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A RAND NOTE

The PACER SHARE Work Incentive
Demonstration Project: An Overview

Bruce R. Orvis

November 1988

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This Note provides an overview of the interventions that constitute "PACER SHARE" and the evaluation plan to assess their effects. PACER SHARE is a five-year federal civil service demonstration project that is being conducted within the Directorate of Distribution at the Sacramento Air Logistics Center, under the auspices of the Office of Personnel Management. Its purpose is to determine whether the experimental changes improve the productivity and the quality of work life. If so, they will be considered for wider application in the federal sector.

*Keywords: Logistics management,
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**The PACER SHARE Work Incentive
Demonstration Project: An Overview**

Bruce R. Orvis

November 1988

**Prepared for
The Office of the Assistant Secretary of Defense
for Force Management and Personnel**

40 Years
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PREFACE

This Note provides an overview of the interventions that constitute the PACER SHARE Demonstration Project and the evaluation plan to assess their effects. PACER SHARE is a five-year work incentive demonstration that is being conducted within the Directorate of Distribution at the Sacramento Air Logistics Center, McClellan Air Force Base, under the legal authority granted to the U.S. Office of Personnel Management to waive Federal Civil Service regulations on an experimental basis to determine whether the experimental changes improve such factors as productivity and the quality of work life. If effective, the interventions will be considered for wider application in the federal sector. RAND is primarily responsible for designing and carrying out the external evaluation. However, RAND has been involved with the Project for several years, and has provided consultation in designing the interventions.

The study is sponsored by the Office of the Assistant Secretary of Defense for Force Management and Personnel, and is being carried out by the Defense Manpower Research Center, a component of the National Defense Research Institute, RAND's OSD-supported Federally Funded Research and Development Center.

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BACKGROUND

- SITE:** **Directorate of Distribution,
Sacramento Air Logistics Center,
McClellan AFB**
- MISSION:** **Receive, store, and issue
materiel in support of USAF
operations**
- STAFF:** **Approximately 1800 civilian employees
and 120 military personnel**
- COMMAND:** **One of five Air Logistics Centers
in U.S., all under authority of
Air Force Logistics Command**

This presentation provides an overview of the PACER SHARE Demonstration Project. PACER SHARE is a five-year work incentive demonstration being conducted at the Sacramento Air Logistics Center, under the legal authority granted to the Office of Personnel Management (OPM) to waive Federal Civil Service regulations on an experimental basis to determine whether the changes improve such factors as productivity and the quality of work life. After several years of planning, the Project was formally initiated in February 1988. If it is successful, the interventions constituting the Project will be considered for wider application in the federal sector. RAND's role is primarily that of external evaluator. However, we have been involved with the Project for several years, and provided assistance in designing the interventions.

The site of the Demonstration is the Directorate of Distribution (DS) at McClellan Air Force Base in Sacramento, California. Distribution's mission is to receive, store, and issue materiel in support of U.S. Air Force operations around the world.¹ The Directorate is staffed by approximately 1800 civilians, who are participating in the Demonstration, and 120 military personnel, who are prohibited by law from doing so.² The Sacramento Air Logistics Center (SM-ALC) is one of five ALCs that perform similar functions. They all are under the authority of the Air Force Logistics Command.

An important feature of this Demonstration that distinguishes it from others is the involvement of both blue and white collar and both line and management personnel. The staff is divided evenly between General Schedule (white collar) and Federal Wage System (blue collar) employees, about 10 percent of whom are supervisors. The employees are represented by three unions. The largest union, the American Federation of Government Employees, has been an active participant in the Project since its inception.

¹The materiel processed by the Directorate of Distribution includes thousands of items, ranging from nuts and bolts or electronic components to large pieces of equipment. Distribution is responsible for all loading, unloading, storage, inspection, inventory, packaging, and paperwork (among other actions) relating to this materiel, which by truck, train, plane, or ship can be received from or shipped to any location required by the Air Force to support its global operations.

²Military personnel are prohibited from participating in gainsharing plans; one of the five interventions being carried out in this Demonstration is such a plan. Moreover, the remaining interventions concern changes in the civilian personnel system, and will not affect military personnel directly.

