

Vacuum Vessel Port Location  
Peer Review  
Jan 29, 2004  
Presented by Mike Cole

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Agenda

- What's Changed
- Port Identification Map
- Port Size and Clearance Chart
- Interface configuration for each Port
- Impact of Bakeout on Port clearance
- RF Ports
- Summary

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Port Identification, Size, and Clearance

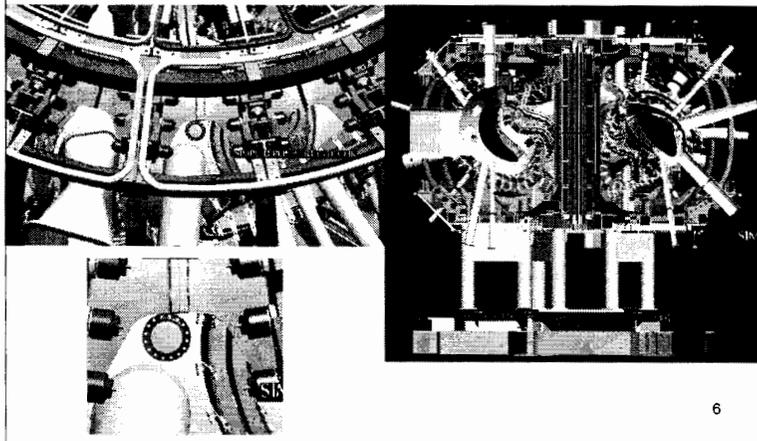
Room Temperature

PORT #	DIA	CLEARANCE
PORT 2	.4	1.884 CLEARANCE WITH CLAMP
PORT 3	.4	1.782 CLEARANCE WITH CLAMP
PORT 4		1.504 CLEARANCE WITH CLAMP
PORT 5	.6	1.916 CLEARANCE WITH CLAMP
PORT 6	.10	1.782 CLEARANCE WITH CLAMP
PORT 7	.8	1.525 CLEARANCE WITH CLAMP
PORT 8	.6	1.827 CLEARANCE WITH CLAMP
PORT 9	.6	1.915 CLEARANCE WITH CLAMP BOLT
PORT 10	.14	3.390 CLEARANCE WITH CLAMP
PORT 11	.4	1.530 CLEARANCE WITH CLAMP
PORT 12		1.522 CLEARANCE WITH CLAMP
PORT 13	.4	2.375 CLEARANCE WITH CLAMP BOLT
PORT 14	.4	2.692 CLEARANCE WITH CLAMP
PORT 15	.4	2.172 CLEARANCE WITH CLAMP BOLT
PORT 16	.8	1.628 CLEARANCE WITH CLAMP
PORT NB		1.017 CLEARANCE WITH CLAMP

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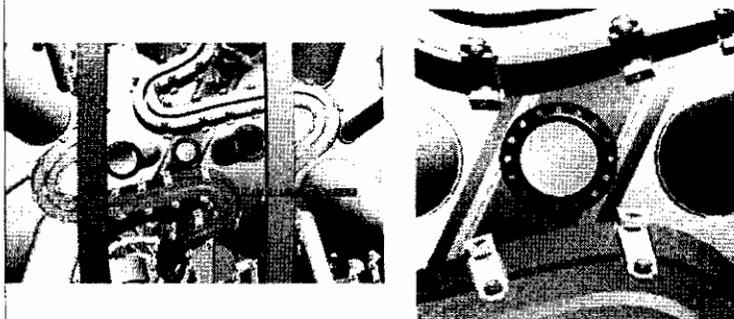
Port 2 - Min clearance to port and clamp = 1.884in

4 inch od tube



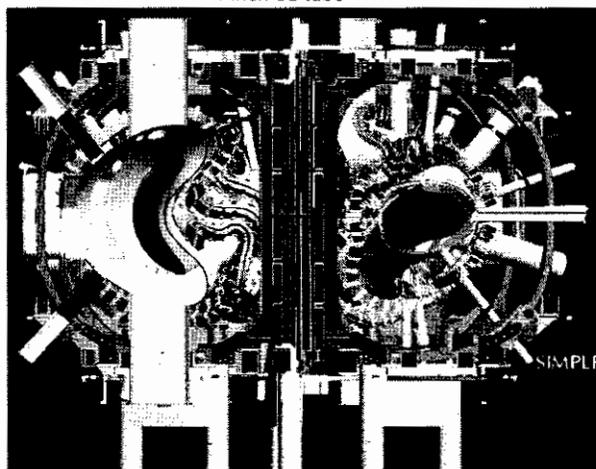
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Port 3 - Min clearance to port and clamp = 1.782 in  
4 inch od tube



