

**From:** Lockett, Tim  
**Sent:** Fri May 28 11:02:52 2010  
**To:** Hill, Trevor  
**Cc:** MC252\_Email\_Retention; Davies, Simon; Chapman, Richard G  
**Subject:** RE: CFD Heat Transfer Model Case 30a - 10,000 bpd flow to assess Hydrates via CFD of BOP stack placement  
**Importance:** Normal  
**Attachments:** Hyrates.txt

Trevor

The CFD result for this case gives a big lift in terms of confidence in the OLGA results which lead to the discussion last Friday.

Essentially the CFD case shows a strong water entrainment, giving low temperatures in the BOP/riser and the knock on is diluting the MEG below the point where it can inhibit hydrates at these conditions. [The actual water rate in the CFD case is yet to be confirmed.]

On the back of this, Simon, Richard and myself have just completed a review of the hydrate issues in this BOP placement activity and have put together the attached outline of our discussion. Whereas we do not feel strongly enough to stop the job in the absence of changes, we do feel that the risk of forming a hydrate blockage is high, and that a blockage if formed would have significant ability to sustain pressure drop which may make it difficult or impossible to land the BOP stack. Furthermore, the path to eliminating that hydrate is not straightforward and would probably involve raising the riser.

Given the discussion last Friday was not favourable in terms of changing the hardware, our recommendation now focusses around using AAs with the MEG to reduce the risk of blockage. Whereas the CFD cases will still be helpful in informing rates etc, we feel confident that the advice/strategy is not going to change on the back of the remaining CFD cases.

Simon and I have a meeting starting 4pm today but we are available up to then if you wish to discuss.

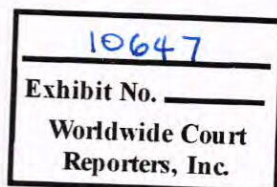
best regards

Tim

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**From:** Chris Matice [mailto:Chris.Matice@stress.com]  
**Sent:** 27 May 2010 20:34  
**To:** Simpson, Richard; Wellings, James S; Lockett, Tim  
**Cc:** Khanna, Samir; MC252\_Email\_Retention; Turnbull, Jon B; Hill, Trevor; Harbinder Pordal; Paul, Anup K (Stress Engineering Services Inc)  
**Subject:** CFD Heat Transfer Model Case 30a - 10,000 bpd flow to assess Hydrates via CFD of BOP stack placement

Richard, James and Tim:



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Attached is our heat transfer analysis for the case of 10,000 bpd flow with 0.1 kts current. Please let me know if there are additional images that would be helpful to you in assessing the formation of hydrates.

Also attached is our updated run log. We are working on the 20,000 and 70,000 bpd cases now.

Regards,  
Chris

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