· SLADE GORTON

COMMITTEES: COMMERCE, SCIENCE, AND TRANSPORTATION

BANKING HOUSING AND

BUDGET

SMALL BUSINESS

United States Senate

WASHINGTON, DC 20510

January 28, 1985

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Mr. Carlton Kammerer Director of Congressional Affairs Nuclear Regulatory Commission 1717 H Street, NW Washington, D.C. 20555

Dear Mr. Kammerer:

I am enclosing correspondence I recently received from my constituent, Mr. Bob Crosby, owner of the CCF Company. I believe you will find his letter self-explanatory.

I would appreciate your reviewing this material and providing me with your comments and suggestions on how Mr. Crosby should proceed. Please direct your response to my Spokane, Washington, office at the address stated above.

Thank you for your assistance.

Sincerely,

SLADE GORTON United States Senator

SG/tr Enclosures

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The Honorable Slade Gorton 513 Hart Senate Office Building Washington, D. C. 20510

Dear Mr. Gorton.

I am the co-owner of a small business operating out of Spokane, Washington. As the enclosed client list indicates, most of our sales have been in the Midwest and East Coast.

You are well aware of the safety problems in nuclear power plants. The enclosed article appeared recently in the Spokesman-Review.

I want the opportunity to demonstrate that our company can significantly reduce safety problems in nuclear industries. I read that small businesses will receive federal assistance to develop their products. We could demonstrate ours with selected contracts.

What evidence can I present that supports my claim that we could reduce safety problems?

First, I've included information from our validity and reliability studies. Notice the strong correlation between high scores and an excellent safety record!

Next, I've included six pages extracted from a Master's thesis. The "High-Tech" company referred to is a nuclear industry. This thesis was written by the manager of a production department of sixty people with two others (internal to the company) assisting her in the project and the writeup. I trained these three and consulted with them, but did not function on-site.

At first it appeared hopeful that our diagnostic tool and our survey feedback processes would spread across that industry, but instead, the results and the project were lost as many research results are.

We recognize that sixty people (one department) is not conclusive. Our only other project where hard results were measured was in a light manufacturing company where, after our diagnostic tool and survey feedback process was used, industrial accidents dropped 21%.

YOUR PARTNER IN TRANSFORMING THE WORKPLACE

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A significant user of our diagnostic tool is the Naval Surface Weapons Center in Dahlgren, Virginia. Dr. Adam Yagodka is the Organizational Development Program Manager. However, they employed Westinghouse as their consultants. Obviously Westinghouse is more prestigious, but they do different work than we would do and, therefore, likely did not have the results we have.

While the diagnostic tool is excellent, the results we obtained came from a wise use of the tool, not just the tool itself.

However, you will note the quote excerpted from the Master's thesis. They compared our tool with ten others.

Also, Dr. Yagodka says, "It identifies problems that can be corrected simply by management deciding to take action on it - an excellent diagnostic tool for beginning an Organization Development Program."

Recently Dr. Ronald Lippitt, a highly esteemed social scientist long identified with the University of Michigan Institute for Social Research and a founder of the N.T.L. Institute, wrote, "Of the four tools I know quite well. this is the most diagnostically comprehensive and the best designed to support an action-research change process at corporate, subgroup and individual levels."

So we're asking you to open doors for us that we may demonstrate our ability to improve safety in this sensitive area of our nation's life.

Sincerely.

Pob Crosby

BC/jk1/1:43

Enclosures

Warnings not halting 'mishaps' at nuclear power plants in U.S.

WASHINGTON (AP) — Despite ample warnings and a multimillion-dollar program to share information, the same "mishaps" are occurring over and over again at U.S. nuclear power plants, according to government atomic safety regulators.

In a report to the five-member Nuclear Regulatory Commission this week, government analysts of data from the nation's 80 operating atomic power plants said the reactors are experiencing, on average, six and one-half times the emergency shutdowns or "scrams" of similarly designed plants in Japan.

"Repetitive events occur which indicate that corrective actions taken at individual plants are not as long-lasting or as effective as anticipated," the analysts said in their semiannual report to the commission. "The lessons of experience seem to be sometimes lost or forgotten with time."

For example, the report mentioned 27 separate incidents in which a key safety system "was lost or degraded" because reactor operators misidentified where the particular problem existed. In seven cases, utility officials even misdirected their attention to the wrong reactor at plants where there is more than one unit.

"A total loss of a safety system is not a rare event," the commission was told. Though a report on safety system total failures has not been issued yet, NRC officials said 30 of 120 breakdowns involved the loss of emergency backup cooling systems designed to prevent a reactor meltdown.

Three-fourths of those cooling system failures were because of human mistakes, many of them identical to one another, the officials said.

"Also relatively frequent was the loss of containment spray systems (another measure aimed at preventing a reactor from overheating) due to valve misposition, i.e., human error," it said. The 1979 accident at the Three-Mile Island plant in Pennsylvania pinpointed the need for utilities to fully report and share the details of any minor mishap as a way to prevent them from recurring.

