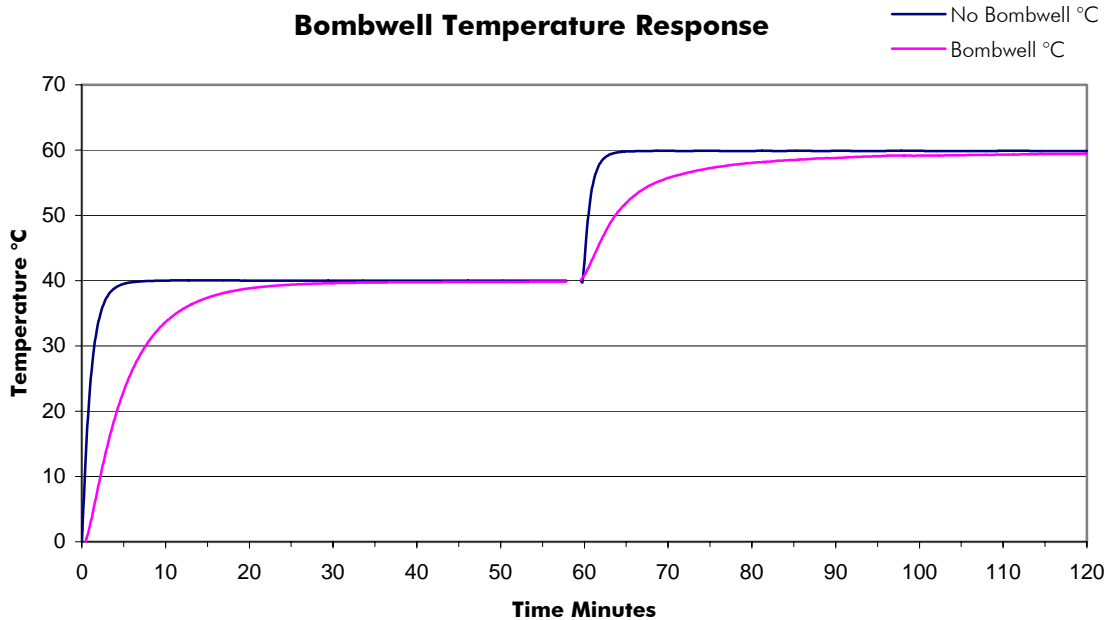




Temperature Response of Downhole Recorders Run with Bombwells

Bombwells are often used to protect downhole recorders from corrosive well fluids. Typically a bombwell is filled with some kind of inhibitor fluid. The well fluids have to dissipate through the fluid before it starts to corrode the gauge. Unfortunately there is one side effect; the temperature response of the gauge is greatly reduced.

In the graph below is a data collected from our 3/4" Mole Downhole recorder. The gauge was first put in a ice bath so the temperature can stabilize at 0 °C, next the recorder is plunged in a tank of hot oil at 40 °C for an hour, and finally then immersed in a tank at 60 °C. The test is then repeated but using a bombwell filled with thermal transfer oil.



From the graph it can be seen the temperature of a gauge without a bombwell settles out in 5-10 minutes. The bombwell increases the temperature settling time by a factor of 4 to almost 30 minutes. Its highly recommended that in tests where the setting time is important, such as taking a gradient, no bombwell should be used or longer stops be done to allow the temperature of the gauge to settle. The exact time depends on the inhibitor fluid and bombwells thermal characteristics.

A bombwell is not usually necessary with modern recorders, such as the ones made by CalScan, since most of our gauges are made of Inconel® 718. This material is extremely resistant to chemicals so it is almost impossible for downhole fluid to damage the housing itself. Care must be taken though when a gauge is run in highly corrosive well fluids to protect the pressure sensor with inhibitor grease or a pigtail. Also the proper o-rings must be used to insure a successful test