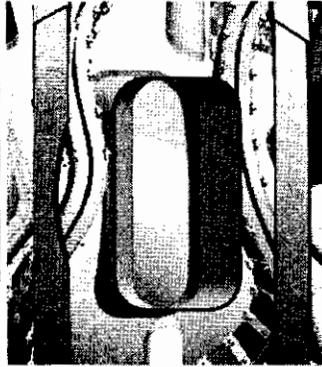
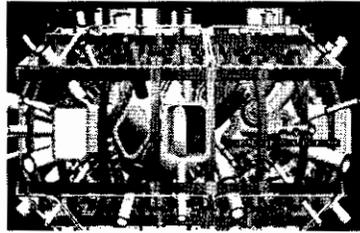
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Port 3 - Min clearance to port and clamp = 1.782 in  
4 inch od tube



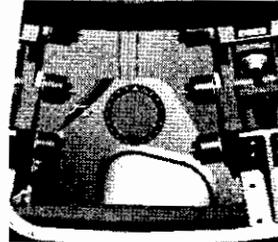
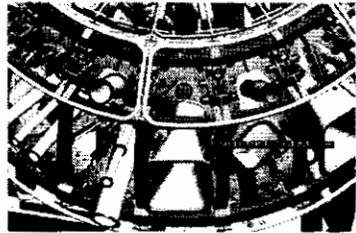
8

Port 4 - Min clearance to port and clamp = 1.504 in



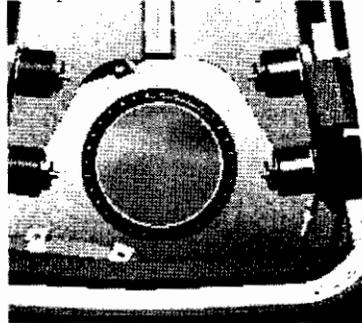
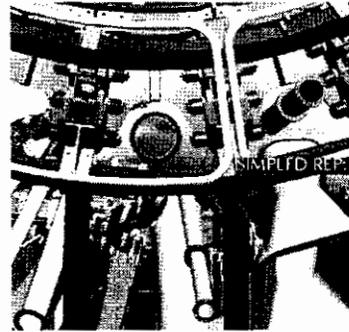
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Port 5 - Min clearance to port and clamp = 1.916 in  
6 inch od tube



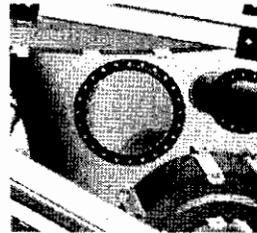
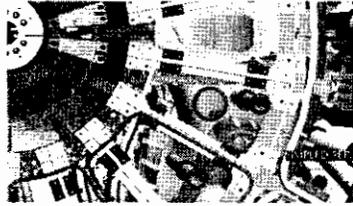
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Port 6 - Min clearance to port and clamp = 1.782 in  
10 inch od tube



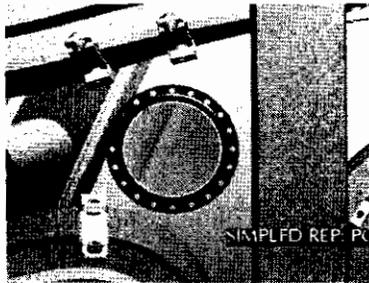
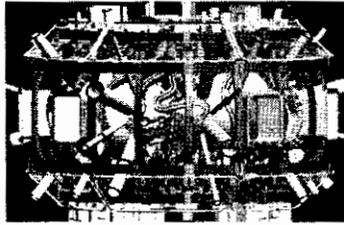
11

Port 7 - Min clearance to port and clamp = 1.525 in  
8 inch od tube



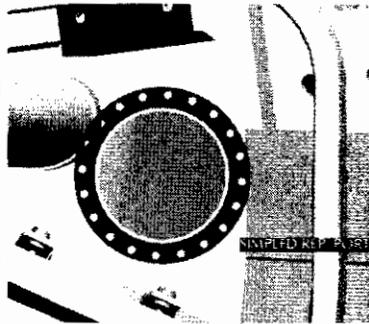
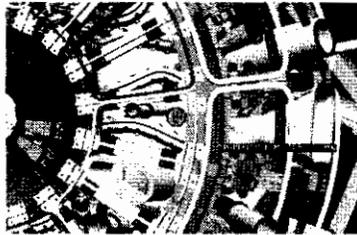
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**Port 8 - Min clearance to port and clamp = 1.827 in**  
6 inch od tube



