

REPORT ON THE 1990  
EDDY CURRENT EXAMINATIONS OF THE  
TMI-1 OTSG TUBING

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I.

INTRODUCTION

During January 1990, while TMI-1 was shut down for Refueling Outage 8R, GPUN performed Eddy Current (ECT) examinations of the tubing in the Once Through Steam Generators (OTSGs). The examinations were required by Technical Specification 4.19 (Reference 1), and GPUN engineering requirements.

Following the completion of the scheduled examinations on February 1, 1990 and the return to power on March 4, 1990, the unit was removed from service on March 6, 1990 due to a tube leak in OTSG A. During this unscheduled shutdown (designated 8U1) additional examinations of the tubing in OTSG A were performed.

During Outage 8R, a total of 2210 tubes in OTSG A and 992 tubes in OTSG B were examined. Based on these examinations, five tubes in OTSG A and three tubes in OTSG B were removed from service by plugging.

During the Outage 8U1 examinations, a total of 419 tubes were examined in OTSG A. This includes 417 lane/lane wedge tubes and two tubes which were examined as suspected leakers. Following the completion of these examinations, two tubes were removed from service by plugging. No examinations were performed in OTSG B during this outage.

This report was prepared to satisfy the reporting requirements of Technical Specification 4.19.5.b (Reference 1). The data was extracted from GPUN TDR 1026 (Reference 15).



II.

METHODS

EDDY CURRENT ACQUISITION SYSTEM

The ECT examinations were performed using the same basic techniques which were used during the 1977-78 examinations. These techniques were initially qualified for use at TMI in 1982 (References 2 & 3) and have been refined and upgraded during subsequent outages. For 1990-8R and 8U1, the only significant change was the use of the .510" diameter bobbin probe for screening indications for further evaluation using the .540" diameter bobbin probe. This change was made to reduce the incidence of "stuck" probes, which, in the past has accounted for significant radiation exposure to personnel. The basis for using the .510" is documented in Reference 11.

For Outage 8R, the data acquisition system included the Zetec Miz 18 Digital Eddy Current System and the B&W "ROGER" in-head manipulator. In Outage 8U1, the data acquisition system (Miz 18) was used in conjunction with a Zetec SM3-10 in-head fixture.

While the use of different in-head fixtures requires a different configuration for data acquisition, the recorded eddy current data is unchanged.

PROBES

The 8R and 8U1 ECT examinations were performed using Zetec probes. The probe types and uses included:

Bobbin Coil - Two sizes of bobbin coil probes were used. The .540" diameter (A-540-LC/NF/M/HF) probe was used to examine all tubes with previously identified indications. This includes tubes in the ISI, S/N and 8x1ACC data sets. (See Section III for data set descriptions). The .540" probe was also used to confirm indications recorded as 20% through wall or greater by the .510" bobbin coil probe.

The .510" diameter bobbin coil probes (A-510-LC/NF/M/HF and A-520-M/TBS/HF) were used to examine tubes with no previous indications. Data sets examined with the .510" probe include the 3%-TS, 6%-TS and lane/wedge tubes.

All three of the above bobbin coil probes have the same electrical characteristics. The A-540-LC/NF/M/HF and A-510-LC/NF/M/HF probes are identical except for the probe diameters. The A-520-M/TBS/HF probe uses the same coils as the LC probes but has a stainless steel nose and tail piece in place of Delrin plastic. The center section, which houses the ECT coils, is Delrin plastic on all three probes; therefore, the eddy current characteristics are not affected by the body change. The metal body probe was used in an attempt to increase probe life thereby reducing personnel exposure and improving data consistency. No major improvement was noted and the LC type probes were used for most of the examinations.

8x1-ABS - The Zetec 8x1 Absolute probe was used to examine the lane and lane/wedge tubes from the 14th T.S.P. to the kinetic expansion zone in the upper tubesheet. This probe was also used to confirm indications screened by the bobbin coil probes. The specific probe used was the Zetec 8C-5240-555-A0187.

MRPC - The Zetec Motorized Rotating Pancake Probes (MRPC) were used to examine specific areas of tubing screened by the bobbin or 8x1-ABS probes. The MRPC probe used for the tubing examinations was a Zetec Model B-510-MRPC/PH with a .125" diameter coil.

#### TECHNIQUES

The following is a summary of the examination methods used. The detailed procedures are contained in TMI-1 Surveillance Procedure 1300-4B (Reference 4).

- ° Dual Examination Method, for the un-expanded portion of tube
- ° Bobbin Coil Absolute Method, for the detection of wear
- ° Motorized Rotating Pancake Probe, (MRPC) for the characterization of select indications

Dual Examination Method: The portion of tubing between the roll expansion in the lower tubesheet and the kinetic expansion in the upper tubesheet is examined using the Dual Examination Method which GPUN developed and qualified in 1982 (Reference 2). This technique consists of examining the tubes using the bobbin coil (.540" or .510" diameter) to screen indications for further evaluations. Tubes with indications requiring further analysis are then examined using the 8x1 absolute technique to determine if the indications are relevant and to determine the circumferential extent. For confirmed indications, the characterization and disposition of the tubes are based on the following:

Percent Through Wall - Based on phase analysis of the bobbin coil probe. If the tube is to remain in service, the percent through wall is based on the .540" probe results.

Circumferential Extent - Based on number of 8x1 coils.

Signal Voltage - Based on Bobbin Coil.

Axial Location - Based on Bobbin Coil.

Wear Examinations: The examination for the detection of gradual, outer diameter tube wear is performed during the Bobbin Coil examinations. This is done by operating one channel of the multi-frequency ECT instrument in the 200 KHz absolute mode. The use of the absolute mode permits detection of gradual changes in the tube wall which cannot be detected during a differential examination. Indications which appear only in the absolute channel are therefore screened as possible wear. The suspect area is then examined using the 8x1 absolute probe to provide additional data.

Motorized Rotating Pancake Probe MRPC: In addition to the dual examination method, the MRPC probe was used to examine tubes with questionable indications. This probe provides a three dimensional (C-Scan) display of the examination area and provides a detailed insitu characterization of defects.

#### EXAMINATION EXTENT

The Bobbin Coil probe is used to examine the un-expanded length of the tube from the lower roll transition in the lower tubesheet to the kinetic expansion transition in the upper tubesheet. Although Technical Specification 4.19 requires the examination of only the portion of tubing between the secondary faces of the upper and lower tubesheets, all of the inspected tubes were examined over the entire un-expanded length.

#### RECORDING OF INDICATIONS

When analyzing the eddy current data, various indications are recorded by the data analyst. These indications fall into two basic groups, indications which require additional evaluations and indications which do not require additional evaluations. A complete list of all abbreviations and definitions used to classify indications is included as Appendix I.

Indications Which Require Additional Evaluations: Indications which are recorded as 40% T.W. or greater, ADR, DTS or DSS are all re-examined using the 8x1 Absolute Probe to determine if they are relevant indications and must be dispositioned. Indications of 20-39% T.W. or S/N are considered relevant indications and are monitored during future examinations but do not require additional evaluations using the 8x1 Absolute probe. (See Appendix I).

Indications Which Do Not Require Additional Evaluations: Indications such as IDC, DNT, DNG and PVN are recorded for information only and do not require a follow-up 8x1 Absolute examination. (See Appendix I).

Indication Locations: The locations of the ECT indications are recorded to identify their "elevation" or "axial location" in the OTSGs. For free span indications the locations are recorded in inches above "+" the tubesheet surfaces or tube support plate center. For indications located within or adjacent to the tube support plates, the indications are recorded as "+" or "-" from the center of the T.S.P. The relative locations of the tubesheets and tube support plates (T.S.P.) are shown in Figure II-1.

#### DATA ANALYSIS PROCESS

The data analysis process is based on the recommendations of the EPRI, PWR Steam Generator Inspection Guidelines. (Reference 7). The process included the use of written interpretation guidelines, which are filed with the examination data; site specific training and testing; and independent two party analysis of the data.

The data analysis process was performed by personnel qualified and certified to at least Level IIA, in accordance with the ECT contractor's approved programs. As a supplement to this qualification, site specific indoctrination and training was attended by all data analyst personnel. The program included both classroom lectures and hands on practice using eddy current data and experience from both TMI and another B&W designed plant. The training covered generic OTSG degradation mechanisms and examination methods and also specifically addressed both the Bobbin coil and 8x1 Absolute methods which are used at TMI.

The total indoctrination process encompassed approximately 16 hours and was conducted by the designated lead analyst. At the completion of the indoctrination, each data analyst was required to pass a performance demonstration for each method to be analyzed. Appendix VI is an outline of the program.

#### Data Analysis Sequence

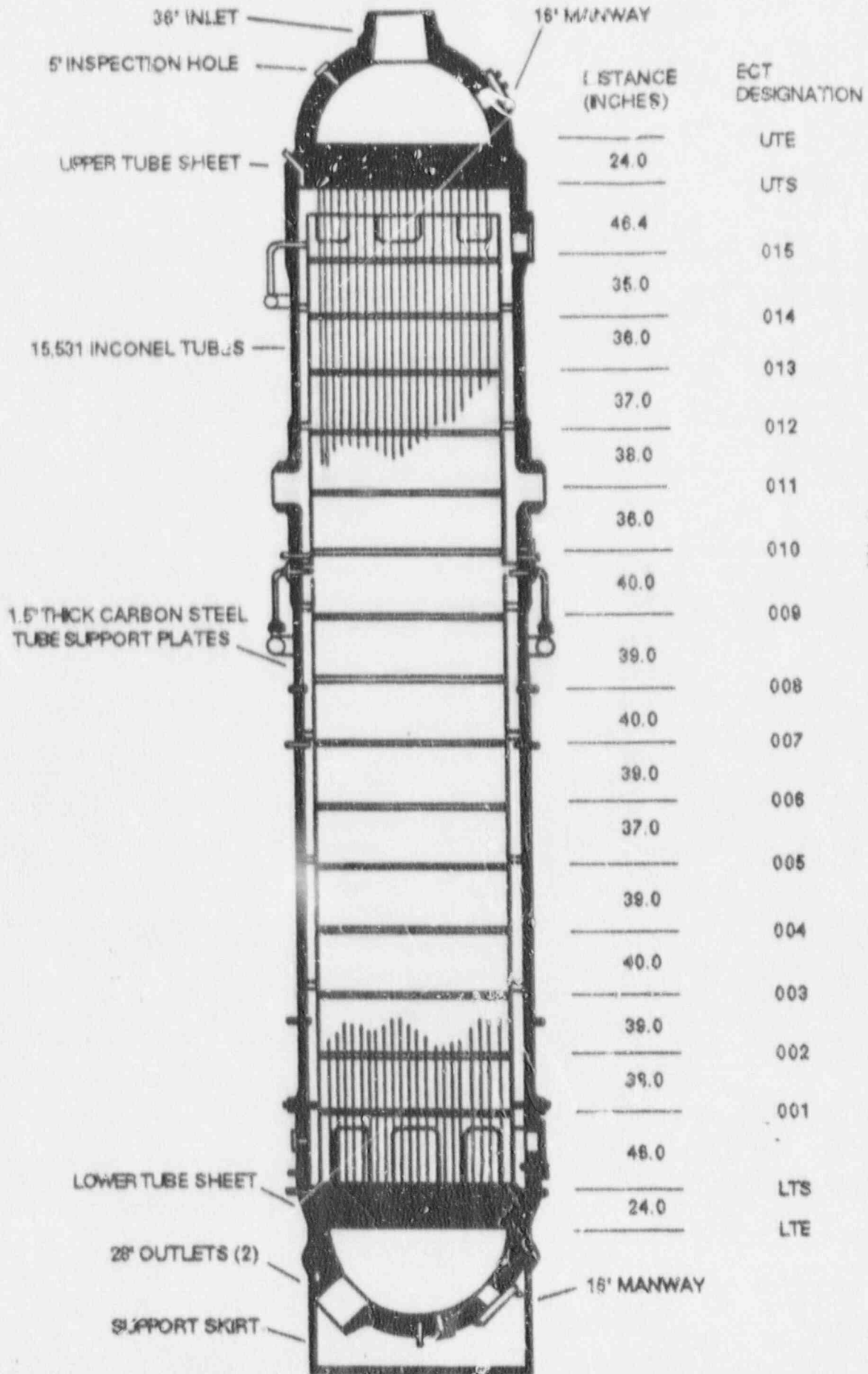
The data analysis process was performed in accordance with the same guidelines used for the data analyst indoctrination and training. The data analysis process was performed in three (3) parts with at least two (2) separate data analysts evaluating 100% of the Bobbin Coil and 8x1-ABS data for each tube. The data analysis process included:

1. Primary Analysis: The primary analysis included a 100% evaluation of the ECT data and the recording of all attributes identified in Appendix I. This analysis included recording the phase angle, percent through wall, voltage, circumferential extent and location of the indications.
2. Secondary Analysis: The secondary analysis also included a 100% review of the ECT data for the attributes identified in Appendix I. This analysis, performed as a blind review, was performed in the same manner as the primary analysis.
3. Official Results: To complete the analysis process, the results of both the primary and secondary analyses are reviewed by the designated lead analyst. This review combines the primary and secondary analyst's results and also resolves any discrepancies.

The data analysis of the MRPC data is considered a specialized examination and the process varies from the production analysis process. The evaluation of the data from the MRPC examinations of the tubing was done either by a Level IIA or Level III data analyst. No additional reviews were required for these evaluations because of the focused area under evaluation.



TMI-1 OTSG  
LONGITUDINAL SECTION



III. OUTAGE SR EXAMINATION CATEGORIES AND RESULTS

The locations of the tubes examined during Outage SR are shown on Figures III-1 and III-2. The examinations were performed in two major groups, based on the examination requirement.

- A. Examinations Required by Technical Specification 4.19
- B. GPUN Elective Examinations

These groups are further divided into specific categories of tubes. This section defines the examination scope, purpose and examination results by category. When classifying the tubes by examination category, some tubes may satisfy the criteria for more than one category. In those cases, the tube is placed into the first category which applies following the sequence of this report. The sequence accounts for variations in tube counts as shown in categories such as B-2 and B-4, where some of the tubes were previously included as Category A-1 tubes.

A. EXAMINATIONS REQUIRED BY TECHNICAL SPECIFICATION 4.19

A-1 PREVIOUSLY DEGRADED TUBES

Data Sets: ISI  
Probe: .540" - Bobbin  
Extent: Full Length

SCOPE

In OTSG 'A', 262 tubes were examined.  
In OTSG 'B', 26 tubes were examined.

REASON FOR EXAMINATION

The examination of the "Degraded" tubes serves a dual purpose. First, new examination results are compared to the results of previous examinations to determine if there is evidence of an active degradation mechanism occurring in the OTSGs. Second, the examination provides assurance that no tubes with indications exceeding the plugging criteria remain in service.

INCLUDED TUBES

The "Degraded Tube" population was selected to meet the requirements of Tech. Spec. 4.19.2.a.1. This population consists of all inservice tubes which had confirmed indications of 20% through wall or greater identified during any previous examinations.

## RESULTS

The results of the 8R examinations of the "Degraded" tubes were consistent with previous examination results. The majority of the previously identified indications showed no evidence of change from previous examinations. In three cases however, the reported % through wall values exceeded the established plugging criteria and the tubes were removed from service.

### OTSG A

Three (3) tubes (A-3-25, A-4-28, A-104-121) had indications of >40% through wall in the freespan portion of the tube and were removed from service by plugging. The indications in these tubes were all 1-coil in circumferential extent.

### OTSG B

No indications >40% through wall were recorded.

### TRENDING OF I.D. INDICATIONS

To monitor for evidence of continuing degradation of identified indications, the 1990-8R examination results were compared to the 1988-7R. The indications included in this comparison were previously recorded indications with through wall values of 16% or greater in both 1990-8R and 1988-7R. The breakdown of the indications is shown in Table 1 and Appendix II.

In "A" OTSG, 167 indications met the above criteria. The mean change in the indications was 0.0% of wall thickness between 7R and 8R (standard deviation 7.5% of wall). The amplitude of these indications showed a mean change of -0.26 volts (standard deviation 0.36 volts).

In "B" OTSG, 29 indications met the criteria. The average change in the indications was +2.3% of wall thickness between 7R and 8R (standard deviation 5.76% of wall). The amplitude of these indications showed a mean change of -0.17 volts (standard deviation 0.19 volts).

When combined, the average change per indication for both OTSGs was +0.2% of wall (standard deviation 7.43% of wall). The mean amplitude change was -0.25 volts (standard deviation 0.35 volts).

To determine the significance of these changes, the data was compared to similar evaluations performed during previous examinations. Based on this comparison (see Table 2) in which the mean change has been both positive and negative, the identified changes are considered to be within the qualified repeatability of the ECT process, and do not indicate a trend of ongoing degradation. This variability is discussed in Reference 3.

TABLE 1  
COMPARISON OF INDICATIONS IN DEGRADED TUBES

	NUMBER OF TUBES		
	OTSG A	OTSG B	TOTAL
Degraded Tube Population	262	26	288
Included in Comparison *	167	22	189
Excluded from Comparison **	95	4	99

\* Comparison includes only indications >16% T.W. in 7R and 8R.

\*\* Excluded indications are primarily threshold level indications which were below the recording threshold or recorded as S/N indications in either 7R or 8R.

OTSG	Number Indications	No. Inds	No. Inds	No. Inds	Mean	Std
		% T.W. Increased 7R-8R	T.W. Decreased 7R-8R	% T.W. Unchanged 7R-8R	Change % T.W. 7R-8R	Deviation % T.W. 7R-8R
A	262	99	101	62	0.0	7.55
B	29	15	7	7	+2.3	5.76
Both A&B	291	114	108	69	+0.2	7.43

OTSG	Number Indication	No. Inds	No. Inds	No. Inds.	Mean	Std
		Volts Increased 7R-8R	Volts Decreased 7R-8R	Volts Unchanged 7R-8R	Change Volts 7R-8R	Deviation Volts 7R-8R
A	262	29	231	2	-0.26	0.36
B	29	3	26	0	-0.17	0.19
Both A&B	291	32	257	2	-0.25	0.35



TABLE 2

COMPARISON OF STATISTICAL EVALUATION TO PREVIOUS EVALUATIONS

Period	Number Indica- tions	Mean Change % T.W.	STD Deviation % T.W.	Mean Change Volts	STD Deviation Volts
1984/1986-5M	152	-2.6	6.1	-0.2	0.3
1986-5M/1986-6R	118	+1.1	6.6	0.0	0.2
1986-6R/1988-7R	119	+2.6	5.5	+0.2	0.3
1988-7R/1990-8R	291	+0.2	7.43	-0.25	0.35

1986-5M data extracted from GPUN TDR 781, Revision 1 (Reference 8).  
1986-6R data extracted from GPUN TDR 839, Revision 0 (Reference 9).  
1988-7R data extracted from GPUN TDR 935, Revision 0 (Reference 10).

NOTE: For outages 1984 through 1988-7R, all indications were examined with both the 8x1-ABS and .540" bobbin coil probes and only indications >20% T.W. and confirmed by both probes were included. For 1990-8R, all indications >16% T.W. were included, which accounts for the increased number of indications.

A-2 TECH. SPEC. RANDOM SAMPLES

Data Sets: 3%-TS, 6%-TS  
Probe: .510" Bobbin  
Extent: Full Length

SCOPE

In OTSG "A", 1406 tubes were examined.  
In OTSG "B", 468 tubes were examined.

REASON FOR EXAMINATION

The tubes in this sample have no history of degradation below the kinetic expansion. They are examined to monitor the overall condition of the steam generator tubing.

INCLUDED TUBES

The initial sample included at least 3% of all the tubes in each OTSG. As required by T.S. 4.19.2.a.2, at least 50% of the tubes were located in the outer periphery of the OTSG which is an area where experience has indicated potential problems. (The outer periphery is defined as the tubes located outside the radius of the outer support rods). The remainder of the tubes were selected to provide a representative sample of the tube bundle. The samples were selected to include tubes which have not been examined since the 1984 examinations.

As a result of examinations of the "Degraded Tubes", an additional sample of 6% was examined in OTSG A. The tubes for this sample were also biased towards the periphery of the OTSG, since the tubes which formed the expanded sample were in this area.

RESULTS

OTSG A

In OTSG A, the examination of the 3%-TS sample did not reveal any indications of 20% T.W. or greater. The examination of the "Degraded Tubes" did however, require the examination of an additional 6%-TS sample. No indications of 20% T.W. or greater were identified in this sample. The examinations (3%-TS and 6%-TS) did result in two tubes (A-17-62 and A-150-24) being screened for distorted support plate signals, which were then determined to be non-relevant based on the 8x1-ABS probe. In addition, one tube (A-59-72) had a low amplitude (S/N) indication recorded and will be monitored during the next examination.

OTSG B

In the OTSG B, the examination of the 3% sample resulted in six tubes being screened for indications exceeding 20% through wall. Of these six indications, five were between 20 and 40% through wall and one tube had a 63% through wall indication. The five tubes with indications 20-40% T.W. were re-examined using the .540" diameter probe to confirm the percent through wall depths. These tubes (B-26-13, B-50-39, B-73-78, B-82-14 and B-103-33) will be monitored as degraded tubes during the next examination. The tube with the 63% through wall indication (B-123-1) was removed from service by plugging. This indication was located at 6.4" above the secondary face of the upper tubesheet. The indication was re-evaluated using the .540" probe and assigned a value of 60% through wall from the inside surface. The 8x1-ABS probe was used to confirm the circumferential extent as 2-coils.

A review of the last examination of this tube (1984) showed the indication had been present but was not screened during the analysis process. A review of the signals amplitude and phase angle showed the indication had not changed. Based on the indications location and the review of the 1984 data, it was determined no scope expansion was required (Reference 12).

B. GPUN ELECTIVE EXAMINATIONS

B-1 TUBES WITH INDICATIONS NOT CONFIRMED BY 8x1  
ABSOLUTE EXAM IN PREVIOUS EXAMINATIONS

Data Set: 8x1ACC  
Probe: .540" Bobbin  
Extent: Full Length

SCOPE

In OTSG "A", 29 tubes were examined.  
In OTSG "B", 14 tubes were examined.

REASON FOR EXAMINATION

These tubes were examined to continue monitoring the status of the previously recorded indications.

INCLUDED TUBES

All in-service tubes with indications recorded as 20% through wall or greater but not confirmed by 8x1-ABS during Outages 86-5M, 86-6R or 88-7R were included in this category. This population represents threshold level indications which are below the threshold of detection for the 8x1-ABS probe. These may be relevant indications which are not detectable due to their geometry or may be non-relevant indications caused by something other than material degradation. Since 1986, this population of tubes had ranged in size from:

	OTSG "A"	OTSG "B"	TOTAL
1986-5M	228	50	278
1986-6R	18	7	25
1988-7R	33	13	46
1990-8R	29	14	43

This change in the population is a result of indications being re-categorized as the examination and analysis techniques are refined. When indications are re-categorized, the tubes may be placed in another data set such as "Degraded Tubes", removed from service by plugging or returned to the general tube population.

RESULTS

OTSG A

In OTSG A, the indications in 15 of the 29 tubes were recorded as 20%-40% through wall and will be monitored as degraded (ISI) tubes during the next examination. In the remaining tubes, four tubes had small amplitude indications less than 1.0 volts and will be monitored as S/N tubes during the next outage. In nine tubes, no recordable indications were identified and the tubes will be returned to the general sample. In one tube, the previously identified indication was recorded as >40% T.W. but not confirmed by 8x1 and the tube will remain in this same category during the next examination.

