AREVA

February 10, 2005 Letter No. 99008-05-001A

ATTN: Document Control Desk
Director, Spent Fuel Project Office
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: Application for a Certificate of Compliance for the Mixed Oxide Fresh Fuel Package, Revision 1, DOCKET No. 71-9295

Reference: PacTec Letter, "Application for a Certificate of Compliance for the Mixed Oxide Fresh Fuel Package, Revision 1, Docket No. 71-9295," dated February 4, 2005.

Dear Sirs:

As a follow-up to the our submittal in the referenced letter, Packaging Technology, Inc., inadvertently did not include some of the Revision 1 pages that were affected by the revision to the Safety Analysis Report for the Mixed Oxide Fresh Fuel Package (MFFP), Docket 71-9295. Ten sets of these pages are hereby submitted to complete the paper copies of the revised pages that were previously transmitted for the SAR. In addition, an updated Delete-Insert instruction page is included to reflect all of the revised SAR pages for your use.

If you have any questions or comments regarding this submittal, please contact me at 678-362-7110 or at clindner@pactec-tn.com if you have any questions.

Sincerely,

GL Clark for

Curt Lindner, Project Manager
Packaging Technology, Inc.

Enclosures: (10) Delete/Insert Instructions (Revised), Revision 1 to MFFP Safety Analysis Report
(10) Appendix 2.12.3, Pages 2.12.3-15 thru 2.12.3-28, 2.12.3-31 thru 2.12.3-32

cc: M. Rahimi, NRC/SFPO

Project File 99008

NMSS01

PACKAGING TECHNOLOGY, INC.
1102 Broadway Plaza, Suite 300, Tacoma, WA 98402-3526 – USA – Tel: 1 253.383.9000 – Fax: 1 253.383.9002

Delete/Insert Instructions (Revised)
Revision 1 to MFFP Safety Analysis Report
(10 Copies)

Please incorporate the attached Revision 1 SAR pages as follows:

SAR Section	Delete	Insert
Cover & Spline	Revision 0	Revision 1
Title Page	Revision 0	Revision 1
Table of Contents	Revision 0	Revision 1
1.0	• 1.1-1 thru 1.1-2, Rev. 0 • 1.2-3 thru 1.2-8, Rev. 0 • 1.4.2-1 thru 1.4.2-2, Rev. 0	• 1.1-1 thru 1.1-2, Rev. 1 • 1.2-3 thru 1.2-8, Rev. 1 • 1.4.2-1 thru 1.4.2-2, Rev. 1
1.4.2	• Dwg 99008-10, Rev. 0 • Dwg 99008-20, Rev. 0 • Dwg 99008-30, Rev. 0 • Dwg 99008-31, Rev. 0 • Dwg 99008-33, Rev. 0 • Dwg 99008-34, Rev. 0 • Dwg 99008-40, Rev. 0	• Dwg 99008-10, Rev. 1 • Dwg 99008-20, Rev. 1 • Dwg 99008-30, Rev. 2 • Dwg 99008-31, Rev. 1 • Dwg 99008-33, Rev. 1 • Dwg 99008-34, Rev. 2 • Dwg 99008-40, Rev. 1
2.0	• 2.1-7 thru 2.1-8, Rev. 0 • 2.2-1 thru **2.2-6**, Rev. 0 • 2.4-1 thru 2.4-4, Rev. 0 • 2.6-7 thru 2.6-16, Rev. 0 • 2.7-3 thru **2.7-14**, Rev. 0	• 2.1-7 thru 2.1-8, Rev. 1 • 2.2-1 thru 2.1-8, Rev. 1 • 2.4-1 thru 2.4-4, Rev. 1 • 2.6-7 thru 2.6-16, Rev. 1 • 2.7-3 thru 2.7-16, Rev. 1
2.12.1	2.12.1-1 thru 2.12.1-22, Rev. 0	2.12.1-1 thru 2.12.1-24, Rev. 1
2.12.2	2.12.2-5 thru 2.12.2-8 Rev. 0	2.12.2-5 thru 2.12.2-8 Rev. 1
2.12.3	2.12.3-9 thru 2.13.3-46, Rev. 0	2.12.3-9 thru 2.13.3-50, Rev. 1[(1)]
2.12.5	2.12.5-3 thru 2.12.5-82, Rev. 0	2.12.5-3 thru 2.12.5-94, Rev. 1
3.0	• 3.2-1 thru 3.2-4, Rev. 0 • 3.5-1 thru 3.5-16, Rev 0	• 3.2-1 thru 3.2-4, Rev. 1 • 3.5-1 thru 3.5-18, Rev 1
6.0	• 6.2-1 thru 6.2-2, Rev. 0 • 6.3-1 thru 6.3-10, Rev.0 • 6.3-13 thru 6.3-14, Rev. 0 • 6.3-17 thru 6.3-18, Rev. 0 • 6.4-1 thru 6.4-4, Rev. 0 • 6.5-1 thru 6.5.2, Rev. 0 • 6.6-1 thru 6.6-2, Rev. 0 • 6.8-1 thru 6.8-14, Rev. 0	• 6.2-1 thru 6.2-2, Rev. 1 • 6.3-1 thru 6.3-10, Rev.1 • 6.3-13 thru 6.3-14, Rev. 1 • 6.3-17 thru 6.3-20, Rev. 1 • 6.4-1 thru **6.4-6**, Rev. 1 • 6.5-1 thru 6.5.2, Rev. 1 • 6.6-1 thru 6.6-2, Rev. 1 • 6.8-1 thru 6.8-14, Rev. 1
7.0	• 7.1-3 thru 7.1-4, Rev. 0 • 7.2-3 thru 7.2-4, Rev. 0	• 7.1-3 thru 7.1-4, Rev. 1 • 7.2-3 thru 7.2-4, Rev. 1
8.0	8.1-13 thru 8.1-14, Rev. 0	8.1-13 thru 8.1-14, Rev. 1

Note: (1) Replacement pages 2.12.3-15 through 2.12.3-28, and 2.12.3-31 through 2.12.3-32, are labeled Revision 0.

b. The closure lid bolt disassembly torques ranged from 180 ft-lb_f to 205-lb_f. None of the bolts appeared to be damaged.

c. Three impact limiter bolts on the lid end impact limiter could not be removed with standard tools and had to be cut-off.

d. The containment body did not buckle due to longitudinal accelerations. Note that the containment body had two puncture dents resulting from Test Series 3.

e. Because this test followed the puncture drop tests of Test Series 3, the strongback could not be removed from the body. The description of the strongback and containment boundary internal damage is based on what was visible with the closure lid removed and by the borescope inspection on the interior.

f. The top plate of the strongback was permanently deformed outwards (towards the closure lid) by approximately 1/2 inch.

g. The strongback retained its basic geometry with minor bending of the longitudinal plates where connected to the top plate.

h. The clamp arms remained in place and retained the dummy fuel assemblies in their positions.

i. The neutron poison plates remained in position and had two minor cracks near the top nozzle of the prototypic fuel assembly. The cracks were similar to those experienced in Test 1, Series 2, shown in Figure 2.12.3-24.

2.12.3.9 Pre-Test and Post-Test Leakage Rate Tests

Demonstration of containment vessel leak tightness was performed prior to and following each test series via a helium leakage rate test of each containment O-ring seal. In addition, a helium leakage rate test of the body structure was performed at the conclusion of the certification test series. Results of the successful mass spectrometer helium leakage rate testing are summarized below.

When accounting for the conversion between air leakage (per ANSI N14.5) and helium leakage, a 2.6 factor applies for standard temperatures and pressures. Thus, a reported helium leakage rate of 8.6×10^{-8} cc/s, helium, is equivalently 3.3×10^{-8} cc/s, air, a level well below the "leaktight" criterion of 1×10^{-7} cc/s, air, per ANSI N14.5.

Sealing Component	Maximum Detected Leakage Rate	Measurement for Test Condition
Main O-ring Seal	$<1.0 \times 10^{-8}$ cc/s, helium	All pre- and post-tests
Vent Port Plug O-ring Seal	2.0×10^{-9} cc/s, helium	All pre- and post-tests
Fill Port Plug O-ring Seal	8.6×10^{-8} cc/s, helium	Test Series 1 post-test
Body Structure	$<1.0 \times 10^{-8}$ cc/s, helium	Pre- and post-tests

