

Supplier report cards—a route to total performance

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Supplier performance has improved, and division management is spending less crisis time with material problems and more constructive time on supplier relationships.

The conditions in today's coated paper market are extremely challenging. Quality is the ultimate concern, as graphic designers direct paper manufacturers toward grades of higher quality for more excellent print reproductions. Domestic competition is keen as new paper and coating technologies are developed which allow the production of higher quality sheets at faster speeds and improved efficiencies.

This demand strains existing mills to measure up to higher quality standards using older and less efficient production equipment. International competition is also strong, with many imported products being of excellent quality at competitive prices.

Faced with these challenges, production managers must maintain precise control of variables that affect quality, cost, and productivity. In all of these production variables, the effect that raw materials have on the production process cannot be overlooked. Variations in paper and coating raw materials can have a dramatic effect on the operation.

Control of raw materials quality means more than statistical process control of variables measured on purchased material. To fully control raw materials quality, a performance relationship must be established with suppliers that allows common understanding about the requirements for purchased materials. Also, a system is needed that objectively measures raw material parameters, communicating back to suppliers a report on how well raw materials meet prescribed requirements. Such a system ensures optimum raw material quality and establishes an environment where raw material problems can be solved objectively and efficiently. The supplier report card is a means to this end.

History and objectives

Our company initiated a raw materials evaluation program in 1978, after recognizing that variations in quality and uniformity of coating raw materials had a

significant effect on the coating operation.

The evaluation program started by establishing statistical limits on raw material tests for fine-mesh residue, solids content, viscosity, and pH. These parameters were tested on all incoming pigments, and limits were established to define acceptable quality. During the late 1970s and early 1980s, this evaluation program grew to include other coating materials and additional raw material tests. Coating materials suppliers began providing their own test data and trends were established between supplier tests and the company's tests.

By 1984, the program had demonstrated the benefits of controlling raw material quality, but the total supplier performance picture had not been assembled. Communication to suppliers on raw materials testing and compliance with statistical limits was very good. However, we were still working on some of the more practical issues associated with supplier performance, such as on-time shipments, the handling of materials, and supplier service.

In early 1985, the concept of the supplier report card was developed. The objectives of this program were:

- To obtain an objective overall rating of supplier performance.
- To ensure complete communications with suppliers concerning their performance in the areas of quality, service, and delivery.
- To provide each supplier with a detailed and factual record of problems and troublesome situations.
- To enhance the performance relationship between the material supplier and the purchaser.

Setup and categories

At the beginning of each calendar quarter, representatives from the mill technical department, the corporate quality assurance group, manufacturing, and purchasing meet to develop the ratings for each supplier for the previous quarter. Before starting the report card program, each supplier received a letter explaining the intention and objectives of the new program.

Quarterly ratings are broken down into three general categories: quality, delivery, and service. Each category was weighted as follows: 50% quality, 30% delivery, and 20% service.

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1. Coating materials supplier report card

COATING MATERIALS SUPPLIER REPORT CARD**1st** **QUARTER, 19 86**Supplier **COMPANY A** Division **WISCONSIN RAPIDS**Material **MATERIAL 1**

<u>Category</u>	<u>Includes</u>	<u>Grade</u>	<u>Grade Point Score</u>
Quality	40% - Rejected shipments	<u>A</u>	
	30% - Ability to meet process capabilities	<u>D</u>	
	10% - Other quality issues	<u>C</u>	
	10% - Availability of preshipment samples	<u>A</u>	
50%	10% - Availability of shipment quality data	<u>A</u>	<u>2.9</u>
Delivery	50% - Timely deliveries	<u>A</u>	
	25% - Condition of equipment	<u>D</u>	
30%	25% - Handling and unloading problems	<u>D</u>	<u>2.5</u>
Service	50% - Responsiveness to technical needs	<u>A</u>	
	25% - Communications	<u>A</u>	
20%	25% - Service calls made routinely	<u>A</u>	<u>4.0</u>
Your Grade Point Average			<u>3.0</u>
Bonus Points 0.5 Maximum	Awarded for exceptional performance in: Meeting emergency requirements (7 cars & 2 trucks)		<u>+.2</u>

Your Final Score **3.2**Grading System

<u>Grade</u>	<u>Grade Points</u>	<u>Performance</u>
A	4	Excellent - keep up the fine work.
B	3	Good - but still some improvement possible.
C	2	Fair - time to start planning corrective measures.
D	1	Unacceptable - immediate corrective action necessary.
F	0	Totally unacceptable - complete "overhaul" required.

