**Team Number:** THS 203

**School Name:** Taos High School

**Area of Science:** Engineering

**Project Title:** Tune the Fire

**Proposal:**

Firefighters put themselves in danger to save the lives of others. Firefighters need safer extinguishing methods to be more effective at their jobs. Firefighters can use other methods that do not include chemicals or other physical means that harm the environment and do not efficiently suppress the fire. Ultrasonic sound waves suppress flames in an environmentally friendly way. By using a parabolic copper array and a signal generator, a firefighter can emit a frequency that matches the nuclear magnetic resonant frequency of the burning material.

Ultrasonic signals disrupt different legs of the fire tetrahedron. The peaks and troughs cause air displacement thus depriving the fire of oxygen. The signals also impact the burning substance and decrease the pressure which causes a decrease in temperature. By depleting portions of the fire tetrahedron, the signals allow the firefighters to put the fire out quicker and safer.

Using Netlogo we plan on modeling and corroborating data previous experimentation. We plan on visually monitoring the signals suppressing and eventually extinguishing a flame source. We also will incorporate graphs that display the pressure, temperature, and remaining mass of the fuel source.

**Team Members:**

* **Joshua Fambro**
* **Kyle Totman**

**Sponsoring Teacher:**

* **Tracy Galligan**

**Project Mentor(s)**

* **Taos Volunteer Fire Department**