



## 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

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**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

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

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

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## 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

Ex #

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

| Plants       | Last Inspection |                     | 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<br>3.5E-3 (Response) | NO                           |
| Oconee 2     | 04/2001         | Qual. Visual - 100% |                 | OK | Qual. Visual - 100%               | OK | 1E-2<br>3.5E-3 (Response) | NO                           |
| Oconee 3     | 2/2001          | Qual. Visual - 100% | 11/2001         | OK | Qual. Visual - 100%               | OK | 1E-2<br>3.5E-3 (Response) | NO                           |
| ANQ 1        | 03/2001         | Qual. Visual - 100% |                 | 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         | Qual. 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    |                 | 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       |                     |                 | 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.

4

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

| Plant            | Ranking (EPFY) | Next Inspection |                                       |    | Reg. Action Proposed |
|------------------|----------------|-----------------|---------------------------------------|----|----------------------|
|                  |                | Date            | Method                                |    |                      |
| Beaver Valley 2  | 11.5           | Sept. 2001      | Eff. Visual in Sept. 2001             | OK | NO                   |
| Beaver Valley 2  | 15.5           | 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           |                 | Eff. Visual & Qual Vol.               | OK | NO                   |
| Crystal River 3  | 5.9            | Oct. 2001       | Eff. Visual in Feb. 2001              | OK | NO                   |
| Diablo Canyon 1  | 20.6           | May 2002        | Eff. Visual in May 2002               | OK | NO                   |
| Diablo Canyon 2  | 16.1           |                 | Eff. Visual in                        | 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           |                 | Eff. Visual in                        | OK | NO                   |
| Point Beach 2    | 9.6            | April 2002      | Eff. Visual in Spring 2002            | OK | NO                   |
| Prairie Island 1 | 26.7           |                 | Eff. Visual in                        | OK | NO                   |
| Prairie Island 2 | 26.8           | Feb. 2002       | Eff. Visual in Feb. 2002              | OK | NO                   |
| Salem 1          | 19.8           |                 | Eff. Visual in                        | 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.              | OK | NO                   |
| St. Lucie 1      | 10.0           |                 | Eff. Visual in                        | OK | NO                   |
| Turkey Point 0   | 6.8            | 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           |                 | Visual in                             | NO | NO*                  |
| Ginna            | 15.0           | Mar. 2002       | Not Specified (notify 1/02)           | NO | NO*                  |
| Farley 2         | 8.3            |                 | NDE TBD in                            | 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           |                 | Not Specified (new owner)             | NO | YES                  |
| Indian Point 3   | 14.5           |                 | GLS 88/05 & 07/01                     | NO | YES                  |
| Palo Verde 1     | 17.0           |                 | None (Vol. in)                        | NO | YES                  |
| Palo Verde 2     | 17.7           | May 2002        | None (Vol. in)                        | NO | YES                  |
| Palo Verde 3     | 17.3           | Sept. 2001      | None (Vol. in)                        | NO | YES                  |
| St. Lucie 2      | 11.3           | Nov. 2001       | None (Eff. Visual in)                 | 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

## **NEXT REGULATORY ACTION**

- **Adequate Protection**
  - ▶ Special Circumstance
  - ▶ Risk
  - ▶ Deterministic Standards
  
- **Regulatory Action**
  - ▶ Phone call with Licensee
  - ▶ Meeting with Licensee
  - ▶ Implement Regulatory Action

