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PEP-4 PRESSURE CERTIFICATION TEST REPORT

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<b>ENGINEERING NOTE</b>		P40401	M5716 B	1 of 2																																				
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Rev. A 6 May 1981 Rev. B 13 May 1981																																								
<p>SLAC's requirements for pressure vessel personnel safety certification are a proof test of the vessel at 150% of maximum allowable operating pressure. Relief valves shall be set at 110% of the maximum allowable operating pressure. For PEP-4, the maximum allowable operating pressure is 150 psig. The relief valves are set at 165 psig.</p> <p>The pressure envelope is described on the following documents:-</p> <table border="0"> <tr> <td style="vertical-align: top;">1. Bore train design and analysis</td> <td style="vertical-align: top;">E.N. P40401, M5296 McLaughlin</td> <td></td> </tr> <tr> <td style="vertical-align: top;">2. Bore train assembly and operating procedure</td> <td style="vertical-align: top;">E.N. P40401, M5687 G. Miner</td> <td></td> </tr> <tr> <td style="vertical-align: top;">3. Pole base and pole tip assembly</td> <td style="vertical-align: top;">E.N. P40200 M5684 P. Purgalis</td> <td></td> </tr> <tr> <td style="vertical-align: top;">4. Pole base to magnet leg attachment bolts</td> <td style="vertical-align: top;">E.N. P40200 M5679 P. Purgalis</td> <td></td> </tr> <tr> <td style="vertical-align: top;">5. Prototype TPC feed thru ring pressure test</td> <td style="vertical-align: top;">E.N. P40401 M5363 G. Miner</td> <td></td> </tr> <tr> <td style="vertical-align: top;">6. Feed thru rings and seal rings as reported on certification of pressure components</td> <td style="vertical-align: top;">E.N. P40401 M5461 G. Miner</td> <td></td> </tr> <tr> <td style="vertical-align: top;">7. Calculations of stress and buckling in the cryostat vacuum vessel</td> <td style="vertical-align: top;">E.N. P44001 M5305, M5461 M. Green</td> <td style="vertical-align: top;">B</td> </tr> <tr> <td style="vertical-align: top;">8. Coil cryostat inner wall as reported certification of pressure components</td> <td style="vertical-align: top;">E.N. P40401 M5461 M. Green</td> <td></td> </tr> <tr> <td style="vertical-align: top;">9. Electrical feed thru assembly</td> <td style="vertical-align: top;">Dwg. 20C6876</td> <td></td> </tr> <tr> <td style="vertical-align: top;">10. Manifold installations North End South End</td> <td style="vertical-align: top;">Dwg. 19Q3266 Dwg. 19Q3296</td> <td></td> </tr> <tr> <td style="vertical-align: top;">11. Westside piping</td> <td style="vertical-align: top;">Dwg. 19Q3306</td> <td></td> </tr> <tr> <td style="vertical-align: top;">12. Pressure test scenario</td> <td style="vertical-align: top;">G. Miner Rev. 3/13/1980</td> <td></td> </tr> </table>					1. Bore train design and analysis	E.N. P40401, M5296 McLaughlin		2. Bore train assembly and operating procedure	E.N. P40401, M5687 G. Miner		3. Pole base and pole tip assembly	E.N. P40200 M5684 P. Purgalis		4. Pole base to magnet leg attachment bolts	E.N. P40200 M5679 P. Purgalis		5. Prototype TPC feed thru ring pressure test	E.N. P40401 M5363 G. Miner		6. Feed thru rings and seal rings as reported on certification of pressure components	E.N. P40401 M5461 G. Miner		7. Calculations of stress and buckling in the cryostat vacuum vessel	E.N. P44001 M5305, M5461 M. Green	B	8. Coil cryostat inner wall as reported certification of pressure components	E.N. P40401 M5461 M. Green		9. Electrical feed thru assembly	Dwg. 20C6876		10. Manifold installations North End South End	Dwg. 19Q3266 Dwg. 19Q3296		11. Westside piping	Dwg. 19Q3306		12. Pressure test scenario	G. Miner Rev. 3/13/1980	
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Larry E. Brown	Mechanical Engineering Dept.	Berkeley	4 May 1981	

13. PEP-4 Pressure certification test procedure E.N. P40401 M5717 L. Brown

The pressure envelope as described above was tested as follows: A

Before testing the main envelope of the PEP-4 experiment, all of the pump outs were tested. When every pump out showed no appreciable leaks, the main tests were undertaken.

The main tests were divided into two parts. The first part was to qualify the upper west side platform as being a safe place to work. The piping was isolated from PEP-4 and was pressurized to 225 psi. This could be done safely by working from the floor level at the South face. The test personnel were protected by the bulk of PEP-4.

For the second test phase control area was moved to the west side platform so that the bulk of PEP-4 protected the test personnel from any failing component.

The test procedure was essentially followed except that no leak hunting was done as there was no noticeable reduction in pressure during the pauses in the pressurization sequence. A

The pressure envelope was successfully pressurized to 225 psi on 26 March 1981 which certifies it for use at 150 psi. The two pole bases separated by .080 inches at 225 psi. A

The test personnel and LBL witnesses were:- A

L. Kerth  
D. Fancher  
G. Miner  
L. Brown

The SLAC witness was John Mark.

While the vessel was depressurized to 100% rating all non test personnel were restricted from access.

This vessel was approved for use at 150 psig.

/nyc

Distribution: L. Brown R. Madaras G. Schnurmacher  
P. Hernandez J. Mark (SLAC)  
C. Hoard SLAC K. Mirk  
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This report was done with support from the Department of Energy. Any conclusions or opinions expressed in this report represent solely those of the author(s) and not necessarily those of The Regents of the University of California, the Lawrence Berkeley Laboratory or the Department of Energy.

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