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## 2P55 - On the performance of triggered closing switches deployed in high explosive pulsed power experiments\*

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High explosive pulsed power experiments conducted by Lawrence Livermore National Laboratory employ several different triggered closing switches. Since experiments are single-shot events, failure in any one of these switches can be catastrophic to the experiment outcome. Thus, repeatability and reliability are key metrics in the assessment of closing switch performance. Presented in this paper are efforts to improve the performance of a triggered closing switch system used in a 450 kilojoule capacitor bank, which is used as a seed current source for magnetic flux compression generator experiments. The capacitor bank switch utilizes two different triggered closing switches: a commercial-off-the-shelf pressurized spark gap and a Livermore-designed solid dielectric puncture switch. Discussion of the commercial spark gap will focus on the results of an experimental investigation into switch reliability - specifically to determine the pre-fire probability. A campaign aimed at improving the repeatability of the solid dielectric puncture switch will be detailed, where almost a two-fold decrease in the average switch function time was observed by reducing the thickness of the solid dielectric. Data captured during the preparation and execution of high explosive pulsed power experiments will also be shown, encompassing the results of these improvement efforts.

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