



the southern electric system



Visible Corona Test on 765 kV Damper

Research Consulting

Project C92520

April, 1992

Requested by: Mr. Al Richardson
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Georgia Power Company
Research Center
Project Report

Project No. C92520

April 8, 1992

Project Name: Visible Corona Test on
765 kV Damper

Objective and Summary:

Mr. Al Richardson of Research Consulting requested Southern Electric International / Georgia Power Research Center evaluate corona limits on a prototype four conductor damper to be used on 765 kV transmission lines. Corona initiation would need to be greater than 442 kV (line to ground voltage for 765 kV). Testing indicated corona initiation at 358 kV on the outer mounting clamps. The clamps will require redesign before additional retesting.

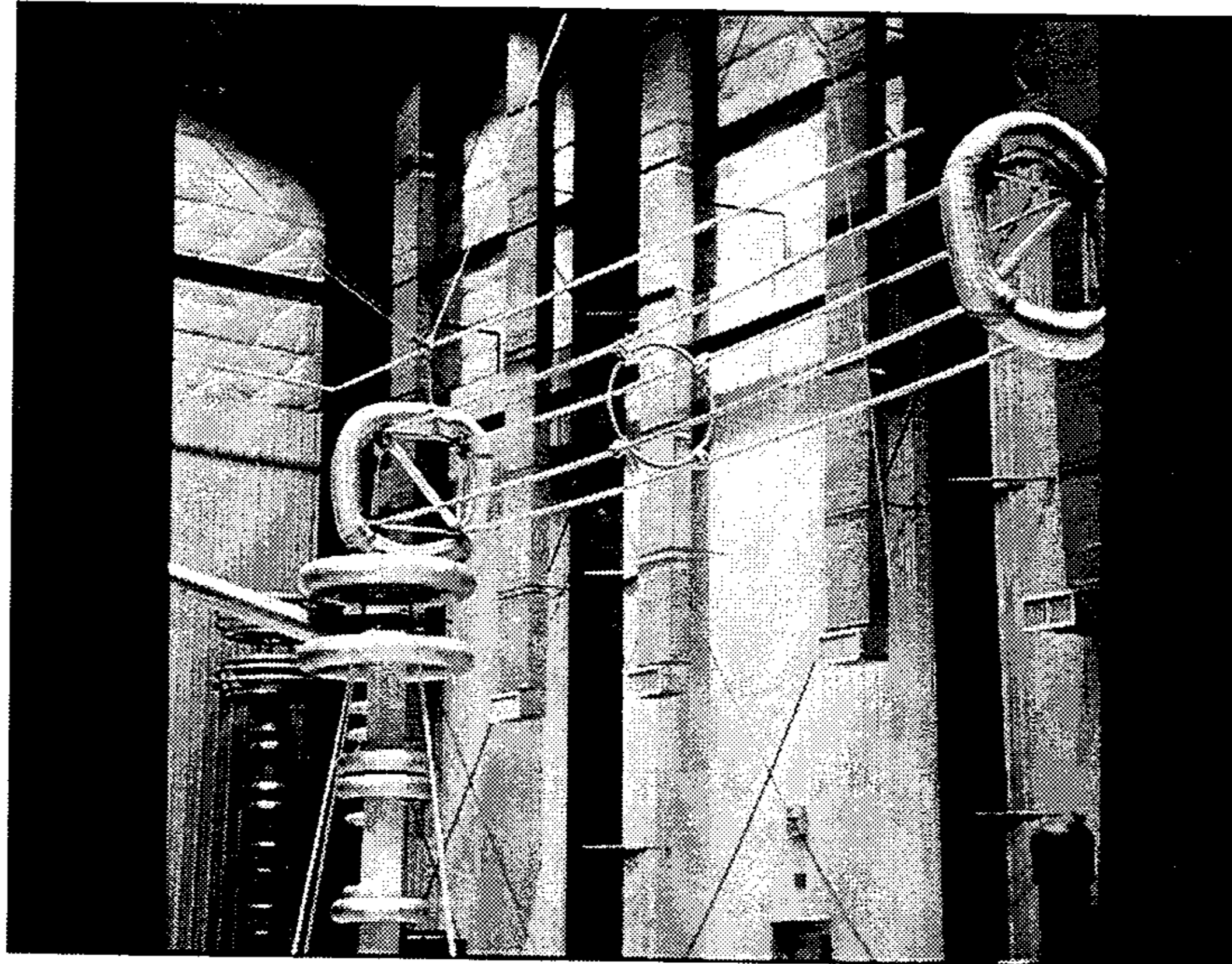
Equipment Used:

Biddle 700 kV AC Test Set
Biddle 700 kV AC Voltage Divider
Light Intensifier

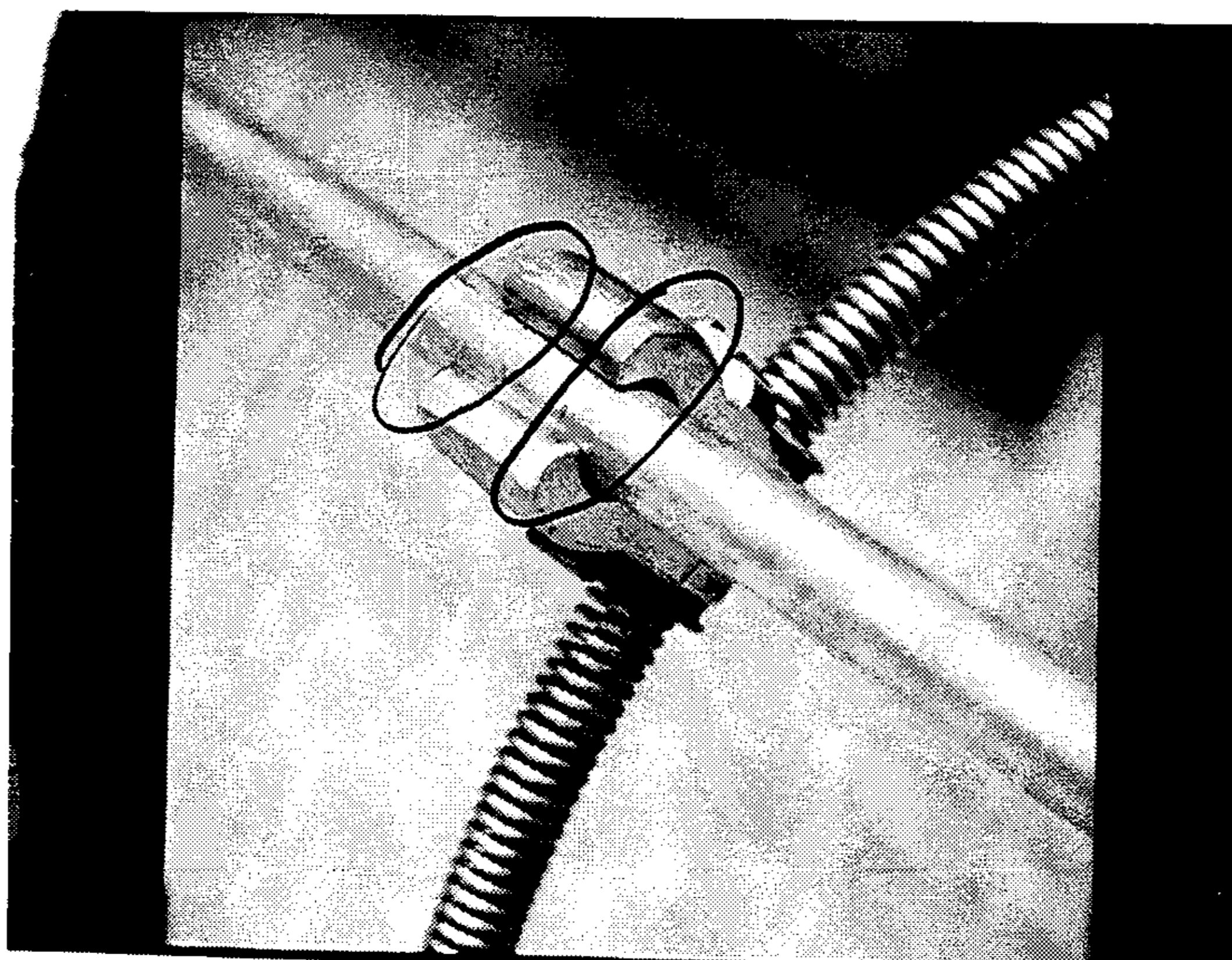
Test Procedure and Results:

The sample was mounted in the center on a 24 foot, 4 conductor bundle of 1.35 inch aluminum tubing, terminated on each end with corona rings. The assembly was suspended with polyethylene ropes and energized by placing one corona ring on the output of the voltage divider with the assembly being parallel to the floor. The assembly was then energized and voltage raised until corona was evident in a darkened laboratory using a light intensification device. The corona inception voltage (360 kV) and the corona extinction voltage (358 kV) and location (mounting clamps) was noted. Mr. Richardson was notified of the results and a future redesign of the clamp will be tested.

