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SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
1st Review Date: 9/24/98
Authority: ADD
Name: R Blasier
2nd Review Date: 9/24/98
Authority: ADD
Name: WC Layne
Determination (Circle Numbers):
1. Classification Retained
2. Classification Changed to: U
3. Contains No DOE Classified Information
4. Coordinate With:
5. Contains UCNI? NA
Comments:
DECLASSIFY

JUL 3 1 1957

TX-41, 3-2
Case No. 746,00
Project No. ET-3949
Completed 7-1-57

TO: DISTRIBUTION

Re: Pressure Lag Test Through a Proposed Baro-Sensing System for the TX-41 Weapon

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CDL No.
ACCOUNTABILITY CARD
FILE No. TX-41 3-2

Object of Test

This test was performed to determine the internal to external pressure differential caused by a pressure drop through the intake ports and desiccant container proposed for the TX-41 weapon. This pressure lag was to be measured during a simulated free fall drop from 50,000 feet with particular emphasis placed on the lag between altitudes of 12,000 to 6,000 feet. Tom L. Bills, 1243 and Ken H. Cordes,5144 were consultants.

Summary

The pressure lag through the desiccant container and intake ports was recorded and curves were obtained showing this lag at altitudes between 50,000 feet and sea level. The test showed that the pressure lag was a function of porting area, with the minimum lag occuring when all ports were open. The maximum value of this pressure lag occured at approximately 20,000 feet regardless of porting area. The maximum lag with all ports open was only 0.096 psi.

Procedure and Results

The Hieatt altitude chamber was used to simulate a free fall drop from 50,000 feet to sea level in 60 seconds. Due to equipment limitations, an additional drop from 15,000 feet was used to obtain proper descent rates at lower altitudes.

Chamber pressure was measured during each drop with a Statham pickup, 0-50 psi gauge. Pressure lag through desiccant and intake ports was measured during each drop by using a Statham differential pickup (± 2 psi). Pressure versus time curves were recorded by two Brush Analyzers, Model BL-320, and a dual channel Brush Recorder. The test setup is shown in Fig. 3, and reduced test data in Figs 1 and 2.

Approximately one-half the internal undisplaced volume of a TX-41 afterbody was simulated by using a 10 cu. ft. AN can. Mounted on this can

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
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CLASSIFICATION CHANGED TO: U
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RECORD ID: 98SW4458
WC Layne 9/28/98
PERSON VERIFYING MARKING & DATE
DATED: 9/24/98

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were three groups of breathing ports, (10 ports in each group and each port 1/4 inch in diameter) connected to desiccant inside the AN can with surgical tubing to simulate the proposed breathing system for the weapon. See Fig. 4.

Three tests were run: the first with all port groups open, the second with two groups open, the third with one group open to investigate varying degrees of porting area.

After a trial drop from 50,000 feet, it was noted that the required rate of descent (0.42 psi per second) was not obtained at 8,000 feet. The desired test was then simulated by performing two series of drops, the first from 50,000 feet to sea level, the second from 15,000 feet to sea level. The combined data from these drops resulted in the most reliable information covering the critical altitudes of 12,000 to 6,000 feet.

