Expert Rebuttal Report: Macondo Phase II

Gregg S. Perkin, P.E.

Engineering Partners International

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This **Rebuttal Report** will supplement my findings thus far in the above referenced matter.

I issued my **First Report** on March 22, 2013. Since that time I have received additional materials to review and consider. In those additional materials, I have read, reviewed and considered the opinions and conclusions expressed in the expert reports of Mr. Ian Adams ("Mr. Adams") and Retired Vice Admiral James D. Hull ("Admiral Hull") issued on behalf of BP. This **Rebuttal Report** will address the expert opinions expressed by these two (2) BP Experts. I have rebutted only some of the statements and options with which I do not agree. By not responding to or rebutting other statements, I am not adopting them. Further, because my background was included in my Phase 1 **First Report,** which was admitted in the Phase 1 trial, I have not included them again.

Materials Reviewed:

A listing of the pertinent materials, reference texts and other information reviewed and used as the basis of my opinions with respect to this **Rebuttal Report** are listed by Document Control Number ("DCN") and will be produced upon request.

Presently, I have reviewed what I understand to be the documents produced by the parties in this case thus far which relate to the technical and factual issues. However, as additional materials may be produced to me, they will likely be reviewed subsequent to this **Rebuttal Report's** date. I therefore reserve the right to add to and/or modify my opinions and conclusions based upon the evaluation of any such materials and/or information. I also reserve the right to further expand upon the opinions and conclusions expressed herein based upon any questions asked and/or any other issues raised regarding this matter.

EPI's Rebuttal Comments to certain Opinions & Conclusions expressed in Mr. Adams' Expert Report:

Mr. Adams stated that:

"...upon removal of the Deepwater Horizon's LMRP, the choke and kill lines on the Deepwater Horizon BOP would have failed closed preventing venting through the choke and kill lines on the Deepwater Horizon BOP for the BOP-on-BOP option."

I believe that Mr. Adams' statement in this regard is misleading. While the choke and kill ("C&K") Lines on Macondo's BOP would have failed closed upon the potential removal of the LMRP, they could have been reopened. Subsequently, the use of hydraulic pressure from the stand-alone subsea accumulators placed on the

seafloor after the blowout could have been used to reopen the C&K Line Valves on Macondo's BOP, if necessary. ROV's also could have potentially been used to open the C&K Line Valves.

Further, there were a number of different options to vent through the DISCOVERER ENTERPRISE's BOP. For example, one (1) of the venting options available to assist BP in this regard was to provide substantially enough flow area by including more flow lines; not just C&K Lines. Further, the DEEPWATER HORIZON's BOP's C&K Lines may have provided additional venting options.

A BP Peer Assist of the BOP-on-BOP option in early May determined these options were feasible, could be managed safely and that they had a high probability of success.

In addition, BP could have undertaken a gradual and systematic approach to shutting-in Macondo using the BOP-on-BOP approach which would not have involved the C&K Lines. From here on I will refer to the DEEPWATER HORIZON's BOP as BOP1 and the DISCOVERER ENTERPRISE's BOP as BOP2. For example, a number of pipe rams, largest opening to smaller openings, could have been used within certain Ram-Type Preventer cavities within BOP2.

When the largest pipe rams were closed, BOP1's 18¾" uncontrolled flow area could have been reduced by a predetermined and incremental amount; e.g. 1/4, 1/3 or 1/2. If fifteen thousand (15,000) barrels of oil per day ("bopd") was flowing from Macondo, then BP should have considered developing an engineered procedure by which the well's flow rate(s) and subsurface pressure(s) could be managed. Subsequently, monitoring dynamic pressures under a closed set of pipe rams with respect to disk pressure thresholds at the surface could have been accomplished.

If the partial shut-in pressure below these closed pipe rams remained within their expected tolerances, the next incremental set of pipe rams could have been closed. Once again, monitoring the pressure under these closed pipe ram with respect to disk pressure thresholds should have been possible and achievable.

At some point in this process, a decision would have been made to shut-in one (1) set of Blind Rams in BOP2 or pull BOP2 off-of BOP1. Once again, we know that uncontrolled flow from BP's Macondo Well was halted on July 15, 2010 utilizing a 3-Blind Ram Capping BOP Stack ("Capping Stack"). We also know that relief well drilling efforts continued to be undertaken.

The Capping Stack utilized was installed at a Riser Adapter connection atop the original BOP1's Flex Joint. BOP1's LMRP had not been removed. In my opinion, had BOP2 been assembled and engineered to slowly choke-off Macondo's uncontrolled flow, then subsurface pressures could have been managed, monitored and controlled with regard to disk pressure thresholds.

Mr. Adams further stated that:

"...the presence of the two (2) pieces of drill pipe in the Deepwater Horizon's LMRP (and its connected) riser would have completely precluded any containment options that required the removal of the LMRP."

I believe that Mr. Adams ignored the fact that any operational risks associated with the drill pipe ("DP") within the LMRP may have been removed and/or partially removed after the bent riser was cut and eliminated.