IMPETUS FOR PROJECT

Existing productivity levels are good, but there is little incentive to maintain/improve productivity

- **Efficiency can lead to staff reductions**
- **Little dependence of pay on organizational performance**
- **Supervisors' pay based on number and grades of subordinates supervised**
- **Personnel Office actions focus on executing current policies, not on productivity**

The impetus for this Project did not result from a productivity problem at Sacramento--recent work performance in Distribution has met or exceeded the applicable Air Force work and quality standards. Rather, the basis of the Demonstration lies in the perception of senior Distribution management personnel that current public sector personnel practices provide little incentive to improve productivity; indeed, in certain cases, current practices can actively discourage it. This perception is based on a variety of factors, such as those listed in the above chart. For example, efficiency can lead to staff reductions, as when, in the name of improving production, DS personnel assignments are decreased for those Air Logistics Centers performing above standard and increased for the Centers performing below standard. Second, there is little dependence of individual pay on organizational performance, and thus little economic incentive to improve the performance of the

Directorate. Another problem in the current system is that supervisors' pay tends to be based on the number and grades of subordinates supervised rather than on job responsibilities. This does not encourage the execution of those responsibilities and is likely to discourage supervisors from recommending staff reductions when they feel the work load could be handled with fewer subordinates. Moreover, it inhibits the organization in positioning supervisors where they would do the most good, because it requires that the appropriate subordinate structure be in place to justify the supervisor's grade. Finally, the Personnel Office's actions necessarily center on executing current policies. The relationship between some of those policies and productivity is nebulous, at best. For example, there is a great deal of paperwork (e.g., forms) that must be completed and processed to take the promotion and job reassignment actions that would help the organization deal with work load fluctuations. This limits organizational flexibility in assigning qualified workers to the jobs where they are most needed on a day-to-day basis.

PROJECT GOALS

- **Enhance productivity**
- **Increase flexibility of organization**
- **Maintain/improve quality and timeliness of work**
- **Enrich quality of work life**

The perceived deficiencies in the current system led to the development of five interventions, which will be discussed in the next several charts. The interventions have four broad goals. The first is to enhance organizational productivity by providing incentives and training that will help employees to work more effectively and to originate ideas on improving efficiency. The second, related goal is to increase the flexibility of the organization in making job assignments. This applies both to the day-to-day assignment of employees to where they are most needed to accomplish the work at hand and to the optimization of supervisor assignments. Improvements in organizational productivity and flexibility must not occur at the expense of work quality and timeliness. Thus, the preservation or, optimally, improvement of quality and timeliness through statistical process control, quality circles, and team building constitutes a third Project

goal. Finally, the Project seeks to enrich the quality of work life by creating a work environment in which individual and organizational goals are more compatible, opportunities to work on a variety of jobs are realized, and training opportunities are expanded.

JOB SERIES CONSOLIDATION

CHANGES

- **Reduce 39 GS series to 3 processes**
- **Reduce 27 FWS series to 2 processes**

DESIRED EFFECTS

- **Improved responsiveness to work/mission requirements in making assignments**
- **Expanded career and training opportunities**
- **Improved job classification process**

The next section of the Note describes the five interventions that constitute the Demonstration. The first intervention concerns the consolidation of 66 current job series into five broadly defined processes.³ This should greatly improve responsiveness to work and mission requirements by allowing an individual to be assigned to any job in a process for which he is qualified. It should also enrich the quality of work life through expanded career and training opportunities, because multiple skill training will be provided to take advantage of the flexibility in making job assignments. The intervention should improve the job classification process by substantially reducing the complexity associated with narrowly defined job series.

³"Management Analyst," "Management Clerk/Assistant," and "Program Analyst" are examples of current job series that will be consolidated into the "Management Operations Process."