Floyd H. Mathews

Test Performed by FLOYD H. MATHEWS- 1611-1

Ernest D Graves

Test Engineer ERNEST GRAVES - 1611-1

Approved by R. S. HOOPER - 1611-1

FHM:1611-1:ea

Encs: Figs. 1 thru 4

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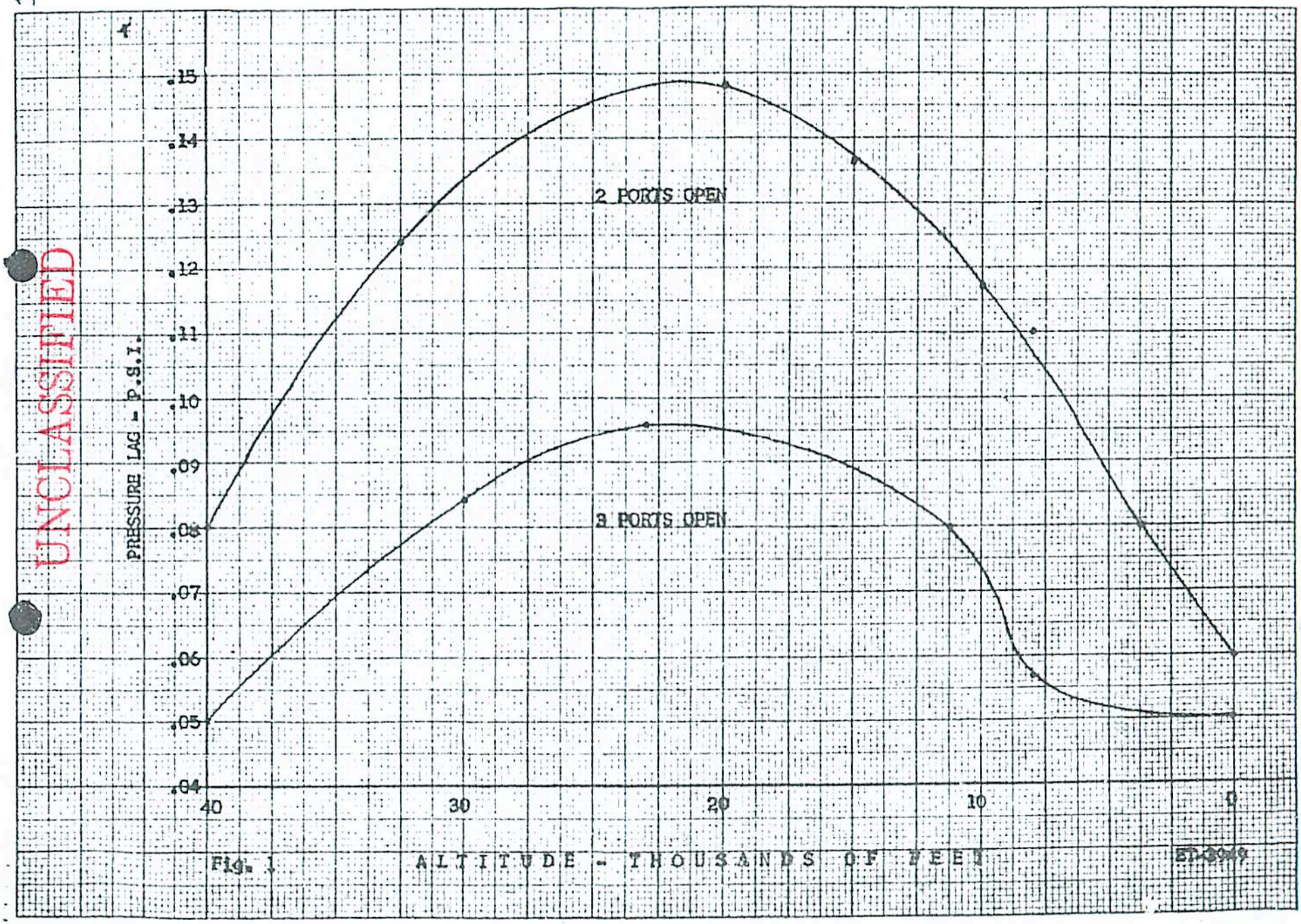

Fig. 1

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10 X 10 TO THE ½ INCH 359-11
KEUFFEL & ESSER CO.

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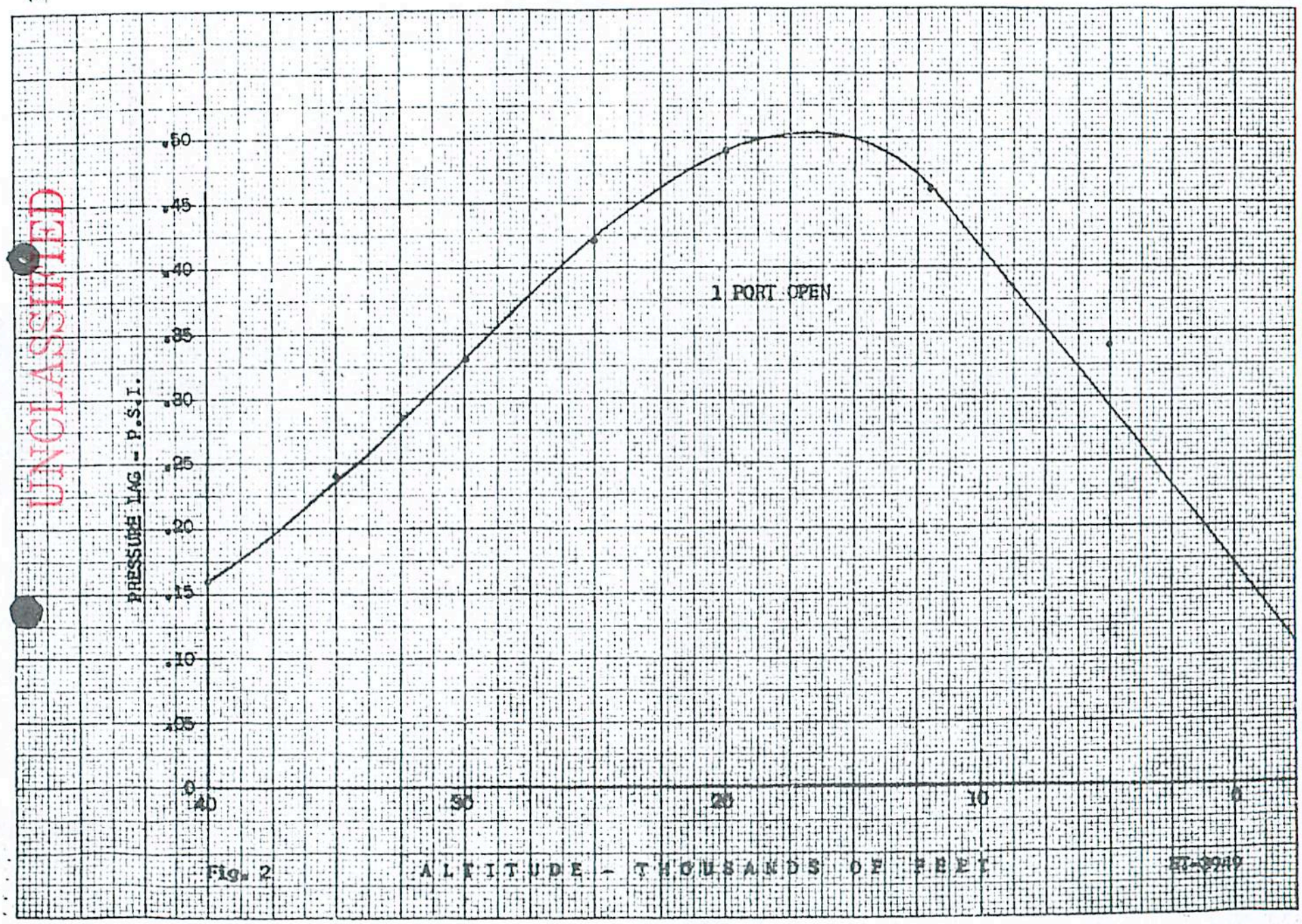

