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### **Paper No. 12: Why Standards Programs Fail**

U.S. DEPARTMENT OF THE NAVY  
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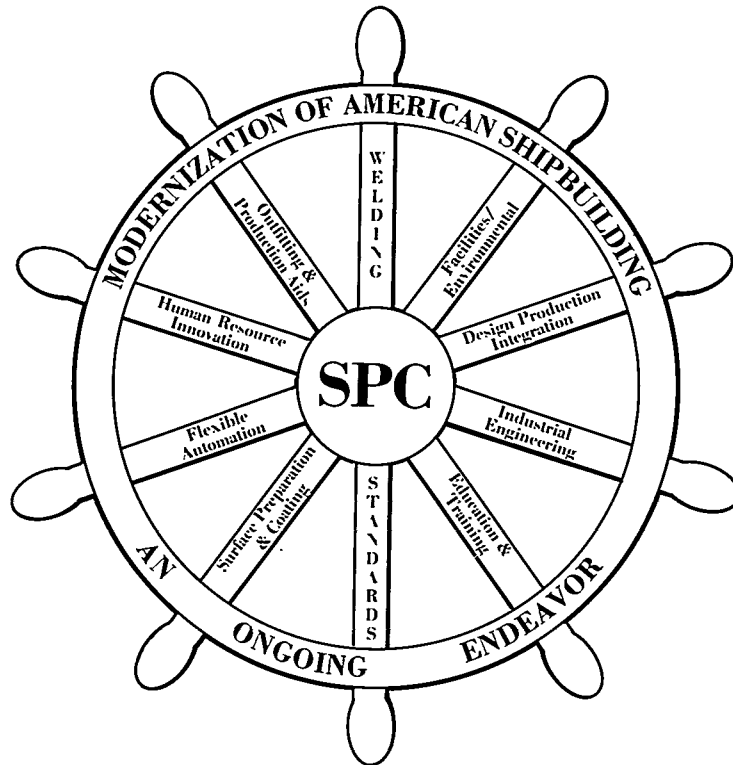
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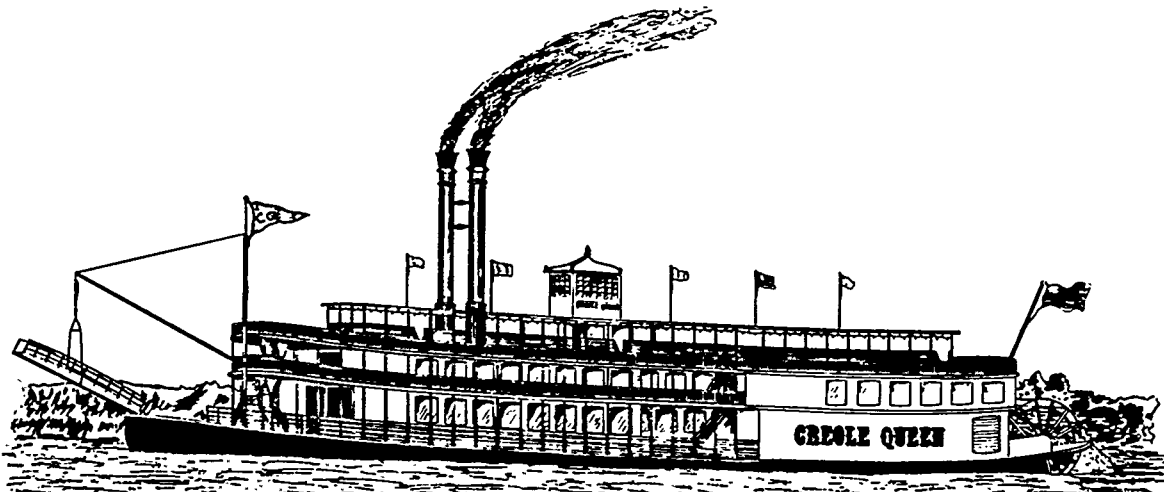
# NSRP 1987 SHIP PRODUCTION SYMPOSIUM



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# Why Standards Programs Fail

No. 12

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## ABSTRACT

### Why Do Standards Programs Fail?

A general review of the failings of Standards Programs, with particular reference to shipyard programs. This review is focused on the reasons why some programs fail and others succeed.

