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Subject: Results of Injectivity Test of Well MC-8

This well was successfully tested for injectivity during 2-4 July 2005. Figure 1 shows the pressure history (in pounds/square inch absolute or "psi") measured at the depth of 800m as a function of time (in hours) from the start of injection; on this figure are shown the final injection pressures reached after injection at 3 main rate steps used: 200, 400 and 600 gallons/minute ("gpm"). Figure 1 also shows the final pressure after injection was stopped; it shows that the total fall-off in pressure after termination of injection at 600 gpm amounted to 300 psi. Therefore, the injectivity index of this well is 600/300 or 2 gpm/psi. As a further check on the injectivity estimate, the injection rate for each of the 3 rate steps has been plotted in Figure 2 against the positive pressure differential needed for injection at each step. Figure 2 shows an approximate linear trend with a slope (corresponding to the injectivity index of the well) of 2 gpm/psi.

Assuming that this well, when produced, will have a productivity index equal to its injectivity index of 2 gpm/psi, one can estimate the available power capacity of the well using a numerical wellbore simulation technique. However, the well is still heating up after having undergone normal cooling from mud circulation and fluid losses during drilling; the stable production zone temperature at this well will not be available for a few weeks. We can estimate a minimum power potential for the well assuming conservatively that the well will heat up to at least 240° C, and also a maximum power potential assuming that the well will heat up to the temperature of well MC-6, namely 260° C.

Figure 3 shows two calculated curves of flowing wellhead pressure versus production rate (in tons per hour) potentially available form this well assuming bottomhole temperatures of 240° C and 260° C. Figure 4 shows the estimated generation capacity (in MW) versus flowing wellhead pressure derived from Figure 3; in this estimate a steam separation pressure of 7 bars (absolute) and a unit steam requirement of 8 tons/hour per MW capacity have been assumed. Figure 4 shows that at a minimum required flowing wellhead pressure of about 7.5 bar (which cannot be less than the separator pressure) the well should have a capacity between 4 and 9.8 megawatts depending on how much it heats up.

