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ALMD5709460092

MOUND LABORATORY-MONSANTO
Central File No. 57-9-46

AL5709460092

September 19, 1957

Dr. J. H. Roberson, Area Manager
U. S. Atomic Energy Commission
P. O. Box 66
Miamisburg, Ohio

Dear Dr. Roberson:

A study has been made to determine capacities for 1EB6 detonator production at Mound Laboratory. These estimates are based on operating experience gained since April, 1957, which was the start of detonator manufacturing at Mound.

The attached report contains the results of this study but it is desirable to point out the following:

Personnel estimates prepared for this report include direct personnel only. If any of these operating conditions are to be reached, it will be necessary to add maintenance, service, and other indirect personnel.

Due to lack of time in preparation no effort has been made to estimate operating or unit costs under these conditions.

While we have estimated expenditures for additional capital equipment, this report does not include additional costs to modify or alter existing buildings to provide more locker room space.

The operation of a 3-shift work day at Mound presents certain policy problems. Under these conditions we can obtain only a 37 1/2 hour work-week from the hourly employee, and the method of payment for this would have to be resolved.

MOUND DECLASSIFICATION REVIEW
DATE 4/1/98
AUTHORITY ☐AOC ☐ADC ☐ADD
NAME T. M. FRAUGHAN
2ND REVIEW-DATE 4/15/98
AUTHORITY ☐AOC
NAME D. B. Rotay
DETERMINATION (CIRCLE NUMBER(S))
1. CLASSIFICATION RETAINED
2. CLASSIFICATION CHANGED TO
3. CONTAINS NO DOE CLASSIFIED INFO
4. COORDINATE WITH:
5. CLASSIFICATION CANCELLED
6. CLASSIFIED INFO BRACKETED
7. OTHER (SPECIFY):

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September 19, 1957

Capacity Studies

Introduction

A study has been made to determine detonator production capabilities at Mound Laboratory under various operating conditions. In all cases the limiting factor is the molding of 1026 heads and other operations have been estimated to operate at this same level.

The operating conditions studied were:

1 - shift, 5-day work week,
2 - shift, 5-day work week,
3 - shift, 5-day work week,
3 - shift, 6-day work week, and
3 - shift, 7-day work week.

All personnel estimates are for direct operating personnel and do not include development personnel or personnel to operate the plastic production facility.

Basic General Assumptions

The following assumptions pertain to all cases:

1. We shall add molding press or presses sufficient to operate 5 presses per shift.

2. Reject rates in all departments are based on the average rate for production during August, 1957.

3. Capacities are expressed in terms of numbers of detonators transferred to the AEC, excluding test-firing samples, 30-hour cycle samples, and BMLC samples.

4. Expenditures estimated in this study are for additional capital equipment only.

Case I - 1-shift, 5-day work week

A. Results

1. Output - 16,250 detonators/month

2. Personnel - 145

3. Additional capital equipment - $15,000

B. Discussion

1. One additional molding press will be required to insure 5 presses working each day.

2. The capacity quoted for this condition is less than our design capacity of 1,000 detonators per day because:

a. The design capacity of 1,000 detonators/day included test-firing and other samples while the capacities quoted in this study do not.

b. At the time of design it was estimated that we would have a higher per cent yield from molded heads than we are getting at the present time. We believe that the switch to Hunal produced molding compound will improve this yield and that production capacities will be correspondingly higher.

Case II - 2-shift, 5-day work week

A. Results

1. Output - 32,500 detonators/month

2. Personnel - 231

3. Additional capital equipment - $15,000

B. Discussion

1. The rate of production on 2 shifts is exactly double that of one shift.

2. One additional molding press will be required to insure 5 presses working each shift.

3. It will require 6 month's advance notice to obtain and train additional personnel before this level of production can be attained.

Case III - 3-shift, 5-day work week

A. Results

1. Output - 43,000 detonators/month

2. Personnel - 314

3. Additional capital equipment - $30,000

B. Discussion

1. The rate of production on 3 shifts is not triple one-shift production. This occurs because it is not possible to [illegible] 3 complete 8-hour shifts plus lunch time in a 24-hour period.

2. It is necessary to add one molding press and one temperature-cycling cabinet at this production level.

3. It will require 6-month's advance notice to obtain and train personnel before this level of production can be attained.

Case IV - 3-shift, 6-day work week

A. Results

1. Output - 52,000 detonators/month

2. Personnel - 314

3. Additional capital equipment - $60,000

B. Discussion

1. The production level for these conditions is 20 per cent higher than Case III.

2. It will be necessary to add 2 molding presses and 2 temperature-cycling cabinets at this production level.

3. It will require 6 month's advance notice to obtain and train personnel before this level of production can be attained.

4. It is assumed that the sixth day will be an overtime day and that no additional personnel beyond Case III will be required.

Case V - 3-shift, 7-day work week

A. Results

1. Output - 60,000 detonators/month

2. Personnel - 489

3. Additional capital equipment - $75,000

B. Discussion

1. The production level for these conditions is 40 per cent higher than Case III.

2. Personnel requirements are increased considerably because it is assumed that each person will work only 5 days per week, necessitating rotation of personnel.

3. It will be necessary to add 2 molding presses and 3 temperature-cycling cabinets at this production level.

4. It will require 6 month's advance notice to obtain and train personnel before this level of production can be attained.

