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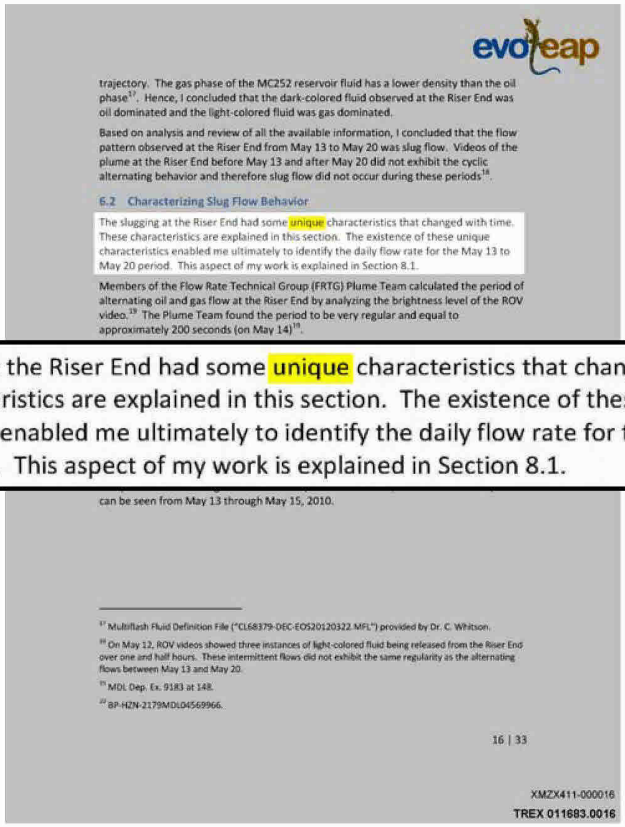

trajectory. The gas phase of the MC252 reservoir fluid has a lower density than the oil phase[17]. Hence, I concluded that the dark-colored fluid observed at the Riser End was oil dominated and the light-colored fluid was gas dominated.

Based on analysis and review of all the available information, I concluded that the flow pattern observed at the Riser End from May 13 to May 20 was slug flow. Videos of the plume at the Riser End before May 13 and after May 20 did not exhibit the cyclic alternating behavior and therefore slug flow did not occur during these periods[18].

6.2 Characterizing Slug Flow Behavior

The slugging at the Riser End had some unique characteristics that changed with time. These characteristics are explained in this section. The existence of these unique characteristics enabled me ultimately to identify the daily flow rate for the May 13 to May 20 period. This aspect of my work is explained in Section 8.1.

Members of the Flow Rate Technical Group (FRTG) Plume Team calculated the period of alternating oil and gas flow at the Riser End by analyzing the brightness level of the ROV video.[19] The Plume Team found the period to be very regular and equal to approximately 200 seconds (on May 14)[20].

can be seen from May 13 through May 15, 2010.

[17] Multiflash Fluid Definition File ("CL68379-DEC-EOS20120322.MFL") provided by Dr. C. Whitson.

[18] On May 12, ROV videos showed three instances of light-colored fluid being released from the Riser End over one and half hours. These intermittent flows did not exhibit the same regularity as the alternating flows between May 13 and May 20.

[19] MDL Dep. Ex. 9183 at 148.

[20] BP-HZN-2179MDL04569966.

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