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GAO

**United States**
**General Accounting Office**
**Washington, D.C. 20548**

**General Government Division**

B-249779

March 30, 1993


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The Honorable Hazel R. O'Leary
The Secretary of Energy

Dear Madam Secretary:

Total Quality Management (TQM) is a management approach that strives to achieve continuous improvement of quality through organizationwide efforts based on facts and data. TQM also focuses business processes on meeting the needs of customers, both internal and external. Although TQM traditionally has been associated with private sector organizations and their efforts to remain competitive and profitable, in recent years federal organizations have been attempting to implement TQM to cope with budget restrictions and better serve the public.

We recently surveyed federal installations to determine the extent of their use of TQM and learned that 68 percent of the installations surveyed were implementing TQM.[1] An installation, as defined by the Office of Personnel Management, is a unit with a specifically designated head who is not subject to on-site supervision by a higher level installation head and who has been delegated some degree of authority in the performance of personnel management functions. Our survey covered over 2,800 installations, such as Internal Revenue Service Centers, Social Security offices, military depots; and Energy area offices and technical centers. Nineteen installations of the Department of Energy were included in this survey, and the purpose of this correspondence is to provide you a brief summary of the results as they apply to Energy as well as to compare Energy's results with the total results of all surveyed federal installations. We believe this information--particularly data on barriers to TQM--can be useful in your planning and as a baseline for judging future efforts.

[1]Quality Management: Survey of Federal Organizations (GAO/GGD-93-9BR, Oct. 1, 1992).

STATUS OF TQM

As figures 1 and 2 show, a significant number of government installations and Energy installations reported implementing TQM. Figure 1 shows that about 68 percent of the federal installations responding to our survey reported they were starting or already implementing TQM. Figure 2 shows 11, or about 58 percent of the 19 Energy installations responding to our survey, reported that they were working on various phases of TQM. Further, two of the Energy installations that reported they were not implementing TQM planned to do so in the future.