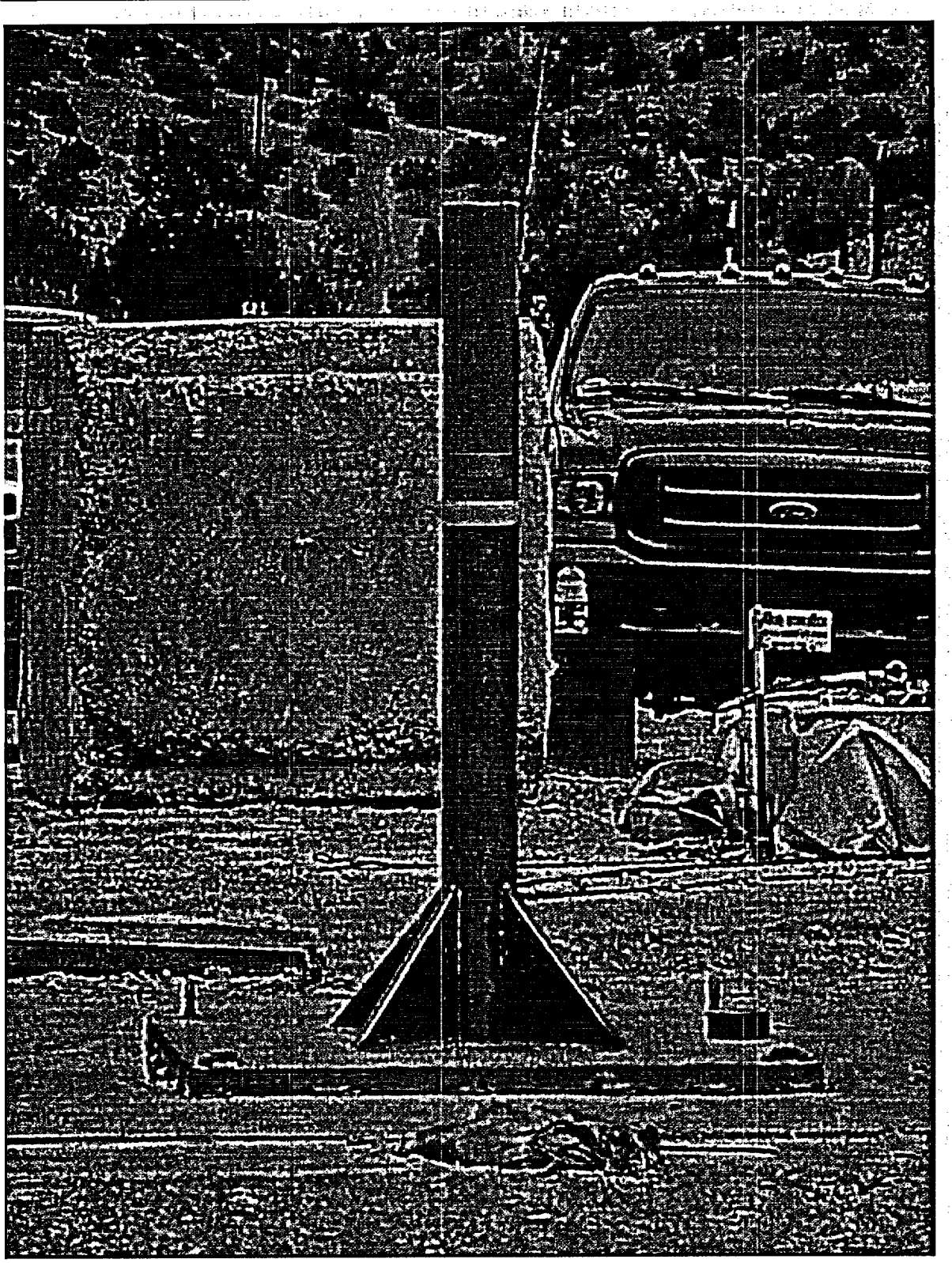

Figure 2.12.3-1 – Attachment of Puncture Bar Assembly to Drop Pad

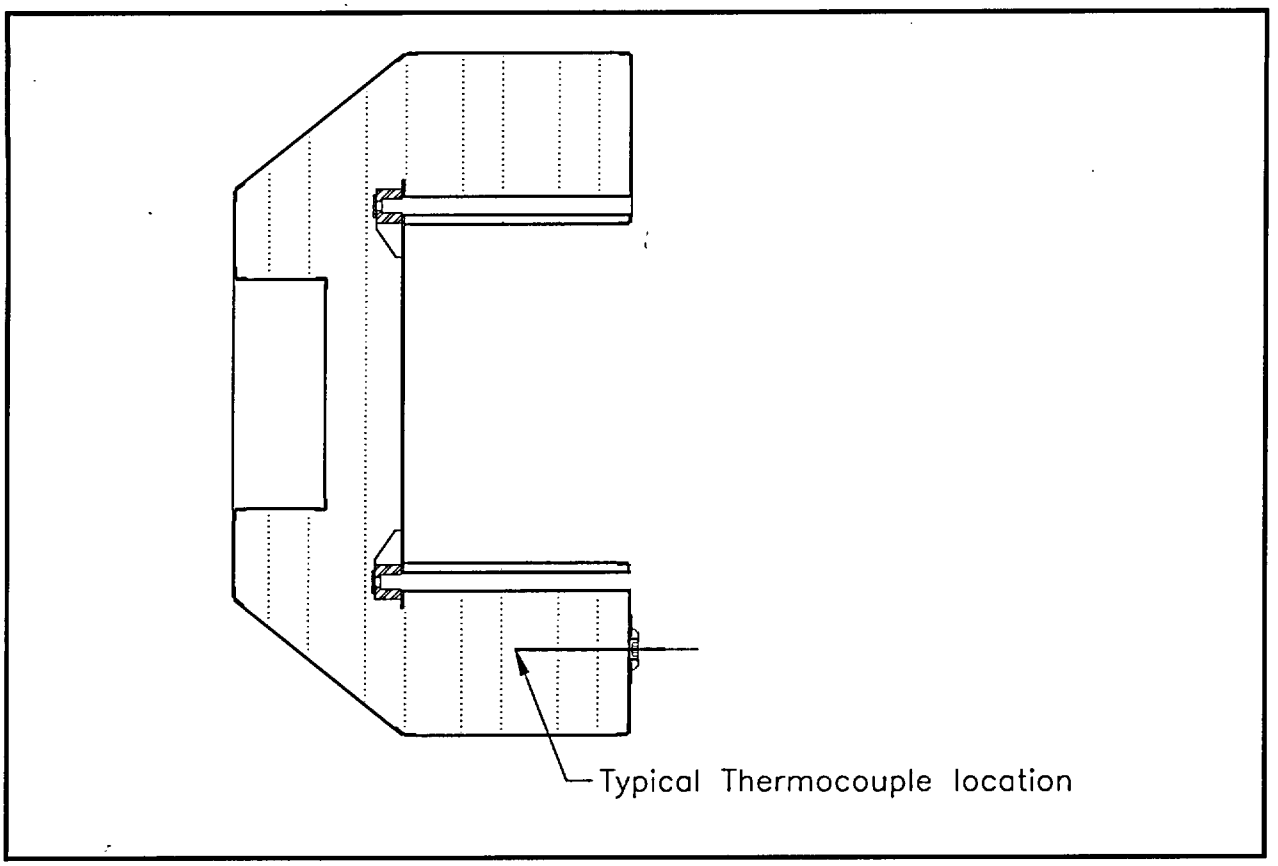

Figure 2.12.3-2 – Typical Location of Thermocouples

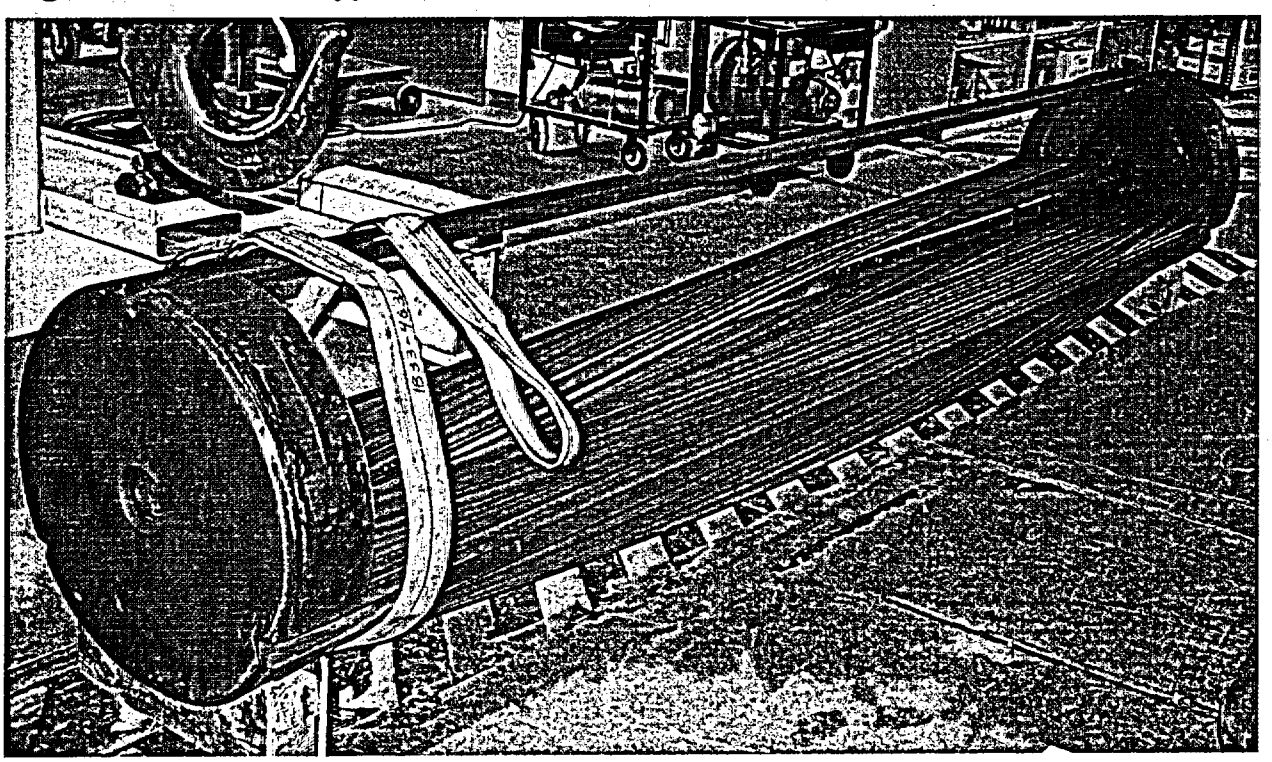

Figure 2.12.3-3 – Mock Payload (Shown Following Test Series 1)