OTSG B

In OTSG B, three of the 14 tubes had indications of 20-40% T.W. and will be monitored as degraded (ISI) tubes during the next examination. Three tubes had small amplitude indications less than 1.0 volts and will be monitored as S/N tubes during the next examination. The remaining eight tubes had no recordable indications and will be returned to the general sample for the next examination.



B-2 LANE/WEDGE TUBES

Data Set: LANWEG  
Probe: 510" Bobbin, 8x1-ABS  
Extent: .510" Bobbin - Full Length  
8x1-ABS - 14th T.S.P. to UTS

SCOPE

In OTSG "A", 403 Bobbin coil examinations, 419 8x1-ABS examinations.  
In OTSG "B", 416 Bobbin coil examinations, 418 8x1-ABS examinations.

REASON FOR EXAMINATION

OTSGs have typically experienced degradation in the lane/wedge tubes. In consideration of the possibility of accelerated degradation in this area, GPUN elected to examine all of the lane/wedge tubes in accordance with paragraph 4.19.2.a.4.(1) of the Tech. Spec. (Reference 1).

INCLUDED TUBES

This examination included all in-service tubes in the Lane and Wedge area. This includes the tubes in the three rows on each side of the open inspection lane (Rows 73, 74, 75, 77, 78, 79) from tube 1 to the center of the OTSG, which are the lane tubes. The wedge tubes are the tubes included in the wedge formed by drawing a line from Row 66 Tube 1 to Row 75 Tube 15 and from Row 86 Tube 1 to Row 77 Tube 15.

RESULTS

OTSG A

In OTSG A, two tubes (A-73-44, A-78-19) had indications >40% through wall and were removed from service by plugging. The indication in A-73-44 was located at the 4th T.S.P. and was evaluated as 52% T.W. from the O.D. surface. The indication in A-78-19 was located at the entrance to the upper tube sheet. This indication could not be sized using the bobbin coil technique; however, based on the MRPC and 8x1-ABS probes, it was considered to be 40% T.W. or greater originating on the O.D. surface.

In addition, four tubes had distorted tubesheet or tube support plate indications. Two tubes (A-73-52, A-74-1) had distorted tubesheet indications on the 8x1-ABS examinations. These areas were examined using the MRPC probe and the indications were determined to be non-relevant. Two tubes (A-77-37, A-79-49) had distorted tube support plate indications (7th T.S.P. and 8th T.S.P., respectively) using the bobbin coil probe. These indications were confirmed as non-relevant using the 8x1-ABS probe.

One other tube (A-79-47) had small amplitude (S/N) indication in the upper tubesheet. This indication was recorded and the tube will be monitored during the next examination.

OTSG B

In OTSG B, one tube (B-77-12) had an indication at the secondary face of the upper tubesheet. This indication was distorted and could not be sized using the bobbin coil probe. Based on the MRPC and 8x1-ABS probes, the indication was determined to be >40% through wall from the O.D. and 1-coil in circumferential extent and the tube was removed from service by plugging.

Indications of 20-40% through wall were recorded in two tubes (B-73-45, B-74-56) and these tubes will be monitored as degraded tubes during the next examination. Two other tubes (B-67-1, B-78-56) had small amplitude (S/N) indications recorded. These indications were recorded and the tubes will be monitored during the next examination.

B-3 TUBES WITH S/N INDICATIONS

Data Set: S/N, S/N-7R  
Probe: .540" Bobbin  
Extent: Full Length

SCOPE

In OTSG "A", 60 tubes were examined.  
In OTSG "B", 18 tubes were examined.

REASON FOR EXAMINATION

These tubes were examined to verify the minor nature of the indications.

INCLUDED TUBES

During previous OTSG examinations, poor signal to noise ratio (S/N) indications of less than 1.0 volt have been detected and recorded using the bobbin coil probe. The through wall depth of these indications cannot be quantified due to the poor (less than 3:1) signal to noise ratio; however, the 8x1-ABS technique has been used to verify the small circumferential extent. Based on the results of these examinations the indications have always been 2 coils or less in circumferential extent and the tubes have remained in service to be monitored as "S/Ns".

S/N indications recorded since 1986-5M which had phase angles of 6° to 110° by .540-HGSD and were confirmed by 8x1-ABS were examined during this outage. In addition, all S/Ns which met this phase angle criteria in 1988-7R were included whether or not they were confirmed by 8x1-ABS.

RESULTS

OTSG A

The indications in 22 of the 60 tubes continued to be below the threshold for evaluating percent through wall. In 11 of the tubes (A-7-4, A-24-19, A-25-2, A-26-96, A-31-24, A-50-2, A-75-26, A-95-127, A-100-90, A-144-2, A-149-30), the indications were of an acceptable level for evaluation and were determined to be 20-39% through wall. These tubes will be considered degraded tubes during the next examination. In 27 tubes, the indications were outside the recording range and the tubes will be returned to the general samples.

OTSG B

The indications in eight of the 18 tubes continued to be below the threshold for evaluation. Four tubes (B-8-44, B-42-74, B-79-47, B-131-27) had indications evaluated as 20-39% through wall and will be examined as degraded tubes during the next outage. In six tubes, the indications were outside the recording range and the tubes will be returned to the general samples.



B-4 MECHANICAL CLEANING BASELINE

Data Set: WSC  
Probe: .540" Bobbin  
Extent: Full Length

SCOPE

In OTSG "A", 47 tubes were examined.  
In OTSG "B", 50 tubes were examined.

REASON FOR EXAMINATION

During Outage 7R, GPUN performed mechanical cleaning (Water Slap Cleaning) to remove deposits from the secondary side of the OTSGs. Since this cleaning process involves pulsing nitrogen into the secondary side of the OTSG and displacing large volumes of water, a pre-cleaning and post-cleaning baseline was desired in areas where the tubes were exposed to the highest stress during the cleaning process.

INCLUDED TUBES

The tubes selected for examination were located near the nitrogen injection nozzle locations. As stated in Reference 5, the tubes exposed to the most adverse loadings are located 18 tubes from the centerline of the nozzle and three tubes in from the periphery. The tubes were therefore selected from this envelope in front of four of the eight nozzles in each OTSG.

RESULTS

OTSG A

No evidence of damage from the mechanical cleaning process was observed in these tubes. Three tubes (A-3-14, A-4-30, A-95-1) did have small amplitude (S/N) inner diameter indications identified and the tubes will be examined as S/Ns during the next outage. In addition, one tube (A-63-128) had an indication in the absolute channel of the bobbin probe, however, the indication was determined to be non-relevant, based on the 8x1-ABS examination.

OTSG B

No evidence of damage from the mechanical cleaning process was noted in these tubes. One tube (B-113-114) did have a distorted support plate signal which was determined to be non-relevant based on the 8x1-ABS probe. In addition, one tube (B-114-4) had a small amplitude (S/N) inner diameter indication and will be examined as a S/N next examination.

B-5 EXTRA

Data Set: Extra  
Probe: .510" Bobbin  
Extent: Full Length

SCOPE

OTSG "A", 3 tubes were examined.

REASON FOR EXAMINATION

During the course of the examinations, Eddy Current data was acquired on tubes not identified on the ECT data sheets. The tubes were examined as a result of the typographical or interpretive errors on the part of the data acquisition personnel. Once the ECT data is recorded, it is evaluated and the tubes dispositioned accordingly.

INCLUDED TUBES

These tubes are randomly located.

RESULTS

No indications were identified in these tubes.

C. DISCUSSION OF RESULTS

Characterization Of Indications

The indications reported during 1990-8R were characterized by location, percent through wall, amplitude, and circumferential extent. (See Figures III-5 through III-8). This characterization showed that the majority of indications are inner diameter initiated and are located towards the top of the OTSGs. In OTSG "A", the indication rates are higher towards the outer periphery while the distribution is more uniform across OTSG "B". This is the same distribution of indications as identified during the previous examinations.

The amplitudes (voltage) of the 1990-8R indications were typically small, <2.0 volts. The characterization by percent through wall shows most of the indications are partial through wall with 98% of the indications recorded as <50% through wall. These are both consistent with previous examination results.

The circumferential extent of the 1990-8R indications was 1 coil for all indications except two 2-coil indications. This is consistent with the previous examination results.

Review of Previous Data

The ECT examination process included a review of previous examination data. This review was performed to better characterize and understand apparent changes in the ECT results from previous outages. This review and comparison included all tubes which were plugged during Outage 8R.

Based on the results of this review, the tubes can be categorized in the following groups.

1. Tubes with indications >40% through wall in 8R which exhibited >10% change from 7R-8R.

This category includes three tubes, all in OTSG A (A-3-25, A-4-28, A-104-121). These tubes had previously recorded indications of less than 40% through wall and the tubes were examined to monitor the indications. The indications in these tubes now exceed the 40% through wall plugging limit and the changes in the indications since the last examination are >10% through wall. A comparison of the signal amplitude shows in each case the amplitude (voltage) of the indications has decreased since the last examination. This would indicate the changes may be attributed to the repeatability of the ECT process and do not positively indicate there is an active mechanism.

2. Tubes with indications >40% through wall which exhibited less than 10% change from the last examination.

This group includes two tubes in OTSG B. (B-123-1, B-138-52). Both of these tubes had indications >40% through wall recorded during 1990-8R and the tubes were removed from service. The indication in B-123-1 was located in the upper tubesheet just below the kinetic expansion transition. A review of the 1984 data for this tube revealed the indication had been present but not detected during the examination. A review of the signal's phase angle and amplitude indicated it had not changed from 1984 to 1990-8R.

In tube B-138-52, a previously screened but not confirmed indication was confirmed by the 8x1-ABS probe at the 6th T.S.P. Based on the .540" bobbin probe examination, this indication had not changed from 1988-7R to 1990-8R.

3. Tubes with indications >40% T.W. which were previously distorted or undetectable.

This category includes two tubes (A-73-44, A-78-19) in OTSG-A and one tube (B-77-12) in OTSG-B.

Two tubes were removed from service, one in each OTSG because of indications at the entrance to the upper tubesheet. In OTSG A, tube A-78-19 had a 2-coil indication detected during the 8x1-ABS examination of the lane area. In OTSG B, tube 77-12 had a distorted tubesheet indication (DTS) recorded during the .510" bobbin coil examination.

Both of these tubes were then examined using the MFPC probe, which showed the indications to be rounded, outer diameter initiated and located immediately above the entrance to the upper tubesheet. Based on a comparison of the size and shape of the indication with the flat bottom holes in the ASME calibration standard, the indications were determined to be >40% T.W. and the tubes were removed from service.

The remaining tube, A-73-44, had a previously recorded distortion at the 4th T.S.P. which was determined to be a relevant indication during Outage 1990-8R. This tube was also removed from service.



UBE

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

ROW

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

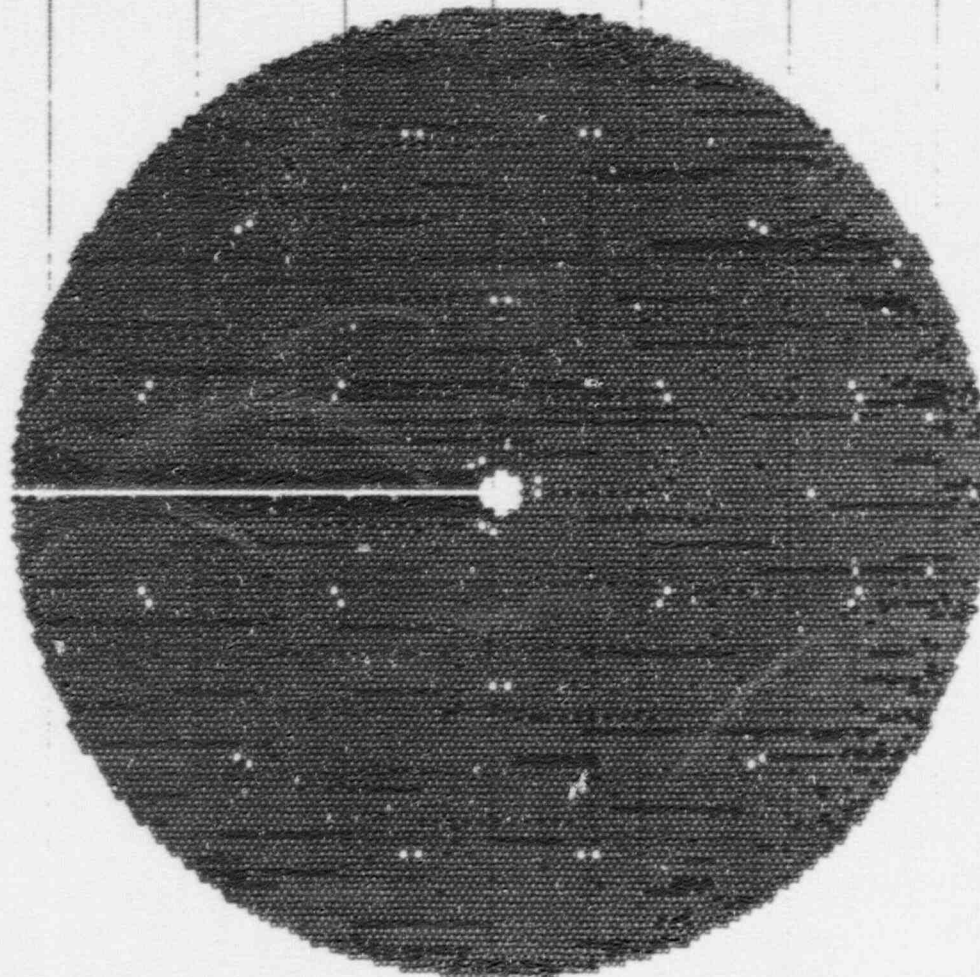
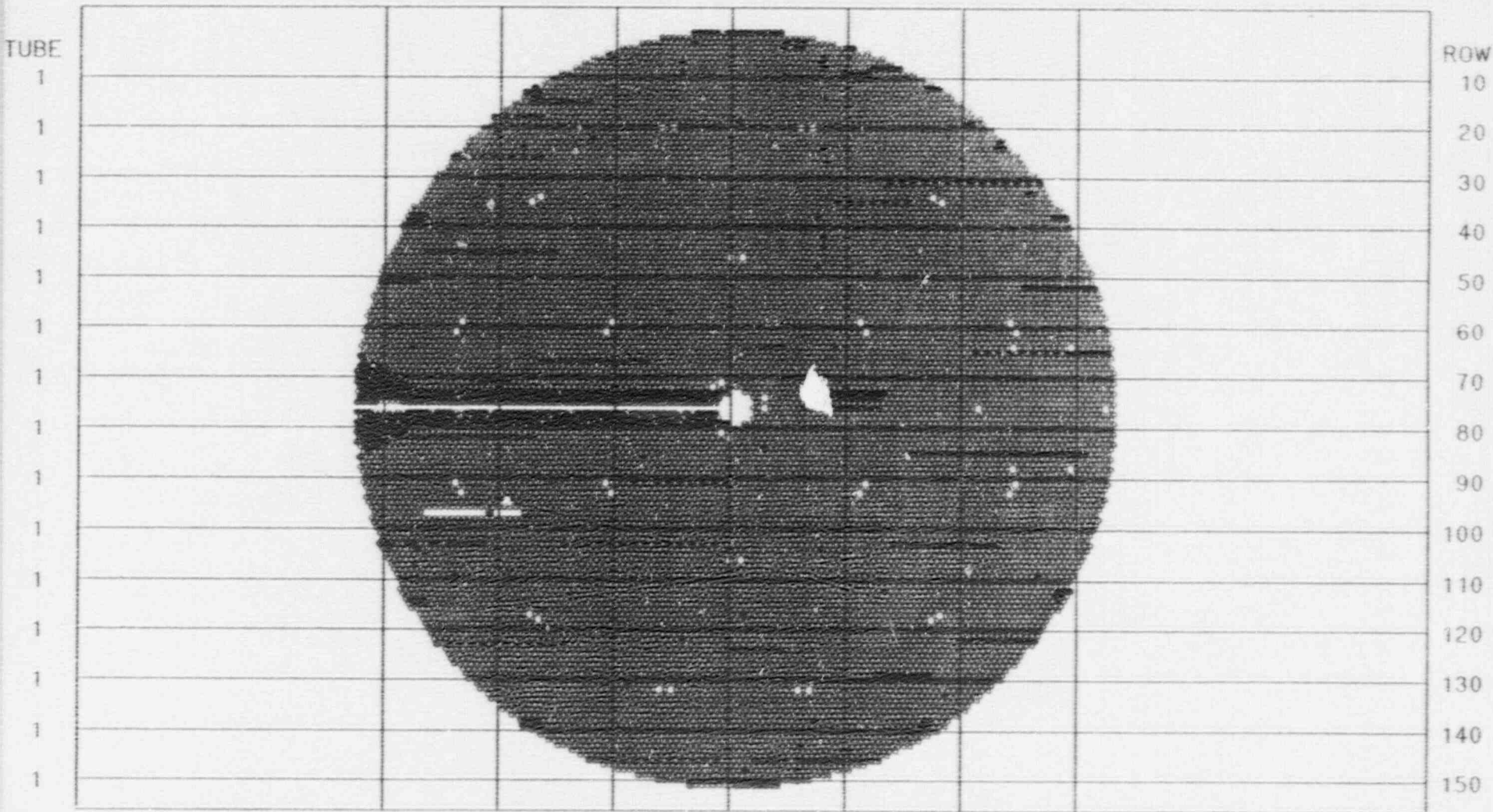


FIGURE III-1 OTSG A Tubes Examined

2210: TUBES EXAMINED OUTAGE 8R

GPU NUCLEAR CORP. TMI - UNIT 1  
 ONCE THROUGH STEAM GENERATOR: A  
 09/13/90



992: TUBES EXAMINED OUTAGE 8R

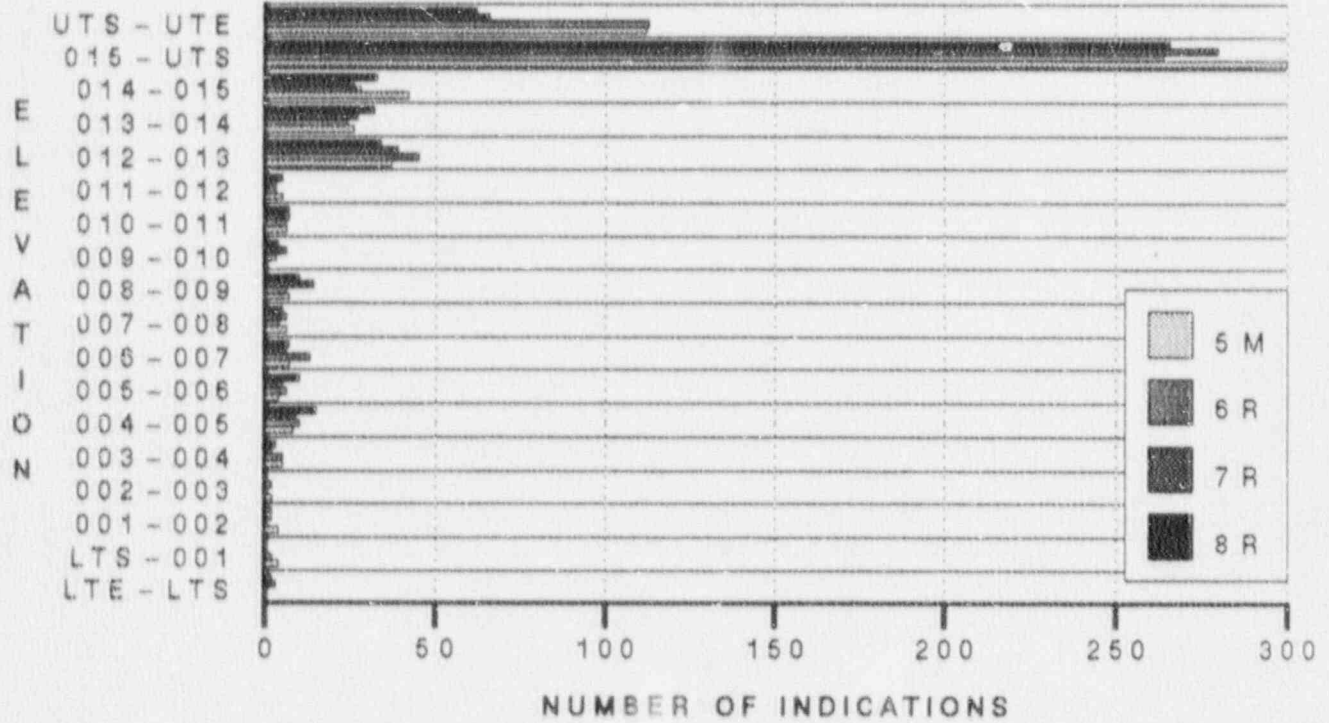
GPU NUCLEAR CORP. TMI - UNIT 1  
 ONCE THROUGH STEAM GENERATOR: B  
 09/13/90

FIGURE III-2 OTSG B Tubes Examined

FIGURE III-3

DISTRIBUTION OF INDICATIONS BY AXIAL LOCATION

OTSG "A"



OTSG "B"

