MRA FORENSIC SCIENCES

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March 3, 2010

Insured: Daniel Jaterka – 5111 Cobble Creek Dr., West Jordan, Utah.
Claim No.: 7243025939
DOL: February 26, 2010

RE: Reverse osmosis water filtration system fitting failure with caused water damage.

Preliminary Inspection Report

Background:

Mr. Jaterka bought the subject reverse osmosis water filter system on January 3, 2009 through e-bay from PureWaterClub.com. He said the unit had arrived completely assembled. He attached the provided ¼" supply tube to his home's culinary water system. The system was used only when water was needed to replenish the fish tank. The supply line fitting cracked and separated from the filter canister housing sometime during the night. The leak was discovered the following morning.

MRA was asked to inspect the failed component and form an opinion about the cause of the failure.

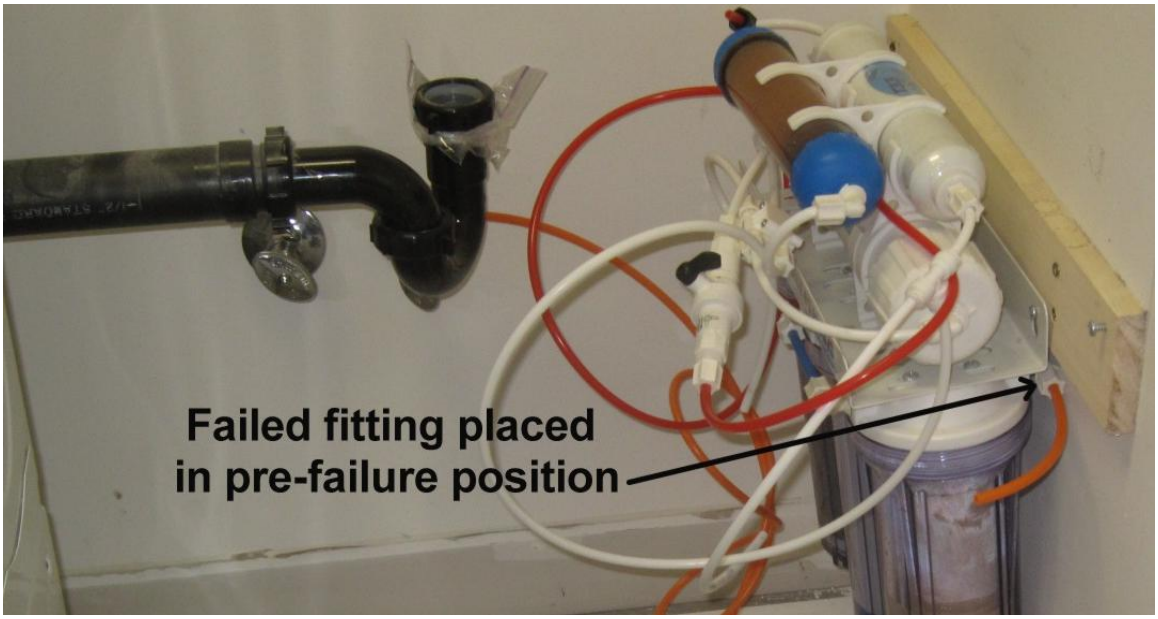

Figure 1: Reverse Osmosis filtration system in the Jaterka home.

Information Reviewed:

- Inspection of the failed part.
- Identification of the part through the PureWaterClub.com web site and other internet searches.
- Inspection of the Jaterka home.
- Conversations with Daniel Jaterka.

Findings:

- Evidence, statements and inspection indicated that the subject fitting failed because it had been over-tightened when originally installed by the product assembler. The induced stress likely generated a crack that gradually increased in length over time until finally the fitting separated.
- The filtration system was purchased from www.PureWaterClub.com. Searching indicated that this company communicates entirely through email. Contacts listed on their website were ro-sales@purewaterclub.com and david@purewaterclub.com**.**

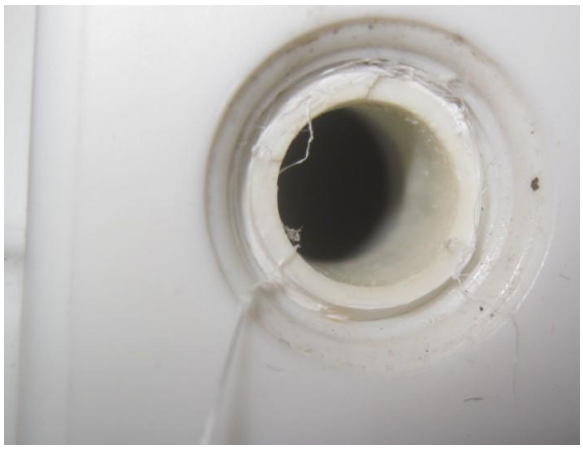

Figure 2: Fractured fitting in housing.

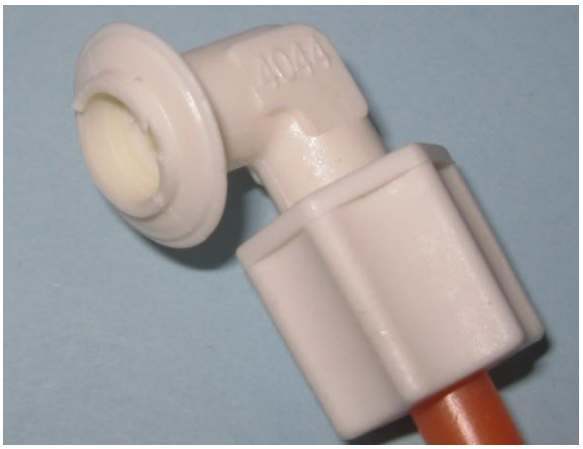

Figure 3: Opposite half of failed fitting.

