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SANDIA SYSTEMATIC DECLASSIFICATION REVIEW	
1st Review Date: 7/06/98 Authority: ☐ADC ☒ADD Name: W Layne 2nd Review Date: 7/13/98 Authority: ADD Name: R B Craner	Determination (Circle Number): 1. Classification Retained 2. Classification Changed to: U 3. Contains No DOE Classified Information 4. Coordinate With: 5. Contains UCAI? NV 6. Comments: OK for Openet

MAR 1 8 1962

File No: XW-53, 3-2
T-18403
Date Completed: 2-5-62
RS 7321/9901

MR. J. J. KANE - 7145
Attn: C. D. Gragg

CENTRAL RECORD FILE	
ACCOUNTABILITY CARD	BB
FILE No.	XW 53 3-2

Re: Spring Constant Test of the XW-53 Case (U)

Summary of Test

The XW-53 was subjected to three static tests to obtain load-deflection data to determine the spring constant of various portions of the XW-53 Case.

Object of Test

The object of this test was to gather load-deflection data on various portions of the XW-53 Case in order to determine their spring constants. The first test was to gather load-deflection data between stations 9 and 67. The second test was to gather load-deflection data between stations 67 and 77 and 77 and 82. The third test was to gather load-deflection data between stations 82 and 93.

INVENTORIED AUG 6 1964 3427-1

Authorization for Test

This test was authorized in an Environmental Test Order from Division 7145 to Division 7321 dated January 23, 1962. The requesting organization's consultant was C. D. Gragg, 7145.

INVENTORIED SEP 14 '65 3428-3

Test Equipment and Instrumentation

The item tested was an XW-53 Case (Dwg. No. 311330).

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The jigs and loading fixtures are listed below:

Barrel, Main	Dwg. No. N18052
Barrel, Case	Dwg. No. N18038
Barrel, Notched	Dwg. No. N18056
Adapter Plate	Dwg. No. N18071

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW DOWNGRADING OR DECLASSIFICATION STAMP	
CLASSIFICATION CHANGED TO: U	AUTHORITY: R. B. Craner
Emelda Selph 7/13/98 PERSON CHANGING MARKING & DATE	RECORD ID: 98SN2822
US Layne 7/22/98 PERSON VERIFYING MARKING & DATE	DATED: 7/13/98

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Test Equipment used.

2 - 6" bore hydraulic cylinders
2 - Baldwin SR-4 load cells, 50,000 lbs. capacity, Serial Nos. 1112, 1114
2 - Baldwin SR-4 strain indicators, Serial Nos. 391902 and 3-59101

Instrumentation

4 - Starrett dial indicators

Procedure

First Test (Station 9 to 67)

The XW-53 minus the D section was placed in the Barrel, Main and bolted down by means of 42 mounting bolts. Barrel, Case (see Figure 1) was attached to the XW-53 by means of the 42 mounting bolts mentioned above. The forward end of the XW-53 at station 9 butted up against a flange on the Barrel, Main.

Load was applied in the axial forward direction to the XW-53 through the Barrel, Case. Load was applied to Barrel, Case at two points 180° apart (see Figure 1).

Two dial indicators were mounted 90° apart on the Barrel, Main to measure the compression of the XW-53 between stations 9 and 67 (see Figures 1 and 2). An additional dial indicator was mounted to the Barrel, Main to determine if it was being compressed a significant amount (see Figure 3).

Load was applied in 10,000-lb. increments up to 100,000 lbs. with deflection readings taken at each increment of load.

Second Test (Station 67 to 77 and Station 77 to 82)

The XW-53 was mounted to the Barrell, Main as in the first test. The D section was mounted to the XW-53 and Barrel, Notched was mounted to the D section at station 82 (see Figure 4).

Load was applied in the axial forward direction to the XW-53 through Barrel, Notched. Load was applied to Barrel, Notched at two points 180° apart (see Figure 4).

