CLAIMS

[Claim1]

A device comprising:

an acquiring means for acquiring, for each of multiple points of time, a load index measured at a point of time, indicative of a degree of a load applied to a subject device and an attribute index measured at the point of time, indicative of an attribute of the subject device; and

an identifying means for identifying, for each of two or more different loads or different load zones, a reference range that is a range of a normal attribute index, based on attribute indices measured at the same point of time as load indices acquired by the acquiring means, the load indices corresponding to a load or load zone.

[Claim 2]

The device according to Claim 1, wherein the identifying means identifies, for each of the two or more different loads or different load zones, a confidence interval of a predetermined confidence level, as the reference range, in a probability distribution to which attribute indices measured at the same point of time as load indices acquired by the acquiring means conform, the load indices corresponding to a load or load zone.

[Claim 3]

The device according to Claim 1 or 2, wherein:

the subject device is provided in a ship;

the acquiring means acquires, for each of the multiple points of time, meteorological/hydrographic data indicative of a meteorological or hydrographic phenomenon that the ship has encountered during navigation of the ship; and

the identifying means identifies the reference range, without using, from among the measuring results, measuring results that have been acquired at a time when a meteorological or hydrographic phenomenon indicated by meteorological/hydrographic data satisfies a predetermined condition.

[Claim 4]

The device according to any one of Claims 1 to 3, wherein:

the acquiring means acquires, for each of the multiple points of time, data on an element of an environment in which the subject device is placed, the element affecting an attribute index of the subject device, as disturbance data indicative of a disturbance element; and

the identifying means corrects an attribute index acquired by the acquiring means, based on a disturbance element indicated by disturbance data to identify the reference range based on a corrected attribute index.

[Claim 5]

The device according to any one of Claims 1 to 4, wherein:

the acquiring means acquires, for each of multiple points of time, a load index measured at a point of time, indicative of a degree of a load applied to a device whose type is similar to that of the subject device and an attribute index measured at the point of time, indicative of an attribute of the device whose type is similar to that of the subject device; and

the identifying means identifies the reference range based on load indices and attribute indices acquired by the acquiring means in connection with the device whose type is similar to that of the subject device.

[Claim 6]

A device comprising:

an acquiring means for acquiring a load index measured at a point of time, indicative of a degree of a load applied to a subject device and an attribute index measured at the point of time, indicative of an attribute of the subject device, wherein the acquiring means acquires, for each of two or more different loads or different load zones, reference range data indicative of a reference range that is a predetermined range of a normal attribute index, a difference between a lower limit and an upper limit of the reference range changing in accordance with a load or load zone; and

a determining means for determining whether a status of the subject device is normal or abnormal based on whether the attribute index measured at the point of time is included in a reference range indicated by reference range data predetermined for a load or load zone corresponding to the load index measured at the point of time.

[Claim 7]

The device according to Claim 6, wherein:

the subject device is provided in a ship;

the acquiring means acquires navigation status data indicative of a navigation status of the ship; and

the determining means, upon detecting that the navigation status indicated by the navigation status data satisfies a predetermined condition, fails to determine that the status of the subject device is abnormal, regardless of whether the attribute index measured at the point of time is included in the reference range indicated by the reference range data predetermined for the load or load zone corresponding to the load index measured at the point of time.

[Claim 8]

A program that causes a computer to execute:

a process of acquiring, for each of multiple points of time, a load index, measured at a point of time, indicative of a degree of a load applied to a subject device and an attribute index measured at the point of time, indicative of an attribute of the subject device; and

a process of identifying, for each of two or more different loads or different load zones, a reference range that is a range of a normal attribute index, based on attribute indices measured at the same point of time as load indices acquired in the acquiring process, the load indices corresponding to a load or load zone.

[Claim 9]

A non-transitory computer readable recording medium recording a program that causes a computer to execute:

a process of acquiring, for each of multiple points of time, a load index measured at a point of time, indicative of a degree of a load applied to a subject device and an attribute index measured at the point of time, indicative of an attribute of the subject device; and

a process of identifying, for each of two or more different loads or different load zones, a reference range that is a range of a normal attribute index, based on attribute indices measured at the same point of time as load indices acquired in the acquiring process, the load indices corresponding to a load or load zone.

[Claim 10]

A method comprising:

a step of acquiring, for each of multiple points of time, a load index measured at a point of time, indicative of a degree of a load applied to a subject device and an attribute index measured at the point of time, indicative of an attribute of the subject device; and

a step of identifying, for each of two or more different loads or different load zones, a reference range that is a range of a normal attribute index, based on attribute indices measured at the same point of time as load indices acquired in the acquiring step, the load indices corresponding to a load or load zone.

[Claim 11]

A program that causes a computer to execute:

a process of acquiring a load index measured at a point of time, indicative of a degree of a load applied to a subject device and an attribute index measured at the point of time, indicative of an attribute of the subject device;

a process of acquiring, for each of two or more different loads or different load zones, reference range data indicative of a reference range that is a predetermined range of a normal attribute index, a difference between a lower limit and an upper limit of the reference range changing in accordance with load or load zone; and

a process of determining whether a status of the subject device is normal or abnormal based on whether the attribute index measured at the point of time is included in a reference range indicated by reference range data predetermined for a load or load zone corresponding to the load index measured at the point of time.

[Claim 12]

A non-transitory computer readable recording medium recording a program that causes a computer to execute:

a process of acquiring a load index measured at a point of time, indicative of a degree of a

load applied to a subject device and an attribute index measured at the point of time, indicative of an attribute of the subject device;

a process of acquiring, for each of two or more different loads or different load zones, reference range data indicative of a reference range that is a predetermined range of a normal attribute index, a difference between a lower limit and an upper limit of the reference range changing in accordance with a load or load zone; and

a process of determining whether a status of the subject device is normal or abnormal based on whether the attribute index measured at the point of time is included in a reference range indicated by reference range data predetermined for a load or load zone corresponding to the load index measured at the point of time.

[Claim 13]

A method comprising:

a step of acquiring a load index measured at a point of time, indicative of a degree of a load applied to a subject device and an attribute index measured at the point of time, indicative of an attribute of the subject device;

a step of acquiring, for each of two or more different loads or different load zones, reference range data indicative of a reference range that is a predetermined range of a normal attribute index, a difference between a lower limit and an upper limit of the reference range changing in accordance with a load or load zone; and

a step of determining whether a status of the subject device is normal or abnormal based on whether the attribute index measured at the point of time is included in a reference range indicated by reference range data predetermined for a load or load zone corresponding to the load index measured at the point of time.