574 - Balancing Your Safety Metrics

Presented by:
Paul Esposito, CIH, CSP
*President, STAR Consultants*
Paul.esposito@starconsultants.net

Presented at:
ASSE
STAR

> Overview

★ STAR has been in business since 1997
  ★ Safety Through Accountability and Recognition

★ STAR specialized is
  ★ Culture
  ★ Management Systems
  ★ Risk Assessments
  ★ Leading Metric sand
  ★ Strategic Planning
  ★ HSE Coaching

★ Paul Esposito is a CIH and CSP, with over 35 years of experience.
★ Masters in H&S from Johns Hopkins
Learning Objectives

Understand the Balanced Scorecard, and potential safety applications

Measure upstream, process and down stream metrics (Deming methodology)

Understand how to apply alternatives to “0” as your primary metric(s)
Why Data/Metrics?

All businesses operate to strategic plans, made up of goals and objectives, metrics and action plans that
- Measure past performance and
- Attempt to predict the future
  With data…

Injury and illness rates are only an *indicator* of past performance,

Prove to management that you can measure and correlate improvements to the programs you suggest

Use leading metrics to help *predict* safety performance
Justify your Budgets, Programs and Staff

Let’s take a look at what leading companies are doing…

Measure the right people on the things
Balanced Scorecard
Kaplan and Norton, Harvard
S&H Balanced Scorecard

Customer (employees)
- Worker Perception Surveys
- Injury and Illness Rates
- IH Overexposures
- Employee Involvement

Learning and Growth
- Continuous Improvement (Closure Rates)
  - Inspections, investigations, notices, hazard analysis, IH, SWOs, etc.
- Training Retention
- Activities
  - Training Completed, etc.
  - Programs performed
- Trend Analysis

Internal Business Processes
- Management Systems Assessment Scores
- Process-Specific Implementation
  - Action Plans/Objective completion
- Risk Reduction
  - Increase use of Engineering Controls
  - Decrease use of PPE

Financial
- Worker’s Compensation
- Program Implementation Budget
Risk Based Balanced Scorecard

**> Sample**

**Process**
% implementation of Eng vs PPE

**Learning and Growth**
# of HA Action Plans Closed

**Change in Serious Risks**

**% of High Risk (HR) Controls Observed**
Learning Objectives

Understand the Balanced Scorecard, and potential safety applications

Measure upstream, process and downstream metrics (Deming methodology)

Understand how to apply alternatives to “0” as your primary metric
ISO 9000:2005 defines a **process** as a “set of interrelated or interacting activities which transforms inputs into outputs.”

A **metric** is essentially a clear, quantitative, objective measure to assess performance in a particular area or progress towards a goal.

So, determining the **goal** of a **process** is the natural starting point… then determine the inputs and outputs … and means to measure...
Do We Measure Progress or Activity?

**Activity**
(good)

The Committee held 12 meetings

**Progress**
(better)

The Committee implemented 10 corrective actions.

“or”
To better manage a safety program, consider a “Set” of metrics that measure continuous improvement toward a goal.

For example, let look at a “Risk Assessment / Hazard Analysis” Process:

- Goal = to identify, communicate and enforce safe work procedures and controls based on Risk and the Hierarchy of Controls.
Measuring JHA Success:
> Process Metrics

Manpower = Diversity of team
Design = Benchmark
Procedures = Field Tested
Materials = ?
Training = Quality (student evaluation)
Measuring JHA Success:
> Process Metrics

Input → Process

Waste = % failed after QC

Output → Process

Assessment Score

% Actions Met

% Actions Met on time?

Outcome → Process

Rework = % modified after QC
Measuring JHA Success:
> Process Metrics

**Product** = # of JSAs
**Service** = # of Changes, and
  Increased use of engineering, substitution or elimination controls
**Training Attendance**
**Training Retention**
Measuring JHA Success:

> Process Metrics

- # of incidents with Hazard Analysis as a Root Cause or Contributing Factor
- % of behavior observations in Compliance to procedures
Process Metrics: Hazard Analysis

As you see, there are numerous metrics that should be used to measure effectiveness and meeting the goal.

Goal = to **identify**, **communicate** and **enforce** safe work procedures and controls based on Risk and the **Hierarchy of Controls**

1. **Identify**:
   - Volume of changes,
   - Quality of changes (% of engineering, substitution or elimination controls)
   - Actions plans closed

2. **Communicate**
   - Attendance **and** Retention

3. **Enforce**
   - % conformance based on inspections and observation

Especially Critical to Safety
Learning Objectives

Understand the Balanced Scorecard, and potential safety applications

Measure upstream, process and downstream metrics (Deming methodology)

Understand how to apply alternatives to “0” as your primary metric

(and why would you only measure one thing anyway)
Safety Through Accountability and Recognition (STAR)

- What Gets Measured Gets Done
- What Gets Celebrated Gets Done Well
Why “Cut Rates 20%” Don’t Work?

- Short term, we often get results. However, they do not seem to sustain. Why?

