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**Commissioners' Technical Assistants Brief**  
Wednesday, October 3, 2001  
1:00 p.m. - 2:00 p.m.  
Room: 18<sup>th</sup> Floor Commissioners' Conference Room

**Purpose:** 1) To discuss and focus on the results of the staff's Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles," response reviews for the high susceptibility plants  
2) To discuss the basis for the next Regulatory Action to be taken

**Success:** Commissioners' Technical Assistants understand the results of the staff's review and the next Regulatory Action(s)

Introduction:	Jake Zimmerman	5 mins.
Discussion of Reviews:	Allen Hiser	20 mins.
Discussion of Next Regulatory Action(s):	Mark Reinhart	20 mins.

39  
ALL Done  
Ref B-1

## PROCESS/STATUS/SCHEDULE

### Action Items Completed

Bulletin Issued - August 3, 2001

Bulletin Responses Received - September 4, 2001

Preliminary Review of Responses Complete - September 12, 2001

- NRR & RES - 7 Submittals
  - ▶ Plants that have found Cracking & Leakage (5 plants) - Bin 1
  - ▶ Plants with High Susceptibility, < 5 EFPY of Oconee 3 (7 plants) - Bin 2
  
- NRR/DLPM PM "Tiger" Team - 37 Submittals
  - ▶ Plants with Moderate Susceptibility, b/w 5 & 30 EFPY of Oconee 3 (32 plants) - Bin 3
  - ▶ Plants with Low Susceptibility, > 30 EFPY of Oconee 3 (25 plants) - Bin 4

Temporary Instruction (TI) Issued to Regions - September 20, 2001

## PLANTS WITH CRACKING/LEAKAGE HISTORY (BIN 1) AND HIGH SUSCEPTIBILITY PLANTS (BIN 2)

Plants	Last Inspection		<i>EX 4</i> Next Inspection		CCDP* (IPE)	Regulatory Action Proposed ?		
	Date	Method	Date	Method				
Oconee 1	11/2000	Qual. Visual - 100%	03/2002	OK	Qual. Visual - 100%	OK	1E-2 3.5E-3 (Response)	NO
Oconee 2	04/2001	Qual. Visual - 100%	[REDACTED]	OK	Qual. Visual - 100%	OK	1E-2 3.5E-3 (Response)	NO
Oconee 3	2/2001	Qual. Visual - 100%	11/2001	OK	Qual. Visual - 100%	OK	1E-2 3.5E-3 (Response)	NO
ANO-1	03/2001	Qual. Visual - 100%	[REDACTED]	OK	Qual. Visual - 100%	OK	3E-3	NO
D.C. Cook 2	09/1994	ID NDE - 91%	11/2001	OK	Remote Visual & ECT/UT	OK	4.7E-3	NO
Surry 1	Spr 2000	***	10/2001	OK	Qual. Visual - 100%	OK	5.3E-3	NO **
TMI-1	09/1999	Eff. Visual - 100%	10/2001	OK	Qual. Visual - 100%	OK	7.5E-3	NO
North Anna 1	02/1996	ID NDE - 31%	09/2001	OK	Qual. Visual (100%) & ECT/UT ****	NO	6.6E-3	YES ****
Robinson	04/2001	Visual - Partial	[REDACTED]	NO	Qual. Visual - 100% ****	NO	2E-2	YES****
Davis-Besse	03/2000	Visual - Partial	04/2002	NO	Qual. Visual - 100%	OK	6.9E-3	YES
North Anna 2	Spr 2001	***	[REDACTED]	NO	Qual. Visual - 100%****	NO	6.6E-3	YES ****
Surry 2	Fall 2000	***	03/2002	NO	Qual. Visual - 100%	OK	5.3E-3	YES **

\* Conditional core damage probability.

\*\* Licensee has committed to qualified visual examination per conference call (September 21, 2001).

\*\*\* Prior inspection at last RFO, in accordance with GL 88-05 & GL 97-01.

\*\*\*\* Licensee may or does not have sufficient information to demonstrate that last inspection was a qualified visual examination.

