CLAIMS

1. An apparatus for providing a fail-safe communications standard for a power managed sub-fab, comprising:
a sub-fab configured to:
operate in a low power state based upon one or more commands received from a sub-fab front end controller;
tabulate an energy consumed by the sub-fab during sub-fab operation;
receive heartbeat signals sent from the sub-fab front end controller at regular intervals; and
operate in a full power operational state in response to failing to receive any heartbeat signals for a specified timeout interval,
wherein the sub-fab is further configured to reset setpoints to default values associated with an entry to the full power operational state for at least one of process gas, fuel, cool dry air (CDA), water, temperature, pressure, throttle valve position, or bypass valve position in response to failing to receive any heartbeat signals for the specified timeout interval.

2. The apparatus of claim 1, wherein the specified timeout interval is two seconds.

3. The apparatus of claim 1, wherein the sub-fab is further configured to re-enter the low power state in response to receiving any heartbeat signals after the sub-fab begins operating in the full power operational state.

4. The apparatus of claim 1, wherein the heartbeat signals are only sent when the sub-fab is configured to operate in the low power state.

5. A method for providing a fail-safe communications standard for a power managed sub-fab, comprising:
operating the sub-fab in a low power state based upon one or more commands received from a sub-fab front end controller;
tabulating an energy consumed by the sub-fab during sub-fab operation;
receiving heartbeat signals sent from the sub-fab front end controller at regular intervals;
determining whether any heartbeat signals from the sub-fab front end controller has been received within a specified timeout interval; and

operating the sub-fab in a full power operational state in response to a failure to receive any heartbeat signals within the specified timeout interval,
resetting setpoints to default values associated with an entry to the full power operational state for at least one of process gas, fuel, cool dry air (CDA), water, temperature, pressure, throttle valve position, or bypass valve position in response to failing to receive any heartbeat signals for the specified timeout interval.

6. The method of claim 5, wherein the specified timeout interval is two seconds.

7. The method of claim 5, wherein the sub-fab is further configured to re-enter the low power state in response to receiving any heartbeat signals after the sub-fab begins operating in the full power operational state.

8. The method of claim 5, wherein the heartbeat signals are only sent when the sub-fab is configured to operate in the low power state.

9. A system for providing a fail-safe communications standard for a power managed sub-fab, comprising:
a sub-fab front end controller configured to:
send one or more commands to a sub-fab to configure the sub-fab to operate in one or more low power states;
tabulate an energy consumed by the sub-fab during sub-fab operation; and
send heartbeat signals to the sub-fab to indicate that the sub-fab is still in communication with the sub-fab front end controller at regular intervals; and
a sub-fab configured to:
operate in the one or more low power states as configured by the sub-fab front end controller;
receive the heartbeat signals from the sub-fab front end controller at regular intervals; and
operate in a full power operational state and reset setpoints to default values associated with an entry to the full power operational state for at least one of process gas, fuel, cool dry air (CDA), water, temperature, pressure, throttle valve position, or bypass valve position in response to a failure to receive any heartbeat signals within a specified timeout interval.

10. The system of claim 9, wherein the specified timeout interval is two seconds.

11. The system of claim 9, wherein the sub-fab is further configured to re-enter one of the one or more low power states in response to receiving any heartbeat signals after the sub-fab begins operating in the full power operational state.

12. The system of claim 9, wherein the heartbeat signals are only sent when the sub-fab is configured to operate in the one or more low power states.