- Law of Averages
- Hawthorne Effect
- Delivering to Expectations
- Not Program-Specific

- What have you really Communicated?
Dan Petersen – Safety System Metrics

Incidences Rates (frequency and severity)

Management System Assessment Score

Employee Opinion (Perception) Surveys

Behavior

% to goal on system improvements

WC $$$
Scorecard Concepts

> Measure actions

Programs Typically Used By Supervisors

- Training
- Job Hazard Analysis
- Behavior Observations
- Incident Investigation
- Ergonomic Assessments
- Inspections
- Employee Participation
- Goals and Objectives
- Recognition

So, We Measure

- Programs used
  - Frequency Of Each!
- Issues identified
  - Volume
- Issues Closed
  - Timeliness
- And Quality!
  - (effectiveness via the annual evaluation)
  - % engineering, substitution or elimination

Measure the right people on the right things
Key Principles of Effective Measurement

- Measure Results, not Activities
- Must be Visible
- Must be Kept Current
- Provides Feedback
- Must be Compared to Something
- Is Shown in Context
- Uncluttered
- At the Point of Work
- Realistic and Attainable Goals
- Don’t Change Often
- Result in Action Plans

Critical Metric Concepts
# Culture Survey Scorecard - Sample

<table>
<thead>
<tr>
<th>Section</th>
<th>Strength 4.0 or &gt;</th>
<th>Vulnerability 3.5-3.9</th>
<th>Weakness 3.0-3.4</th>
<th>Gap &lt; 3.0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Worker</td>
<td>All</td>
<td>Worker</td>
<td>All</td>
</tr>
<tr>
<td>Management Commitment (MC)</td>
<td>Q 8</td>
<td>Q5 &amp; 8</td>
<td>Qs 5, 6, 7, 9 &amp; 10</td>
<td>Qs 5, 7, 9, 10</td>
</tr>
<tr>
<td>Employee Engagement (EE)</td>
<td>Qs 12, 13 &amp; 14</td>
<td>Qs 11, 12, 13 &amp; 14</td>
<td>Q 11</td>
<td>Q 13</td>
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<tr>
<td>Communication (C)</td>
<td>Q 20</td>
<td>Qs 19, 20</td>
<td>Qs 16, 18, 19 &amp; 22</td>
<td>Qs 16, 18 &amp; 22</td>
</tr>
</tbody>
</table>
## Risk-Based Scorecard - Sample

### Quarterly Organizational Risk Reduction Scorecard

<table>
<thead>
<tr>
<th>Organization</th>
<th>Validate Site Level Risk Assess</th>
<th>ID Risk Reduction Targets</th>
<th>Business Concurrency on Target</th>
<th>Target (Objective) Status</th>
<th>Critical Control Verification Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100%</td>
<td>3</td>
<td>y</td>
<td>100%</td>
<td>N/A</td>
</tr>
<tr>
<td>B</td>
<td>100%</td>
<td>2</td>
<td>y</td>
<td>50%</td>
<td>97%</td>
</tr>
<tr>
<td>C</td>
<td>100%</td>
<td>0</td>
<td>N</td>
<td>N/A</td>
<td>97%</td>
</tr>
<tr>
<td>S</td>
<td>100%</td>
<td>1</td>
<td>y</td>
<td>0%</td>
<td>N/A</td>
</tr>
<tr>
<td>E</td>
<td>100%</td>
<td>2</td>
<td>y</td>
<td>50%</td>
<td>N/A</td>
</tr>
<tr>
<td>F</td>
<td>100%</td>
<td>3</td>
<td>y</td>
<td>67%</td>
<td>95%</td>
</tr>
<tr>
<td>G</td>
<td>100%</td>
<td>1</td>
<td>y</td>
<td>100%</td>
<td>88%</td>
</tr>
<tr>
<td>H</td>
<td>100%</td>
<td>2</td>
<td>y</td>
<td>50%</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>3</strong></td>
<td><strong>88%</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:
- Insert an arrow (up or down or horizontal) indicating the direction of change (if any) since the last quarter.
- Targets = Goals, Objectives and action plans
<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
<th>Previous Evaluation</th>
<th>Current Evaluation</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td># of Priority 1's</td>
<td>Section Score</td>
</tr>
<tr>
<td></td>
<td></td>
<td># of Priority 1's</td>
<td>Section Score</td>
</tr>
<tr>
<td>1.1</td>
<td>Safety &amp; Health Policy</td>
<td>3</td>
<td>56</td>
</tr>
<tr>
<td>1.2</td>
<td>Goals &amp; Objectives</td>
<td>2</td>
<td>44</td>
</tr>
<tr>
<td>1.3</td>
<td>Planning</td>
<td>2</td>
<td>76</td>
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<tr>
<td>1.4</td>
<td>Top Management Involvement</td>
<td>1</td>
<td>79</td>
</tr>
<tr>
<td>1.5</td>
<td>Responsibility &amp; Authority</td>
<td>-</td>
<td>75</td>
</tr>
<tr>
<td>1.6</td>
<td>Line Accountability</td>
<td>1</td>
<td>62</td>
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<tr>
<td>1.7</td>
<td>Resources</td>
<td>-</td>
<td>92</td>
</tr>
<tr>
<td>1.8</td>
<td>Contract Workers</td>
<td>-</td>
<td>88</td>
</tr>
<tr>
<td>1.9</td>
<td>Written Safety &amp; Health Management Systems</td>
<td>5</td>
<td>47</td>
</tr>
<tr>
<td>1.10</td>
<td>Program Evaluation</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1.0</td>
<td>Management Commitment</td>
<td>12</td>
<td>59</td>
</tr>
<tr>
<td>2.1</td>
<td>Encouragement</td>
<td>5</td>
<td>55</td>
</tr>
<tr>
<td>2.2</td>
<td>Participation</td>
<td>4</td>
<td>46</td>
</tr>
<tr>
<td>2.3</td>
<td>Committees</td>
<td>3</td>
<td>76</td>
</tr>
<tr>
<td>2.0</td>
<td>Employee Involvement</td>
<td>12</td>
<td>59</td>
</tr>
</tbody>
</table>
# Strategic Scorecard Sample