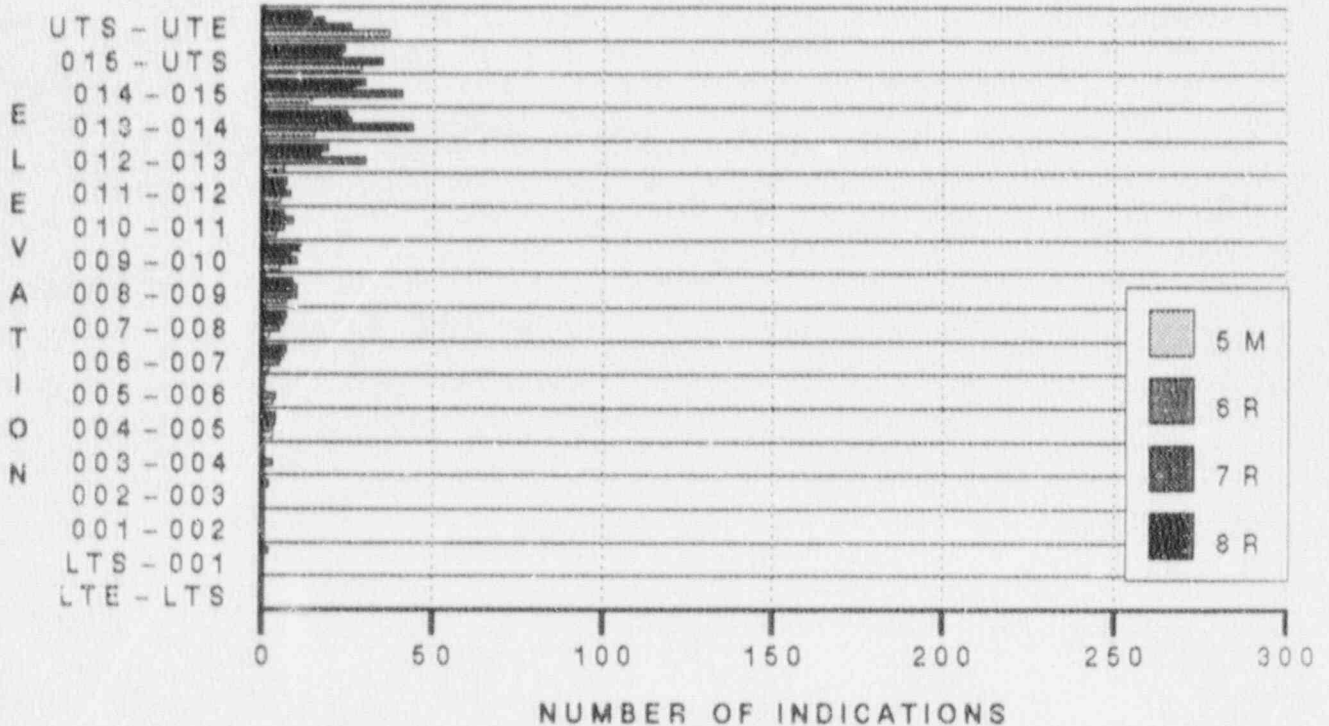


FIGURE III-4

INDICATION RATES BY REGION  
TUBES WITH INDICATIONS / TUBES EXAMINED

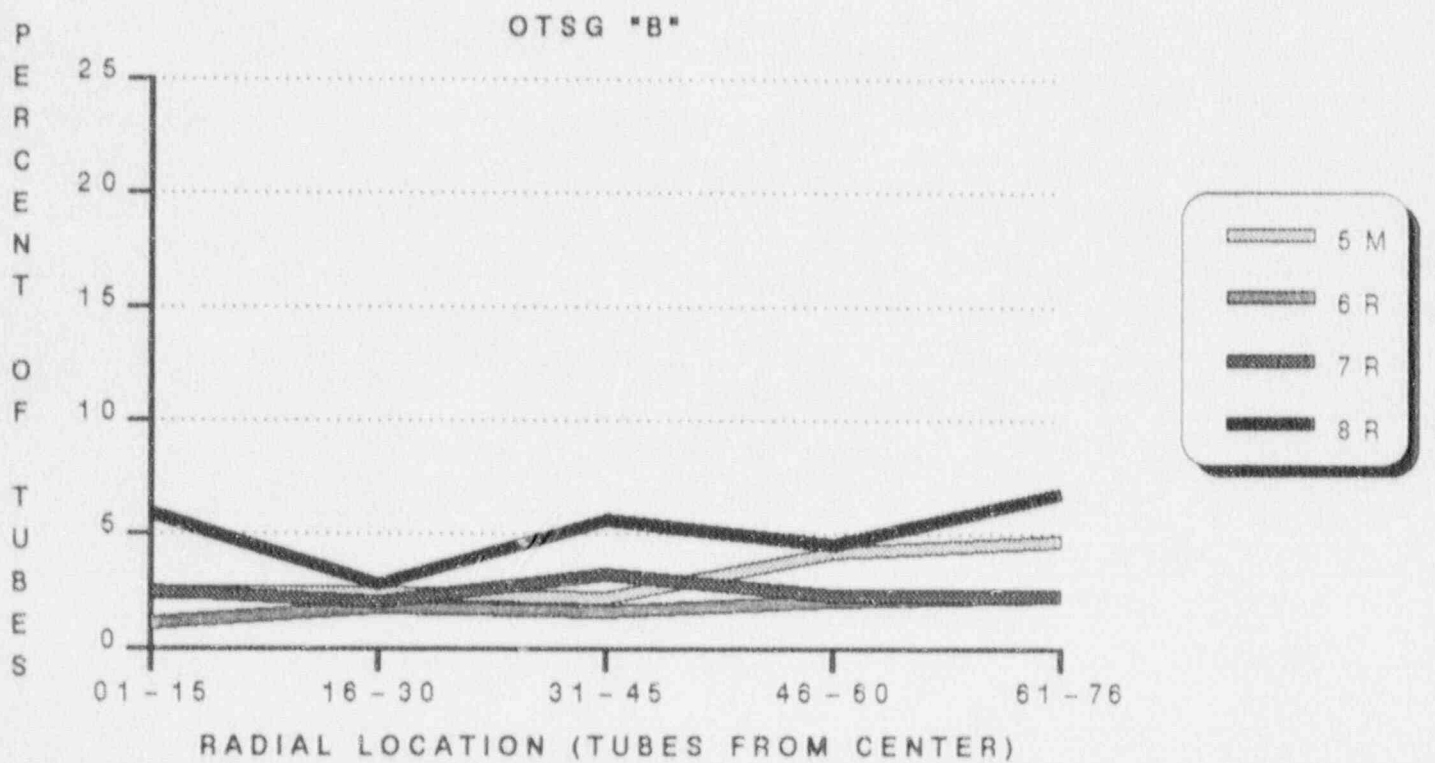
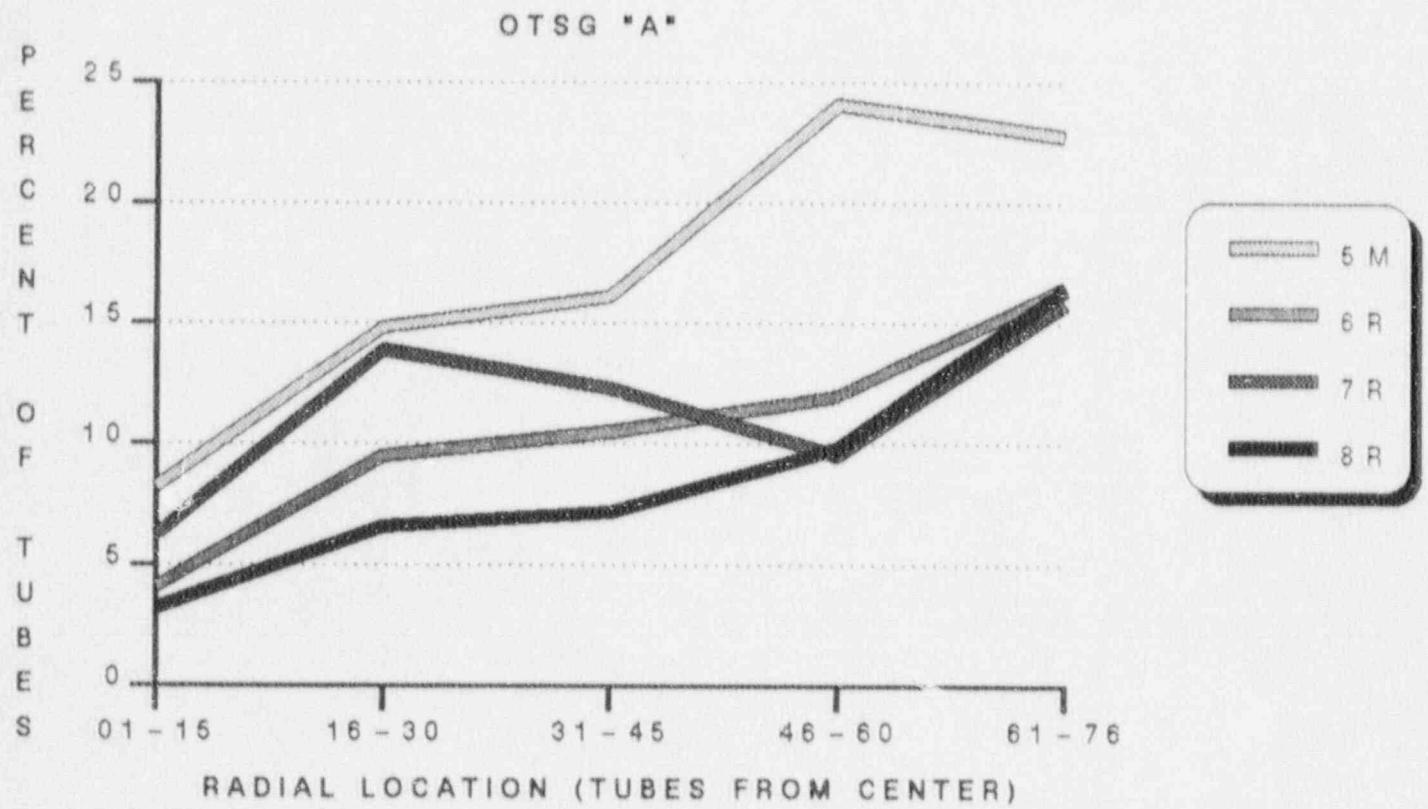




FIGURE III-5

DISTRIBUTION OF INDICATIONS BY PERCENT THROUGH WALL

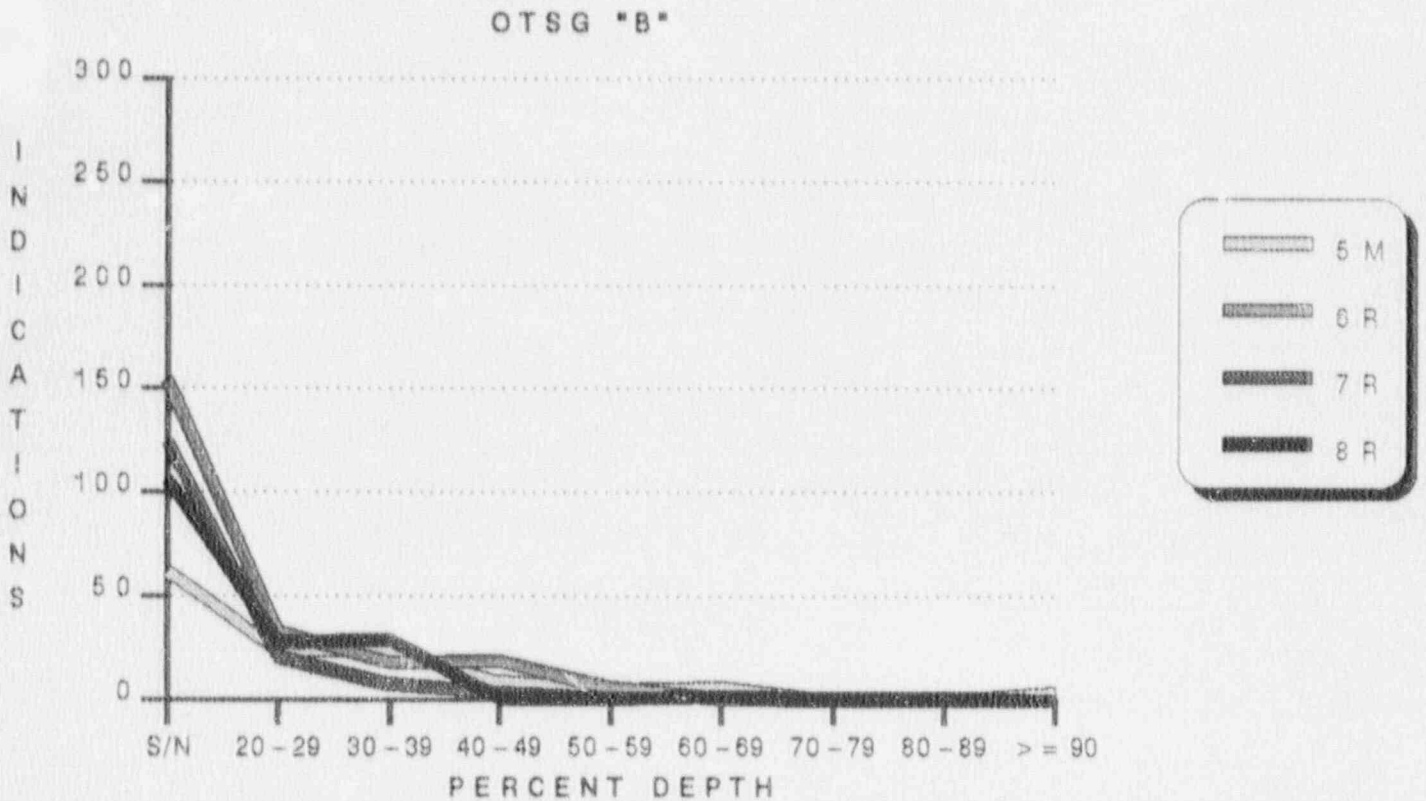
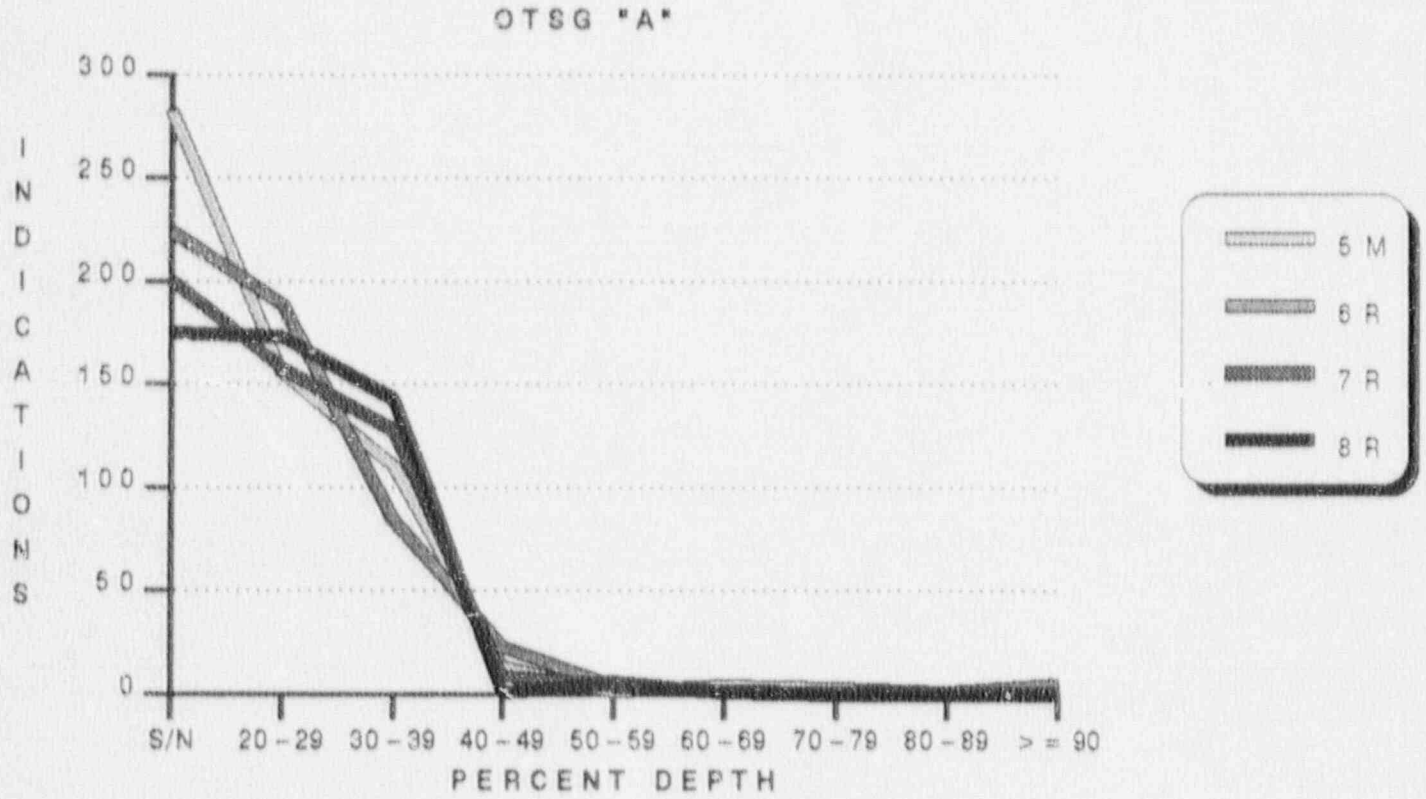
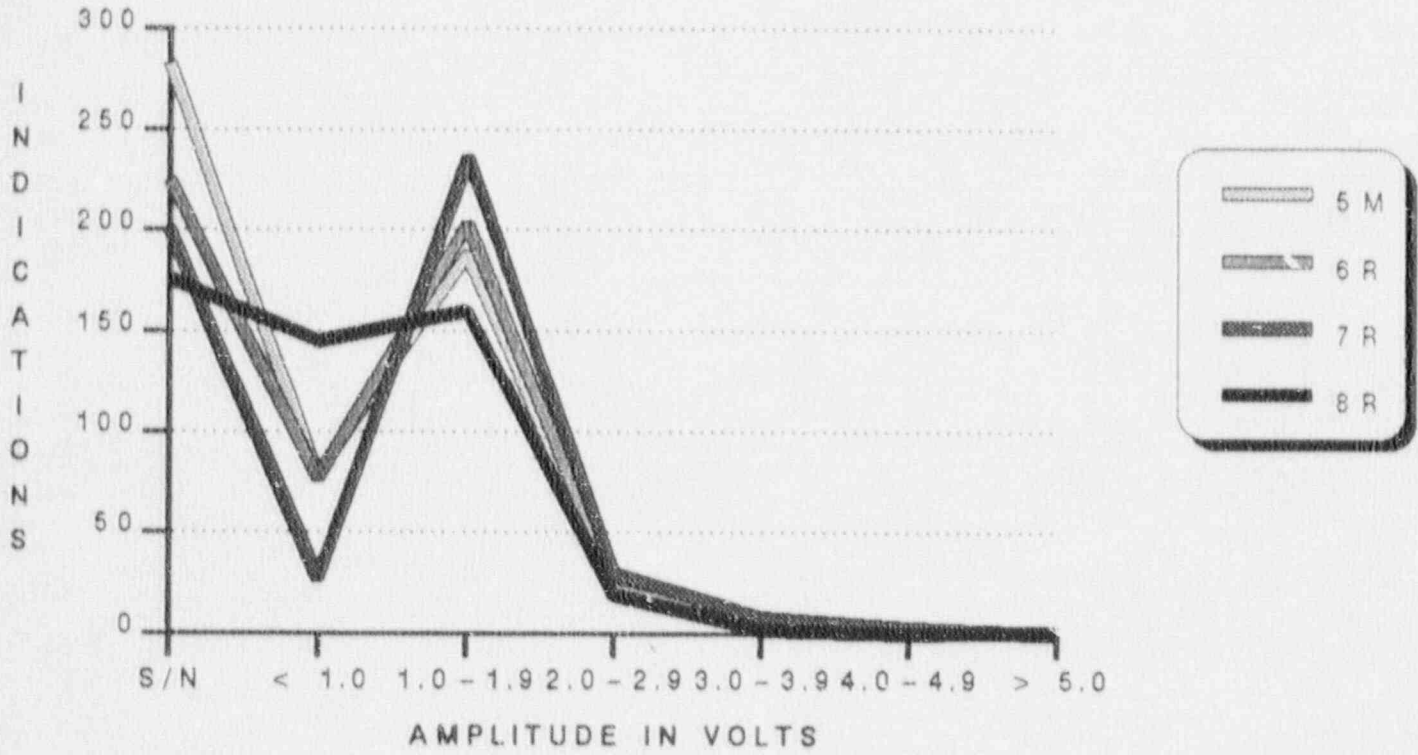


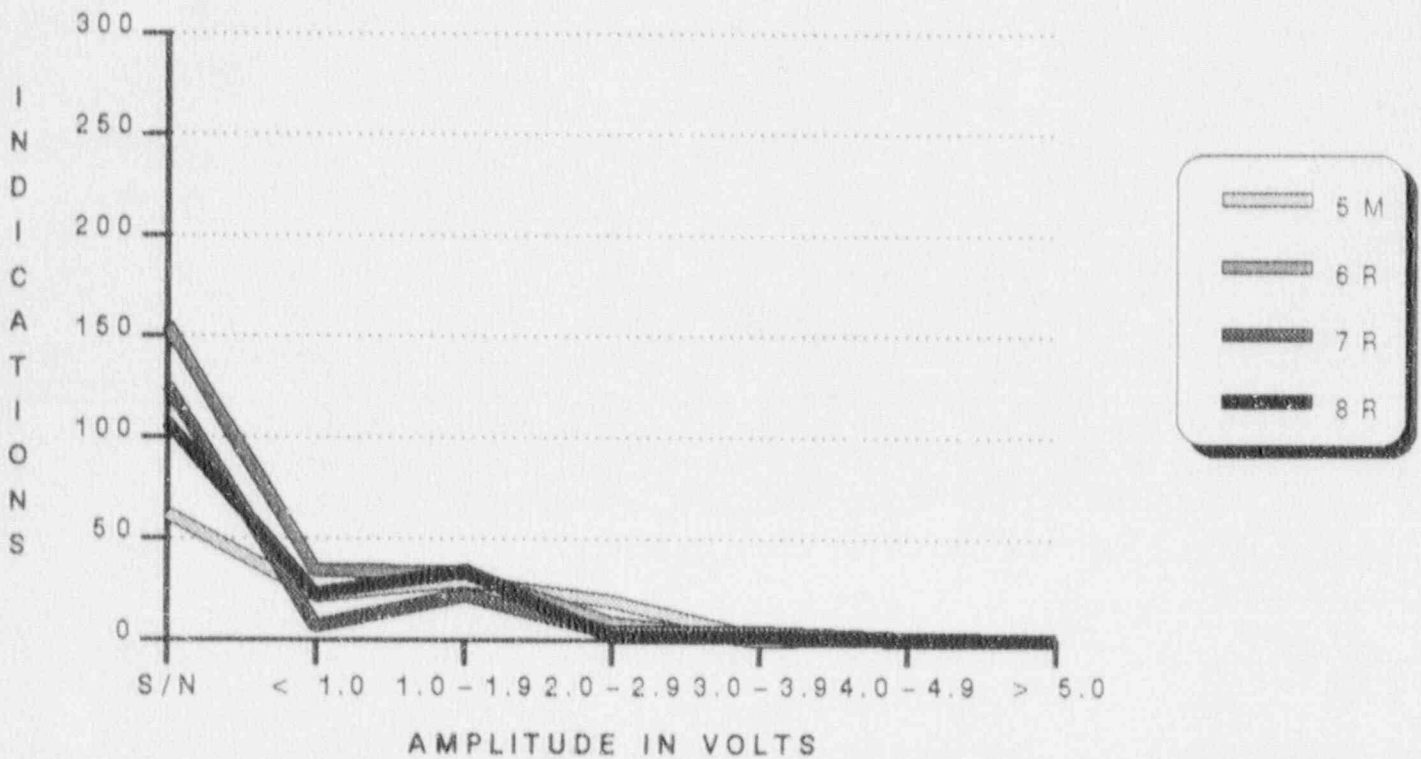
FIGURE III-6

DISTRIBUTION OF INDICATIONS BY AMPLITUDE

OTSG "A"



OTSG "B"



#### IV. OUTAGE 8U1 EXAMINATION CATEGORIES AND RESULTS

The locations of the tubes examined during Outage 8U1 are shown in Figure IV -1. The tubes were categorized in two groups based on the examination purpose.

- A. Tubes suspected as leakers
- B. Lane/lane wedge tubes

The results of these examination are summarized below.

##### A. TUBES SUSPECTED AS LEAKERS

Data Set:	Suspect
Probe:	.540" Bobbin
	8x1-ABS
Extent:	Various

#### SCOPE

In OTSG "A", three tubes were examined.

#### REASON FOR EXAMINATION

Following the plant shutdown, a bubble test was performed to determine the source of primary to secondary leakage.

During the test, tube A-77-1 (lane wedge tube) was identified as an obvious leaker and tubes A-48-64 and A-85-92 (interior tubes) were identified as suspected leakers. The tubes were then examined to locate any possible defects.