**Pre-decisional Information - Not for Public Disclosure**  
**PLANTS HAVING MODERATE SUSCEPTIBILITY TO PWSCC AS OF 10/03/2001**

Plant	Ranking (EFPY)	Next Inspection			Reg. Action Proposed
		Date	Method		
Beaver Valley 2	(11.5)	Sept. 2001	Eff. Visual in Sept. 2001	OK	NO
Beaver Valley 2	16.5	Feb. 2002	Eff. Visual in Feb. 2002	OK	NO
Calvert Cliffs 1	9.8	Feb. 2002	Eff. Visual & Qual. Vol., Feb. 2002	OK	NO
Calvert Cliffs 2	10.2	[REDACTED]	Eff. Visual & Qual. Vol. [REDACTED]	OK	NO
Crystal River 3	(5.9)	Oct. 2001	Eff. Visual in Fall 2001	OK	NO
Diablo Canyon 1	20.8	May 2002	Eff. Visual in May 2002	OK	NO
Diablo Canyon 2	16.1	[REDACTED]	Eff. Visual in [REDACTED]	OK	NO
Farley 1	(6.9)	Oct. 2001	Eff. Visual in Oct. 2001	OK	NO
Kewaunee	21.9	Oct. 2001	Eff. Visual in Fall 2001	OK	NO
Point Beach 1	11.5	[REDACTED]	Eff. Visual in [REDACTED]	OK	NO
Point Beach 2	9.6	April 2002	Eff. Visual in Spring 2002	OK	NO
Prairie Island 1	26.7	[REDACTED]	Eff. Visual in [REDACTED]	OK	NO
Prairie Island 2	26.8	Feb. 2002	Eff. Visual in Feb. 2002	OK	NO
Salem 1	13.8	[REDACTED]	Eff. Visual in [REDACTED]	OK	NO
Salem 2	17.4	Apr. 2002	Eff. Visual in Apr. 2002	OK	NO
San Onofre 2	10.7	May 2002	Eff. Visual or Qual Vol., May 2002	OK	NO
San Onofre 3	10.8	Jan. 2002	Eff. Visual or Qual Vol., [REDACTED]	OK	NO
St. Lucie 1	10.3	[REDACTED]	Eff. Visual in [REDACTED]	OK	NO
Turkey Point 3	6.3	Oct. 2001	Eff. Visual in October 2001	OK	NO
Turkey Point 4	6.4	Mar. 2002	Eff. Visual in Spring 2002	OK	NO
Waterford 3	7.8	Mar. 2002	Effective Visual in Spring 2002	OK	NO
Fort Calhoun	17.9	[REDACTED]	Visual in [REDACTED]	NO	NO*
Ginna	15.0	Mar. 2002	Not Specified (notify 1/02)	NO	NO*
Farley 2	8.3	[REDACTED]	NDE TBD in [REDACTED]	NO	NO*
Millstone 2	14.3	Feb. 2002	Not Specified (notify 1/02)	NO	NO*
ANO-2	17.1	April 2002	Surface or Vol. of 25% in Spring 2002	NO	YES*
Indian Point 2	26.6	[REDACTED]	Not Specified (new owner)	NO	YES*
Indian Point 3	14.5	[REDACTED]	GLs 88-05 & 97-01	NO	YES*
Palo Verde 1	17.0	[REDACTED]	None (Vol. in [REDACTED])	NO	YES
Palo Verde 2	17.7	May 2002	None (Vol. in [REDACTED])	NO	YES
Palo Verde 3	17.3	Sept. 2001	None (Vol. in [REDACTED])	NO	YES
St. Lucie 2	11.3	Nov. 2001	None (Eff. Visual [REDACTED])	NO	YES

\* Staff is pursuing additional information from the licensee for review

\*\* Licensee proposed to remove one panel of insulation, and to look under the shroud to examine as many CRDMs as possible. St. Lucie Unit 2 has 91 CRDMs

EX.4

## NEXT REGULATORY ACTION

- Adequate Protection

- ▶ Special Circumstance (*inspect adequate*)
- ▶ Risk
- ▶ Deterministic Standards (*GDC-14 extremely low probab of RCD boundary failure.*)

