

**Fermilab****Fermi National Accelerator Laboratory
Technical Support Engineering
P.O. Box 500 - Batavia, Illinois - 60510**

May 21, 1990

To: Distribution

From: T. Nicol - FNAL

**Subject: SSC 50mm Collider Dipole Cryostat Cross Section
and Interconnect Dimensions**

One of the critical issues facing the design of any magnet cryostat is the definition of the cross section and longitudinal interconnect dimensions. Without those it is difficult to continue with the detailed design of piping systems, magnet supports, insulation, etc.

Since we began the cryostat redesign to accommodate the 50mm collider dipole coil a group of us from Fermilab and much of the engineering staff from the SSCL have been working toward finalizing the 2-d cryostat cross section and the magnet interconnect dimensions. The results of that work are attached for your reference and comment. These drawings represent the following:

- Cryostat cross section through an internal support
- Cryostat cross section through an external support
- Longitudinal interconnect dimensions
- Cryostat stack height for 80cm beam to beam spacing

To the best of my knowledge we have taken the needs and concerns of the critical interface groups into account in all of our work; i.e. tunnel interface, cryogenic systems, magnet test, quadrupole design, and spool design.

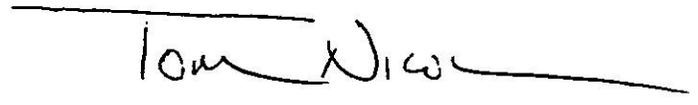
Essentially the cryostat design is an extrapolation of the design we are currently building (Design B). Modifications have been made to accommodate the larger cold mass cross section and to accommodate changes in the cryogenic system. We have tried not to reinvent the wheel to any great extent. We have invested a lot of effort verifying the performance of the cryostats now being built. We know they work and live up to their expectations. It doesn't seem prudent to interject markedly different component designs into the first 50mm prototype cryostats. There are areas within the design that we believe may lend themselves to change in the interest of a more simple or cost effective design. Where this potential exists we have implemented new development efforts running parallel with the mainstream redesign effort.

Please review those parts of the attached drawings that affect your involvement in the 50mm design effort and let me know any concerns, questions, or comments you might have. I don't mean to imply that the

cryostat design is complete nor that these drawings represent the last word in the cross sections or interconnect dimensions, but I want everyone who may be affected by our decisions to know what we are planning.

I have tried to include a broad selection of people from each institution in the distribution below. If there is anyone not included who you feel may benefit from this information, please feel free to share it freely. Thanks very much.

T. Nicol
Fermilab
P.O. Box 500
Batavia, IL 60510
Mail station 316
Decnet: FNAL::TNICOL
Phone: (708) 840-3441
FAX: (708) 840-3756



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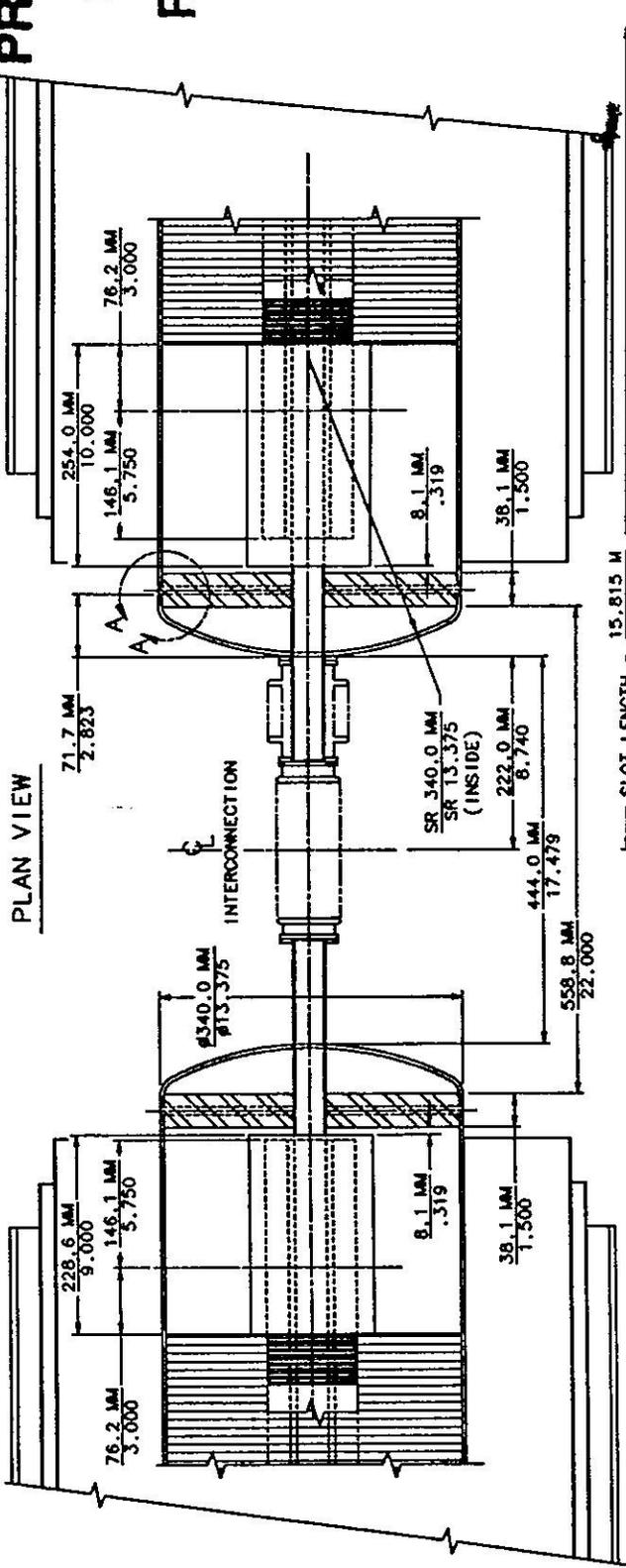
D. Edwards
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PLAN VIEW



