

W.B. Creamer
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MOUND LABORATORY-MONSANTO
Central File No. 59-10-107

October 21, 1959

Mr. W.B. Creamer, Area Manager
U.S. Atomic Energy Commission
P.O. Box 68
Miamisburg, Ohio

Dear Mr. Creamer:

Plastics Production at Mound Laboratory

Ref: Memo Ralph P. Johnson to W.B. Creamer
September 23, 1959

The following information is supplied for your consideration in arriving at a decision concerning plastics production at Mound Laboratory, as referred to in the reference memorandum.

After a full analysis of all factors, we strongly recommend that plastics production at Mound proceed as originally planned. Justifications for this recommendation are outlined below.

Basically, the original circumstances prompting the authorization of construction of the plastics shop in 1957 still exist.

- 1. Good commercial molding powders have not been obtainable to date from known sources of supply.

This still applies, however is dependent on interpretation of "good commercial molding powders." It is our firm believe that high and variable rejection rates on material are detrimental to quality of final product, result in excessive cost, and promote scheduling and management problems.

- a) There is at the moment only one supplier.

GROUP 1
Excluded from automatic
downgrading and
declassification

RESTRICTED DATA
[Handwritten signature]

W.B. Creamer

MOUND DECLASSIFICATION REVIEW
1ST REVIEW DATE: 10/21/59
AUTHORITY: W.B. Creamer
NAME: W.B. Creamer
2ND REVIEW DATE: 10/21/59
AUTHORITY: W.B. Creamer
NAME: W.B. Creamer
1. CONTAINS NO FOR CLASSIFIED INFO
2. CLASSIFICATION CHANGED TO
3. CLASSIFICATION CANCELLED
4. COMMENTS WITH
5. CLASSIFIED INFO BLACKETED
6. OTHER COMMENTS

SECRET

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- b) Quality continues to be erratic, and at a fairly high level of off grade, i. e.
- 1) Over the past 16 months, 19% of the batches were complete rejects, the last occurring as recently as June, 1959.
 - 2) Of the "acceptable" batches during the last 16 months, the overall rejection rate has averaged 41.6%, varying from 25% to 70%. The attached Figure I, showing overall rejection rate and X-ray rejection rate by month, points up the erratic nature of quality of Mesa product received.
2. Mound's usage is too small to interest vendors in development of satisfactory methods, or in special controls. Further, commercial materials are high in impurities and evidence of cross contamination, coupled with the fact that our requirements are much more rigid than normal commercial practice.

The above factors have been borne out by experience, as witness the continued variable and high rejection rate of the product indicated above. It is only logical that a small commercial supplier must utilize his equipment full time on several products if necessary, and can not normally afford large development expenditures. Whereas in the Mound Laboratory installation, the equipment is specifically designed for this one particular operation, is backed up by a research department effort, as well as by the large fund of plastics and technical know-how which exists in Monsanto Chemical Company.

This should certainly result in continued improvement in the plastics product, which will therefore be reflected in the overall decontamination program as well.

3. Mound Laboratory should be able to produce a higher quality product with less variation from batch to batch.

This has been borne out in actual practice now that the

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facility has been installed and operated to produce production materials, i. e.

- a) Mound material has been certified by the Los Alamos Scientific Laboratory as acceptable.
- b) Reject rate on the three production batches has been as low as the best of Mesa material, and there is no reason why this should not improve further as continued production experience is developed.
- c) The physical properties of Mound material are generally superior to that of Mesa material as shown in Table I attached. Mound has better tensile strength and impact strength, for example. Although sufficient long term data are not yet available, indications are that consistency of quality is superior.

In addition to the quality factors above, which are the same ones originally considered, the economics of the operation is also very important. The following table shows the cost per acceptable item based on the percentage reject rate, as well as the total cost per month at a normal production rate.

Table II

Cost / Acceptable Items

<u>% Reject</u>	<u>Cost/Acceptable Item</u>	<u>Cost/Mo. at \$45,000/mo. rate</u>
5	\$0.94	\$42,400
10	\$1.00	\$45,000
25	\$1.20	\$54,000
35	\$1.38	\$62,100
50	\$1.79	\$80,500
70	\$2.99	\$134,500

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W.B.C.

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As shown, if we can operate at a stable 25% rejection rate (certainly possible from all present indications) a savings of \$28,500 per month can be potentially realized, compared to the usual 40 to 50% average rejection rate we now experience. Realistically, such cost savings would not in all probability be achieved. A conservative estimate indicates that reduction in staff of seven (7) machine operators, four (4) small parts workers, and several inspectors would certainly result, along with other related savings. Actual out of pocket savings consisting of salaries and materials plus associated indirect costs are estimated at \$15,000 per month. This amounts to \$180,000 per year - substantial savings permitting early pay off of the facility. In addition three presses now in full operation can be released as spares, which was the original intent.

To carry out the plastics operation at Mound will not involve any additional expenditures for capital or expansion of facilities, since these are now fully available. If such operations are not carried out, a total investment of \$311,200 will be idle, in addition to the development costs incurred in bringing this process to the present state of knowledge.

