

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW	
1. Review Date: <u>7/9/98</u>	2. Determination (Circle Number): 1. Classification Retained 2. Classification Changed to <u>UNCL</u> 3. Contains No DOE Classified Information 4. Contains WFO 5. Contains UCAF 6. <u>Other</u>
3. Reviewer: <u>P. Adams</u>	4. Authority: <u>W. C. Layne</u>
5. Review Date: <u>7/14/98</u>	6. Date: <u>7/14/98</u>
7. Authority: <u>ADD</u>	8. Name: <u>W. C. Layne</u>

APR 11 1956  
 Case No. 646.00  
 Ref. Sym: 1612 (310)  
 Project No. TM-376  
 File: XW-25, 3-2

MR. W. M. WELLS, JR. - 1232

Attn: Mr. J. A. Anderson - 1232

Re: Static Test of XW-25 Centrifuge Jig

CDL No.	
ACCOUNTABILITY CARD	
FILE No.	

Summary of Results

A load of 212 g (106,000 pounds) representing a simulated centrifuge loading of 170 g plus a safety factor of 25 percent was applied to the XW-25 centrifuge jig. The load was applied to the jig along a line of action making an angle of 22.5 degrees with the jig axis and intersecting the front face of the jig two inches above its centroid.

Instrumentation with Stresscoat indicated maximum stresses of approximately 25,000 psi at the welded joints between the front face of the jig and the side plates.

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Object of Test

The object of this test was to determine the adequacy of the XW-25 centrifuge jig to withstand a centrifuge loading of 125 percent the anticipated centrifuge loading of 170 g.

Reason for Test

This test was requested in a Request for Materials Laboratory Investigation from Mr. W. M. Wells, Jr., 1232, to Mr. P. H. Adams, 1612, dated January 17, 1956.

Function of Object Tested

The function of the XW-25 centrifuge jig is to secure the XW-25 HE unit to the centrifuge booms.

Summary of Past Tests

The XW-25 centrifuge jig was originally manufactured for and used in a centrifuge test described in the report, Centrifuge Test of XW-12 Telemetering Warhead, from R. A. Pee, 1612-1, to W. J. Howard, 1330,

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW DOWNGRADING OR DECLASSIFICATION STAMP	
CLASSIFICATION CHANGED TO: <u>U</u>	AUTHORITY: <u>W. C. Layne</u>
PERSON CHANGING MARKING & DATE: <u>7/14/98</u>	RECORD ID: <u>98SN2968</u>
PERSON VERIFYING MARKING & DATE: <u>W. C. Layne 7/16/98</u>	DATED: <u>7/14/98</u>

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dated September 24, 1954. In this test the jig plus warhead was loaded to 100 g (67,400 pounds).

The jig was used to mount the XW-25 warhead for a centrifuge test as described in a report, Centrifuge Test of the XW-25, Ref. Sym: 1612 (277), from D. F. Hillyer, 1612-1, to W. M. Wells, Jr., 1232, dated February 3, 1956. In this test the jig and warhead were subjected to a centrifuge load 178 g longitudinal aft.

The XW-25 had been statically tested prior to this test as described in a report Static Test of the XW-25 and Centrifuge Jig, Ref. Sym: 1612 (240), from R. I. Butler, 1612-2, to W. M. Wells, Jr., 1232, dated September 29, 1955. In this test the XW-25 centrifuge jig was subjected to a longitudinal aft load of 188 g (110,000 pounds).

No dangerously high stress conditions were observed in any of the previous tests.

#### Setup for Test

- I. Figures 1 and 2 are photos depicting the test setup.
- II. The following component was tested:
  1. One XW-25 centrifuge jig -- No drawing number available.
- III. The following test equipment was used:
  1. One Blackhawk hydraulic ram -- capacity 50 tons.
  2. One Sprague air-operated hydraulic pump, Model S-216C.
  3. One Baldwin SR-4 load cell, Type C, Serial No. 8878, capacity 100,000 pounds, sensitivity 25.5 pounds per microinche per inch.
  4. One Baldwin SR-4 strain indicator, Serial No. J-59252.
- IV. The following instrumentation was used in the test:
  1. Stresscoat No. 1201

#### Procedure

The unit was mounted as shown in Figs. 1 and 2. The line of action of the load was inclined in a vertical plane at 22.5 degrees with respect

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to the longitudinal axis of the jig, and intersected the front face of the jig two inches above its centroid.