See attachment for documentation of
quality/service/delivery problems.

2. Supporting data for the supplier report card

SUPPORTING DATA FOR SUPPLIER REPORT CARD		
1st QUARTER, 1986		
Supplier	COMPANY A	
	Division	WISCONSIN RAPIDS
Material	MATERIAL 1	
Grade	Category	Reason
D	Process Capability	13 Cars with high residue tests
C	Other Quality Issues	Grit problem on unload screens persisted early in quarter but much effort was put in and improvement was seen late in the quarter.
D	Condition Of Equipment	A total of 10 cars with a variety of car problems: bottom valve leading, no safety seal, flange under valve leaking.
D	Handling & Unloading Problems	Continued to see slow unload times until the cars that were screened at the plant arrived. We have seen improvement in these cars and are confident that 2nd quarter results will be better.

Figure 1 shows an example of the overall rating page for the report card. Any grades lower than an "A" are explained on the supporting data sheet shown in Fig. 2. Figure 3 is a chart that outlines the trends in each category of performance.

The grading system

Grades are given for each of the criteria under the quality, delivery, and service categories, as Fig. 1 shows. The grading system is based on the academic grading system:

- A = Excellent. Keep up the fine work.
- B = Good. But still some improvement possible.
- C = Fair. Time to start planning corrective measures.
- D = Unacceptable. Immediate corrective action is necessary.
- F = Totally unacceptable. A complete "overhaul" is required.

Guidelines were developed to help in making grading decisions. These correspond with the criteria under each category.

Quality performance

Rejected shipments. If no shipments are rejected in the quarter, a grade of "A" is assigned. A grade of "B" is not given, because its corresponding performance statement would have no meaning for rejected shipments.

If up to 4% of the shipments are rejected, a grade of "C" is given. For 4-10% rejected, the supplier earns a "D". An "F" means that more than 10% of the shipments were rejected.

Ability to meet process capabilities. Process capabilities are established by statistical analysis of test data for past shipments, generally covering a period of at least six months. Three standard deviation limits are used. The

percentage of tests outside of the process capability limits for each vendor are determined each quarter, and grades are earned on the basis of this percentage as follows:

- A = less than 1%
- B = up to 5%
- C = 5-10%
- D = 10-20%
- F = more than 20%.

Other quality issues. This portion of the quality rating deals with quality deficiencies that do not result in shipment rejection or failure to meet established process capabilities. Examples would be grit found on the unloading screens and product interactions with other coating materials that cause formula problems. The grade is assigned to convey its corresponding performance message.

Availability of preshipment samples. A sample of product is required for each shipment prior to the arrival of the actual shipment. Prescreening of this sample is done as an early warning for possible problems with the actual shipment. This category measures how consistently the supplier provides these samples.

If samples are available for every shipment, the supplier receives an "A". If 90% or more of the shipments were preceded by samples, then the grade is a "B". If 80-90% had samples, the grade is a "C". If 70-80% had samples, the grade is a "D". If less than 70% had samples, the supplier gets an "F".

Availability of shipment quality data. In addition to preshipment samples, suppliers are required to provide their own test data on each shipment. These data are subsequently correlated with the company's results. In this category, the supplier is evaluated on how consistently these data are provided. The grades are assigned on the same basis as preshipped samples.