Consideration is given to both the people aspects and the technical aspects. Comparison is made of theory and practice in Standards Programs, and how at times they appear to conflict.

Eight basic rules are given for successful Standards Programs. They apply whether you are installing a program, maintaining a program, or trying to revitalize a deteriorated program. It is stressed that failure to follow these rules is the main reason "Why Standards Programs Fail."

## 3 BASIC QUESTIONS RE: PERFORMANCE STANDARDS

### I. ARE THEY OF ANY VALUE?

### II. WHY DO THEY FAIL?

### III. WHEN DO THEY FAIL?

#### I. Are Performance Standards of Any Value?

(a) If they are of no value, the reasons for failure are irrelevant. They then are an unnecessary expense, should be cheerfully relegated to the waste-basket, and we do not need to consider why they fail.

(b) But if they are of value, what causes their destruction? What are the primary reasons for the large percentage of failures?

#### II. Why Do Performance Standards Fail?

(a) Are people the reason? Is it upper management, middle management or front-line management? Are the unions responsible, or the workers? Is it the staff -- production engineers, industrial

engineers, human resource personnel? What role do the financial and marketing people play in the failure or success of Standards Programs.

(b) Are techniques the reason? Which standards techniques are apt to cause failures? Which ones are apt to succeed? How can you select the one most likely-to-succeed for a specific operation?

#### III. When Do Performance Standards Fail?

What are the early warning symptoms? Which symptoms are incurable? Which symptoms indicate curable problems? Which symptoms are readily curable?

## ARE PERFORMANCE STANDARDS OF ANY VALUE?

The theoretical answer is "yes." In theory, Performance Standards help your planners do a better job of having good Planning Standards for (a) cost estimating; (b) production scheduling; (c) crew scheduling, etc. In theory, Performance Standards help production managers and foremen do a better job of (a) identifying and correcting poor productivity habits and inefficiencies by workers and crews; (b) avoiding bottlenecks; (c) evaluating and training employees, etc. Performance Standards, in theory, also help engineers (a) evaluate alternate methods, equipment and tooling; (b) provide factual basis for cost and savings calculations, etc.

Most important, Performance Standards - "in theory" - provide upper management and controllers with factual tools for cost control, budgeting, profit optimization and competitive operations.

## IN THEORY? HOW ABOUT IN REAL LIFE?

The facts in real life often are:

1. Performance Standards don't exist.

-- or --

2. Performance Standards are suspect. The standards are not considered realistic; they are not in convenient format for use; they are confusing and not easily understood.

-- or --

3. The potential users are not aware that standards exist in a useable format.

-- or --

4. The potential users are not experienced in the use of Performance Standards. As a result, they don't use the standards or they use them incorrectly.

For the above reasons many shipyards have dropped or cut back their Standards Programs because they were not cost effective.

**ARE PERFORMANCE STANDARDS COST EFFECTIVE? MAYBE?**

Standards may be of value. But standards are not worth having if the Standards Programs cost more than they save. This can occur. Why? It can occur because

1. the Standards Plan as designed and implemented did not provide for effective use of the standards.

-- or --

2. the plan called for Performance Standards in areas where standards could not logically be cost effective.

-- or --

3. the Standards Plan was poorly designed and implemented so that setting the standards was time consuming and far too costly.

Too often, companies do not actually know whether their Standards Plan is or ever was cost effective. The following set of statistics in Table I represents the results we have been able to glean from a study of 210 locations that did track their Standards Programs savings and costs.

RESULTS OF 210 STANDARDS PROGRAMS	
• GOOD PLANS	25% - 50% NET SAVINGS.
• AVERAGE PLANS	10% - 20% NET SAVINGS.
• POOR PLANS	10% - 20% NET LOSS.

TABLE I

Variables Affecting Cost Effectiveness

The most important variable in the cost effectiveness of Performance Standards is in the improved productivity that can be achieved from their use. Table II shows the changes in productivity apt to occur from the use of Performance Standards.

