

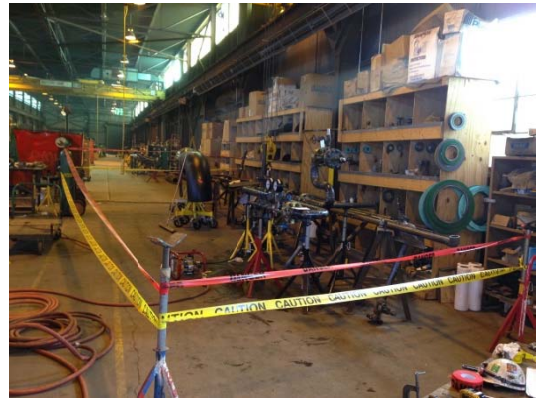
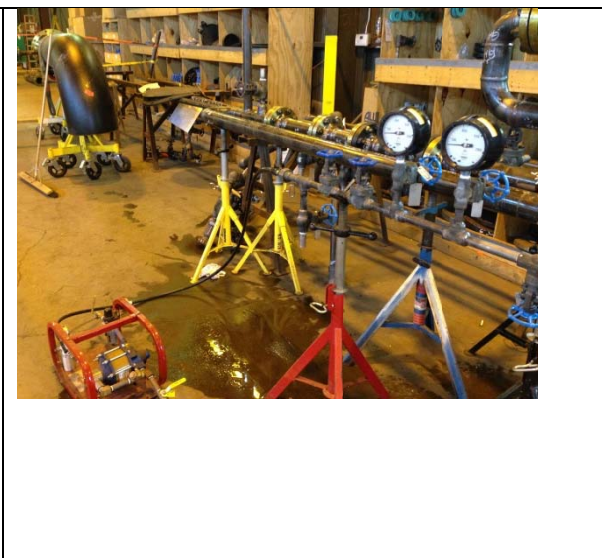





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Task Step	Step Hazard	Hazard Mitigation	Picture
<p>1. Check to ensure that the line is in good condition and is suitable for testing</p> <ul style="list-style-type: none"> <li>a. Line is complete</li> <li>b. NDE is clear</li> <li>c. Verify Pneumatic test is required vs. potential Hydro or Service test</li> </ul>	<ul style="list-style-type: none"> <li>a. Pneumatic tests should only be performed if safer testing methods cannot be performed or are not suitable</li> </ul>	<ul style="list-style-type: none"> <li>a. Verify that Pneumatic test is the correct method for scope of test with Engineering Authority</li> </ul>	
<p>2. Determine Test Pressure and relief valve pressure setting</p> <ul style="list-style-type: none"> <li>a. Check drawings and/or Job Note</li> <li>b. If necessary, raise the question to Engineering for written direction</li> </ul>	<ul style="list-style-type: none"> <li>a. Over-pressurization of line could lead to catastrophic failure</li> </ul>	<ul style="list-style-type: none"> <li>a. Verify test pressure with appropriate engineering document and/or Engineering Authority</li> <li>b. Relief valves appropriately placed and at the correct setting should reduce consequences of over pressurizing line</li> </ul>	
<p>3. Complete pneumatic test plan and submit to appropriate authority for approval</p> <ul style="list-style-type: none"> <li>a. Includes barricade locations</li> <li>b. Pressure gauge locations</li> <li>c. Pressurizing / De-Pressurizing Process</li> <li>d. Inspection Points / Process</li> </ul>	<ul style="list-style-type: none"> <li>a. Over-pressurization of line could lead to catastrophic failure</li> </ul>	<ul style="list-style-type: none"> <li>a. Calculate correct barricade distance to minimize potential impact of failed test</li> <li>b. Pressure gauges should be located at high and low spots and line and provisions should be in place to easily access these gauges</li> <li>c. Pressurizing is done gradually (see step 6) and De-pressurizing should take into account gases or debris from pipe that could exhaust to atmosphere</li> </ul>	<p style="text-align: center;"><u>Attachment 6</u> <u>PNEUMATIC STRENGTH TEST PERMIT AND REPORT</u></p> <p style="text-align: center;">(1)Work Order No. _____</p> <p>Prepared by: (1) _____ Phone: _____ Date: _____ Operating Unit/Area: _____</p> <p>Operating Unit/Area: _____ Date Needed: _____</p> <p>Equipment/System Being Tested: Vessel _____ Exchanger _____ Piping _____ Furnace _____ Other _____</p> <p>Equipment/System Description &amp; Service _____</p> <p>Reason for Test _____</p> <p>Material (s) of system being tested _____</p> <p>Material(s) subject to brittle failure? (1) Yes _____ No _____</p> <p>Test Medium: Air (1) _____ N2 (1) _____ Other _____ Minimum ambient temperature _____</p>
<p>4. Test Gauges are inspected to make sure they are the appropriate size and within their calibration dates.</p> <p>Note: All test gauges should have a calibration stickers showing when calibration expires</p>	<ul style="list-style-type: none"> <li>a. Gauges which are out of calibration can indicate incorrect pressures which means you could be over or under pressurizing the line which could have immediate or long term ramifications</li> </ul>	<ul style="list-style-type: none"> <li>a. Verify test gauges are calibrated and if there is no sticker, send the gauge back for calibration</li> </ul>	
<p>5. Ensure that the test area is properly barricaded, flagged, or otherwise controlled to prevent unauthorized personnel. Any unnecessary personnel need to be removed from the test area prior to proceeding.</p>	<ul style="list-style-type: none"> <li>a. Over-pressurization of line could lead to catastrophic failure</li> <li>b. Failure could effect work above or below the testing area</li> </ul>	<ul style="list-style-type: none"> <li>a. Calculate correct barricade distance to minimize potential impact of failed test</li> <li>b. Perform sweep of barricaded area to remove any individuals that may have wandered in or been working above or below the test area</li> </ul>	
<p>6. The pressure should gradually be increased until 1/2 the test pressure or 25 psi has been</p>	<ul style="list-style-type: none"> <li>a. Quickly ramping up pressure could lead to catastrophic failure in</li> </ul>	<ul style="list-style-type: none"> <li>a. Care should always be taken to ramp up slowly and find locate any areas of concern</li> </ul>	