Figure 1: Percentage of Government Installations Implementing TQM

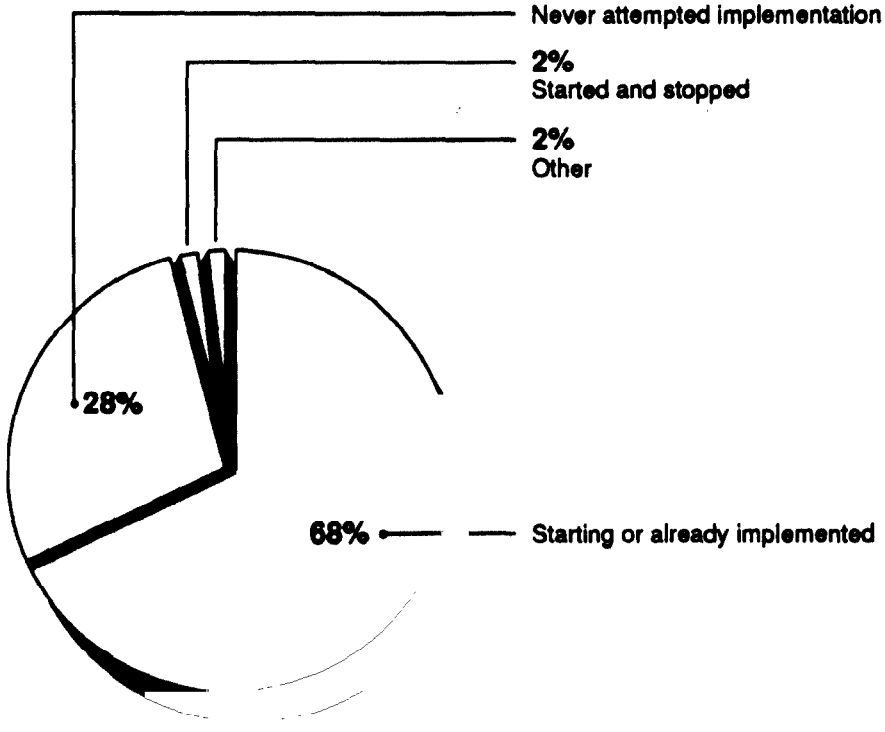
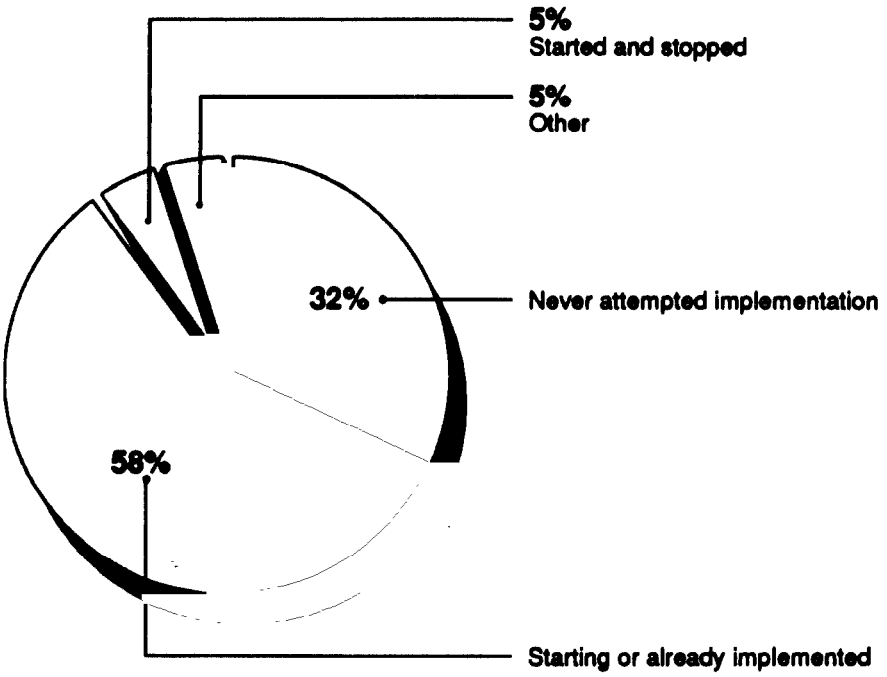
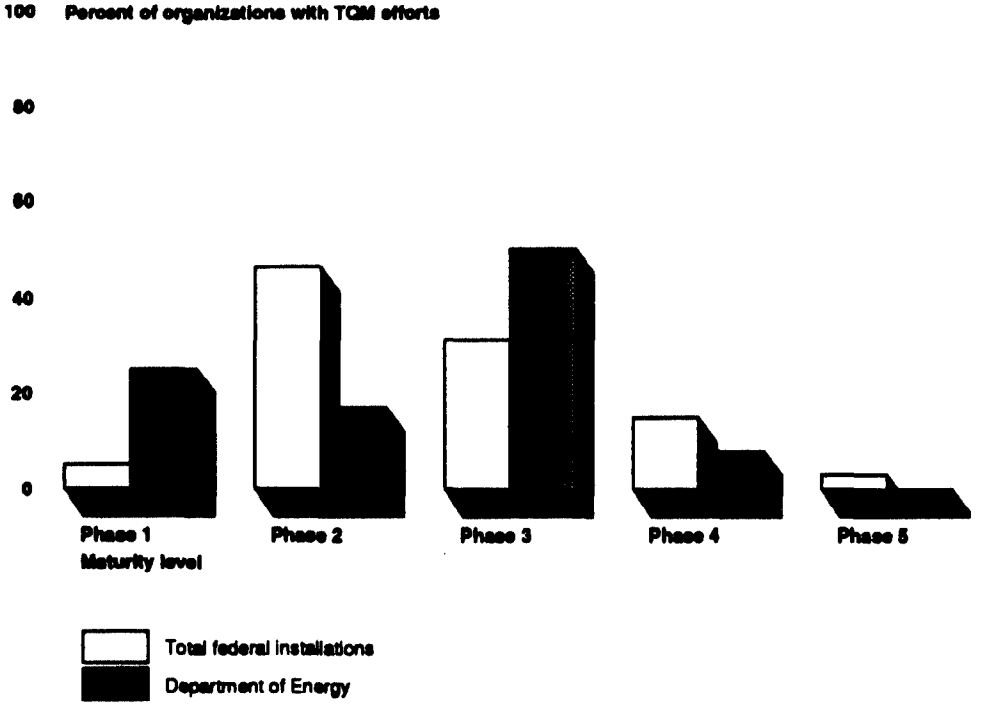


