

TRI and Workload Normalization Subcommittee

Products and Deliverables

TRI Work Load Normalization Factor_Rev7.doc

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FINAL REPORT ITEM # 6

Item: 6 Lead: Jim McCarty
 Status: 95% complete

6. Develop a "Standardized Workload Normalization Factor"

The purpose of this factor is to compensate for the impact of significant workload variations on metrics used to assess P2 Program performance.

Introduction:

As you may remember from past meetings, some among us believe that simply publishing a "vertical bar" with a "name beneath it" is far too easy. Furthermore, some believe that in certain cases this is very misleading because some of these publications later show themselves as metrics on general display. These metrics then continue to exist with no basis for the data displayed, often shown only as simple "pie charts, vertical bars, graphs, etc." As P2 Professionals, we must never allow incomplete representations to stand without challenge. If not challenged, the metric stands as written. The judgment of others will be based purely upon the metric, as it is published. In some cases, the reader has no background experience or knowledge with which to form an altered perception. Therefore, the reader becomes misinformed, often through no malice intent by the writer or publisher. The picture painted by metrics is not always flattering. Our job, as P2 Professionals, is to ensure the metrics published are at least referenced, in order to provide "Validity" and "Truth-in Metrics".

To truly understand, we must know the definitions. Sometimes, words are used to "coin an expression" simply because they fit nicely into a "jingle" or an "acronym". While abuse of the English Language is nothing new, there is simply no room for such misuse and abuse, when the subject is as important as the reputation of an entire facility or one of its major programs, such as P2.

As an example, and in an effort to clarify and further inform, I've provided a couple of definitions:

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Definitions:

Normalization:

1. To make normal
2. To become normal; resume a normal state
(The Random House College Dictionary, revised edition, unabridged, copyright 1980, Jess Stein, Editor In Chief)

Factor:

One of two or more numbers, algebraic expressions, or the like, that when multiplied together produce a given product: a divisor: The numbers 6 and 3 are factors of 18.
(The Random House College Dictionary, revised edition, unabridged, copyright 1980, Jess Stein, Editor In Chief)

Term:

Normalization Factor: (a term made by combining two words):

Normalization:

- (1) To make normal (2) To become normal; resume a normal state
(plus)

Factor:

One of two or more numbers, algebraic expressions, or the like, that when multiplied together produce a given product: a divisor: The numbers 6 and 3 are factors of 18.

Details:

After exhaustive examination, it became clear that the nature of "TRI"(a non-mathematical abbreviation/acronym) and the condition: "Fluctuating work loads at naval shipyards" (a non-mathematical statement) provided no strict adherence to a pure mathematical expression, as is required by the word "Factor". In the absence of that "pure mathematical state", the best that can be expected, is to develop a "recognizable form" to act as a "normalizing factor".

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Until better minds are able to reveal a better factor, this subcommittee is satisfied with the following "general mathematical form": a/b . This general form is both ubiquitous and intuitive. A typical example is "miles per hour". Our application is "TRI per Workload". TRI is self-explanatory. Workload, for the purpose of this analytical description, is understood to mean the "the number of types" of vessels undergoing repair, at a particular shipyard, at a particular time, or block of time.

An example would be: Norfolk Naval Shipyard (NNSY), January through November of 2002:

- 2 Aircraft Carriers (plus = +)
- 2 Cruisers, +
- 2 Destroyers, +
- 2 Submarines, +
- 3 Amphibians, +
- 3 Auxiliary Vessels, +
- 1 Other (dredging material)

When we wish to compare shipyards and /or Intermediate Maintenance Facilities (IMF), "weighting" the vessels is simply and agreement among analysts, based upon similar types of vessels at each location. While this is not an exact science, neither is "normalization factor". If further analysis is required, then the particular TRI chemical can be linked to a particular process and that in turn linked to a particular vessel or vessels. In most cases, that depth of examination is not required in order to get a quick feel for the effectiveness of the present P2 Program. However, if a large increase in the TRI is not reflected by an equally large increase in workload, then the need for in-depth analysis is in order. After all, under close analysis, we could find that the P2 Program must be improved in order to perform at an acceptable level, when compared to other shipyards and /or IMF(s).

Summary:

When we began this quest, we listed a few requirements:

1. We were looking for some sort a system that would provide "Truth-in-Metrics"

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- 2. We sought also, to provide "validity" and "repeatability"**
- 3. We needed a simple system that others found easy to understand**
- 4. We required a system that would allow both "broad overview" and "a capability for deep analysis", when needed**
- 5. We needed a simple method of comparison analysis that could be used by others to normalize initial data, so that the initial data would be revealing, descriptive, and legitimate, when viewed by those with similar interests**

We had hoped for a simple "multiplier" that could be used by everyone, but in reality, the nature of our business and the complexities of our repair packages would not allow for such a simple multiplier. Instead, we were forced to relate our TRI to broad categories and functions, such as our workload. When desired, we can look at the same TRI chemical, in use at several shipyards, in an effort to reveal the particular TRI chemical, as it relates to a particular process. Doing so, we are able to both direct our P2 efforts toward the elimination of the offending TRI chemical, and at the same time, reveal the effectiveness of our P2 program. When this depth of analysis is not required, we will still have the broad picture as it relates TRI with respect to Workload. This provides a very simple and effective method to examine, screen, and direct efforts jointly with other shipyards and IMF(s). Also, when bulk data is published, it can easily be referenced to "TRI per Workload" for each shipyard or facility able to list their TRI and their Workload. Periodic "TRI per Workload" statements can be used to provide a trend analysis. The data necessary to develop the "TRI per Workload" periodic statements should not be difficult to acquire, since that data already exists, both for the recent past as well as the present.

As always, we welcome any assistance, from any source, in an ongoing effort to normalize data, identify, and reduce the TRI.

**Jim McCarty
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NNSY**