CLAIMS:

1. A system for detecting abusive operation of transport refrigeration units, the system comprising:

a storage device to store abuse parameters associated with a transport refrigeration unit;

an abuse detection system coupled to the storage device, the abuse detection system including:

a diagnostic module to determine the occurrence of abusive operation of the transport refrigeration unit in response to the abuse parameters;

a failure probability module to determine a probability of failure for at least one component of the transport refrigeration unit in response to the abuse parameters; and

a life extending module to determine adjustments in the operation of at least one component of the transport refrigeration unit in response to the probability of failure,

wherein the life extending module adjusts the operation of the transport refrigeration unit when adjustments in the operation of at least one component of the transport refrigeration unit will alter the probability of failure of the at least one component of the transport refrigeration unit, and

wherein the life extending module uses a baseline life curve which provides remaining life as a function of time to determine adjustments in the operation of at least one component of the transport refrigeration unit to alter the probability of failure.

2. The system of claim 1, wherein:

the diagnostic module activates an alarm when the occurrence of abusive operation of the transport refrigeration unit is determined.

3. The system of claim 1, wherein:

the failure probability module activates an alarm when the probability of failure for at least one component of the transport refrigeration unit is greater than a selected value.

4. The system of claim 1, wherein:

the life extending module activates an alarm when adjustments in the operation of at least one component of the transport refrigeration unit

will alter the probability of failure of the at least one component of the transport refrigeration unit.

5. The system in any one of claim 2, 3, and 4, wherein:

the alarm is sent to a user device.

6. The system of claim 1, wherein:

at least one of the storage device and the abuse detection system are located within the transport refrigeration unit.

7. The system of claim 1, wherein:

the abuse parameters include parameters of the transport refrigeration unit including at least one of operating electrical current, operating temperature, operating pressure, operating vibrations, operation cycles, and operation duration of the transport refrigeration unit.

8. The system of claim 1, further comprising:

a location tracking sensor to detect time-based locations of the transport refrigeration unit and assign the time-based locations to the abuse parameters.

9. A method of detecting abusive operation of transport refrigeration units, the method comprising:

storing, using a storage device, abuse parameters associated with a transport refrigeration unit;

monitoring, using an abuse detection system, the transport refrigeration unit, the abuse detection system coupled to the storage device, the abuse detection system including:

a diagnostic module to determine the occurrence of abusive operation of the transport refrigeration unit in response to the abuse parameters;

a failure probability module to determine a probability of failure for at least one component of the transport refrigeration unit in response to the abuse parameters;

a life extending module to determine adjustments in the operation of at least one component of the transport refrigeration unit in response to the probability of failure; and

adjusting, using the life extending module, the operation of the transport refrigeration unit when adjustments in the operation of at least one

component of the transport refrigeration unit will alter the probability of failure of the at least one component of the transport refrigeration unit,

wherein the life extending module uses a baseline life curve which provides remaining life as a function of time to determine adjustments in the operation of at least one component of the transport refrigeration unit to alter the probability of failure.

10. The method of claim 9, further comprising:

activating an alarm, using the diagnostic module, when the occurrence of abusive operation of the transport refrigeration unit is determined.

11. The method of claim 9, further comprising:

activating an alarm, using the failure probability module, when the probability of failure for at least one component of the transport refrigeration unit is greater than a selected value.

12. The method of claim 9, further comprising:

activating an alarm, using the life extending module, when adjustments in the operation of at least one component of the transport refrigeration unit will alter the probability of failure of the at least one component of the transport refrigeration unit.

13. The method in any one of claim 10, 11, and 12, wherein:

the alarm is sent to a user device.

14. The method of claim9, wherein:

at least one of the storage device and the abuse detection system are located within the transport refrigeration unit.

15. The method of claim 9, wherein:

the abuse parameters include parameters of the transport refrigeration unit including at least one of operating electrical current, operating temperature, operating pressure, operating vibrations, operation cycles, and operation duration of the transport refrigeration unit.

16. The method of claim 9, further comprising:

detecting, using a location tracking sensor, time-based locations of the transport refrigeration unit and assign the time-based locations to the abuse parameters.