

MONSANTO RESEARCH CORPORATION

Inter-Office Correspondence

From LOCATION : Development Department, Mound Laboratory^{cc} :

DATE : May 11, 1965

SUBJECT : Trip Report - Sandia Corporation
Albuquerque, New Mexico

REFERENCE : April 27, 1965, through April 29, 1965

- L. V. Jones
- G. W. Leadingham
- L. D. Iacurci
- J. R. Brinkman
- J. A. Grasso
- A. J. Rogers
- R. B. Jones
- A. Abid

TO : Mr. D. L. Scott

THIS DOCUMENT CONSIST OF 8 PAGES

THIS IS COPY 1 OF 9A

PURPOSE: Discuss timers and associated programs and other new programs.

PERSONNEL: Messrs. M. T. Abegg Sandia Corporation
 H. D. Kubiak Sandia Corporation
 R. L. Brown Sandia Corporation
 D. K. Morgan Sandia Corporation
 A. C. Schwarz Sandia Corporation
 H. L. Anderson Sandia Corporation
 J. C. Bagg Sandia Corporation
 W. A. Scranton Sandia Corporation
 M. J. Robinson Sandia Corporation
 R. P. Guilford Sandia Corporation
 L. M. Parker Sandia Corporation
 B. H. Simon Sandia Corporation
 R. W. Berger Sandia Corporation
 R. B. Jones Mound Laboratory
 A. Abid Mound Laboratory
 J. M. Tullis Mound Laboratory
 R. J. Huss Mound Laboratory

SUMMARY:

The present XMC-1697 and XMC-2136 and associated programs along with the PERT Charts were discussed with minor changes incorporated.

Data on the MK-4C explosive material (EDC-8) was reviewed with nothing new learned.

GROUP
[REDACTED]

RESTRICTED DATA
[REDACTED]

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Trip Report (Continued)
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A possible order for 2000 SE-1 type high temperature detonators could be forthcoming from Sandia. Sandia will supply the explosive material.

Various other new detonator programs were discussed with the possibility that Mound could become quite involved.

The Halbert (Pebbles) program is being reactivated. A meeting is scheduled between LRL and Sandia on May 28, 1965. This program could require that Mound fabricate a large number of units. A plan for two years would require the XMC-1697 type package, whereas a three year plan would use a new timer similar to the Mechanical Timer now being built at Mound in the Development area.



R. B. Jones
Development Supervisor



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Production Engineer

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MK-4C Delay Line Assembly

This program was discussed with M. T. Abegg (1311), W. A. Scranton (1411), M. J. Robinson (1411), and R. P. Guilford (1313). They do not have any additional information concerning the mixing of the EDC-8 explosive. They have not tried to mix any of the material. Sandia is correcting the MK-4C drawings which will be ready in two weeks. Any future orders will require parts purchased to the new drawings. Sandia still owes Mound five track plates.

High Temperature SE-1 Type Detonator

R. B. Jones (Mound) and M. T. Abegg (1311) discussed the prospects of a Sandia order for 2000 SE-1 type detonators. The detonator will contain a glass sealed header, 1.5 mil x 40 mil welded bridge-wire. Sandia will supply at least two different explosive materials. The units should be able to withstand 250°C. Both Sandia and Mound will be required to do some of the testing.

EX-12 Type Detonators Per 93-1046

This program was discussed with R. L. Brown (1313). This type of assembly will be used in all future driver programs. The present sleeve and header design is being evaluated. The new header will be of the right angle type, while the sleeve will be of a type that can be screwed into the driver. The present order (93-1046) will require that at least 25 assemblies will be tested. Sandia will supply the cables.

Another program similar to 93-1046 is in the planning stage. The number of units will be the same using a right angled header and a threaded sleeve.

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XMC-1697 Timer

R. B. Jones and A. Abid of Mound discussed the XMC-1697 timer with R. P. Guilford (1313), H. L. Anderson (1313), J. C. Bagg (1313), A. C. Schwarz (1313), and H. D. Kubiak (2621). J. M. Tullis and R. J. Huss of Mound discussed the test firing requirements.

1. Sandia would like to have seven scrap housings of the latest design sent to them by June 7, 1965, for fabrication of models.
2. They are planning on ordering six Visual Aids per the present XMC-1697 drawings. The required delivery will be two in July, two in August and two in September. The parts can be functional rejects.
3. Sandia is writing a change order to 95-2759 increasing the number of timers to 513 units. A group of 148 will be of the W. R. version. They are also reducing the number of units for the PT 1347 prove-in from 50 to 15 with 35 being shipped to Sandia for environmental testing. They do not require that any more X-ray films and assembly record cards be sent to Sandia as long as they are retained at Mound Laboratory for later evaluation.
4. The PT 1347 tester was checked. Modifications to the Firing Unit going in the tank will be required before any high temperature firing can be done. The PT 1347 should be shipped to Mound Laboratory by May 15, 1965, if no problems develop.
5. The PERT Chart ND 311594, Issue W, was reviewed and changed as follows:
 - a. I to 6282 changed from 6111/MC2136 to 6135/MC2136
 - b. 6257-6273 from 65 units to 100 units

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- c. 6257-6265 from 50 units to 15 units
 - d. The 6/29/66 (6389 - I to 5082/usec) is a very important date.
6. J. C. Bagg is now the Sandia Development Engineer instead of R. P. Guilford.
 7. Sandia is re-evaluating the adhesives and assembly procedure of the XMC-1697 with possible changes in the mill.
 8. The next 10 XMC-1697 timers from P. O. 93-0753 should contain the XMC-1964 connector.
 9. Sandia plans to send in 200 TOADS and cable assemblies for use on P. O. 95-2759.
 10. A timer (SN 154) from Lot D-1 after exposure to Vibration, Mechanical Shock, and Thermal Shock showed a resistance of 0.5 ohm. This is an increase of about 0.475 ohm. The consensus of opinion seems to be that the taper pin moved. Sandia plans to X-ray the unit to see what can be observed.