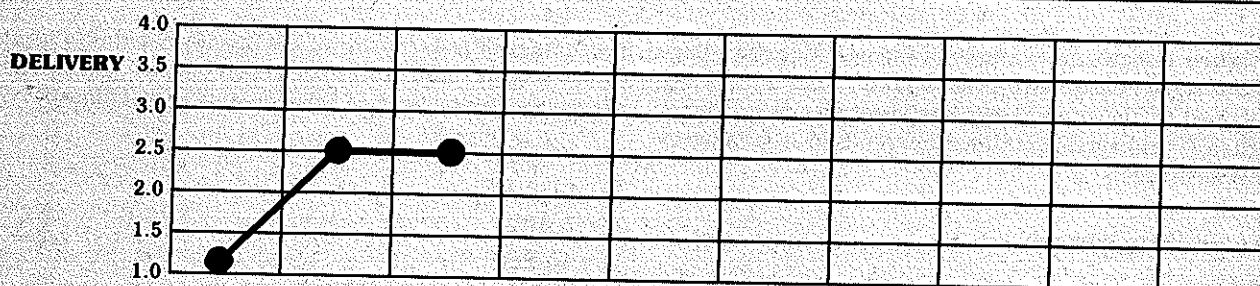
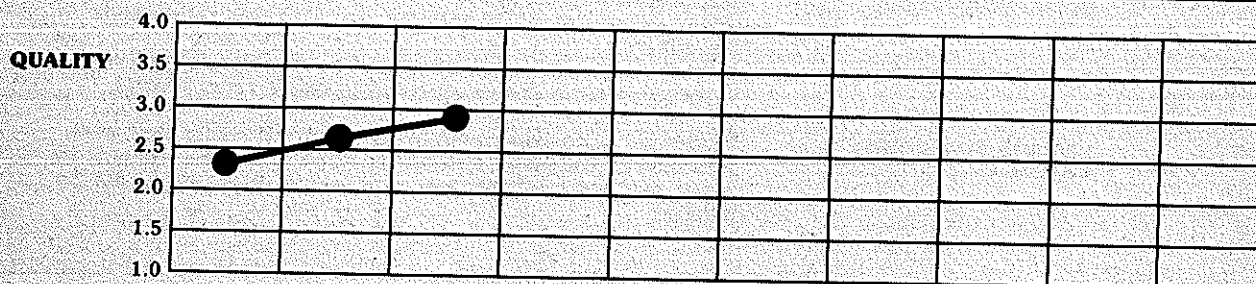
3. Trends in each category of performance

COATING MATERIALS SUPPLIER REPORT CARD

QUARTERLY PERFORMANCE SUMMARY

Supplier **COMPANY A**Division **WISCONSIN RAPIDS**Material **MATERIAL 1**

Quarter & Year	3rd/85	4th/85	1st/86								
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M54-85A (5/86)

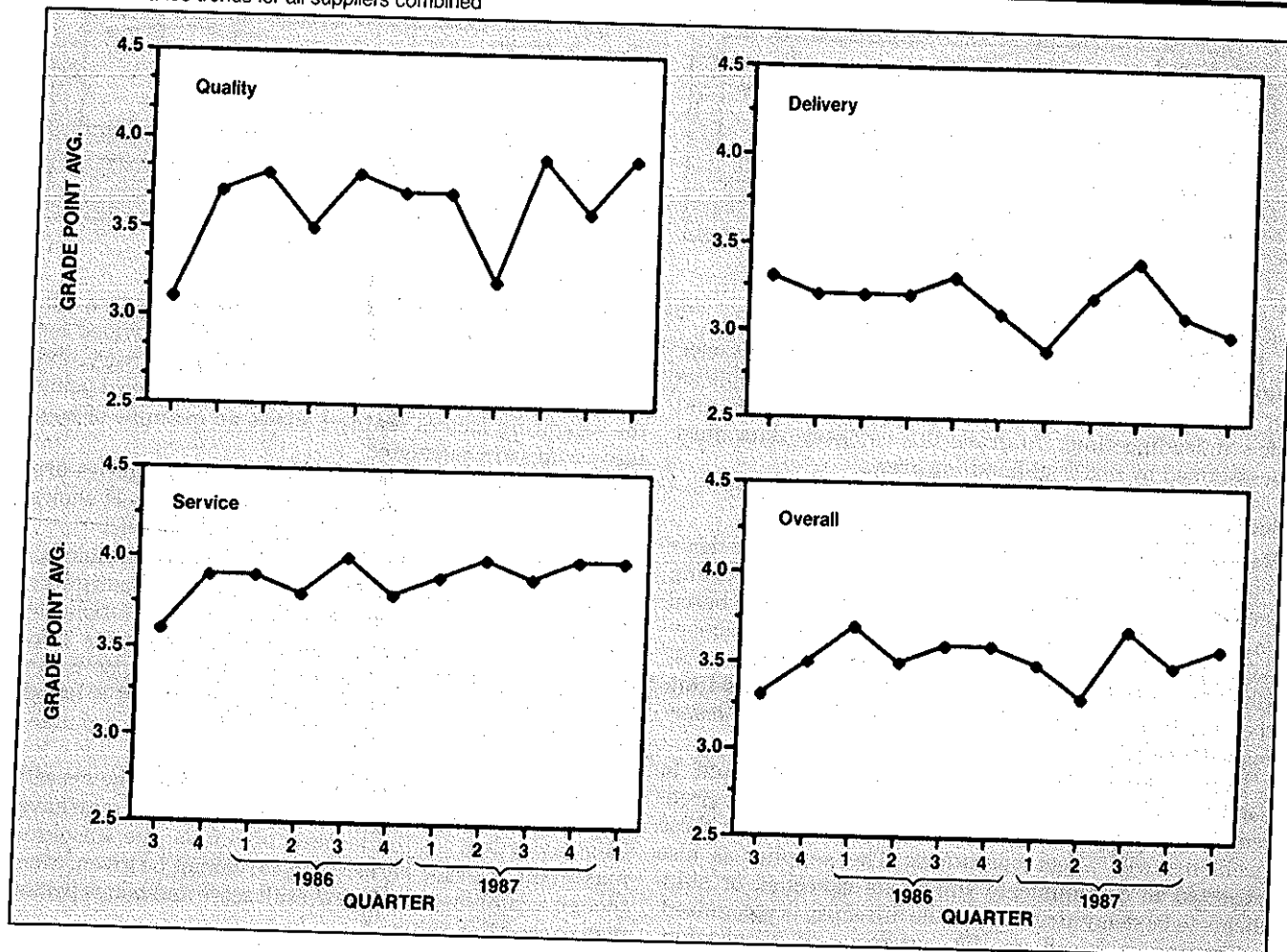
I. Calculation of grade score for the quality category

