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## Correlating Cygnus Diagnostics to Machine Reliability

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The Dual Beam Radiographic Facility (aka Cygnus) has been operating successfully for over 10 years providing invaluable data for our nation's stockpile mission. However successful, there have been some failures that may have been predicted, hence eradicated, during an uninterrupted operation phase. This report describes a statistical method to incorporate existing machine diagnostics, such as B-dots and D-dots, located at various positions throughout the pulsed power delivery chain to predict degraded performance and expose dormant failure modes. A basic graphical user interface (GUI) tool, which performs and displays the statistical computations and results, will also be described herein. The ability to leverage machine diagnostics, statistical inference, and historic data will prove invaluable to Cygnus operation and provide a foundation for predictive maintenance for other pulsed power facilities.

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