Figure 2: Percentage of Energy Installations Implementing TQM




To obtain a picture of the status of federal TQM efforts, we asked installations to report their efforts in terms of a five-phase maturity scale. Maturity definitions ranged from Phase 1, preliminary TQM efforts, to Phase 5, institutionalized efforts that are achieving significant benefits (see enc. I for definitions). As figure 3 shows, 51 percent of the total federal installations responding to the survey reported being in Phase 1 or 2, while five (42 percent) of the Energy installations reported still being in these early phases. None of the Energy installations reported being in Phase 5. The number of installations in the early phases may reflect the relative newness of Energy's efforts; 55 percent of the installations implementing TQM reported beginning TQM efforts within the past 2 years.

Figure 3: Status of TQM




In our survey of federal installations, we asked respondents about the extent of their involvement in 43 activities commonly undertaken by organizations involved in TQM. Such activities include providing training in TQM tools for employees, establishing quality councils or steering groups, and establishing problem-solving teams. Installations reported that their involvement in these activities increased as maturity increased. In other words, installations identifying themselves as more mature in TQM also more frequently said they were doing the 43 activities commonly associated with TQM.

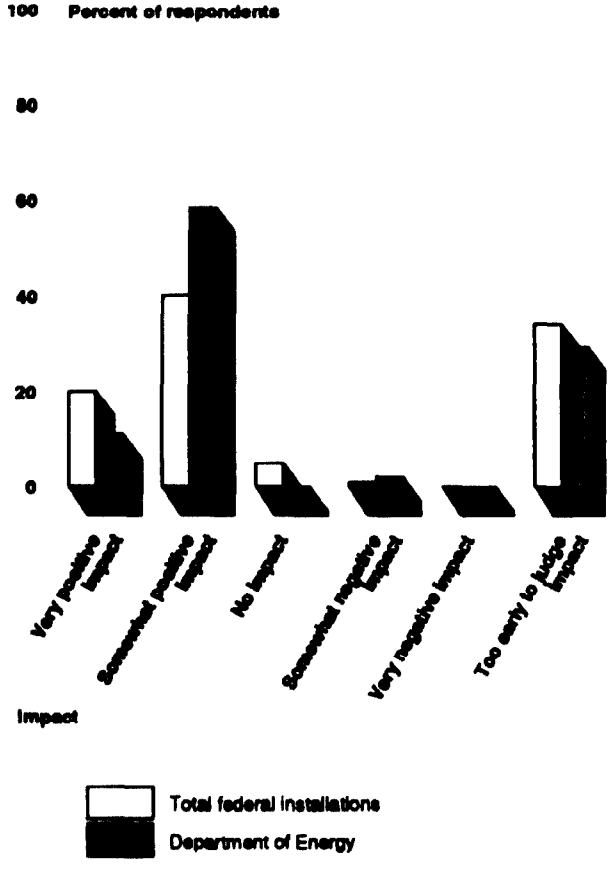
Comparing Energy installations' involvement in these activities with reported maturity phases, we discovered that Energy generally reflected the same trend as in the total survey--that

is, as Energy installations' maturity increased, they more frequently reported doing TQM activities. For example, one of five installations (20 percent) of the combined Phase 1 and Phase 2 Energy installations provided training in TQM tools for employees; whereas four of seven (57 percent) of the combined Phase 3 and Phase 4 Energy installations had such training. Also, none of the Phase 1 and 2 Energy installations reported having tools for assessing customer needs; whereas four of seven (57 percent) of the combined Phase 3 and 4 installations reported having such tools.