PAY-BANDING

CHANGES

- **Reduce 15 GS grades to 4 pay levels**
- **Reduce 15 FWS grades to 4 pay levels**

DESIRED EFFECTS

- **Improved responsiveness to work/mission requirements in making assignments**
- **Reduced need for formal promotions**
- **Improved work force understanding of/satisfaction with pay decisions**
- **Increased pay comparability for blue and white collar workers**

The second intervention concerns pay-banding, a concept similar to that of job series consolidation. Fifteen current white- and blue-collar pay grades will be banded into four broad levels each. Again, a primary purpose of the intervention is to improve responsiveness to mission requirements by enabling individuals to work on any job within a pay level for which they are qualified. The need for formal promotions will be reduced, because they will apply only to movement across the four broad levels, instead of the more narrowly defined current grades. As a result, many individuals will realize greater salary potential. And understanding of pay decisions should improve, since a steady progression through the four pay levels will replace the current progression through grades and steps. Finally, the intervention should lead to increased pay comparability for blue- and white-collar workers. Comparability varies across the different ALCs, because blue-collar pay

is determined partly by prevailing local wages. Currently, some individuals at Sacramento with similar amounts of education and experience can make more money in blue-collar jobs than in white-collar jobs, raising concerns about job migration. The pay-banding intervention will reduce this imbalance.

REVISED SUPERVISORY GRADING CRITERIA

CHANGES

- **Place all supervisors in 1 job process with 4 pay levels**
- **Base pay on job responsibilities and difficulty, not number of subordinates**

DESIRED EFFECTS

- **Increased flexibility in assigning supervisors**
- **Less disinclination to recommend appropriate staff reductions**
- **Changed organizational structure**
- **Improved supervision of subordinates**
- **Increased dependence of pay on job responsibilities**

The third intervention consists of changes in supervisory grading criteria. All supervisors--whether blue or white collar--will be placed into the "Supervisory (job) Process," which will consolidate current differences in supervisory job series and pay schedules. Through the use of six classification criteria with several levels each, supervisors' pay will be based on their job responsibilities and the difficulty of executing those responsibilities, not on the number and grades of subordinates supervised. There are several desired effects. The intervention should increase organizational flexibility in assigning supervisors to the positions where they are most needed, by eliminating the need for a specific subordinate structure to be in place, and it should reduce supervisors' disinclination to recommend appropriate staff reductions. This in turn should lead to a more optimal organizational structure and improved supervision. Finally, by definition, supervisors' pay will become more dependent on their actual job responsibilities.

REVISED HIRING/RETENTION CRITERIA

CHANGES

- **Make new appointments to "Demonstration On-Call" Program**
 - **No automatic conversion to career status**
 - **No RIF requirements**
 - **10 day release/recall notification**

DESIRED EFFECTS

- **Increased capability to vary size of work force and retain key skills/personnel**
- **Reduce potential RIF costs**

The fourth intervention concerns changes in hiring and retention criteria. New appointments will be made to the Demonstration On-Call (DOC) program, which is a revision of the current on-call hiring authority. For DOC appointees, there will be no automatic conversion to career status after three years; the complex, formal Reduction in Force (RIF) procedures will not be required for termination if a RIF is mandated; and a ten-day release and recall notification period will be applicable. The principal desired effect of the Program is to increase the capability of the organization to rapidly vary the size of the work force in response to work load changes and to retain key skills and personnel. Potential RIF costs would also be reduced substantially. It should be noted that although conversion to career status after three years will not be automatic, the planned percentage of career employees will remain close to its pre-Demonstration level. Thus, most individuals should be eligible for conversion after three years, assuming the conversion is consistent with the needs of the organization at that time.

PRODUCTIVITY GAINSHARING

CHANGES

- **Assess quarterly labor cost for achieved level of output and compare with baseline**
- **Return half of any savings to Air Force**
- **Split other half equally among workers**

DESIRED EFFECT

- **Link pay with organizational performance**

The final intervention is a form of productivity gainsharing. This change goes hand-in-hand with the other interventions; it provides an economic, extrinsic incentive to Distribution employees that should help them and the Air Force realize the opportunities for greater productivity made possible by the accompanying changes in the personnel system and intrinsic motivators. Gainsharing will be based on a quarterly assessment of the labor cost for the actual level and mix of outputs achieved. The cost of producing that level and mix of outputs will be compared with an estimate of what it would have cost to produce the same output during the pre-Demonstration period. If it is determined that there are savings, half of the savings will be returned directly to the Air Force; the remaining half will be split equally among the workers in the form of equal dollar shares. The desired effect is to provide a direct connection between organizational

performance and individual compensation. Distribution's decision to pay equal shares to all employees is consistent with the organizational perspective advocated by Deming⁴ and practiced by numerous private companies. The payments will not be tied to individual performance appraisals--which will be eliminated--and will not provide an incentive for branches or divisions within Distribution to perform work of uncertain value or lower priority to the Directorate as a whole, in an attempt to maximize their own work load indicators. From a strictly practical standpoint, it may be noted that the organization approach also prevents problems concerning inequity of opportunity to earn gainshares within the Directorate. This is a potentially important issue, given possible differences in the ability of the individual divisions, branches, and sections within Distribution to control their own work loads.