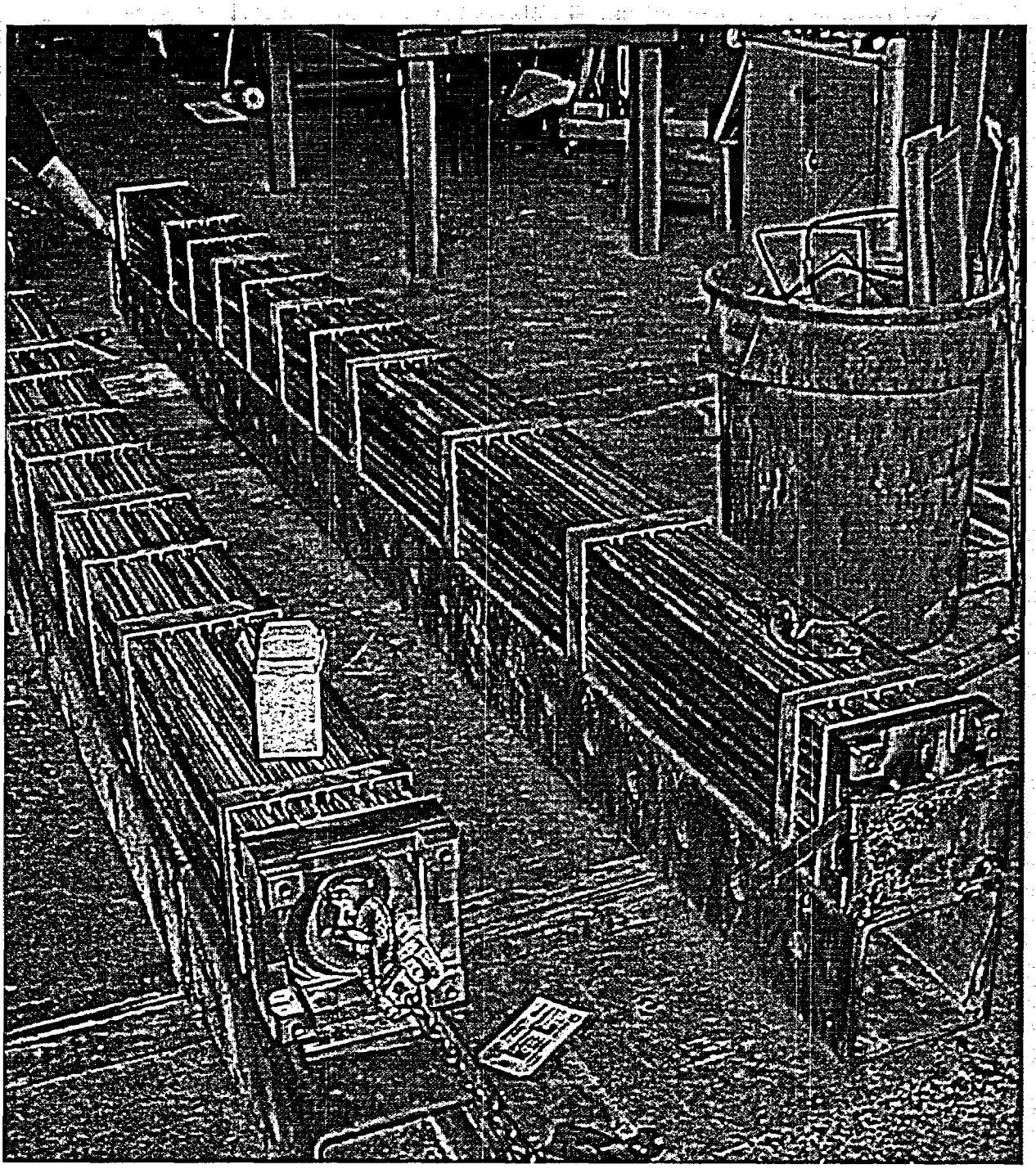

Figure 2.12.3-4 – Dummy Fuel Assemblies (Supported on Fabrication Support Structures)

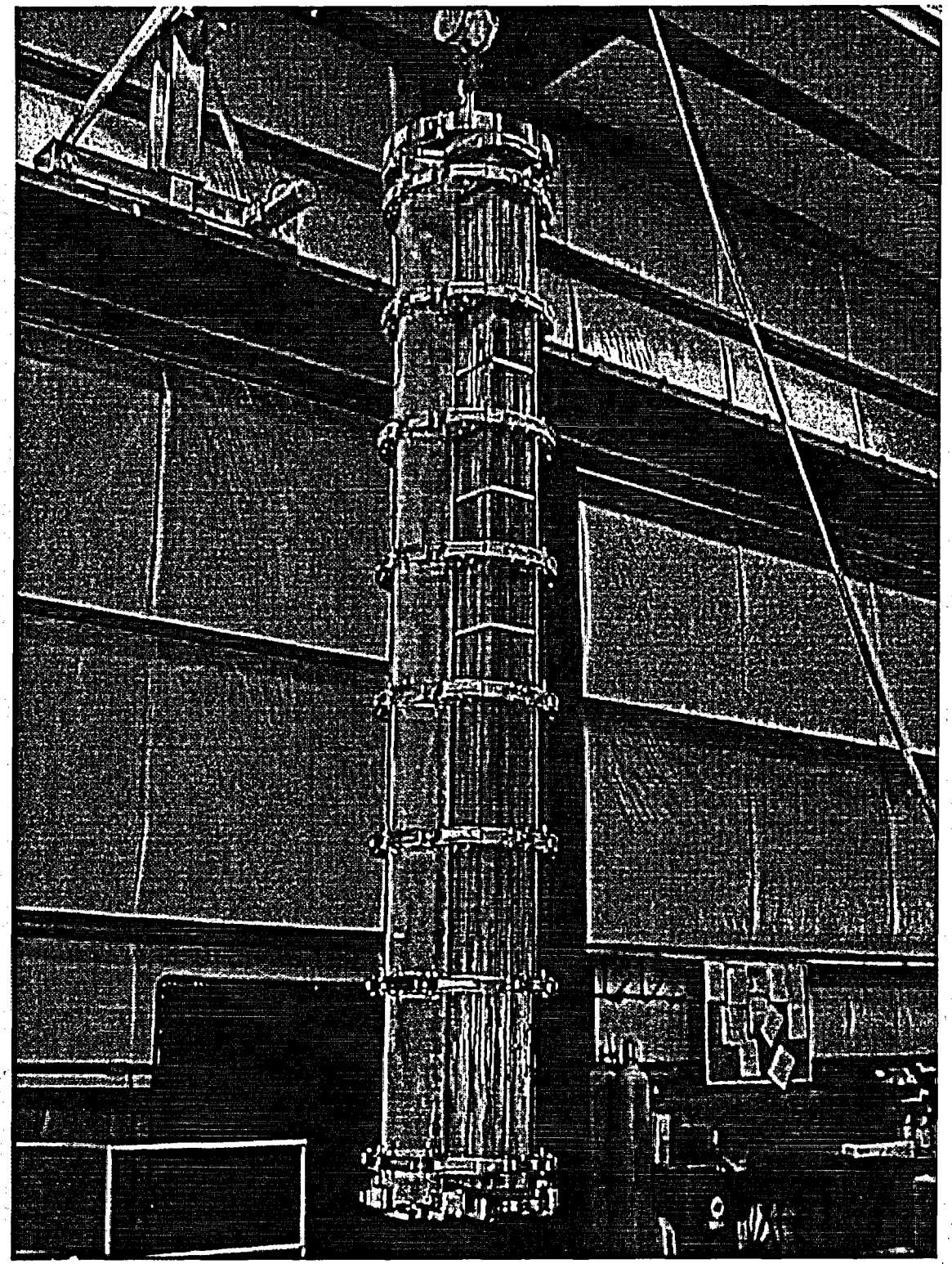

Figure 2.12.3-5 – Dummy Fuel Assembly (Loaded into Strongback)