PRODUCTIVITY/ VARYING OPERATING CONDITIONS			
Based on over 1000 Productivity Audits and Work Measurement Installations.			
PERFORMANCE MEASUREMENT	SUPERVISION		
	POOR	AVERAGE	GOOD
MEASURED	60% to 80%	70% to 90%	80% to 95%
UNMEASURED	30% to 70%	50% to 75%	60% to 85%

TABLE II

The second variable that directly affects cost effectiveness is the time and cost of having Performance Standards. The actual times for setting Performance Standards can vary from immediately to seemingly forever. The costs can vary from low cost to exorbitant.

Why the great discrepancy in time and cost of setting standards? The most frequent reason is in the standards setting techniques. The difference can be startling as evidenced by the averages shown in Table III.

TYPE OF OPERATION	POOR TECHNIQUES	GOOD TECHNIQUES
	-----	
Machining		
- up to 30 min. cycle	1 hour to 4 hours	5 to 10 minutes
- up to 10 hr. cycle	over 10 hours	5 to 30 minutes
Assembly		
- up to 30 min. cycle	4 to 8 hours	5 to 15 minutes
- up to 8 hour cycle	8 to 24 hours	15 to 60 minutes
- over 8 hours	1 week to forever	1 to 4 hours

TABLE III

There is a general rule of thumb that the manpower needed for good standards setting -- in areas appropriate for standards -- is:

1. one standards setter per 50 employees covered by standards in job shop or custom shop operations.
2. one standards setter per 100 employees covered by standards in production shop operations.

These would appear to be reasonable time and costs for standards setting,

IF there are good results from having standards.

**DO YOU HAVE STANDARDS? YES!!**

You can bet your next launching that your yard has Performance Standards for all or practically all production activities. The only real question about the standards is: Are they derived from an official Standards Program or have they been derived at will -- by different people with different philosophies, skills and experiences?

If you doubt this statement: "A Performance Standard exists, formal or informal, for practically every activity in your operations," check that conclusion the next time you are out in the yard. Ask the first person you see how long a specific job should take. The answer will probably cover the following range:

- . "I don't know, but the planners are sure off by a mile."
- . "The last time we did it, it took about a day and a half."
- . "I don't know, but I think it will take the rest of the afternoon."
- . "The time for that job, about three per shift, is right on the money."

The question, in essence then, is not "Do you have Standards?" but "How good are the Standards?" The answer can be extremely important to your Company.

Predicted time values (whether you call them planning times, estimating times, guesses or engineered standards) can be extremely important to the competitive success of your Company and the job satisfaction of your employees.

Peter Drucker says it best:

-----  
 "WITHOUT PRODUCTIVITY OBJECTIVES,  
 A BUSINESS DOES NOT HAVE DIRECTION.

WITHOUT PRODUCTIVITY MEASUREMENT,  
 IT DOES NOT HAVE CONTROL"  
 -----

**TIME, PRODUCTIVITY AND COST EXPECTATIONS**

Table IV shows the multiplier effect on unit costs by dropping from 100% to 90% to 70% productivity. It shows clearly why a Company with 70% productivity may have a tough job competing.

PRODUCTIVITY EFFECTS ON UNIT COSTS			
Productivity	Std.	Good	Poor
%	100%	90%	70%
Units Produced	100	90	70
TOTAL COSTS-----			
(a) <u>D.L. Payroll</u> @ \$10/Hr.	\$1000	\$1000	\$1000
<u>Production O.H.</u>			
@ 30% D.L. Payroll	\$ 300	\$ 300	\$ 300
@ \$7/D.L. Hour	700	700	700
@ \$5/Unit Output	500	450	350
@ \$1000/Hour	1000	1000	1000
<u>General Overhead</u>			
@ \$2000/Hour	\$2000	\$2000	\$2000
(b) Total Labor & Overhead	\$5500	\$5450	\$5350
UNIT COSTS-----			
(a) D.L. COSTS	\$10.00	\$11.11	\$14.29
Comparison	par	\$ 1.11 <u>extra</u>	\$ 4.29 <u>extra</u>
(b) D.L. plus OVERHEAD	\$55.00	\$60.56	\$76.43
Comparison	par	\$ 5.56 <u>extra</u>	\$21.43 <u>extra</u>

TABLE IV

The practical effect on all aspects of your Company's operations from good productivity based on realistic standards is enormous. This is true regardless of the importance of labor costs in relationship to your overall competitive position.

