

## **Energy Actions for TMI Tube Sever Concerns for ANO-1**

### **ANO-1 Scope of Potential Concern**

- ANO-1 did not install Westinghouse or B & W I-600 mechanical rolled plugs during the 1980's. Instead, ANO-1 used either welded, ribbed or explosive plugs
- The first rolled plug was installed in the ANO-1 OTSG's in 1992 which was Alloy-690 material.
- Review of past outage eddy current data revealed no wear indications have ever been detected at the tubesheet face
- ANO worked with Framatome, based on the criteria presented at the Feb. 1, 2002 meeting with the NRC, to determine the susceptible plugged tube list
- List included:
  - UTS plugs removed and replaced at a later date,
  - UTS plugs installed could have leaked and another type of plug was placed in the tube to seal the water in the tube,
  - I-690 plugs installed was rerolled/retorqued at a later date to possibly seal in water
- A total of 12 tubes were determined to be susceptible to possible tube swelling

### **Energy Planned Actions During 1R17 Outage**

- ANO has no plans to remove any plugs during 1R17
- All susceptible tubes have been evaluated and a total of 63 neighboring tubes will be plugged. 4 stabilizers will be installed in the upper span due to the industry operating experience events
- Some tubes will be plugged as an extra "buffer zone" downstream of plugged tubes
- Eddy Current Analysis will be performed on all tubes surrounding susceptible tubes to ensure no wear is seen on tubes prior to plugging/stabilizing



1R17 Steam Generator  
Status Report  
10/17/02 3.04 AM



Test Type	Leg	Probe	Extent	OTSG A			OTSG B		
				Planned	Acquired	Resolved	Planned	Acquired	Resolved
<b>Bobbin Coil Exam</b>									
Non-Sleeved Tubes	COLD	510UL	LTELTE	13736	13734	13734	14229	14225	14225
Non-Sleeved Tubes	HOT	510UL	LTEUTE	446	446		487	457	
Tubes w/ 31" Sleeves	COLD	510UL	LSELTE	54	54		121	121	
Tubes w/ 80" Sleeves	COLD	510UL	LSELTE	376	376		359	359	
<b>Total Bobbin Exams</b>				<b>14812</b>	<b>14810</b>	<b>14510</b>	<b>15176</b>	<b>15172</b>	<b>15172</b>
<b>Sleeve Bobbin Exam</b>									
31" 1600 Sleeves	HOT	400UL	USELSE	54	54		121	121	
80" 1600 Sleeves	HOT	400UL	USELSE	376	376		359	359	
<b>Total Sleeve Bobbin Exams</b>				<b>430</b>	<b>430</b>		<b>480</b>	<b>480</b>	
<b>Sleeve +Point Exam</b>									
31" Sleeves - Upper Rolls	HOT	400PP	USEUSR	11	11		23	23	
31" Sleeves - Lower Rolls	HOT	400PP	MSRLSE	11	11		23	23	
80" Sleeves - Upper Rolls	HOT	400PP	USEUSR	156	156		129	129	
80" Sleeves - Lower Rolls	HOT	400PP	MSRLSE	156	156		129	129	
<b>Total Sleeve +Point Exams</b>				<b>334</b>	<b>334</b>		<b>304</b>	<b>304</b>	
<b>Lower Tubesheet Crevice +Point Examination</b>									
Lower Tubesheet Crevice	COLD	520PP	LTSLTS	583	583		290	290	
Lower Tubesheet	COLD	520PP	LTSLTS	34	34				
<b>Total Lower Tubesheet Crevice +Point Examinations</b>				<b>617</b>	<b>617</b>		<b>290</b>	<b>290</b>	
<b>Upper Roll +Point Examination</b>									
Upper Roll Transition	HOT	520PP	UTEUTE	12074	12073	12072	13452	13448	13448
Re-Roll Transition	HOT	520PP	UTEUTE	2104	2101	2101	1244	1244	
Deep Re-Roll Transition	HOT	520PP	UTEUTE	4	4				
<b>Total Upper Roll +Point Examinations</b>				<b>14182</b>	<b>14178</b>	<b>14177</b>	<b>14696</b>	<b>14692</b>	<b>14692</b>
<b>Selected +Point Examinations</b>									
Dented Locations O&S-UTE	HOT/COLD	520PP	Various	122	122		62	62	
SSA MRPC Exam	HOT	520PP	Various	11	11		1	1	
<b>Total Selected +Point Exams</b>				<b>133</b>	<b>133</b>		<b>63</b>	<b>63</b>	
<b>Special Interest (Diagnostic) MRPC</b>									
Tubes			Various	638	638		497	497	
Indications			Various	758	758		546	546	
<b>Post Re-Roll Eddy Current</b>									
Bobbin	HOT	510UL	15SUTE	188	123	123	154	76	76
+Point	HOT	520PP	UTEUR1	188	178	122	154	76	76
<b>Plug Visual Examination</b>									
20% B&W Ribbed Plugs	HOT			8					
20% Welded Plugs	HOT			36			19		
100% Westinghouse Ribbed Plugs	COLD			64			7		
100% B&W Explosive Plugs	COLD			4			2		
20% Welded Plugs	COLD			11			7		