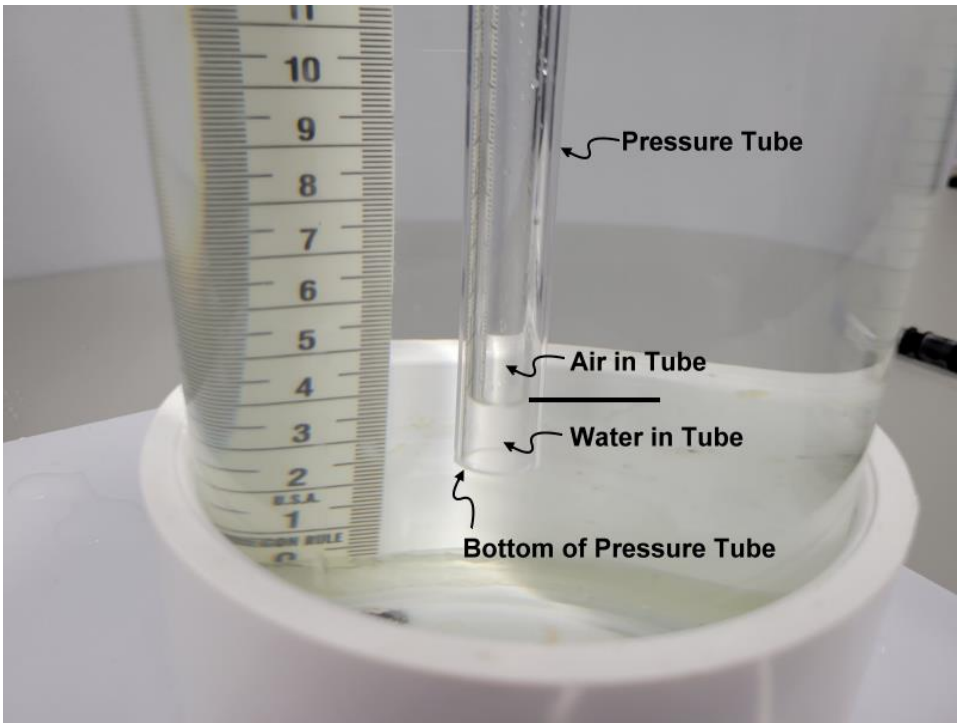
Upstream Technologies
5201 East River Road, Suite 303
Fridley, MN 55421
651-237-5123
www.upstreamtechnologies.us

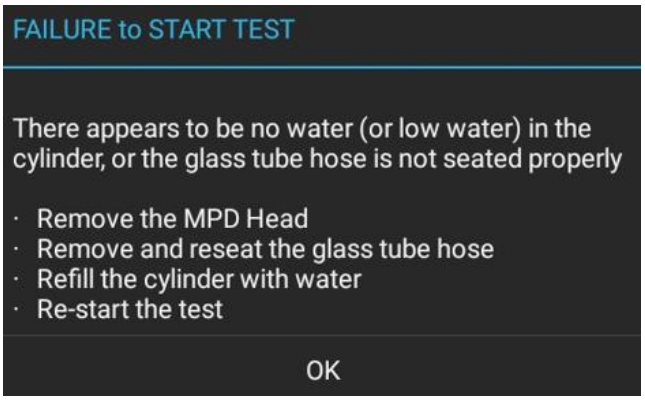
MPD Pressure Tube Concern

When the MPD pressure tube is sealed to the MPD head, and is not cracked or have any air leaks, this is how the bottom of the pressure tube should appear when performing an MPD test:



As you place the tube into the water and set the MPD head, the air inside of the tube compresses under pressure, about 0.4 PSI. Approximately 1cm of water will go up inside the tube as shown in the picture above.

If the tube is not sealed or if it is cracked, water will rise all the way up the pressure tube, and the MPD head will believe the cylinder is empty and you will receive this error message:



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If you get this error message and the cylinder is full of water, then the pressure tube is leaking. Check to see where the air bubble is inside of the tube and if it is not about 1cm from the bottom, the pressure tube has a leak.

The issue described above is easily fixed by replacing the pressure tube.

There is, however, a greater concern that is not obvious.

An MPD client ran into this problem when they started a test, and all appeared to be good. They left the MPD run overnight and came back 15 hours later. There was still a good amount of water in the cylinder when they returned. It had not completely infiltrated, but the test was finalized anyway and uploaded to our server and Ksat was calculated.

The results on our server showed that the cylinder completely drained in 9 minutes, even though there was still water in the cylinder after 15 hours.

How could this be?

There was a very slow air leak in the pressure tube, and it took 9 minutes for the air to leak out of the pressure tube.

As the air leaked out, pressure inside the tube went down slowly. This tricked our electronics into thinking the water infiltrated in 9 minutes. And this false data produced a false Ksat value. Fortunately, the client questioned why it showed 9 minutes instead of 15 hours and called us with this concern.

Take-Away:

We are working on a solution that will mitigate this issue.

To avoid this issue, always check for the 1cm of water at the bottom of the pressure tube after starting a test. It should never be higher than 1cm. Then check it again every 10 minutes or so. The water level in the pressure tube should go down, and never up.

If the water level in the pressure tube goes up, abort the test and replace the pressure tube.

June 6, 2024