Name: _____ Date: _____

ACTIVITY: SSME Valves HPFTP

Directions:

After reading *Understanding the Valves used with the HPFTP*, complete the activities below.

1. What if the FPOV had a leak? How would you calculate *flowrate*? Would you use the same *flowrate* formula or would you have to modify it?

2. Both the oxidizer and fuel are related linearly to flowrate.

a. Can you graph the oxidizer flow rate for either the HPFTP or HPOTP as a function of how much the oxidizer valve is open? (Note: The maximum oxidizer flow rate for the HPFTP is 68, and for the HPOTP it is 25.)

b. Can you graph the fuel flow rate on the same set of axes? (Note: The maximum oxidizer flow rate for the HPFTP is 78 and for the HPOTP it is 40.)

c. Graph the total flow rate for the HPFTP and HPOTP with the Main Fuel Valve kept constant at 100%.

d. How did you determine the scale for the Flow Rate (y) axis?

e. Can you graph either the HPFTP or HPOTP flow rate as a function of both fuel **and** oxidizer valve opening?

3. Using the graphs or equations above, determine which turbopump would experience the greatest change in flowrate by an increase in the Main Fuel Valve opening: the HPFTP or HPOTP?

4. With each turbopump's oxidizer valve set at 100%, can you graph the difference between the HPFTP and HPOTP's flow rates as a function of Main Fuel Valve opening?