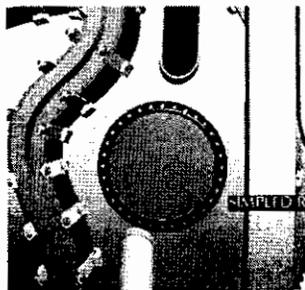
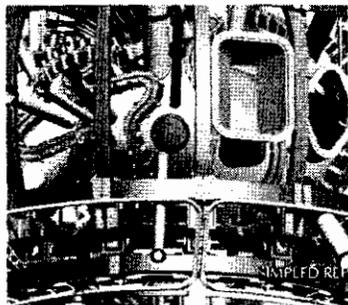
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**Port 9 - Min clearance to port and clamp = 1.915 in**  
6 inch od tube



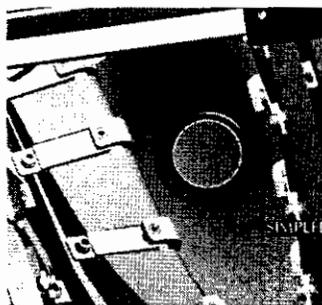
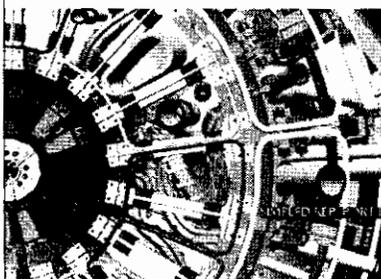
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**Port 10 - Min clearance to port and clamp = 3.390 in**  
14 inch od tube



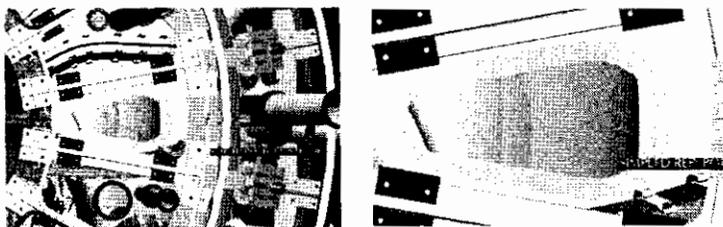
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**Port 11- Min clearance to port and clamp = 1.530 in**  
4 inch od tube



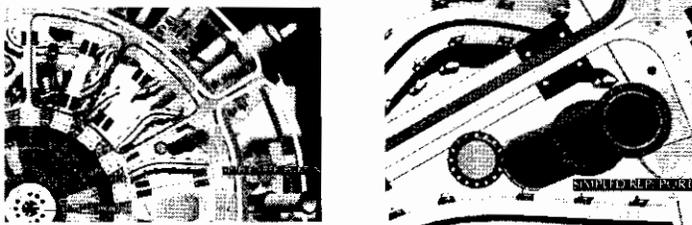
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Port 12 - Min clearance to port and clamp = 1.522 in



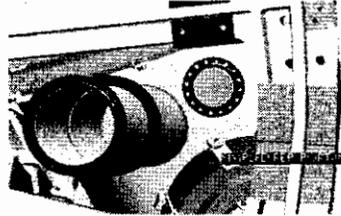
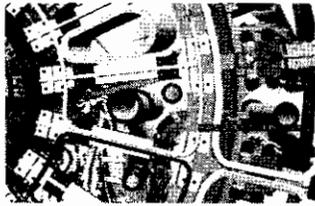
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Port 13 - Min clearance to port and clamp = 2.375 in  
4 inch od tube



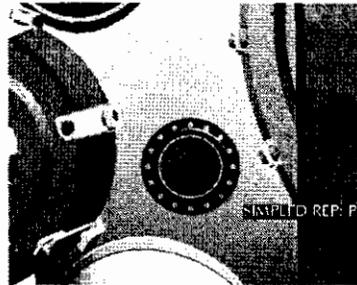
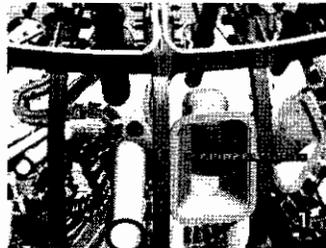
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Port 14 - Min clearance to port and clamp = 2.692 in  
4 inch od tube