Quality criteria	Grade	Score	Weight	Cross product
Rejected shipments	C	2.0	0.4	0.8
Ability to meet process capabilities	B	3.0	0.3	0.9
Other quality issues	A	4.0	0.1	0.4
Availability of preshipment samples	A	4.0	0.1	0.4
Availability of shipment quality data	B	3.0	0.1	0.3
Grade point score				2.7

II. Calculation of overall grade point average.

	Grade point score	Weight	Cross product
Quality	2.7	0.50	1.35
Delivery	3.0	0.30	.90
Service	4.0	0.20	.80
Grade point average = Weighted average			3.05

4. Performance trends for all suppliers combined



Delivery performance

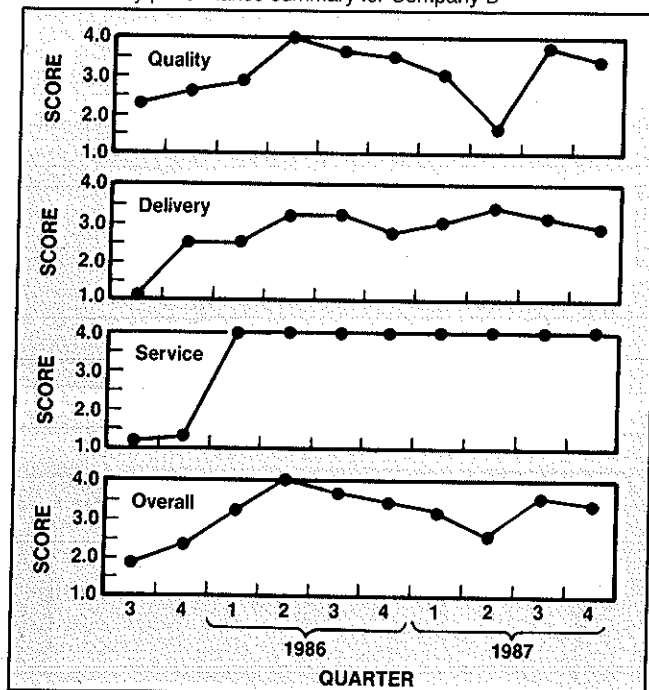
On-time delivery. The criterion used is "average days late/shipment." A shipment is late if it arrives three or more days after it is due. Shipments one or two days late are not counted.

