

## Notes on flow rate modeling history

- **4 Well Scenarios:** Original flow based modeling given four well damage assumptions from BP. All labs made common assumption of 5000 bbl/day flow rate and a fixed BOP pressure. Bottom of well pressure was determined from solution.
- **Video (cut riser):** Results provided via Flow Rate Technical Group during a Science Team conference call. Results done by video analysis. This analysis had three independent cases: flow out fallen riser, flow out kink leaks, flow out cut riser. Only the cut riser results included in the table.
- **Top Hat 4 Fixed Flow:** Tri-Lab effort to calculate total flow rate based on Top Hat 4 leak paths and known surface collection. Great uncertainty in skirt leak path, some uncertainty in pressure measurement inside Top Hat.
- **Flow Variations in Top Hat 4:** Several independent efforts to determine flow rate from known Top Hat & flow rate changes due to shipboard collection rate changes. Generally found that the uncertainties and rate sensitivity made this approach unreliable. Individual attempts by Garwin, Majumdar, Miller, Ratzel .
- **Acoustic:** Results provided via Flow Rate Technical Group during a Science Team conference call. Acoustic analysis of flow out fallen riser, not including kink leaks.
- **Well Integrity:** Tri-Lab effort to determine potential leak rates out of presumed burst disk openings. Model results based on presumed flow rates for open well to define shut-in behavior

Tri-Lab Assessment – None of methods listed above provide “believable” mass flow results – too many model uncertainties and/or data for quantitative analysis