## BENEFITS OF TQM

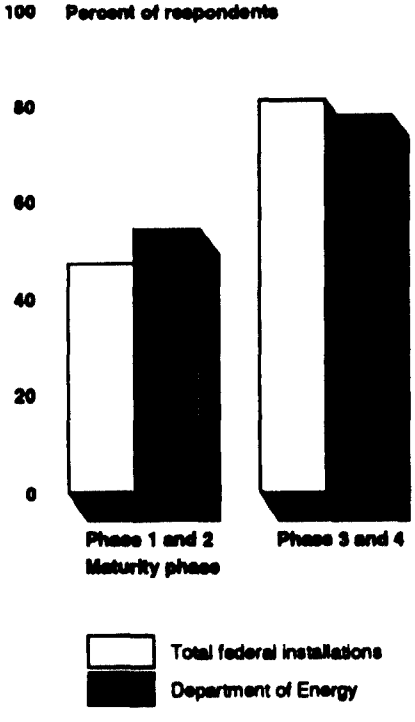
We considered benefits in two ways: (1) effect on external customers as reflected by overall organizational performance and (2) effect on internal customers as reflected by internal operating conditions. We asked respondents to assess TQM's effect on organizational performance in terms of productivity, reductions in costs, quality of products and services, overall service to customers, customer satisfaction, and timeliness. To depict the overall impact, we developed an index that is the average of responses to our questions on the degree of impact. Figure 4 compares the organizational performance index for Energy and total federal responses and shows that over two-thirds of the responding Energy installations reported positive benefits, very few saw negatives to TQM, and almost a third felt it was too soon to judge benefits. These results were similar on an overall basis to the total federal survey results, although as figure 4 shows, the majority of the Energy Department benefits were judged to be "somewhat positive." This was higher than the total federal survey average.

Figure 4: Impact of TQM on Performance



Reported benefits increased as maturity increased. We compared the composite index of responses on external benefits with maturity phases and learned that more mature installations reported greater benefits. Figure 5 shows, for combined Phase 1 and 2 and for Phase 3 and 4 installations the percent of total federal respondents and Department of Energy respondents who reported somewhat positive to very positive benefits.[2]

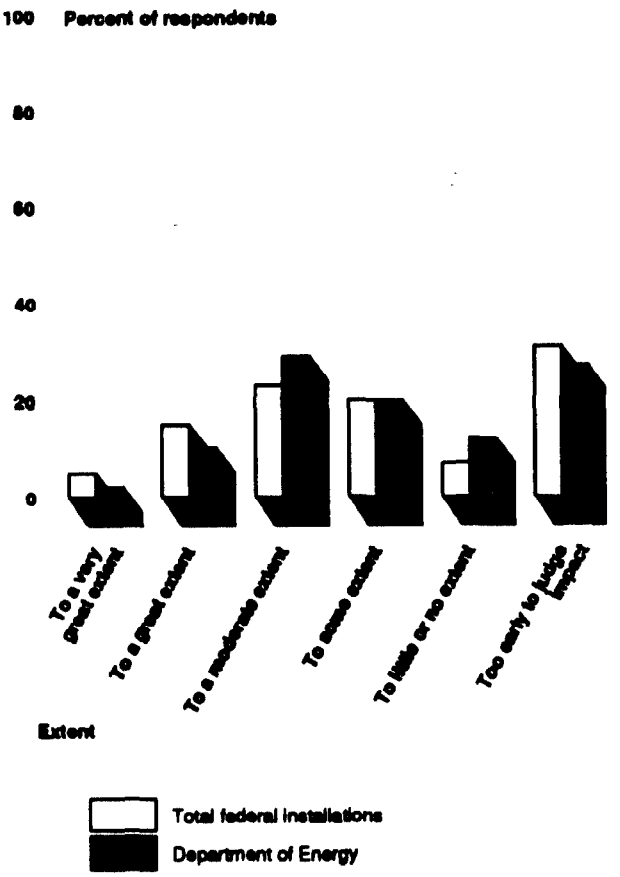
Figure 5: Respondents Reporting Increased Organizational Performance




[2]As shown in figure 5, none of the Energy installations reported being in Phase 5. We combined phases because of the small number of Energy installations reporting in each phase.