Suppose a supplier makes 20 shipments in the quarter. Two are late, one by four days and the other by three days. Dividing this total of seven "late shipping days" by the number of shipments gives the value of 0.35 for "average days late/shipment." If this value is 2.0 or more, the grade is an "F". If the value falls in the range of 1.0-2.0, the

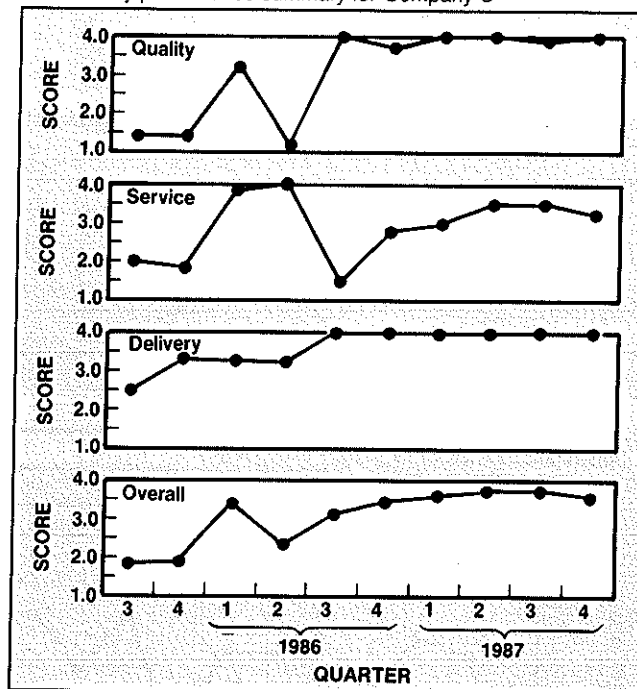
grade is a "D". If the value is in the 0.5-1.0 range, the grade is a "C". Less than 0.5 days late/shipment fetches a "B", and no late shipments earns an "A".

Condition of equipment. The grade depends on the performance message intended, which is chosen by considering the frequency of unsatisfactory equipment conditions and the severity of the shortcomings. Such conditions would include loose manhole covers, leaking valves, the lack of safety seals, broken pipe caps, and leaking diaphragms on pressure relief valves. To grade this category, data have to be obtained by material

5. Quarterly performance summary for Company B



6. Quarterly performance summary for Company C



handling crews.

Handling and unloading. The grade assigned is once again dependent on the performance message. Problems in this area include obnoxious odors, eye irritation, and slow unloading time. To grade this category, data must be obtained by material-handling crews.

Service performance

Responsiveness to technical needs. This category deals with technical service for solving mill problems, providing feedback useful to problem analysis, etc. Grading is based on the consensus of manufacturing and technical personnel. When "all is well," this category is graded as an A. However, when mill problems arise, help is expected from the supplier. Grading is based on the intended performance message.

Communications. The suppliers are expected to communicate process changes and manufacturing problems so the mill can anticipate and evaluate how these problems will affect operations. The supplier is also expected to communicate shipments cancelled or shipments to be delayed as soon as the difficulty is recognized.

Grading is based on the consensus of purchasing, manufacturing, and technical personnel, and grades are given on the same basis as those in the category of "responsiveness to technical needs."

Service calls. Routine supplier contact is necessary. The frequency of mill visits by supplier representatives is generally suggested by the purchasing department. Failure to meet these guidelines will lower the grade assigned in this category. The rating is once again based on the intended performance message.

Grade point scores

Grade points are assigned to each alphabetical grade based

on the 4.0 scale, where an A gets a 4.0, a B gets a 3.0, and so on. Individual grade point scores are provided for each of the three general categories—quality, delivery, and service. These grade point averages are determined using the weighting factors. Table I shows an example of how these scores are calculated.

The grade point averages for all three categories are determined using the weighting factors. Table II shows how the overall grade point average is calculated.

Bonus points are awarded for exceptional performance. A supplier might earn bonus points by meeting emergency supply requirements, providing innovative solutions to mill problems, or introducing product changes that improve performance. A maximum of 0.5 bonus points can be awarded each quarter. The amount awarded is based on the consensus of purchasing, technical, and manufacturing personnel.