#### EXTENT

Tube A-77-1 was an obvious leaker and had temporary plugs installed in each end during the bubble and subsequent drip tests. This stopper limited subsequent examinations to the upper portion of the tube. The .540" bobbin examination was performed from the 9th tube support plate to the upper tube end while the 8x1-ABS examination was performed from the 14th tube support plate through the tube end. These extents were acceptable to permit positioning the tube in accordance with the approved repair criteria.

Tubes A-48-64 and A-85-92 were examined from the 10th tube support plate to the tube end using the 8x1-ABS probe and over their entire length using the .540" bobbin.

RESULTS

Tube A-77-1, which was the obvious leaker, was identified as having a large amplitude 100% through wall defect at the entrance to the upper tubesheet. Based on the 3x1-ABS, the indication was determined to be 8-coils in circumferential extent indicating it was nearly 360°. This circumferential extent was also confirmed by the MRPC probe and visual examination.

Tubes A-48-64 and A-85-92 had no detectable indications using either probe. Post repair bubble testing also confirmed this result.

B. LANE/LANE WEDGE TUBES

Data Set: Lane, Lane-1  
Probe: 8x1-ABS  
Extent: 14th T.S.P.

SCOPE

In OTSG "A", 417 tubes were examined.

REASON FOR EXAMINATIONS

As noted in Section III, OTSGs have typically experienced higher degradation rates in the upper portions of the lane and lane wedge tubes. This was further evidenced by the fact that tube A-77-1, a lane wedge tube, had failed at the secondary face of the upper tubesheet. This failure mode, type and location were typical of failures observed in other OTSGs.

INCLUDED TUBES

This examination included all inservice tubes in the previously defined lane and wedge regions. This includes the tubes in the three rows on each side of the open inspection lane (Rows 73, 74, 75, 77, 78, 79) from tube 1 to the center of the OTSG, which are the lane tubes. The wedge includes all tubes inside the area formed by drawing a line from Row 66 Tube 1 to Row 75 Tube 15 and from Row 86 Tube 1 to Row 77 Tube 15.

RESULTS

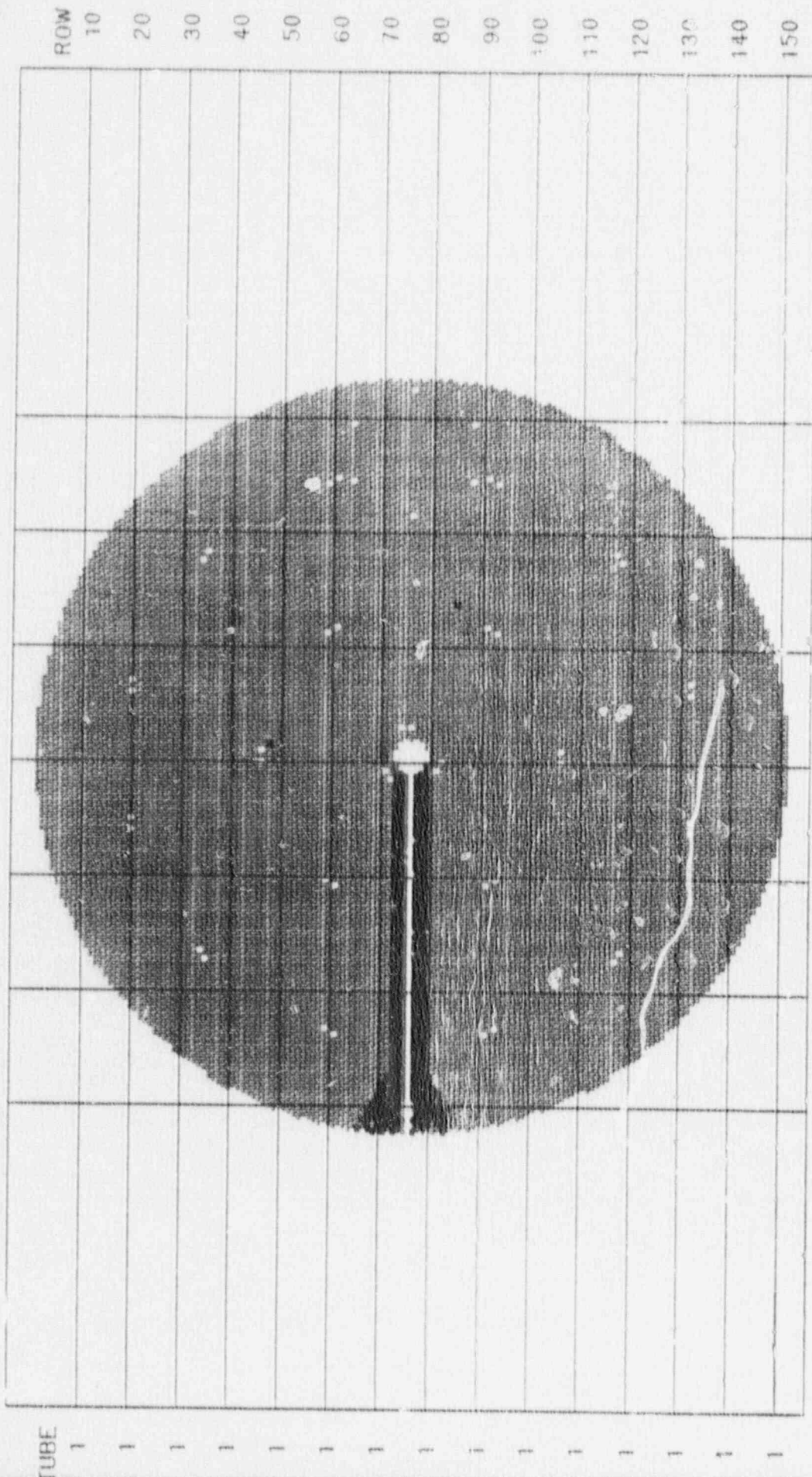
Based on the 8x1-ABS examination of these tubes, four tubes were identified as having suspect indications. These tubes A-73-37, A-74-1, A-75-62 and A-78-28 were examined using the MRPC probe. Based on the combined results of the 8x1-ABS and MRPC, tube A-78-28 was removed from service as a precautionary measure. This tube had an indication considered to be >40% through wall, however, no depth could be assigned.



C. DISCUSSIONS OF RESULTS

Based on the characterization of the defect in tube A-77-1 and the results of the ECT examinations, GPUN determined the occurrence of the tube leak was most probably the result of high cycle fatigue. Failures of this type have previously been identified at other B&W plants and typically occur over a short period of time prohibiting the detection and preventive plugging of suspected defects. The scope of the examinations was therefore not expanded beyond the initial scope. This evaluation and disposition is documented in References 13 and 14.

FIGURES IV-1



418: TUBES EXAMINED OUTAGE 8U1

GPU NUCLEAR CORP. TMI - UNIT 3  
ONCE THROUGH STEAM GENERATOR: A  
09/13/90

ACRI ISTS Tubes

V.

CONCLUSIONS

Based on the results of the 1990, Outage SR and SU1, ECT examinations and data evaluations, GPUN was able to reach the following conclusions:

1. The examinations of the previously "Downgraded Tubes" do not indicate a trend of ongoing degradation.
2. The examination results of the Tech. Spec. random samples did not reveal a trend of new or continuing damage mechanisms. The majority of the indications identified during this examination were determined to have been present during previous inspections.
3. The GPUN Elective Examinations confirmed the minor nature of indications in this category. The few indications which exceeded the 40% through wall plugging limit indicate GPUN should continue to monitor indications of this type.
4. The results from the SU1 examinations indicate the tube leak was an isolated occurrence, the result of high cycle fatigue, similar to failures which have been identified at other B&W plants.



VI.

REFERENCES

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2. GPUN TDR 423, Rev. 1, R. Barley, J. Janiszewski, G. Rhedrick, M. Torborg, "Three Mile Island - Unit 1 OTSG Tubing Eddy Current Program Qualification," 03/15/84.
3. GPUN TDR 642, Rev. 2, M. Torborg, G. Rhedrick "Qualification of Conversion Curve for Inner Diameter Discontinuities," 10/31/85.
4. Three Mile Island Nuclear Station Unit No. 1 Surveillance Procedure 1300-4B, Rev. 2, "Eddy Current Examination of OTSG," 03/21/86.
5. GPUN TDR 652, Rev. 2, G. E. Rhedrick, M. T. Torborg, D. L. Langan, "Evaluation of the 1984 Required Technical Specification Examination for the TMI-1 OTSG," 12/02/85.
6. GPUN IOM, 5310-88-531, J. D. Abramovici to R. O. Barley, "Suggested OTSG Tube Sample Population To Be Inspected in 7R Before WSC," 01/05/88.
7. PWR Steam Generator Examination Guidelines, Revision 2, August 1988, EPRI.
8. GPUN TDR 781, Rev. 1, M. T. Torborg, "Results of 5M ECT Examinations of the TMI-1 OTSGs," 06/16/86
9. GPUN TDR 839, Rev. 0, M. T. Torborg, "Results of the 1986-6R OTSG Eddy Current Examinations," 03/16/87
10. GPUN TDR 935, Rev. 0, M. T. Torborg, Results of the 1988-7R OTSG Eddy Current Examinations, 01/25/89

11. GPUN TDR 999, Rev. 0, M. T. Torborg, "Evaluation Of ECT Probes For Use In Examining The TMI-1 OTSGs," 01/09/90
12. GPUN IOM, 3300-90-0021, R. O. Barley to J. J. Colitz, "OTSG Eddy Current Test Results (8R)," 02/25/90
13. Appendix A to the TMI-1 Operating License, Amendment 153, Technical Specification 4.19, 05/29/90
14. GPUN IOM, R. O. Barley to J. J. Colitz, "OTSG Eddy Current Test Results (8U-1)," 03/13/90
15. GPUN TDR 1026, Rev. 0, M. T. Torborg, "Outage 8R and 8U1 OTSG Eddy Current Examinations," 10-12-90

Appendix I

DATA ANALYSIS CODES

DDA-4 ANALYSIS CODES TO BE PUT IN PERCENT COLUMN

Absolute Drift Retest ADR	ADR RAD	Indication Not Reportable	INR
Bad Data Retest BDA	BDA RBD	Incomplete Test Retest INC	INC RIC
Dent Retest DNT	DNT RDH	No Detectable Discontinuity	NDD
Dent With Possible Indication Retest DNI	DNI EDI	Permeability Variation Retest PVN	PVN RPV
Ding Retest DNG	DNG RDG	Plugged	PLG
Distorted Roll Transition Retest DRT	DRT RRT	Roll Transition With Possible Indication Retest DRI	DRI RDI
Distorted Roll Transition W/Pass Indication Retest DRI	DRI RRI	Obstructed Retest OBS	OBS ROB
Distorted Support Signal Retest DSS	DSS RDS	Sludge Retest SLG	SLG RSG
Distorted Top of Tubesheet Retest DTS	DTS RDT	Signal To Noise Ratio	S/N
Expansion Transition Location Retest ETL	ETL REL	Template Obstruction Retest TMO	TMO RTO
Fixture Retest FIX	FIX RFX	Template Plug Retest TMP	TMP RTP
ID Charter Retest IDC	IDC RDC	Tube No Test Retest TNT	TNT RNT
Indication Not Found Retest INF	INF RNF	Tube Number Check Retest TNC	TNC RNC
		Tube Restricted Retest TRS	TRS RTR
		Undefined Signal Retest UDS	UDS RUD

EXPLANATION OF DDA-4 ANALYSIS CODES

Absolute Drift (ADE) - Normally refers to drift in the crevice of non-expanded tube sheets. Can also be used for tube to tube wear in free standing section of tubing. Possible indicator of Inner Granular Attack (IGA). Recorded in low frequency absolute.

Bad Data (BDA) - Self explanatory.

Dent (DNT) - Tube I.D. smaller than nominal I.D., occurring at support plate intersections or top of tube sheets. Recorded in differential mix.

Ding (DNG) - Similar to dent but in free-standing part of tube. Either caused in manufacturing or by mechanical cause. Recorded in prime frequency.

Dent With Possible Indication (DNI) - Possible discontinuity indication associated with dent but is not measurable. Recorded from differential mix.

Distorted Roll Transition (DRT) - Self explanatory.

Distorted Roll Transition With Possible Indication (DRI) - A distorted roll transition that has sufficient distortion that a discontinuity may be creating the distortion.

Distorted Support Signal (DSS) - An indication at the intersection of a support plate which may be indicative of a possible discontinuity. The signal may be distorted by deposit, dents, or saturated drilled hole supports.

Distorted Tube Sheet (DTS) - An indication at the intersection of the upper or lower secondary tube sheets which may be indicative of a possible discontinuity. The signal may be distorted by deposits, dents, or saturated tube sheet signals.

Expansion Transition Location (ETL) - Used to record the location of the kinetic expansion.

Fixture (FIX) - Used when tubes cannot be examined because the fixture foot is obstructing tube or the fixture will not reach a particular tube.

ID Chatter (IDC) - Caused by manufacturing process (pilgering). Characterized by long areas of horizontal motion. Recorded in prime frequency.



Incomplete Test (INC) - Tube not run to the extent required or complete tube not recorded.

Indication Not Found (INF) - Indication that has been previously reported but is not found on current examination.

Indication Not Reportable (INR) - Indication that has been previously reported but does not meet current reporting criteria.

No Detectable Discontinuity (NDD) - Entry not required if DBASE system used.

Obstructed (OBS) - Tube that is obstructed by foreign material, i.e., dirt, chunk of metal, broken off probe head, etc.

Permeability Variation (PVN) - Self explanatory. Recorded in prime frequency free-standing tube, measured in differential mix at support plate intersections.

Plugged (PLG) - Permanent mechanical plug, not to be confused with obstruction.

Sludge (SLG) - Accumulation of ferromagnetic material on top of tube sheets or support plates. Recorded in lowest absolute frequency as per specific plant requirements.

Signal To Noise Ratio (S/N) - Small amplitude indications (less than 1 volt with 540 HGSD, less than 1/2 volt normal gain) that do not have a minimum of a 3 to 1 signal to noise ratio.

Template Obstruction (TMO) - Self explanatory.

Tube No Test (TNT) - Self explanatory.

Tube Number Check (TNC) - Used when the tube identity is in doubt.

Tube Restricted (TRS) - Caused by tube itself, i.e. bent tube lip, large dents or dings.

Undefined Signal (UDS) - A signal that is re-examined with the 8x1 technique to determine if the signal is relevant.

Appendix II

STATISTICAL EVALUATION DATA

THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
1	4	ISI	8R	12856	012+ 6.8	5	17	1.35		
		ISI	7R	5508	012+ 6.7	7	23	1.49	-00.14	-6.00
		ISI	8R	12856	013+ 6.5	7	23	1.95		
		ISI	7R	5508	013+ 6.6	9	30	2.38	-00.43	-7.00
		ISI	8R	12856	013+ 10.6	6	20	1.10		
		ISI	8R	12856	013+ 12.0	10	33	1.08		
		ISI	7R	5508	013+ 12.1	7	23	1.29	-00.21	10.00
		ISI	8R	12856	013+ 20.0	5	17	1.12		
		ISI	8R	12856	013+ 26.4	5	17	0.85		
		ISI	8R	12856	015+ 36.0	10	33	2.22		
		ISI	7R	5508	015+ 35.9	6	20	2.67	-00.45	13.00
		2	6	ISI	8R	12857	015+ 24.5	8	26	1.11
ISI	7R			5509	015+ 24.5	8	26	1.19	-00.08	00.00
ISI	8R			12857	015+ 25.2	10	33	1.26		
ISI	7R			5509	015+ 24.5	8	26	1.19	00.07	07.00
ISI	8R			12857	015+ 28.9	8	27	1.72		
ISI	7R			5509	015+ 28.8	9	30	1.82	-00.10	-3.00
ISI	8R			12857	015+ 35.8	9	30	1.29		
ISI	7R			5509	015+ 35.7	6	20	1.63	-00.34	10.00
ISI	8R			12857	015+ 36.4	6	20	3.83		
ISI	7R			5509	015+ 35.7	6	20	1.63	02.20	00.00
ISI	8R			12857	015+ 39.4	6	20	2.30		
ISI	7R			5509	015+ 39.2	5	16	2.76	-00.46	04.00
ISI	8R			12857	015+ 40.6	8	27	1.53		
ISI	7R			5509	015+ 40.4	8	26	1.71	-00.18	01.00
2	22	ISI	8R	12993	014+ 21.9	9	30	1.06		
		ISI	8R	12993	014+ 29.4	8	26	0.73		
2	25	ISI	8P	12858	004+ 13.3	6	20	1.59		
		ISI	8R	12858	012+ 35.9	1	36	0.95		
		ISI	8R	12858	013+ 3.2	6	20	0.73		
		ISI	8R	12858	013+ 9.3	11	36	1.23		
		ISI	7R	5510	013+ 9.2	5	18	1.24	-00.01	18.00
		ISI	8R	12858	013+ 10.3	10	33	1.17		
		ISI	7R	5510	013+ 10.3	6	21	1.20	-00.03	12.00
3	17	ISI	8R	12959	015+ 32.9	8	27	1.08		
		ISI	7R	5635	015+ 32.6	10	33	1.27	-00.19	-6.00

Continues Next Page =>

THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R

COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason ISI	Exam Out 8R	Exam Numb 12959	Indication Location UTS+	Ind Deg 0.4 6	Ind \$ T.W. 20	Ind Volt 0.80	Delta Volts	Delta Depth
3	25	ISI	8R	12859	015+ 41.3	10	33	0.89		
		ISI	7R	5511	015+ 41.7	9	32	1.03	-00.14	01.00
		ISI	8R	12859	015+ 41.7	11	36	1.10		
		ISI	7R	5511	015+ 41.7	9	32	1.03	00.07	04.00
		ISI	8R	12859	015+ 42.8	16	53	1.03		
		ISI	7R	5511	015+ 42.8	8	28	1.36	-00.33	25.00
		ISI	8R	12859	015+ 43.1	17	56	1.54		
		ISI	7R	5511	015+ 42.8	8	28	1.36	00.18	28.00
		ISI	8R	12859	015+ 43.5	10	33	0.89		
		ISI	7R	5511	015+ 42.8	8	28	1.36	-00.47	05.00
4	6	ISI	8R	12960	015+ 41.8	5	17	1.04		
		ISI	7R	5636	015+ 41.6	9	30	1.06	-00.02	-13.00
4	28	ISI	8R	12860	015+ 21.8	11	36	1.16		
		ISI	8R	12860	015+ 23.2	5	16	0.82		
		ISI	8R	12860	015+ 27.6	5	16	1.63		
		ISI	8R	12860	015+ 30.6	15	50	1.47		
		ISI	7R	5512	015+ 30.8	7	25	2.09	-00.62	25.00
4	29	ISI	8R	12861	015+ 19.4	8	26	0.84		
		ISI	8R	12861	015+ 20.9	5	16	1.90		
		ISI	8R	12861	015+ 27.1	11	36	1.97		
		ISI	7R	5513	015+ 27.3	10	36	1.71	00.26	00.00
		ISI	8R	12861	015+ 35.9	11	16	0.59		
		ISI	7R	5513	015+ 35.9	7	25	0.76	-00.17	-9.00
		ISI	8R	12861	015+ 37.6	8	26	0.59		
4	34	ISI	8R	12994	015+ 23.6	9	30	1.02		
5	3	ISI	8R	12862	014+ 24.1	6	20	0.89		
		ISI	8R	12862	015+ 3.1	5	17	0.69		
		ISI	8R	12862	015+ 44.2	10	33	1.49		
		ISI	7R	5514	015+ 44.2	9	30	1.69	-00.20	03.00
		ISI	8R	12862	015+ 44.8	10	33	2.67		
		ISI	7R	5514	015+ 44.2	9	30	1.69	00.98	03.00
5	5	ISI	8R	12961	012+ 27.2	83	50	0.53		
		ISI	7R	5637	012+ 27.1	81	51	0.58	-00.05	-1.00

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R

COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Num	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
		ISI	8R	12961	015+ 34.4	7	23	1.29		
		ISI	7R	5637	015+ 34.3	8	26	1.32	-00.03	-3.00
5	38	ISI	8R	12863	UTS+ 4.1	7	23	1.21		
6	43	ISI	8R	12864	015+ 42.6	9	30	0.67		
		ISI	8R	12864	UTS+ 3.5	11	36	2.88		
		ISI	7R	5516	UTS+ 3.5	9	32	2.12	00.76	04.00
		ISI	8R	12864	UTS+ 6.3	7	23	2.33		
6	47	ISI	8R	12865	015+ 19.9	6	20	1.49		
		ISI	7R	5517	015+ 19.9	7	25	1.19	00.30	-5.00
		ISI	8R	12865	015+ 23.0	7	23	1.34		
		ISI	8R	12865	015+ 24.2	7	23	1.04		
		ISI	8R	12865	015+ 33.8	5	16	1.88		
		ISI	7R	5517	015+ 33.9	7	25	1.51	00.37	-9.00
		ISI	8R	12865	015+ 39.2	5	16	0.67		
		ISI	8R	12865	015+ 40.1	8	26	0.67		
6	48	ISI	8R	12866	UTS+ 0.4	10	33	1.46		
		ISI	7R	5518	UTS+ 0.4	11	36	2.03	-00.57	-3.00
8	2	ISI	8R	12867	012+ 16.2	9	30	1.15		
		ISI	7R	5519	012+ 16.1	5	16	1.54	-00.39	14.00
		ISI	8R	12867	012+ 19.0	7	23	0.99		
		ISI	8R	12867	012+ 25.3	8	27	2.03		
		ISI	7R	5519	012+ 25.1	8	26	2.49	-00.46	01.00
		ISI	8R	12867	012+ 29.3	10	33	1.45		
		ISI	7R	5519	012+ 29.1	8	26	1.76	-00.31	07.00
		ISI	8R	12867	012+ 33.5	9	30	1.81		
		ISI	7R	5519	012+ 33.4	10	33	2.26	-00.45	-3.00
8	43	ISI	8R	12962	015+ 23.8	6	20	1.30		
		ISI	7R	5638	015+ 23.8	9	30	1.08	00.22	-10.00
		ISI	8R	12962	015+ 24.3	10	33	0.72		
		ISI	7R	5638	015+ 23.8	9	30	1.08	-00.36	03.00
		ISI	8R	12962	015+ 32.1	11	36	0.75		
		ISI	8R	12962	015+ 33.1	9	30	0.90		
9	6	ISI	8R	12996	015+ 21.7	11	36	0.66		

