

# AFT Impulse™ Saves Time & Effort in Pump Trip Evaluation: Natural Gas PowerPlant

CASE STUDY

Circulating Water System  
Power Generation Industry



**Kiewit Power Engineers**  
**Lenexa, Kansas, USA**

**Platinum Pipe Award Honorable Mention - Software Features and Model Creativity**

Woodbridge Energy Center is a combined cycle, natural gas power plant estimated to produce 725MW for the city of Woodbridge, New Jersey. The entire circulating water system was modeled in AFT Fathom. Dalton Sivils, mechanical engineer at Kiewit Power Engineers, moved the AFT Fathom model to AFT Impulse for the transient analysis. His purpose was to evaluate different pump trip scenarios to (1) ensure a large transient event would not occur, and (2) that major equipment, pipes,

He noted that the best part of AFT Impulse is the ability to create a graph along a flow path, showing the location of each piece of equipment and where the largest pressure spikes are located. This gave him a high degree of confidence that the equipment design was sufficient for a given transient event.

**“Being able to roll over the model [into AFT Impulse] from Fathom and edit as necessary is a great time saver. Then setting up all of the different scenarios and being able to take the results and produce graphs of the transient system, all within one program saves time and effort.”**

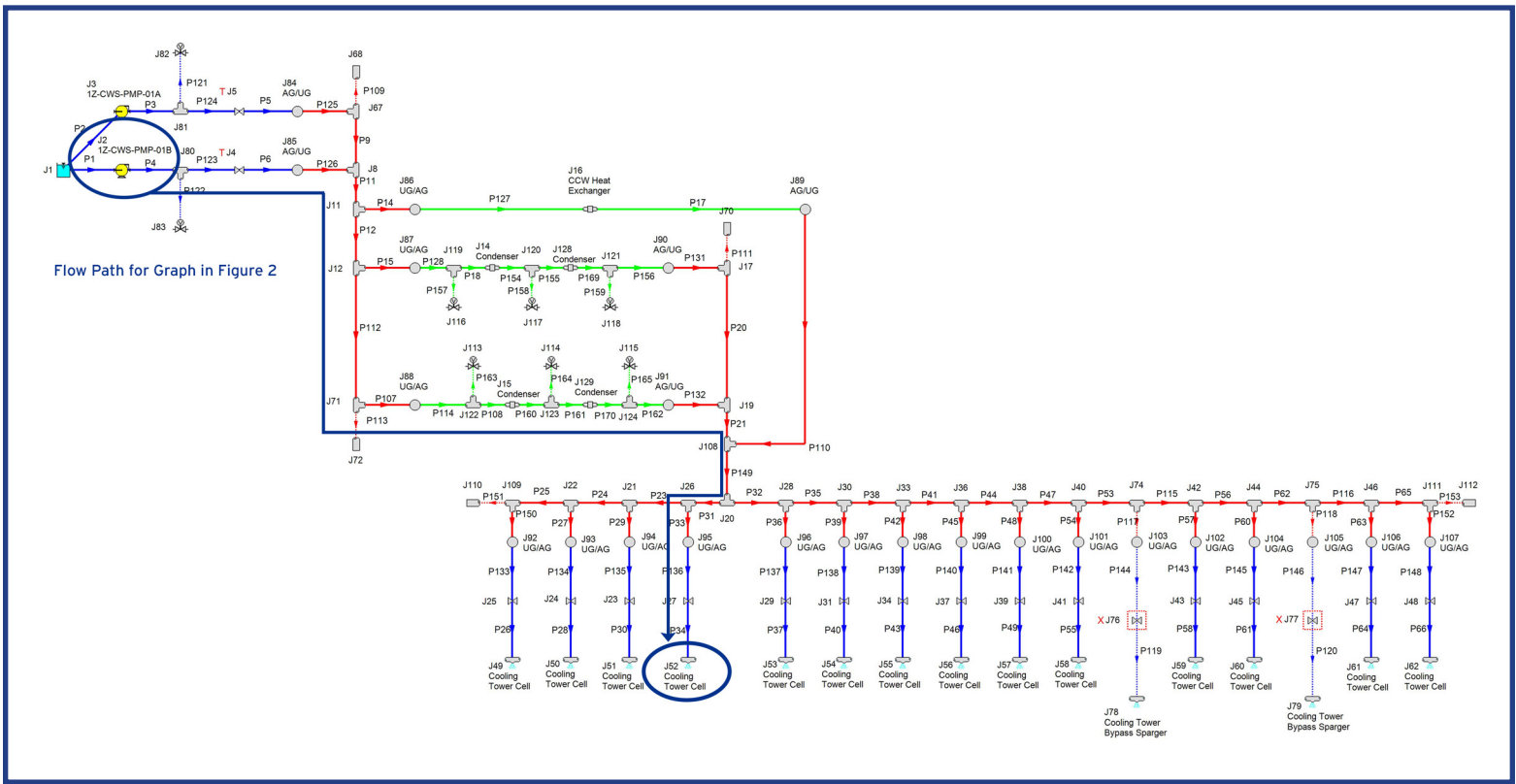


Woodbridge Energy Center,  
Woodbridge, NJ, USA

and valves were designed and positioned to withstand normal, small transient events. His model was well laid out with color coded pipes and contained 46 scenarios.

