

1.4 m NCSX Engineering Design Assumptions



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Vision Statement

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- NCSX has to be built for \$55M in FY 99\$!

Design Basis Recommendation for Discussion to achieve cost objective

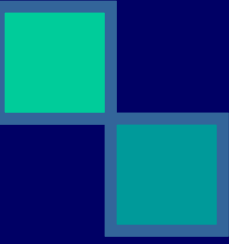

- Vessel built in thirds.
- Since T_{max} is 150 C, we can consider flanges and seals to permit vessel to be bolted together.
 - May permit staging of in-vessel components.
 - Can use either Viton seals or Helicoflex seals.
- Use “smooth” vessel that Tom Brown proposes.
- Assume 106 picture frame type trim coils (total) mounted on the outside of the vessel.
 - Simple, low current density. Maybe only cooled by conduction to the vessel.

Design Basis Assumptions - continued

- Assemble the machine periods in the TFTR Test Cell. Lots of space available.
 - Vessel port extensions will still be welded on.
- Assume the machine will be supported on a ring, which is supported of the Test Cell floor by 6 columns.
 - Fiberslip on top to permit machine cool down motion.
- Current cryostat design proposed to be used for cost basis, but see if we can move to “conformal” cryostat with better insulation.

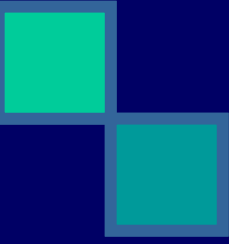



Today's Situation

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- Cost is a big concern!!!
 - Can we build a 1.4 m machine with new modular coils, pf coils, trim coils, at a cost premium of \$10m over the originally proposed PBX-M based NCSX??
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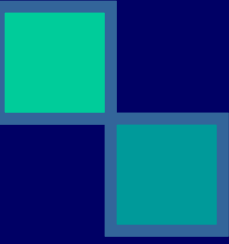



How Did We Get Here?

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- Too much ambition for more, too much optimism.
 - Original assumptions that are no longer valid – the PBX-M machine did not achieve its mission objectives.
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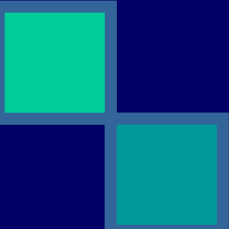


Available Options

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- State the alternative strategies
 - List advantages & disadvantages of each
 - State cost of each option
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Recommendation

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- Recommend one or more of the strategies
 - Summarize the results if things go as proposed
 - What to do next
 - Identify action items
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