Two dial indicators were mounted 90° apart on the Barrel Main to measure the compression of the XW-53 between stations 67 and 77.

Two more dial indicators were mounted 90° apart on the Barrel Main to measure the compression of the XW-53 between stations 77 and 82 (see Figure 4).

Load was applied in 10,000-lb. increments up to 50,000 lbs. with deflection readings taken at each increment of load.

Third Test (Station 82 to 93)

The XW-53 remained mounted in the Barrel Main as in the first and second tests.

Barrel Notched was removed and Adapter Plate was attached to the XW-53 at the same location as the firing set is normally attached, station 93 (see Figure 5).

Load was applied in the axial forward direction to the XW-53 through Adapter Plate. Load was applied at only one location (see Figure 5).

Two dial indicators were mounted at 90° apart on the XW-53 at the location shown in Figure 5. These dial indicators were used to measure the compression of the XW-53 between stations 82 and 93.

The XW-53 was loaded in increments up to 30,000 lbs with deflection readings taken at each increment of load.

Results

The XW-53 was subjected to three static tests to obtain load-deflection data to determine the spring constant of various portions of the XW-53 case. Listed below are the load-deflection tables.

First Test (Station 9 to 67)	Table I
Second Test (Station 67 to 77 and 77 to 82)	Table II
Third Test (Station 82 to 93)	Table III

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Approved By: R. S. Hooper
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7/7A - R. K. Smeltzer, 3421-3

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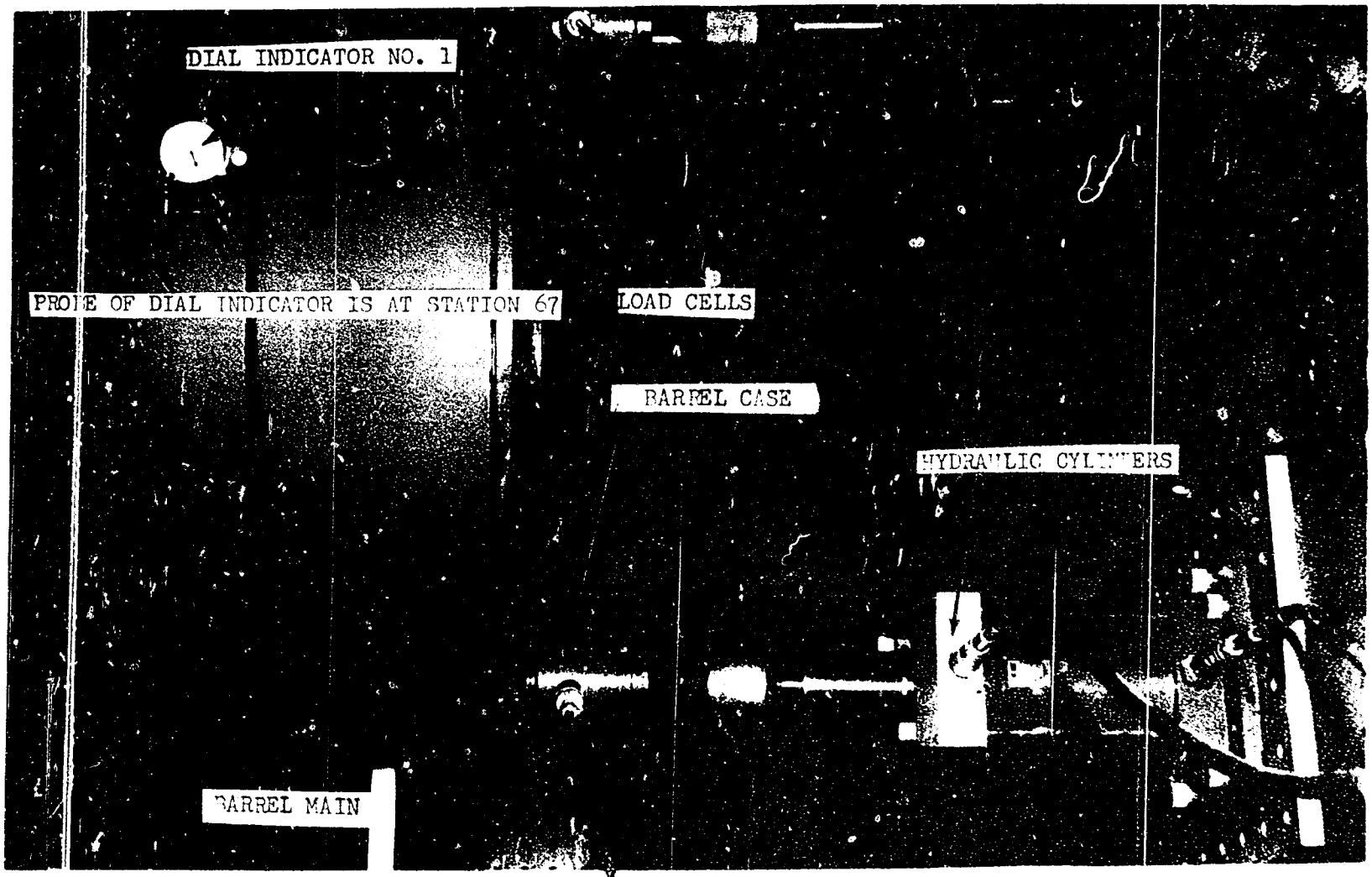

