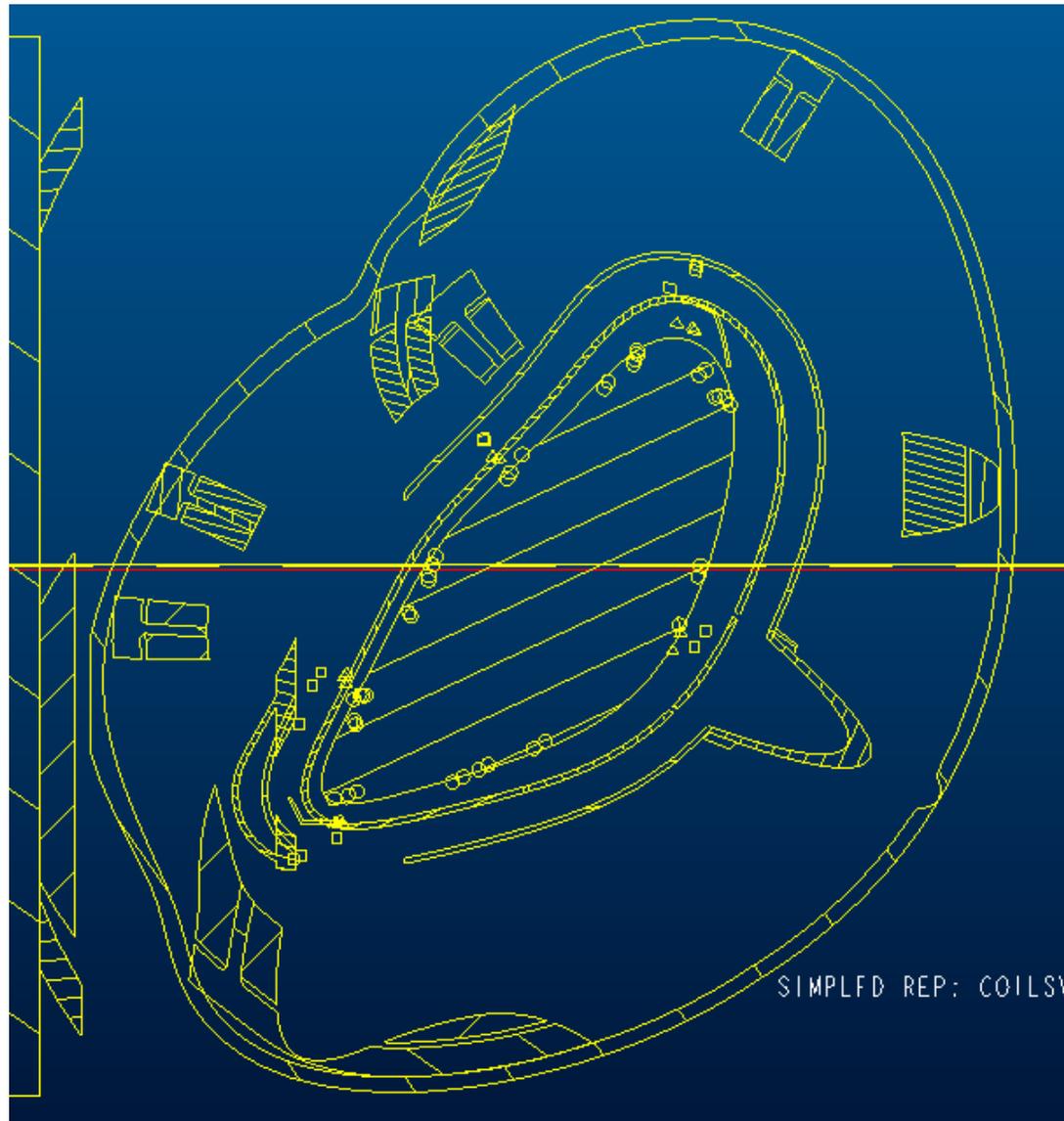


# 45 deg from 8 inch axis - plan

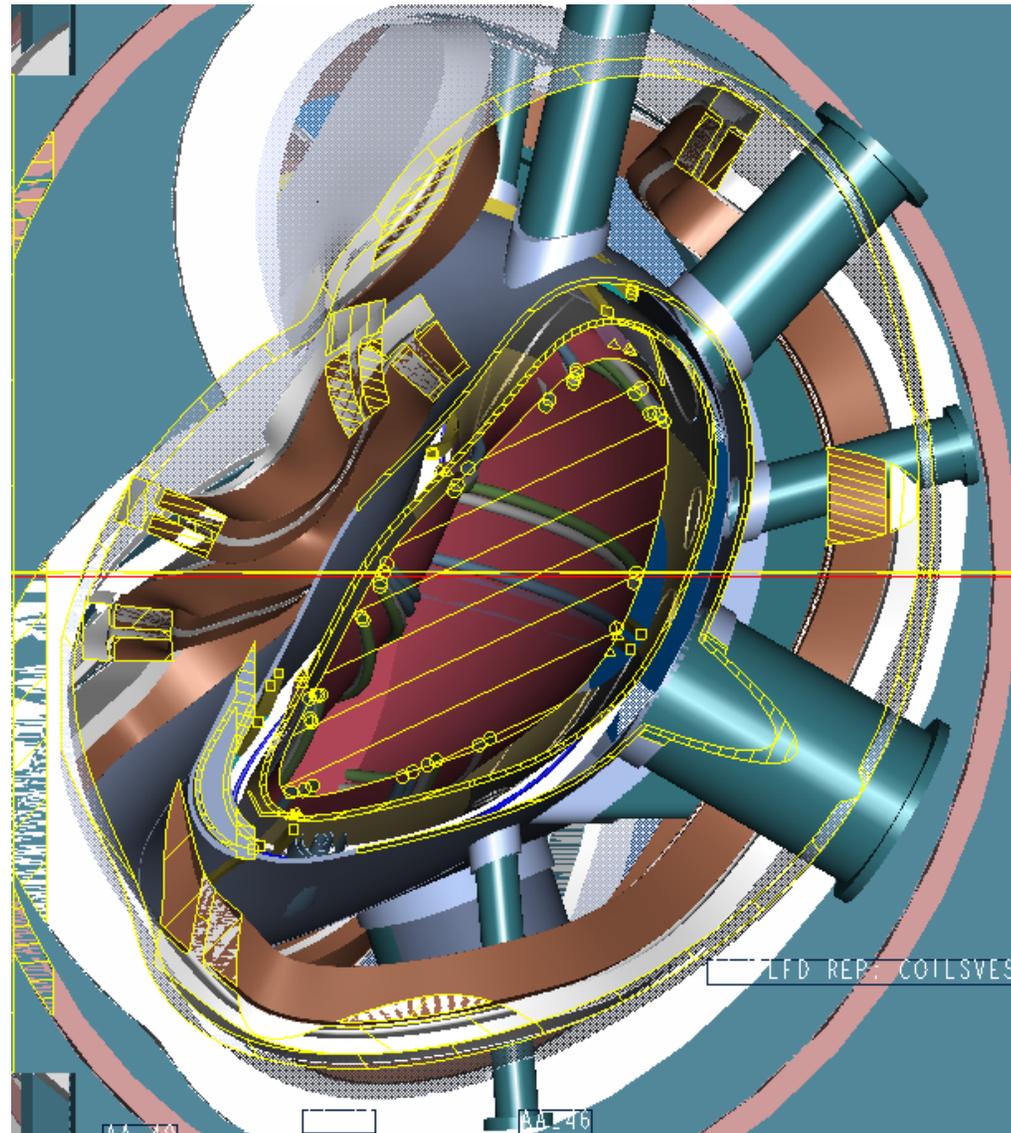


