

**FLORIDA POWER CORPORATION  
CRYSTAL RIVER UNIT 3**

**OTSG TUBE INSERVICE INSPECTION  
REFUEL OUTAGE 10  
90-DAY REPORT**

**AUGUST 1996**

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Legend for abbreviations used in this report:

ADI	Absolute Drift Indication
B. A. Code	Bobbin Analysis Code
BVTs	Below Voltage Threshold Indications
CR-3	Crystal River Unit 3
ECT	Eddy Current Testing
IGA	Intergranular Attack
LTE	Lower Tube End
LTS	Lower Tube Sheet
MBM	Manufacturer Buff Mark
MRPC	Motorized Rotating Pancake Coil
MSG	Message
NDD	No Detectable Degradation
NDF	No Degradation Found
NQIs	Non-quantifiable Indications
%TW	Percent Through Wall
OD	Outside Diameter
ODI	Outside Diameter Indication
OTSG	Once Through Steam Generator
RIC	Run Incomplete Full Length
S	Support Plate
SZ	Size
TS	Technical Specifications
TSP	Tube Support Plate
VOL	Volumetric Indication
WAR	Wear

## INTRODUCTION

Crystal River Unit 3 (CR-3) Technical Specification (TS) 5.7.2.c specifies that the complete results of the Once Through Steam Generator (OTSG) tube inservice inspection shall be submitted to the NRC within 90 days following the completion of the inspection. The contents of the report shall include:

1. Number and extent of tubes inspected,
2. Location and percent of wall-thickness penetration for each indication of an imperfection,
3. Location, bobbin coil amplitude, and axial and circumferential extent (if determined) for each first span IGA indication, and
4. Identification of tubes plugged and tubes sleeved.

This report provides the above required information for the OTSG tube inservice inspection performed during CR-3 Refueling Outage 10 (10R).

### 1. Number and extent of tubes inspected

Approximately 21% of all in-service tubes in each OTSG were examined with the bobbin coil technique. The scope of the bobbin coil eddy current (ECT) examination for the A OTSG consisted of 3,252 tubes. The scope of the ECT examination for the B OTSG consisted of 3,235 tubes. The bobbin coil technique was applied to the complete extent possible for the tubes examined for detection purposes.

The scope of the bobbin examination consisted of tubes in every 5th row of each OTSG to ensure adequate inspection across the entire cross section of tubes. Other tube pairs (to maximize dual guide tube acquisition) were selected at random throughout the generator to complete the balance of the planned 21% sample. The 21% sample was randomly divided into subsets (1S, 2S and 4S) as required by CR-3 Technical Specifications. The total number of tubes per OTSG in each sample were as follows:

TS Sample	A OTSG	B OTSG
1S	465	462
2S	929	924
4S	1,858	1,849

1. Number and extent of tubes inspected (continued)

The bobbin coil examinations were performed with a standard 0.510" diameter probe, type A-510 MULC/HF at frequencies of 600, 400, 200 and 35 kHz, each operated in both the differential and absolute test modes. In addition to the four base frequencies, 600/200 kHz and 400/200 kHz differential tube support plate (TSP) suppression mixes were used to enhance the evaluation at TSP intersections.

The motorized rotating pancake coil (MRPC) technique was used in both OTSGs to further characterize some indications reported by the bobbin technique and to provide final depth sizing of some tube support plate (TSP) wear indications.

In accordance with FPC's commitment in response to Generic Letter (GL) 95-03, "Circumferential Cracking of Steam Generator Tubes", the MRPC technique was also used to examine areas susceptible to cracking, including the lane/wedge region, non-stress relieved roll transitions, plugs, and ding locations. The rotating plus point probe and bobbin techniques were used during 10R to examine sleeves. The rotating plus point probe was used to examine the sleeve roll joints and lower sleeve ends. The GL 95-03 examinations were not part of the standard examination required by TS 5.6.2.10 and therefore, are not part of the scope of this report. The results of the GL 95-03 examinations were summarized in FPC-to-NRC letter 3F0796-15 dated July 27, 1996.