Loads were applied in increments shown in Table I. The load was relaxed between increments and Stresscoat patterns marked.

### Results

The XW-25 centrifuge withstood the inclined load of 212 g (106,000 pounds) without visible damage. Figures 3 through 7 are photos depicting Stresscoat crack patterns. Table I lists apparent stresses corresponding to each pattern at maximum load. Maximum apparent stress was 25,000 psi at the welded joint as shown in Fig. 3. Method of computing apparent stress is given in the footnote of Table I.

### Conclusions and Recommendations

The XW-25 centrifuge jig is structurally adequate to withstand centrifuge loads up to 212 g (106,000 pounds) with the XW-25 inclined 22.5 degrees with the centrifuge boom.

*R. I. Butler*  
R. I. BUTLER - 1612-2

Approved by:

*P. H. Adams*  
P. H. ADAMS - 1612

RIB:1612-2:as

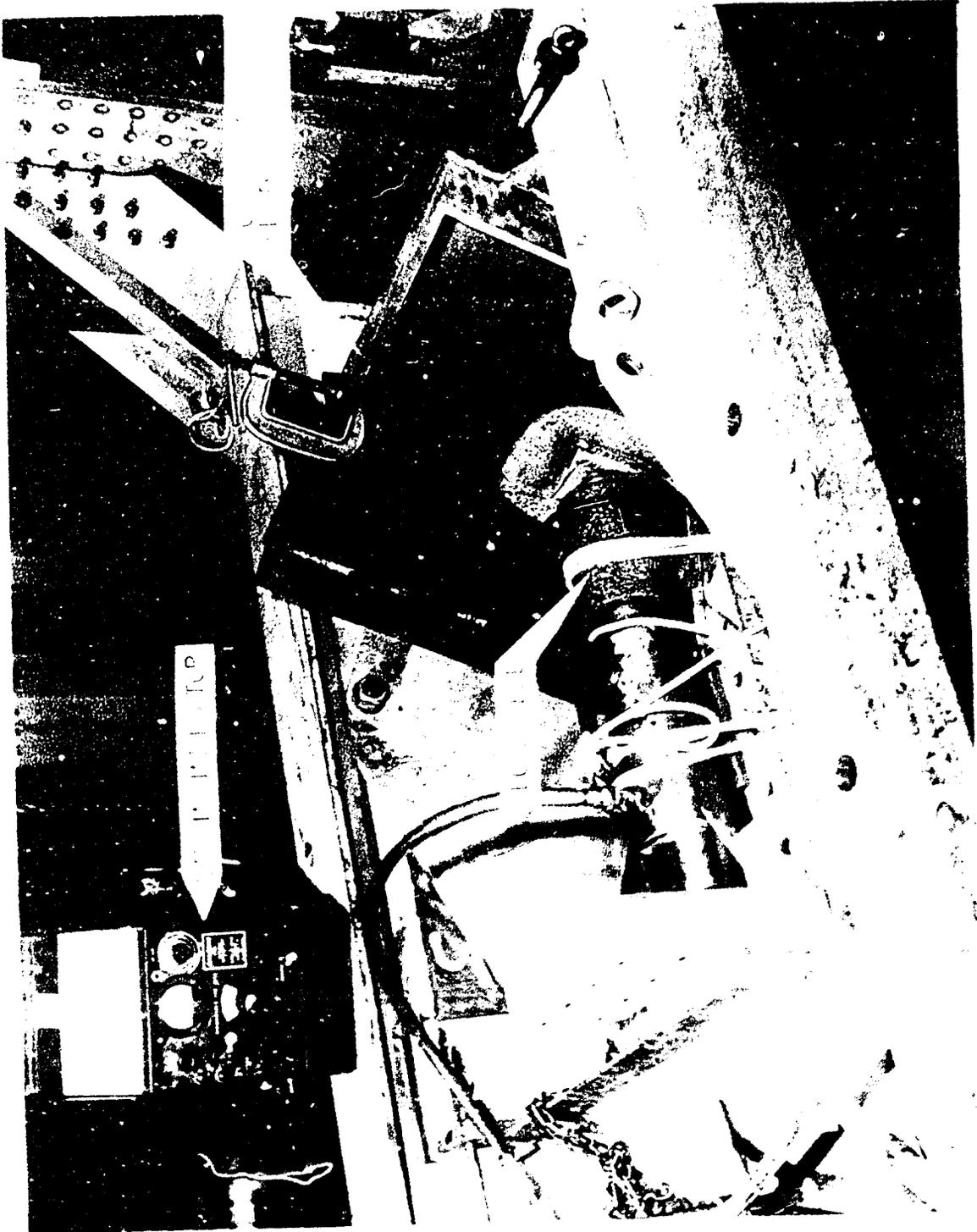
Copy to:

T. B. Morse, 1610  
W. A. Gardner, 1282  
R. E. Fisher, 1621  
C. L. Gomel, 5523  
R. K. Smeltzer, 7222-2  
K. M. Flood, 7222-3

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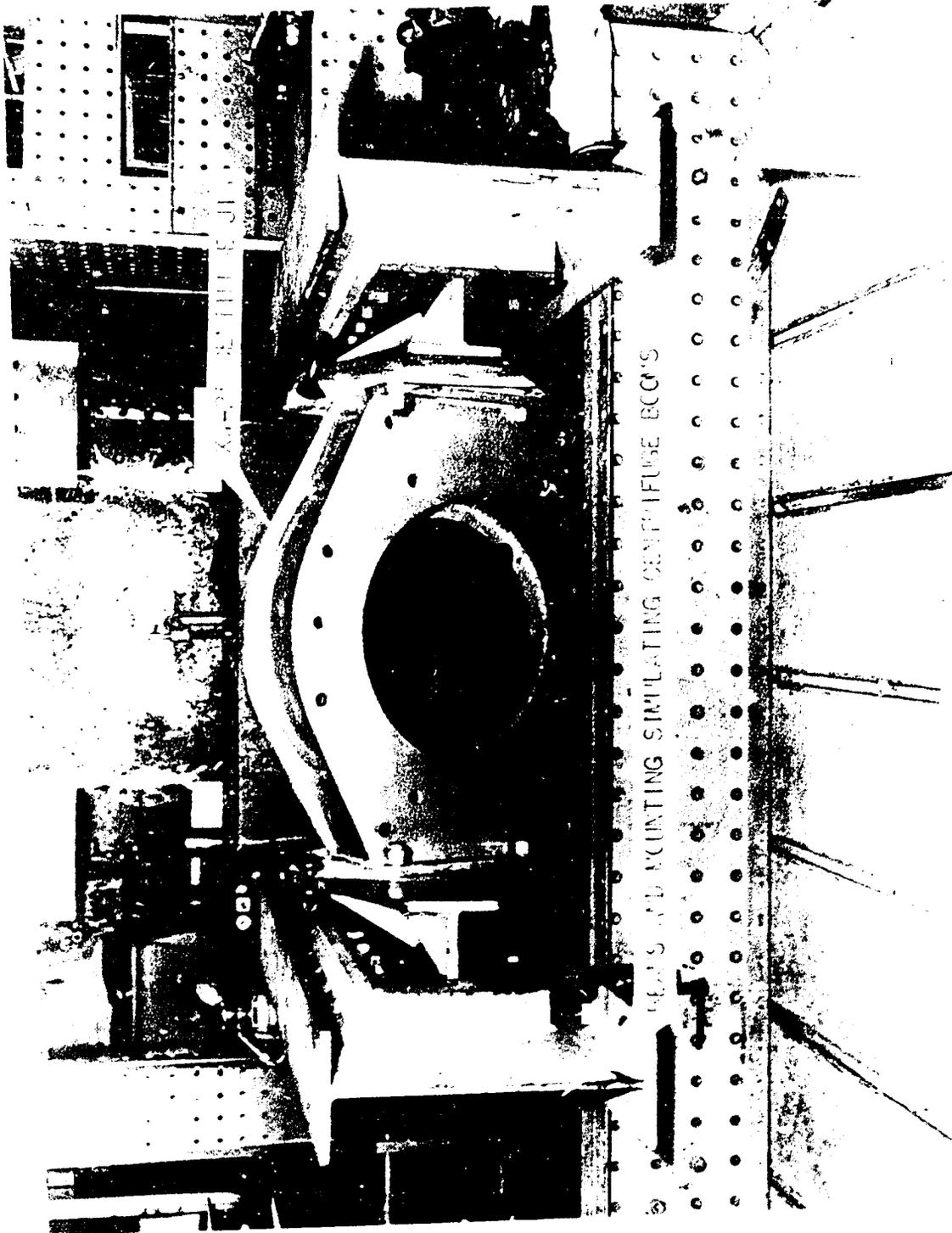