- Regulatory Action

- ▶ Phone call with Licensee
- ▶ Meeting with Licensee
- ▶ Implement Regulatory Action

*D. burden is on us (NRC) to show they don't meet adequate protect*

## PERFORMANCE GOALS

### ● **Maintain Safety**

- ▶ Purpose of the bulletin is to collect information to determine if additional regulatory action is necessary
- ▶ Information to date provides a sufficient technical basis to show that conditions adverse to quality are being managed for most, but not all plants in the short-term
- ▶ Additional cracking should be anticipated - long-term management needed

### ● **Increase Public Confidence**

- ▶ Participation at public meetings via telephone
- ▶ Maintaining current information on Bulletin 2001-01 & Alloy 600 Web Sites
- ▶ Disciplined and timely reviews of plant-specific responses and regulatory action(s)

### ● **Make NRC Activities and Decisions More Effective, Efficient, and Realistic**

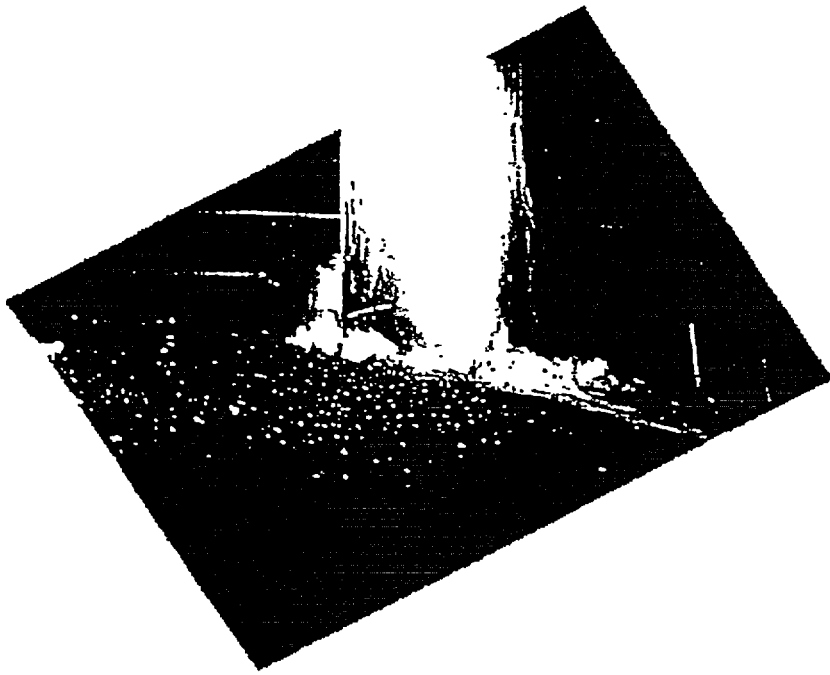
- ▶ Reviews prioritized based on susceptibility groupings and plant outage schedules
- ▶ Use of Risk Insights

### ● **Reduce Unnecessary Regulatory Burden**

- ▶ Information requested in the bulletin was minimized
- ▶ Stakeholder meetings on resolution of issue (Short- and Long-term)
- ▶ Inspection, Assessment, and Repair methods must be developed to manage this issue