Productivity is the engine that drives the ship. Poor productivity affects more than the direct labor costs.

Poor productivity can dramatically delay delivery schedules, tie up capital, play havoc with your unit costs and ruin your yard's competitive reputation.

We have seen many operations where productivity has been as low as 30% to 40%. Some of you have probably seen comparable poor performance, or at least down to a 50% to 60% productivity level.

If Time, Productivity and Cost Expectations can have such a large effect on the competitive position of your operations, what can you do to make your Standard Program successful?

The answer is basic. There is no mystery to it. The solution is so simple there is no fun in solving it.

All that is required for a good, cost-effective Performance Standards Program is common sense and hard work. That is not any fun. It does not solve any of the mysteries of the universe, it just merely makes money for the shipyard that uses it.

#### REALISTIC STANDARDS ARE POSSIBLE FOR LONG CYCLE WORK

Let's look at the reasons why most upper management, operations management, staff personnel, and foremen do not and will not believe it. Most of them have been exposed directly or indirectly to programs where the Performance Standards

1. were of no value.
2. if of any value, the value was not apparent.
3. had been of value but the value had deteriorated.

#### Whose Fault? No-one's/Everyone's!

All that's required to correct the situation is common sense and hard work. Common Sense? Yes, elementary common sense. If you are going to use a cost-effective Standards Program, you must plan for it. You must

1. pick a program appropriate to your needs.
2. pick techniques appropriate to your needs and your operations.
3. keep it simple. Install slowly so that problems are solved as you progress rather than buried in the muck of turmoil from trying to install the standards everywhere at once.
4. keep everyone informed. Upper management, middle management, staff, foremen, employees and if you are blessed with a union, the union officials.

Hard work? You better believe it! Worth the effort? Let's consider the probabilities.

The Work Probabilities shown in Table V seem to repeatedly exist in operations with "soft standards," with deteriorated Standards Programs, or no Standards Programs.

Soft standards are apt to be found in operations

- (a) where there is no structured plan to establish realistic standards, or
- (b) where realistic standards have been allowed to deteriorate.

#### WORK PROBABILITIES IN OPERATIONS WITH SOFT STANDARDS

- \* 50% by wrong people.
- \* 40% done wrong way.
- \* 30% doesn't need to be done.

TABLE V

Correcting the problem is no easy task, but the results are "well worth the candle."

#### RULES FOR SUCCESSFUL STANDARDS

##### Rule I. Comparable Yardsticks

Let's modify the term "Performance Standards" to identify the desired relationship between Planning Times and Performance Standards. A good Planning Program and a good Performance Standards Program require that the times are comparable, modified only by the changes that take effect between calculating the Planning Times and calculating the Performance Standards. From here on, let's talk about Planning Standards as encompassing both aspects. They



should. Otherwise we have the old gag: (1) "Here's how we plan the work," and (2) "Here's how we work the plan." That joke is too often true. In which case, neither group interferes with the other, nor gives a damn about the other, nor helps the other.

Having Planning Time Estimates comparable to Performance Standards does not mean that they have to be in the same degree of detail. Planning, production, and engineering, each should have the say on the amount of detail they need. But it would seem essential that all operate from comparable yardsticks.

Rule II. Select Appropriate Techniques

The techniques used in establishing the Performance Standards should fit the uses to which they will be applied and the type of operations to which they apply. If accuracy needed is  $\pm 30\%$ , there is no need -- in fact it is stupidity -- to try to set the standards with  $\pm 5\%$  accuracy. Likewise, if the need is for  $\pm 10\%$  accuracy, then there is no excuse for using sloppy techniques that cannot be maintained within  $\pm 10\%$ .

It is quite common for the Production Department to need a greater degree of accuracy in the Performance Standards than that required in Planning Estimates. As stated above, this is no problem as long as the performance levels are comparable.

A common mistake in selecting Performance Standards techniques is failure to allow for the range in tolerance and in techniques required by different needs in different types of operations. Table VI shows the range of accuracy customarily realized with the four most common Performance Standards techniques.