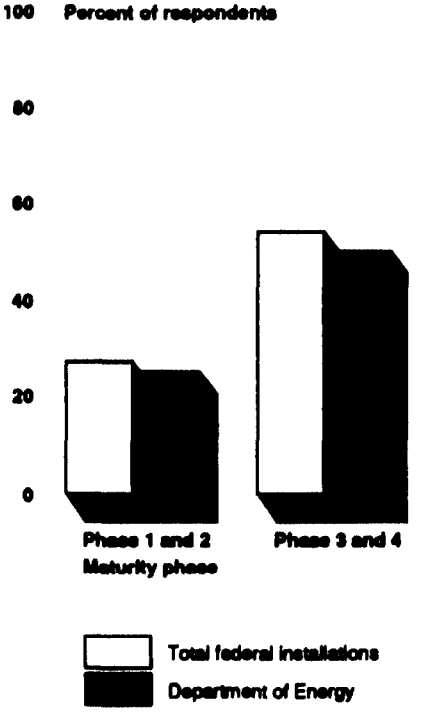
For internal operating conditions, we asked the installations to identify the impact of TQM on each of 13 internal operating conditions, such as communications and labor-management relations. To illustrate the benefits, we developed an index in the same manner as for the organizational performance indicators. Figure 6 compares Energy and total federal responses and shows that Energy installations generally reported slightly less positive benefits than the total of all surveyed federal installations.

Figure 6: Extent of Positive Impact on Internal Operating Conditions



In a manner similar to the overall organizational benefits, we compared the composite index of benefits with maturity phases and noted that reported internal conditions improved as maturity increased. Figure 7 shows the percent of Energy and total federal respondents reporting a moderate to very great positive impact, for combined Phase 1 and 2 and for Phase 3 and 4 installations.[3]

Figure 7: Respondents Reporting Positive Impact on Internal Operating Conditions



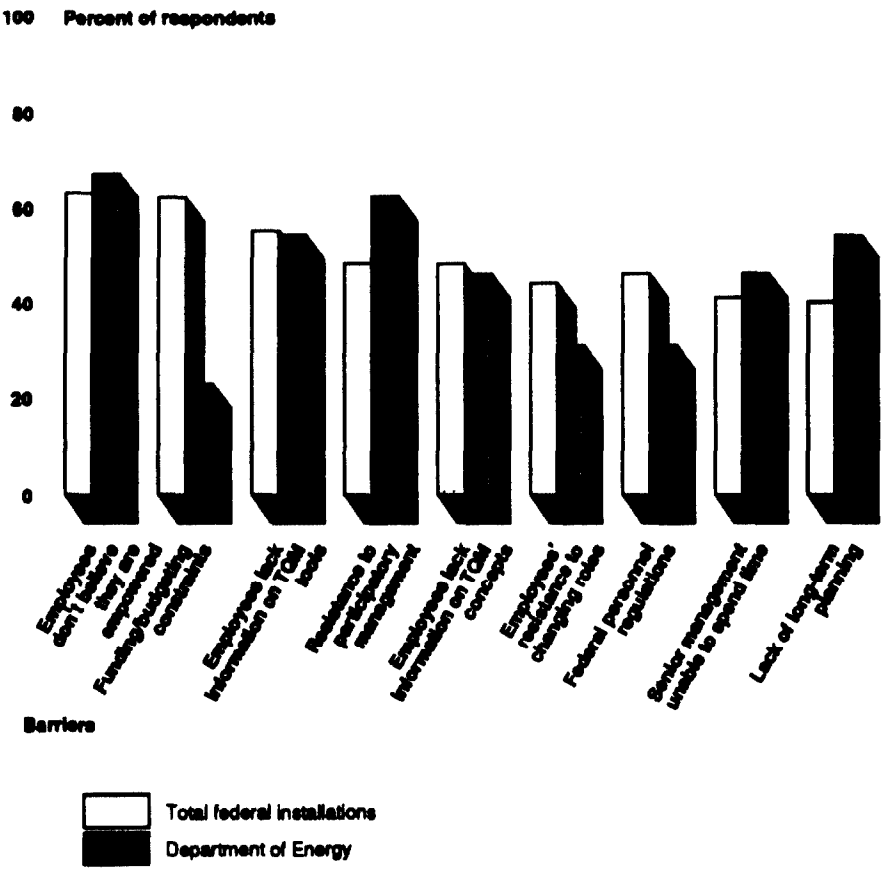

[3]As shown in figure 7, none of the Energy installations reported being in Phase 5. We combined phases because of the small number of Energy installations reporting in each phase.