TEST CONFIGURATION



CORONA LOCATION



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25 September 1992

Mr. A. S. Richardson, Jr.
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Laboratory Test Report

Two cable fixtures were loaded to failure. The attached photographs show the test assemblies. Recordings of load vs. cross head displacement are attached.

The failure loads were:

Fixture #1	3,000 lbs.
Fixture #2	10,000 lbs.

Note: During the test of Fixture #2, there was a load drop corresponding to the opening of the two brackets. However, the load to failure (fracture at the bolt hole) should not depend on the separation of the two brackets.

Attachments:
1 graph
5 photos

RP/

Fixture #1 (the AR Spacer/Damper sleeve clamp) was held in the tensile test machine as shown in Figure 1. The fixture failed in tension at 3,000 lb, fracturing at the juncture of the u-shaped "hook" and the vertical member as shown in Figure 2. The load history is given in the graph of Figure 3.

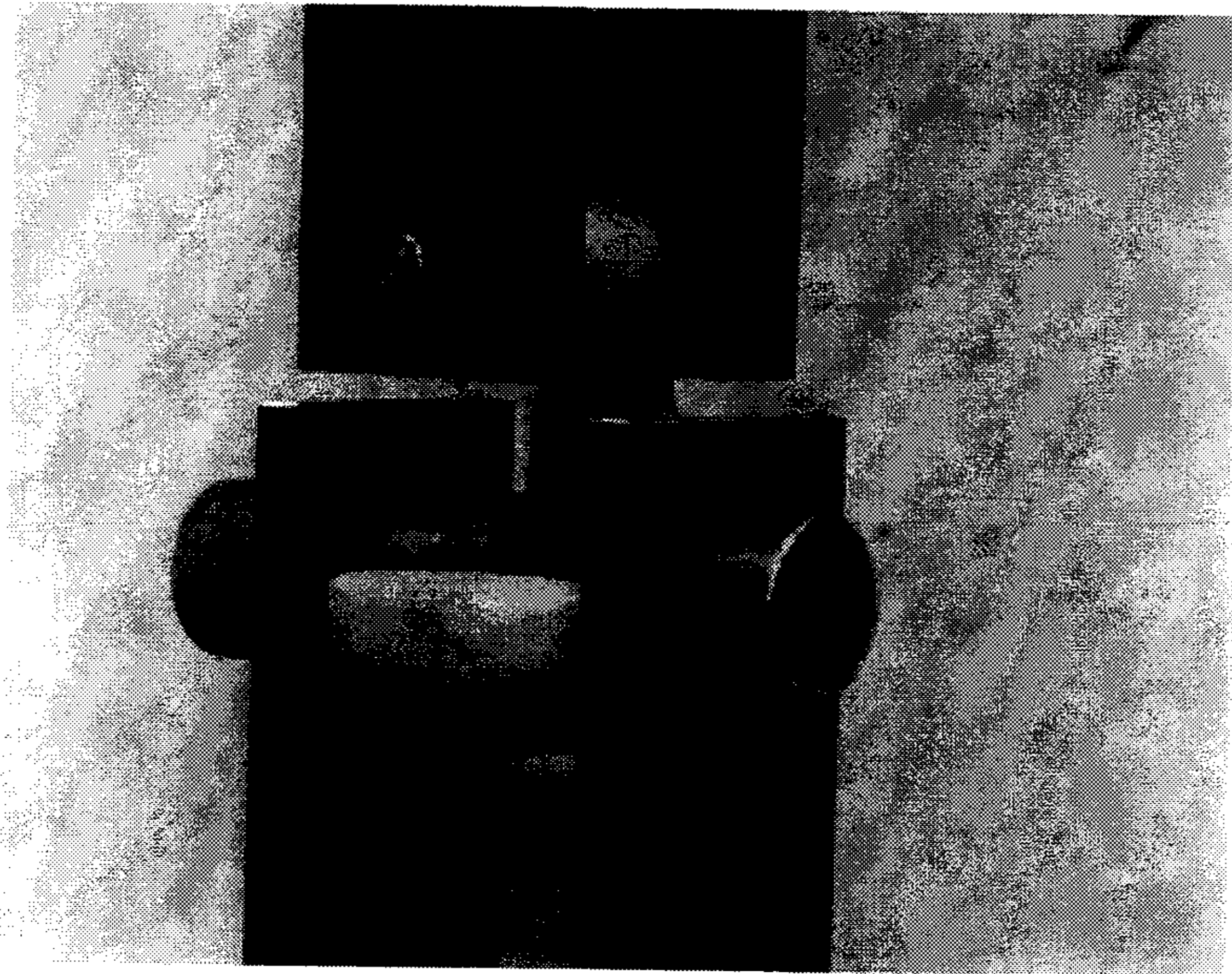


FIGURE 1 — *Fixture #1 (sleeve clamp in test jig.)*

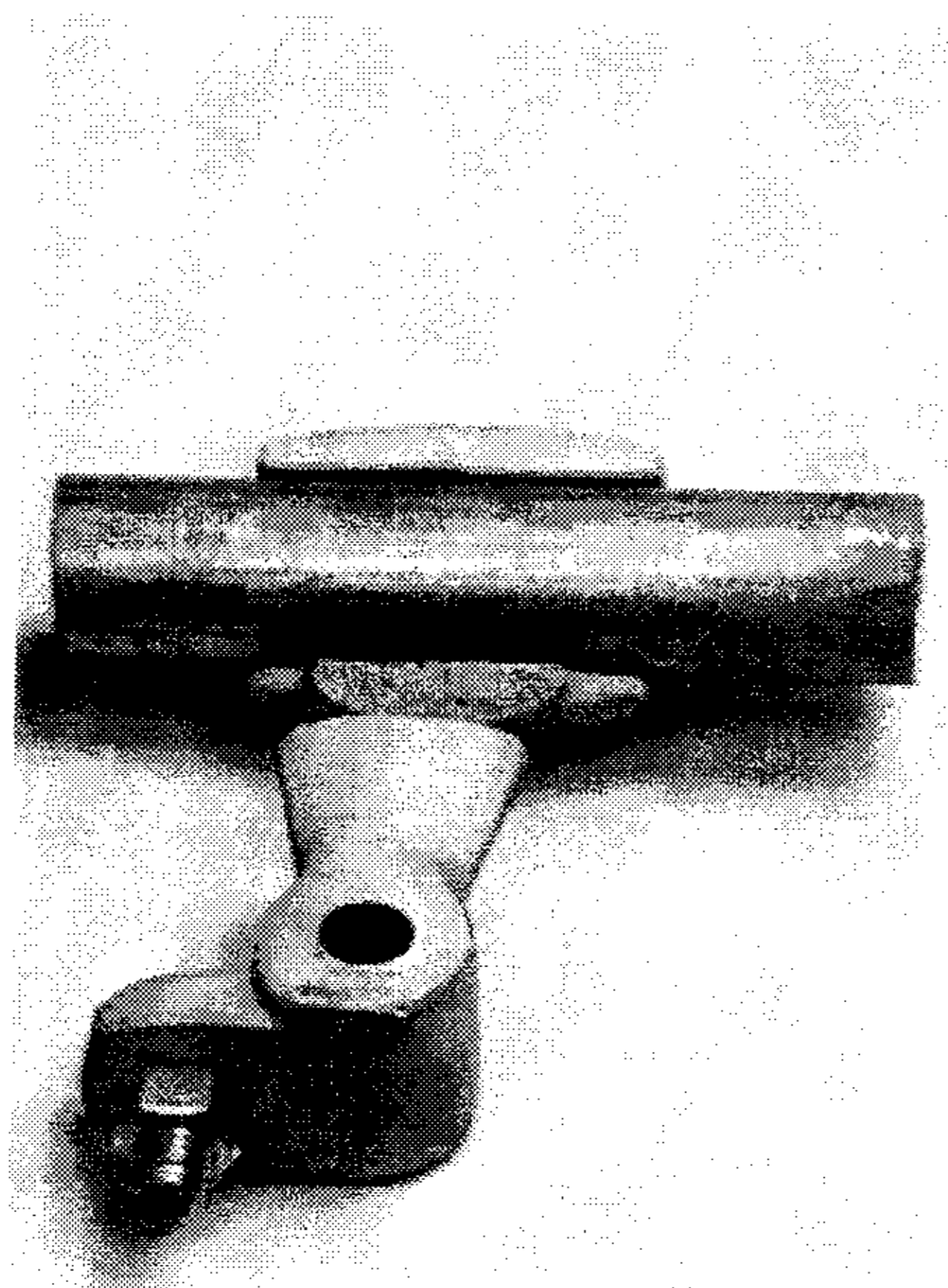


FIGURE 2 — *Fracture of sleeve clamp in tension.*

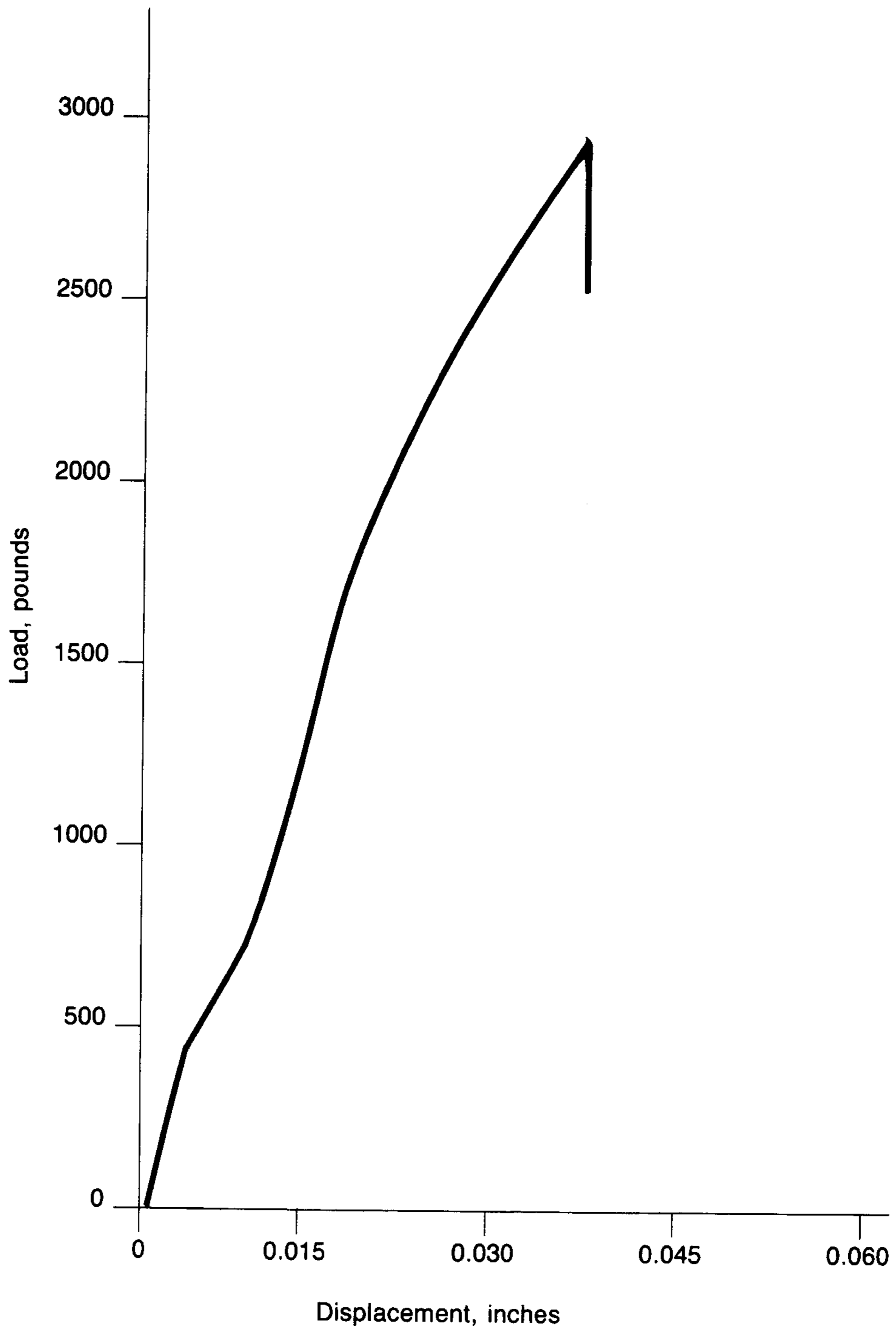


FIGURE 3 — *Load history to failure of sleeve clamp.*