FIG. 1 -

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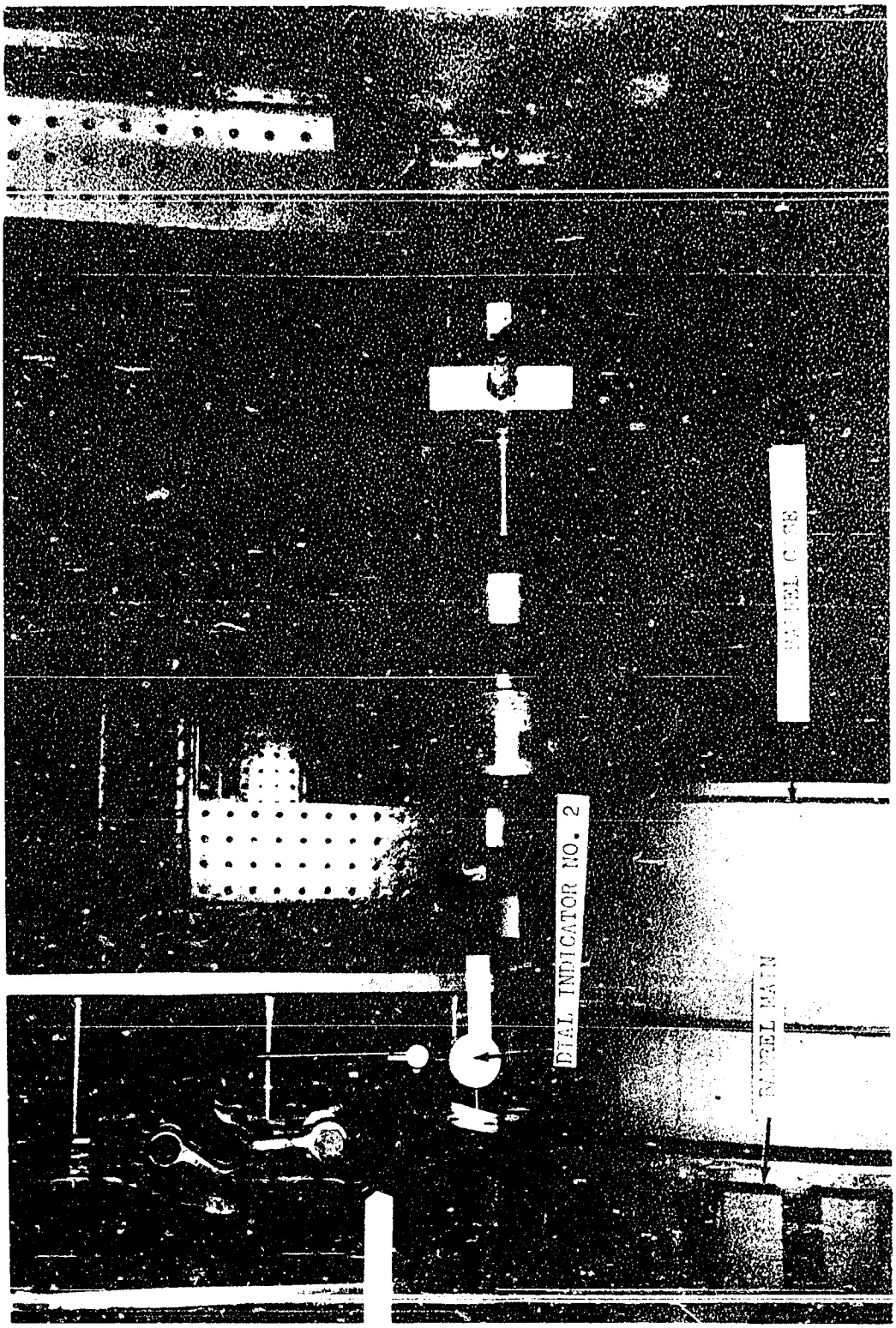