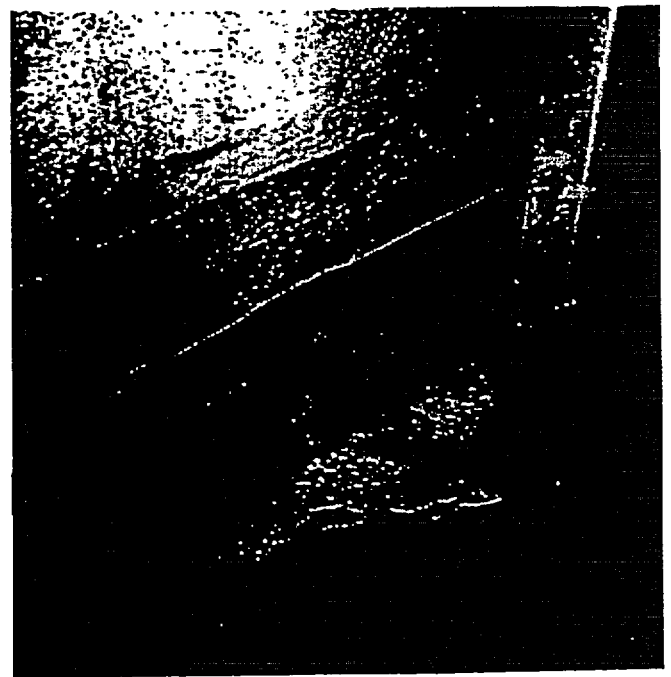
## STEPS TO SUPPORT REGULATORY ACTION

- Brief NRR Leadership Team - 9/20/01 (Complete)
- Brief NRR Executive Team - 9/26/01 (Complete)
- NRR Management Phone Calls w/ Licensees' - 9/28/01 (Complete)
  - ▶ Robinson 2
  - ▶ Davis-Besse
  - ▶ North Anna 2
  - ▶ Surry 2
- Brief Executive Director for Operations - 10/2/01 (Complete)
- Brief Commission Technical Assistants - 10/3/01
- Brief Committee to Review Generic Requirements - 10/11/01



**ONS-1 Reactor Vessel  
Head showing Boric Acid  
at CRDM Nozzle  
(November 2000)**

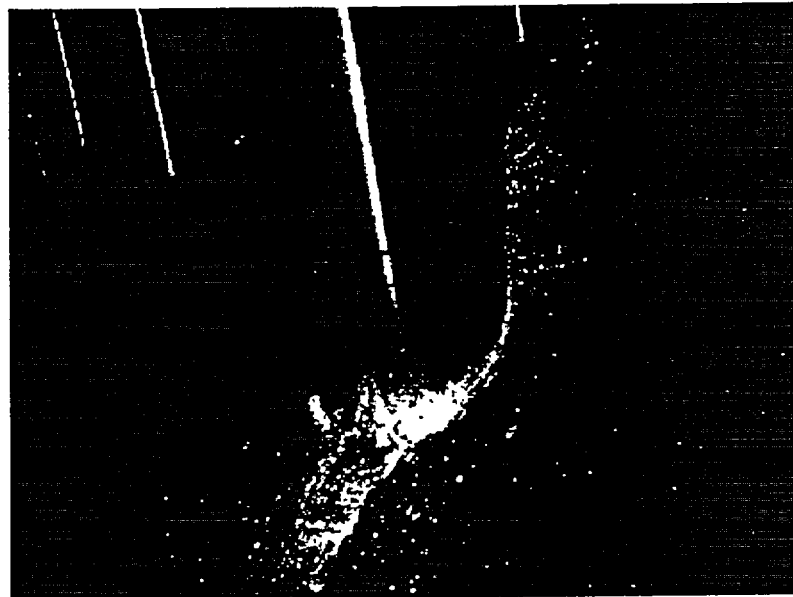
**ONS-1 Reactor Vessel Head  
showing Boric Acid at  
Thermocouple Nozzle  
(November 2000)**