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Num	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
11	4	ISI	8R	12868	015+ 21.2	9	30	1.10		
		ISI	7R	5520	015+ 21.1	8	26	1.19	-00.09	04.00
13	1	ISI	8R	12869	011+ 35.2	7	23	0.53		
		ISI	7R	5521	011+ 35.6	11	36	1.25	-00.72	-13.00
		ISI	8R	12869	011+ 35.7	11	36	1.15		
		ISI	7R	5521	011+ 35.6	11	36	1.25	-00.10	00.00
		ISI	8R	12869	013+ 14.1	8	26	0.69		
		ISI	7R	5521	013+ 14.0	5	16	0.78	-00.09	10.00
		ISI	8R	12869	013+ 21.0	7	23	0.66		
		ISI	8R	12869	013+ 22.3	11	36	1.89		
		ISI	7R	5521	013+ 22.2	8	26	2.31	-00.42	10.00
		ISI	8R	12869	013+ 23.3	11	36	1.31		
		ISI	7R	5521	013+ 23.3	6	20	1.54	-00.23	16.00
		ISI	8R	12869	013+ 27.0	5	16	1.46		
		ISI	8R	12869	013+ 30.4	8	26	0.76		
		ISI	7R	5521	013+ 30.3	6	20	1.02	-00.26	06.00
15	77	ISI	8R	12963	012+ 18.5	10	33	0.83		
		ISI	7R	5639	012+ 18.5	8	28	1.00	-00.17	05.00
		ISI	8R	12963	012+ 27.5	11	36	0.78		
		ISI	8R	12963	012+ 30.5	9	30	0.80		
		ISI	7R	5639	012+ 30.5	11	39	1.05	-00.25	-9.00
		ISI	8R	12963	014+ 3.1	5	16	0.65		
16	2	ISI	8R	12870	015+ 42.3	6	20	0.99		
		ISI	7R	5522	015+ 42.0	8	26	1.07	-00.08	-6.00
18	1	ISI	8R	12964	004+ 5.1	11	33	1.17		
		ISI	7R	5640	004+ 5.3	9	30	1.45	-00.28	03.00
		ISI	8R	12964	004+ 11.9	7	23	1.00		
18	3	ISI	8R	12965	015+ 23.7	6	20	0.50		
		ISI	8R	12965	015+ 25.1	11	36	1.04		
		ISI	7R	5641	015+ 24.8	9	30	1.08	-00.04	06.00
18	84	ISI	8R	12871	015+ 32.6	10	33	1.11		
		ISI	7R	5523	015+ 32.6	8	26	1.10	00.01	07.00
		ISI	8R	12871	015+ 33.0	6	20	1.70		
		ISI	7R	5523	015+ 32.6	8	26	1.10	00.60	-6.00

Continues Next Page =>

THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
		ISI	8R	12871	015+ 33.8	8	26	0.70		
		ISI	7R	5523	015+ 33.0	8	26	1.40	-00.70	00.00
		ISI	8R	12871	015+ 34.4	7	23	1.43		
		ISI	7R	5523	015+ 33.8	6	20	0.96	00.47	03.00
		ISI	8R	12871	015+ 35.6	7	23	0.78		
		ISI	7R	5523	015+ 35.6	6	21	1.11	-00.33	02.00
		ISI	8R	12871	015+ 38.1	9	30	1.06		
		ISI	7R	5523	015+ 38.1	8	26	1.51	-00.45	04.00
		ISI	8R	12871	015+ 40.8	9	30	1.10		
		ISI	7R	5523	015+ 40.8	9	32	0.86	00.24	-2.00
		ISI	8R	12871	015+ 41.8	5	16	1.11		
		ISI	7R	5523	015+ 40.0	9	32	0.86	00.25	-16.00
20	1	ISI	8R	12967	005+ 31.9	7	23	0.99		
		ISI	7R	5643	005+ 32.1	9	30	1.13	-00.14	-7.00
		ISI	8R	12967	005+ 31.9	11	36	0.92		
		ISI	7R	5643	005+ 32.1	8	26	1.04	-00.12	10.00
20	56	ISI	8R	12872	015+ 25.9	5	16	0.80		
		ISI	8R	12872	015+ 33.5	8	26	0.97		
		ISI	7R	5524	015+ 33.5	11	36	0.68	00.29	-10.00
20	85	ISI	8R	12873	010+ 14.5	6	20	0.96		
		ISI	8R	12873	010+ 17.4	9	30	1.33		
		ISI	7R	5525	010+ 17.4	8	26	1.59	-00.26	04.00
		ISI	8R	12873	010+ 18.3	11	36	1.31		
		ISI	7R	5525	010+ 17.4	8	25	1.59	-00.28	10.00
		ISI	8R	12873	010+ 20.2	9	30	1.01		
		ISI	7R	5525	010+ 21.1	9	30	1.09	-00.08	00.00
		ISI	8R	12873	010+ 31.7	7	23	1.00		
		ISI	8R	12873	014+ 31.4	11	36	0.72		
		ISI	7R	5525	014+ 31.4	6	20	1.15	-00.43	16.00
		ISI	8R	12873	015+ 1.9	5	16	1.02		
		ISI	8R	12873	015+ 10.7	7	23	0.65		
22	35	ISI	8R	12968	015+ 34.0	10	33	1.85		
		ISI	7R	5644	015+ 33.7	10	33	1.98	-00.13	00.00
		ISI	8R	12968	UTS+ 3.6	8	27	0.84		
		ISI	7R	5644	UTS+ 3.8	8	26	0.91	-00.07	01.00
23	3	ISI	8R	12969	015+ 31.3	6	20	1.00		

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
24	2	ISI	8R	12970	015+ 37.6	8	26	1.06		
25	3	ISI	8R	12999	014+ 12.4	9	30	1.06		
		ISI	7R	5679	014+ 12.4	5	16	1.18	-00.12	14.00
25	21	ISI	8R	12874	015+ 38.0	9	30	0.93		
		ISI	7R	5526	015+ 37.6	8	26	1.17	-00.24	04.00
27	78	ISI	8R	12971	015+ 22.4	5	16	0.89		
		ISI	8R	12971	015+ 29.9	7	23	0.99		
		ISI	7R	5647	015+ 29.9	9	30	1.11	-00.12	-7.00
27	96	ISI	8R	12875	LTE+ 21.7	88	37	2.40		
		ISI	8R	12875	015+ 37.5	9	30	0.95		
		ISI	7R	5527	015+ 37.5	6	20	1.33	-00.38	10.00
28	78	ISI	8R	12876	015+ 14.5	5	16	2.43		
		ISI	7R	5528	015+ 14.5	8	26	3.05	-00.62	-8.00
		ISI	8R	12876	015+ 28.3	9	32	0.94		
		ISI	7R	5528	015+ 28.3	9	30	1.16	-00.22	02.00
29	58	ISI	8R	12972	015+ 29.8	7	23	0.74		
		ISI	7R	5648	015+ 29.8	7	23	1.03	-00.29	00.00
		ISI	8R	12972	015+ 33.5	8	26	0.83		
30	23	ISI	8R	12877	013+ 7.7	6	20	1.01		
		ISI	7R	5529	013+ 7.5	5	16	1.17	-00.16	04.00
		ISI	8R	12877	015+ 13.1	11	36	0.79		
		ISI	7R	5529	015+ 12.8	6	20	0.99	-00.20	16.00
31	1	ISI	8R	12973	008+ 6.5	11	36	0.94		
33	83	ISI	8R	12878	015+ 45.1	6	20	0.98		
		ISI	7R	5530	015+ 45.1	9	30	1.13	-00.15	-10.00
33	102	ISI	8R	13001	015+ 5.8	9	30	0.89		
		ISI	7R	5681	015+ 5.8	11	36	1.15	-00.26	-6.00
34	1	ISI	8R	13099	006+ 15.5	9	30	1.07		
		8X1ACC	7R	5531	006+ 15.7	7	23	1.18	-00.11	07.00

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R

COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
34	3	ISI	8R	12879	UTS+ 2.0	9	30	1.13		
		ISI	7R	5532	UTS+ 1.8	10	36	1.44	-00.31	-6.00
35	54	ISI	8R	13100	UTS+ 4.4	6	20	0.71		
		8X1ACC	7R	6179	UTS+ 4.4	6	20	1.48	-00.77	00.00
36	106	ISI	8R	12974	015+ 34.3	7	23	1.03		
		ISI	7R	5650	015+ 34.3	8	26	1.47	-00.44	-3.00
37	109	ISI	8R	12975	015+ 38.9	11	36	0.80		
		ISI	7R	5651	015+ 38.9	9	30	1.21	-00.41	06.00
38	29	ISI	8R	12976	011+ 25.1	7	23	0.72		
		ISI	8R	12976	012+ 3.7	8	26	1.41		
		ISI	7R	5652	012+ 3.7	6	21	1.65	-00.24	05.00
39	101	ISI	8R	12881	015+ 34.6	9	30	1.02		
		ISI	7R	5534	015+ 34.6	10	33	1.24	-00.22	-3.00
39	110	ISI	8R	12882	015+ 39.6	11	36	0.89		
		ISI	7R	5535	015+ 39.6	9	30	1.21	-00.32	06.00
42	73	ISI	8R	13005	015+ 41.2	5	16	1.07		
42	114	ISI	8R	13006	015+ 32.2	6	20	0.77		
		ISI	7R	5686	015+ 32.2	6	20	0.89	-00.12	00.00
		ISI	8R	13006	015+ 34.5	5	16	0.75		
		ISI	7R	5686	015+ 34.5	5	16	0.95	-00.20	00.00
		ISI	8R	13006	015+ 43.3	6	20	0.79		
46	88	ISI	8R	13007	015+ 30.4	7	23	1.16		
		ISI	7R	5687	015+ 30.4	8	26	1.42	-00.26	-3.00
47	84	ISI	8R	12885	015+ 39.7	5	16	0.88		
		ISI	7R	5538	015+ 39.7	8	26	1.16	-00.28	-10.00
48	83	ISI	8R	13101	UTS+ 6.1	7	23	1.09		
		S/N	7R	6219	UTS+ 6.1	7	23	1.98	-00.89	00.00
48	118	ISI	8R	12886	014+ 29.5	9	30	0.94		
		ISI	7R	5539	014+ 29.5	9	30	1.03	-00.09	00.00

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R

COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
		ISI	8R	12886	014+ 30.3	5	16	0.61		
		ISI	7R	5539	014+ 29.5	9	30	1.03	-00.42	-14.00
49	23	ISI	8R	13009	015+ 42.6	10	33	0.77		
		ISI	7R	5689	015+ 42.6	11	39	0.86	-00.09	-6.00
49	73	ISI	8R	12887	UTS+ 5.0	9	30	1.69		
		ISI	7R	5540	UTS+ 5.0	9	30	2.11	-00.42	00.00
49	82	ISI	8R	12888	015+ 39.8	7	23	0.65		
		ISI	7R	5541	015+ 39.8	7	23	0.78	-00.13	00.00
49	85	ISI	8R	13010	015+ 33.6	5	16	1.00		
		ISI	8R	13010	015+ 34.7	5	16	0.70		
		ISI	8R	13010	015+ 36.3	6	20	1.52		
		ISI	7R	5690	015+ 36.3	7	23	1.54	-00.02	-3.00
50	1	ISI	8R	13011	014+ 8.7	7	23	1.30		
		ISI	8R	13011	014+ 10.1	8	26	1.42		
		ISI	7R	5691	014+ 10.4	8	26	1.31	00.11	00.00
		ISI	8R	13011	014+ 10.4	8	26	1.10		
		ISI	7R	5691	014+ 10.4	8	26	1.31	-00.21	00.00
		ISI	8R	13011	014+ 15.3	5	16	1.30		
		ISI	7R	5691	014+ 15.3	5	16	1.47	-00.17	00.00
50	102	ISI	8R	12889	015+ 16.6	9	30	1.34		
51	2	ISI	8R	12977	015+ 2.9	11	36	0.78		
		ISI	7R	5654	015+ 2.9	11	36	1.06	-00.28	00.00
		ISI	8R	12977	015+ 3.1	6	20	0.86		
		ISI	7R	5654	015+ 2.9	11	36	1.06	-00.20	-16.00
		ISI	8R	12977	015+ 15.3	5	16	0.59		
		ISI	8R	12977	015+ 20.1	10	33	0.93		
		ISI	7R	5654	015+ 20.1	11	36	1.01	-00.08	-3.00
		ISI	8R	12977	015+ 39.8	5	16	0.75		
51	92	ISI	8R	13012	013+ 27.4	7	23	0.55		
52	34	ISI	8R	13102	013+ 23.0	5	16	0.96		
		8X1ACC	7R	6189	013+ 23.0	9	30	1.08	-00.12	-14.00

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
		ISI	8R	13102	014+ 12.7	5	16	1.17		
		8X1ACC	7R	6189	014+ 12.5	5	16	1.13	00.04	00.00
		ISI	8R	13102	014+ 31.4	10	33	0.93		
		8X1ACC	7R	6189	014+ 31.4	11	36	1.17	-00.24	-3.00
52	110	ISI	8R	13013	015+ 39.3	5	16	0.77		
55	124	ISI	8R	13017	015+ 14.2	7	23	1.77		
		ISI	7R	5697	015+ 14.2	7	23	2.14	-00.37	00.00
56	93	ISI	8R	13018	015+ 39.4	11	36	0.70		
		ISI	7R	5698	015+ 39.3	11	36	0.92	-00.22	00.00
57	63	ISI	8R	12890	015+ 36.9	7	23	2.03		
		ISI	7R	5543	015+ 36.9	7	25	2.26	-00.23	-2.00
57	65	ISI	8R	12891	015+ 37.5	8	26	1.15		
		ISI	7R	5544	015+ 37.5	8	26	1.12	00.03	00.00
		ISI	8R	12891	015+ 40.5	8	26	0.70		
58	94	ISI	8R	13020	015+ 44.0	9	30	0.80		
		ISI	7R	5700	015+ 43.9	5	16	1.03	-00.23	14.00
58	105	ISI	8R	13021	UTS+ 4.0	10	36	0.80		
58	117	ISI	8R	13022	015+ 40.8	5	16	0.76		
		ISI	7R	5702	015+ 40.0	6	20	0.76	00.00	-4.00
58	120	ISI	8R	13023	015+ 39.7	7	23	0.63		
60	65	ISI	8R	13025	015+ 37.3	9	30	1.14		
		ISI	7R	5705	015+ 37.3	9	30	1.08	00.06	00.00
60	125	ISI	8R	12892	015+ 25.3	6	20	1.19		
		ISI	7R	5545	015+ 25.5	6	20	1.22	-00.03	00.00
		ISI	8R	12892	015+ 25.9	5	16	1.51		
		ISI	7R	5545	015+ 25.5	6	20	1.22	00.29	-4.00
60	126	ISI	8R	3027	014+ 24.3	5	16	0.70		
		ISI	8R	3027	014+ 26.3	5	16	1.00		
		ISI	7R	5707	014+ 26.1	5	16	1.03	-00.03	00.00

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R

COMPARISON OF PREVIOUS EXAM RESULTS

ROW	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
		ISI	8R	13027	014+ 26.7	5	16	0.80		
		ISI	7R	5707	014+ 26.1	5	16	1.03	-00.23	00.00
		ISI	8R	13027	014+ 27.8	10	33	0.65		
60	128	ISI	8R	13028	015+ 39.9	7	23	0.85		
		ISI	7R	5708	015+ 40.0	5	16	0.94	-00.09	07.00
63	96	ISI	8R	12978	015+ 34.1	5	16	0.59		
		ISI	8R	12978	015+ 38.9	9	30	0.99		
		ISI	7R	5655	015+ 38.8	10	33	1.18	-00.19	-3.00
63	126	ISI	8R	13103	015+ 22.8	10	33	0.95		
		8ALACC	7R	6182	015+ 22.6	6	20	1.33	-00.38	13.00
64	129	ISI	8R	12893	015+ 46.0	11	36	1.48		
		ISI	7R	5546	015+ 46.0	11	36	1.68	-00.20	00.00
65	94	ISI	8R	12894	015+ 35.8	5	18	0.84		
		ISI	7R	5547	015+ 35.8	5	16	1.00	-00.16	02.00
66	1	ISI	8R	12895	004+ 27.7	9	30	2.60		
		ISI	7R	5548	004+ 27.7	8	26	2.61	-00.01	04.00
66	127	ISI	8R	12896	015+ 44.9	7	25	1.18		
		ISI	7R	5549	015+ 44.9	8	26	1.37	-00.19	-1.00
67	93	ISI	8R	12979	015+ 35.5	9	32	0.62		
		ISI	8R	12979	015+ 36.1	6	21	0.90		
67	130	ISI	8R	13030	LTE+ 11.2	15	53	13.99		
70	88	ISI	8R	13031	015+ 39.9	6	21	0.66		
72	21	ISI	8R	13032	015+ 35.3	10	33	0.98		
		ISI	7R	5712	015+ 35.3	10	36	0.96	00.02	-3.00
72	86	ISI	8R	12897	UTS+ 3.8	11	36	1.19		
		ISI	7R	5550	UTS+ 3.8	11	36	1.66	-00.47	00.00
73	22	ISI	8R	13035	015+ 41.2	5	16	1.09		

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
74	28	ISI	8R	12898	015+ 44.0	5	16	0.57		
		ISI	8R	12898	UTS+ 5.7	6	20	1.51		
		ISI	7R	5551	UTS+ 5.7	10	33	1.86	-00.35	-13.00
74	30	ISI	8R	12899	UTS+ 5.8	7	23	1.20		
		ISI	7R	5552	UTS+ 5.8	10	33	1.70	-00.50	-10.00
74	50	ISI	8R	12900	015+ 45.4	5	17	1.06		
74	83	ISI	8R	13036	015+ 35.2	6	21	1.07		
		ISI	7R	5716	015+ 35.2	6	20	1.38	-00.31	01.00
75	81	ISI	8R	12980	015+ 35.4	7	25	1.36		
		ISI	7R	5657	015+ 35.4	10	33	1.59	-00.23	-8.00
75	122	ISI	8R	13037	015+ 44.9	5	18	1.39		
		ISI	7R	5717	015+ 44.9	7	23	1.65	-00.26	-5.00
75	123	ISI	8R	12902	015+ 20.3	7	25	0.78		
		ISI	8R	12902	015+ 20.3	7	25	0.78		
		ISI	8R	12902	015+ 21.7	5	18	0.86		
		ISI	8R	12902	015+ 24.2	6	21	1.80		
		ISI	7R	5555	015+ 24.2	7	23	2.36	-00.56	-2.00
77	126	ISI	8R	12903	015+ 18.5	8	28	1.01		
		ISI	7R	5556	015+ 18.5	9	30	1.34	-00.33	-2.00
79	130	ISI	8R	12905	UTS+ 5.2	6	20	0.72		
		ISI	7R	5558	UTS+ 5.2	6	20	1.29	-00.57	00.00
81	92	ISI	8R	12906	015+ 42.3	9	32	1.05		
		ISI	7R	5559	015+ 42.3	9	30	1.25	-00.20	02.00
		ISI	8R	12906	UTS+ 0.6	8	26	0.75		
		ISI	7R	5559	UTS+ 0.6	8	26	1.10	-00.35	00.00
82	32	ISI	8R	12907	UTS+ 6.5	7	23	1.70		
		ISI	7R	5560	UTS+ 6.5	9	30	2.19	-00.49	-7.00
82	128	ISI	8R	13042	015+ 7.9	7	21	0.96		

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R

COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
83	17	ISI	8R	12908	015+ 32.3	7	23	0.99		
		ISI	8R	12908	015+ 35.3	10	33	1.14		
		ISI	7R	5561	015+ 35.3	8	26	1.52	-00.38	07.00
83	29	ISI	8R	12983	015+ 34.0	5	16	0.72		
		ISI	7R	5661	015+ 34.0	5	16	0.89	-00.17	00.00
84	103	ISI	8R	13043	015+ 32.4	5	16	0.97		
		ISI	7R	5723	015+ 32.7	5	16	1.31	-00.34	00.00
87	1	ISI	8R	12910	012+ 7.0	9	30	2.93		
		ISI	7R	5563	012+ 7.1	6	20	3.99	-1.06	10.00
		ISI	8R	12910	012+ 7.3	8	26	2.83		
		ISI	7R	5563	012+ 7.1	6	20	3.99	-1.16	06.00
87	20	ISI	8R	13044	015+ 33.0	5	16	0.92		
		ISI	7R	5724	015+ 33.0	7	23	1.05	-00.13	07.00
88	124	ISI	8R	13045	015+ 3.5	7	25	0.90		
		ISI	7R	5725	015+ 3.5	10	33	1.02	-00.12	-8.00
90	80	ISI	8R	12985	015+ 32.3	6	21	1.06		
		ISI	7R	5663	015+ 32.3	7	23	1.47	-00.41	-2.00
90	128	ISI	8R	12911	014+ 15.2	7	23	1.12		
		ISI	7R	5564	014+ 15.2	10	33	1.24	-00.12	-10.00
		ISI	8R	12911	014+ 15.3	6	20	1.04		
		ISI	7R	5564	014+ 15.2	10	33	1.24	-00.20	-13.00
		ISI	8R	12911	015 0.3	8	26	2.09		
		ISI	7R	5564	015 0.2	7	23	3.00	-00.91	03.00
		ISI	8R	12911	015 0.2	6	20	1.90		
		ISI	7R	5564	015 0.2	7	23	3.00	-1.10	-3.00
		ISI	8R	12911	015+ 2.0	8	26	0.96		
		ISI	7R	5564	015+ 2.0	6	20	1.42	-00.46	06.00
		ISI	8R	12911	015+ 2.0	11	36	0.95		
		ISI	7R	5564	015+ 2.0	6	20	1.42	-00.47	16.00
91	90	ISI	8R	13047	015+ 38.0	6	20	1.06		
93	27	ISI	8R	12986	015+ 38.0	8	26	0.96		
		ISI	7R	5664	015+ 37.9	5	16	1.04	-00.08	10.00

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R

COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
93	90	ISI	8R	13049	UTS+ 0.7	11	36	0.90		
		ISI	7R	5729	UTS+ 0.8	11	36	1.13	-00.23	00.00
93	121	ISI	8R	13106	015+ 34.9	6	20	0.81		
		RANSAM	7R	6649	015+ 34.8	6	20	1.00	-00.19	00.00
		ISI	8R	13106	015+ 42.0	5	16	0.80		
93	123	ISI	8R	13107	015+ 6.7	5	16	0.86		
		WSC	7R	6271	015+ 7.0	8	26	0.95	-00.09	-10.00
		ISI	8R	13107	015+ 7.0	7	23	0.86		
		WSC	7R	6271	015+ 7.0	8	26	0.95	-00.09	-3.00
94	113	ISI	8R	13108	015+ 33.6	10	33	1.09		
		8X1ACC	7R	6192	015+ 33.5	9	30	1.22	-00.13	03.00
94	117	ISI	8R	12987	015+ 44.2	8	23	1.44		
		ISI	7R	5665	015+ 44.2	7	23	1.94	-00.50	03.00
95	111	ISI	8R	12913	015+ 40.4	7	23	1.23		
		ISI	7R	5566	015+ 40.3	7	23	1.49	-00.26	00.00
95	123	ISI	8R	12914	UTS+ 1.8	9	30	1.31		
		ISI	7R	5567	UTS+ 1.9	10	33	4.11	-2.80	-3.00
95	124	ISI	8R	13109	UTS+ 2.1	11	36	0.82		
		S/N	7R	6226	UTS+ 2.2	11	36	1.13	-00.31	00.00
		ISI	8R	13109	UTS+ 5.9	9	30	1.00		
95	126	ISI	8R	13110	UTS+ 6.2	11	36	1.00		
		RANSAM	7R	6650	UTS+ 6.6	10	33	1.73	-00.73	03.00
		ISI	8R	13110	UTS+ 6.8	8	26	1.90		
		RANSAM	7R	6650	UTS+ 6.6	10	33	1.73	00.17	-7.00
96	32	ISI	8R	12915	015+ 37.6	7	23	1.68		
		ISI	7R	5568	015+ 37.5	10	33	1.84	-00.16	-10.00
		ISI	8R	12915	015+ 43.2	10	33	1.08		
		ISI	7R	5568	015+ 43.2	9	30	1.23	-00.15	03.00
		ISI	8R	12915	UTS+ 4.0	5	17	1.24		
96	114	ISI	8R	13050	015+ 5.7	6	20	0.90		