PERFORMANCE TECHNIQUES	WHEN SET	CUSTOMARY TRENDS
Historical Records	$\pm 30\%$	20% tight to 60% loose
Reasonable Expectancies	$\pm 20\%$	10% tight to 45% loose
Stop-Watch Studies	$\pm 10\%$	5% tight to 35% loose
Pre-Determined Times	$\pm 5\%$	5% tight to 20% loose

TABLE VI

Selecting techniques appropriate to the need can save a great deal of grief.

Rule III. Plan Your "Frame Work"

The second most common mistake in establishing Performance Standards Programs is failure to plan ahead. The best way to set Performance Standards for operations that are complex and long-cycled (days and weeks instead of hours) is to get some overall settings with approximate accuracy. Then refine the time estimates -- where necessary -- with supporting details and greater accuracy.

This is contrary to common experience. Most industrial engineers build Performance Standards with great detail, with great accuracy, whether needed or not.

I believe most of you who are involved in building or overhauling ships, will achieve optimum progress if you begin with the overall structure and approximate times. Then plan out different techniques as needed for different departments and operations.

A "common sense" pragmatic approach as outlined above is the easiest way for long-cycle operations to install a cost-effective, long-lasting Planning Standards Program.

Do it the right way, the easy way. In our firm's 40 years of specialization in Performance Standards, we've learned the right way by doing things the hard way -- again and again. With that confession before you, I feel quite free to say that the following statistics in Table VII on the average Engineering Department are typical in this country and abroad.

IF YOUR ENGINEERING IS AVERAGE:

- \* 80% DONE THE HARD WAY.
- \* 40% IS UNNECESSARY.
- \* 20% DONE BY WRONG PEOPLE

TABLE VII

Rule IV. Hard Work

Planning Standards to be effective must be believed.

Planning Standards to be believed must be consistent, must be understood. The following techniques help achieve these results:

1. "Systems Standard Data."
2. "Family Grouping."
3. Training. Include industrial engineers, process engineers, planners, production managers,

foremen and industrial relations plus anyone else who is interested.

4. Communication.

There are many factors that influence the reliability and maintainability of the integrity and cost effectiveness of your Planning Standards.

The tangible factors are:

1. Formats used for setting Standards.
2. Methods Specifications.
3. Competitive Needs.
4. Work Sampling.

It is essential that the formats used for standards setting and the supporting data for the time values are convenient to

- \* use,
- \* understand,
- \* validate.

The following intangible factors also strongly influence Planning Standards integrity and cost effectiveness:

1. Management Controls.
2. Management Experience.
3. Line and Staff Knowledge.
4. Union Knowledge.

The three modifying forces that have the strongest influence on the quality of a yard's Planning Standards Program usually are:

1. Competitive Needs.
2. Methods Specifications.
3. Management Experience.

Rule V. Win, Don't Lose, from Your Computer Use

The big advantage to using Computerized Planning Standards is that computers (a) take a great deal of the drudgery out of the work; (b) do the detail consistently and legibly; (c) provide the answers rapidly in a multitude of formats that can be aimed to fit your specific requirements; and (d) can be programmed to be a highly useful tool for fact-finding and productivity improvement.

The last is one of the most important features of a good Computerized Standards Systems. Properly programmed and implemented, the software system can

massage the information to greatly improve operating performance. For example, the computer system can readily

1. Rank by performance - help the poor performers.
2. Rank by jobs - identify problem areas.
3. Rank by families - identify and validate good Planning Standards along with the need to correct defective Planning Standards.

However, you can lose from use of computers also. There are three important dangers to protect against in Computerized Planning Standards Systems:

1. Computerized Planning Standards must be applied in a practical manner, so that they are understandable
  - \* by everyone involved,
  - \* including line supervisors and hourly workers.
2. Good Planning Standards take a lot of hard floor work that cannot be replaced by a computer.
3. Too often, Computerized Planning Standards are seen as a cure-all. Industrial engineers and management often forget about the floor once Computerized Planning Standards are introduced.

Today's software systems for Computerized Standards are cost effective. There are a multitude of good, moderately priced computer programs available for Computerized Planning Standards. They run on micros, minis, and mainframes. Our firm, for example, works in tandem with five different software developers on seven different Computerized Standards Systems that operate on microcomputers and can be upgraded to mainframes. These systems range from very basic and low priced (\$4,000 to \$7,000) to more sophisticated systems at higher prices (up to \$39,500.)