⁴W. E. Deming, *Out of the Crisis*, MIT Press, Cambridge, Mass., 1987.

MEASUREMENT OF DEMONSTRATION OUTCOMES

- **Productivity improvement: lower operating costs**
 - **Projected versus actual costs**
 - **Estimates based on cost equations**

- **Organizational flexibility and quality of work life**
 - **Attitude changes among DS workers**
 - **Non-survey measures (e.g., multiple skill training, absenteeism)**

- **Quality and timeliness of work**
 - **Performance on AFLC-directed quality measures**
 - **Timeliness and support goals**

The final section of the presentation concerns the measurement of results. The above chart provides an overview of the measurement areas; additional detail follows. There are four broad areas in which the Demonstration's outcomes will be assessed, corresponding to the overall goals discussed earlier. The evaluation design is described in great detail in the *Federal Register* publications concerning PACER SHARE (see, in particular, Vol. 52, No. 224, pp. 44782-44810). In those articles, hypothesized effects and corresponding measures are presented for each intervention. We note that although it is possible conceptually to describe desired effects for each intervention, from an analytical standpoint outcomes can be attributed only to the Demonstration as a whole. This is because all five interventions are being carried out simultaneously. We thus discuss measurement of the Demonstration's outcomes by area, without regard to intervention.

The first measurement area, productivity improvement, relates to lower operating (i.e., personnel) cost for a given work load, because 90 percent of Distribution's operating budget deals with wages. Two approaches will be used to assess productivity improvement. The first compares the actual cost for a given work load with a projected cost that is derived from the pre-Demonstration relationship between actual and earned hours. This approach is being used by Sacramento to calculate gainshares. RAND's approach to assessment of productivity changes will be based on the computation of a series of cost equations. The two approaches will be discussed in more detail shortly.

The second and third measurement areas concern changes in organizational flexibility and the quality of work life. They have been grouped together because similar types of measures will be used to assess changes in the two areas. An extensive annual survey of the work force will assess perceptions of flexibility and quality of work life. A battery of non-survey measures--such as instances of multiple skill training and absenteeism rates--will also be used. We are fortunate in this Demonstration to have numerous hard data measures at our disposal to assess changes in the four areas.

Finally, RAND will conduct an independent assessment of the quality and timeliness of work. As indicated earlier, the interventions may lead to improved quality; at the very least, however, alleged improvements in productivity should not occur at the expense of quality and timeliness. The strategy will be to use Command-directed measures, so there will be a basis of comparison across the five ALCs. Two types of measures will be analyzed: quality indicators assessed routinely by the Quality Division of Distribution and measures of success in meeting timeliness and support goals compiled by the Management Division.

EVALUATION DESIGN

- **Demonstration site: SM-ALC**

- **Comparison group: Other ALCs**

- **Evaluation:**
 - **Demonstration period versus baseline**
 - **SM-ALC versus comparison group**

- **Directorates involved: Distribution, Personnel, Accounting and Finance**

The evaluation design is highlighted in this chart. The Demonstration site is Directorate of Distribution at the Sacramento Air Logistics Center. The Directorates of Distribution at the four other Air Logistics Centers collectively serve as a comparison group. Changes that occur during the Demonstration at Sacramento, as compared to the baseline, will be compared with changes occurring at the other ALCs during the same time period. In each measurement area, only those changes occurring uniquely at Sacramento will be attributable to the Demonstration. Changes occurring at the other ALCs will provide evidence of systemic effects.⁵ The directorates supplying data for the evaluation are Distribution, Personnel, and Accounting. All measures

⁵As described earlier, similar work loads, job standards, and personnel practices apply to all five ALCs. Specific differences in factors that affect job performance, such as the physical layout of the Directorate of Distribution, are accounted for through adjustments in

are defined in such a way that they will reflect both desirable and undesirable changes.

the times allotted for the performance of specific tasks, per Air Force standards. Moreover, by agreement with the Air Force, no unique policy changes will be applied to Sacramento during the Demonstration, nor will it be exempted from policy changes affecting the other ALCs. Finally, potential differences in the composition and compensation of the work force among the ALCs that could affect the outcome measures being evaluated will be controlled statistically in our analyses.