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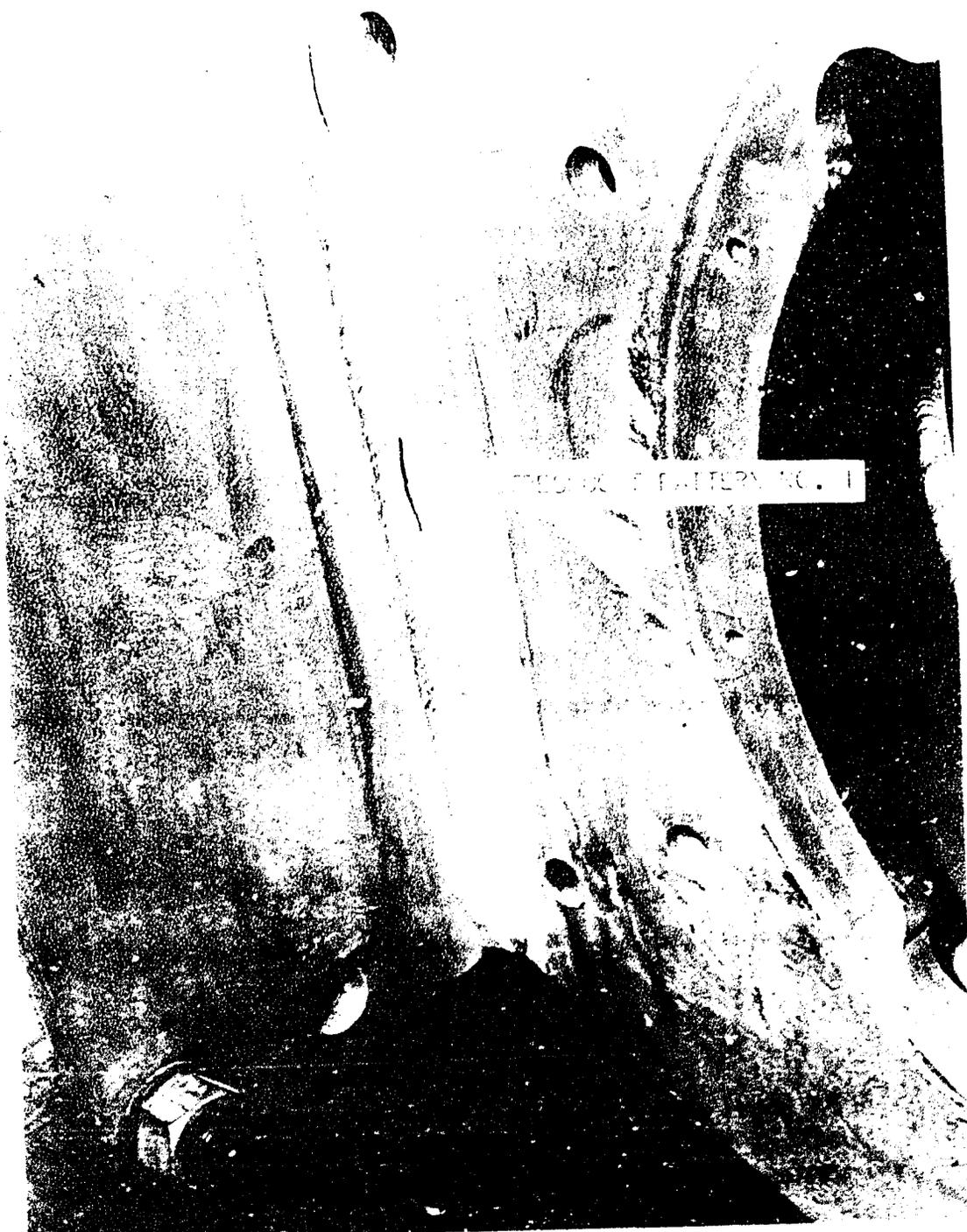
TESTS AND COUNTING SIMULATING CENTRIFUGE BCC'S