By careful review of available software, you should be able to find one that fits your needs and your pocket-book. Before buying, be sure you identify the reports you want. These should be the reports you need, not your Christmas wish list. Computers can generate enough paperwork to sink a small tugboat and you. Then look at sample printouts. Pro-forma (preliminary samples), not actual, are satisfactory if the software supplier warrants that the actuals will match the samples.

Rule VI. Make Your Planning Standards Programs Bilingual

Bilingual? No, I do not mean different languages. I mean two types of Performance Measurement. I am specifically referring to using both Planning Time Standards and Planning Cost Standards. The difference is important.

If you really want an on-going program with effective Planning Standards and competitive productivity, install bilingual Performance Measurement Programs. Both are essential. Table VIII outlines the reasons why.

**MOTIVATION OF PRODUCTION AND STAFF PERSONNEL**

*Negative and Positive Performance Measurement*

1. Supervisors measured by:
  - \* Productivity comparisons - puts 'em on the other side.
  - \* Cost comparisons - your side.
2. Staff measured by:
  - \* Coverage - take shortcuts.
  - \* Grievances - avoid work.
  - \* Cost comparisons - encourages foremen cooperation and management style thinking.

TABLE VIII

If you want your Bilingual Performance Measurement Programs to be effective, the person measured must understand and believe the figures.

I recommend measuring the employees by work done and time taken. Those are factual things they can see, understand and believe. Please do not try to measure employees by things they cannot see, understand, and believe. In most cases, that rules out cost comparisons.

I do not recommend measuring foremen and staff by the identical yardsticks used for measuring employees. Table VIII explains why. If time and space permitted, I could give you case histories by the barrel of problems such identical measurement has caused.

Instead, take my word based on forty years of working with Productivity Improvement Programs worldwide: use Cost and Profit Comparisons to measure supervision and staff. Sure, I know

most of them also do not understand or believe your cost figures. Perhaps even some of your Accounting Department people don't. But if you look carefully, you can find ways of making the crucial Planning Cost Standards clear, understandable and believable to individual foremen and individual staff personnel for their specific areas of responsibility.

One favor: use the basic approach followed in Standard Cost Programs. See Table IX. Alternate approaches cause trouble in cost effective measurement of supervision and staff personnel.

**3 - PHASE STANDARD COST CONTROLS FOR BETTER MANAGEMENT**

- . FROZEN STANDARD COSTS FOR INVENTORY & BASE TARGET
- . CURRENT STANDARD COSTS FOR MARKETING
- . ACTUAL COSTS -- THE BOTTOM LINE !

Table IX

Rule VII. Involve The Front Line Supervisor

Your front-line supervision must be an integral part of the Planning Standards Program if it is to succeed.

The typical supervisor is untrained -- uninformed -- unimpressed. Does Table X reflect your yard? If so, your yard has unnecessary troubles.

**IF YOUR SUPERVISION IS AVERAGE:**

- \* 75% OF OPERATORS NOT INSTRUCTED.
- \* 50% OF SUPERVISORS UNSKILLED INSTRUCTORS.
- \* 25% OF OPERATORS, IF INSTRUCTED, COULD DOUBLE OUTPUT.

TABLE X

Don't blame your supervision if this condition exists. It is management's fault. Involve your supervisors and train them. Give them the knowledge; give them the responsibility; give them a pat on the back when they do a good job.

Make them feel good -- catch them doing something right. If you give recognition for good performance, if you give training on how to be a good supervisor, you will be amazed at how many good supervisors - how many diamonds in the rough - you have in your shipyard.

There are many benefits from involving front-line supervision. What's the best source of knowledge about what the actual methods are, how the work is actually done in your yard? No, it's not management. It's not engineers. It's not planners. It's not the foremen. It's the employees. But who is the second best source? It's the foremen.

The time required to do a job depends on the method used. That's basic. And if you want the Performance Standards to be somewhat correct, involve the foreman. Find out the methods actually used. Get suggestions on how to improve the methods. And get the foreman involved in putting the improvements into effect. Everyone benefits, except your competitors.

