*Modes, Pressure Flow, and Behavior:*

Green (normal) Line: GreenPump -> ShutoffValve -> Selector

ShutoffValve: When pressure in > 0 and sysValid, then output is positive.

Blue (alt) line : BluePump & Accum -> AddGate -> Selector

AddGate: output = min{in1+in2, 10}

BluePump also sends pressure value to accumulator (ciruit\_pressure).

Selector Behavior:

- Normal: (greenin > 0 AND sysValid) => greenout > 0

- Alternate: ((greenin = 0 OR not Valid) AND bluein > 0) => blueout > 0

Since the accumulator input is coming into the selector, the only fault that the accumulator avoids is the blue hydraulic pump. Emergency mode only saves us when the alternate pump goes out. No other faults in the alternate line are avoided through the use of the accumulator. This INCLUDES the selector valve.

Questions about subcomponent behavior:

* When does the accumulator output pressure?
  + Output is positive if and only if blue pump output is zero.
* When is blue output zero?
  + Output is zero if we have no power or the top level supply is zero.
* Is the top level supply ever zero?
  + It could be. The assumption binds it between 0 and 10 inclusive.
* Accumulator can kick in when exactly?
  + Case 1: Top level supply for blue pump is zero.
  + Case 2: We have no power to the pump.
  + Case 3: A fault is active on the pump which causes output to be zero.
* When is the green line used?
  + When we have power to the green pump, when the “system is valid”, and when the top level green supply is positive.
* What causes green line to go bad (i.e. what activates blue line)?
  + Case 1: No power to green pump
  + Case 2: Top level green supply is zero
  + Case 3: System is invalid
  + Case 4: Fault on green pump causes output to be zero
  + Case 5: Fault on ShutoffValve causes its output to be zero
* If we have all cases covered from previous question and wheel does not receive pressure (normal line), does the system switch to alternate mode?
  + No, there are no flags or commands to Selector, Pumps, or Accumulator regarding pressure at the wheel and there is no delay in feedback regarding pressure at the wheel.

In this setup of the system, the Alternate mode only protects against faults that occur in the GreenPump or ShutoffValve. The Emergency mode only protects against a fault in the BluePump.

The Alternate mode does kick in when the BSCU is invalid and requires mechanical braking, thus eliminating the need for electrical components when something goes wrong in the digital side of the system.