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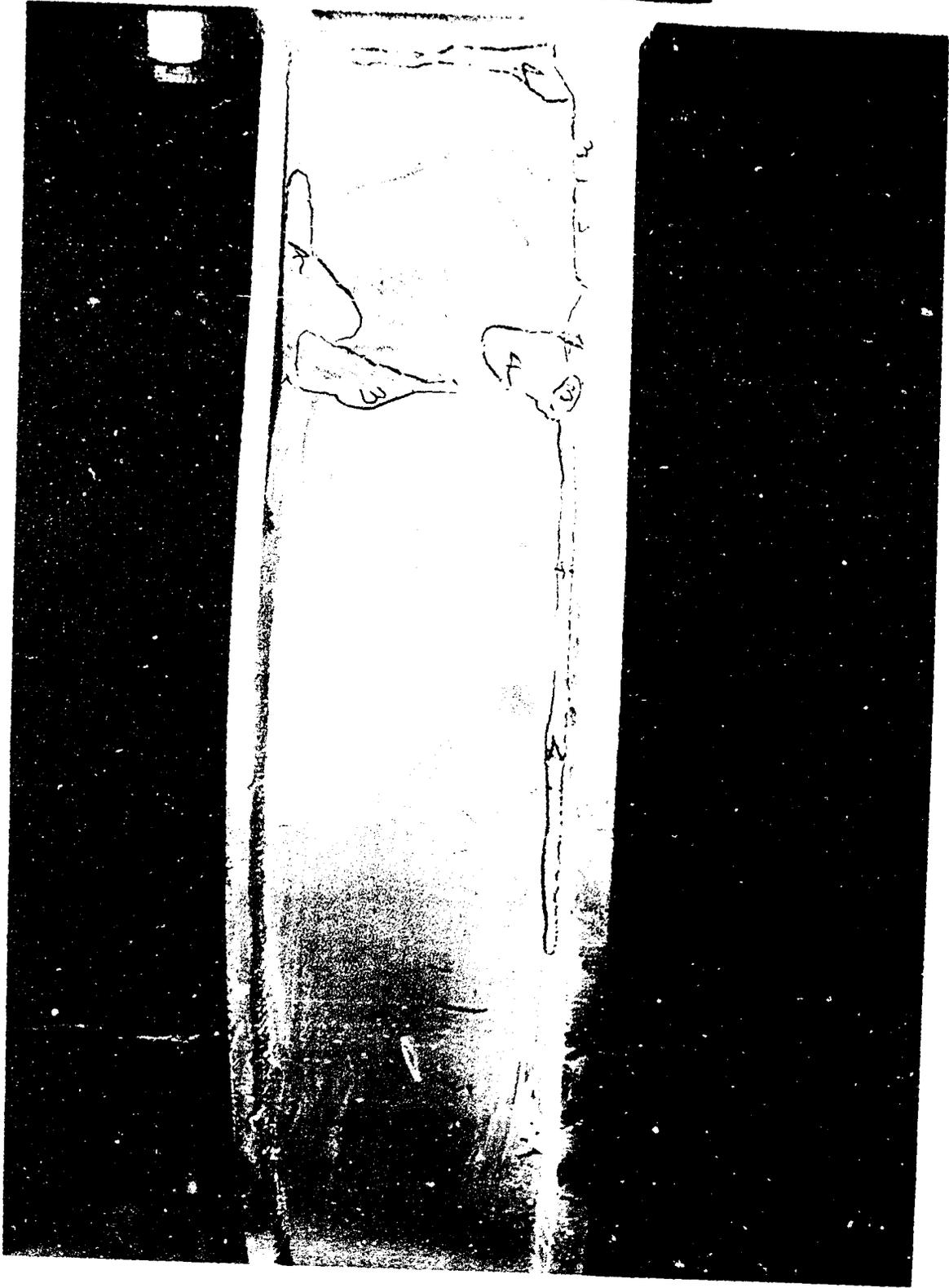
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THE PRESIDENT OF THE UNITED STATES  
 J. B. GOSSEN  
 REF. DIV. FILE # 100-100000  
 PROJECT NO. 100-100000