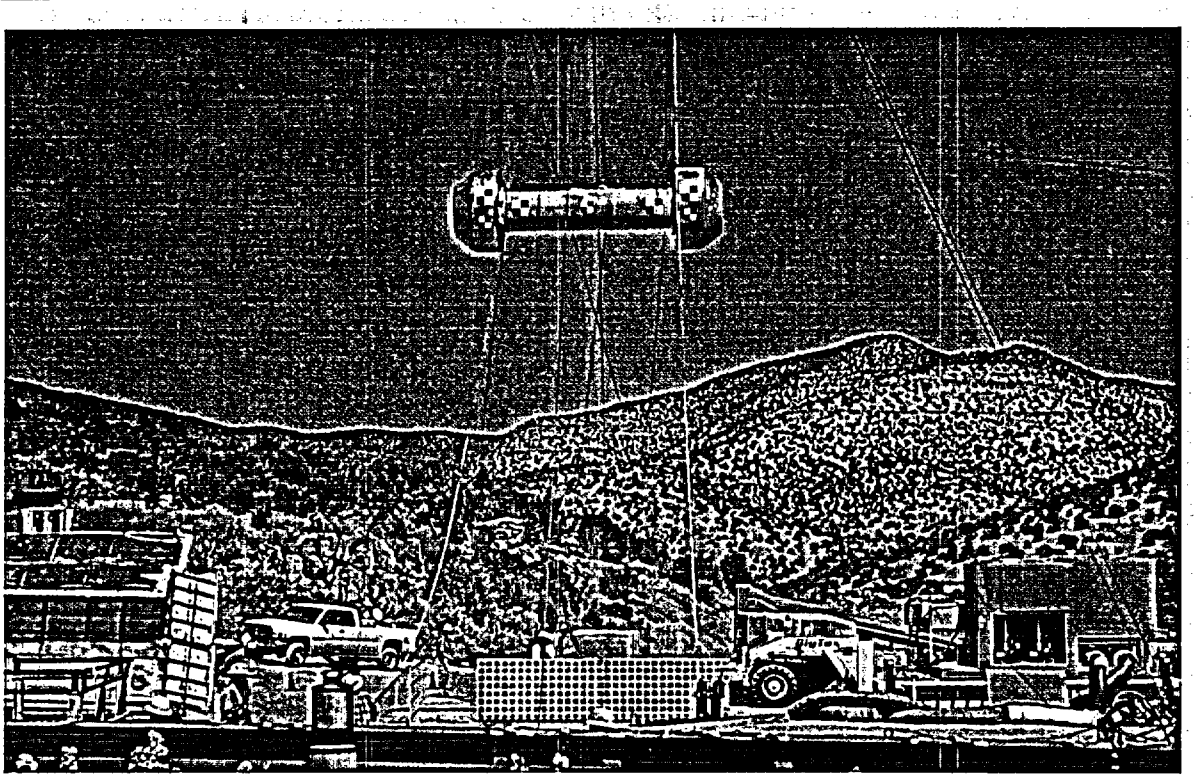

Figure 2.12.3-6 – Series 1, Test 1: HAC 30-Foot Free Side Drop

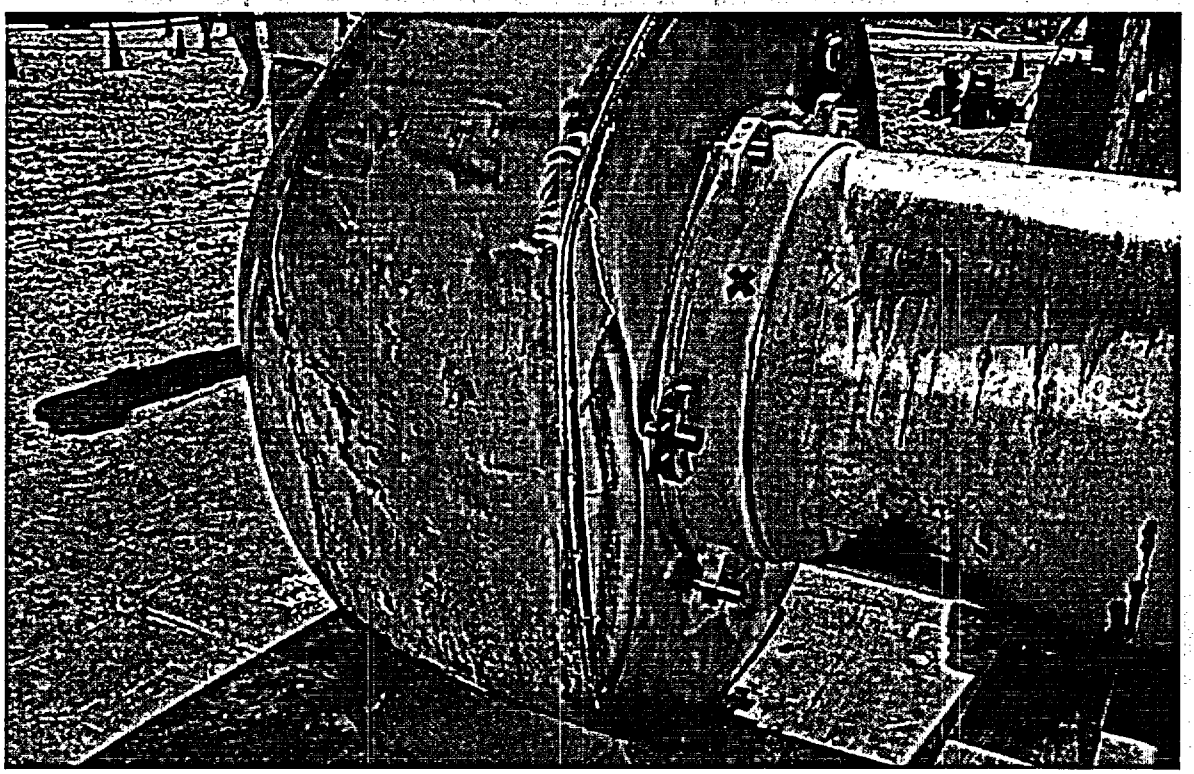

Figure 2.12.3-7 – Series 1, Test 1: View of Lid End Impact Limiter Damage (~28" Length)