Figure 1. Pressure History for MC-8 Injection Test

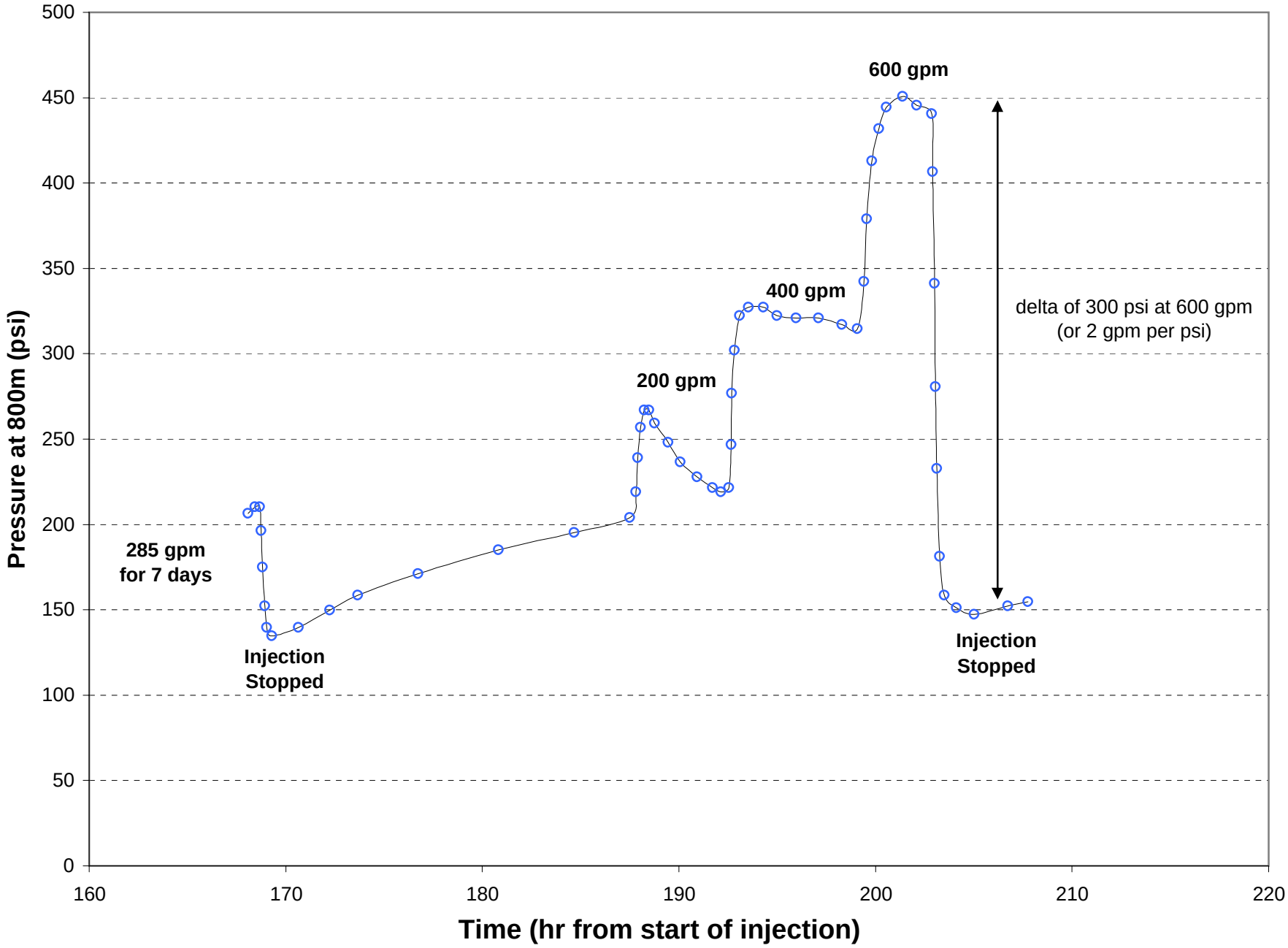

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Figure 2. Injectivity Index for MC-8