## **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**

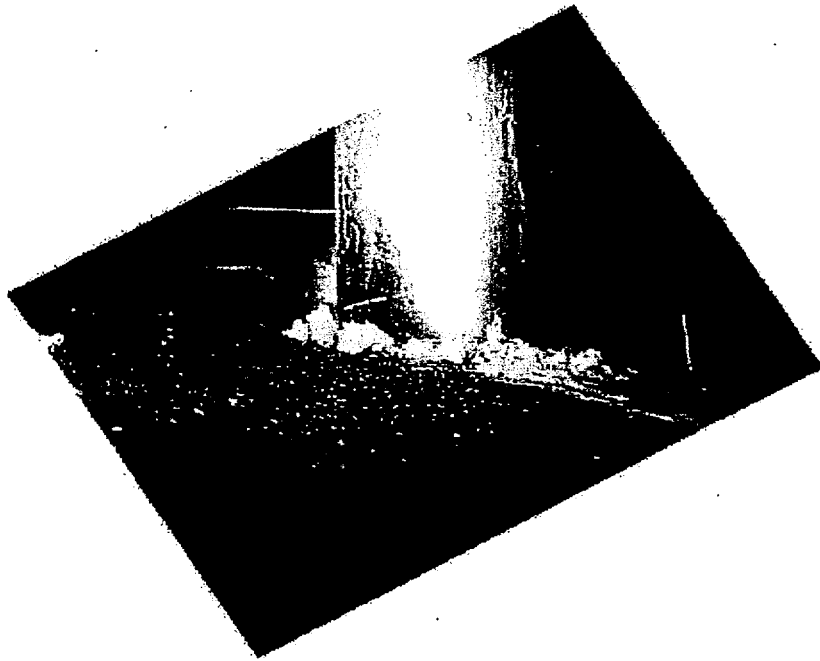
- ▶ Reviews prioritized based on susceptibility groupings and plant outage schedules
- ▶ Use of Risk Insights

- **Reduce Unnecessary Regulatory Burden**

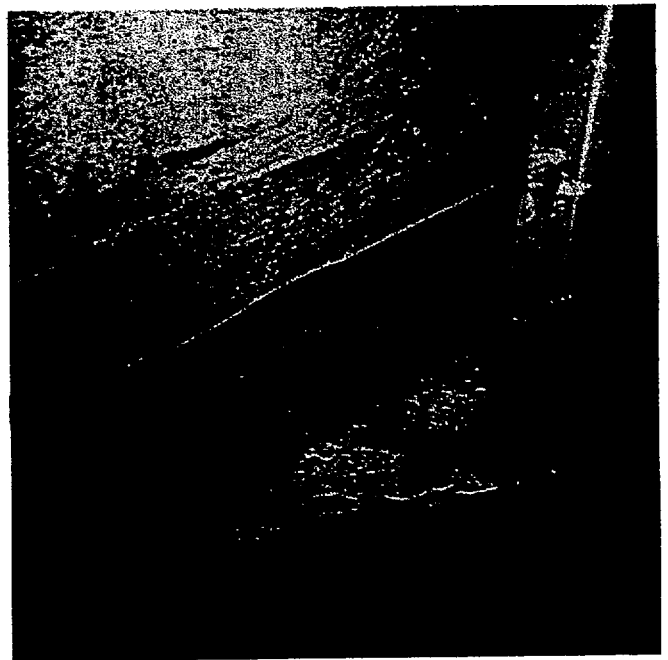
- ▶ Information requested in the bulletin was minimized
- ▶ Stakeholder meetings on resolution of issue (Short- and Long-term)
- ▶ Inspection, Assessment, and Repair methods must be developed to manage this issue