# 45 deg from 8 inch axis

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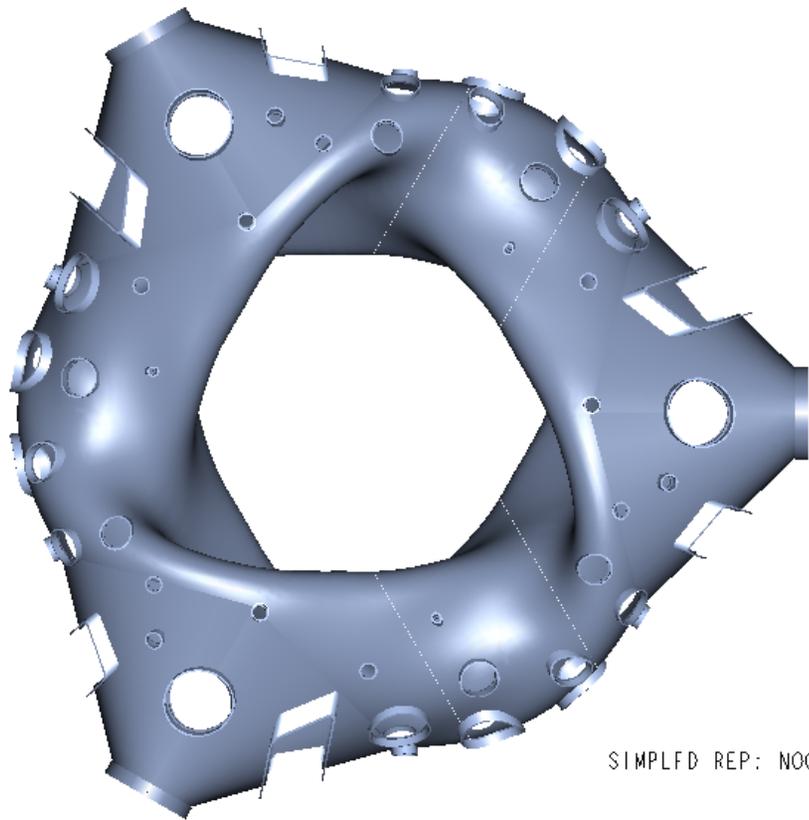