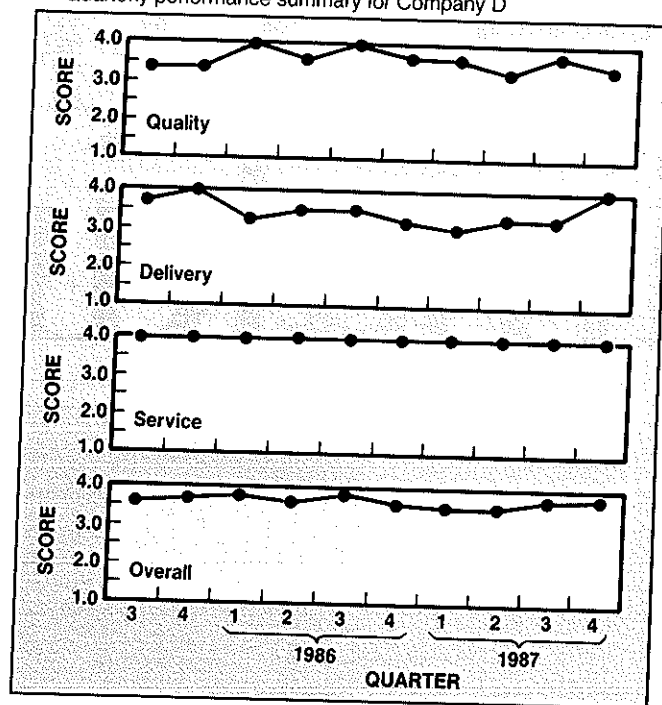
The final score is determined by summing the overall grade point average and any bonus points that may have been awarded. A final score of 4.0 is the absolute maximum. A grade higher than 4.0 cannot be given, even though a combination of the overall score and bonus points may exceed this value.

Each supplier receives a copy of the reports illustrated in Figs. 1-3 on a quarterly basis. These reports are directed to the manager of sales and marketing.

Administration time

One of the first questions that arises with any program like this is, how much time does the program take to administer? A total of 21 different coating products from 14 different suppliers are involved in this program. A total of 44 samples are tested each week, and 180 laboratory tests are done on these samples each week. It takes 3 h per day, 7 days a week, to conduct these tests and record

7. Quarterly performance summary for Company D



data.

It takes 2 h of process engineering time each week to administer the testing program and to summarize test results in a form that makes report card ratings more efficient. One hour of managerial time per week is spent on reviewing and summarizing data for the report card rating. This time is split between purchasing department personnel and quality assurance personnel.

A total of 4 h per quarter of clerical time is required for final assembly of report card data and preparation of report cards. Eight people spend 3 h per quarter in a meeting in which the suppliers are graded.

Results

Figure 4 shows the trends for each performance category since the program began. Each data point represents an average for all suppliers in the program, and the figure represents the true, overall performance for our coating materials suppliers.

The quality and service categories show consistent performance improvement. The delivery category shows a performance deterioration because the tight market for coated paper had led to a tight market for coating materials. This situation has resulted in delivery problems. Also, equipment problems with rail cars has been causing difficulty. Materials suppliers are working to solve this problem.

The report card program has been the means to fewer quality and service upsets for coating raw materials at our plant. As supplier performance has improved, fewer management hours have been spent on material problems.

Before we started using the supplier report card system, time was spent on materials problems. This crisis-oriented time was a management burden. Since the supplier report card system was implemented, performance improve-

ments have yielded fewer crisis hours. This reduction in crisis hours goes a long way to offset the hours spent to administer the report card program. Also, the time spent now on supplier performance is more constructive to communicate requirements and performance trends. Crisis hours tend to be negative and emotional.

The report card program has also enhanced the relationship with our suppliers. There were cases in which companies had serious performance problems early in the program. Those companies have demonstrated remarkable recoveries. Some examples of companies that have exhibited these trends are shown in Figs. 5 and 6. Other companies have shown continued excellent performance through the entire period of the report card program, as shown in the example in Fig. 7.

A closer look at Figs. 5-7 shows that companies with consistently good service ratings show consistently good quality and delivery performance. On the other hand, firms that have had quality or delivery problems have generally had low service ratings. In some cases, the deterioration in the service rating has been an early warning sign for future quality or delivery problems.

The relationship between quality and service relates to the definition of service, which is a measure of the "goodness" of supplier contact with the purchaser in terms of responsiveness to technical needs, communications, and the frequency of service calls. When the supplier and the company understand each other's needs, many problems can be avoided.

Conclusions

Implementation of the supplier report card program has yielded excellent results. The objectives of the program have been met. Supplier performance has improved over the past three years, and division management is spending less crisis time with material problems and more constructive time on supplier relationships. The division has experienced fewer production upsets as a result of material inadequacies. The general consensus is that the benefits of this program far outweigh the costs in time and energy to administer.

Received for review June 9, 1988.

Accepted June 11, 1988.

Presented at the 1988 International Process and Product Quality Conference.