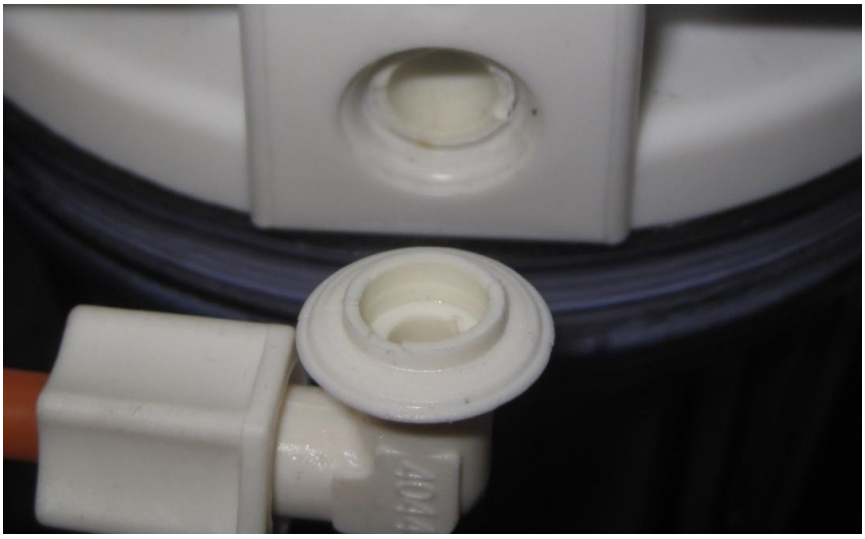

Figure 4: Failed fitting.

Discussion:

The home had peak water pressure of about 60-psi with an average of around 55-psi. It had a pressure relief valve and an expansion tank to control water hammer.

The subject filtration system had been located in the home's finished basement, under a sink in the corner of a laundry room. It was used infrequently, to replenish a large fish tank. The filter canister and failed fitting had been situated against an interior wallboard wall (Figure 1), which would have protected the fitting from impact. The wall was not dented at the location of the fitting which indicated that the fitting had not been forced against the wall.

Research indicated that the fitting was made by Semtec Technology Limited of Jaiding District, Shanghai, China. Information posted on the internet showed that the fitting was made from Nylon. Presumably, PureWaterClub.com purchased filtration system components from Semtec. Information on the PureWaterClub.com website suggested they assembled the components and shipped the assembly to the customer. The web site included a link to parts. The subject fitting was listed as #PT-4044-6. Figure 5 is the web site picture of the fitting. The subject fitting was wrapped with Teflon tape, which would not have been needed if the fitting had an o-ring as PT-4044-6 does. The fitting on an adjacent filter canister was wrapped with Teflon tape and had no o-ring. The next fitting over did have an o-ring.

Figure 5: Replacement fitting has o-ring.

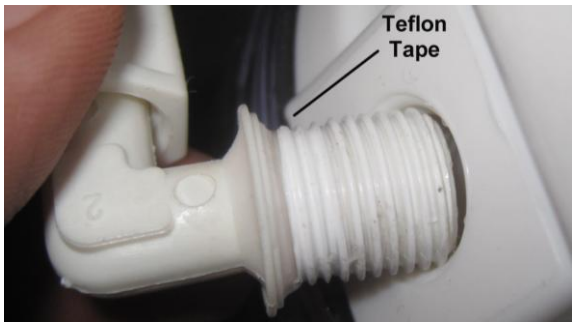

Figure 6: Adjacent fitting had no o-ring.

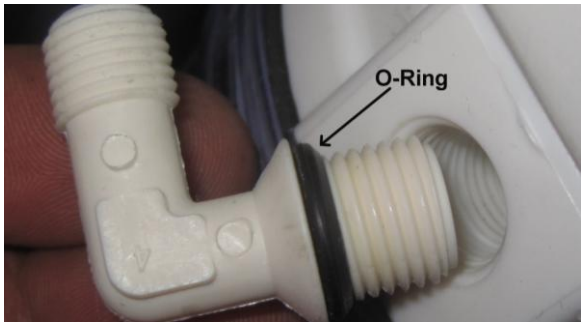

Figure 7: System fitting with o-ring.

Note the apparent deformation of the flange in Figure 6 compared to the ones shown in Figures 5 and 7.

This suggested that the subject fitting should have had an o-ring but did not, and that it may have been taped and over-tightened in order to create a water tight joint.

Microscopic inspection of the fitting's inside diameter found craze type cracking of the surface. This could be due to the stress created by over-tightening and stretching the fitting. It was considered unlikely that the crazing was caused by exposure to chemicals. The filter was attached to the West Jordan, Utah, community water supply, which should have had no effect on the fitting.

Conclusion:

Current information indicated that the subject fitting failed because it had been over-tightened. This caused cracks to form that, over time, resulted in part separation. The pressurized supply line leaked water that damaged the home.

Best regards,

Larry Smiltneek, M.S., P.E.