# 45 deg from 8 inch axis

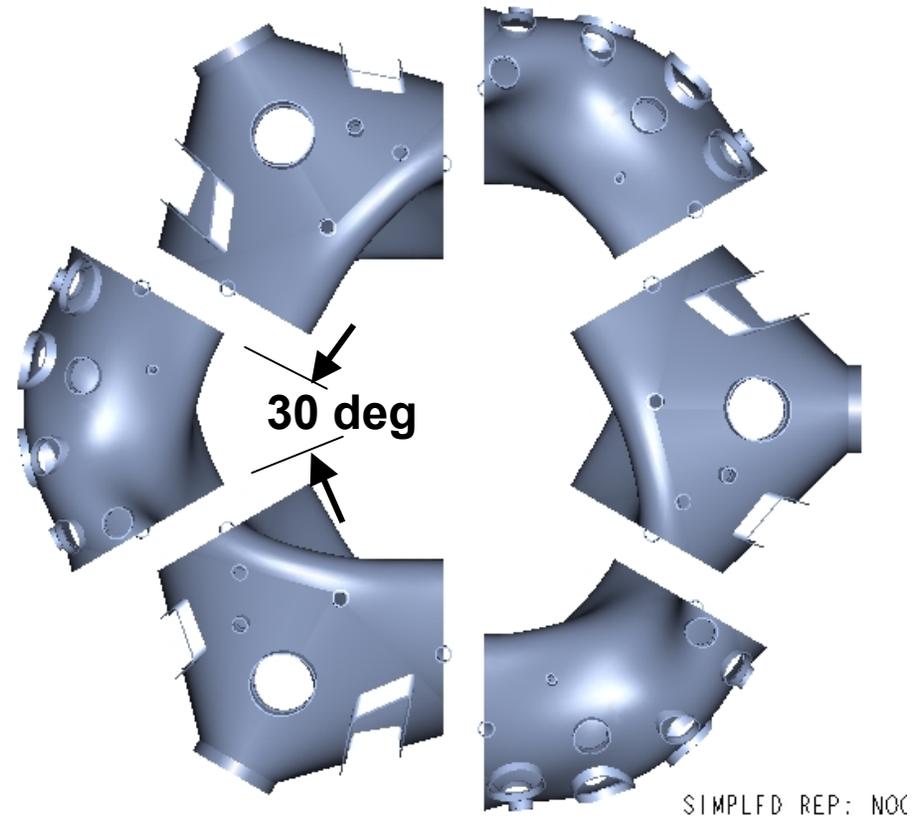


# Alternate VV segmentation

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