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
98	93	ISI	8R	12916	UTS+ 6.3	5	16	1.27		
		ISI	7R	5569	UTS+ 5.8	7	23	1.45	-00.18	-7.00
99	1	ISI	8R	12917	004 -3.7	7	16	0.71		
		ISI	8R	12917	004+ 23.8	7	23	1.27		
		ISI	8R	12917	005+ 12.5	5	16	1.56		
		ISI	8R	12917	008+ 5.0	9	30	0.93		
		ISI	7R	5570	008+ 5.0	7	23	1.16	-00.23	07.00
		ISI	8R	12917	008+ 5.1	10	33	0.92		
		ISI	7R	5570	008+ 5.0	7	23	1.16	-00.24	10.00
99	17	ISI	8R	12918	015+ 33.0	9	30	1.21		
		ISI	7R	5571	015+ 32.9	8	26	1.78	-00.57	04.00
100	122	ISI	8R	12919	UTS+ 4.8	7	23	1.42		
		ISI	7R	5572	UTS+ 4.8	10	33	2.08	-00.66	-10.00
101	16	ISI	8R	12920	015+ 30.9	6	20	1.14		
		ISI	7R	5573	015+ 30.9	8	26	1.18	-00.04	-6.00
101	51	ISI	8R	12921	UTS+ 1.3	11	36	1.11		
		ISI	7R	5574	UTS+ 1.4	11	36	1.59	-00.48	00.00
		ISI	8R	12921	UTS+ 4.0	11	36	1.06		
		ISI	7R	5574	UTS+ 4.0	10	33	1.85	-00.79	03.00
		ISI	8R	12921	UTS+ 4.9	6	20	1.16		
		ISI	7R	5574	UTS+ 4.0	10	33	1.85	-00.69	-13.00
101	61	ISI	8R	12923	015+ 29.3	6	20	2.23		
		ISI	7R	5576	015+ 29.4	10	33	2.16	00.07	-13.00
103	121	ISI	8R	12924	003+ 16.3	93	27	0.66		
		ISI	7R	5577	003+ 16.3	97	14	0.78	-00.12	13.00
		ISI	8R	12924	014+ 12.2	10	33	0.96		
		ISI	7R	5577	014+ 12.2	11	36	1.29	-00.33	-3.00
		ISI	8R	12924	014+ 15.6	7	23	0.98		
		ISI	7R	5577	014+ 15.6	6	20	1.31	-00.33	03.00
		ISI	8R	12924	015+ 43.8	9	30	2.16		
		ISI	7R	5577	015+ 44.1	7	23	1.20	00.96	07.00
		ISI	8R	12924	015+ 44.1	6	20	1.10		
		ISI	7R	5577	015+ 44.1	7	23	1.20	-00.10	-3.00

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Num	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
104	75	ISI	8R	12988	015+ 29.4	8	26	0.67		
		ISI	7R	5666	015+ 29.4	6	20	0.93	-00.26	06.00
		ISI	8R	12988	015+ 33.1	5	16	1.05		
		ISI	8R	12988	015+ 39.5	8	26	1.09		
		ISI	7R	5666	015+ 39.4	8	26	1.42	-00.33	00.00
104	121	ISI	8R	12925	014+ 3.0	6	20	1.50		
		ISI	7R	5578	014+ 3.0	8	26	1.81	-00.31	-6.00
		ISI	8R	12925	015+ 45.6	14	46	1.12		
		ISI	7R	5578	015+ 45.6	9	30	1.69	-00.57	16.00
105	94	ISI	8R	12926	014+ 0.0	90	28	1.09		
		ISI	7R	5579	014+ 0.0	89	25	1.90	-00.81	03.00
		ISI	8R	12926	014+ 0.0	90	23	1.14		
		ISI	7R	5579	014+ 0.0	89	25	1.90	-00.76	-2.00
106	2	ISI	8R	12927	015+ 10.3	7	23	0.92		
107	2	ISI	8R	12929	015+ 33.4	8	26	1.27		
		ISI	7R	5582	015+ 33.4	6	20	2.04	-00.77	06.00
		ISI	8R	12929	015+ 37.4	7	23	1.40		
107	116	ISI	8R	13056	015+ 43.2	6	20	0.66		
		ISI	7R	5736	015+ 43.7	6	20	0.97	-00.31	00.00
107	120	ISI	8R	12931	UTS+ 3.6	6	20	1.18		
		ISI	7R	5584	UTS+ 4.6	6	20	1.94	-00.76	00.00
		ISI	8R	12931	UTS+ 4.0	5	16	1.25		
		ISI	7R	5584	UTS+ 4.6	6	20	1.94	-00.69	-4.00
		ISI	8R	12931	UTS+ 5.0	9	30	1.10		
		ISI	7R	5584	UTS+ 4.6	6	20	1.94	-00.84	10.00
110	2	ISI	8R	13059	015+ 28.1	5	16	1.21		
		ISI	7R	5739	015+ 28.1	5	16	1.61	-00.40	00.00
110	52	ISI	8R	12933	015+ 40.0	9	30	1.13		
		ISI	7R	5586	015+ 40.0	9	30	1.46	-00.33	00.00
		ISI	8R	12933	UTS+ 1.1	6	20	1.25		
		ISI	7R	5586	UTS+ 1.1	11	36	1.75	-00.50	-16.00

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULT

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
		ISI	8R	12933	UTS+ 2.7	7	23	1.13		
		ISI	7R	5586	UTS+ 2.7	11	36	1.32	-00.19	-13.00
111	51	ISI	8R	13061	015+ 38.7	8	27	1.61		
		ISI	7R	5741	015+ 38.7	11	36	1.87	-00.26	-9.00
112	116	ISI	8R	12935	008+ 31.3	6	20	0.62		
		ISI	7R	5588	008+ 31.1	7	23	1.11	-00.49	-3.00
		ISI	8R	12935	009+ 10.0	5	16	0.93		
		ISI	8R	12935	012+ 22.1	7	23	1.39		
		ISI	7R	5588	012+ 22.2	10	33	1.75	-00.36	-10.00
		ISI	8R	12935	013+ 5.1	5	16	1.41		
		ISI	7R	5588	013+ 5.4	7	23	1.17	00.24	-7.00
		ISI	8R	12935	013+ 5.6	7	23	0.87		
		ISI	7R	5588	013+ 5.4	7	23	1.17	-00.30	00.00
113	104	ISI	8R	12989	015+ 21.9	6	20	0.87		
		ISI	7R	5667	015+ 21.9	8	26	1.05	-00.18	-6.00
114	93	ISI	8R	12936	015+ 40.9	6	20	1.33		
		ISI	7R	5589	015+ 40.8	9	30	1.58	-00.25	-10.00
114	113	ISI	8R	12990	013+ 29.4	5	16	1.98		
		ISI	7R	5668	013+ 29.5	7	23	2.78	-00.80	-7.00
115	26	ISI	8R	12937	015+ 25.6	11	36	1.12		
		ISI	7R	5590	015+ 25.6	11	36	1.55	-00.43	00.00
115	109	ISI	8R	12938	UTS+ 5.1	7	23	2.84		
		ISI	7R	5591	UTS+ 4.8	9	30	3.50	-00.66	-7.00
116	109	ISI	8R	12939	015+ 33.2	6	20	1.01		
		ISI	7R	5592	015+ 33.4	6	20	1.58	-00.57	00.00
		ISI	8R	12939	015+ 36.2	7	23	1.12		
		ISI	7R	5592	015+ 36.5	8	26	1.59	-00.47	-3.00
117	24	ISI	8R	13063	015+ 33.8	5	16	1.59		
		ISI	8R	13063	015+ 42.4	5	16	2.00		
118	67	ISI	8R	12991	015+ 38.4	9	30	1.09		
		ISI	7R	5669	015+ 37.8	8	26	1.43	-00.34	04.00

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R

COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
119	77	ISI	8R	12940	015+ 29.1	6	20	1.72		
		ISI	7R	5593	015+ 29.5	10	33	1.90	-00.18	-13.00
119	107	ISI	8R	12941	015+ 38.6	5	16	1.81		
120	67	ISI	8R	12942	015+ 36.3	7	23	1.23		
		ISI	7R	5595	015+ 36.1	11	36	1.45	-00.22	-13.00
122	30	ISI	8R	12945	UTS+ 0.8	8	26	0.86		
		ISI	7R	5598	UTS+ 0.8	8	26	1.45	-00.59	00.00
123	85	ISI	8R	13094	015+ 45.1	6	20	1.02		
		ISI	7R	5749	015+ 45.0	8	26	1.50	-00.48	-6.00
124	1	ISI	8R	12946	012+ 23.6	7	23	1.57		
		ISI	7R	5600	012+ 23.4	6	20	1.94	-00.37	03.00
124	100	ISI	8R	13112	012+ 30.9	5	16	0.79		
		8X1ACC	7R	6201	012+ 30.9	7	23	0.75	00.04	-7.00
		ISI	8R	13112	013+ 8.8	7	23	0.63		
125	82	ISI	8R	13095	015+ 34.2	5	16	0.69		
		ISI	7R	5750	015+ 33.9	5	16	1.17	-00.48	00.00
125	97	ISI	8R	13113	015+ 41.0	9	30	0.96		
		8X1ACC	7R	6195	015+ 41.4	9	30	0.96	00.00	00.00
125	98	ISI	8R	13079	015+ 29.7	9	30	0.98		
		ISI	7R	5603	015+ 29.9	11	36	1.13	-00.15	-6.00
126	94	ISI	8R	13080	015+ 35.8	10	33	2.14		
		ISI	7R	5605	015+ 36.2	11	36	3.11	-00.97	-3.00
126	97	ISI	8R	13081	015+ 26.6	5	16	1.05		
		ISI	7R	5606	015+ 26.7	9	30	1.47	-00.42	-14.00
127	94	ISI	8R	13082	UTS+ 3.6	11	36	1.54		
		ISI	7R	5607	UTS+ 3.6	11	36	1.90	-00.36	00.00
130	41	ISI	8R	12948	015+ 27.8	7	23	1.84		
		ISI	7R	5609	015+ 27.8	9	30	1.85	-00.01	-7.00

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
130	46	ISI	8R	13070	015+ 22.7	5	16	1.51		
		ISI	7R	5754	015+ 22.7	8	26	1.62	-00.11	-10.00
130	60	ISI	8R	13114	015+ 33.2	11	36	0.81		
		8X1ACC	7R	6203	015+ 33.6	8	26	0.99	-00.18	10.00
130	73	ISI	8R	13083	015+ 41.8	11	36	0.75		
131	1	ISI	8R	13115	013+ 13.3	5	16	1.03		
		SECSAM	7R	7593	013+ 13.7	5	16	1.25	-00.22	00.00
		ISI	8R	13115	013+ 24.9	10	33	1.09		
		SECS-	7R	7593	013+ 25.6	9	30	1.54	-00.45	03.00
131	82	ISI	8R	13077	015+ 0.0	10	33	1.02		
		ISI	8R	13077	015+ 15.6	11	36	1.53		
		ISI	7R	5611	015+ 15.8	8	26	1.61	-00.08	10.00
		ISI	8R	13077	015+ 38.0	11	36	1.46		
		ISI	7R	5611	015+ 38.0	9	30	2.02	-00.56	06.00
		ISI	8R	13077	015+ 43.1	11	36	1.25		
		ISI	7R	5611	015+ 43.1	8	26	1.87	-00.62	10.00
132	36	ISI	8R	13071	015+ 33.7	5	16	1.10		
		ISI	7R	5755	015+ 33.7	6	20	1.26	-00.16	-4.00
134	1	ISI	8R	12950	004+ 2.3	9	30	1.13		
		ISI	7R	5614	004+ 2.4	9	30	1.35	-00.22	00.00
		ISI	8R	12950	004+ 3.2	6	20	0.91		
		ISI	7R	5614	004+ 2.4	9	30	1.35	-00.44	-10.00
134	65	ISI	8R	13097	015+ 37.5	9	30	1.55		
		ISI	7R	5756	015+ 37.6	7	23	1.99	-00.44	07.00
135	2	ISI	8R	12951	013+ 17.3	5	16	0.98		
		ISI	7R	5616	013+ 17.3	5	16	1.30	-00.32	00.00
		ISI	8R	12951	013+ 34.0	6	20	0.74		
		ISI	7R	5616	013+ 34.0	5	16	1.07	-00.33	04.00
		ISI	8R	12951	014 0.2	10	33	0.88		
		ISI	7R	5616	014 0.2	6	20	0.98	-00.10	13.00
		ISI	8R	12951	015+ 11.6	9	30	0.80		
		ISI	7R	5616	015+ 11.7	9	30	1.12	-00.32	00.00

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
		ISI	8R	12951	015+ 35.8	9	30	1.10		
		ISI	7R	5616	015+ 35.9	7	23	1.09	-00.39	07.00
135	5	ISI	8R	12952	014+ 27.5	6	20	1.19		
		ISI	7R	5617	014+ 27.5	8	26	1.40	-00.21	-6.00
136	2	ISI	8R	12953	014+ 9.2	5	16	1.08		
		ISI	7R	5618	014+ 9.3	10	33	1.12	-00.04	-17.00
136	5	ISI	8R	12954	015+ 33.7	5	16	0.90		
		ISI	8R	12954	015+ 39.1	10	33	1.37		
		ISI	7R	5620	015+ 39.3	9	30	1.54	-00.17	03.00
136	6	ISI	8R	12955	015+ 36.2	9	30	1.60		
		ISI	7R	5621	015+ 35.9	11	36	1.56	00.04	-6.00
136	69	ISI	8R	13084	015+ 8.9	6	20	0.69		
		ISI	8R	13084	015+ 11.6	8	27	1.09		
		ISI	7R	5622	015+ 11.6	9	30	1.29	-00.20	-3.00
		ISI	8R	13084	015+ 13.1	7	23	0.99		
		ISI	7R	5622	015+ 13.1	6	20	1.16	-00.17	03.00
		ISI	8R	13084	015+ 33.4	10	33	1.11		
		ISI	7R	5622	015+ 33.4	10	33	1.23	-00.12	00.00
		ISI	8R	13084	015+ 37.6	11	36	2.08		
		ISI	7R	5622	015+ 37.6	7	23	2.64	-00.56	13.00
138	65	ISI	8R	13085	UTS+ 5.9	11	36	1.73		
		ISI	7R	5623	UTS+ 6.1	11	36	2.28	-00.55	00.00
139	67	ISI	8R	13117	015+ 45.8	11	36	1.44		
		8X1ACC	7R	6185	015+ 45.9	10	33	1.63	-00.19	03.00
139	71	ISI	8R	13086	013+ 25.9	11	36	1.77		
		ISI	7R	5624	013+ 26.0	11	36	2.14	-00.37	00.00
		ISI	8R	13086	015+ 41.4	9	30	1.03		
		ISI	7R	5624	015+ 41.4	6	20	1.29	-00.26	10.00
140	67	ISI	8R	13087	UTS+ 3.4	10	33	1.09		
		ISI	7R	5625	UTS+ 3.4	10	33	1.32	-00.23	00.00
141	60	ISI	8R	13088	015+ 44.1	9	30	0.87		

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
		ISI	8R	13088	015+ 45.8	8	27	1.03		
		ISI	7R	5626	015+ 45.6	7	23	1.00	00.03	04.00
143	55	ISI	8R	13098	UTS+ 3.2	10	33	0.98		
		ISI	7R	5627	UTS+ 3.2	10	33	1.84	-00.86	00.00
145	50	ISI	8R	13089	UTS+ 4.2	10	33	3.47		
		ISI	7R	5628	UTS+ 4.2	7	23	4.56	-1.09	10.00
146	1	ISI	8R	12956	004+ 35.6	11	36	1.47		
		ISI	7R	5629	004+ 35.8	11	36	1.81	-00.34	00.00
146	3	ISI	8R	13072	012+ 26.4	7	23	0.74		
		ISI	7R	5757	012+ 26.4	11	36	1.01	-00.27	-13.00
146	43	ISI	8R	13090	015+ 33.9	11	36	0.85		
		ISI	7R	5630	015+ 34.0	10	30	1.01	-00.16	03.00
		ISI	8R	13090	015+ 35.2	11	36	0.83		
		ISI	7R	5630	015+ 35.2	11	36	1.07	-00.24	00.00
		ISI	8R	13090	015+ 36.2	9	30	0.85		
		ISI	7R	5630	015+ 35.2	11	36	1.07	-00.22	-6.00
		ISI	8R	13090	015+ 40.5	6	20	0.83		
146	50	ISI	8R	13091	003+ 35.8	11	36	1.74		
		ISI	7R	5631	003+ 35.8	9	30	2.15	-00.41	06.00
147	2	ISI	8R	12957	012+ 10.4	7	23	1.12		
		ISI	7R	5632	012+ 10.5	11	36	1.17	-00.05	-13.00
147	15	ISI	8R	13075	015+ 20.2	5	16	1.04		
		ISI	7R	5760	015+ 20.3	5	16	1.22	-00.18	00.00
150	8	ISI	8R	12992	015+ 3.5	7	23	0.94		
		ISI	7R	5672	015+ 3.5	8	26	1.07	-00.13	-3.00
		ISI	8R	12992	015+ 18.4	7	23	0.92		
		ISI	7R	5672	015+ 18.5	6	20	1.12	-00.20	03.00

Total Tubes Included : 192

Total Indications : 359

Voltage Summary :

Tubes Compared : 167  
 Indications Compared : 262

Number Increased : 29  
 Number Decreased : 231  
 Number No Change : 2  
 Mean Change : - 0.26  
 Std. Dev. : 0.36

Percent Summary :

Tubes Compared : 167  
 Indications Compared : 262

Number Increased : 99  
 Number Decreased : 101  
 Number No Change : 62  
 Mean Change : 0.02  
 Std. Dev. : 7.55

THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG B  
 OUTAGE : 8R

COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Num	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volt.	Delta Depth
1	11	ISI	8R	11420	UTS+ 2.9	7	23	1.19		
		ISI	7R	6217	UTS+ 2.9	8	26	1.47	-00.28	-3.00
6	4	ISI	8R	11443	UTS+ 5.3	7	23	2.51		
		ISI	7R	6244	UTS+ 5.3	7	23	2.79	-00.28	00.00
7	42	ISI	8R	11421	012+ 11.9	7	23	0.87		
		ISI	7R	6218	012+ 11.9	5	16	1.06	-00.19	07.00
		ISI	8R	11421	013+ 11.2	10	33	0.98		
		ISI	7R	6218	013+ 11.2	11	36	1.10	-00.12	-3.00
		ISI	8R	11421	014+ 22.9	10	33	0.82		
9	22	ISI	8R	11422	015+ 45.0	7	23	1.22		
		ISI	7R	6219	015+ 45.0	8	28	1.36	-00.14	-5.00
19	64	ISI	8R	11423	015+ 41.8	8	26	1.78		
		ISI	7R	6220	015+ 41.8	5	16	2.01	-00.23	10.00
24	63	ISI	8R	11424	013+ 14.0	11	36	0.86		
		ISI	7R	6221	013+ 14.0	13	43	0.93	-00.07	-7.00
		ISI	8R	11424	014+ 9.4	11	36	0.64		
		ISI	7R	6221	014+ 9.4	11	36	0.79	-00.15	00.00
30	13	ISI	8R	11425	015+ 45.2	10	33	2.26		
		ISI	7R	6222	015+ 45.2	10	36	2.27	-00.01	-3.00
30	71	ISI	8R	11426	015+ 32.0	5	16	1.76		
		ISI	7R	6223	015+ 32.6	8	26	1.40	00.36	-10.00
		ISI	8R	11426	015+ 32.6	9	30	1.17		
		ISI	7R	6223	015+ 32.6	8	26	1.40	-00.23	04.00
60	83	ISI	8R	11427	015+ 39.3	11	36	1.09		
		ISI	7R	6225	015+ 39.3	10	33	1.28	-00.19	03.00
64	83	ISI	8R	11428	015+ 31.6	10	33	1.22		
		ISI	7R	6226	015+ 31.6	10	33	1.26	-00.04	00.00
104	77	ISI	8R	11429	UTS+ 3.9	10	33	1.64		
		ISI	7R	6227	UTS+ 3.8	7	23	1.94	-00.30	10.00

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG B  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Num	Indication Location	Ind Deg	Ind T.W.	Ind Volt	Delta Volts	Delta Depth
105	8	ISI	8R	11430	UTS+ 6.6	10	33	1.18		
		ISI	7R	6228	UTS+ 6.5	6	20	1.55	-00.37	13.00
109	11	ISI	8R	11431	015+ 44.1	6	20	0.96		
		ISI	7R	6229	015+ 44.8	8	25	1.17	-00.21	-6.00
		ISI	8R	11431	015+ 44.8	10	33	1.17		
		ISI	7R	6229	015+ 45.7	6	20	1.11	00.06	13.00
		ISI	8R	11431	015+ 45.7	6	20	1.00		
		ISI	7R	6229	015+ 45.7	6	20	1.11	-00.11	00.00
		ISI	8R	11431	UTS+ 5.0	11	36	1.00		
		ISI	7R	6229	UTS+ 5.0	8	26	1.37	-00.37	10.00
109	112	ISI	8R	11432	003+ 30.7	5	17	1.22		
		ISI	8R	11432	004+ 0.0	7	25	1.74		
		ISI	7R	6230	004+ 0.0	6	20	1.97	-00.23	05.00
		ISI	8R	11432	004+ 4.9	10	33	1.23		
		ISI	8R	11432	005+ 20.5	5	17	0.85		
		ISI	8R	11432	006+ 3.5	5	17	2.38		
		ISI	7R	6230	006+ 3.5	5	16	2.33	00.05	01.00
122	44	ISI	8R	11433	UTS+ 2.5	6	20	1.62		
		ISI	7R	6231	UTS+ 2.5	6	20	1.74	-00.12	00.00
124	36	ISI	8R	11434	015+ 45.1	10	33	1.17		
		ISI	7R	6232	015+ 45.1	8	26	1.32	-00.15	07.00
136	40	ISI	8R	11435	015+ 40.5	6	20	1.48		
		ISI	7R	6233	015+ 40.5	6	20	1.70	-00.22	00.00
138	52	ISI	8R	11436	006+ 0.6	65	52	1.67		
		ISI	7R	6234	006+ 0.6	65	52	2.53	-00.86	00.00
143	43	ISI	8R	11437	010+ 7.7	7	23	0.76		
		ISI	7R	6235	010+ 7.7	6	20	0.91	-00.15	03.00
144	49	ISI	8R	11438	006+ 0.0	71	43	1.39		
		ISI	7R	6236	006+ 0.5	74	40	1.70	-00.31	03.00
146	37	ISI	8R	11439	012+ 7.2	10	33	0.99		
		ISI	7R	6237	012+ 7.2	8	26	1.04	-00.05	07.00