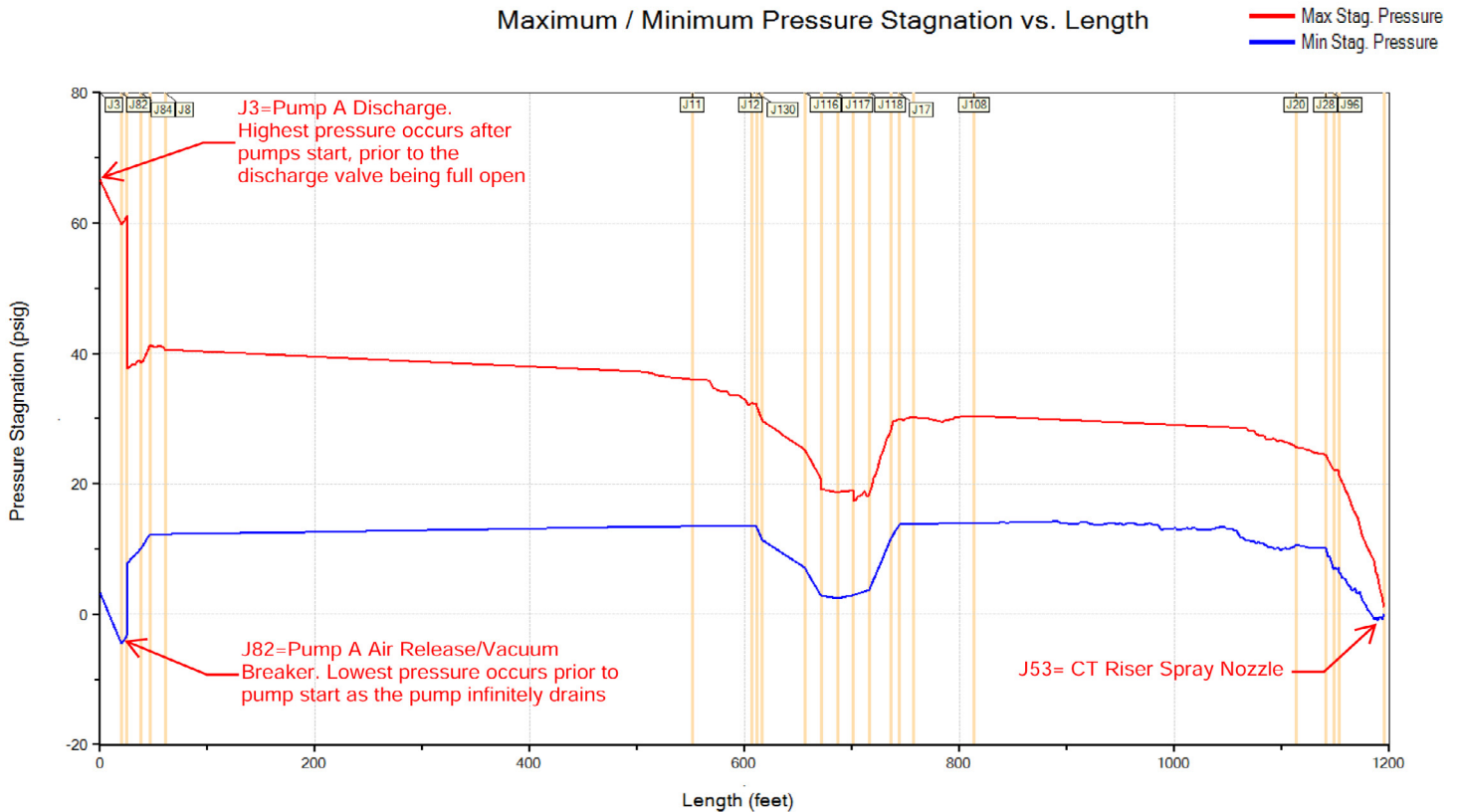
“Impulse is a great program for analyzing transient events,” Sivils said. “Being able to roll over the model from Fathom and edit as necessary is a great time saver. Then setting up all of the different scenarios and being able to take the results and produce graphs of the transient system, all within one program, saves time and effort.”

*What began in 1884 with two hardworking brothers has grown into a Fortune 500 construction, mining and engineering powerhouse. Kiewit's ethical, forward-thinking workforce continues to build upon the company's reputation of safe, high-quality engineering. Consistently ranked among the top five of the Engineering News-Record Top 400 Contractors, Kiewit is a leader in a variety of market sectors throughout North America and, most recently, Australia.*



Flow Path for Graph in Figure 2

**Figure 1 - AFT Impulse Model: Circulating water system at Woodbridge Energy Center**



**Figure 2 - AFT Impulse Graph: Stagnation pressure vs. length**