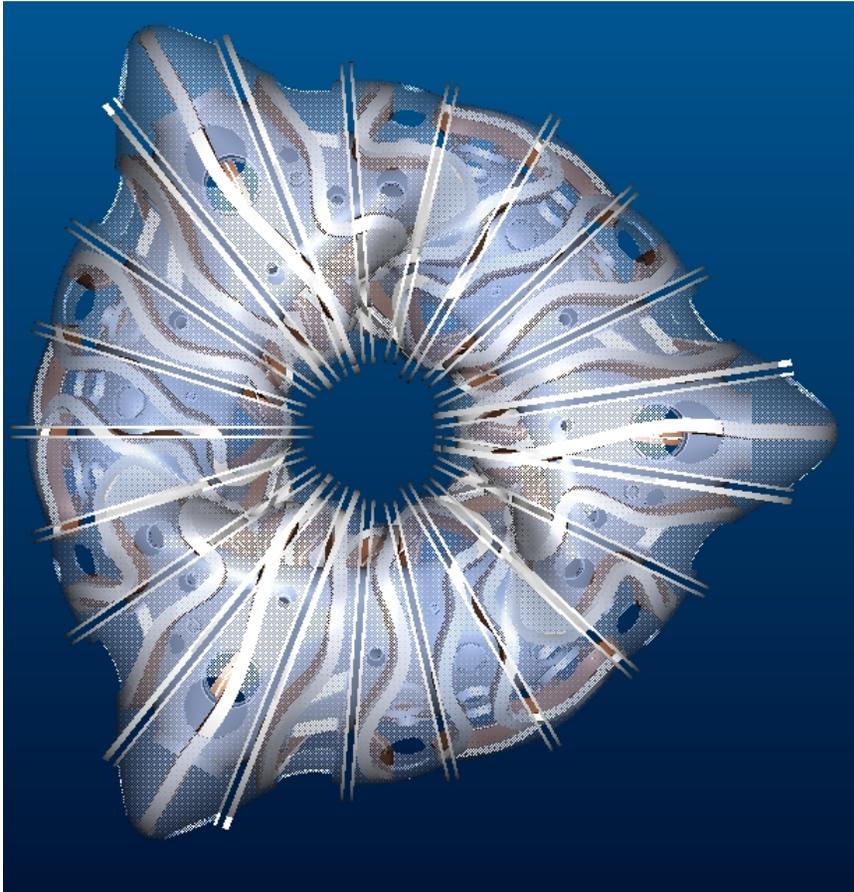
All segments assembled



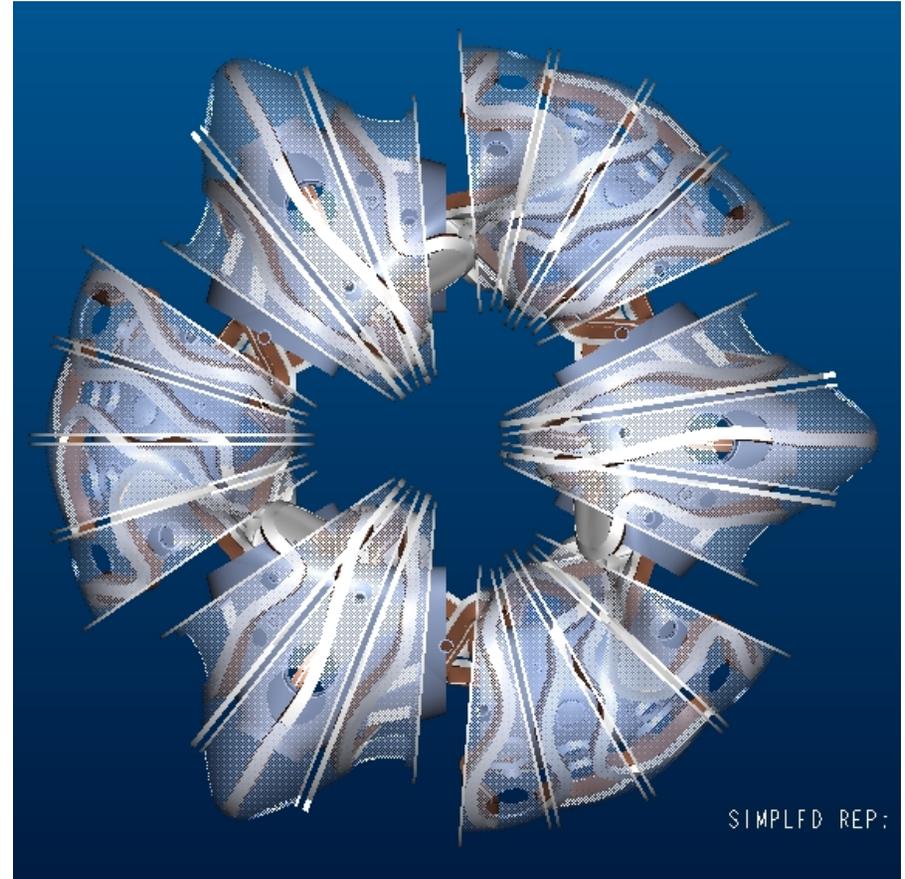
Larger segments retracted  
20 inches radially