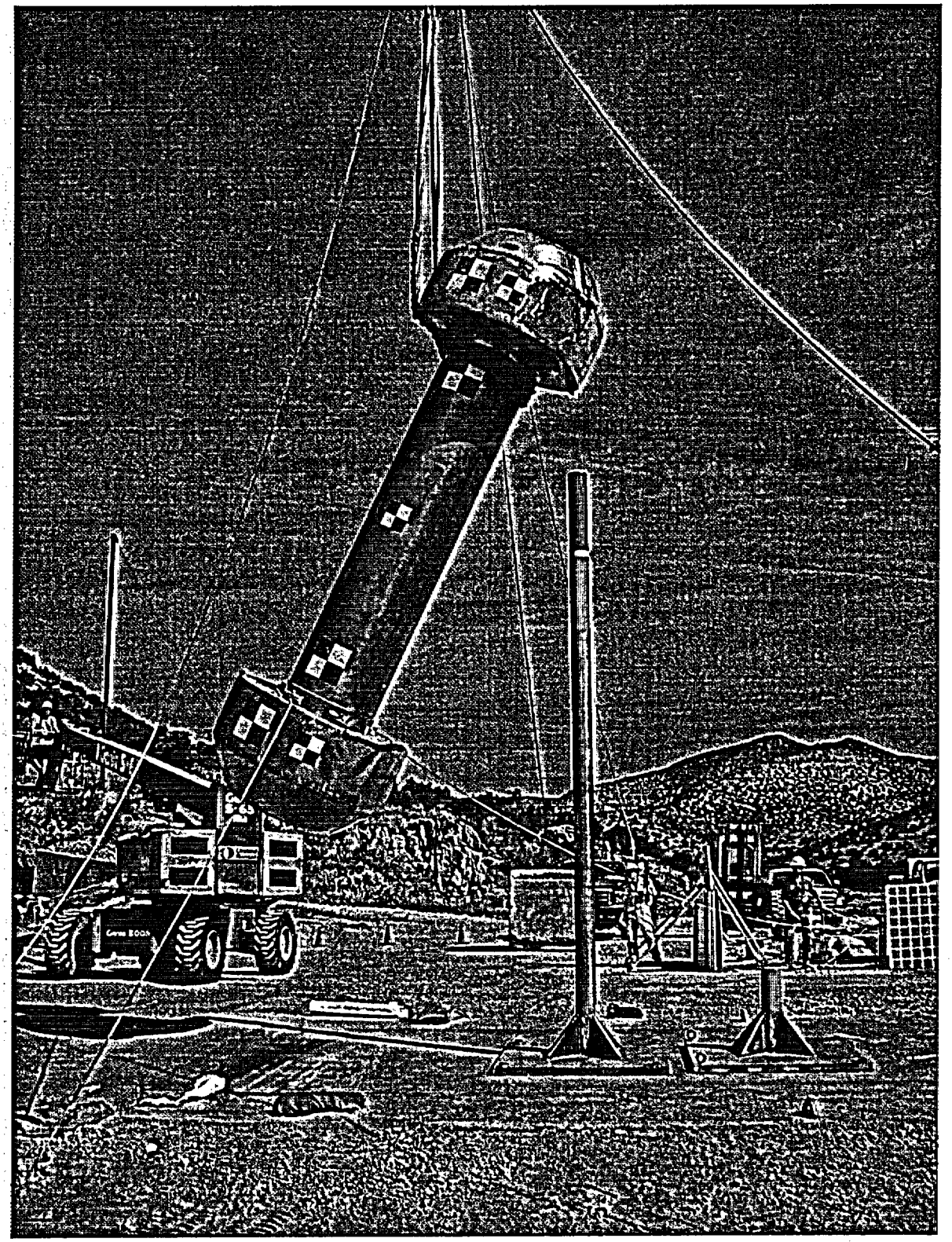

Figure 2.12.3-8 – Series 1, Test 2: HAC 40-inch Near Vertical Puncture Drop

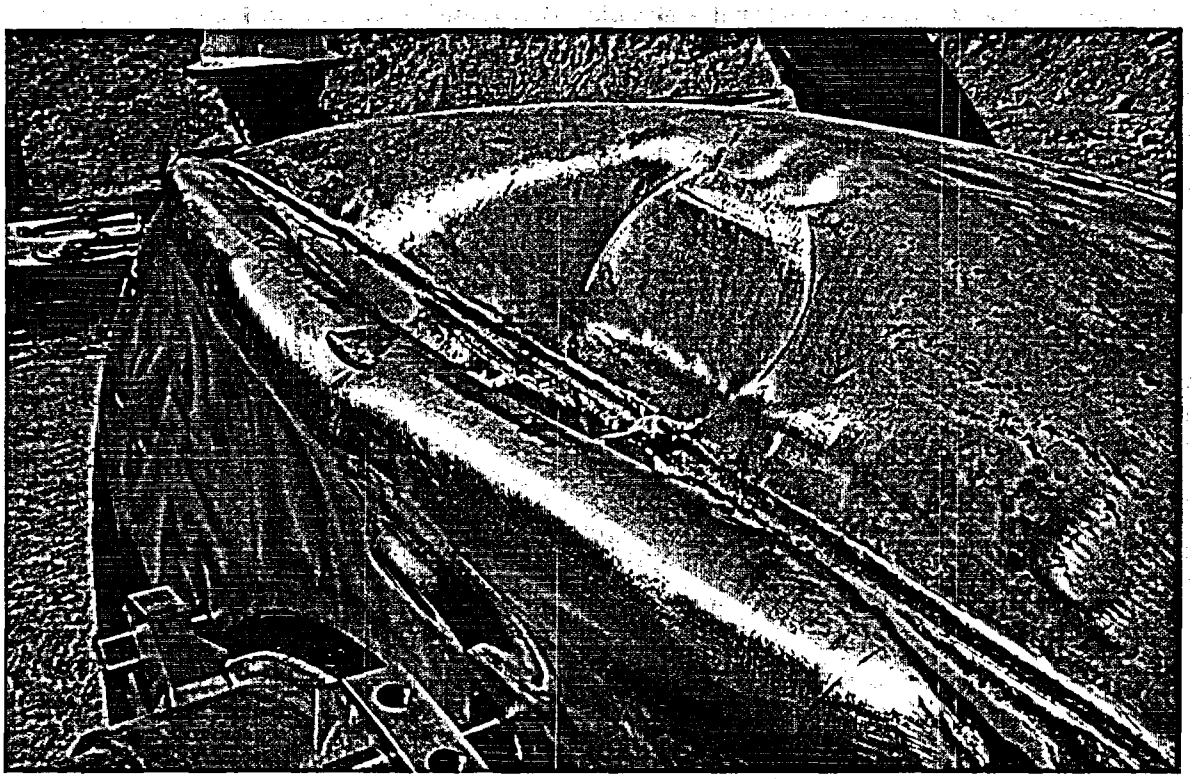

Figure 2.12.3-9 – Series 1, Test 2: Close-up View of Puncture Damage

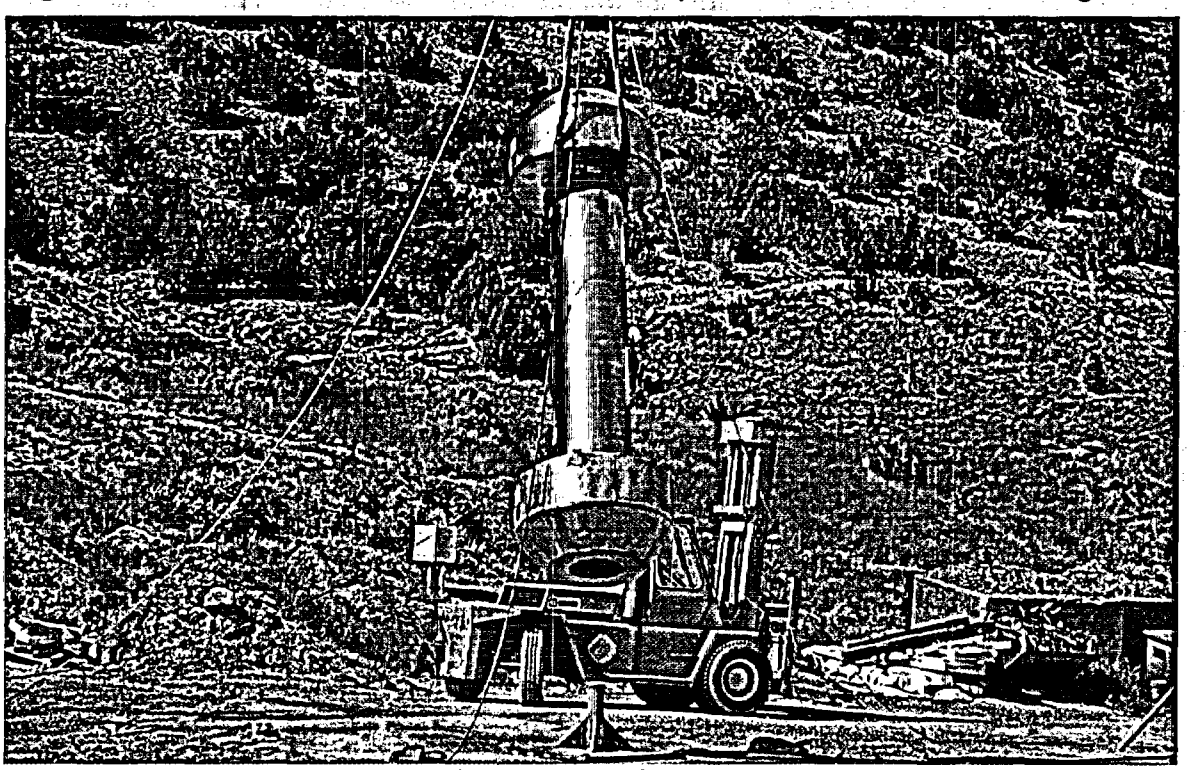

Figure 2.12.3-10 – Series 1, Test 3: HAC 65-Degree Oblique 40-Inch Puncture Drop

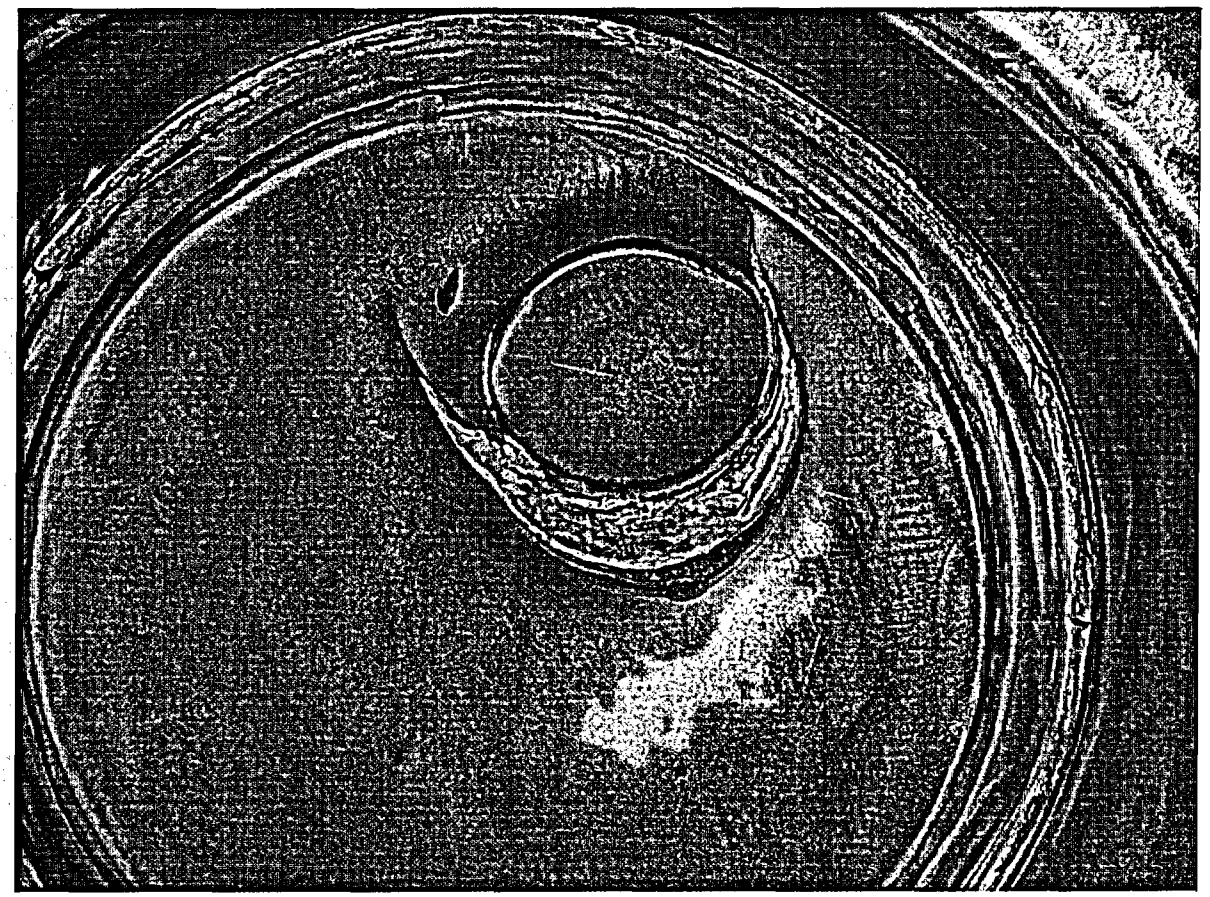

Figure 2.12.3-11 – Series 1, Test 3: Close-up View of Puncture Damage (~3" Deep)

