Title: Process Improvements Possible in the Longview Reduction Maintenance Control Dispatch Process

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Abstract: This study looked for process improvements that might be possible in the Longview Reduction Maintenance Control Dispatch Process using advanced engineering management techniques.

Process Improvements That Might be Possible in the Longview Reduction Maintenance Control Dispatch Process

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I. The purpose of this study is to look for process improvements that might be possible in the Longview Reduction Maintenance Control Dispatch process.

II. The nature of the problem:

Background - Historically Maintenance Control's function has been to coordinate maintenance activities for the plant. The basic day-to-day responsibilities include processing written maintenance requests, maintaining maintenance cost records, equipment history, providing maintenance data as required, and act as the communications relay center (Dispatch Center) for verbal maintenance requests. These verbal requests enter Maintenance Control by telephone, two-way radio, or walk-in and then are relayed to the responsible craft or supervisor usually by radio or intercom page. Maintenance Control is currently staffed with three maintenance coordinators.

Due to a salaried employee early retirement program offer, two people retired at the end of February, 1993. These retirements directly affected the workload of Maintenance Control. They were the maintenance secretary and a data processing operator. These positions were not allowed to be back filled and therefore, parts of their duties were redistributed to Maintenance Control.

The redistribution of duties included having to absorb the telephone calls that used to be the maintenance secretary's responsibility and take over data entry responsibilities of hourly maintenance employee craft time distribution cards. The data was previously entered by Data Processing.

From the maintenance coordinators perspective, too much time is now being spent acting as "middle men" to random incoming verbal requests.

III. Continuous Improvement Tools Used

- Brainstorming - Brainstorming was used to solicit team members ideas for continuous improvement projects.
- Consensus decision making - to establish team member ownership of project selection.
- Flow Charting - This is to acquire more understanding of the Maintenance Control dispatch process steps.
- Pareto Chart Analysis - Used to identify and rank the most common type of incoming requests.
- Time study - Amount of time required to complete incoming requests - This was intended to measure the amount of time it took the maintenance coordinator to complete each verbal request and establish relative times for the different types of incoming verbal requests. These times could then be compared to help prioritize the type of request to focus on.
- Basic Statistics - Used to quantify the data that was collected ie: Time study and Daily Service Request Log Sheets.

IV. Procedures

STEP 1 Project discussion started with a verbal brainstorming session with the Maintenance Control coordinators to solicit ideas and to choose an improvement project. The two "Hot Topic" areas that were discussed the most were the data entry of craft time distribution cards and the increased workload in the dispatch area. All agreed that the project that would have the most chance for successful completion within short time constraints would be in the Maintenance Control dispatch process. Discussions continued about what area of the dispatch process should be examined and it was decided to narrow our focus on the dispatch process involving incoming verbal maintenance requests.

STEP 2 From the maintenance coordinators experience, the basic types of verbal requests were identified and it was decided that the requests generally fell into the following categories.

1. Maintenance teamster dispatch which includes forklift and mobile crane jobs.

2. Shift Electrician - equipment lockouts and unlocks for the individual maintenance crafts before and after maintenance work is done.

3. Individual requests for maintenance crafts
a. electricians
b. millwrights
c. oilers
d. pipefitters
e. welders
f. auto mechanics

4. Telephone answering services for the 11 maintenance supervisors and 8 maintenance engineers when they are away from their desks or are talking on the phone. (the majority of these calls were answered by the maintenance secretary)

5. Miscellaneous - message relaying services for non-maintenance personnel.

What was not known was the distribution of requests per category, the amount of time spent per request, or the distribution of how they were received.

All opinions at this point were based on experience, intuition, and approximations but no "hard" data to support any opinions.

STEP 3 Phase 1 Data Collection Definition
It was decided we needed to know what were the quantities of incoming verbal requests per day and how they were received.
The data collection method decided upon was to log the incoming verbal requests on a sheet of paper. Since most incoming verbal requests required jotting down notes that were used during the "relay" phase of dispatch anyway, this caused minimal change in the existing process.

STEP 3 (cont) Additional information that was recorded was whether the incoming request was by telephone or radio. This was designated by the letter "T" for telephone or an "R" for radio. (See Appendix 1 for samples of verbal request log sheet). Phase 1 Data Collection occurred 4/28/93 through 5/21/93.

STEP 4 The process flow chart was developed during the data collection phase. (See Appendix 2 for flow chart).

STEP 5 Evaluate the initial data collection log sheets and establish the following categories and category code numbers:

CATEGORY	CODE NUMBER
Teamster (Telephone)	1
Shift Elect.	2
Maint. Supv.	3
Other Maint.	4
Maint. Radio	5
Teamster (Radio)	6
Misc.	7

STEP 6 Assign category code numbers to data and begin input of data into StatGraphics 5.1

STEP 7 Analyze Phase 1 Data with StatGraphics 5.1. (See pareto charts in Appendix 3).

STEP 8 Develop Phase 2 time study sampling form on Lotus 1-2-3 and begin data collection. (See form and sample data collection sheets in Appendix 4). The time study was conducted 5/26/93 through 5/28/93.

STEP 9 From the Phase 2 time study data collection sheets, The times were manually sorted and recorded into the 7 identified categories. (See Appendix 5 for data). This was done to facilitate easy data entry into StatGraphics 5.1.

STEP 10 Input the Phase 2 time study data into StatGraphics 5.1 and perform basic statistical analysis. (See Appendix 6 for analysis data).

STEP 11 Making the assumption that the average times obtained from the time study for each request category could be used as a standard, the previous 18 days worth of data collection was analyzed. The average number of calls per day was calculated and the average amount of time spent on incoming verbal requests was calculated. (See Appendix 7 for calculations).

V. Results Summary

Maintenance now has some "hard" information with respect to incoming verbal maintenance request types and time spent processing the requests. The study provided data that indicates an approximate 27% increase in time workload due to the retirement of the maintenance secretary. This represents the supervisors category. This translates into approximately 53 minutes that can no longer be used in other maintenance control processes. When the supervisor category is combined with the teamster telephone and radio categories, we now have accounted for approximately 53% of the total 3.3 hours spent dispatching incoming verbal maintenance requests or approx. 1.75 hours. It should be noted that this does not factor in any intangibles due to the maintenance coordinators broken "train of thought" or other frustrations caused by having to respond to the incoming request.

VI. Continuous Improvement Plan

The maintenance coordinators will not believe there has been any improvement unless it can be measured by a reduction in the amount of time spent processing incoming verbal maintenance requests. With this goal in mind, the obvious strategy would be to push out of maintenance control as much of the answering services that the maintenance coordinators are providing as possible. The plan that will be suggested will be to provide answering machines for the maintenance supervisors and engineers. Voice mail was investigated but was eliminated because of its high cost. Investigate the feasibility of an answering machine specifically for the teamsters telephone requests. There are union issues involved in this suggestion that would need resolution.

VII. Conclusions

Due to the time constraints of the project, There is still useful information that can be gotten from the existing data collection sheets. This information would be the type of response that the request invoked ie: immediate, message, or page. Also, the time study accuracy could be increased by utilizing a stop watch instead of a wristwatch or wall clock.