Summary

Although the results of this study indicate that a 3-shift, 6-day week would be required to produce a net schedule of 50,000 detonators per month, we feel that this quantity could be produced on a 3-shift, 5-day week provided:

1. The present head reject rate is reduced to 20 per cent or 2 molding presses are added.

2. Two additional temperature-cycling cabinets are installed using the area where cables are now stored. This may not be necessary if we are allowed to cycle on a sampling basis which we feel is quite possible.

3. Add personnel to other departments to reach this level of production.

In all cases except Case I it will be necessary to supply additional lockers. Space is available in the "E" Building but additional space will have to be provided in the "I" Building. This additional space will require construction or alteration money which is not included in this study.

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4 R. L. Spaulding, GMX-7, LASL
5 E. C. McCarthy, Mound Laboratory
6 D. L. Scott, " "
7 J. E. Bradley, " "

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Ltr. to Dr. J. E. Roberson Sept. 19, 1957

The last page of the attached report contains a bar graph summarizing the results of this study in relationship to the present Mound schedule.

Any additional information will be supplied upon request.

Very truly yours,

Edw. C. McCarthy

Edward C. McCarthy
Plant Manager

JEB:vrg

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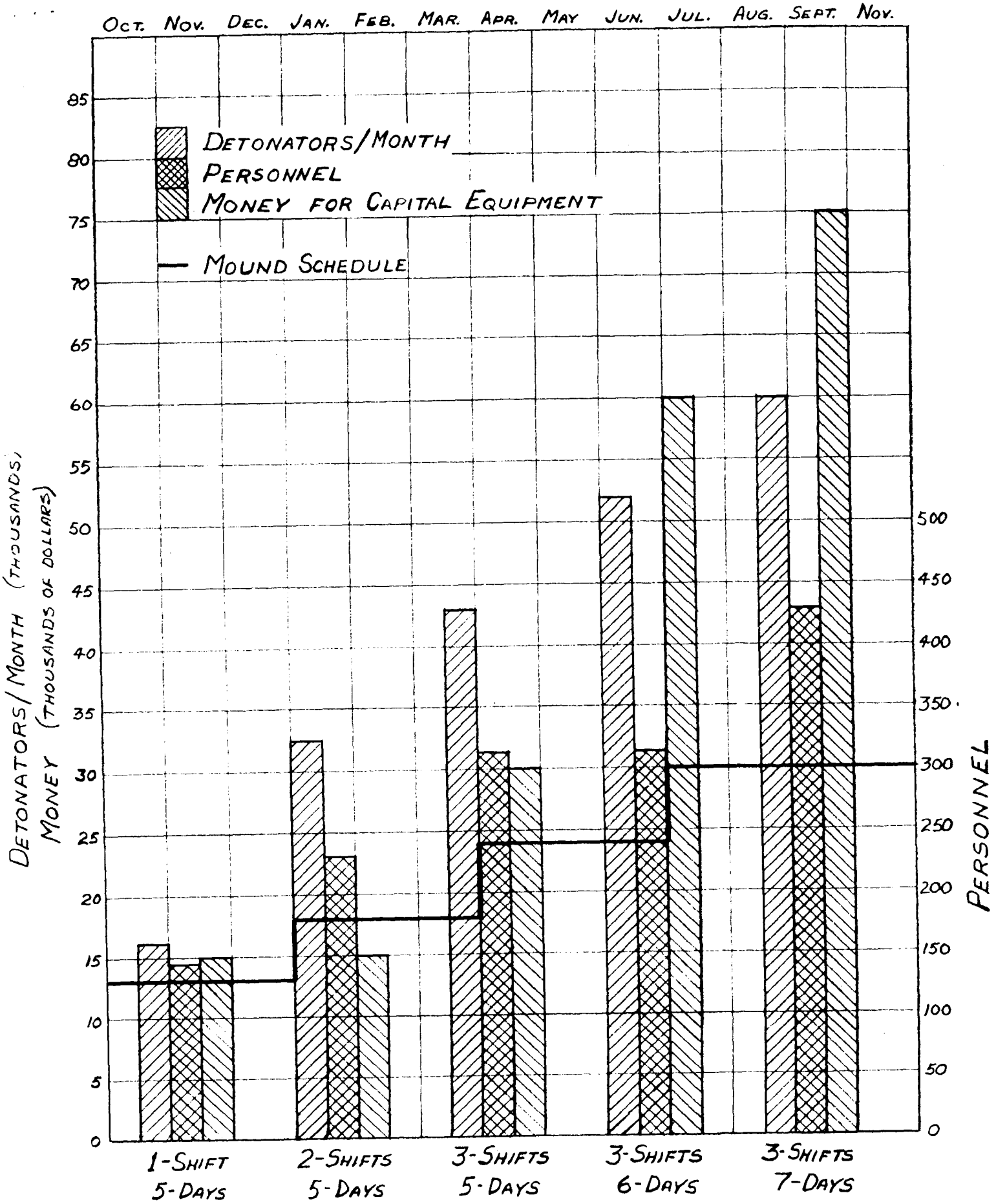
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DETONATORS/MONTH
PERSONNEL
MONEY FOR CAPITAL EQUIPMENT
MOUND SCHEDULE
DETONATORS/MONTH (THOUSANDS)
MONEY (THOUSANDS OF DOLLARS)
PERSONNEL
0
5
10
15
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25
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1-SHIFT 5-DAYS
2-SHIFTS 5-DAYS
3-SHIFTS 5-DAYS
3-SHIFTS 6-DAYS
3-SHIFTS 7-DAYS