COST-SAVINGS MEASUREMENT: GAINSHARE APPROACH

- **Rely on actual and "earned" hour totals**
- **Determine baseline relationship of actual hours to earned hours at Directorate level**
- **Use relationship to estimate actual hours that would have been required for earned hours achieved under Demonstration**
- **Cost savings equals estimated actual hours X old average wage - true actual hours X new average wage**

As noted earlier, there are two approaches to measuring cost savings. The first is the gainshare approach that will be used by Sacramento. It relies on actual and earned hours at the Directorate level. Earned hours--a measure of work output--are based on the numbers and types of outputs produced, each of which is assigned a standard time for its accomplishment. The pre-Demonstration (FY87) relationship of actual hours to earned hours at Sacramento has been determined. During the Demonstration, this relationship will be applied to the earned hours for a quarter to estimate the number of actual hours that would have been required to achieve those earned hours. The cost savings is equal to the estimated actual hours times the old average wage rate less the true number of actual hours times the new hourly wage rate, adjusted for inflation. Thus, the formula accounts for changes in the relationship between actual and earned hours and in the cost of labor during the Demonstration.⁶

⁶The computation of cost changes and gainshare values using this approach is described at length in the *Federal Register* publication on PACER SHARE.

COST-SAVINGS MEASUREMENT: COST EQUATION APPROACH

- **Model actual hours as function of earned hours and work quality**
- **Estimate baseline equations for cost centers within Directorate of Distribution**
- **Estimate equations for comparison sites**
- **Use equations to determine cost savings**
 - **Predicted versus actual costs**
 - **Reestimation of equations**
 - **Comparison with other ALCs**

RAND's approach to the measurement of cost savings involves the estimation of equations that model actual hours as a function of earned hours and work quality during the pre-Demonstration period. The baseline equations will be estimated for the cost centers or branches within the Directorate. Moreover, similar equations will be generated for the comparison sites. Determining the extent of cost changes during the Demonstration will be an evolving process. In the short run, the baseline equations will be used to translate the actual level, mix, and quality of outputs accomplished into predicted costs, against which the actual costs may be compared. As time passes and more data are accumulated, the equations will be reestimated, providing a direct test of the statistical significance of apparent cost changes. In all cases, cost changes at Sacramento will be compared with changes at the other ALCs during the same time period.⁷

⁷The comparisons will be made in terms of changes in labor cost for a given level of output and quality, adjusted for inflation. The

Each of the two approaches has advantages. The gainshare approach relies on standard Air Force accounting procedures and, thus, is more readily understood and acceptable. It is also easier to compute, since it employs one overall formula. In contrast, the second approach requires the estimation of numerous equations. However, these equations provide a direct control for work quality (which must be dealt with separately in the gainshare approach); help to pinpoint the sources of savings within the Directorate and determine their statistical significance; and provide a means of distinguishing the operational cost savings at Sacramento from the comparative cost savings relative to the other ALCs.

precise forms of the equations and comparisons remain to be specified, because much of the baseline data required to estimate the equations are still being compiled by the Air Force.

MEASUREMENT OF INTERVENTIONS' EFFECTS ON QUALITY OF WORK LIFE AND ORGANIZATIONAL FLEXIBILITY

- **Develop survey with OPM to assess attitude changes among DS employees**
 - **Incorporate OPM core survey items**
 - **Develop unique items for Sacramento interventions**
 - **Use simple questions, Likert scale**

- **Assess changes on specific nonsurvey measures as compared to baseline period**
 - **Personnel Office records**
 - **Computer records for civilian work force**

The second and third measurement areas concern changes in quality of work life and organizational flexibility. Again, the two areas are grouped together based on the similarity of the types of measures that will be used. In each case, our approach consists both of survey results and hard data measures.