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<p>reached. This pressure should be held for 10 minutes. At this point an initial inspection for leaks shall be made. After no leaks are verified the line can continue to be pressurized in 1/10 test pressure intervals and held at 10 minutes at each step until the required test pressure has been met. Nonessential personnel should remain at safe distance during pressurization of line to test pressure</p>	<p>b. Care should be taken while the line is at higher pressures due to the amount of stored energy in the system and the</p>	<p>b. Individual releasing test media into the line should remain at the shut off point</p>	
<p>7. Test pressure shall be held for a minimum of 15 minutes and not longer than 30 minutes and shall be witnessed by QA/QC</p>	<p>a. Care should be taken while the line is at test pressure due to the amount of stored energy in the system and the</p>	<p>a. Non-essential personnel are should remain outside barricades while test holds at pressure</p>	
<p>8. The pressure shall then be reduced to the Operating Pressure or MAWP for detailed inspection a. Apply soap solution or approved alternative to accessible welds, screwed pipe joints, flanges, etc.</p>	<p>N/A</p>	<p>N/A</p>	
<p>9. If there is evidence of structural distortion due to the test pressure, stop the test pending evaluation of whether repair is necessary</p>	<p>a. Any signs of structural distortion could make working area unsafe</p>	<p>a. Be vigilant during inspections and stop test and remove personnel from the test area until further evaluation can be made if structural distortion found</p>	
<p>10. If there is leakage found in the system a. Stop test, repair leak, and repeat testing process <u>or</u> b. Reject test</p>	<p>a. Any identified leaks could indicate loose mechanical joints or failures in pipe, welds, etc. which could be signs of an unsafe system</p>	<p>a. Any leaks found should be evaluated and discussed to determine if repairs can be made or if the test needs to be pushed off to a later date for further work.</p>	
<p>11. Once test is rejected or successfully completed, the test media shall be vented / discharged in based on the approved testing plan to an acceptable discharge area</p>	<p>a. Gases or debris may be vented which could be harmful to personnel</p>	<p>a. Areas where line is being vented should be considered line of fire and personnel should be aware to stay away b. Safety glasses and other PPE should be worn to warn of gases or any debris that is vented</p>	
<p>12. Inspector shall complete the pressure test report and note acceptability of the test with any comments</p>	<p>N/A</p>	<p>N/A</p>	



INDUSTRIAL-STRENGTH CONSTRUCTION

# TASK SAFETY PROCESS



Title: Pneumatic Testing  
Author: Chris Kramer

TSP Number: P0014

Revision Date: 6/19/2014  
Reviewed By: Clay West

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13. Inspector turns in completed test package to project Quality Lead and a copy is made for BMW records	N/A	N/A	
14. Original copy of completed test package is submitted to client for turnover.	N/A	N/A	