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG B  
 OUTAGE : 8R  
 COMPARISON OF PREVIOUS EXAM RESULTS

Row	Tube	Exam Reason	Exam Out	Exam Numb	Indication Location	Ind Deg	% T.W.	Ind Volt	Delta Volts	Delta Depth
150	25	ISI	8R	11440	007+ 25.4	7	23	1.02		
		ISI	7R	6238	007+ 25.4	5	16	1.08	-00.06	07.00
		ISI	8R	11440	008+ 37.2	7	23	0.66		
		ISI	8R	11440	014+ 6.1	8	26	0.60		
		ISI	8R	11440	015+ 19.6	9	30	0.76		

Total Tubes Included : 22                      Total Indications : 36

Voltage Summary :

Tubes Compared :	22	Number Increased :	3
Indications Compared :	29	Number Decreased :	26
		Number No Change :	0
		Mean Change :	- 0.17
		Std. Dev. :	0.19

Percent Summary :

Tubes Compared :	22	Number Increased :	15
Indications Compared :	29	Number Decreased :	7
		Number No Change :	7
		Mean Change :	2.28
		Std. Dev. :	5.76



Appendix III

TUBES PLUGGED DURING OUTAGE 8R

THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : SR  
 TUBES TO BE PLUGGED

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% T.W.	Ind Volt	Circ Ext	Ind Des	Per Ext
3	25	ISI	540-MIZ18	008	015 + 41.3	10	33	0.89			LTE
3	25	ISI	540-MIZ18	008	015 + 41.7	11	36	1.10			LTE
3	25	ISI	540-MIZ18	008	015 + 42.8	16	53	1.03			LTE
3	25	ISI	540-MIZ18	008	015 + 43.1	17	56	1.54			LTE
3	25	CONFIR	8X1-ABS	062	015 + 43.3	0		0.29	1		014
3	25	ISI	540-MIZ18	008	015 + 43.5	10	33	0.89			LTE
3	25	CONFIR	8X1-ABS	062	015 + 43.7	356		0.33	1		014
4	28	ISI	540-MIZ18	008	015 + 21.8	11	36	1.16			LTE
4	28	ISI	540-MIZ18	008	015 + 23.2	5	16	0.82			LTE
4	28	ISI	540-MIZ18	008	015 + 27.6	5	16	1.63			LTE
4	28	ISI	540-MIZ18	008	015 + 30.6	15	50	1.47			LTE
4	28	CONFIR	8X1-ABS	062	015 + 30.8	357		0.48	1		013
73	44	LANE-8	8X1-ABS	058	+ 0.0	0		0.00	0		014
73	44	CONFIR	8X1-ABS	062	004 + 0.5	90		0.43	1		002
73	44	LANEWE	510-MIZ18	032	004 + 0.5	86	52	1.43			LTE
78	19	LANEWE	510-MIZ18	055	+ 0.0	0	0	0.00			LTE
78	19	LANE-8	8X1-ABS	060	UTS + 0.0	61		0.62	2		014
78	19	CONFIR	RPC	065	UTS + 0.3	39	0	6.06		SAI	UTS
104	121	ISI	540-MIZ18	011	014 + 3.0	6	20	1.50			LTE
104	121	CONFIR	8X1-ABS	062	015 + 45.6	2		0.41	1		014
104	121	ISI	540-MIZ18	011	015 + 45.6	14	46	1.12			LTE

Total Tubes Examined : 5

Total Indications : 21

THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG B  
 OUTAGE : 8R  
 TUBES TO BE PLUGGED

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% T.W.	Ind Volt	Circ Ext	Ind Des	Per Ext
77	12	LANEWE	510-MIZ18	021	UTS +	0.0 25	0	1.70		DTS	LTE
77	12	CONFIR	MRPC	036	UTS +	0.1 84	0	0.62		SAI	UTS
77	12	LANE-8	8X1-ABS	029	UTS +	0.1 66		0.69	1		014
123	1	CONFIR	540-MIZ18	027	UTS +	6.4 18	60	3.76			LTE
123	1	CONFIR	8X1-ABS	034	UTS +	6.4 13		1.30	2		015
123	1	RANSAM	510-MIZ18	010	UTS +	6.4 19	63	3.65			LTE
138	52	CONFIR	MRPC	036	006	0.6 48	0	1.00		SAI	006
138	52	CONFIR	8X1-ABS	034	006 +	0.6 60		0.31	1		004
138	52	ISI	540-MIZ18	003	006 +	0.6 65	52	1.67			LTE

Total Tubes Examined : 3

Total Indications : 9

Appendix IV

INDICATIONS 20 & THROUGH WALL OR GREATER

THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
1	4	ISI	540-MIZ18	014	013+ 6.5	7	23	1.95	LTE	12856
		ISI	540-MIZ18	014	013+ 10.6	6	20	1.10	LTE	12856
		ISI	540-MIZ18	014	013+ 12.0	10	33	1.08	LTE	12856
		ISI	540-MIZ18	014	015+ 36.0	10	33	2.22	LTE	12856
2	6	ISI	540-MIZ18	014	015+ 24.5	8	26	1.11	LTE	12857
		ISI	540-MIZ18	014	015+ 25.2	10	33	1.26	LTE	12857
		ISI	540-MIZ18	014	015+ 28.9	8	27	1.72	LTE	12857
		ISI	540-MIZ18	014	015+ 35.8	9	30	1.29	LTE	12857
		ISI	540-MIZ18	014	015+ 36.4	6	20	3.83	LTE	12857
		ISI	540-MIZ18	014	015+ 39.4	6	20	2.30	LTE	12857
		ISI	540-MIZ18	014	015+ 40.6	8	27	1.53	LTE	12857
2	22	ISI	540-MIZ18	008	014+ 21.9	9	30	1.06	LTE	12993
		ISI	540-MIZ18	008	014+ 29.4	8	26	0.73	LTE	12993
2	25	ISI	540-MIZ18	008	004+ 13.3	6	20	1.59	LTE	12858
		ISI	540-MIZ18	008	012+ 35.9	1	36	0.95	LTE	12858
		ISI	540-MIZ18	008	013+ 3.2	6	20	0.73	LTE	12858
		ISI	540-MIZ18	008	013+ 9.3	11	36	1.23	LTE	12858
		ISI	540-MIZ18	008	013+ 10.3	10	33	1.17	LTE	12858
3	17	ISI	540-MIZ18	014	015+ 32.9	8	27	1.08	LTE	12959
		ISI	540-MIZ18	014	UTS+ 0.4	6	20	0.80	LTE	12959
3	25	ISI	540-MIZ18	008	015+ 41.3	10	33	0.89	LTE	12859
		ISI	540-MIZ18	008	015+ 41.7	11	36	1.10	LTE	12859
		ISI	540-MIZ18	008	015+ 42.8	16	53	1.03	LTE	12859
		CONFIR	8X1-ABS	062	015+ 43.7	356	1	0.33	014	15888
		CONFIR	8X1-ABS	062	015+ 43.3	0	1	0.29	014	15888
		ISI	540-MIZ18	008	015+ 43.1	17	56	1.54	LTE	12859
		CONFIR	8X1-ABS	062	015+ 43.7	356	1	0.33	014	15888
		CONFIR	8X1-ABS	062	015+ 43.3	0	1	0.29	014	15888
		ISI	540-MIZ18	008	015+ 43.5	10	33	0.89	LTE	12859
4	28	ISI	540-MIZ18	008	015+ 21.8	11	36	1.16	LTE	12860

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
		ISI	540-MIZ18	008	015+ 30.6	15	50	1.47	LTE	12860
		CONFIR	8X1-ABS	062	015+ 30.8	357	1	0.48	013	15887
4	29	ISI	540-MIZ18	008	015+ 19.4	8	26	0.84	LTE	12861
		ISI	540-MIZ18	008	015+ 27.1	11	36	1.97	LTE	12861
		ISI	540-MIZ18	008	015+ 37.6	8	26	0.59	LTE	12861
4	34	ISI	540-MIZ18	008	015+ 23.6	9	30	1.02	LTE	12994
4	38	8X1ACC	540-MIZ18	008	012+ 11.1	11	36	0.84	LTE	13129
5	3	ISI	540-MIZ18	014	014+ 24.1	6	20	0.89	LTE	12862
		ISI	540-MIZ18	014	015+ 44.2	10	33	1.49	LTE	12862
		ISI	540-MIZ18	014	015+ 44.8	10	33	2.67	LTE	12862
5	5	ISI	540-MIZ18	014	012+ 27.2	83	50	0.53	LTE	12961
		CONFIR	8X1-ABS	062	012+ 27.1	0	NDD	0.00	010	15884
		ISI	540-MIZ18	014	015+ 34.4	7	23	1.29	LTE	12961
5	38	ISI	540-MIZ18	008	UTS+ 4.1	7	23	1.21	LTE	12863
6	43	ISI	540-MIZ18	008	015+ 42.6	9	30	0.67	LTE	12864
		ISI	540-MIZ18	008	UTS+ 3.5	11	36	2.88	LTE	12864
		ISI	540-MIZ18	008	UTS+ 6.3	7	23	2.33	LTE	12864
6	47	ISI	540-MIZ18	008	015+ 19.9	6	20	1.49	LTE	12865
		ISI	540-MIZ18	008	015+ 23.0	7	23	1.34	LTE	12865
		ISI	540-MIZ18	008	015+ 24.2	7	23	1.04	LTE	12865
		ISI	540-MIZ18	008	015+ 40.1	8	26	0.67	LTE	12865
6	48	ISI	540-MIZ18	008	UTS+ 0.4	10	33	1.46	LTE	12866
7	4	S/N-7R	540-MIZ18	014	015+ 32.4	7	23	1.02	LTE	13253
		S/N-7R	540-MIZ18	014	015+ 33.0	7	23	0.79	LTE	13253
		S/N-7R	540-MIZ18	014	UTS+ 0.8	8	26	0.70	LTE	13253
8	2	ISI	540-MIZ18	014	012+ 16.2	9	30	1.15	LTE	12867
		ISI	540-MIZ18	014	012+ 19.0	7	23	0.99	LTE	12867
		ISI	540-MIZ18	014	012+ 25.3	8	27	2.03	LTE	12867

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
		ISI	540-MIZ18	014	012+ 29.3	10	33	1.45	LTE	12867
		ISI	540-MIZ18	014	012+ 33.5	9	30	1.81	LTE	12867
8	43	ISI	540-MIZ18	007	015+ 23.8	6	20	1.30	LTE	12962
		ISI	540-MIZ18	007	015+ 24.3	10	33	0.72	LTE	12962
		ISI	540-MIZ18	007	015+ 32.1	11	36	0.75	LTE	12962
		ISI	540-MIZ18	007	015+ 33.1	9	30	0.90	LTE	12962
9	6	ISI	540-MIZ18	014	015+ 21.7	11	36	0.66	LTE	12996
11	4	ISI	540-MIZ18	014	015+ 21.2	9	30	1.10	LTE	12868
13	1	ISI	540-MIZ18	013	011+ 35.2	7	23	0.53	LTE	12869
		ISI	540-MIZ18	013	011+ 35.7	11	36	1.15	LTE	12869
		ISI	540-MIZ18	013	013+ 14.1	8	26	0.69	LTE	12869
		ISI	540-MIZ18	013	013+ 21.0	7	23	0.66	LTE	12869
		ISI	540-MIZ18	013	013+ 22.3	11	36	1.89	LTE	12869
		ISI	540-MIZ18	013	013+ 23.3	11	36	1.31	LTE	12869
		ISI	540-MIZ18	013	013+ 30.4	8	26	0.76	LTE	12869
15	77	ISI	540-MIZ18	007	012+ 18.5	10	33	0.83	LTE	12963
		ISI	540-MIZ18	007	012+ 27.5	11	36	0.78	LTE	12963
		ISI	540-MIZ18	007	012+ 30.5	9	30	0.80	LTE	12963
16	2	ISI	540-MIZ18	013	015+ 42.3	6	20	0.99	LTE	12870
17	82	8X1ACC	540-MIZ18	007	014+ 32.6	7	23	0.84	LTE	13130
		8X1ACC	540-MIZ18	007	015+ 5.6	6	20	0.92	LTE	13130
18	1	ISI	540-MIZ18	013	004+ 5.1	11	33	1.17	LTE	12964
		ISI	540-MIZ18	013	004+ 11.9	7	23	1.00	LTE	12964
18	3	ISI	540-MIZ18	013	015+ 23.7	6	20	0.50	LTE	12965
		ISI	540-MIZ18	013	015+ 25.1	11	36	1.04	LTE	12965
18	84	ISI	540-MIZ18	007	015+ 32.6	10	33	1.11	LTE	12871
		ISI	540-MIZ18	007	015+ 33.0	6	20	1.70	LTE	12871
		ISI	540-MIZ18	007	015+ 33.8	8	26	0.70	LTE	12871
		ISI	540-MIZ18	007	015+ 34.4	7	23	1.43	LTE	12871

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES SX1-ABS FOR INDICATIONS GE 40 \*

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
		ISI	540-MIZ18	007	015+ 35.6	7	23	0.78	LTE	12871
		ISI	540-MIZ18	007	015+ 38.1	9	30	1.06	LTE	12871
		ISI	540-MIZ18	007	015+ 40.8	9	30	1.10	LTE	12871
20	1	ISI	540-MIZ18	013	005+ 21.5	7	23	0.99	LTE	12967
		ISI	540-MIZ18	013	005+ 31.9	11	36	0.92	LTE	12967
20	56	ISI	540-MIZ18	007	015+ 33.5	8	26	0.97	LTE	12872
20	85	ISI	540-MIZ18	007	010+ 14.5	6	20	0.96	LTE	12873
		ISI	540-MIZ18	007	010+ 17.4	9	30	1.33	LTE	12873
		ISI	540-MIZ18	007	010+ 18.3	11	36	1.31	LTE	12873
		ISI	540-MIZ18	007	010+ 20.2	9	30	1.01	LTE	12873
		ISI	540-MIZ18	007	010+ 31.7	7	23	1.00	LTE	12873
		ISI	540-MIZ18	007	014+ 31.4	11	36	0.72	LTE	12873
		ISI	540-MIZ18	007	015+ 10.7	7	23	0.65	LTE	12873
22	35	ISI	540-MIZ18	013	015+ 34.0	10	33	1.85	LTE	12968
		ISI	540-MIZ18	013	UTS+ 3.6	8	27	0.84	LTE	12968
23	3	ISI	540-MIZ18	013	015+ 31.3	6	20	1.00	LTE	12969
24	2	ISI	540-MIZ18	013	015+ 37.6	8	26	1.06	LTE	12970
24	19	S/N	540-MIZ18	013	015+ 45.9	11	36	0.78	LTE	13152
25	2	S/N	540-MIZ18	013	013+ 2.5	10	33	0.88	LTE	13153
25	3	ISI	540-MIZ18	013	014+ 12.4	9	30	1.06	LTE	12999
25	21	ISI	540-MIZ18	013	015+ 38.0	9	30	0.93	LTE	12874
26	96	S/N-7R	540-MIZ18	007	015+ 19.4	6	20	0.90	LTE	13244
27	78	ISI	540-MIZ18	007	015+ 29.9	7	23	0.99	LTE	12971
27	96	ISI	540-MIZ18	007	LTE+ 21.7	88	37	2.40	LTE	12875
		ISI	540-MIZ18	007	015+ 37.5	9	30	0.95	LTE	12875
28	78	ISI	540-MIZ18	017	015+ 28.3	9	32	0.94	LTE	12876

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
29	58	ISI	540-MIZ18	007	015+ 29.8	7	23	0.74	LTE	12972
		ISI	540-MIZ18	007	015+ 33.5	8	26	0.83	LTE	12972
30	23	ISI	540-MIZ18	013	013+ 7.7	6	20	1.01	LTE	12877
		ISI	540-MIZ18	013	015+ 13.1	11	36	0.79	LTE	12877
31	1	ISI	540-MIZ18	013	008+ 6.5	11	36	0.94	LTE	12973
31	24	S/N-7R	540-MIZ18	013	012+ 8.0	6	20	0.80	LTE	13251
33	83	ISI	540-MIZ18	007	015+ 45.1	6	20	0.98	LTE	12878
33	97	8X1ACC	540-MIZ18	007	015+ 10.2	8	26	0.85	LTE	13135
		8X1ACC	540-MIZ18	007	015+ 36.8	11	36	0.90	LTE	13135
33	102	ISI	540-MIZ18	007	015+ 5.8	9	30	0.89	LTE	13001
34	1	ISI	540-MIZ18	014	006+ 15.5	9	30	1.07	LTE	13099
34	3	ISI	540-MIZ18	014	UTS+ 2.0	9	30	1.13	LTE	12879
35	54	ISI	540-MIZ18	015	UTS+ 4.4	6	20	0.71	LTE	13100
36	103	8X1ACC	540-MIZ18	007	LTS+ 35.1	65	69	0.73	LTE	13120
		CONFIR	8X1-ABS	062	LTS+ 35.1	0	NDD	0.00	LTE	15886
36	106	ISI	540-MIZ18	007	015+ 34.3	7	23	1.03	LTE	12974
37	27	8X1ACC	540-MIZ18	015	015+ 28.3	8	26	0.93	LTE	13126
37	109	ISI	540-MIZ18	007	015+ 38.9	11	36	0.80	LTE	12975
38	29	ISI	540-MIZ18	015	011+ 25.1	7	23	0.72	LTE	12976
		ISI	540-MIZ18	015	012+ 3.7	8	26	1.41	LTE	12976
39	101	ISI	540-MIZ18	007	015+ 34.6	9	30	1.02	LTE	12881
39	110	ISI	540-MIZ18	007	015+ 39.6	11	36	0.89	LTE	12882

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
42	114	ISI	540-MIZ18	007	015+ 32.2	6	20	0.77	LTE	13006
		ISI	540-MIZ18	007	015+ 43.3	6	20	0.79	LTE	13006
46	88	ISI	540-MIZ18	006	015+ 30.4	7	23	1.16	LTE	13007
48	83	ISI	540-MIZ18	006	UTS+ 6.1	7	23	1.09	LTE	13101
48	118	ISI	540-MIZ18	006	014+ 29.5	9	30	0.94	LTE	12886
49	23	ISI	540-MIZ18	015	015+ 42.6	10	33	0.77	LTE	13009
49	73	ISI	540-MIZ18	006	UTS+ 5.0	9	30	1.69	LTE	12887
49	82	ISI	540-MIZ18	006	015+ 39.8	7	23	0.65	LTE	12888
49	85	ISI	540-MIZ18	006	015+ 36.3	6	20	1.52	LTE	13010
50	1	ISI	540-MIZ18	014	014+ 8.7	7	23	1.30	LTE	13011
		ISI	540-MIZ18	014	014+ 10.1	8	26	1.42	LTE	13011
		ISI	540-MIZ18	014	014+ 10.4	8	26	1.10	LTE	13011
50	2	S/N	540-MIZ18	014	015+ 29.0	11	36	0.79	LTE	13157
50	102	ISI	540-MIZ18	006	015+ 16.6	9	30	1.34	LTE	12889
51	2	ISI	540-MIZ18	015	015+ 2.9	11	36	0.78	LTE	12977
		ISI	540-MIZ18	015	015+ 3.1	6	20	0.86	LTE	12977
		ISI	540-MIZ18	015	015+ 20.1	10	33	0.93	LTE	12977
51	92	ISI	540-MIZ18	006	013+ 27.4	7	23	0.55	LTE	13012
52	34	ISI	540-MIZ18	015	014+ 31.4	10	33	0.93	LTE	13102
55	124	ISI	540-MIZ18	006	015+ 14.2	7	23	1.77	LTE	13017
56	1	8X1ACC	540-MIZ18	015	008+ 36.4	6	20	0.70	LTE	13127
56	93	ISI	540-MIZ18	006	015+ 39.4	11	36	0.70	LTE	13018

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
57	63	ISI	540-MIZ18	015	015+ 36.9	7	23	2.03	LTE	12890
57	65	ISI	540-MIZ18	006	015+ 37.5	8	26	1.15	LTE	12891
		ISI	540-MIZ18	006	015+ 40.5	8	26	0.70	LTE	12891
58	25	8X1ACC	540-MIZ18	015	015+ 42.1	9	30	0.65	LTE	13119
58	94	ISI	540-MIZ18	005	015+ 44.0	9	30	0.80	LTE	13020
58	105	ISI	540-MIZ18	005	UTS+ 4.0	10	36	0.80	LTE	13021
58	120	ISI	540-MIZ18	005	015+ 39.7	7	23	0.63	LTE	13023
60	65	ISI	540-MIZ18	015	015+ 37.3	9	30	1.14	LTE	13025
60	125	ISI	540-MIZ18	005	015+ 25.3	6	20	1.19	LTE	12892
60	126	ISI	540-MIZ18	005	014+ 27.8	10	33	0.65	LTE	13027
60	128	ISI	540-MIZ18	005	015+ 39.9	7	23	0.85	LTE	13028
63	96	ISI	540-MIZ18	005	015+ 38.9	9	30	0.99	LTE	12978
63	126	ISI	540-MIZ18	005	015+ 22.8	10	33	0.95	LTE	13103
64	66	8X1ACC	540-MIZ18	015	015+ 40.0	8	26	0.91	LTE	13141
64	129	ISI	540-MIZ18	004	015+ 46.0	11	36	1.48	LTE	12893
66	1	ISI	540-MIZ18	037	004+ 27.7	9	30	2.60	LTE	12895
66	127	ISI	540-MIZ18	004	015+ 44.9	7	25	1.18	LTE	12896
67	93	ISI	540-MIZ18	004	015+ 35.5	9	32	0.62	LTE	12979
		ISI	540-MIZ18	004	015+ 36.1	6	21	0.90	LTE	12979
67	130	ISI	540-MIZ18	004	LTE+ 11.2	15	53	13.99	LTE	13030
		CONFIR	8X1-ABS	062	LTE+ 11.2	0	NDD	0.00	LTE	15885

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
70	88	ISI	540-MIZ18	004	015+ 39.9	6	21	0.66	LTE	13031
72	21	ISI	540-MIZ18	015	015+ 35.3	10	33	0.98	LTE	13032
72	86	ISI	540-MIZ18	004	UTS+ 3.8	11	36	1.19	LTE	12897
73	44	LANEWE CONFIR	510-MIZ18 8X1-ABS	032 062	004+ 0.5 004+ 0.5	86 90	52 1	1.48 0.43	LTE 002	14210 15876
74	28	ISI	540-MIZ18	015	UTS+ 5.7	6	20	1.51	LTE	12898
74	30	ISI	540-MIZ18	015	UTS+ 5.8	7	23	1.20	LTE	12899
74	83	ISI	540-MIZ18	004	015+ 35.2	6	21	1.07	LTE	13036
75	26	S/N-7R	540-MIZ18	015	015+ 33.3	8	26	0.80	LTE	13242
75	81	ISI	540-MIZ18	004	015+ 35.4	7	25	1.36	LTE	12980
75	123	ISI	540-MIZ18	004	015+ 20.3	7	25	0.78	LTE	12902
		ISI	540-MIZ18	004	015+ 20.3	7	25	0.78	LTE	12902
		ISI	540-MIZ18	004	015+ 24.2	6	21	1.80	LTE	12902
77	126	ISI	540-MIZ18	017	015+ 18.5	8	28	1.01	LTE	12903
79	15	LANEWE	510-MIZ18	055	004+ 36.8	6	20	2.35	LTE	14465
79	130	ISI	540-MIZ18	017	UTS+ 5.2	6	20	0.72	LTE	12905
81	92	ISI	540-MIZ18	017	015+ 42.3	9	32	1.05	LTE	12906
		ISI	540-MIZ18	017	UTS+ 0.6	8	26	0.75	LTE	12906
82	32	ISI	540-MIZ18	015	UTS+ 6.5	7	23	1.70	LTE	12907
82	128	ISI	540-MIZ18	017	015+ 7.9	7	21	0.96	LTE	13042
83	17	ISI	540-MIZ18	016	015+ 32.3	7	23	0.99	LTE	12908
		ISI	540-MIZ18	016	015+ 35.3	10	33	1.14	LTE	12908