In concert with the Office of Personnel Management, RAND developed an extensive survey of attitudes in the work place. It incorporates numerous OPM core survey items, to provide comparisons with other demonstrations, as well as a variety of questions specifically tailored for PACER SHARE. For the most part, the survey consists of short statements followed by a five-point agree-disagree scale. The use of simple questions accommodates the variety of reading grade levels found within the Directorate and allows the inclusion of a greater number of items, increasing the coverage of attitudes.

The hard data measures of quality of work life and organizational flexibility are drawn primarily from two sources. Some of the measures are extracted from Personnel Office records, and must be tabulated manually or collected as part of the Personnel Office Productivity Assessment being undertaken by OPM. Fortunately, most of the measures are constructed from computerized information that is maintained for the civilian work force.

EXAMPLES OF SURVEY AREAS

- **Intrinsic work satisfaction**
 - **Extrinsic reward satisfaction**
 - **Pay-performance link**
 - **Organizational involvement**
-
- **Perceived ability to meet work load changes**
 - **Perceived staffing needs**
 - **Blue-white collar pay equity**

The above chart gives examples of the types of issues addressed in the survey. The upper group pertains to the quality of work life and the lower to organizational flexibility. Typically, individual survey questions will be grouped into more broadly based scales on the basis of both a priori hypotheses and exploratory analyses. (The *Federal Register* description of PACER SHARE provides a great deal of additional detail.) With respect to quality of work life, the survey addresses such issues as intrinsic work satisfaction (i.e., the level of satisfaction with nonpecuniary aspects of the job); extrinsic reward satisfaction; the perceived link between performance, effort, and compensation; and organizational involvement (i.e., the extent to which the individual feels personally responsible for the organization's performance and identifies with its goals). Organizational flexibility is addressed by questions concerning such issues as perceived ability to meet daily changes in work load; supervisors' perceptions of staffing needs; and perceptions of blue-white collar pay equity.

EXAMPLES OF NONSURVEY MEASURES

- **Nonretirement separation rate**
- **Absenteeism and leave rates**
- **Grievance rates**

- **Hours spent on routine personnel support**
- **Promotions**
- **Senior supervisor:mid-level supervisor:subordinate structure**
- **Multiple skill training**

The above chart provides examples of the hard data measures that will be used to assess quality of work life and organizational flexibility. Quality of work life indicators will include measures such as the nonretirement separation, absenteeism, and grievance rates, which should decrease over the long term if quality of work life is enriched. There are also a variety of measures that will be used to examine organizational flexibility, such as hours spent on routine personnel support, promotions, changes in organizational structure, and instances of multiple skill training. Hours spent on routine personnel support and promotions should decrease by virtue of the job series consolidation and pay-banding interventions; the supervisor-subordinate structure should change in response to the revised supervisory grading criteria; and instances of multiple skill training should increase, as a broader training base is provided to take advantage of the increased flexibility in making job assignments. It is important to note again, however, that all of the measures are two-edged swords, and will detect all changes, whether desirable or undesirable.

MEASUREMENT OF QUALITY AND TIMELINESS

- **Perform overall assessment to ensure quality and timeliness are maintained/improved**
- **Use measures required by AFLC to provide comparisons of quality changes across ALCs**
- **Focus on broad range of functions/indicators that are quantifiable and routinely evaluated**
 - **Materiel processing and receiving**
 - **Preservation, packaging, and packing**
 - **Locator accuracy**
 - **Transportation**
 - **Supply functions**
 - **Inventory actions**
 - **Reports of discrepancies**
 - **Monthly timeliness and support goals for issues/shipments**

The fourth and final measurement area concerns the quality and timeliness of work. The approach is to perform an independent, overall assessment to ascertain the extent of any changes. By focusing on Command-directed measures, we ensure that the measures cover a broad range of functions, are both quantifiable and routinely evaluated, and are available for all five Air Logistics Centers. The indicators cover the range of work performed within Distribution, including materiel processing and receiving; preservation, packaging, and packing; locator accuracy; transportation; supply functions; inventory actions; reports of discrepancies; and monthly timeliness and support goals for issues/shipments.

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