Fig. 2

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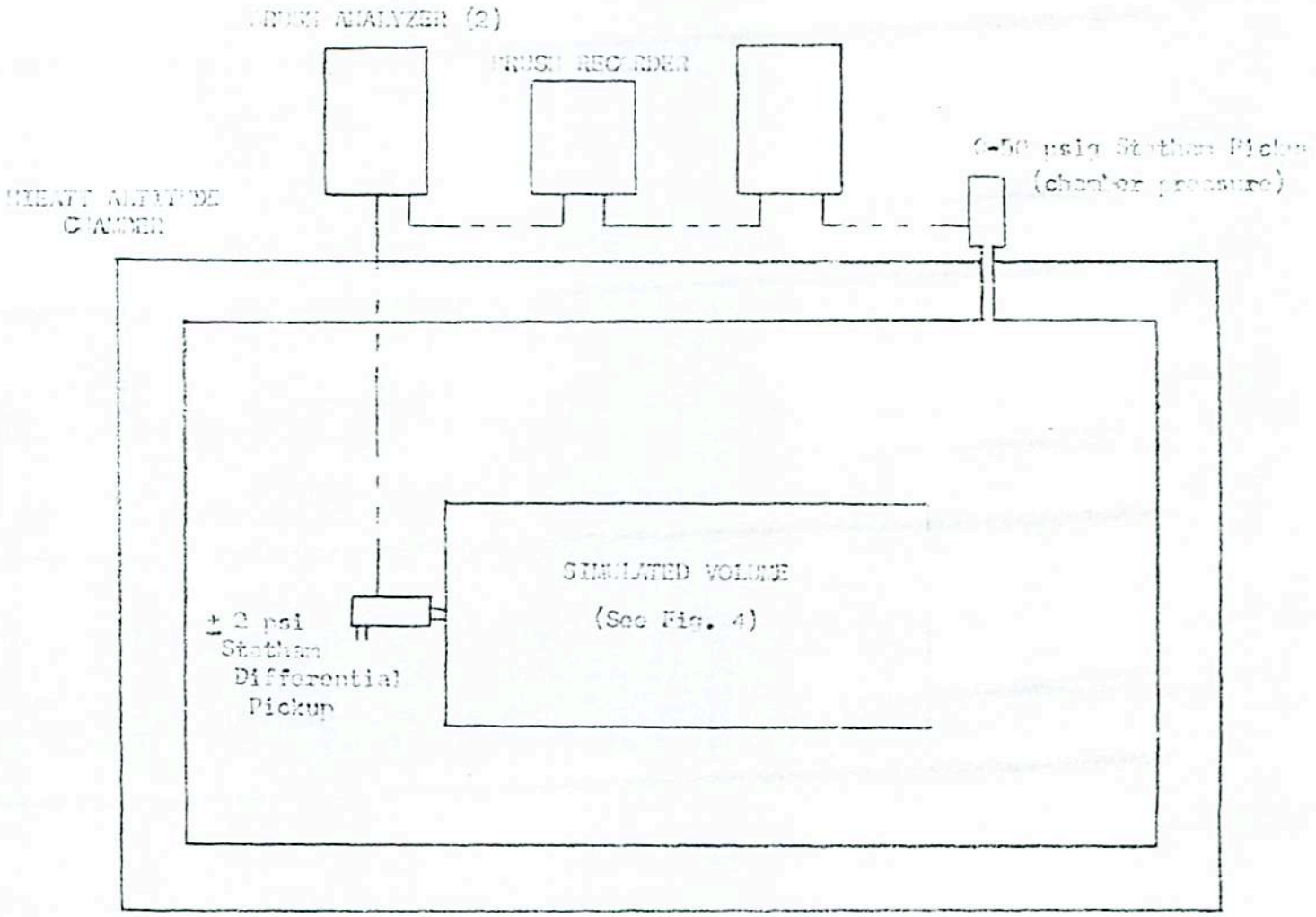