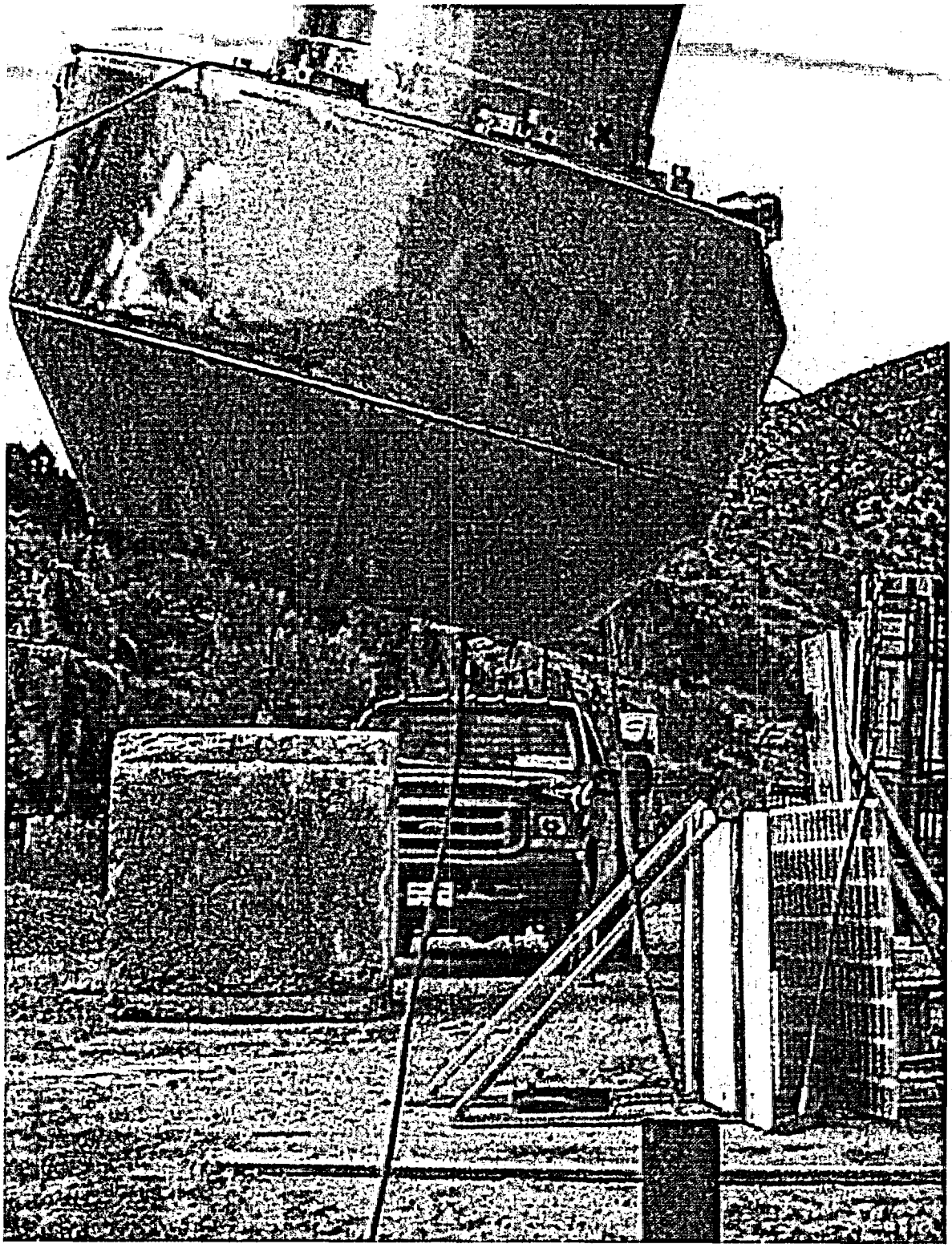

Figure 2.12.3-12 – Series 1, Test 4: HAC 75-Degree Oblique 40-Inch Puncture Drop

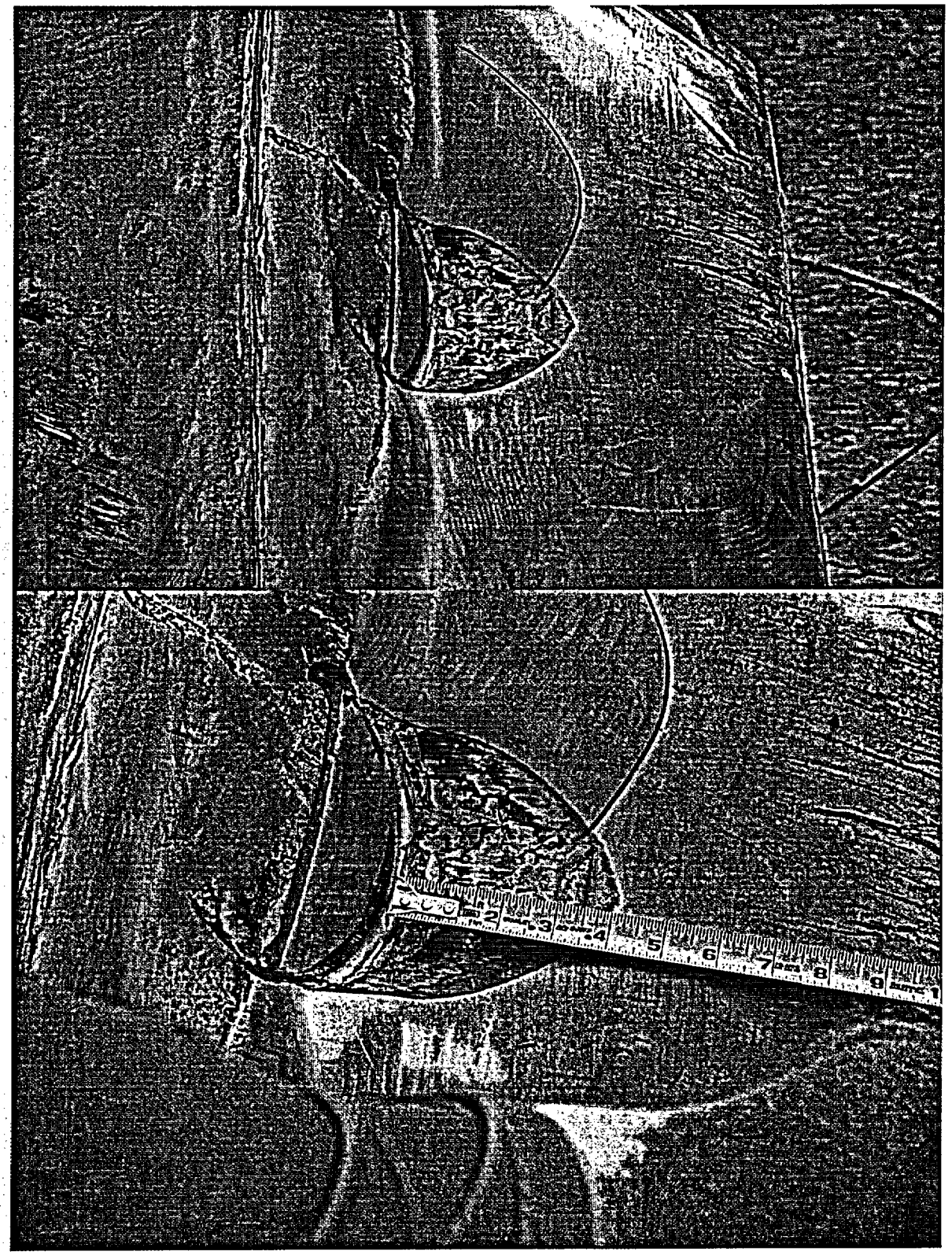

Figure 2.12.3-13 – Series 1, Test 4: Close-up Views of Puncture Damage (~4" Length)

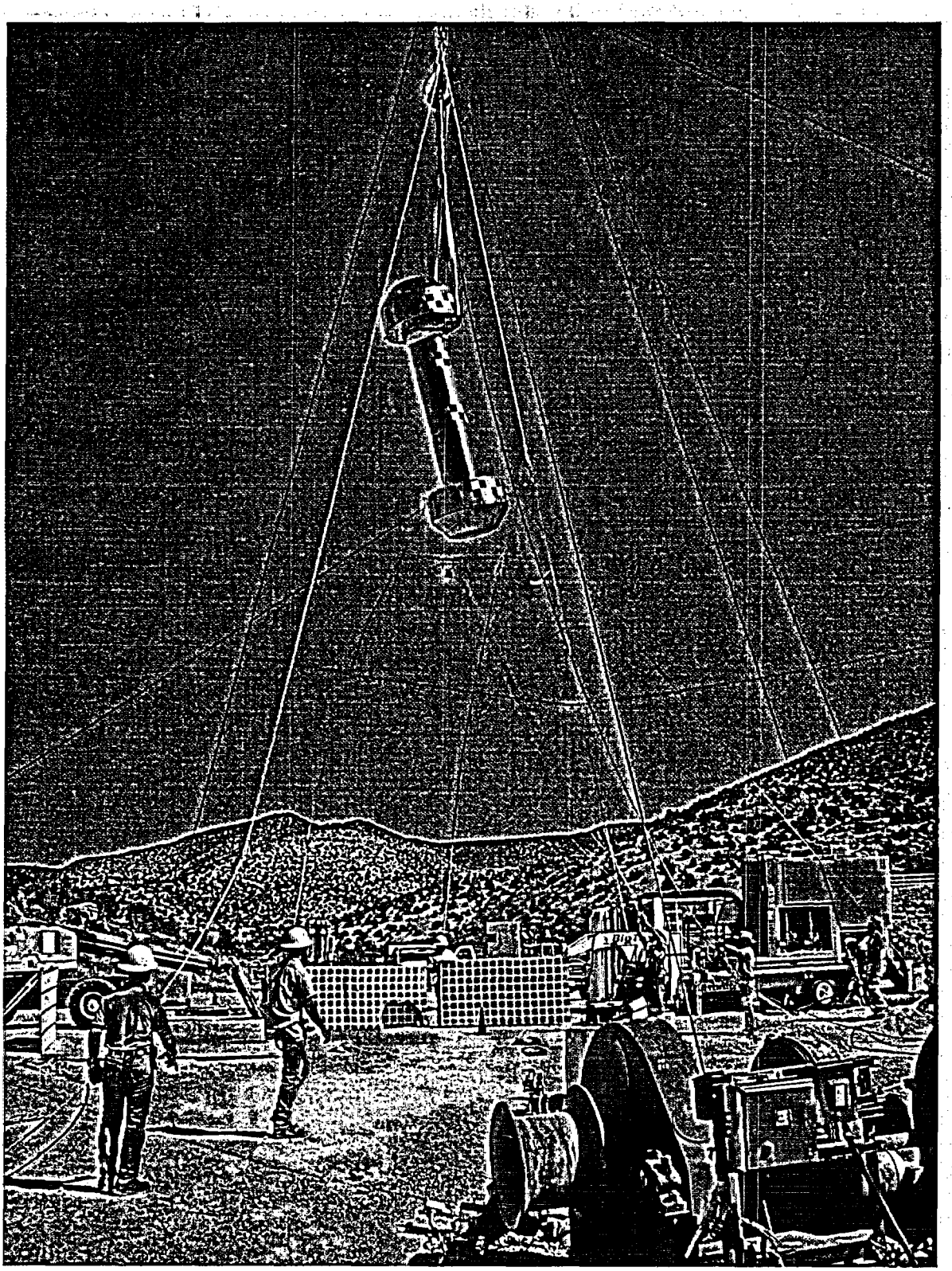

Figure 2.12.3-14 – Series 2, Test 1: HAC 80-Degree Oblique C.G.-Over-Corner 30-Foot Drop