Also, now that the foreman is involved, has participated and understands how the Performance Standards are based on the methods, he is apt to be more supportive. He is not as apt to sabotage the standards by telling his team, "Look what those \*!#!\* came up with now." You may even get some respect.

#### Rule VIII. Explain to Your Employees

You know, they are people too. The employees are the ones most concerned about job security. Where do they go when your yard closes down? They do not have the mobility or the resources management and staff have. Employees have a vital interest in your Company's success. They will respond enthusiastically to good Productivity Improvement Plans, particularly if you keep them informed and give the good ones recognition.

Most employees are proud of doing a full day's work. They want to know how to do their work, and when they have performed well against realistic targets. It's not much fun bowling or playing golf, if you don't know what to shoot for.

Many times, all that is necessary for a 20% or greater jump in productivity is:

1. replace soft standards with realistic standards.
2. validate the realistic standards with the foremen.
3. explain the reasons for the changes to foremen and employees.

4. brag about the better performance, give recognition for good methods suggestions and good productivity.
5. don't complain, don't criticize about the past.

Base your action on the 99% of your people who are good, honest, dedicated employees. Forget the 1% who don't care. Work with the 99% who do. Give them recognition when they do good work.

And, if you are blessed with a Union, recognize -- and let the Union recognize -- that they do not have the right to run your yard. Keep reminding them that "The Company must exist for the Union to exist, but the Union does not need to exist for the Company to exist."

Don't let the Union shoot itself by sinking the Company.

#### WHY AND WHEN DO STANDARDS PROGRAMS FAIL?

Failure to follow the above eight rules are the most common reasons why Standards Programs fail. They start to fail the moment those rules are forgotten. The Standards Programs start to revive the moment those rules are re-introduced.

#### WHAT CAN YOU DO TO REVITALIZE OR INSTALL A COST-EFFECTIVE PLANNING STANDARDS PROGRAM?

First, make an audit of where you are. An audit should encompass both technical and personnel aspects.

##### *I. From a technical viewpoint:*

- A. Audit the techniques used to establish your Planning Standards. As a by-product, identify the techniques that should be used.
- B. Do a Work Sampling Study to evaluate your current productivity and opportunity for productivity improvement.
- C. Compare the Work Sampling results with reported productivity figures. That will highlight opportunities for improvement in your present Planning Standards.

- D. Compare specified processes and methods with actual including facilities layout, equipment specifications and quality specifications. That will highlight further opportunities for improvement in production and in Planning Standards.
- E. Compare actual time and production recording practices with specified procedures. That will highlight opportunities for simplification and improvement in paperwork.

*II. From a personnel viewpoint:*

Make a confidential sampling of operator attitude, foremen attitude, staff attitude and management attitude. These sampling surveys will reveal:

- A. Opportunities for improvement in Productivity and Planning.
- B. Areas of support for, and opposition to, improvement.
- C. The types of approaches most apt to succeed.

Don't be overly surprised if you find that the operator attitudes compare very positively with the other attitudes.

*III. Take action.*

**YOU CAN WIN --**

- IN PLANNING STANDARDS, AND
- IN PRODUCTIVITY IMPROVEMENT

The answers are simple. They are basic and they are tough. It is up to you in upper management or with aspirations to be in upper management.

You must lead. Let me close with two slogans. One slogan is from Great Britain when they ruled the waves:

-----  
*"THERE ARE NO POOR SAILORS,  
 JUST POOR OFFICERS !!"*  
 -----

In our work worldwide, we run into too many operations where Table XI is appropriate.

MANAGEMENT AWARENESS	
* 80% DON'T KNOW SHOULD COSTS.	
* 50% DON'T KNOW ACTUAL COSTS.	
* 30% LACK NEEDED MARKETING DATA.	
- - - -	
* 100% EXPECT STOCKHOLDER APPROVAL.	

TABLE XI

If that's true in your operations, let's correct that cost knowledge on the double. There is an old Viking slogan:

-----  
*"THE VISION OF THE CHIEF  
 SETS THE SPEED OF THE SHIP."*  
 -----

**VISION IS IMPAIRED BY LACK OF FACTS.**

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