## **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

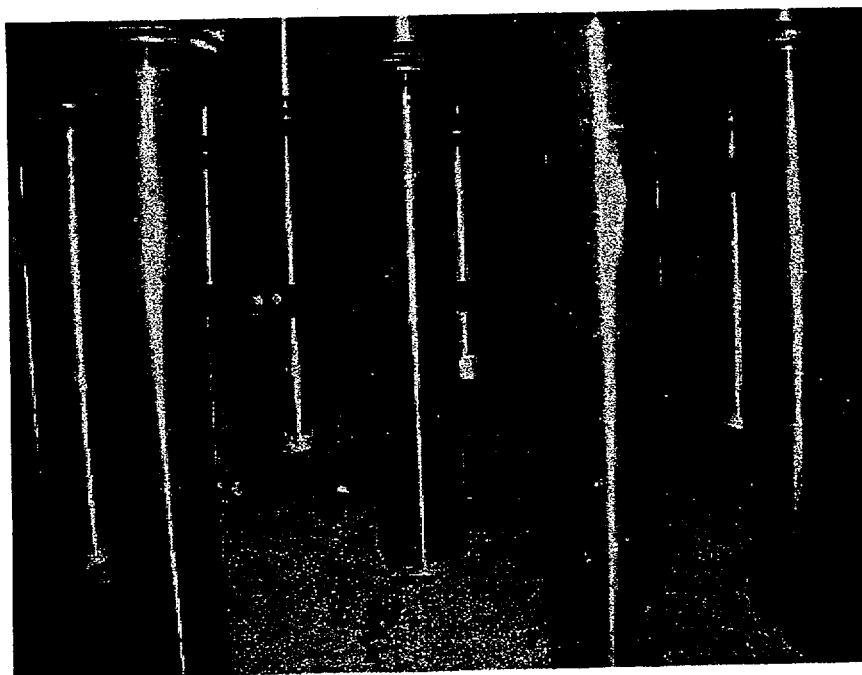


April 19, 2001

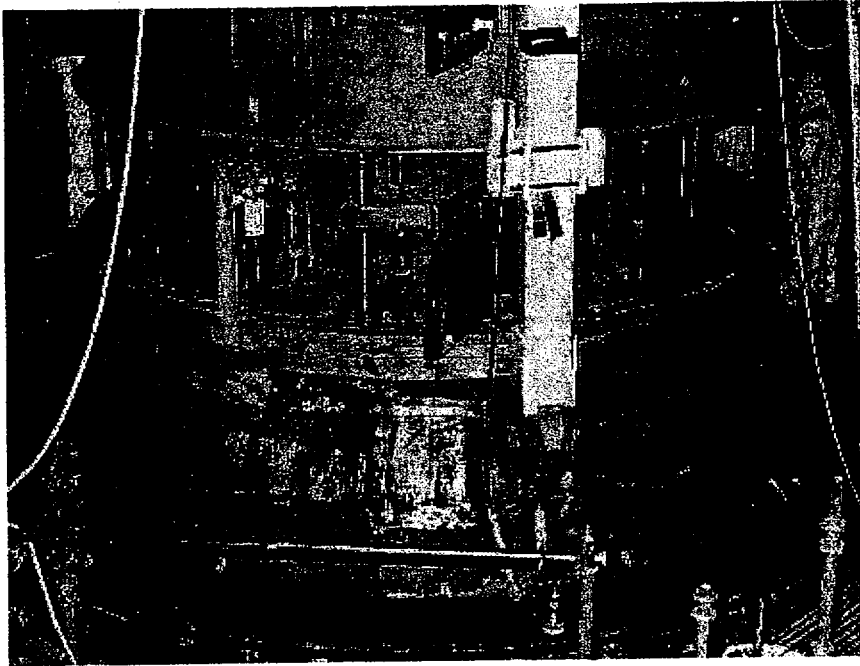
# Visual Inspection at ANO-1 (March 2001)



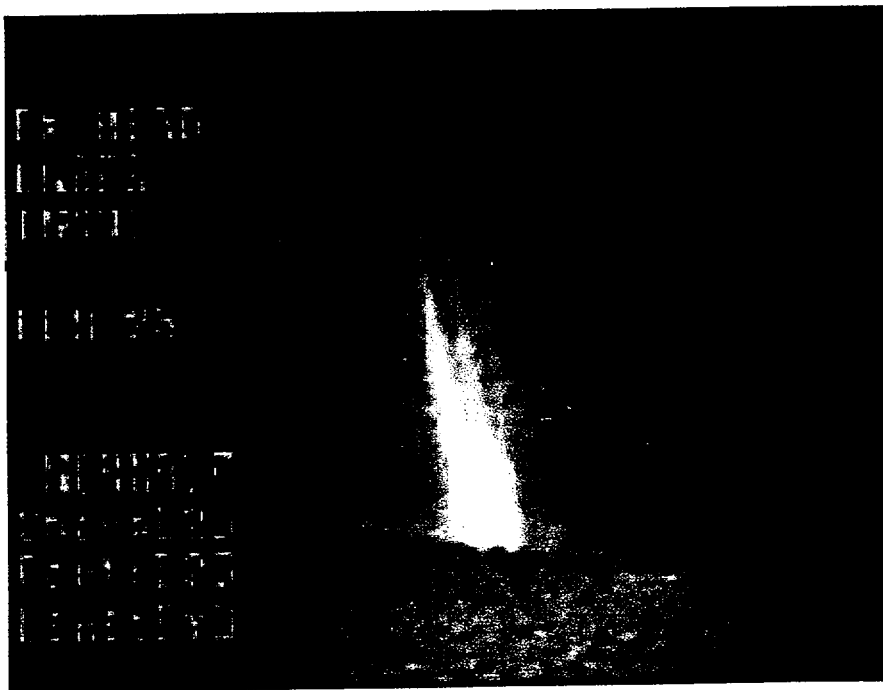
# Visual Inspection at Robinson 2 (April 2001)