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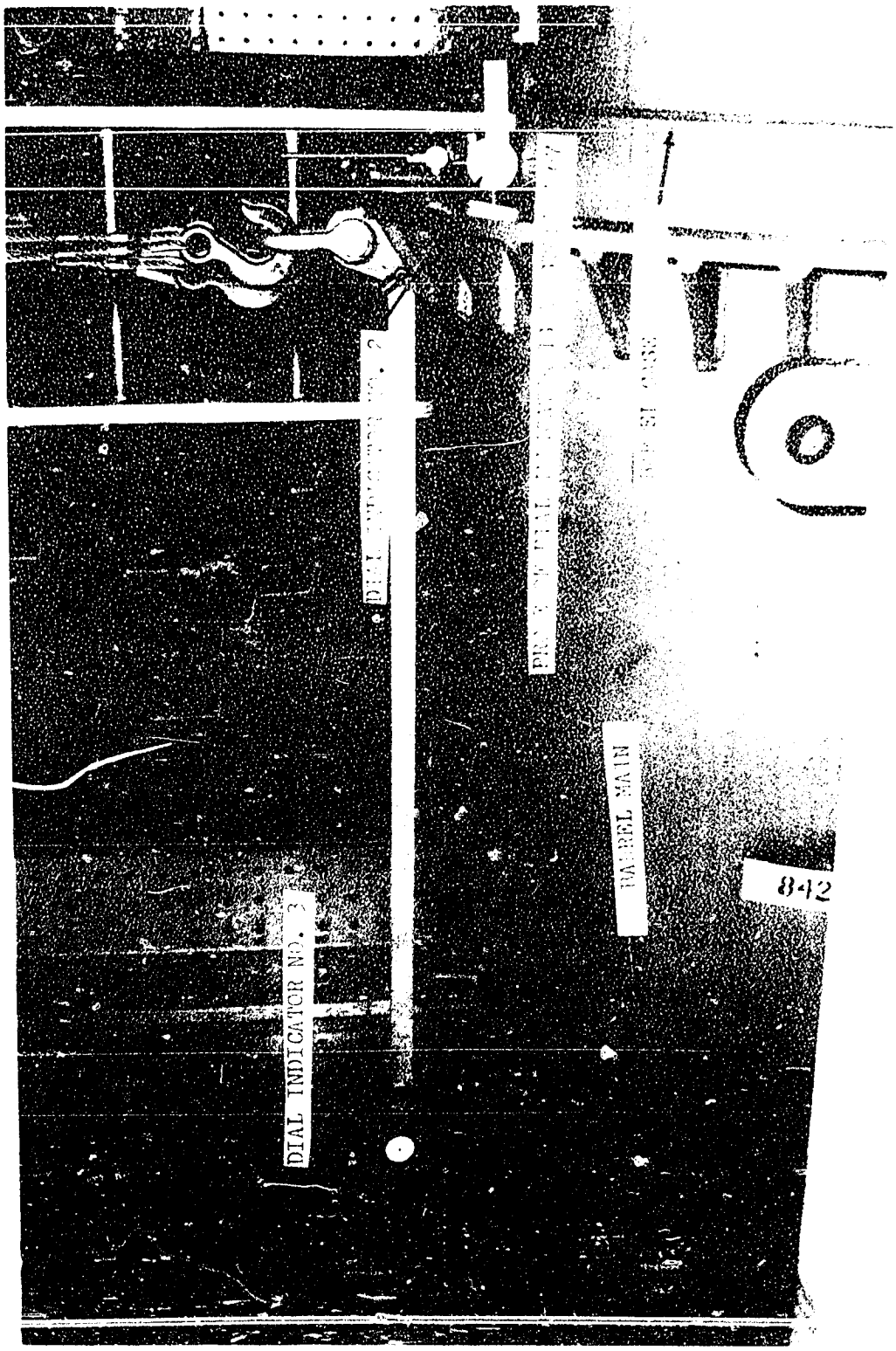