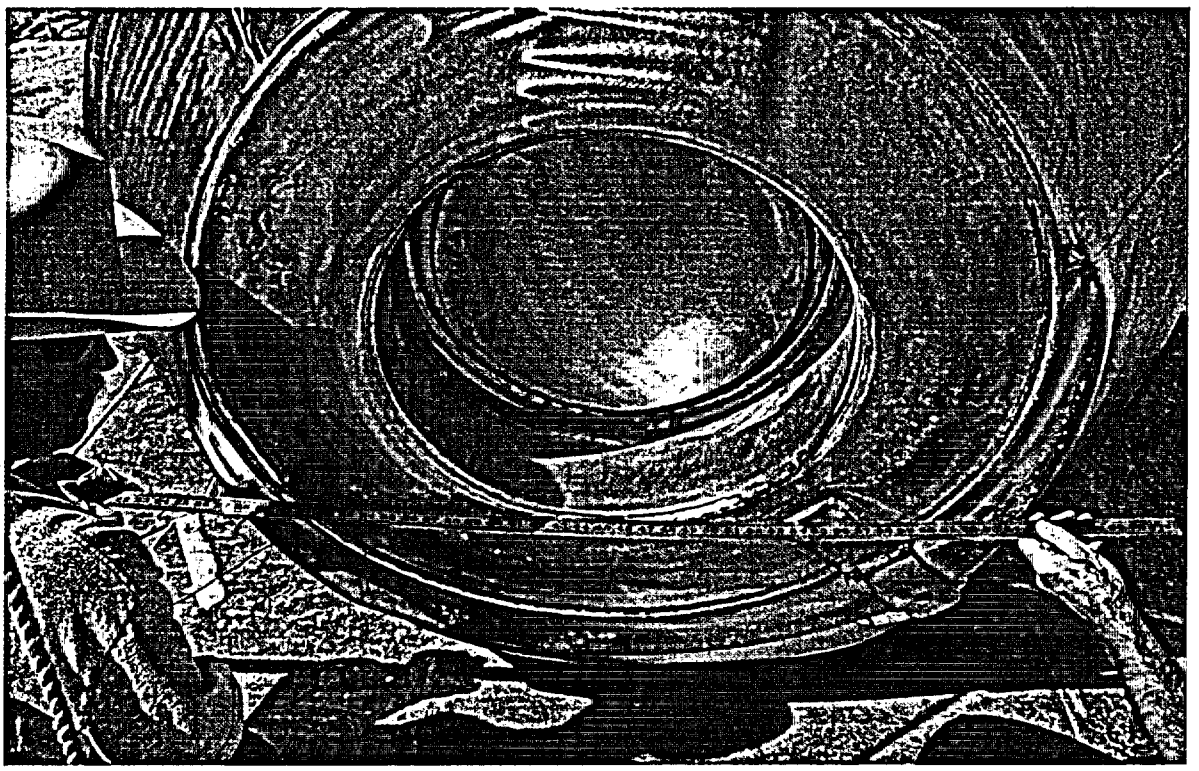

Figure 2.12.3-15 – Series 2, Test 1: Overall View of Impact Limiter Damage

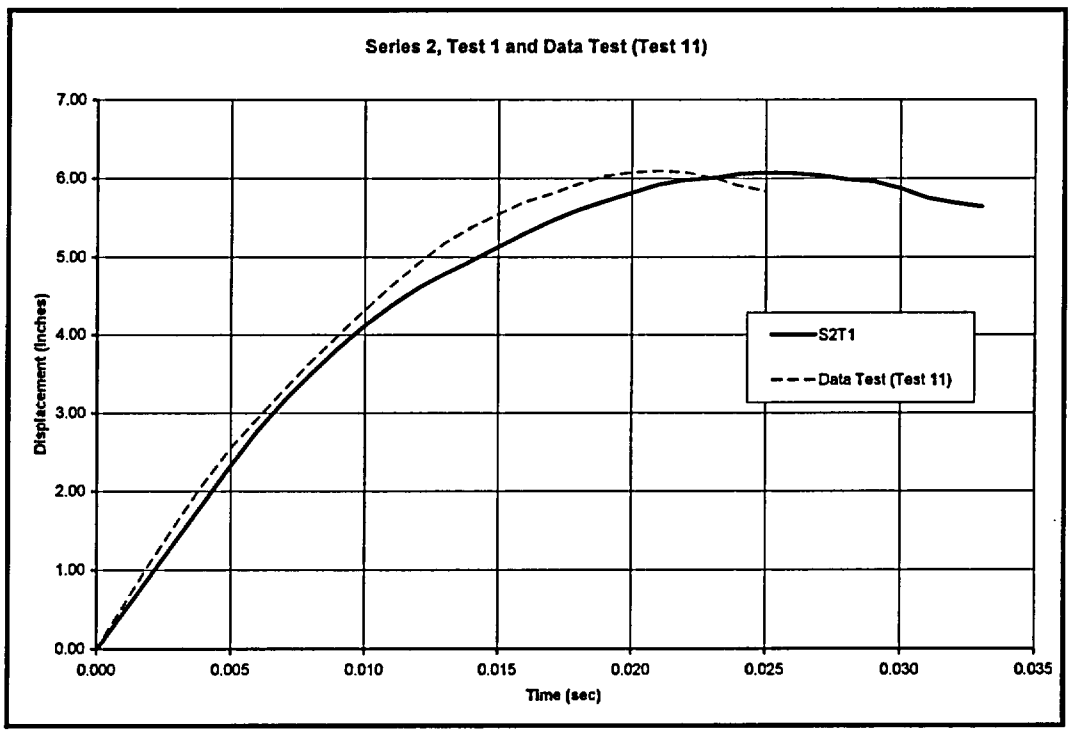

Figure 2.12.3-16 – Series 2, Test 1: Time-Displacement from 1,000 fps Video

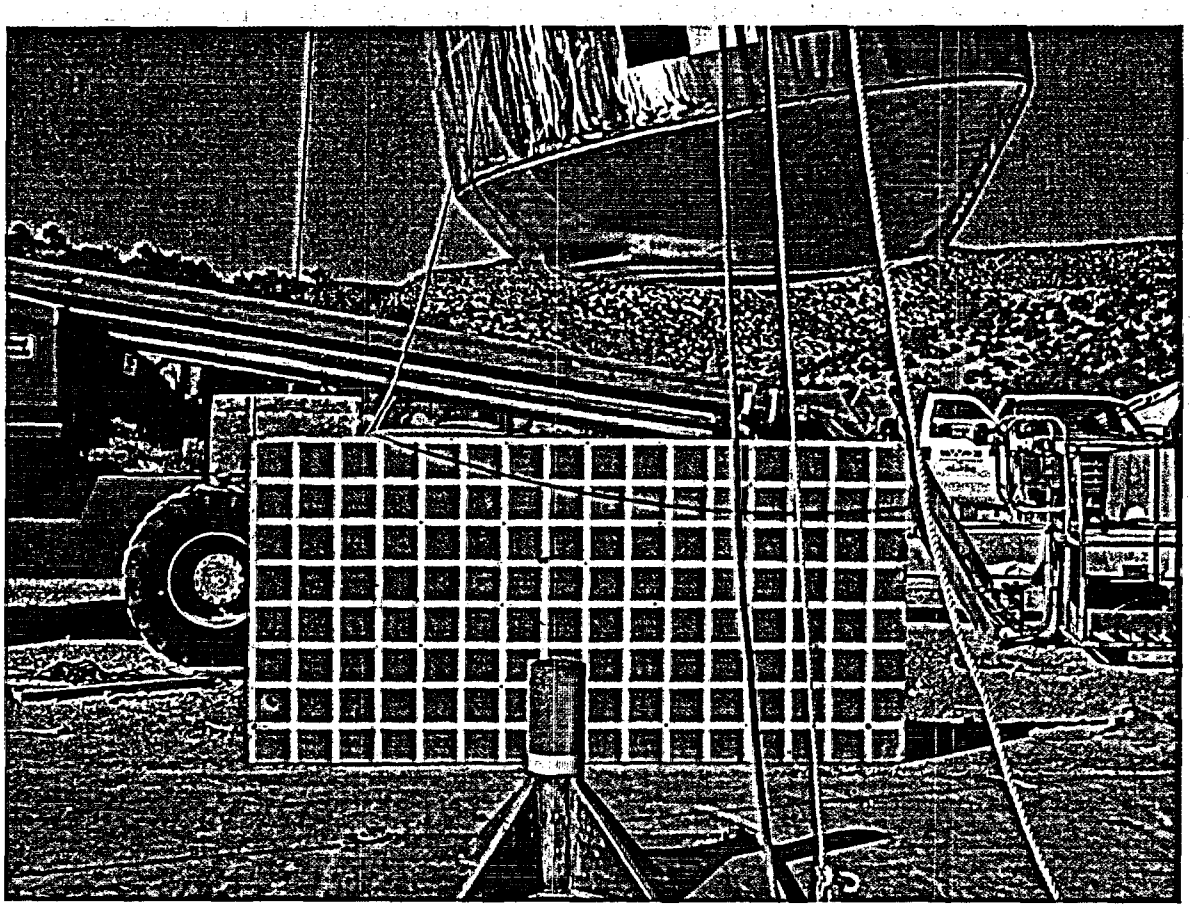

Figure 2.12.3-17 – Series 2, Test 2: HAC 80-Degree Oblique Puncture Drop

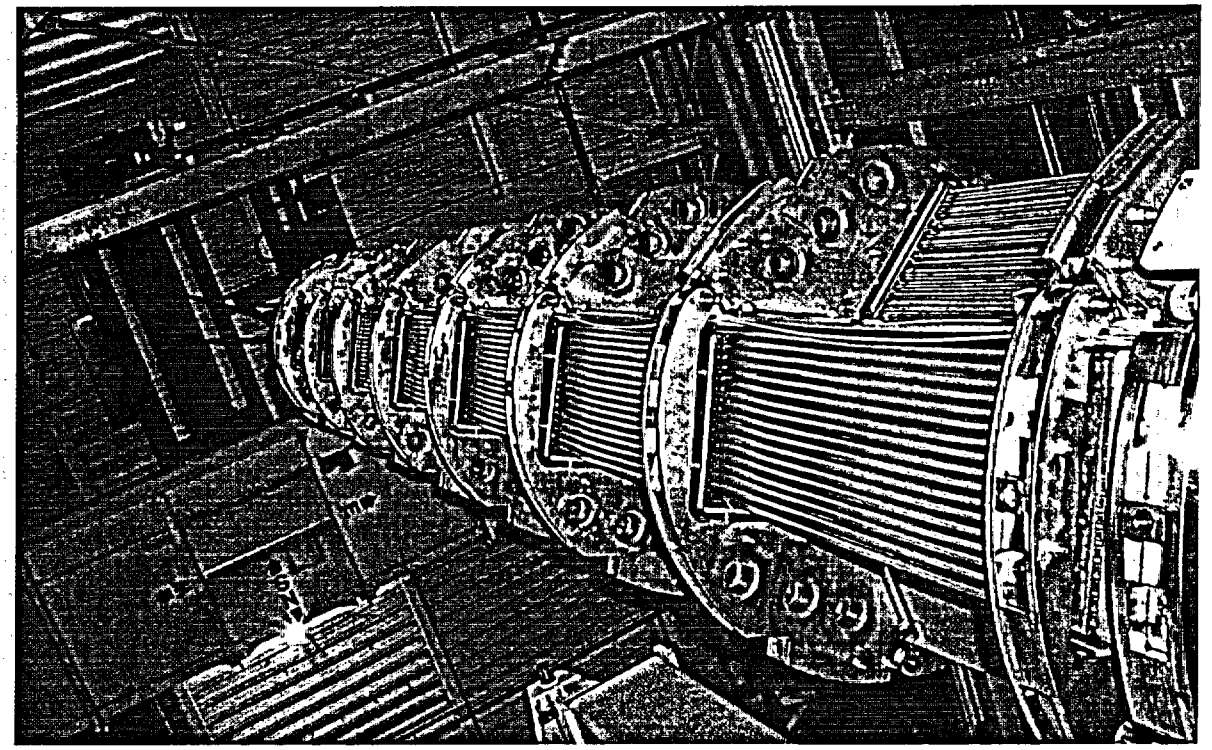

Figure 2.12.3-21 – Series 2: View from Bottom of Strongback (Clamp Arms Closed)