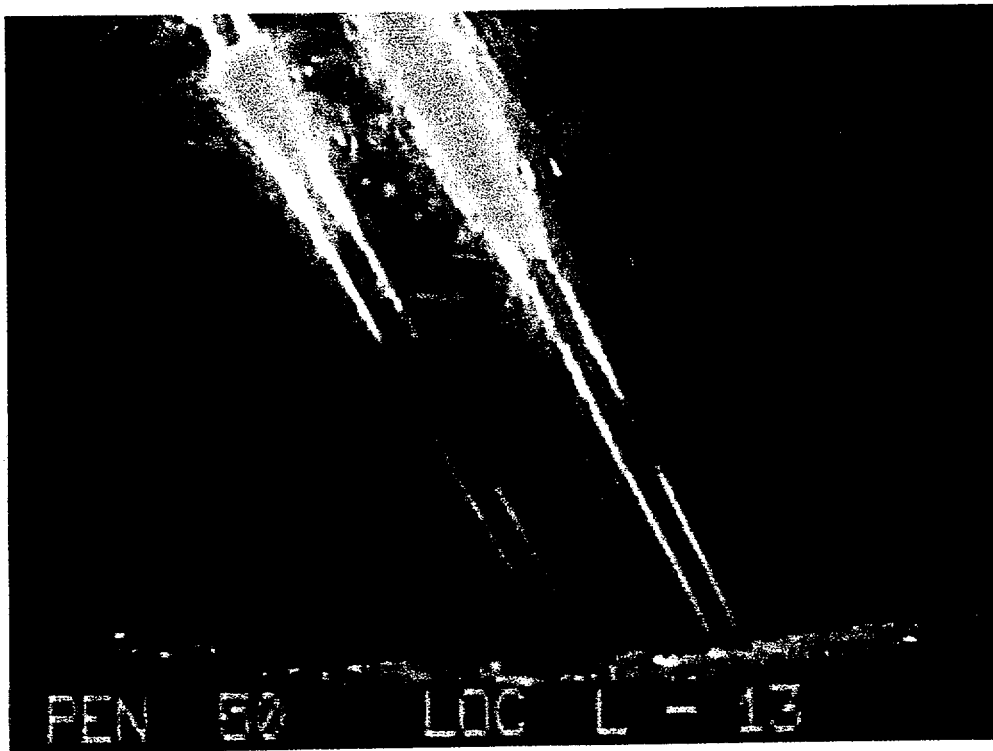
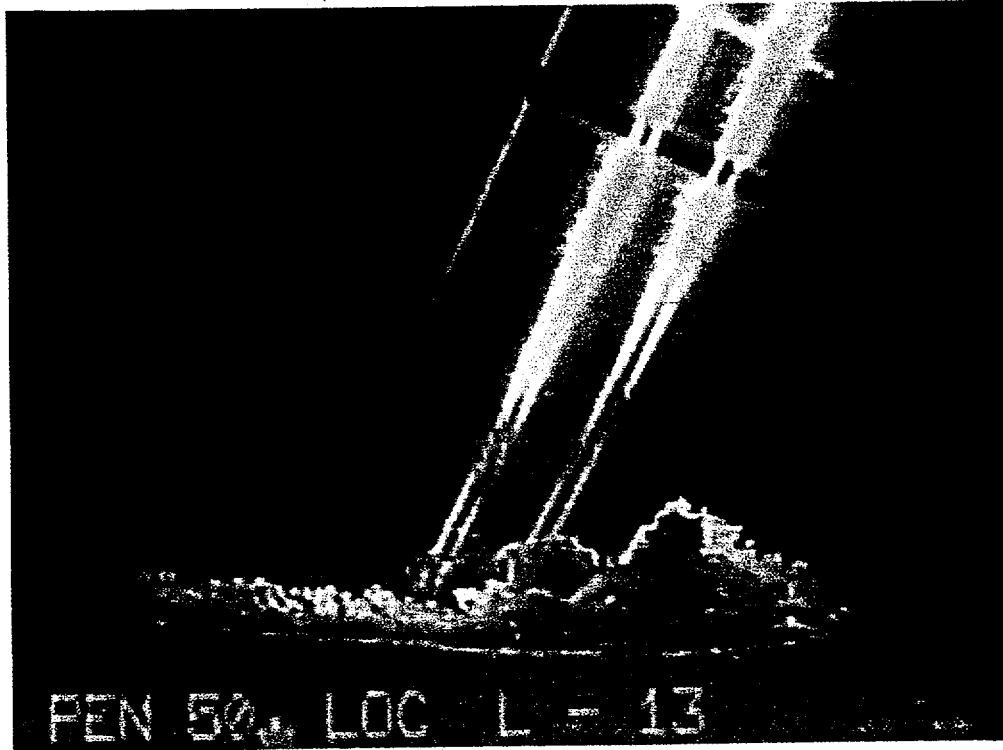
## Visual Inspection at Salem Unit 1 (April 2001)