FIG. 3 TEST SET-UP ET-3041

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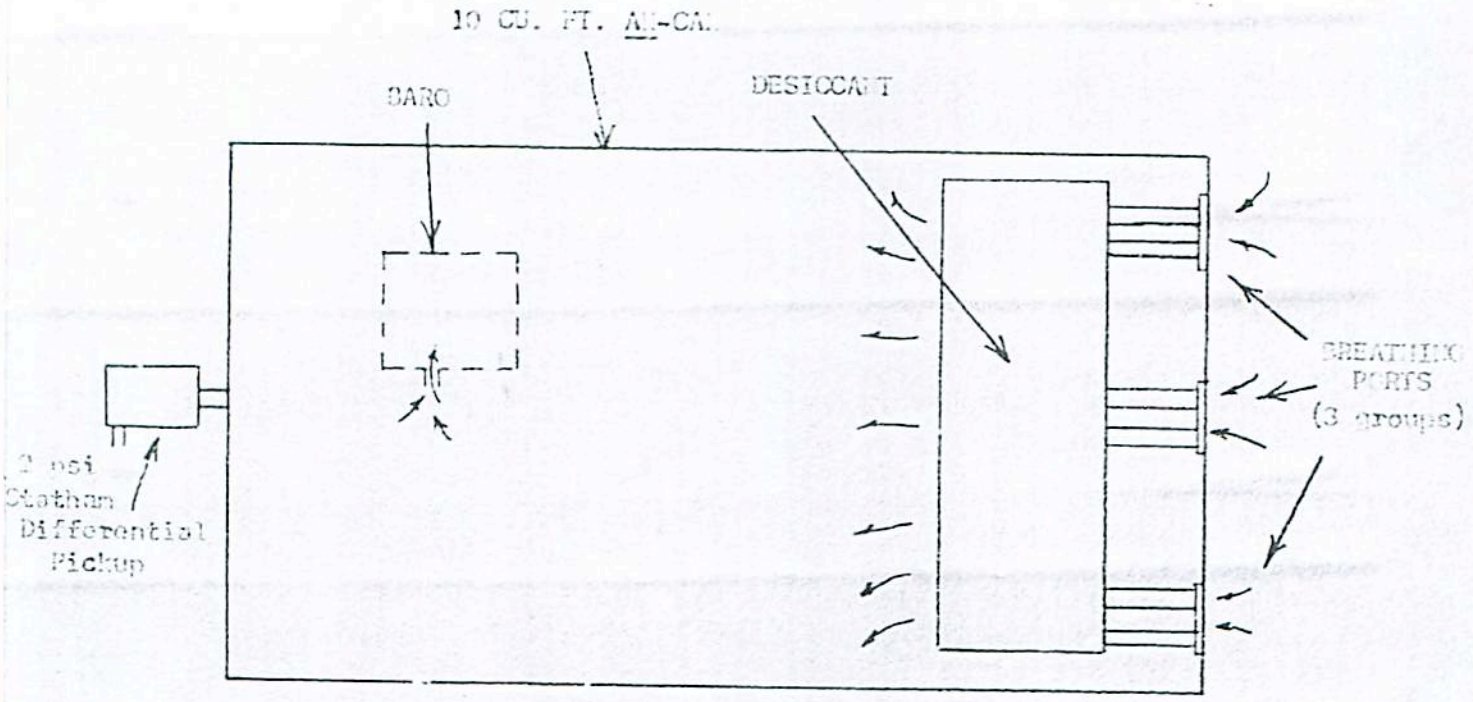

FIG. 4 SIMULATED AFTER-BODY VOLUME

ET-3949

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