2. Location and percent of wall thickness penetration for each indication of an imperfection.

The examination results are provided in Tables 1A-5A for the A OTSG and 1B-5B for the B OTSG. These tables provide a breakdown of the bobbin and MRPC examination results as follows:

**A OTSG**

Table 1A shows a list of tubes with wear indications at tube support plates with 1-19 percent through-wall (%TW) penetration which were depth sized using bobbin coil phase angle. The total number of tubes containing indications with 1-19 %TW for the A OTSG (Table 1A) was 72 (9 tubes in the 1S sample, 17 tubes in the 2S sample and 46 tubes in the 4S sample).

Table 2A shows a list of tubes with wear indications at TSPs with 20-39 %TW penetration which were depth sized using bobbin coil phase angle. The total number of tubes containing indications with 20-39 %TW for the A OTSG was 65 (12 tubes in the 1S sample, 20 tubes in the 2S sample and 33 tubes in the 4S sample).

Table 3A provides a list of tubes with indications reported by bobbin as non-quantifiable (NQIs) or as below voltage threshold (BVTs). Indications reported as NQIs include indications which could not be percent TW sized with a qualified technique; IGA indications in the first span; and wear indications for which more accurate TW sizing than provided by bobbin analysis was desirable. BVTs include all first span bobbin indications less than 0.7 volts. MRPC examination was performed on all NQI and BVT indications. Table 5A provides the results of the MRPC analysis performed to confirm each of those indications. The table includes MRPC analysis codes such as volumetric (VOL), wear (WAR) at the TSPs, manufacturer buff marks (MBM), and no degradation found (NDF). The indications' location (elevation) and voltage are reported from the bobbin examination results.

Table 3A shows 100 tubes from the A OTSG having indications defined as NQIs and BVTs. MRPC confirmed wear as the degradation mechanism in 20 of those tubes. MRPC also confirmed 23 tubes with volumetric indications. The tubes containing volumetric indications were assigned the "VOL" analysis code and were removed from service (a list of tubes plugged in the A OTSG is provided in Table 4A). However, the decision to plug some of those tubes was made prior to NRC clarification that continued use of the MBM analysis code, where justified by previous history and MRPC characterization, is acceptable. Additional review will be performed to determine whether or not these indications were MBMs and as such, were not truly defective tubes (Table 4A).

**2. Location and percent of wall thickness penetration for each indication of an imperfection (continued)**

MBMs are the result of final hand polishing or grinding on tubes during manufacture to remove imperfections on the tube outer surface. Therefore, FPC is reporting the reason for their repair to be administrative. The MRPC analysis of the balance of tubes (57) showed no detectable degradation.

**B OTSG**

Table 1B shows the total number of tubes with wear indications at TSPs with 1-19 %TW penetration for the B OTSG which were depth sized using bobbin coil phase angle. The total number of tubes containing indications with 1-19 %TW was 116 (18 in the 1S sample, 38 in the 2S sample and 60 in the 4S sample).

Table 2B shows the total number of tubes with wear indications at the TSPs with indications 20-39 %TW for the B OTSG was 95 (11 in the 1S sample, 33 in the 2S sample and 51 in the 4S sample).

Table 3B provides a list of tubes with indications reported by bobbin as NQIs or as BVTs. Indications reported as NQIs included indications which could not be percent TW sized with a qualified technique; IGA indications in the first span; and wear indications for which more accurate TW sizing than provided by bobbin analysis was desirable. BVTs include all first span bobbin indications less than 0.7 volts. MRPC examination was performed on all NQI and BVT indications. Table 5B provides the results of the MRPC analysis performed to confirm each of those indications. The table includes MRPC analysis codes such as volumetric (VOL), wear (WAR) at the tube support plates (TSPs), manufacturer buff marks (MBM), and no degradation found (NDF). The indications' location (elevation) and voltage are reported from the bobbin examination results.

Table 3B shows 262 tubes from the "B" OTSG having indications defined as NQIs and BVTs. MRPC confirmed wear as the degradation mechanism in 46 of those tubes. MRPC also confirmed 12 tubes with volumetric indications. Tubes containing volumetric indications were assigned the "VOL" analysis code and were removed from service (a list of tubes plugged in the B OTSG is provided in Table 4B). However, the decision to plug some of those tubes was made prior to NRC clarification that continued use of the MBM analysis code, where justified by previous history and MRPC characterization, is acceptable. Additional review will be performed to determine whether or not these indications were MBMs and as such, were not truly defective tubes (Table 4B).

3. Location, bobbin coil amplitude, and axial and circumferential extent (if determined) for each first span IGA indication.