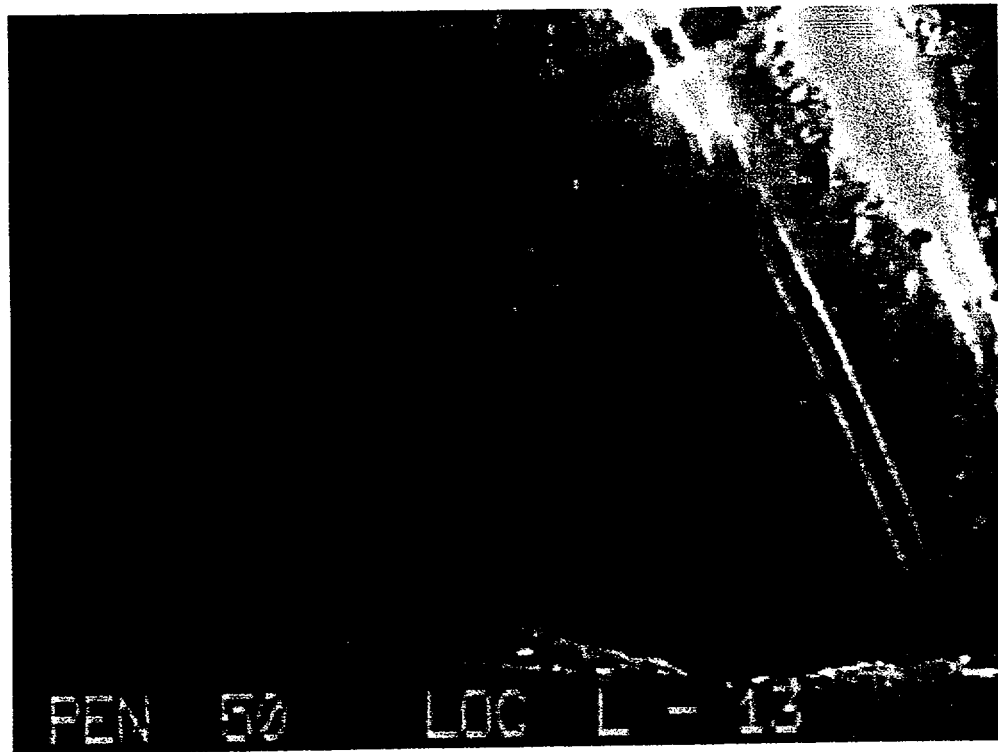
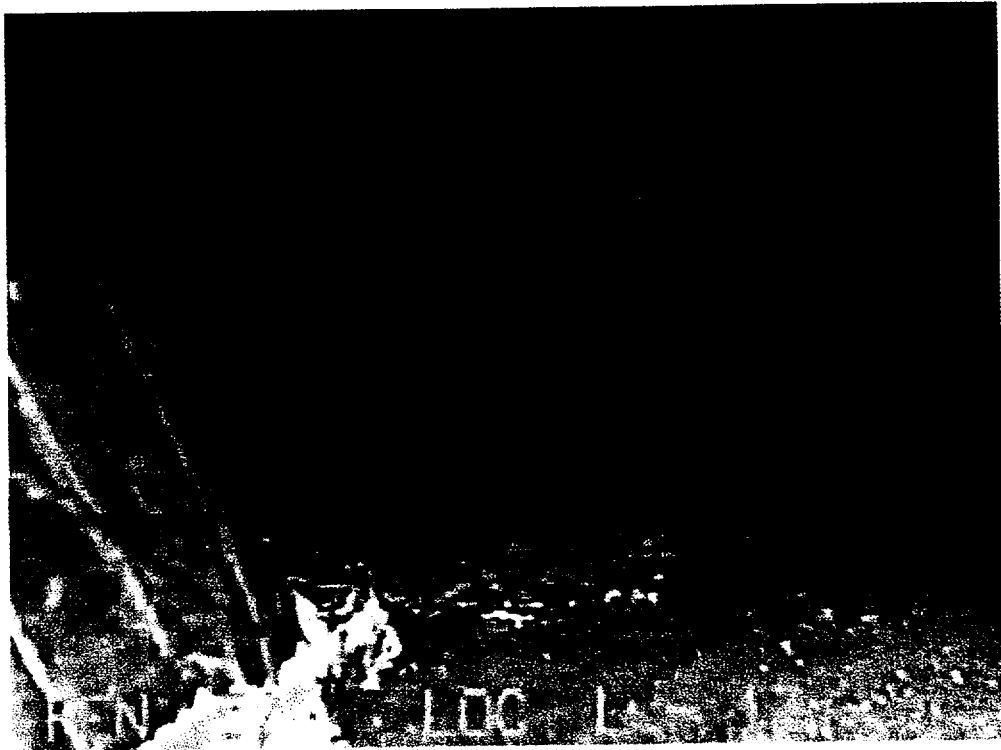
## Visual Inspection at Farley Unit 2 (February 2001)



