9. Addendums

[1] In addition to the additive Gaussian noise with RMS 80mV of thermal noise inserted at each node, up to 50[mV] of RTS noise was also inserted at each gate throughout the circuit randomly.

[2] Implications in trial B, displayed in figure 19, were chosen firstly by looking at all chains outputted by the implication chain algorithm, not necessarily just the highest ranked chains analyzed in section 3.4. We then selected the chain that had the implications with the highest overall fault observability. We subsequently removed implications with low fault observability, and replaced them with implications with high fault observability. The result was a pseudo-chain. We did not, however, take the activation probability of implications into account when creating this scenario. Scenario B ultimately allowed us to realize the importance of implication activation probability in building future, robust scenarios.

[3] The probabilities of implication activation are only briefly discussed. Scenario 1 and scenario B are reproduced in figures 23 and 24 on the following page. For comparison's sake, each implication has been labeled (in red and highlighted in yellow) with its probability of activation. Note that the un-highlighted red numbers on figure 23 represent the polarities of the implication. Also note that probabilities were generated from functional simulations that were not completely exhaustive.

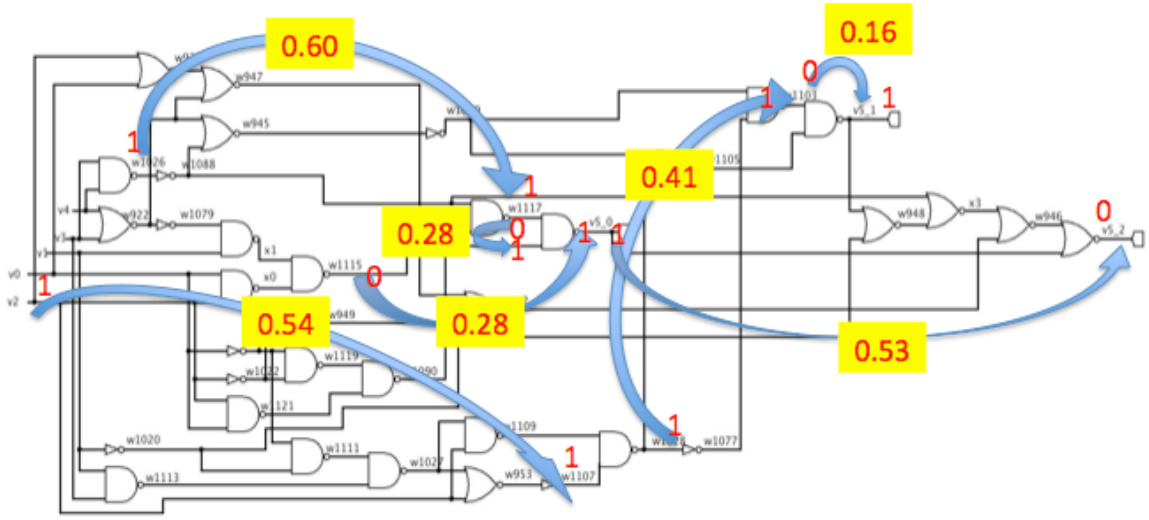

Figure 23: Scenario B Implication Activation Probabilities

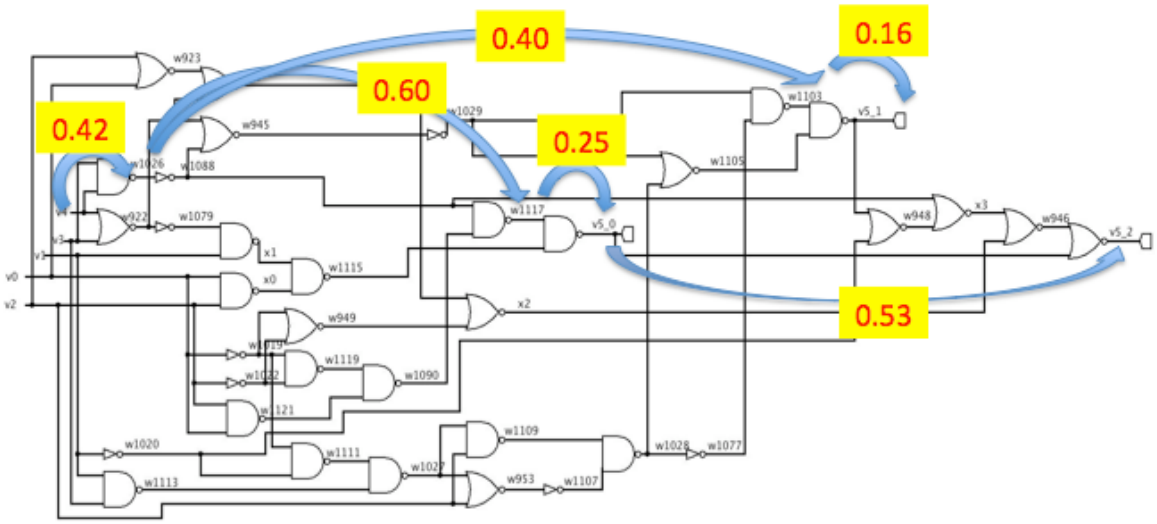

Figure 24: Scenario 1 Implication Activation Probabilities

[4] The reinforcement of w1117 using w1115 within the scenario 1 implication chain can be seen on the following page in figure 25.

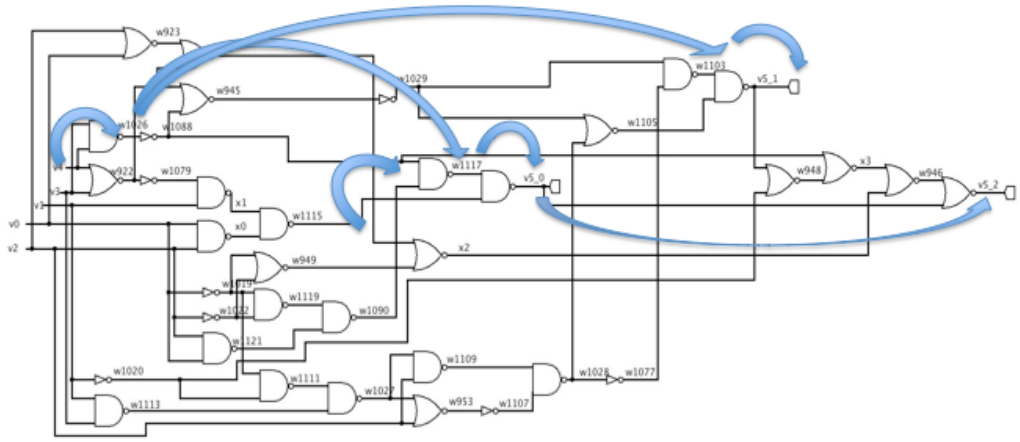

Figure 25: Reinforcement of the w1115 node within the scenario 1

[5] The modified Schmitt trigger used in the combination fault observability and implication chain trial was not, in fact, visible in Figure 3. The actual gate can be seen in figure 26, on the following page. Note that the new gate keeps the original implication the same, however, it reinforces the other signal polarity using self-reinforcement.

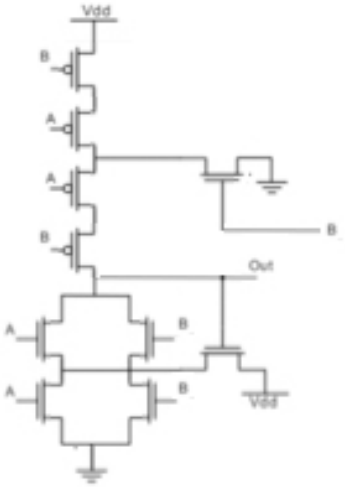

Figure 26: The Modified Schmitt Trigger NAND Gate used in the combination fault observability and implication chain trial

[6] In addition to the potential investigations mentioned in the “Future Work” section, we would like to continue our research by creating a “trial C.” Trial C will take path, fault observability, and implicant probability into account.