First span IGA indications were dispositioned in accordance with Technical Specification 5.6.10 as modified by Crystal River Unit 3's License Amendment Number 154. Bobbin voltage was used as a screening tool to identify indications for evaluation with MRPC. IGA indications reported to be  $\geq 1.25$  volts during bobbin examination were removed from service. All IGA indications in the first span reported by bobbin to be  $< 1.25$  volts received an MRPC examination for characterization and dimensional sizing. The MRPC characterization of all first span indications was volumetric with no crack-like indications reported in this region. Tables 3A and 3B contain the location and bobbin coil amplitude for each first span IGA indication (locations identified as "LTS + xx"). Tables 5A and 5B provide MRPC location, characterization by MRPC, and the indications' MRPC amplitude and dimensional measurements (axial and circumferential).

None of the first span IGA indications exceeded the Technical Specification acceptance criteria of 0.25 inches axial or 0.60 inches circumferential for allowable indications.

#### 4. Identification of tubes plugged and sleeved.

There were 25 tubes plugged in A OTSG and 18 tubes plugged in B OTSG. Tables 4A and 4B provide the identification, location and the reason for plugging for each tube plugged in the A and B OTSGs respectively. Some of the tubes were plugged because of the inability to apply qualified depth sizing techniques to the indications noted. Other tubes were plugged which contained shallow, outside diameter, volumetric indications. Since they were also detected during a previous inspection, there is a high probability that the indications are likely manufacturer buff marks (MBM). However, the decision to plug was made prior to NRC clarification that continued use of the MBM analysis code, where justified by previous history and MRPC characterization. One tube was plugged which presented an axial crack-like indication in a non-stressed relieved upper tube end roll transition in A OTSG.

Three tubes which were part of the in-situ pressure testing sample were plugged in the B OTSG during Refuel 10. These tubes were not part of the 10R TS inspection but were plugged because they had historical indications confirmed with bobbin re-examination prior to in-situ testing to be  $\geq 1.25$  volts.

No tubes were sleeved during the Refuel Outage 10.

**TABLE 1A**  
**A OTSG**  
**Tubes with Bobbin Indications 1-19%TW (1S Sample)**

ROW	COL	IND	%TW	VOLTS	LOCATION	
11	68	ODI	9	.77	12S	+0.75
16	7	ODI	16	.36	07S	-0.71
31	11	ODI	11	.60	09S	+0.50
36	9	ODI	6	1.24	07S	0.65
61	6	ODI	12	0.40	07S	-0.79
71	6	ODI	14	0.48	11S	+0.71
81	18	ODI	5	0.53	10S	-0.78
146	29	ODI	1	0.52	07S	-0.75
146	49	ODI	10	0.63	10S	-0.67

**TABLE 1A (continued)**  
**A OTSG**  
**Tubes with Bobbin Indications 1-19%TW (2S Sample)**

ROW	COL	IND	%TW	VOLTS	LOCATION
6	51	ODI	12	0.30	13S +0.59
11	8	ODI	13	0.38	07S -0.79
16	9	ODI	6	0.25	12S +0.71
26	4	ODI	1	0.30	08S -0.79
51	6	ODI	16	0.37	09S +0.71
56	5	ODI	16	0.74	09S +0.58
62	128	ODI	16	0.61	08S -0.86
81	32	ODI	8	0.30	10S +0.67
81	52	ODI	9	0.38	10S +0.70
		ODI	14	0.32	08S -0.78
81	130	ODI	8	0.39	10S -0.79
106	114	ODI	1	0.30	07S -0.71
121	2	ODI	9	0.26	08S +0.77
121	31	ODI	15	0.38	05S -0.82
121	32	ODI	17	0.27	05S -0.83
146	7	ODI	13	1.02	08S +0.70
		ODI	17	0.49	07S +0.67
146	18	ODI	6	0.38	08S -0.66
147	20	ODI	2	0.39	08S -0.69



