Graduate Project

WKHOURS

Submitted to the Computer Science Department
Corpus Christi State University

by

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April 10, 1983

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ABSTRACT

The purpose of this project was to design and produce an automated system for recording employees' non-regular (i.e., other than Monday-Friday, 8 a.m.-5 p.m.) work-hours and their work-hours lost. WKHOURS was designed to replace an existing manual record-keeping system and to extend the existing system to include production of several reports needed by management to aid in making decisions on utilization of the work-force. Target/test group for the project was the Works Engineering Department of Potomac River Works, E.I. DuPont de Nemours, Inc., in Martinsburg, West Virginia. Specifics for the various reports needed by management and information on user needs were provided by the Assistant Superintendent of Works Engineering at Potomac River Works. Output produced by the system includes the six reports requested by the user-contact, plus two reports which advise the user of updates and changes as they are made to the employees' records.
BACKGROUND

Potomac River Works, which manufactures explosives for use in the coal-mining industry, employs approximately 400 workers at present. The Works Engineering Department is a maintenance group for the Potomac River plant, and consists of approximately 50 skilled technicians, including instrument and electrical technicians (mechanics, electricians), millwrights (carpenters, pipefitters), machinists, welders, and trainees. The employees in the department are grouped by work-area assignment into five work-groups, each with its own supervisor.

Under the current manual record-keeping system for non-regular work-hours and work-hours lost, each work-group supervisor records on time-cards his/her workers' overtime, short-term shift hours, and lost hours (i.e., hours lost from work due to disability, vacation, death in the family, or other time-off with, and without pay). From this information, one of the supervisors manually computes total overtime worked and refused by each worker and sorts the totals to produce an "overtime list." This list of employees, in ascending order by hour-total, specifies the order in which

1 "Short-term shift" refers to a temporary change in work assignment to a shift other than regular day-shift, which can result in certain circumstances in the employee being paid a shift-differential.
2 Potomac River Works has the following overtime policy: in order to be as equitable as possible in giving workers the opportunity to work overtime (at 1½ times their regular wage rate), overtime is determined to have occurred when the worker is asked to work. The number of hours charged as a refusal is based on the actual overtime hours worked by the employee who accepted the assignment. In this way, the next workers asked to work are those who have been approached less often.
workers are to be asked to work overtime. Clerical staff manually pro-
duces the seniority list, a list of all department employees in chrono-
logical order by adjusted-service-date (date of hire), by searching through
personnel folders for the dates and then sorting the list.

Potomac River Works does not currently have a computer system on-plant.
Due to current cost-control strictures, local management is uncertain at
present as to what data processing equipment will be authorized for pur-
chase in the near future. There exists the possibility that the plant may
be permitted to tie in via remote terminals to corporate headquarters, but
no progress has been made in that regard to date. Wkhours was therefore
designed to be modified to adapt to the specific hardware ultimately in use
at Potomac River Works.

The user-contact indicated that the department (and by extension, the
plant as a whole) needs a faster, more efficient method of producing over-
time lists (and seniority lists, though the latter are required less often).
The same method would produce a similar list for short-term shift availab-
ility, another department/plant need. Per the user-contact, the department
/plant also needs statistical information, not currently available due to
lack of clerical support for the manual compilation of the information, on
work-force performance. Specifically, statistics are needed on a monthly
basis to show work-groups' totals and rates for overtime, disability, and

"other" time-off; these totals and rates would be compared with the depart-
ment as a whole and with the work-groups' previous years' performances.
This information would provide "progress reports" on the various work-
groups in terms of cost-containment (keeping overtime and lost work-hours

3 "Other" time-off signifies work-hours lost for reasons other than for
disability or vacation leave.
to a minimum) and safety record (company policy is very stringent in its requirement for producing its product as safely as possible), and would provide management with a method of evaluating current work-force utilization (e.g., showing where reassignment of workers may be needed).

At year-end (December 31), statistics are needed to show workgroups' totals and rates for short-term shift hours worked, just as the monthly reports show overtime, disability and "other" time-off totals and rates. A current seniority list would be produced at year-end as well.

Statistics are needed for evaluating individual employees' performances during the year. Employees' total overtime worked and refused, short-term shift hours worked, disability leave taken, vacation taken, and "other" time-off taken would be reported and compared with the average for the department as a whole. The specific dates and hours contributing to each of the totals also would be listed. This information, provided at the time of each employee's yearly performance review and at year-end, or at a supervisor's request if an employee has an apparent attendance problem, would be an objective accounting of employee attendance and of extra work-hours, and would aid supervisors in determining employee performance ratings.