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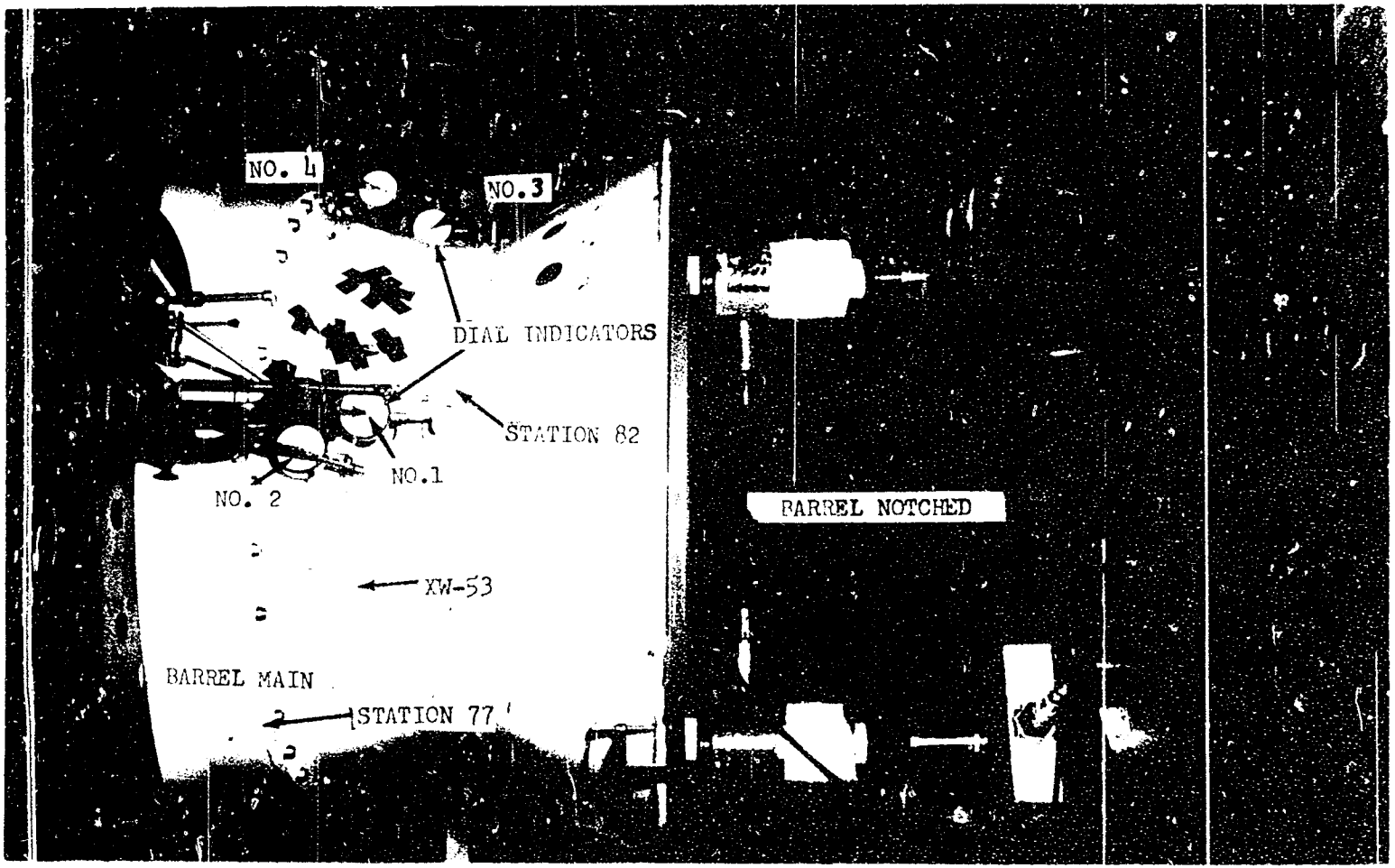