Regarding BP's Top Kill procedure, Mr. Adams incorrectly stated that:

"...if the injection of bridging material is considered, the Top Kill procedure is not limited by flow rate."

Note: The injection of bridging material is considered in the industry to be a Junk Shot.

A Junk Shot's success generally depends upon the materials ("Bridging Materials") introduced into the wellbore's flow and the constituents which make-up this flow.

A Junk Shot is a procedure known to fail and in this instance had a high likelihood of failure. The Bridging Material which BP intended to pump into BOP1 had to travel through lines that had inside diameters ("ID" or IDs") as small as three and one-sixteenth inches (3-1/16"). This small ID limited the size(s) of the Bridging Materials to be utilized to impede uncontrolled well flow.

One (1) reason Junk Shots often fail is because of the differential pressures encountered. Any Bridging Materials which became lodged into/within BOP1's ID could potentially be subjected to significant differential pressures. Bridging materials subjected to significant differential pressures can cause them to significantly deform and/or break-up. Therefore, their ability to seal-off uncontrolled wellbore flow may become limited and/or ineffective.

The Top Kill consisted of pumping a large and heavy volume of fluid at a high rate of flow ("Momentum Kill") along with various items ("Junk") which could plug any voids and/or openings in the flow's path. As discussed, the success of either or both methods was risky because many parameters pertaining to the uncontrolled flow from their Well was unknown, not well understood, and/or withheld by BP. Some of the direct parameters included the flow rates, pressures and the flow's make-up including any resistance to flow.

As I stated in my **First Report**, indirect Top Kill parameters included risks and hazards such as:

1. Bursting rupture disks in the 16" OD Liner;
2. Potentially and negatively impacting the drilling of the Relief Wells and;
3. Subsea and surface equipment damage. For example, any catastrophic failure of the high pressure and flow surface equipment used in the Top Kill could risk the lives of the people conducting the Top Kill work.

A Junk Shot of this magnitude within uncontrolled wellbore flow had never been performed before in any deepwater operation. In my opinion, a Junk Shot would have had an even more unpredictable outcome and would have wasted valuable time in order to substantially control this well.

The Junk Shot, similar to a momentum kill method is sensitive to the flow rate(s) and flow constituents. I agree with Energy Secretary Steven Chu's testimony that a Junk Shot's success would:

"...certainly depend on the flow (rate)."

In my opinion, this is just common sense.

Further, BP's Mr. Kurt Mix ("Mr. Mix") appeared to have held the same view when he wrote in the midst of BP's top kill procedure:

"...too much flow rate. Over 15000 and too large an orifice. Pumped over 12800 bbl. of mud today plus 5 separate bridging pills."

What Mr. Mix was generally referring to with regard to is comments that there was

"...too large an orifice", i.e. the 18¾" ID through BOP1.

Moreover, BP's own Junk Shot procedure entitled **MC252-Top Kill Procedure Contingency: Alternative LCM Pills** proved that BP was assuming an uncontrolled wellbore flow rate of five thousand (5000) barrels of oil per day ("bopd") when they analyzed this procedure. For example:

"Current BOP analysis (pressure and ram location) suggests that when Blind Sheer Rams and/or the Casing Shear Rams are closed, but passing with a leak area of 0.4 inches to 0.64 inches equivalent throat diameter were based on a 5,000 bopd total flow."

In contrast, Wild Well Control's CEO explained that:

"...what we saw was that there's a very generous flow path. We don't know if that's multiple moderate cutout areas or if it's a single large cutout area. We don't know what that is. We only see what's being expelled. And what's being expelled to a person of experience would suggest I can't stop this (flow) with a junk shot."

Mr. Adams also stated that:

"...it cannot be said with any degree of engineering probability that the well could have been shut in within weeks of the blowout....even if BP had access to a capping stack prior to April 20, 2010."

In my opinion, Mr. Adams ignored the feasibility of using a BOP2 solution. It was my understanding that both BP and the Marine Well Containment Corporation ("MWCC") now have capping stacks available to deploy in response to a deepwater blowout.

In this instance, a BOP-on-BOP solution could have been devised which could have systematically brought uncontrolled flowing conditions under control while allowing BP to manage the risks of breaching their well's integrity.

Further, timing estimates and efforts to shut-in a deepwater blowout under Macondo's uncontrolled conditions performed afterwards suggest a control range from one (1) to five (5) weeks. As a result, had BP appropriately planned to respond to Macondo's blowing out before it occurred, including having a BOP2 Solution available, BP could have shut-it-in much sooner.

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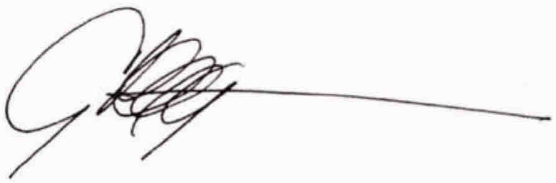
Respectfully Submitted,



Gregg S. Perkin, P.E.
CEO/Principal Engineer
Engineering Partners Int'l, LLC
Louisiana License No. 23587