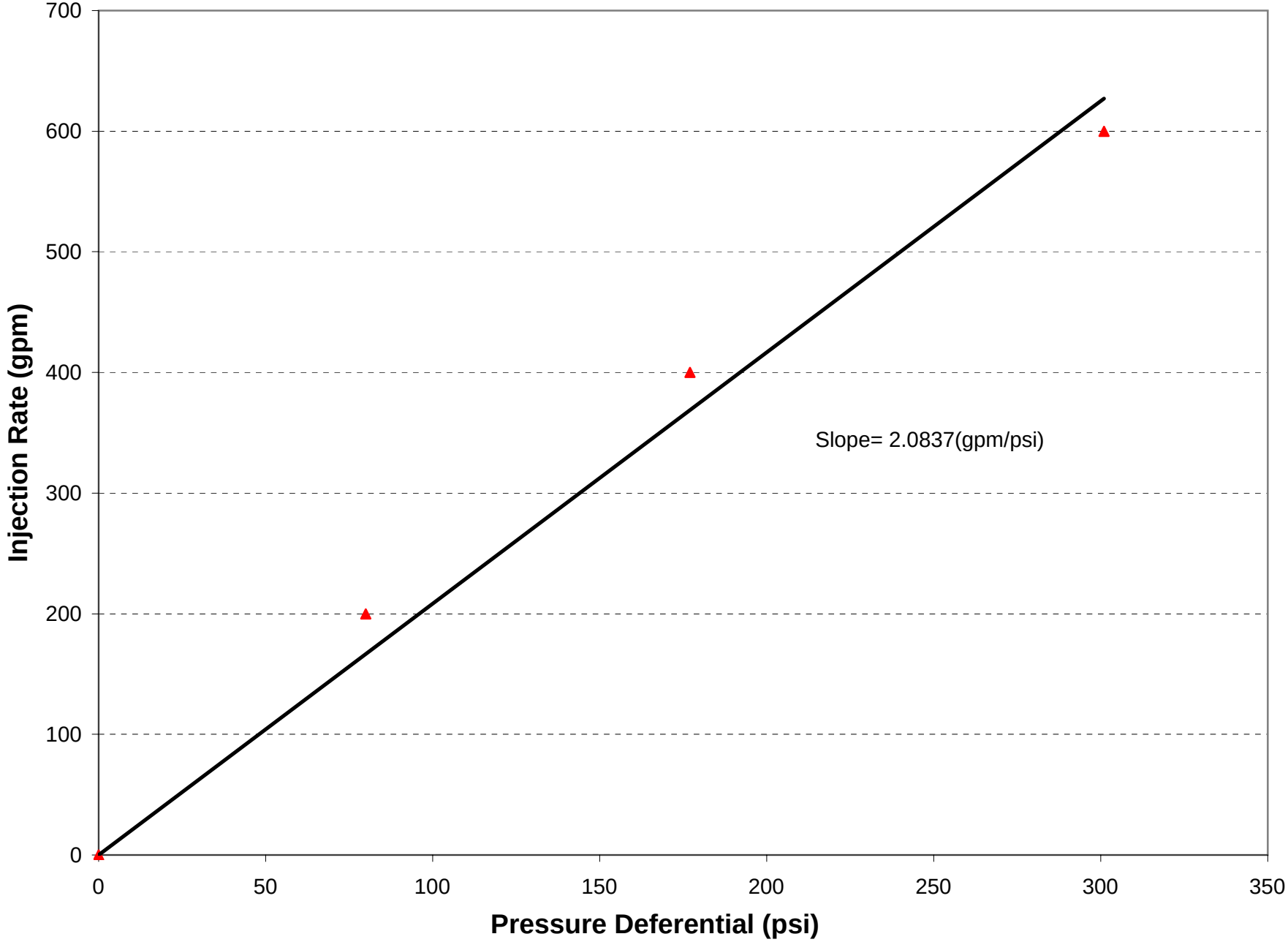

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Figure 3. Projected Wellbore Deliverability Curve for MC-8