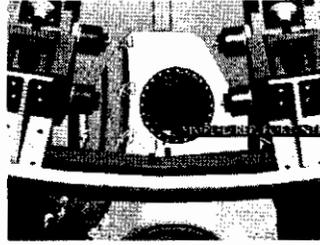
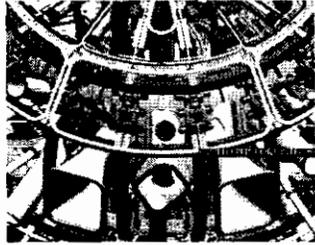
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Port 15 - Min clearance to port and clamp = 2.172 in  
4 inch od tube



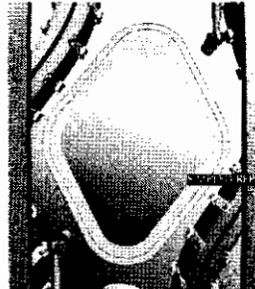
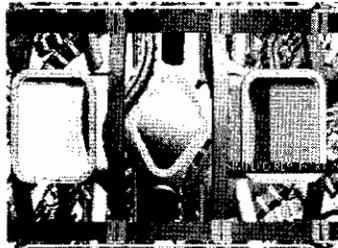
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Port 16 - Min clearance to port and clamp = 1.628 in  
8 inch od tube



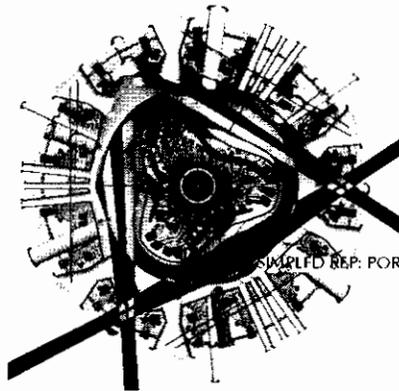
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Port NB - Min clearance to port and clamp = 1.017 in



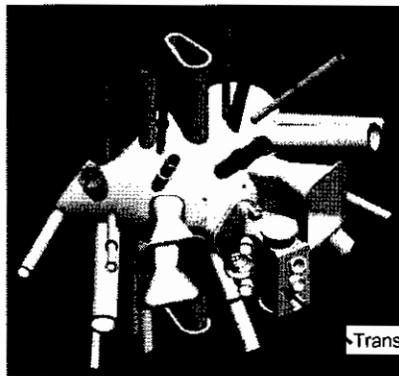
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Cross-section Plan View at  
Midplane



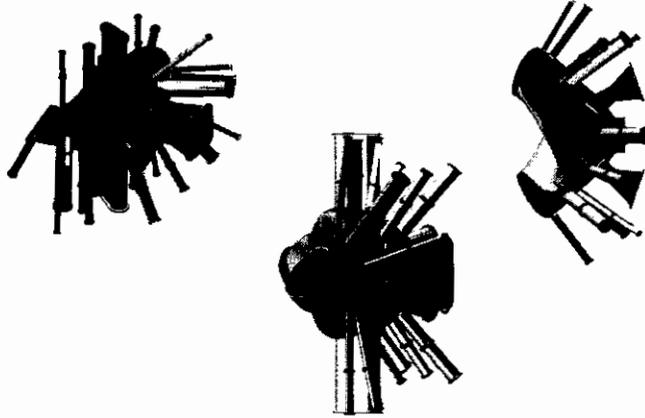
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Changes to NB port did not change  
concept for transition duct



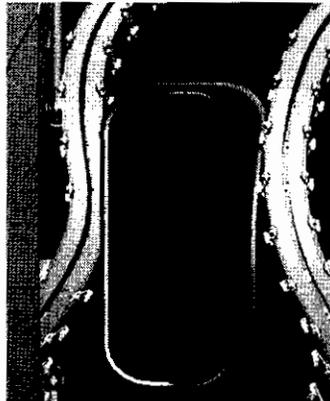
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Comparison of room temperature  
VV to VV at 350 deg C (green) and  
Coils at 80K