**TABLE 1A (continued)**  
**A OTSG**  
**Tubes with Bobbin Indications 1-19%TW (4S Sample)**

ROW	COL	IND	%TW	VOLTS	LOCATION	
1	12	ODI	5	0.26	12S	+0.66
1	13	ODI	14	0.35	11S	+0.68
1	14	ODI	18	0.41	12S	+0.66
6	11	ODI	15	0.22	03S	+0.69
6	26	ODI	13	0.37	08S	+0.57
6	34	ODI	12	0.37	07S	-0.99
11	24	ODI	13	0.42	08S	+0.70
11	60	ODI	6	0.57	12S	+0.68
16	5	ODI	17	0.38	07S	-0.80
16	35	ODI	10	0.31	07S	+0.64
21	60	ODI	16	0.30	04S	+0.70
26	6	ODI	16	0.26	08S	-0.82
31	9	ODI	8	0.17	07S	-0.71
31	32	ODI	16	1.61	10S	+0.60
41	115	ODI	6	0.39	02S	+0.66
61	1	ODI	17	0.29	06S	-0.76
70	5	ODI	12	0.49	07S	-0.77
71	128	ODI	12	0.69	10S	-0.67
		ODI	19	0.51	15S	-0.73
76	103	ODI	11	0.49	15S	+0.60
81	2	ODI	15	0.64	10S	-0.74

**TABLE 1A (continued)**  
**A OTSG**  
**Tubes with Bobbin Indications 1-19%TW (4S Sample)**

ROW	COL	IND	%TW	VOLTS	LOCATION	
81	4	ODI	17	0.32	10S	-0.71
81	7	ODI	12	0.27	10S	-0.81
81	20	ODI	10	0.35	09S	-0.78
81	21	ODI	12	0.48	10S	-0.74
81	26	ODI	17	0.52	10S	-0.75
81	30	ODI	11	0.66	10S	-0.79
81	34	ODI	18	0.49	10S	-0.75
81	42	ODI	7	0.52	10S	-0.75
81	53	ODI	6	0.56	08S	-0.77
		ODI	15	0.30	10S	-0.71
81	131	ODI	18	0.30	11S	-0.82
86	47	ODI	17	0.25	05S	-0.78
96	110	ODI	7	0.45	04S	+0.58
101	4	ODI	7	0.27	08S	-0.68
106	33	ODI	14	0.25	10S	-0.15
106	119	ODI	1	0.51	11S	+0.65
111	88	ODI	9	0.69	15S	-0.87
116	5	ODI	10	0.39	08S	+0.68



**TABLE 1A (continued)**  
**A OTSG**  
**Tubes with Bobbin Indications 1-19%TW (4S Sample)**

ROW	COL	IND	%TW	VOLTS	LOCATION	
116	6	ODI	15	0.39	07S	-1.04
121	3	ODI	10	0.43	08S	+0.68
121	41	ODI	16	0.65	05S	-0.82
126	1	ODI	10	0.40	08S	+0.74
126	91	ODI	16	0.44	08S	-0.79
126	92	ODI	11	0.65	07S	-0.77
131	84	ODI	3	0.54	07S	-0.80
146	5	ODI	13	0.56	09S	+0.58
146	51	ODI	16	0.32	10S	-0.74

**TABLE 2A**  
**A OTSG**  
**Tubes with Bobbin Indications 20-39%TW (1S Sample)**

ROW	TUBE	LOCATION	B.A.CODE	%TW	VOLTS
11	7	07S - 0.77	ODI	38	0.25
11	14	08S +0.70	ODI	37	0.46
		07S +0.67	ODI	38	0.30
21	78	12S +0.67	ODI	38	0.33
36	73	03S +0.68	ODI	26	0.75
66	128	08S - 0.78	ODI	23	0.35
71	130	10S +0.61	ODI	29	0.35
81	18	06S +0.69	ODI	23	0.30
86	114	15S - 0.89	ODI	32	0.49
88	51	09S - 0.82	ODI	20	0.30
101	7	07S - 0.76	ODI	22	0.29
106	18	07S - 0.81	ODI	23	0.20
121	28	05S - 0.86	ODI	34	0.34