# Visual Inspection at Oconee Unit 3 (February 2001)

## CRDM Nozzle #56



April 19, 2001

## CRDM Nozzle #50

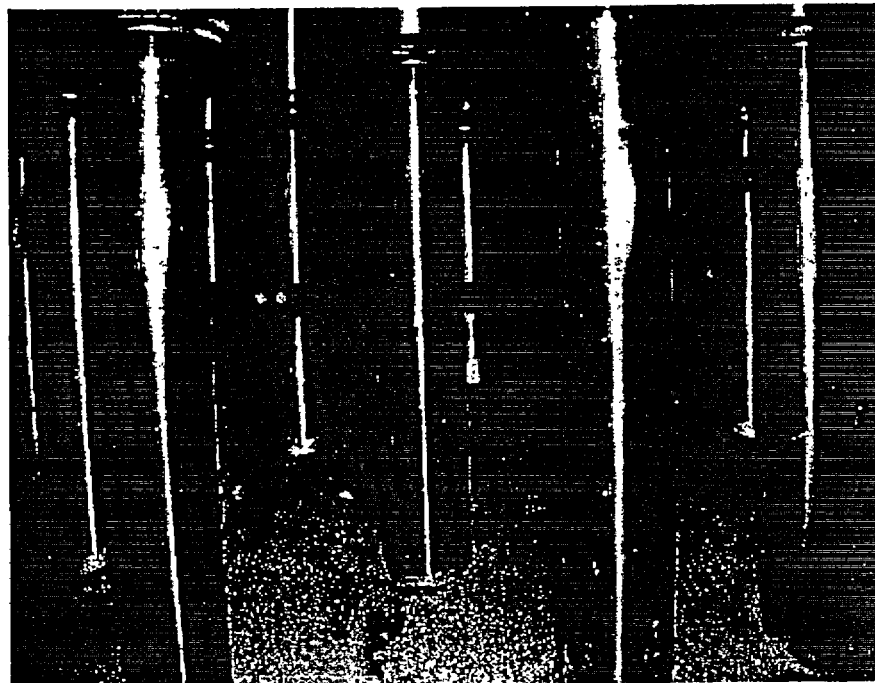


April 19, 2001

# Visual Inspection at ANO-1 (March 2001)



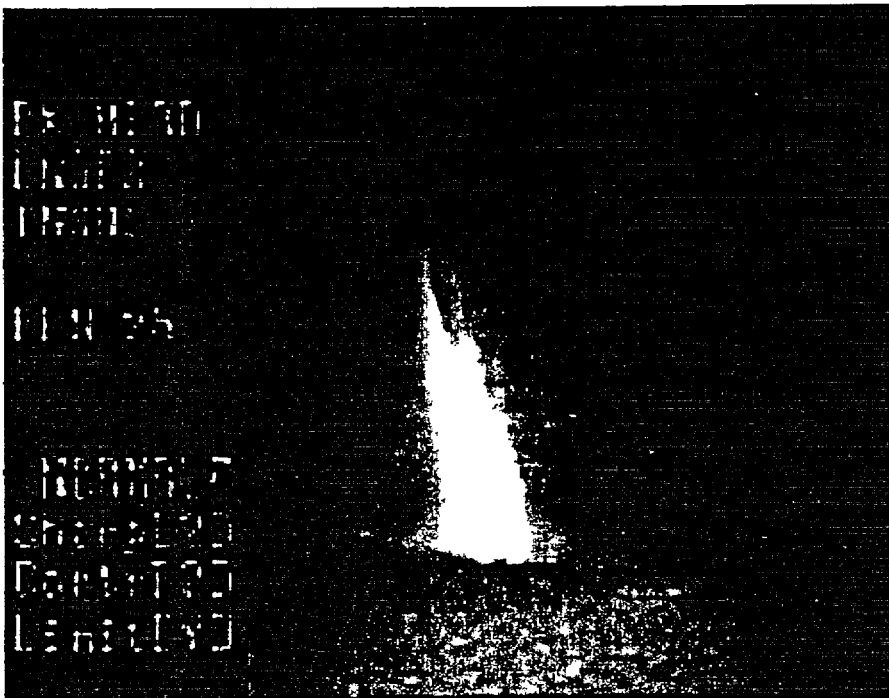
# Visual Inspection at Robinson 2 (April 2001)