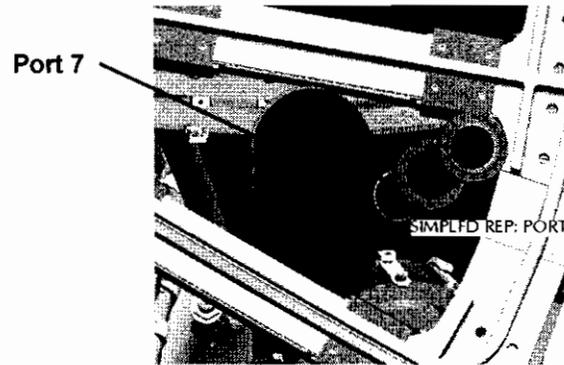
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Port 4 may be one of the ports that will be  
effected during bake out



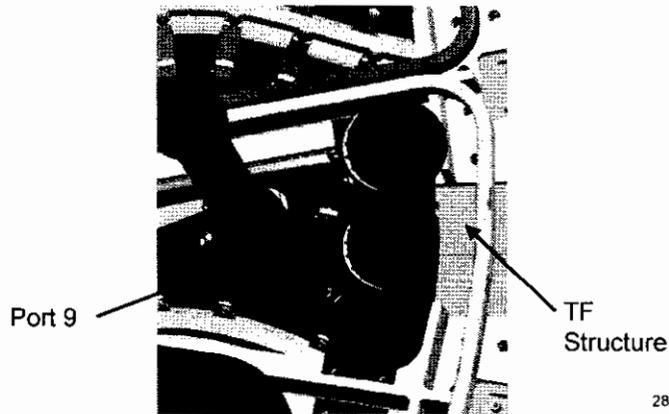
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Port 7 may be impacted during bake out



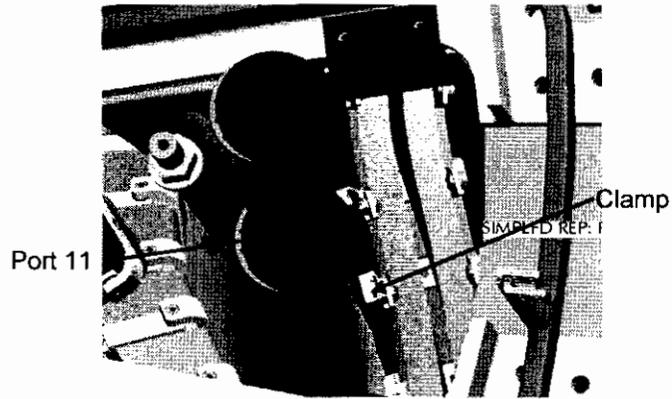
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Port 9 may be impacted during bake out



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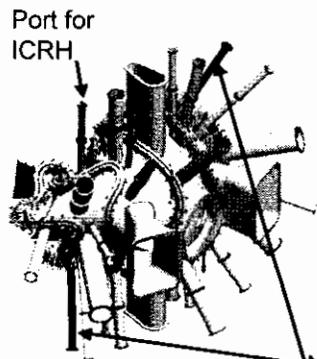
Port 11 may be impacted during bake out



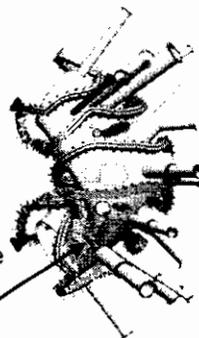
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## RF Antenna

Possible Port for ICRH



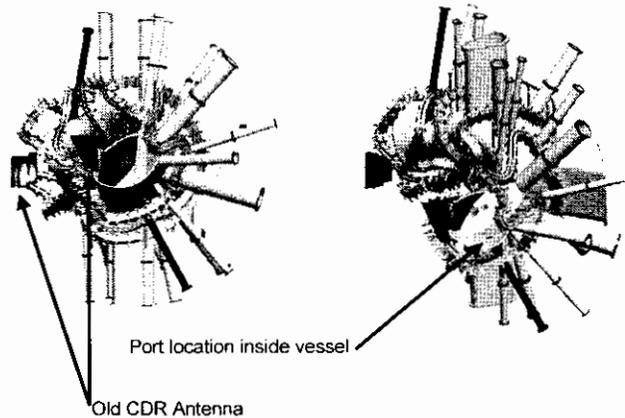
Possible Port for ICRH



New Port Locations

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## RF Antenna



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## Summary

- The basic port configuration appears to have settled down. We have placed ports and tried to optimize size of ports based on surrounding geometry.
- Available locations for placing ports has been investigated and either a port was located or other factors such as space or viewing angle prevented a port from being added.
- This configuration is being proposed for your review/acceptance.

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