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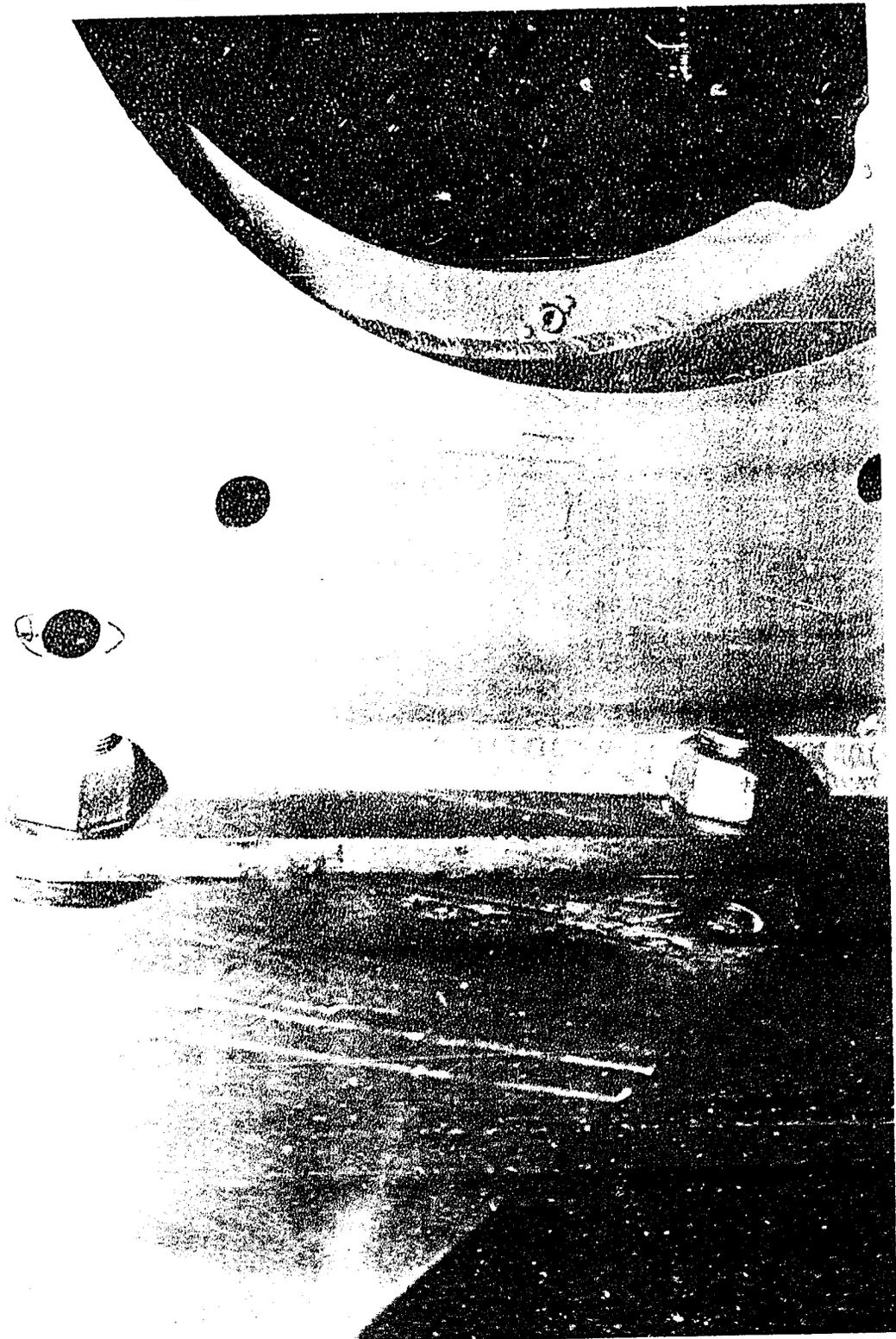


FIG. 7-- REDUCED COPY WITH MARKS--OF FIG. 1 OF X-25 ON P. 15 OF  
A. 7000 P.  
SER. NO. 1019 (310)  
PROJECT NO. W-376



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Ref. Syst. 1002 (117)  
Project No. 71-216

TABLE I

LOAD-STRAIN DATA  
STATIC TEST OF XN-25  
CENTRIFUGE JIG

<u>Load No.</u>	<u>Load (Pounds)</u>	<u>Stresscoat Sensitivity</u>	<u>Pattern No.</u>	<u>*Apparent Stress at Max. Load (psi)</u>
0	0	0.0009	--	
1	30,000		--	
2	36,000	0.00025	1**	25,000
3	42,200		2	21,000
4	51,800	0.00080	--	
5	62,400		--	
6	75,000		--	
7	90,000	0.00075	3	9,000
8	106,000	0.00075	4	7,500

\* Apparent stress evaluated by the following approximate formula:

$$S_r = \frac{(\text{Max. Load}) (E) (\text{Threshold Sensitivity of Stresscoat})}{\text{Load at Pattern No. } n}$$

\*\* Patterns 1 and 2 were inaccessible for marking. Pattern Number indicates load at which cracks were first observed in each area.

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