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MEMORANDUM

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From: Jim Lovekin and Eduardo Granados

Subject: Interference Testing Between MC-6 and MC-8

GeothermEx has reviewed the data we have received on the injection testing of MC-6 and the temperature surveys of MC-8. The purpose of this memo is to describe the logical next step in testing these wells, and to discuss the pros and cons of such testing.

First, a summary of the data since July 2005:

- The injectivity test of MC-8 on 2-4 July showed an injectivity index of about 2 gpm/psi (see our memo to you of 6 July). A temperature survey on 4 July (after injection) showed cooling on the bottom of the well (86.4°C at 2,377m), implying that much of the injected water had exited the well at the bottom, below the big fracture at 2,345m.

- Injection into MC-6 started on 7 July by gravity feed of stream water at about 1 m^3/minute (about 264 gpm). Downhole pressure monitoring in MC-6 by capillary tubing at 800m began on 27 July. Over the next three weeks, downhole pressures in MC-6 declined about 30 psi. We thought this might represent gradual improvement in injectivity, but it may also have reflected simply a thermal effect, e.g., gradually reducing the temperature of liquid in the rock fractures near MC-6, with a consequent increase in fluid density and lowering of the liquid level in this area. The latter interpretation is consistent with the observation that when injection stopped, downhole pressures did not fall off (as might have been expected after injection) but rose gradually as the wellbore and the surrounding formation began heating back up.

- Temperature surveys of MC-8 on 12 July and 27 July showed MC-8 heating while MC-6 was injecting. By 27 July, the temperature reversal on bottom of MC-8 had essentially disappeared. The bottom of the well had recovered to 215°C and was expected to continue heating.

- Temperature surveys of MC-8 just 3.5 weeks later (starting on 19 August, and with numerous repeat surveys through 26 August) showed a dramatic recurrence of the temperature reversal at the bottom of the well. This time, the source of the fluid appeared

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to be the cold water injected into MC-6. In other words, a thermal front from MC-6 had arrived at MC-8 (approximately 800 meters away in downhole location) between about 3 to 6 weeks after the start of injection into MC-6. The bottom-hole temperature in MC-8 dropped to about 180°C. Interestingly, the temperature just above the "big crack" in MC-8 was essentially unaffected, and indeed continued heating, reaching 233°C at 2,300m by 26 August.

- The step-rate injectivity test conducted on MC-6 on 25 August (with injection rates of 200, 400, and 600 gpm) showed an Injectivity Index of about 1.4 gpm/psi. This essentially matched the Productivity Index estimated from the initial rig test in November 2004 and suggests no improvement in the permeability of the formation around MC-6. It is also consistent with the interpretation that the decrease in downhole injection pressures in MC-6 since 7 July was primarily a thermal effect, rather than an increase in the amount of fracturing.

- Pressure monitoring was attempted in MC-8 during the MC-6 step-rate injectivity test, but no MC-8 downhole pressures were actually recorded due to a tool failure. The capillary tube from MC-6 has since been installed in MC-8.

The next logical step from the point of view of quantifying formation properties and understanding the nature of the connection between MC-6 and MC-8 would be to re-start injection into MC-6 for about 1 week, while monitoring downhole pressures in MC-8. The injection into MC-6 could be accomplished by re-starting gravity feed at about 1 m^3/minute, and the capillary tubing and data-logger on MC-8 are already in place. The goal would be to look for a clear pressure response from the MC-6 injection.

This procedure has certain advantages and disadvantages.

The advantage is that, if a clear pressure response is seen, it should allow better estimation of formation properties (permeability-thickness product and storage capacity of the fractures). It should also be quite an inexpensive test, since it does not involve pumping and uses equipment already in place. The length of injection (1 week) would not significantly slow the recovery of temperatures in MC-6 and MC-8.

A potential disadvantage is that the result of this test might give evidence of very limited storage capacity of the fractures in the vicinity of these two wells. This is already indicated by the speed of the thermal breakthrough and the sharp nature of the temperature reversal at the bottom of MC-8. If this is confirmed by the proposed interference test, it would call into question whether the formation in this area is commercially viable. From the point of view of maintaining momentum for significant investments that appear to be required for stimulating the formation (e.g., by massive hydraulic fracturing), this test might work to the project's disadvantage. On the

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other hand, if massive hydraulic fracturing is ever to be attempted, knowledge about the formation properties will be essential for good design.

Another potential disadvantage is that injection at 1 m^3/minute may yield an inconclusive result, i.e., no pressure response may be visible at this low rate. This may entail further testing, such as using the rig pumps to obtain a higher injection rate (about 600 gpm) for as long as tank capacity on site would allow (about 5 hours), or a longer-term test at the gravity-feed rate, further deferring the temperature recovery of MC-6 and MC-8.

Our recommendation at this point is to proceed with the 1-week, gravity-feed injection test into MC-6, with monitoring of MC-8. If a pressure response is seen, this will be the lowest-cost approach to gaining significant insight into formation properties. If the test is inconclusive, we can re-group and consider where to go from there.