Some of the malfunctions that contributed to the TMI accident, the worst in the nuclear power industry's history, had occurred previously at similar plants elsewhere, but operators at the Harrisburg facility were not aware of them.

After the accident, the NRC established its Office for Analysis and Evaluation of Operational Data to keep up with "licensee event reports" of unusual occurrences and make sure that all plants are made aware of significant mishaps.

The industry itself created the Institute for Nuclear Power Operations in Atlanta, provided it with tens of millions of dollars for a computer link to share technical data, and loaned it some of the nation's top experts in nuclear engineering to do 'he same thing.

COMPARISON DATA

(Between High Achieving and Low Achieving Teams at an Industrial Plant)



*of high to low productive groups by supervisors without knowledge of absenteeism and safety records.

** % of safety problem among 8 teams in the same division.

Figure 3

COMPARISON DATA

BETWEEN High Achieving and Low Achieving Teams At an Industrial Plant

TEAMS	Subjective Ranking *	Absenteeism	Safety**	Super- vision	Role Clarity	Meeting Effectivenes:	Job Satisfaction	Group Productivity	Problem Solving	Management Procedures	Environmental Climate
B EAST	1	1.35	25	4.22	4.36	3.15	3.46	3.87	3.42	2.13	2.44
B WEST	2	1.78	10%								
A WEST	3	2.28	176								
A EAST	4	2.6%	238	1.55	2.57	1.92	2.14	3.14	1.66	1.23	0.65

* of high to low productive groups by supervisors without knowledge of absenteeism and safety records

A

** % of safety problems among 8 teams in the same division

VALIDITY & RELIABILITY STUDY OF THE PEOPLE FERFORMANCE PROFILE*

INTRODUCTION AND BACKGROUND

The purpose of this project was to see if the People Performance Profile could be used to diagnose effective and ineffective work groups (validity) and if repeated use of the instrument was consistent (reliability).

The test was conducted in a heavy industrial plant in the Pacific Northwest consisting of approximately 420 hourly and 90 salaried employees. The plant produces two metals used as alloys with aluminum. Tasks required in the operation range from hot physical work (pouring molten metal and jackhammering ladles) to jobs requiring high technical competence (computer assisted furnace operation). The process technology is new to the United States originating in France.

Because the plant is non-union, innovative management practices such as job rotation, rewards based on applied skill, autonomous work groups (teams), development of 12-hour shifts and delegated supervision are used to increase job satisfaction.

In the spring of 1981 the plant was used to test validity and reliability of the People Performance Profile survey. The following is a summary of the study.

METHOD

The survey was administered to the two most effective teams and the two least effective teams in one of the departments. The department selected had eight teams operating on four rotating shifts. Each team had approximately 13 members (Figure 1). The advantage of selecting teams from the same department was that many of the variables remained the same since the teams worked in the same work areas but on different shifts.

Team	Number	Surveys Completed
A East	1.3	8
A West	14	8
B East	13	10
B West	14	14
		Figure 1

"Performed by an independent researcher/consultant specialist.

To determine the two most and the two least effective teams, three criteria were used: 1) 1980 absenteeism records, 2) 1980 safety reports, and 3) subjective rankings made by the department superintendent and internal consultant (Figure 2). Since productivity is determined by the chemical process, performance based on productivity was difficult to measure and, therefore, not used.

Team		Subjective** Ranking		Absenteeism	Safety.	
B	East	1	FFFeet	1.3%	2%	
B	West	2	LITECTIVE	1.7%	10:	
A	West	3	t Effective	2.2%	17%	
B	West	4 Leas		2.6%	23%	

*Percent of safety problems among team in the same department.

**Of high to low productive groups by supervisor without knowledge of absenteeism and safety records.

Figure 2

The survey was given to each team during a half hour team meeting before beginning the shift. Once the surveys were completed, they were sent to CCF for analysis. A summary of the composit analysis was reviewed with each team.

Once the computer analysis was completed, the scores from the profile were compared with the performance criteria to see if the survey was valid. A statistical test was then used to measure significance.

Reliability was measured by retesting the teams and correlating the results with the first survey.

RESULTS

The research hypotheses used in the project are as follows:

- The People Performance Profile can be used to measure a difference between effective and ineffective work teams based on performance criteria, thereby establishing validity.
- The People Performance Profile can be used repeatedly with consistency, thereby establishing reliability.

To test validity, the Profile scores from each team were statistically compared using the Kruskal-Wallis one-way analysis of variance (non-parametric) test. A significance of .05 was used to reject the null hypothesis. The results of the test was

a Kruskal-Wallis statistic (H) equal to 25.06 with a DF equal to 3. Using the chi-square distribution, the null hypothesis was rejected at the .05 level of significance and the research hypothesis was accepted. A summary of the results is contained in Figure 3.

Reliability was measured by using the Person Product Moment (r) statistic to test for a correlation between the first survey administered in May of 1981 and the second survey administered n June of 1981. The result of the statistic was a r -.95 showintg on extremely high relationship between the two surveys. A summary of the results is in Figures 4 and 5.