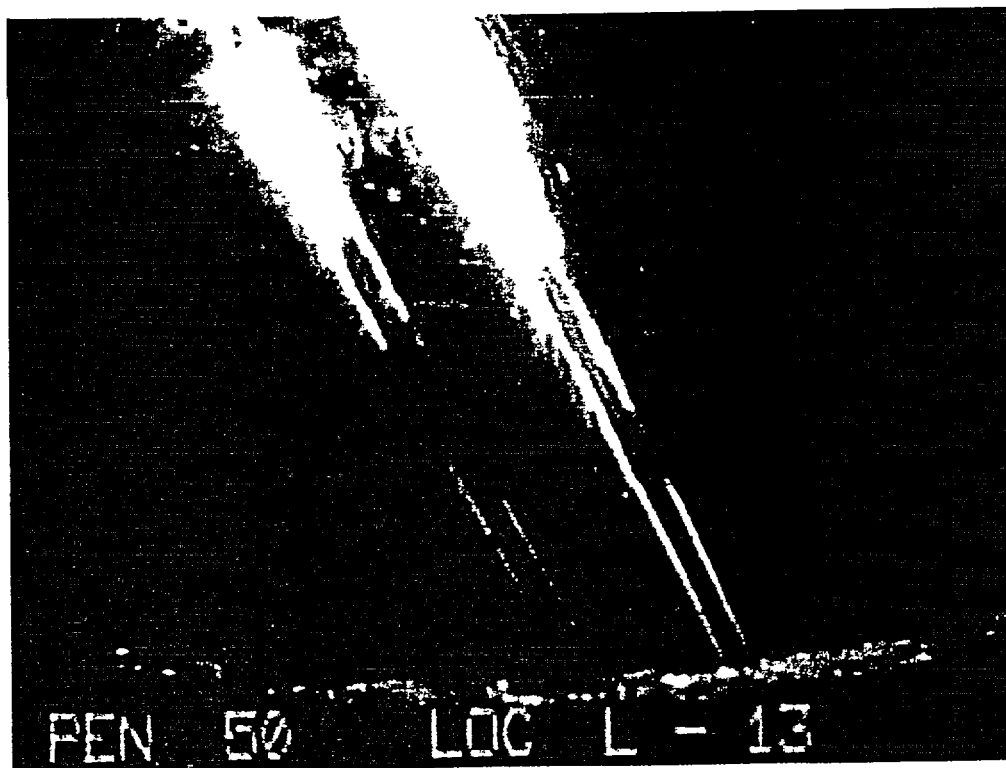
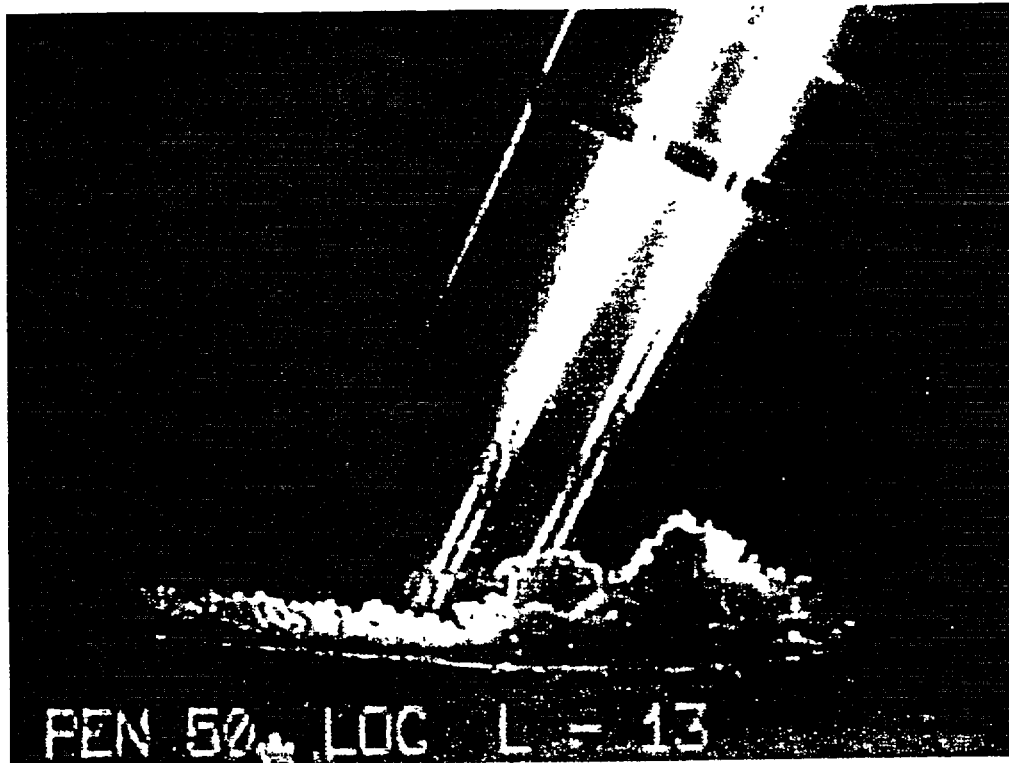
**Visual Inspection at Salem Unit 1  
(April 2001)**



