Bendix
Aerospace Systems Division

GAUTHIER
Apollo Lunar Radioisotopic Heater Program

EATM-46

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DATE 23 January 19(

Attached, for general information, is the Mound Laboratory Weekly Report #7 on the Apollo Lunar Radioisotopic Heater Program.

D. Courtois
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APOLLO LUNAR RADIOISOTOPIC HEATER PROGRAM

Weekly Status Report #7

January 13, 1969 to January 17, 1969

PREPARED BY: _____
Program Coordinator

APPROVED BY: _____
Program Manager

MONSANTO RESEARCH CORPORATION

A SUBSIDIARY OF MONSANTO COMPANY

M O U N D L A B O R A T O R Y

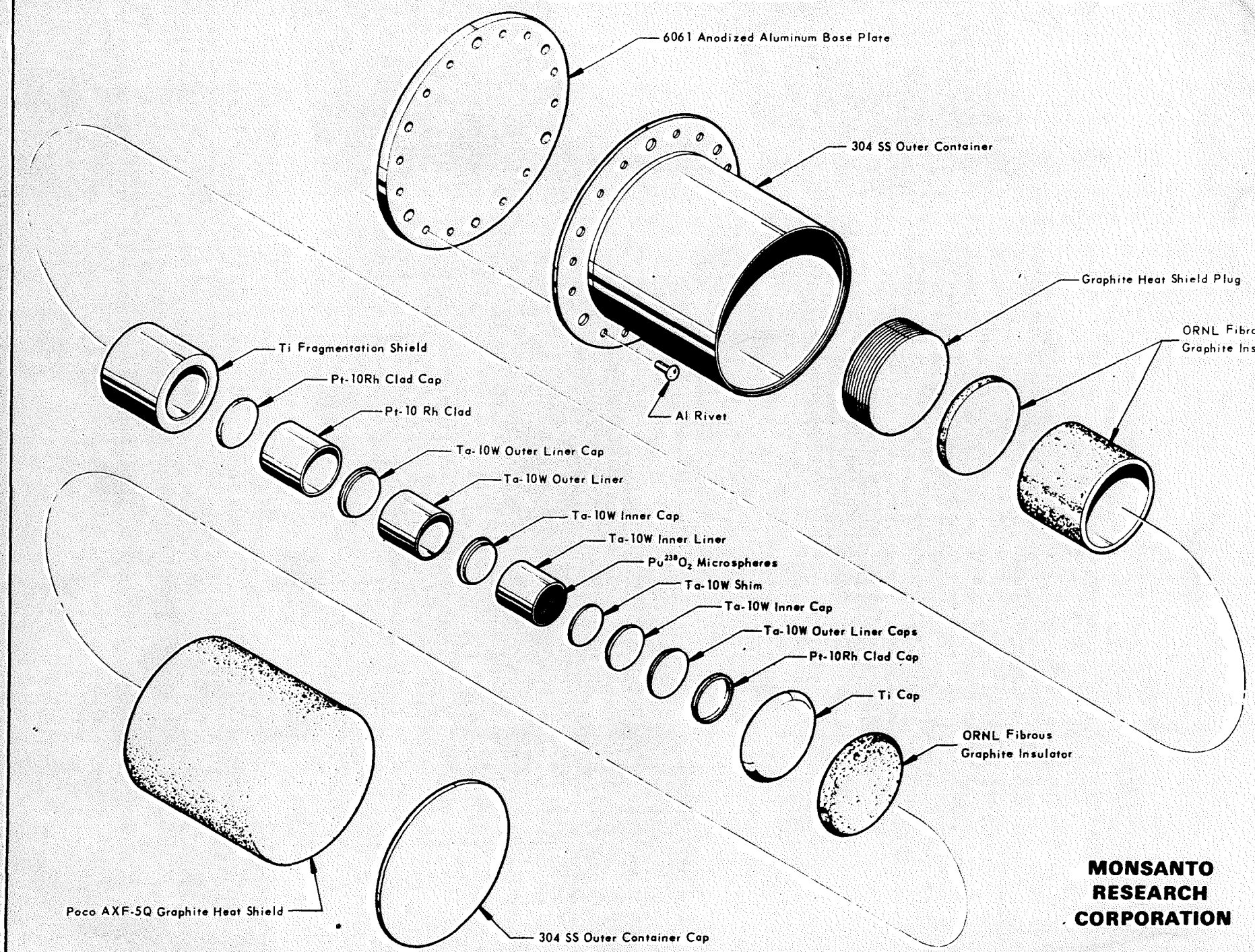
MIAMISBURG, OHIO

OPERATED FOR

UNITED STATES ATOMIC ENERGY COMMISSION

U.S. GOVERNMENT CONTRACT NO. AT-33-1-GEN-53

APOLLO LUNAR RADIOISOTOPIC HEATER



MONSANTO RESEARCH CORPORATION

APOLLO LUNAR RADIOISOTOPIC HEATER PROGRAM

Weekly Status Report #7

January 13, 1969 to January 17, 1969

Developments at Mound Laboratory concerning the Apollo Lunar Radioisotopic Heater Program for the week ending January 17, 1969, are presented in this report.

I. Open Items

The following summarizes open items generated from meetings held earlier and from the weekly progress of the program. The items listed are those which are still open as of January 17, 1969:

1. Sandia will furnish to Mound results of the capsule drop tests which are currently being scheduled. These tests will be made to more accurately verify the terminal impact velocity of the heat source.

2. No comments have been received to date on the proposed Mound Laboratory Interface Document from other than AEC/DAO personnel. This interface document was distributed to program distribution on December 18, 1968.

II. Highlights

1. The electrical heater design has been completed. Fabrication of the heater units is currently in progress.

2. Design of the capsule holding fixtures to be used in the shock and vibrational tests has been completed. Dynamic testing of two test capsules is scheduled for the week of January 20, 1969.

3. Ten test capsules through the fragmentation shield were shipped to Sandia on January 13, 1969, bringing the total shipped to 15.