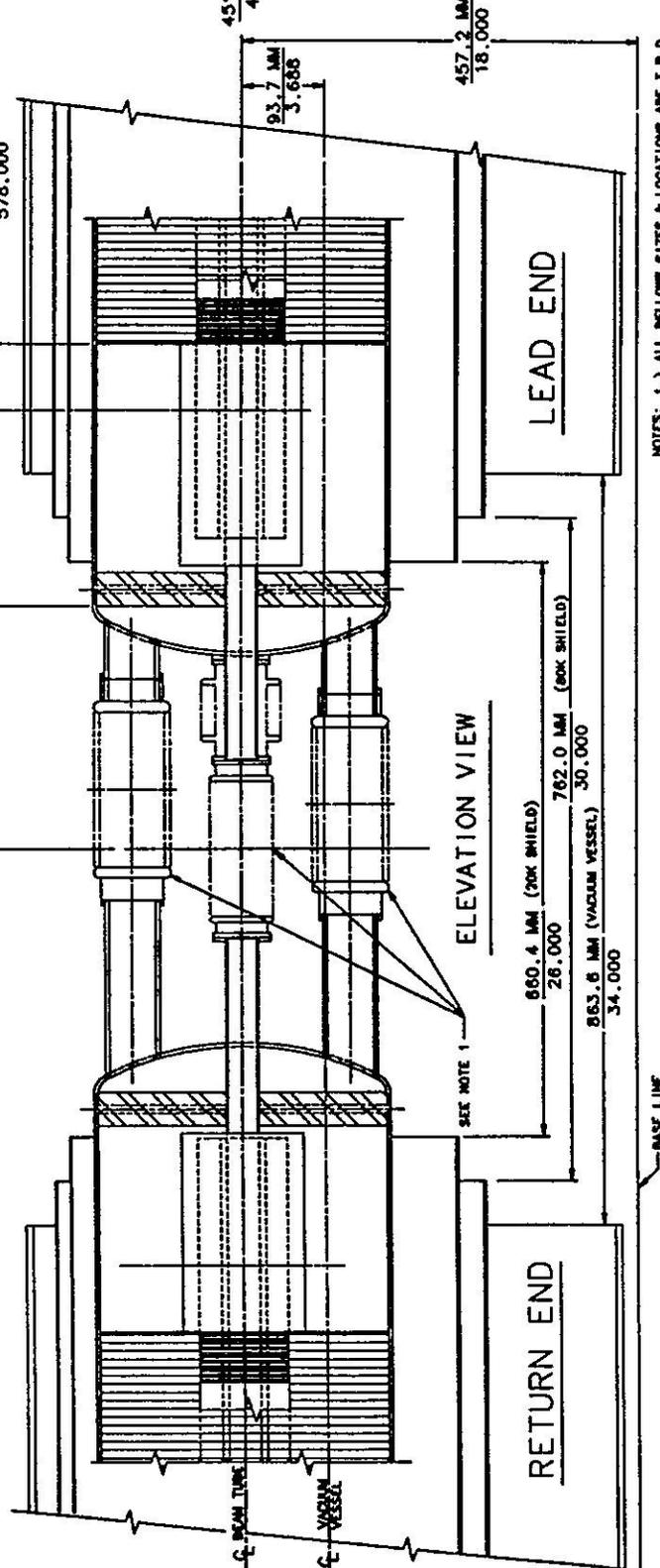
SLOT LENGTH = 15.815 M
622.638

15.256 M (OUTSIDE ENDPATE)
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14.834 M (COIL STRAIGHT LENGTH)
584.000

14.681 M
578.000

ELEVATION VIEW

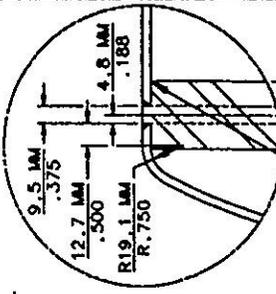


RETURN END

LEAD END

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NOTES: 1.) ALL BELLOW SIZES & LOCATIONS ARE T.B.D.



