

Use Case 1: Monitor Pre-Launch**Scenario:** Monitor Delivery System–Monitor Stage**Scope:** LaunchSimulator**Level:** Flight Controller Goal**Primary Actor:** Flight Controller**Related Use Cases:** None**Stakeholders & Interests:**

- Flight Controller: Wants to monitor the entire stage data during Pre-Launch for Pre-Launch validity (continue, hold or abort Pre-Launch)
- Engineer/Technicians: Wants to monitor the stage data during Pre-Launch to apprise the Flight Controller to the condition of the Stage
- Astronaut: Wants to monitor the stage data during pre-launch for mission integrity

Pre-Conditions: The Countdown has started, in Pre-Launch**Post-Conditions:** The Countdown at 0, the System transitioned to Initiate Launch**Main Success Scenario:**

Flight Controller	System
	1. Monitors the Pre-Launch Engine Data
	2. Returns the Pre-Launch Engine Data
	3. Repeats 1,2 for each Engine
	4. Monitors the Fuel System Data
	5. Returns the Fuel System Data
	6. Repeats 4,5 for each component in the Fuel System
	7. Reports Countdown at 0
8. Initiate Launch	
	9. Transitions to Initiate Launch

Alternative Flows:

- 2a. During the entire Countdown, if the any Engine is ignited, then the System reports the ignition error. Flight Controller issues an Abort.
- 2b. During the entire Countdown, if any Engine reports a fuel flow rate beyond “tolerance”, then the System reports an Engine error. Flight Controller issues an Abort.
- 5a. During the entire Countdown, if the Stage’s Fuel Tanks report an empty rate beyond “tolerance”, then the System reports a Leak Error. Flight Controller issues an Abort.

- 5b. During the entire Countdown, if the Stage's Pumps report a pump rate beyond "tolerance", then the System reports an Pump Error. Flight Controller determines next course of action.
- 5c. During the entire Countdown, if the Stage's Pumps report a flow rate beyond "tolerance", then the System reports at Pump Leak. Flight controller issues and Abort.
- 5d. During the entire Countdown, if the Stage's Fuel Tanks report a High Temperature, the the System report the High Temperature error. Flight Controller issues an Abort.
- 5e. During the entire Countdown, if the Pipes report a Flow Rate beyond "tolerance", then the System reports a Leak. Flight controller issues and Abort.

Special Requirements:

- The System returns Several different measurements for each Component. All the appropriate data needs accessing.

Technology & Variations List:

- "Tolerance" for each Component may vary based on product, make and model
- What is considered "tolerable" varies based on specification of component

Frequency of Occurence: Almost Continuously–dependent upon System

Open Issues:

- "Tolerance" for all of the Components related to this Use Case need more attention and furthr investigation.