4. Sandia evaluation of the ATJ and POCO AXF-5Q ablative graphite indicates that both materials will survive the -6.25° lunar reentry mode. The POCO graphite, however, had a higher average tensile ultimate to predicted tensile stress ratio indicating a higher safety margin for the POCO. It was, therefore, agreed between Sandia and Mound to use the POCO graphite in the fueled units and the test capsule assemblies that will undergo shock tube, arc tunnel and fragmentation tests at Sandia. The four electrically heated units will also contain the POCO graphite.

5. Test capsule fabrication and hardware production are progressing according to schedule.

III. Reports Issued

1. Isotope Heater Program - Report No. 1 issued December 2, 1968.

2. Proposed Capsule Design Drawing - Report No. 2 issued December 4, 1968.

3. Capsule Component Weight Analysis - Report No. 3 issued December 9, 1968.

4. Copies of Mound's MLM-1377 were furnished to Bendix and NASA on December 4, 1968.

5. Sandia Capsule Testing and AEC/ALO/QA Discussions - Report No. 5 issued December 18, 1968.

6. Design Analysis - Report No. 6 issued December 26, 1968.

7. Revised Capsule Component Weight Analysis - Report No. 7 issued December 26, 1968.

8. Test Capsule Fabrication Schedule - Report No. 8 issued December 26, 1968.

9. Material Specifications - Report No. 9 issued December 31, 1968.

10. Component and Assembly Drawings - Report No. 10 issued January 3, 1969.

11. Preliminary Impact Testing - Report No. 11 issued January 6, 1969.

12. Electric Isotope Heater Models - Report No. 12 issued January 10, 1969.

13. Material Specifications - Revision 1 - Report No. 13 issued January 13, 1969.

14. Shipping Container - Report No. 14 issued January 14, 1969.

15. POCO AXF-5Q Graphite Properties - Report No. 15 issued January 15, 1969.

IV. Forecast

1. Test capsule fabrication is continuing as scheduled.

2. The following is a review of the milestones which are listed in the letter from Mr. D. Ofte to Dr. G. Richard Grove, thru Mr. W. B. Creamer, dated December 17, 1968. The milestones listed are those which pertain to Mound Laboratory:

	Milestone	Status
3.	Design Freeze	Completed 1/3/69
4.	Deliver preliminary evaluation capsules to Sandia	Completed 12/10/68
5.	Receive BXA mounting plate	Completed 12/27/68
8.	Delivery of test capsules to Sandia	Completed 1/10/69
10.	Deliver 4 electrical and 4 size and weight capsules to BXA	Scheduled 2/20/69
12.	Complete 3 fueled heat sources	Scheduled 4/1/69