FIGURE 4 - TEST SETUP FOR SECOND TEST (STATION 67 TO 77 and STATION 77 TO 82) IN SPRING CONSTANT TEST OF XW-53 CASE

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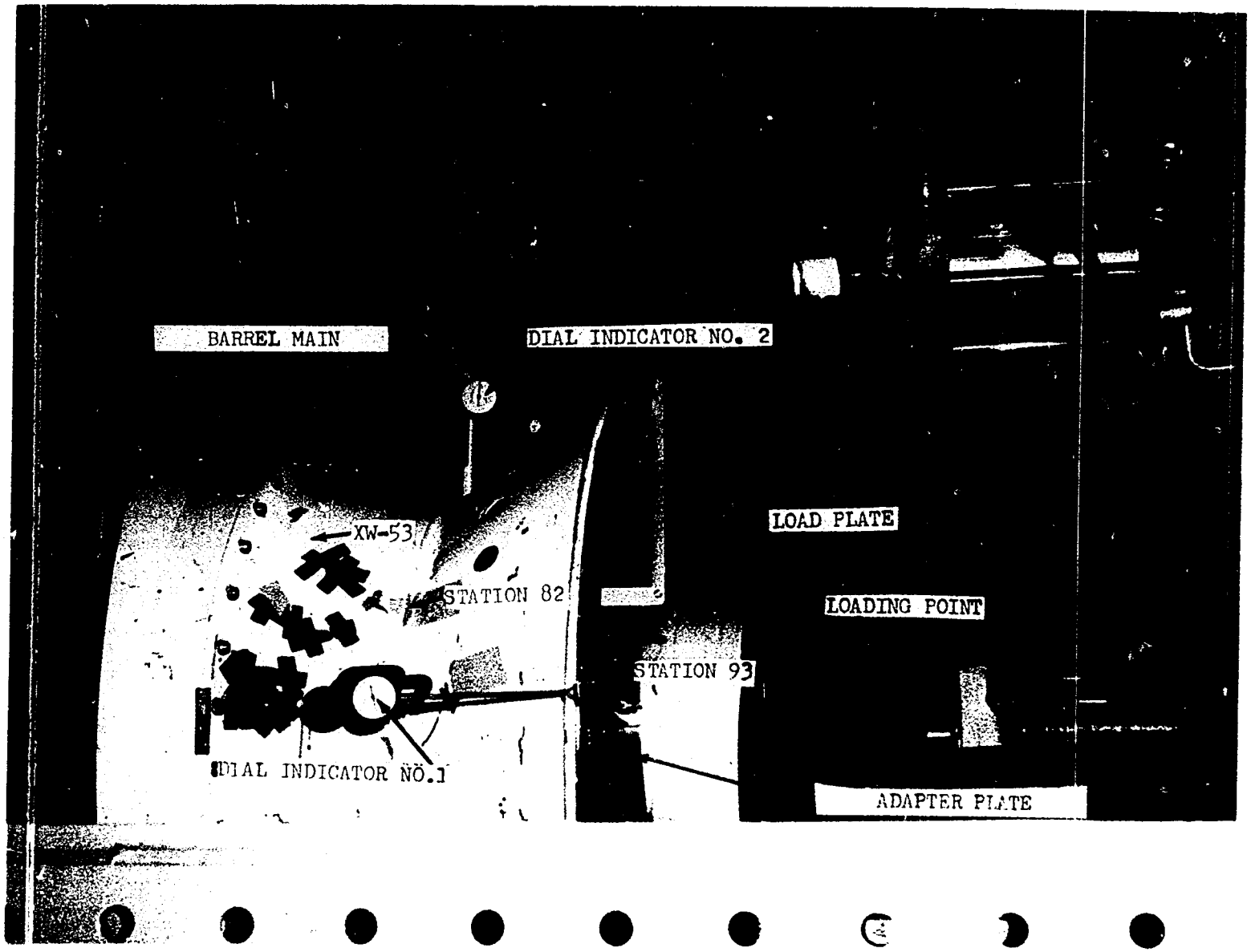