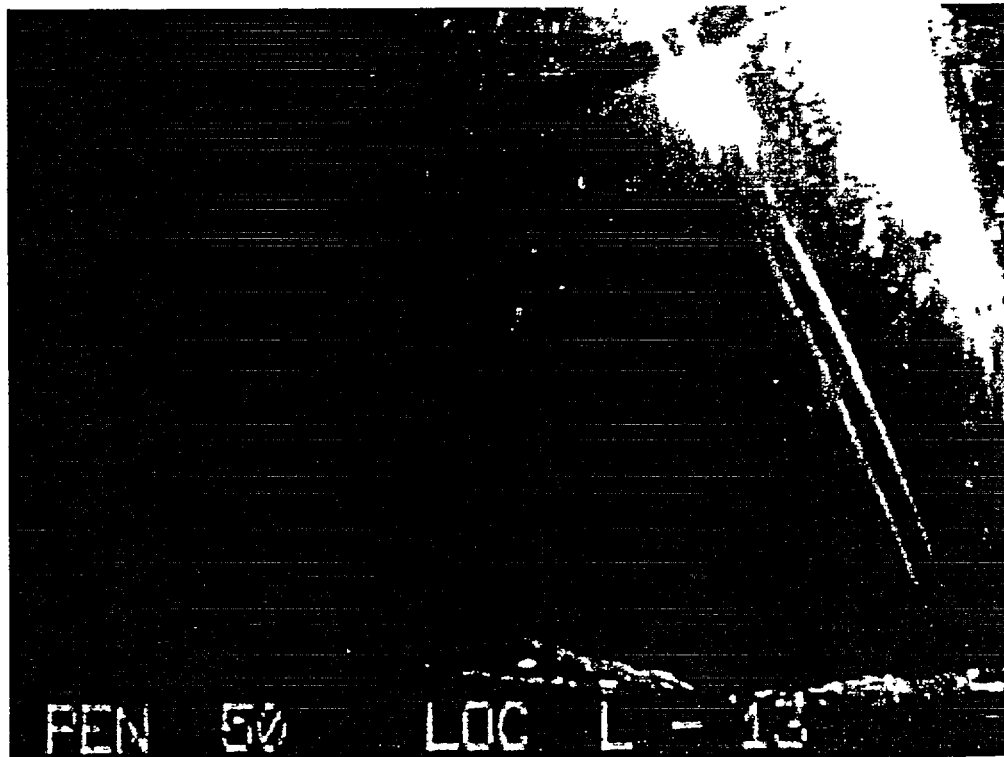
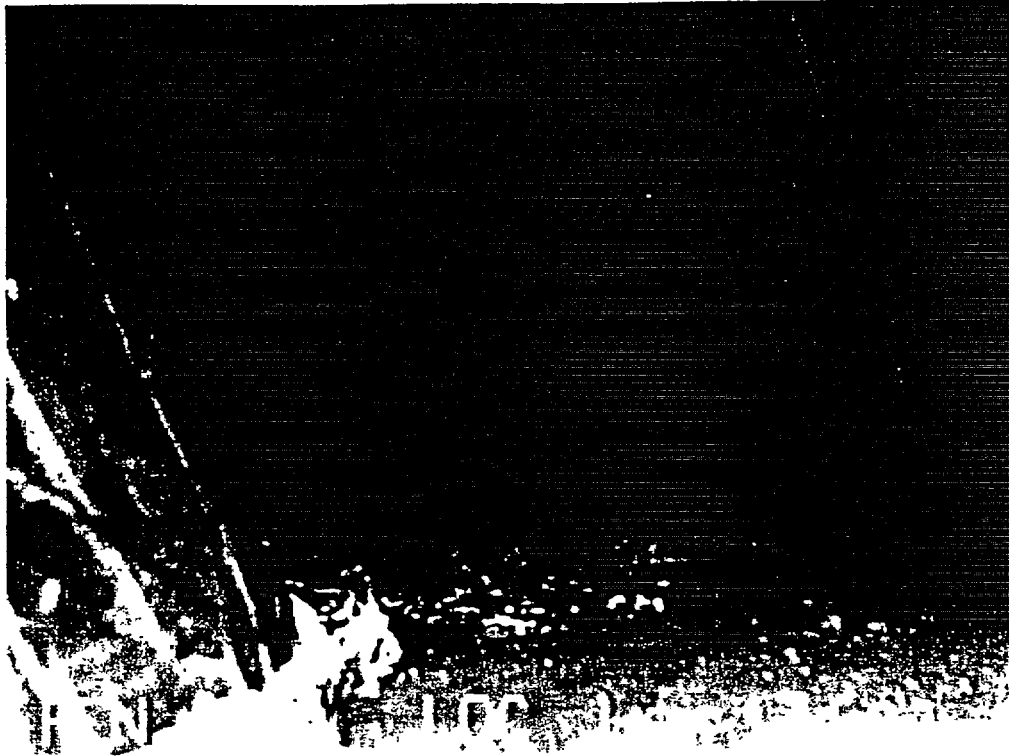
**Visual Inspection at Farley Unit 2  
(February 2001)**