**TABLE 2A (continued)**  
**A OTSG**  
**Tubes with Bobbin Indications 20-39%TW (2S Sample)**

ROW	TUBE	LOCATION	B.A.CODE	%TW	VOLTS
6	8	07S - 0.70	ODI	20	0.16
6	10	12S +0.59	ODI	34	0.64
8	28	08S +0.56	ODI	23	0.79
		07S +0.62	ODI	29	1.35
21	6	08S - 0.63	ODI	22	0.25
41	58	03S +0.73	ODI	36	0.65
56	3	10S +0.66	ODI	30	0.73
66	125	07S +0.58	ODI	38	0.43
66	130	12S - 0.86	ODI	26	0.39
71	129	09S +0.29	ODI	38	0.81
81	52	10S - 0.73	ODI	38	0.32
81	84	04S +0.67	ODI	37	0.34
81	107	15S - 0.99	ODI	30	0.43
81	130	09S +0.00	ODI	21	0.49
		11S +0.00	ODI	22	0.58
84	39	10S - 0.70	ODI	21	0.29
86	46	10S +0.70	ODI	23	0.47
91	29	01S - 0.75	ODI	32	0.46
116	1	08S - 0.63	ODI	24	0.62
116	21	05S - 0.77	ODI	22	0.16
136	10	08S - 0.77	ODI	30	0.33
		05S - 0.80	ODI	33	0.22
141	2	10S - 0.71	ODI	32	0.83

**TABLE 2A (continued)**  
**A OTSG**  
**Tubes with Bobbin Indications 20-39%TW (4S Sample)**

ROW	TUBE	LOCATION	B.A.CODE	%TW	VOLTS
1	11	12S +0.61	ODI	33	0.37
6	7	12S +0.67	ODI	22	0.42
11	1	12S +0.62	ODI	39	0.62
11	2	07S +0.77	ODI	28	0.53
11	32	08S +0.70	ODI	28	0.25
16	6	08S - 0.88	ODI	25	0.27
16	8	07S - 0.88	ODI	21	0.33
16	77	09S - 0.78	ODI	20	0.88
26	95	08S - 0.80	ODI	23	0.64
31	100	08S +0.68	ODI	27	0.42
41	116	11S - 0.85	ODI	22	1.05
46	24	03S +0.54	ODI	30	0.71
56	1	12S +0.64	ODI	35	0.63
61	5	07S - 0.76	ODI	23	0.45
		05S +0.70	ODI	34	0.26
61	110	14S +0.75	ODI	27	0.72
76	122	09S +0.60	ODI	37	0.85
76	123	09S +0.34	ODI	20	0.46
		11S +0.06	ODI	30	0.41
		10S +0.59	ODI	36	0.77
81	29	10S - 0.65	ODI	28	0.54
81	36	10S +0.69	ODI	37	0.35
81	51	08S - 0.83	ODI	26	0.47
81	55	08S - 0.91	ODI	36	0.33
82	94	04S +0.63	ODI	38	0.31

**TABLE 2A (continued)**  
**A OTSG**  
**Tubes with Bobbin Indications 20-39%TW (4S Sample)**

ROW	TUBE	LOCATION	B.A. CODE	%TW	VOLTS
86	52	10S - 0.67	ODI	25	0.31
86	76	07S +0.69	ODI	23	0.29
86	115	15S - 0.81	ODI	24	0.32
88	53	09S +0.70	ODI	28	1.02
96	1	10S - 0.70	ODI	21	0.54
101	79	04S +0.63	ODI	28	0.39
106	55	03S +0.17	ODI	28	0.38
106	89	04S +0.68	ODI	21	0.27
111	4	08S +0.73	ODI	21	0.26
111	48	05S - 0.78	ODI	25	0.33
146	22	07S - 0.75	ODI	34	0.64

**TABLE 3A**  
**A OTSG**  
**NON-QUANTIFIABLE INDICATIONS (1S Sample)**

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
11	7	12S +0.74	NQI	1.04
11	14	09S +0.76	NQI	0.28
31	59	11S +17.49	NQI	0.75
56	74	LTS +5.46	NQI	0.71
61	88	03S +30.23	NQI	0.31
		02S +30.28	NQI	0.32
		01S +19.56	NQI	0.38
		01S +20.03	NQI	0.43
		10S +8.76	NQI	0.58
		04S +9.55	NQI	0.79
66	71	11S +6.27	NQI	0.67
71	130	08S -0.78	NQI	0.35
76	67	02S +1.05	NQI	0.28
		03S -1.57	NQI	0.31
		14S +32.38	NQI	0.56
		02S +19.08	NQI	0.57

TABLE 3A (continued)  
A OTSG  
NON-QUANTIFIABLE INDICATIONS (1S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
		03S +16.66	NQI	0.60
		02S +34.94	NQI	0.67
81	37	10 S -0.77	NQI	0.36
106	83	09S +17.03	NQI	0.18
111	68	15S +10.17	NQI	0.76
121	1	08S +0.79	NQI	0.56
121	28	01S +0.71	NQI	0.21