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MR. COLA (MR. D. P. COLA)
INTEGRATION (MR. COLA)

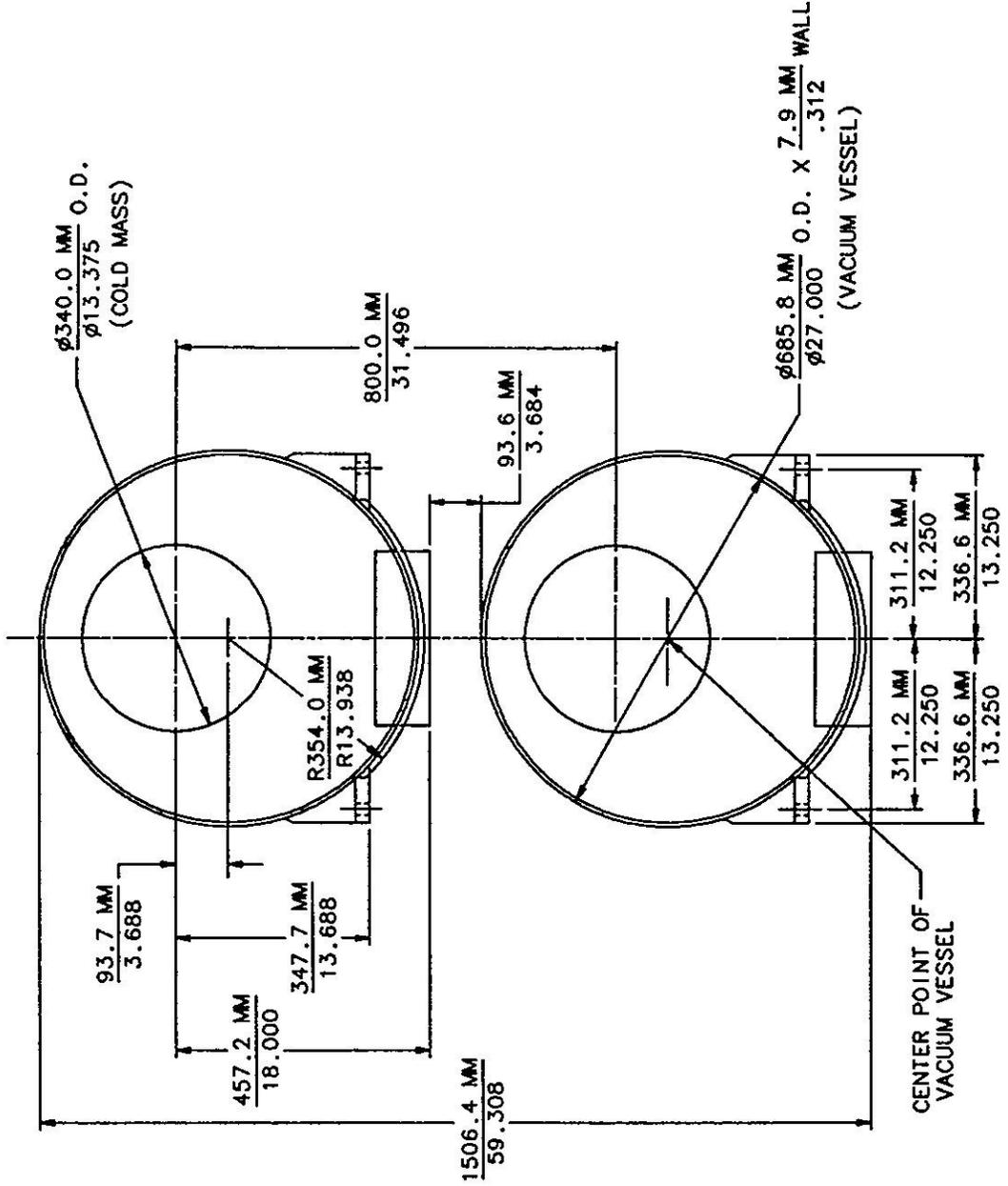
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REV.	DESCRIPTION

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FBI NATIONAL ACCELERATOR LABORATORY
UNITED STATES DEPARTMENT OF ENERGY

SSC COLLIDER DIPOLE
50 MM CRYOSTAT
STACK HEIGHT

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