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
87	1	ISI	540-MIZ18	016	012+	7.0	9	30	2.93	LTE 12910
		ISI	540-MIZ18	016	012+	7.3	8	26	2.83	LTE 12910
88	124	ISI	540-MIZ18	017	015+	3.5	7	25	0.90	LTE 13045
90	80	ISI	540-MIZ18	017	015+	32.3	6	21	1.06	LTE 12985
90	120	8X1ACC	540-MIZ18	011	UTS+	2.6	7	23	1.00	LTE 13144
90	128	ISI	540-MIZ18	037	014+	15.2	7	23	1.12	LTE 12911
		ISI	540-MIZ18	011	014+	15.3	6	20	1.04	LTS 12911
		ISI	540-MIZ18	037	015	0.3	8	26	2.09	LTE 12911
		ISI	540-MIZ18	011	015	0.2	6	20	1.90	LTS 12911
		ISI	540-MIZ18	011	015+	2.0	8	26	0.96	LTS 12911
		ISI	540-MIZ18	037	015+	2.0	11	36	0.95	LTE 12911
91	90	ISI	540-MIZ18	011	015+	38.0	6	20	1.06	LTE 13047
93	27	ISI	540-MIZ18	016	015+	38.0	8	26	0.96	LTE 12986
93	90	ISI	540-MIZ18	011	UTS+	0.7	11	36	0.90	LTE 13049
93	121	ISI	540-MIZ18	011	015+	34.9	6	20	0.81	LTE 13106
93	123	ISI	540-MIZ18	011	015+	7.0	7	23	0.86	LTE 13107
94	113	ISI	540-MIZ18	011	015+	33.6	10	33	1.09	LTE 13108
94	117	ISI	540-MIZ18	011	015+	44.2	8	26	1.44	LTE 12987
95	111	ISI	540-MIZ18	011	015+	40.4	7	23	1.23	LTE 12913
95	123	ISI	540-MIZ18	011	UTS+	1.8	9	30	1.31	LTE 12914
95	124	ISI	540-MIZ18	011	UTS+	2.1	11	36	0.82	LTE 13109
		ISI	540-MIZ18	011	UTS+	5.9	9	30	1.00	LTE 13109
95	126	ISI	540-MIZ18	011	UTS+	6.2	11	36	1.00	LTE 13110

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 % THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 %

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
		ISI	540-MIZ18	011	UTS+ 6.8	8	26	1.90	LTE	10110
95	127	S/N	540-MIZ18	011	012+ 13.2	7	23	0.63	LTE	13191
96	32	ISI	540-MIZ18	037	015+ 37.6	7	23	1.68	LTE	12915
		ISI	540-MIZ18	037	015+ 43.2	10	33	1.08	LTE	12915
96	114	ISI	540-MIZ18	011	015+ 5.7	6	20	0.90	LTE	13050
99	1	ISI	540-MIZ18	037	004+ 23.8	7	23	1.27	LTE	12917
		ISI	540-MIZ18	015	008+ 5.0	9	30	0.93	LTE	12917
		ISI	540-MIZ18	037	008+ 5.1	10	33	0.92	LTE	12917
99	17	ISI	540-MIZ18	015	015+ 33.0	9	30	1.21	LTE	12918
100	90	S/N	540-MIZ18	011	UTS+ 2.8	10	33	1.00	LTE	13181
100	122	ISI	540-MIZ18	011	UTS+ 4.8	7	23	1.42	LTE	12919
101	16	ISI	540-MIZ18	015	015+ 30.9	6	20	1.14	LTE	12920
101	51	ISI	540-MIZ18	037	UTS+ 1.3	11	36	1.11	LTE	12921
		ISI	540-MIZ18	037	UTS+ 4.0	11	36	1.06	LTE	12921
		ISI	540-MIZ18	037	UTS+ 4.9	6	20	1.16	LTE	12921
101	61	ISI	540-MIZ18	037	015+ 29.3	6	20	2.23	LTE	12923
103	121	ISI	540-MIZ18	011	003+ 16.3	93	27	0.66	LTE	12924
		ISI	540-MIZ18	011	014+ 12.2	10	33	0.96	LTE	12924
		ISI	540-MIZ18	011	014+ 15.6	7	23	0.98	LTE	12924
		ISI	540-MIZ18	011	015+ 43.8	9	30	2.16	LTE	12924
		ISI	540-MIZ18	011	015+ 44.1	6	20	1.10	LTE	12924
104	75	ISI	540-MIZ18	011	015+ 29.4	8	26	0.67	LTE	12988
		ISI	540-MIZ18	011	015+ 39.5	8	26	1.09	LTE	12988
104	121	ISI	540-MIZ18	011	014+ 3.0	6	20	1.50	LTE	12925
		ISI	540-MIZ18	011	015+ 45.6	14	46	1.12	LTE	12925
		CONFIR	8X1-ABS	062	015+ 45.6	2	1	0.41	014	15889

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
105	94	ISI	540-MIZ18	037	014+	0.0	90	28	1.09	LTE 12926
		ISI	540-MIZ18	011	014+	0.0	90	23	1.14	LTE 12926
106	2	ISI	540-MIZ18	015	015+	10.3	7	23	0.92	LTE 12927
107	2	ISI	540-MIZ18	015	015+	33.4	8	26	1.27	LTE 12929
		ISI	540-MIZ18	015	015+	37.4	7	23	1.40	LTE 12929
107	116	ISI	540-MIZ18	010	015+	43.2	6	20	0.66	LTE 13056
107	120	ISI	540-MIZ18	011	UTS+	3.6	6	20	1.18	LTE 12931
		ISI	540-MIZ18	011	UTS+	5.0	9	30	1.10	LTE 12931
110	52	ISI	540-MIZ18	037	015+	40.0	9	30	1.13	LTE 12933
		ISI	540-MIZ18	037	UTS+	1.1	6	20	1.25	LTE 12933
		ISI	540-MIZ18	037	UTS+	2.7	7	23	1.13	LTE 12933
111	51	ISI	540-MIZ18	037	015+	38.7	8	27	1.61	LTE 13061
112	1	8X1ACC	540-MIZ18	015	011+	36.0	6	20	0.85	LTE 13142
112	116	ISI	540-MIZ18	010	008+	31.3	6	20	0.62	LTE 12935
		ISI	540-MIZ18	010	012+	22.1	7	23	1.39	LTE 12935
		ISI	540-MIZ18	010	013+	5.6	7	23	0.87	LTE 12935
113	104	ISI	540-MIZ18	010	015+	21.9	6	20	0.87	LTE 12989
114	93	ISI	540-MIZ18	010	015+	40.9	6	20	1.33	LTE 12936
115	26	ISI	540-MIZ18	015	015+	25.6	11	36	1.12	LTE 12937
115	109	ISI	540-MIZ18	010	UTS+	5.1	7	23	2.84	LTE 12938
116	2	8X1ACC	540-MIZ18	016	006+	3.3	10	33	2.01	LTE 13125
116	109	ISI	540-MIZ18	010	015+	33.2	6	20	1.01	LTE 12939
		ISI	540-MIZ18	010	015+	36.2	7	23	1.12	LTE 12939
118	67	ISI	540-MIZ18	010	015+	38.4	9	30	1.09	LTE 12991

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	& / Coils	Ind Volt	Per Ext	Exam Number
119	77	ISI	540-MIZ18	010	015+ 29.1	6	20	1.72	LTE	12940
120	67	ISI	540-MIZ18	010	015+ 36.3	7	23	1.23	LTE	12942
122	30	ISI	540-MIZ18	015	UTS+ 0.8	8	26	0.86	LTE	12945
123	85	ISI	540-MIZ18	010	015+ 45.1	6	20	1.02	LTE	13094
124	1	ISI	540-MIZ18	016	012+ 23.6	7	23	1.57	LTE	12946
124	99	8X1ACC	540-MIZ18	010	013+ 8.4	7	23	0.62	LTE	13134
124	100	ISI	540-MIZ18	010	013+ 8.8	7	23	0.63	LTE	13112
125	97	ISI	540-MIZ18	010	015+ 41.0	9	30	0.96	LTE	13113
125	98	ISI	540-MIZ18	010	015+ 29.7	9	30	0.98	LTE	13079
126	94	ISI	540-MIZ18	010	015+ 35.8	10	33	2.14	LTE	13080
127	94	ISI	540-MIZ18	009	UTS+ 3.6	11	36	1.54	LTE	13082
130	41	ISI	540-MIZ18	015	015+ 27.8	7	23	1.84	LTE	12948
130	60	ISI	540-MIZ18	009	015+ 33.2	11	36	0.81	LTE	13114
130	73	ISI	540-MIZ18	009	015+ 41.8	11	36	0.75	LTE	13083
131	1	ISI	540-MIZ18	016	013+ 24.9	10	33	1.09	LTE	13115
131	82	ISI	540-MIZ18	009	015+ 0.0	10	33	1.02	LTE	13077
		ISI	540-MIZ18	009	015+ 15.6	11	36	1.53	LTE	13077
		ISI	540-MIZ18	009	015+ 38.0	11	36	1.46	LTE	13077
		ISI	540-MIZ18	009	015+ 43.1	11	36	1.25	LTE	13077
132	39	8X1ACC	540-MIZ18	015	015+ 28.9	6	20	0.97	LTE	13118
		8X1ACC	540-MIZ18	015	015+ 30.7	7	23	1.03	LTE	13118
134	1	ISI	540-MIZ18	016	004+ 2.3	9	30	1.13	LTE	12950

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
		ISI	540-MIZ18	016	004+	3.2	6 / 20	0.91	LTE	12950
134	65	ISI	540-MIZ18	009	015+	37.5	9 / 30	1.55	LTE	13097
135	2	ISI	540-MIZ18	016	013+	34.0	6 / 20	0.74	LTE	12951
		ISI	540-MIZ18	016	014	0.2	10 / 33	0.88	LTE	12951
		ISI	540-MIZ18	016	015+	11.6	9 / 30	0.80	LTE	12951
		ISI	540-MIZ18	016	015+	35.8	9 / 30	1.10	LTE	12951
135	5	ISI	540-MIZ18	016	014+	27.5	6 / 20	1.19	LTE	12952
136	5	ISI	540-MIZ18	016	015+	39.1	10 / 33	1.37	LTE	12954
136	6	ISI	540-MIZ18	016	015+	36.2	9 / 30	1.60	LTE	12955
136	69	ISI	540-MIZ18	009	015+	8.9	6 / 20	0.69	LTE	13084
		ISI	540-MIZ18	009	015+	11.6	8 / 27	1.09	LTE	13084
		ISI	540-MIZ18	009	015+	13.1	7 / 23	0.99	LTE	13084
		ISI	540-MIZ18	009	015+	33.4	10 / 33	1.11	LTE	13084
		ISI	540-MIZ18	009	015+	37.6	11 / 36	2.08	LTE	13084
137	53	8X1ACC	540-MIZ18	009	015+	18.7	11 / 36	0.79	LTE	13136
138	65	ISI	540-MIZ18	009	UTS+	5.9	11 / 36	1.73	LTE	13085
139	67	ISI	540-MIZ18	009	015+	45.8	11 / 36	1.44	LTE	13117
139	71	ISI	540-MIZ18	009	013+	25.9	11 / 36	1.77	LTE	13086
		ISI	540-MIZ18	009	015+	41.4	9 / 30	1.03	LTE	13086
140	67	ISI	540-MIZ18	009	UTS+	3.4	10 / 33	1.09	LTE	13087
140	69	8X1ACC	540-MIZ18	009	013+	13.9	7 / 23	1.77	LTE	13124
141	60	ISI	540-MIZ18	009	015+	44.1	9 / 30	0.87	LTE	13088
		ISI	540-MIZ18	009	015+	45.8	8 / 27	1.03	LTE	13088
143	55	ISI	540-MIZ18	009	UTS+	3.2	10 / 33	0.98	LTE	13098
143	57	8X1ACC	540-MIZ18	009	015+	43.3	10 / 33	1.10	LTE	13132

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THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
144	2	S/N	540-MIZ18	016	012+	31.3	11 36	0.83	LTE	13173
145	50	ISI	540-MIZ18	009	UTS+	4.2	10 33	3.47	LTE	13089
146	1	ISI	540-MIZ18	016	004+	35.6	11 36	1.47	LTE	12956
146	3	ISI	540-MIZ18	016	012+	26.4	7 23	0.74	LTE	13072
146	43	ISI	540-MIZ18	009	015+	33.9	11 36	0.85	LTE	13090
		ISI	540-MIZ18	009	015+	35.2	11 36	0.83	LTE	13090
		ISI	540-MIZ18	009	015+	36.2	9 30	0.85	LTE	13090
		ISI	540-MIZ18	009	015+	40.5	6 20	0.83	LTE	13090
146	50	ISI	540-MIZ18	009	003+	35.8	11 36	1.74	LTE	13091
147	2	ISI	540-MIZ18	016	012+	10.4	7 23	1.12	LTE	12957
149	30	S/N	540-MIZ18	009	005+	25.6	7 23	0.72	LTE	13175
		S/N	540-MIZ18	009	005+	26.5	10 33	0.76	LTE	13175
150	8	ISI	540-MIZ18	015	015+	3.5	7 23	0.94	LTE	12992
		ISI	540-MIZ18	015	015+	18.4	7 23	0.92	LTE	12992

Total Tubes : 198

Total Indications : 324

THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG B  
 OUTAGE : 8R  
 INDICATIONS GE 20 % THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 %

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
1	11	ISI	540-MIZ18	002	UTS+	2.9	7 23	1.19	LTE	11420
6	4	ISI	540-MIZ18	005	UTS+	5.3	7 23	2.51	LTE	11443
7	42	ISI	540-MIZ18	002	012+	11.9	7 23	0.87	LTE	11421
		ISI	540-MIZ18	002	013+	11.2	10 33	0.98	LTE	11421
		ISI	540-MIZ18	002	014+	22.9	10 33	0.82	LTE	11421
8	44	S/N	540-MIZ18	002	014+	16.5	10 33	0.69	LTE	11460
		S/N	540-MIZ18	002	014+	29.4	9 30	0.62	LTE	11460
9	22	ISI	540-MIZ18	005	015+	45.0	7 23	1.22	LTE	11422
19	44	ISI	540-MIZ18	002	015+	41.8	8 26	1.78	LTE	11423
24	63	ISI	540-MIZ18	002	013+	14.0	11 36	0.86	LTE	11424
		ISI	540-MIZ18	002	014+	9.4	11 36	0.64	LTE	11424
26	13	3%-TS	510-MIZ18	008	013+	15.3	6 20	1.65	LTE	11982
		CONFIR	540-MIZ18	027	013+	15.3	6 20	1.48	LTE	12899
30	13	ISI	540-MIZ18	005	015+	45.2	10 33	2.26	LTE	11425
30	71	ISI	540-MIZ18	002	015+	32.6	9 30	1.17	LTE	11426
38	72	8X1ACC	540-MIZ18	002	012+	7.3	11 36	0.80	LTE	11459
		8X1ACC	540-MIZ18	002	012+	35.7	11 36	0.78	LTE	11459
42	74	S/N	540-MIZ18	002	009+	4.5	7 23	0.56	LTE	11465
44	75	8X1ACC	540-MIZ18	002	013+	17.0	8 26	0.61	LTE	11449
		8X1ACC	540-MIZ18	002	013+	29.2	7 23	0.92	LTE	11449
		8X1ACC	540-MIZ18	002	014+	9.7	8 26	0.88	LTE	11449
		8X1ACC	540-MIZ18	002	015+	1.3	10 33	0.62	LTE	11449
		8X1ACC	540-MIZ18	002	015+	34.3	6 20	0.99	LTE	11449
50	39	CONFIR	540-MIZ18	027	008+	34.0	8 26	1.13	LTE	12900
		3%-TS	510-MIZ18	008	009+	34.9	8 26	1.41	LTE	12009

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG B  
 OUTAGE : 8R  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
60	83	ISI	540-MIZ18	027	015+ 39.3	11	36	1.09	LTE	11427
64	83	ISI	540-MIZ18	027	015+ 31.6	10	33	1.22	LTE	11428
73	45	CONFIR LANEWE	540-MIZ18 510-MIZ18	027 017	002+ 9.8 002+ 9.8	7 6	23 20	1.22 1.27	LTE LTE	12906 12491
73	78	CONFIR 3%-TS	540-MIZ18 510-MIZ18	027 013	LTS+ 32.4 LTS+ 32.4	8 9	26 30	1.87 1.53	LTE LTE	12905 12146
74	56	CONFIR LANEWE	540-MIZ18 510-MIZ18	027 019	014+ 2.1 014+ 2.1	10 10	33 33	1.48 1.44	LTE LTE	12904 12566
79	47	S/N-7R	540-MIZ18	004	004+ 24.8	83	31	0.60	LTE	11522
82	14	CONFIR 3%-TS	540-MIZ18 510-MIZ18	027 009	006+ 0.6 006+ 0.7	78 72	24 37	1.57 1.46	LTE LTE	12901 12304
103	33	CONFIR 3%-TS	540-MIZ18 510-MIZ18	028 010	014+ 0.0 014+ 0.0	9 11	30 36	1.62 1.47	LTE LTE	12902 12345
104	77	ISI	540-MIZ18	003	UTS+ 3.9	10	33	1.64	LTE	11429
105	8	ISI	540-MIZ18	004	UTS+ 6.6	10	33	1.18	LTE	11430
109	11	ISI ISI ISI ISI	540-MIZ18 540-MIZ18 540-MIZ18 540-MIZ18	004 004 004 004	015+ 44.1 015+ 44.8 015+ 45.7 UTS+ 5.0	6 10 6 11	20 33 20 36	0.96 1.17 1.00 1.00	LTE LTE LTE LTE	11431 11431 11431 11431
109	112	ISI ISI	540-MIZ18 540-MIZ18	003 003	004+ 0.0 004+ 4.9	7 10	25 33	1.74 1.23	LTE LTE	11432 11432
117	56	8X1ACC	540-MIZ18	003	012+ 14.2	6	20	1.33	LTE	11456
122	44	ISI	540-MIZ18	004	UTS+ 2.5	6	20	1.62	LTE	11433
123	1	CONFIR CONFIR	540-MIZ18 8X1-ABS	027 034	UTS+ 6.4 UTS+ 6.4	18 13	60 2	3.76 1.30	LTE 015	12903 12907

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THREE MILE ISLAND: UNIT 1  
 COMPONENT : SG B  
 OUTAGE : 8R  
 INDICATIONS GE 20 & THROUGH WALL  
 INCLUDES 8X1-ABS FOR INDICATIONS GE 40 &

Row	Tube	Exam Reason	Exam Tech	Exam Reel	Indication Location	Ind Deg	% / Coils	Ind Volt	Per Ext	Exam Number
		3&-TS	510-MIZ18	010	UTS+ 6.4	19	63	3.65	LTE	12388
		CONFIR	8X1-ABS	034	UTS+ 6.4	13	2	1.30	015	12907
124	36	ISI	540-MIZ18	004	015+ 45.1	10	33	1.17	LTE	11434
131	27	S/N-7R	540-MIZ18	004	011+ 10.4	9	30	0.95	LTE	11527
136	40	ISI	540-MIZ18	004	015+ 40.5	6	20	1.48	LTE	11435
138	52	ISI	540-MIZ18	003	006+ 0.6	65	52	1.67	LTE	11436
		CONFIR	8X1-ABS	034	006+ 0.6	60	1	0.31	004	12908
143	43	ISI	540-MIZ18	002	010+ 7.7	7	23	0.76	LTE	11437
144	49	ISI	540-MIZ18	002	006+ 0.0	71	43	1.39	LTE	11438
		CONFIR	8X1-ABS	034	006+ 0.0	0	NDD	0.00	004	12909
146	37	ISI	540-MIZ18	002	012+ 7.2	10	33	0.99	LTE	11439
150	25	ISI	540-MIZ18	002	007+ 25.4	7	23	1.02	LTE	11440
		ISI	540-MIZ18	002	008+ 37.2	7	23	0.66	LTE	11440
		ISI	540-MIZ18	002	014+ 6.1	8	26	0.60	LTE	11440
		ISI	540-MIZ18	002	015+ 19.6	9	30	0.76	LTE	11440

Total Tubes : 37

Total Indications : 61

Appendix V

TUBES PLUGGED DURING OUTAGE 8U1

THREE MILE ISLAND:UNIT 1  
 COMPONENT : SG A  
 OUTAGE : 8U1  
 EXAMINATION RESULTS FOR TUBES TO BE PLUGGED

Row	Tube	Exam Reason	Exam Tech	Out-age	Reel	Indication Location	Ind Deg	% T.W.	Ind Volt	Circ Ext	Ind Des	Per Ext	
77	1	REVIEW	510	8U1	054	UTS+ 0.0	190	0	7.49		DNT	LTE	
		CONFIR	540	8U1	011	UTS+ 0.0	17	100	172.80			009	
		CONFIR	MRP	8U1	013	UTS+ 0.0	22	100	120.00				UTS
		LANE-1	8X1	8U1	001	UTS+ 0.0	20		33.37	8			014
78	28	REVIEW	510	8U1	055	UTS+ 0.0	186	0	6.94		DNT	LTE	
		CONFIR	540	8U1	011	UTS+ 0.0	194	0	5.83		DNT	LTE	
		LANE	8X1	8U1	003	UTS+ 0.0	8		0.65	1			014
		CONFIR	MRP	8U1	013	UTS+ 0.2	5	41	4.13				UTS

Total Tubes: 2

GENERAL PUBLIC UTILITIES  
THREE MILE ISLAND PLANT, UNIT #1

SCHEDULE

DAY ONE

<u>TIME</u>	
:30 12:30 - 1:00	Introduction <ul style="list-style-type: none"><li>- Course Objective</li><li>- Overview</li><li>- Schedule of Activities</li></ul>
:30 1:00 - 1:30	Miz-18 Bobbin Coil Guidelines (Class Reading Assignment)
:15 1:30 - 1:45	Break
:30 1:45 - 2:15	Miz-18 Bobbin Coil Guideline Lecture (Instructor Directed)
:30 2:15 - 2:45	8X1 Analysis Guideline (Class Reading Assignment)
:15 2:45 - 3:00	Break
:30 3:00 - 3:30	8X1 Analysis Lecture (Instructor Directed)
:45 3:30 - 4:15	Set-up Equipment

Appendix VI

OUTLINE OF DATA ANALYST INDOCTRINATION



SCHEDULE (Cont.)

DAY TWO

4:00 8:00 - 12:00	Practice Tape Lab Session (Class Reviews Tape)
12:00 - 12:45	Lunch
4:00 12:45 - 4:45	Practical Examination (Night Shift)

DAY THREE

4:00 8:00 - 12:00	Practical Examination (Day Shift)
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Times shown could be subject to change or modification.