# Alternate VV segmentation, w/coils

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All segments assembled



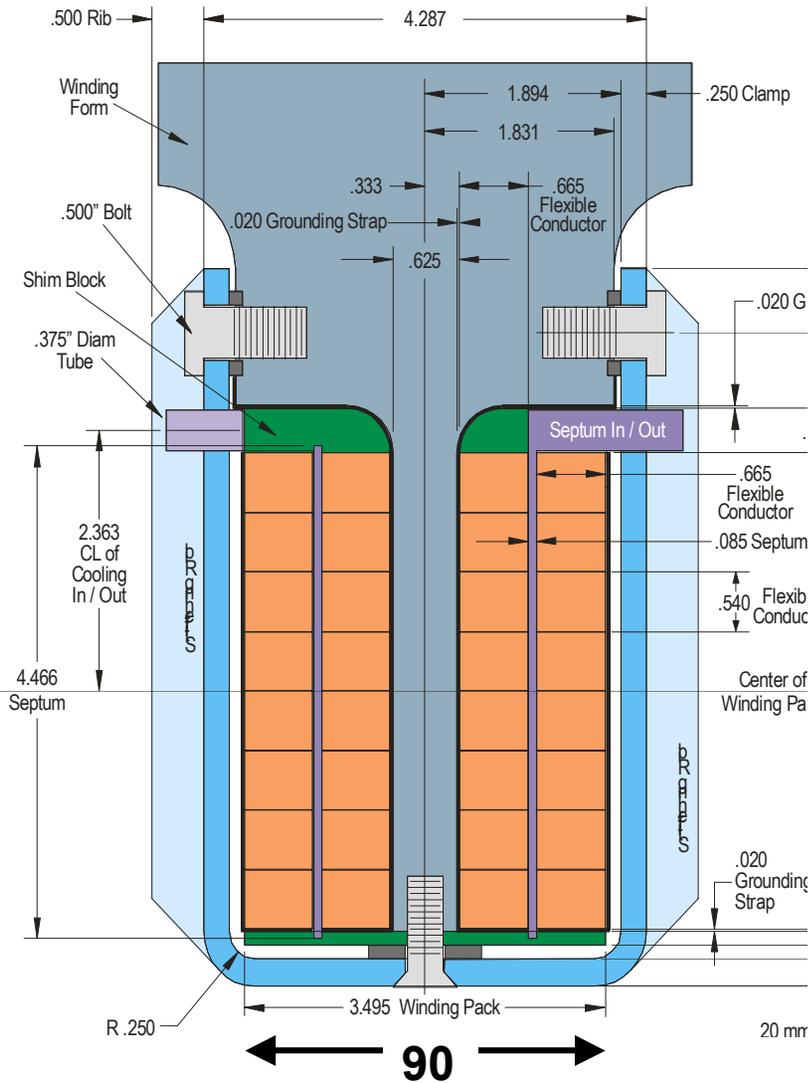
4-coil segments retracted  
20 inches radially

## SUMMARY

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- The solution to vacuum vessel segmentation has not yet been determined.
- The major items that impact the segmentation issue have been identified and are being studied to understand how they impact the segmentation issue.
- Areas that need to be resolved are the following:
  - Number, shape, and size of the Modular coils.
  - Shell segmentation.

# Modular coil cross section



## Key dimensions:

- **Winding pack: 90 x 110 mm**
- **Individual conductor: 13 x 16 mm**