> multiple metrics per program

<table>
<thead>
<tr>
<th>ESH PM Report Topics</th>
<th># of Events</th>
<th># of Changes Identified/Needed</th>
<th>Closure Rate (From Date Closed)</th>
<th>Effectiveness (Control Type or conformance)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Target</td>
<td>Actual</td>
<td>Target</td>
</tr>
<tr>
<td>Current Program Risk Assessment Changes to Controls</td>
<td>10</td>
<td>20</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Monthly Safety Review - Incidents</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Monthly Inspections/Discrepancies high risk control conformance</td>
<td>20</td>
<td>10</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Monthly Observations (Optional) conformance or % safe operations</td>
<td>50</td>
<td>10</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Communication by Supervisors (Suggestions)</td>
<td>10</td>
<td>20</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>ESH Action Plan Status</td>
<td>5</td>
<td>20</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ESH PM Report Topics</th>
<th>Awarded</th>
<th>Actual</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESH Rewards &amp; Recognitions</td>
<td>50</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Date Delivered: [ ]

Media Used to Deliver:

Who was Recognized for what? (Describe below or attach copy):

Start here
Suggested Use for Scorecard Results

- Posted in the Workplace
- Generates Action Plans to Improve Scores
- Department Recognition and Contests
- Part of the Performance Appraisal
Getting Started…

- A full scorecard often takes years to put in place, to ID resources and data collection mechanisms
- Start with the data you (or someone else) has
  - Maintenance Safety Work Orders – from Maint!
    - Volume and Closure
  - Investigation Corrective Actions – Safety Committee
    - 30 days after closed, see if it stays closed.
    - Report as part of the committee minutes
- Motivation – HR
  - # of safety recognitions awarded
- Safety Suggestions – Suggestion committee
  - Volume and Closure rate
  - Discussed during monthly safety meetings, by department
  - Have department contests for visibility
    - Not winner based, but threshold based
- Action plans in response to data – Departments
  - Post on a white board in the work area…
- Keep Going….. As resources are identified to collect data…
Why Do Most Fail…

★ Not Measurable
  ★ (e.g., Improve employee involvement, no start or target)

★ No Relationship Between Data and Plans
  ★ (e.g., most injuries are ergonomic, yet emphasizing PPE)

★ Measures Activities
  ★ (e.g., Training was accomplished, but ineffective)

★ Subjective
  ★ (e.g., Above average performance, without defining average)

★ They Are a Secret
  ★ (e.g., Only known by H&S, no line management ownership)

★ Not Attainable
  ★ (e.g., 0 injuries)
Why Do Most Succeed?

- Measured Regularly
  - (e.g., Part of monthly production meetings)

- Reported Publicly
  - (e.g., Posted and presented to all workers)

- Measured at Line Management
  - (e.g., Department and Division Levels)

- Part of Performance Appraisal/Bonus
  - (e.g., Audit scores/improvements tied to % of raise/bonus)

- Tracks Objectives, Not Just Goals
  - (e.g., did meeting a goal have anything to do with meeting your accomplishments?)
If you want a Safety Contact process to stimulate new ideas, **measure the # of new Ideas**, not just the # of Safety Contacts.

If you want employees to retain course materials, **measure their retention**, not just their attendance.

If you want reduce incidents, **measure exposure reduction**, both conditions and behaviors, not just incident #'s.

If you want management to use your safety programs, **measure how much they use the programs**, not just the # of people who get hurt.

If you want safety committees to get involved, **measure how often each of them get involved**, not just how often they meet.

Measure the right people on the right things
References


References

- Balanced Scorecard
  - Kaplan and Norton
- Organizational Resource Council
  - www.orc-dc.com
- Department of Energy
- How Do You Measure Safety?. Kyle Dotson., Executive Strategies, Industrial Hygiene and Safety News.
Any questions, please contact:

Paul Esposito, CIH, CSP
Paul.esposito@starconsultants.net
410-218-8451