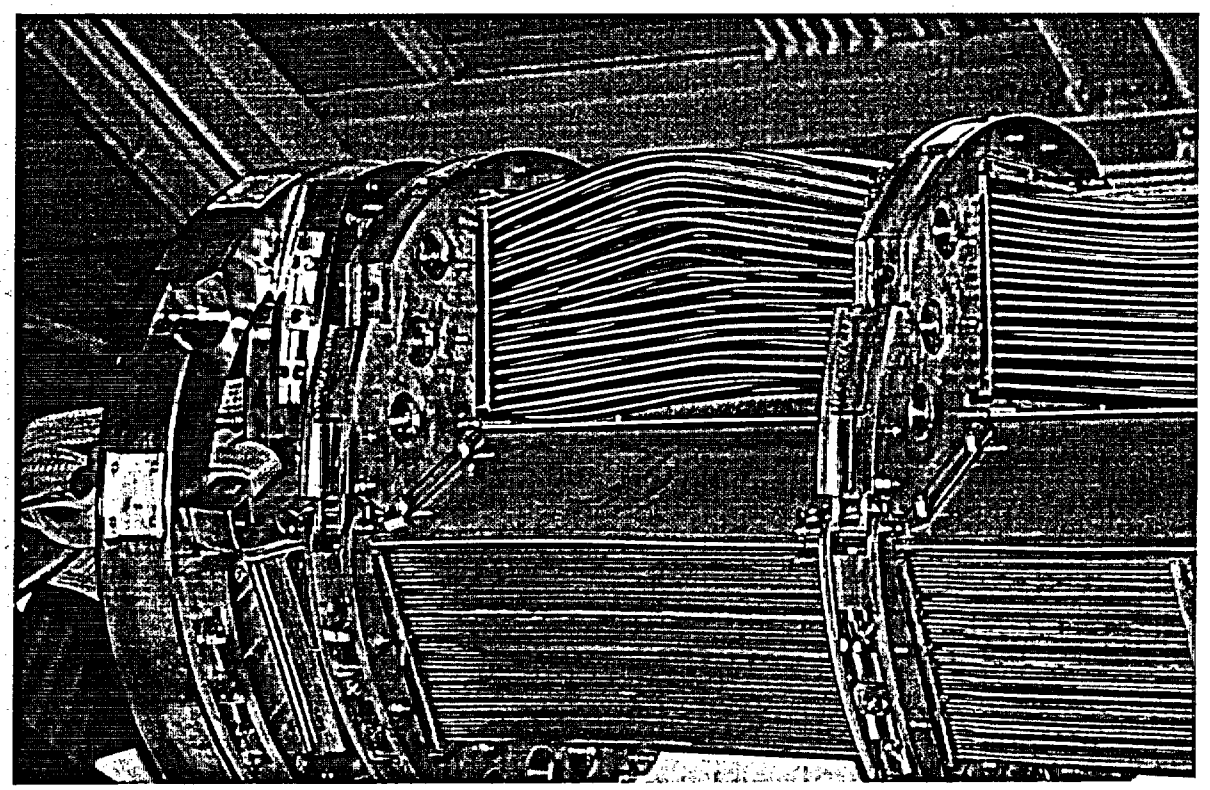

Figure 2.12.3-22 – Series 2: View of Worst Case Fuel Deformation (Nearest the Top Nozzle)

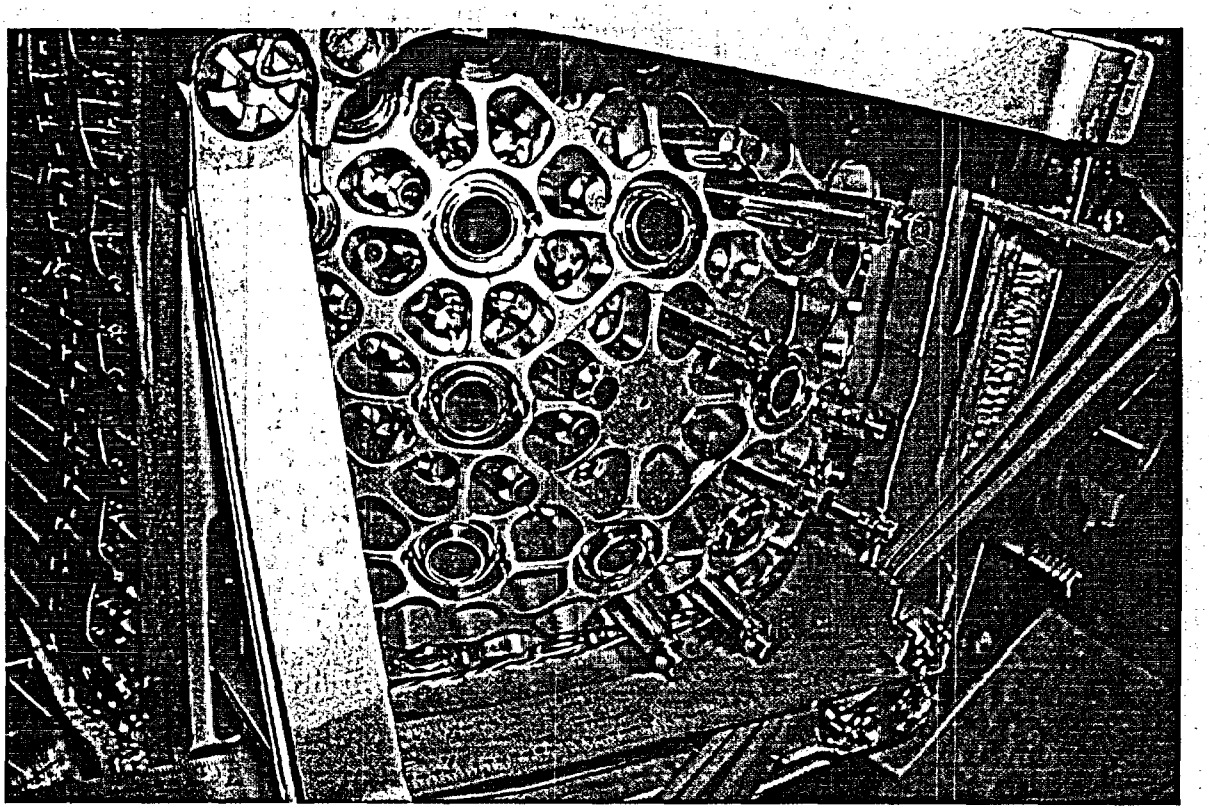

Figure 2.12.3-23 – Series 2: View of Top Nozzle Damage of the Prototypic Fuel Assembly

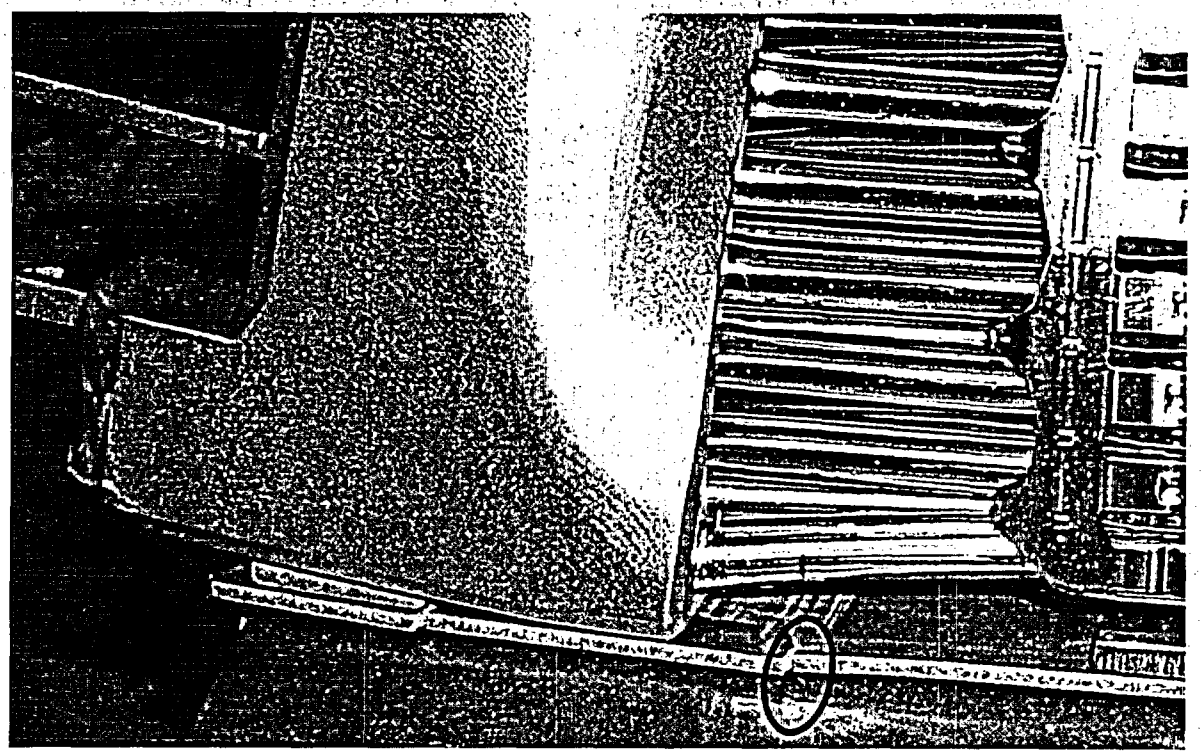

Figure 2.12.3-24 – Series 2: Worst-Case Neutron Poison Damage (Circled on Photo)