FIGURE 5 - [illegible] STATION 82 TO 93 [illegible]

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TABLE I

Load-Deflection Data on First Test (Station 9 to 67)
Spring Constant Test of XW-53 Case

Load (lbs)	Deflection* (inches) 1	2	3
0	0.000	0.000	0.000
10,000	0.000	0.000	0.000
20,000	0.000	-0.001	0.000
30,000	0.000	-0.002	0.000
40,000	-0.0005	-0.002	0.001
50,000	-0.001	-0.003	0.001
60,000	-0.001	-0.004	0.001
70,000	-0.001	-0.004	0.001
80,000	-0.001	-0.005	0.001
90,000	-0.0015	-0.006	0.001
100,000	-0.0015	-0.006	0.001
0	-0.0005	-0.0005	0.000

*Dial-indicator locations are shown in Figures 1, 2, and 3.

Notes: 1. Numbers to the fourth place are estimated numbers.
2. Negative numbers signify the movement was away from the deflection gage; positive numbers signify the movement was towards the deflection gage.

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TABLE II

Load-Deflection Data on Second Test
(Stations 67 to 77 and 77 to 82)
Spring Constant Test of KW-53 Case

Load (lbs)	Deflection* (inches) 1	2	3	4
0	0.000	0.000	0.000	0.000
10,000	0.0025	-0.001	0.003	-0.002
20,000	0.004	-0.003	0.007	-0.005
30,000	0.006	-0.004	0.012	-0.007
0	0.0005	-0.0005	0.0005	-0.0005

*Dial-indicator locations are shown in Figure 4.

Notes: 1. Numbers to the fourth place are estimated numbers.
2. Negative numbers signify the movement was away from the deflection gage; positive numbers signify the movement was towards the deflection gage.

TABLE III

Load-Deflection Data on Third Test
(Station 82 to 93)
Spring Constant Test of XW-53 Case

Load (lbs)	Deflection* (inches) 1	2
0	0.000	0.000
5,000	0.0025	0.0005
10,250	0.003	0.0005
15,000	0.0035	0.0015
20,000	0.004	0.003
0	0.001	0.001

*Dial-indicator locations are shown in Figure 5.

Notes: 1. Numbers to the fourth place are estimated numbers.
2. Positive numbers signify the movement was towards the deflection gage.