CONCLUSION

The results of the validity and reliability tests demonstrate that the People Performance Profile can be discriminate between effective and ineffective work groups. Since there is a strong relationship between the performance areas which the survey is designed to measure and actual performance, the instrument seems to be a valid and reliable tool in analyzing critical problem areas associated with poor performing work groups.

PPP Research & Validity Summary

The People Performance Profile has established validity under controlled circumstances. Three kinds of validation have been used: Discriminate, construct and consensual.

- (1) Discriminate Validity: Scores follow what one would expect.
 - When the survey instrument is used with a highly productive group, the group scores high.
 - When a relatively unproductive group is surveyed, the group scores low.

The CCF project at Northwest Alloys yielded, for example, results like these:

Productivity	Absenteeism (No. hours out of 100 hours)	Safety (0 being perfect)	Supervision Score	Role Clarity	Influence With Supervision	
High Group	1.3	2%	4.22	4.61	4.88	
Low Group	2.6	23%	1.55	1.69	1.81	

Sharp differences were found in the organization and work team indices and, overall, the survey scores for the highest and lowest teams were significantly different. The People Performance Profile effectively differentiates at the .05 level of significance.

- (2) Construct Validity: The instrument measures what it says it measures.
 - Construct validity checks were obtained through interviewing hundreds of people to determine that the survey instrument yields what people actually think and feel.
- (3) Consensual Validity: "hose who are surveyed agree that "the data fits."
 - In four years of usage, client response is a confirming "this sure hits home." The common response is, "how could they have gotten it so accurate?" Perhaps the strongest, albeit non-numerical, validity test for the PPP is this consensual measure. We have yet to have a client reject the data as incorrect.

Reliability

Other popular diagnostic instruments achieve a reliability score of .40 - .45, which is considered good. Using the Pearson product-moment test (r), the PPP instrument achieved an r = .95, an astoundingly high score.

Conclusions

Based on statistical verifications and client and consultant reports, CCF's diagnostic instrument has the highest reliability and validity achievable.

"HIGH TECH" COMPANY REPORT

"The CCF process was an ideal tool for an OD intervention. The consultative management style, the cyclical audit of human resources, the clear, concise, 'laser-like' direction, and the consideration of people as the most important element in a change situation made it the most viable tool to use.

"The amount of data generated and the clarity in which it was presented could not have been equaled by the other data gathering options explored. The CCF questionnaire covered more ground and a wider breadth of subjects than any 10 other questionnaires combined. The time saved on data collection and feedback gave more time to devote to problem solving and action planning. In general, the whole CCF process is so well thought out and logically arranged that the consultant's job is just to facilitate it from conception through to birth of results."

> -Excerpt from Summary & Conclusions Chapter "Process & Implementation of Organization Effectiveness Practices & Consultative Management at a High Technology Company" Applied Behavioral Science Masters Thesis, 1983



YOUR PARTNER IN TRANSFORMING THE WORKPLACE

The bottom line results of this intervention were that major improvements were made in the areas of productivity, safety, and equipment needs.

Productivity

Productivity has improved significantly since the start of the intervention. Within the Processing Section there are many tasks that are performed which are a direct measure of the Section's productivity. Since June 1982 the Section's overall productivity has more than tripled. The graph below shows this trend. The loss of productivity in February 1983 was caused by a major equipment breakdown which interrupted some aspects of production for two weeks.





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Safety

Safety is another area where significant improvement has been realized as a result of the intervention. The Section personnel have aggressively pursued improving all aspects of Safety. The graph below shows the continually decreasing number of Safety violations occurring in the Section. Inherent in the graph line is the reduction of medical injuries as a result of the Section's aggressive Safety Improvement Program.



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Equipment

One of the major concerns of the Processing personnel at the start of the intervention was the equipment condition and the need for frequent repairs which interrupted work flow (interrupted work flow impacts



production). The group, through more effective interfacing with support groups and increased acceptance of "ownership" for their equipment, have improved all aspects of equipment status. Equipment is now being repaired in a timely manner by other support groups and critical pieces of equipment have been identified and spares ordered for back-ups in the event of a breakdown. The positive changes in the entire area of equipment status has definitely improved production. As indicated in the bar chart, significant

increases in the number of work authorizations written and completed to improve equipment conditions (and thereby improve production) has occurred.

A significant part of the Section's Safety Improvement Program has been not only the Section personnel's dedication to improvement but also their willingness to identify potential and real safety hazards in their work areas. The bar chart below expresses the work authorizations written within the Section to correct Safety hazards. The chart also shows the significant increase in the number of authorizations written since the June timeframe when the OD intervention started.

WORK AUTHORIZATIONS INITIATED



TO CORRECT SAFETY HAZARDS

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The long-term picture for continued improvement in production, safety, and equipment, looks bright. One way the group insured that this will happen was to generate formal paperwork (in the form of design changes and engineering support requests) which has been put into the company planning and scheduling system. These are long-term planning efforts for major improvements in the Section's business. The bar chart shows the increase in the number of requests for support submitted in the June 1982 to April 1983 timeframe.



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