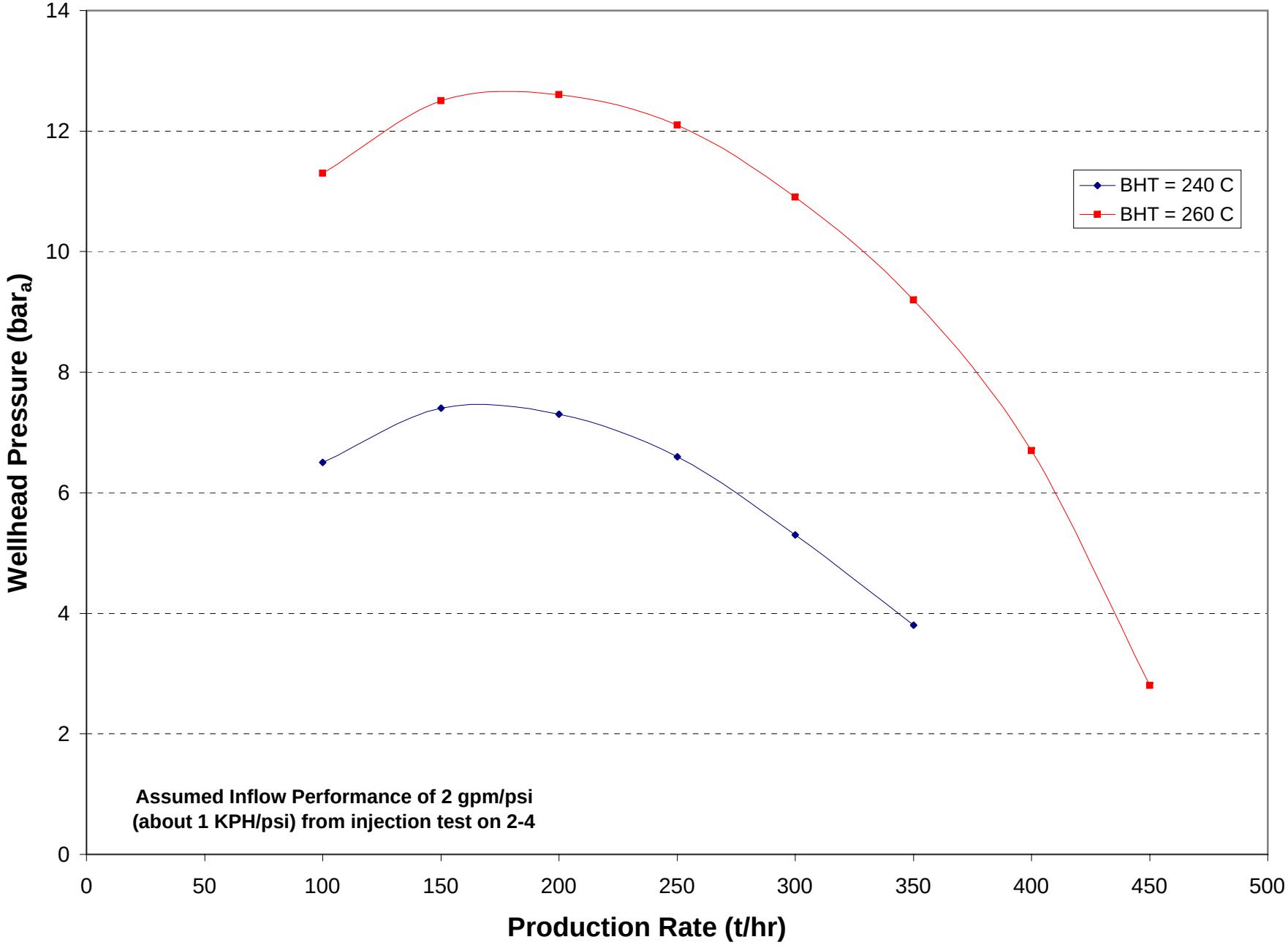

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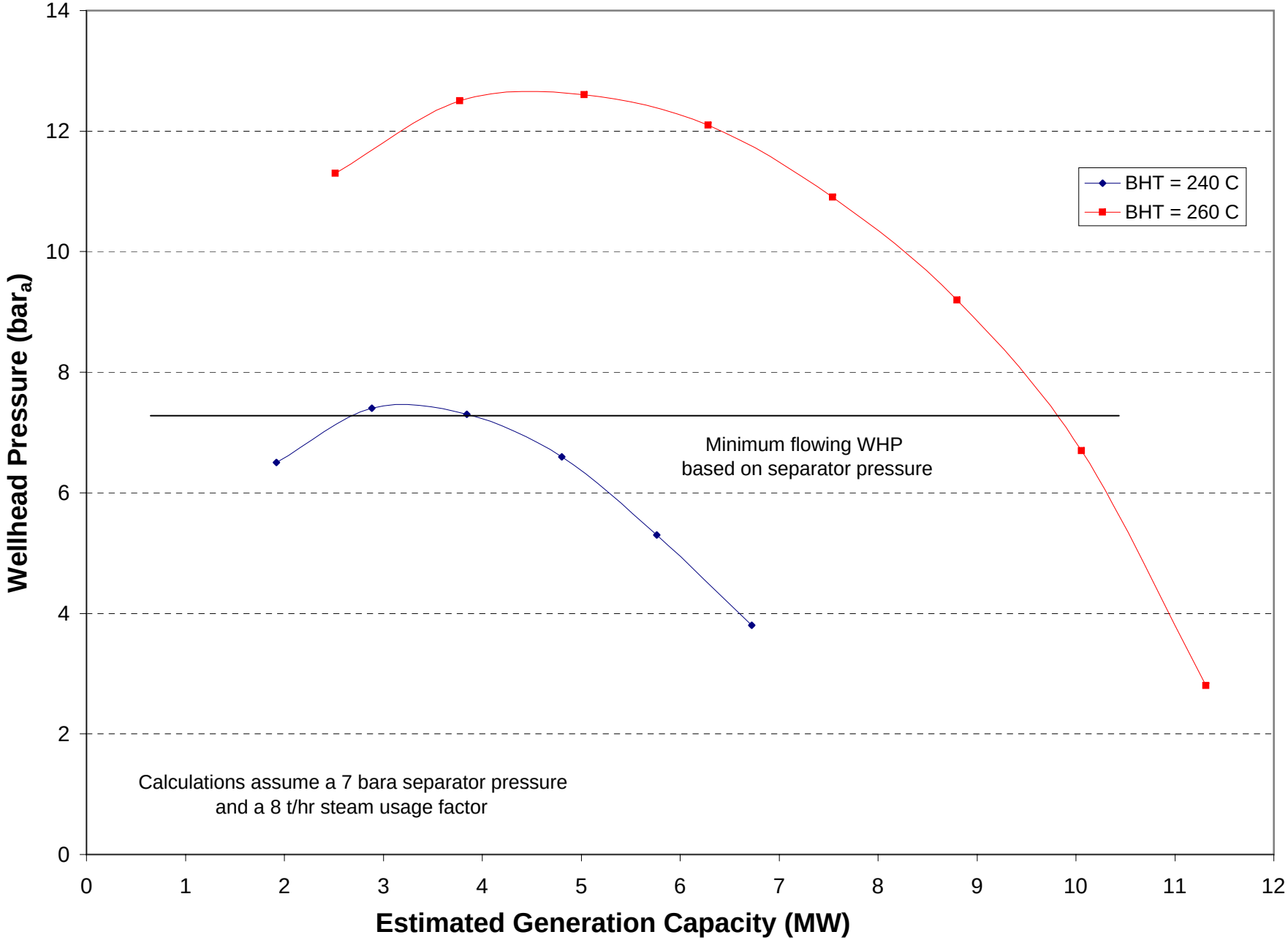
Figure 4. Estimated Generation Capacity for MC-8



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