

TECHNICAL BULLETIN NO. 20110803 August 03, 2011

SUBJECT **Battery Failure for Field Scout Meters**

PRODUCT FAMILY **TDR 100, 200, 300, SC 900**

Some customers have experienced issues recently with corroded batteries in TDR meters. A likely cause for this has to do with the negative terminal of the battery. In figure 1, notice that the **positive connection** (outer gray strip in drawing) extends from the bump at the top and continues down the side of the battery. The **negative terminal** consists solely of the disk at the bottom of the battery. These two terminals are separated by an insulator (yellow **protective cap** in drawing). If the spring that holds the battery in the battery holder is positioned on the bottom of the battery such that it is simultaneously touching the negative and positive terminals, the battery will be short-circuited. This can cause the battery to heat up and eventually fail. When this condition exists, the batteries will quickly feel very hot to the touch. If the meter is turned on, it will give a battery strength of 0% and any attempts to collect data will result in a "Low Battery" message.

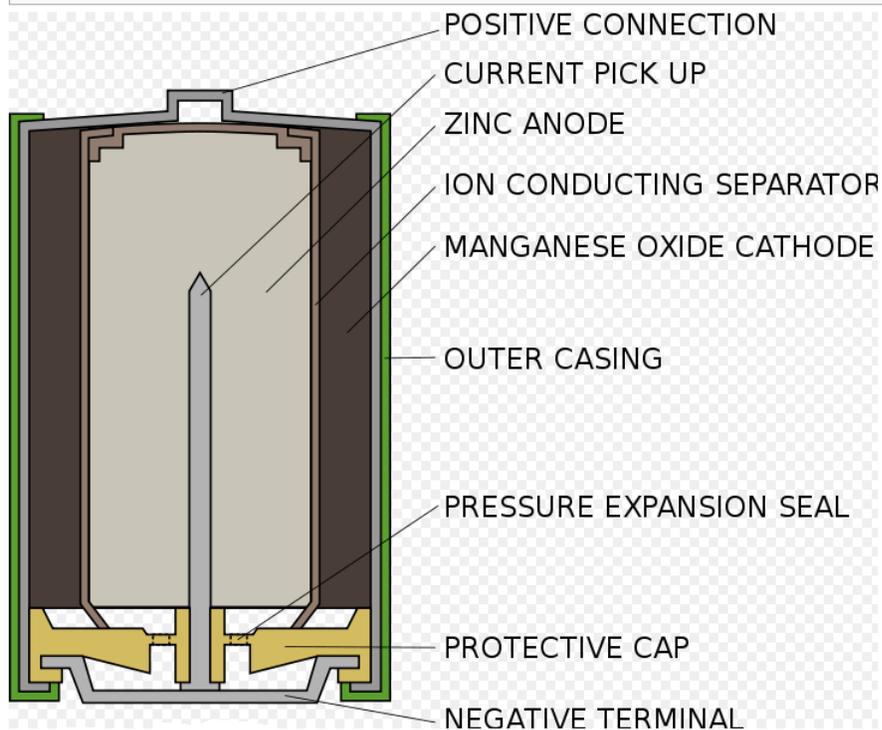


Figure 1. Diagram of alkaline battery structure.  
<http://en.wikipedia.org/wiki/File:Alkaline-battery-english.svg>

Some batteries are more vulnerable than others depending on how well the bottom of the battery is manufactured. An illustration of a “good” battery and a “bad” one that is susceptible to this problem is shown in figure 2. Figure 3 illustrates a battery that is installed in such a way that the spring is penetrating the negative terminal. It should be noted that there is a good chance that a battery that is susceptible can be installed such that the spring doesn’t poke through. In this case, the meter should function normally. However, it is possible that normal use of the meter could cause the spring and battery to move in such a way that the battery holder spring short-circuits the battery.

**If this problem occurs, it is recommended that different batteries be installed and the problem batteries discarded. In some cases a different brand of batteries may need to be purchased.**

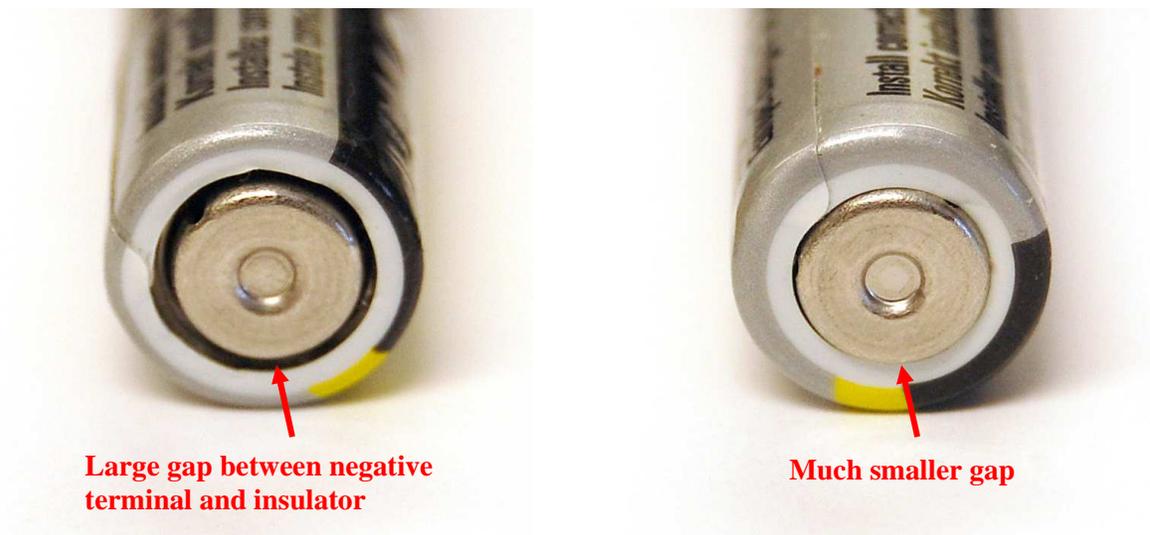


Figure 2. Examples of batteries that are a.) more susceptible to failure b.) less susceptible to failure.



Figure 3. Example of a short circuit caused by the battery holder spring contacting the negative terminal of the battery (by design) and the positive terminal (by puncturing the plastic insulator).