To lend weight to our firm conviction that in order to produce the best detonators possible it is necessary that we have control of the plastics production, as recently as February 1959, Dr. R.L. Spaulding of LASL suggested that we start production as soon as possible to take advantage of the more uniform nature of Mound material. This is covered in the minutes of the 23rd meeting of the Detonator Production Coordinating Committee, dated February 2, 1959.

To summarize we feel that the facts of this case warrant an exception to the policy that the main source of certain components should be private American industry. To refer to the quotation that contractor manufacture is warranted "where captive plants have adequate capacity, with no major expansion required, and when in such cases it would be advantageous for economics and management reasons," the justifications outlined above seem to us to fulfill the requirements necessary.

Very truly yours,

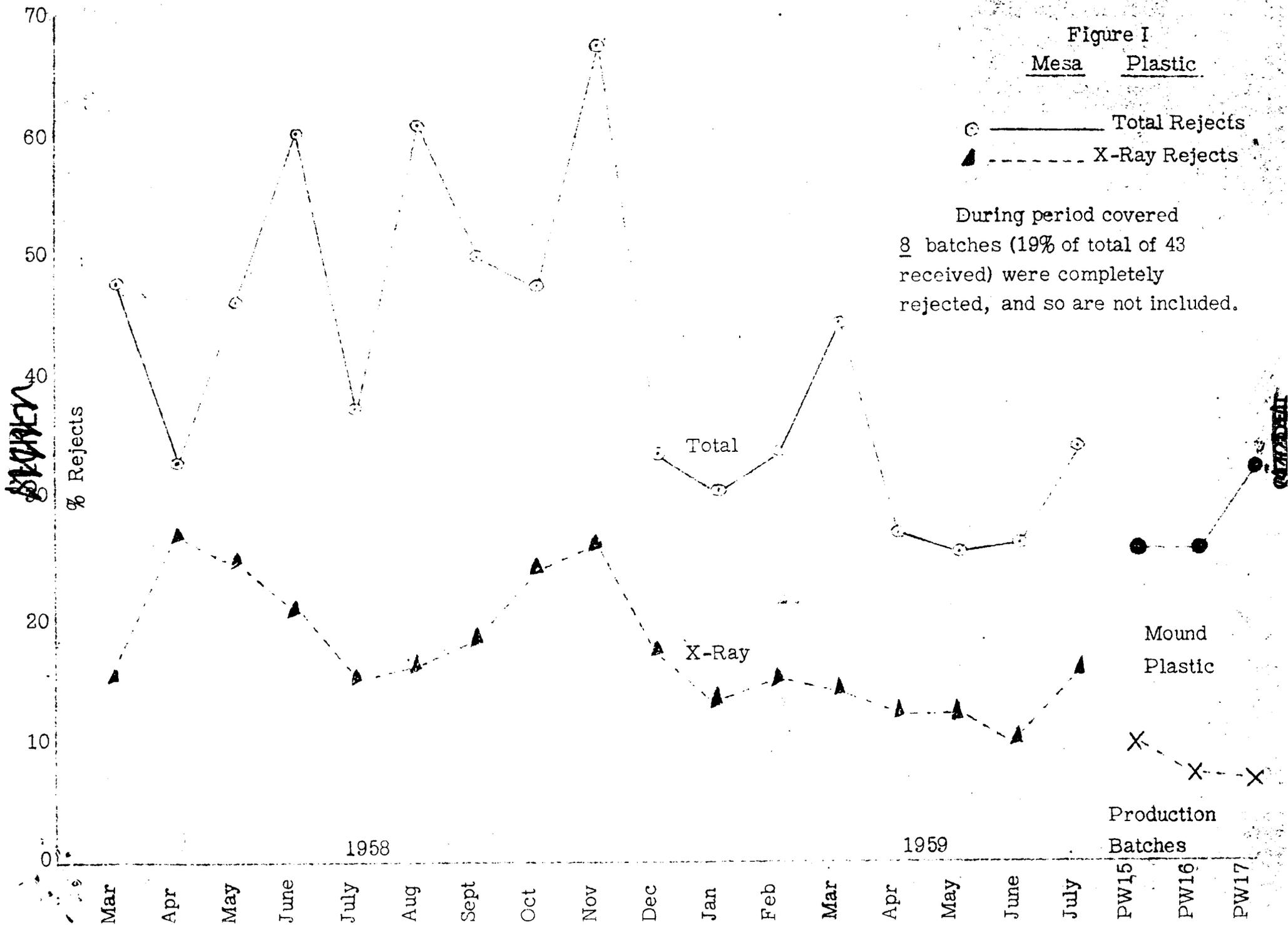
David L. Scott
Plant Manager

EAR:DLS:mg

Distribution:

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3A - J.F. Eichelberger
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Table I

**Physical Properties
Comparison ***

<u>Property</u>	<u>Mound PW-15</u>	<u>Mesa B-5640</u>
Tensile strength, psi	7,540	5,254
Ized Impact ft. /lb. /in notch	0.271-0.304	0.264-0.272
Heat Distortion Temp. °C	164.7	162.0
Arc Resistance, Sec.	130.4	134.9

*Mound batch (PW-15) compared to normal Mesa control batch B-5640.

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