XMC-2136 Timer

The following were discussed in meetings with R. B. Jones, and Abe Abid of Mound and A. C. Schwarz (1313), H. L. Anderson (1313), J. C. Bagg (1313) and H. D. Kubiak (2621).

1. J. C. Bagg would like to know when Mound plans to start fabrication of XMC-2136 timers and to test fire the XMC-2136 Mock timers as he would like to observe both.
2. The PERT Chart ND 312113, Issue B, was reviewed and changed as follows:
 - a. 6108 to I to 6282 is being deleted.
 - b. 6106 to 6108. Place PO for 311 XMC-2136 timers.
 - c. 6106 to XXXX. Place PO for 500 Pressure Transducers.
 - d. 6110 to 6135 is being added for fabrication of 60 Pressure Transducers to be tested at Sandia.

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- e. 6135 to I to 6282/1697. Deliver 56 units for 1697 testing.
- f. 6135 to 6134 - Deliver 384 units for 2136 testing.

XMC-1831 and XMC-1942 Detonators

R. B. Jones and Abe Abid of Mound discussed the XMC-1942 and XMC-1831 detonators with H. L. Anderson (1313), J. C. Bagg (1313), A. C. Schwarz (1313), and H. D. Kubiak (2621). J. M. Tullis and R. J. Huss of Mound discussed the test firing requirements.

1. H. L. Anderson plans to order 500 each XMC-1942 and XMC-1831 headers. These will be ordered through Production for use only on Sandia programs.
2. A. C. Schwarz plans to order between 500 and 1000 each of both the XMC-1831 and XMC-1942 piece parts through Development for use on Sandia programs. He also plans to order an XMC-1942 header with 10 mil spacing.
3. The insulation color specified for the XMC-1831 will be orange.
4. Sandia would like to observe the test firing required on P. O. 93-1047. This order requires the fabrication and testing of the XMC-1942 using a Sandia and a Mound PETN.
5. Sandia plans to order the following for system tests at Nevada in July.
 - a. 100 XMC-1942 (Standard).
 - b. 150 XMC-1942 without bridge wires.
 - c. 100 XMC-1831 (Standard).
 - d. 150 XMC-1831 without bridge wires.

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6. The Mound personnel observed the dent block threshold test and the assembly methods required on the XMC-1831 and XMC-1942 programs. A characteristic dent is produced only when the assembly goes high order. There will probably be a PT designed by Sandia for this testing. The other test firing requirements were also discussed.
7. The XMC-1942 and the XMC-1831 headers will be ordered with long leads for ease of fabrication but will use the short insulation.
8. In addition to the TWXed request for information as to the affect of reduction of some tolerances on the XMC-1831 and XMC-1942 programs Sandia would like to have the electrode spacing reduced from $\pm .002$ to $\pm .001$.
9. The PERT Chart ND 311918 Issue G indicates that 7/20/65 is a very important date. Any slippage in this date will cause the whole program to be delayed. This date is represented by activity 6801-I to 6263/1697.

MDF Evaluation Program

R. B. Jones and Abe Abid of Mound discussed the MDF Evaluation Program with J. C. Bagg (1313) and H. L. Anderson (1313).

1. The P. O. is in process for fabrication and testing of of about 280 2 grain MDF test devices.
2. The response time of the Manganin cell used in recording the pressure during pressurization of the 2 grain MDF, is too slow. Another recording system (The Norwood Bonded Gage Pressure Transducer) is being tested at Sandia. If the system works it will be incorporated in the MDF Specification.

Halbert (Pebbles) System

This system was discussed with H. D. Kubiak (2621), D. K. Morgan (1313) and H. L. Anderson (1313) and R. B. Jones of Mound.

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1. The Halbert (Pebbles) system is being reactivated. There is a meeting scheduled with LRL on the 28th of May, 1965. This system will require a large number of devices. If we have two years the XMC-1697 system will be used and June 29, 1966, is a very important date on the XMC-1697 PERT Chart. If we have three years there will be a new timer (XMC-1984) similar to the Mechanical Timer now being developed at Mound.

The new timer will use a Fiber-Metal material to delay the shock instead of a flying plate. The explosive end will be similar to the present mechanical timer. It will contain a 9407 pellet, 1 inch in diameter by about .2 inch thick and will utilize a .25 inch steel plate. The transducer will contain a "Z" stack of ceramics so that the output and time can be increased without any increase in size. The timer portion will be about 1.75 inches in diameter by 1.75 inches in height.