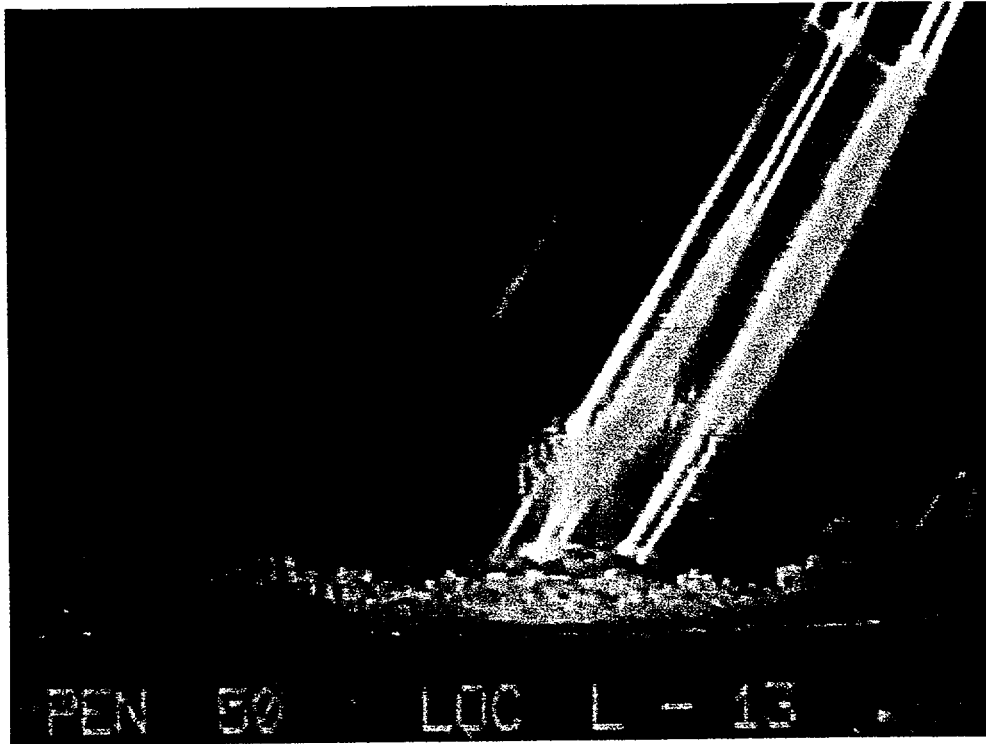
# Visual Inspection at North Anna Unit 2<sup>1</sup> (September 2001)



Visual Inspection at North Anna Unit 2<sup>1</sup> (cont.)  
(September 2001)



**Visual Inspection at North Anna Unit 2<sup>1</sup> (cont.)  
(September 2001)**



**Visual Inspection at Crystal River 3  
(October 2001)**

