

Figure 2. Daily averages of BOP pressures from May 8 through July 8.

The mean drop in pressure relative to the trend during the top-kill period is 680 psi, which corresponds well with estimates of the pressure drop across the closed test rams as of May 25.³⁵

The blue line is a least-squares fit the pressures shown, excluding the top-kill period. The dashed red lines show variations about this fit of +/- 200 psi.

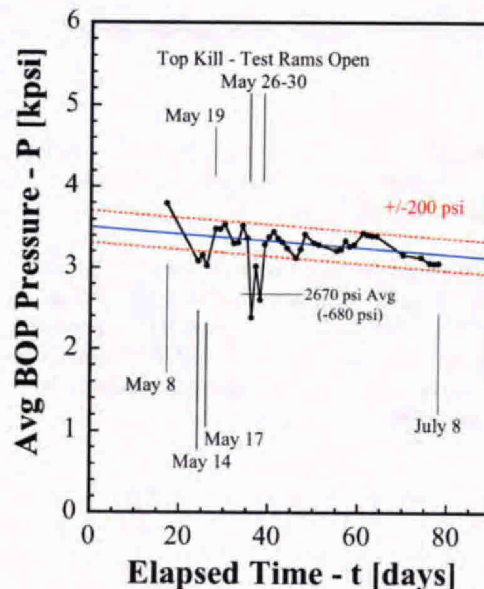


Figure 2 exhibits several significant features: (1) the drop in pressure following May 8 and subsequent rise on May 19; (2) the temporary drop in pressure during top-kill activities; (3) a general decline in the pressure associated with decay of the reservoir pressure; and (4) mild oscillations having a magnitude of at most about 200 psi. It is also noteworthy that the pressure of May 8 and May 14 to 17 fall just outside the range of these oscillations, while the temporary drop during top-kill falls well below. Most of these features will be touched on shortly.

Absent assumptions, models, and scenarios, the resistance to flow along any path is represented by the pressure drop between two points. That is, a higher resistance requires a larger pressure drop to drive a given flow rate. The overall effective resistance between the reservoir and BOP is thus represented by the pressure difference between these two locations. And, the resistance to flow between the BOP and ambient sea is represented by the difference in pressures between those two locations. The ratio of the overall effective resistance in the BOP to that in the reservoir and wellbore is thus represented by the ratio of the pressure drop between the BOP and ambient to that between the reservoir and BOP.

This ratio is shown in Figure 3. Here the ratio is calculated using the pressures of Fig. 2 above, the reservoir pressure history per Fig. 5 of my original report, and an ambient sea pressure of 2198 psi. Here the BOP pressures are corrected using both my constant value of 740 psi and the corrections of Dr. Trusler for each of his two periods covered by this data.

Like the pressures of Fig. 2, the calculated ratio of pressure drops shows several interesting features: (1) an abrupt drop from May 8 to May 14 followed by an increase on May 19; (2) a large drop and then recovery during the top-kill period; and (3) some periodic oscillations. Unlike the pressures of Fig. 3,

³⁵ Per BP-HZN-2179MDL02208359 the pressure drop across the test rams is 725 psi. This however is based on the flawed +966 psi correction to the BOP gauges. My correction of 740 psi would place the value at about 500 psi. Per MC252_DataDump_071810.xls, SNL087-001206, the rise in pressure when the test rams were closed at 04:08 on May 30 is 440 psi.