BARRIERS TO TQM

We asked all the federal installations we sent our recent survey to about the significance of 21 potential barriers to implementing TQM that had been identified through our research. Nine barriers were said to be moderate to very major problems by 39 percent or more of the total federal respondents. As figure 8 shows, the replies from Energy respondents were not always consistent with the category of barriers identified by the total federal survey and the extent of the impact of these barriers. Energy respondents identified six of the same top nine barriers as the total federal survey; however, as figure 8 shows, clearly not in the same priority. Although the top barrier (employees do not believe they are empowered to make changes) was the same as in the total survey, the second most important in the total survey (funding and budgeting constraints) was ranked number 17 (out of 21) by Energy respondents. Four different barriers in the top nine identified by Energy respondents and the percentage identifying them as a significant barrier were (1) management unfamiliar with measurement--62 percent, (2) resistance to measuring processes--54 percent, (3) disconnect between strategic plans and TQM plans--50 percent, and (4) difficult to measure customer satisfaction--46 percent.

It should be noted that three of the top nine barriers were related to employee issues, such as (1) employees do not believe they are empowered to make changes, (2) employees lack sufficient information on how to use TQM tools, and (3) employees lack information and training on TQM concepts and theory. Also, Energy respondents identified measurement difficulties as an overall barrier issue.

Figure 8: Respondents Reporting Barriers Are Moderate to Very Major Problems to Implementing TQM




In our report on the total federal survey, we noted that respondents indicated that barriers became less troublesome as organizations increased in TQM maturity. In the same manner as total federal respondents, Energy respondents reported that the barriers became less significant as their TQM efforts matured. For example, of the combined Phase 1 and 2 Energy installations, four of five (80 percent) reported that employees' lack of

information on TQM tools was a significant barrier (moderate to very major degree); whereas three of seven (43 percent) of the combined Phase 3 and 4 Energy installations held that view. In a like manner, four of five of the combined Phase 1 and 2 installations reported the lack of long-term planning as a significant barrier, but only three of seven of the combined Phase 3 and 4 reported it as a significant barrier.

SUMMARY

Our survey of federal TQM efforts indicated that as installations invested more time and effort in TQM activities, they matured in the implementation of TQM, found that the barriers became less difficult, and reaped greater benefits. Although some differences were reported between Department of Energy TQM experiences and those of all federal respondents, overall Energy respondents' message generally appeared to be similar.

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We have enclosed a copy of our report Quality Management: Survey of Federal Organizations (GAO/GGD-93-9BR, Oct. 1, 1992) to provide information on the background; results; and objective, scope, and methodology of the total survey.

We hope you will find this information useful in guiding your quality management initiatives and in improving service to your customers under today's budget constraints. We will make copies of this correspondence available to others upon request.

The major contributors to this correspondence are listed in enclosure II. If you have any questions, please call me on (202) 512-8387.

Sincerely yours,

J. William Gadsby
Director, Government Business
Operations Issues

## PHASES OF TQM IMPLEMENTATION

### PHASE 1 - DECIDING WHETHER TO IMPLEMENT TQM

Management is researching or deciding whether to implement TQM, but no formal decisions or activities have been initiated by top management. A few employees may have attended quality conferences or network meetings, but the installation as a whole has yet to be informed or involved in a TQM project.

### PHASE 2 - JUST GETTING STARTED

TQM efforts are in the early planning and implementation phase. Management has made a formal decision to start TQM and has communicated this to the organization. The organization's mission and vision have been articulated. A few quality structures, such as quality councils, steering committees, or teams, have been established, and some awareness training has been given. Preliminary quality planning has been done. Pilot programs or newly initiated installationwide efforts to improve quality are included in this phase.

### PHASE 3 - IMPLEMENTATION

Specific TQM processes designed to improve quality are in place. TQM training for management and employees is beyond the orientation/awareness stage and focuses on TQM tools and techniques and team-related activities. Measures of quality and productivity have been identified and specific goals have been set.

### PHASE 4 - ACHIEVING RESULTS

The installation has a sustained TQM effort and has begun to achieve and document significant results. Systemic, cross-functional, and/or organizational achievements from the TQM effort have been realized.

PHASE 5 - LONG-TERM INSTITUTIONALIZATION

The installation has incorporated all of the principles and operating practices of TQM throughout much of the organization. The installation has documented substantial improvements in quality and customer satisfaction resulting from these efforts and is making consistent and continuous improvement throughout. An installation in this phase may have been recognized as a Quality Improvement Prototype Award winner or may be a recipient of the President's Award for Quality.

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