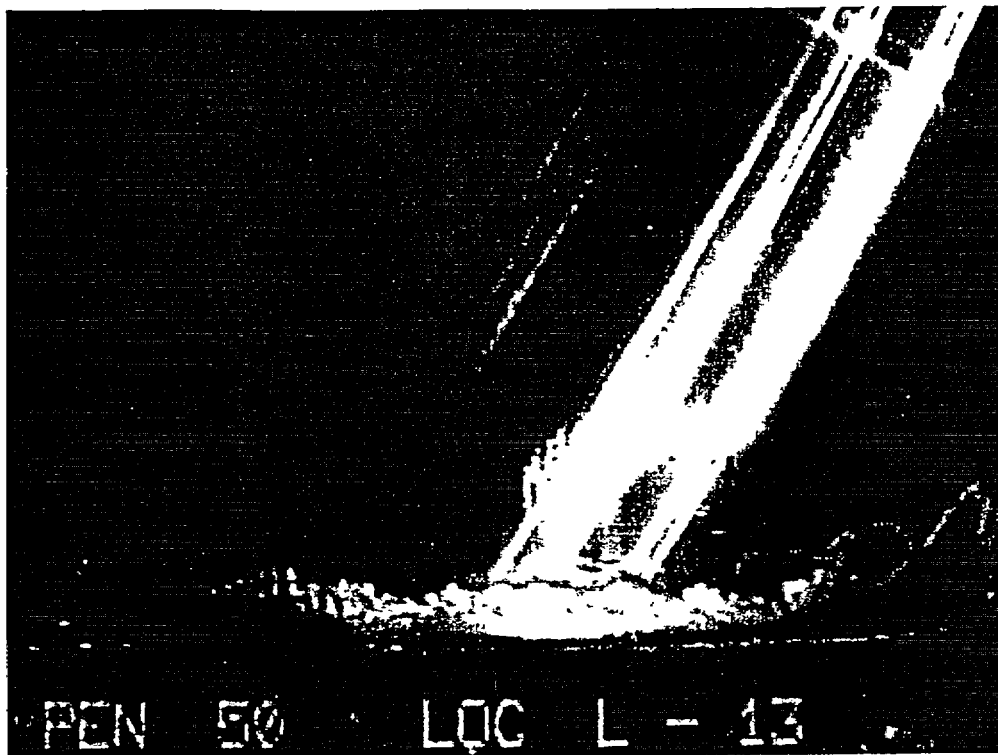
# Visual Inspection at North Anna Unit 2 (September 2001)



Visual Inspection at North Anna Unit 2 (cont.)  
(September 2001)



Visual Inspection at North Anna Unit 2 (cont.)  
(September 2001)



Visual Inspection at Crystal River 3  
(October 2001)