### NON-QUANTIFIABLE INDICATIONS (1S Sample)

[illegible]



TABLE 3A (continued)  
 A OTSG  
 NON-QUANTIFIABLE INDICATIONS (2S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
141	57	15S +10.51	NQI	0.87
146	21	07S -0.73	NQI	0.43
6	39	08S +0.68	NQI	0.24
8	27	15S +14.73	NQI	0.58
		14S +15.73	NQI	0.61
		06S +12.02	NQI	0.61
		UTS +9.49	NQI	0.83
		15S +12.40	NQI	0.93
		07S -0.77	NQI	0.66
8	28	15S +27.79	NQI	0.34
		15S +26.45	NQI	0.44
		15S +28.49	NQI	0.49
		09S +0.48	NQI	0.89
11	58	12S +0.64	NQI	0.47
16	9	07S -0.60	NQI	0.27
16	78	15S -1.11	NQI	1.31

TABLE 3A (continued)  
 A OTSG  
 NON-QUANTIFIABLE INDICATIONS (2S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
21	11	05S +20.40	NQI	0.18
21	28	10S +0.71	NQI	0.27
26	70	12S +18.76	NQI	0.26
26	90	09S +26.40	NQI	0.25
		13S +16.68	NQI	0.39
		10S +14.75	NQI	0.52
		10S +24.11	NQI	0.55
		10S +33.93	NQI	0.74
		15S +40.08	NQI	0.79
		10S +6.11	NQI	0.80
		09S +36.03	NQI	0.80
		15S +20.95	NQI	0.97
26	92	14S +2.29	NQI	0.40
		15S +16.97	NQI	1.91
		09S -0.82	NQI	0.37
31	104	08S -0.80	NQI	0.31

TABLE 3A (continued)  
A OTSG  
NON-QUANTIFIABLE INDICATIONS (2S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
61	67	13S +30.51	NQI	0.58
61	68	09S +32.15	NQI	0.24
		07S +22.80	NQI	0.34
62	128	10S +0.00	NQI	1.27
71	47	11S +21.73 to +13.42	ADI	7.01
71	63	07S +16.02	NQI	0.88
71	129	15S +2.63	NQI	0.38
		10S +0.55	NQI	0.63
91	92	04S +0.66	NQI	0.31
96	73	03S +1.21	NQI	0.48
111	113	15S -0.85	NQI	0.6 <sup>7</sup>
121	37	08S +24.02	ADI	0.90
126	73	04S +27.38	NQI	0.24
131	70	02S +27.86	NQI	0.23
131	89	15.S +5.50	NQI	0.46

TABLE 3A (continued)  
 A OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
6	23	14S +19.67	NQI	1.04
6	26	11S +16.17	NQI	0.34
		09S +0.55	NQI	0.57
6	29	01S +1.67	NQI	0.35
10	33	01S +4.62	NQI	0.23
		10S +21.01	NQI	0.24
		13S +22.81	NQI	0.36
		13S +21.08	NQI	0.36
		15S +34.85	NQI	0.39
		01S +0.11	NQI	0.51
11	2	08S +0.67	NQI	0.19
		12S +0.65	NQI	0.27
11	64	12S +0.64	NQI	0.26
16	41	11S +16.13	NQI	0.55
16	47	01S +29.12	NQI	0.17
		05S +7.41	NQI	0.23

TABLE 3A (continued)  
 A OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
		08S +34.51	NQI	0.28
		10S +26.11	NQI	0.32
		01S +20.12	NQI	0.51
16	52	09S +32.23	NQI	0.23
21	1	11S +0.66	NQI	0.25
21	19	LTE +20.96	NQI	0.59
21	39	07S +33.64	NQI	0.38
		02S +35.20	NQI	1.31
21	54	13S +26.35	NQI	0.21
		13S +23.84	NQI	0.25
26	55	12S +2.58	NQI	0.26
36	78	05S +12.75	NQI	0.26
		06S +0.18	NQI	0.69
36	113	02S -0.85	NQI	0.55
41	15	15S +15.50	NQI	1.23
41	68	05S +9.85	NQI	0.49

TABLE 3A (continued)  
A OTSG  
NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
41	116	12S +0.64	NQI	0.77
46	74	05S +0.68	NQI	0.27
46	112	08S +0.64	NQI	0.50
51	30	06S +37.37	NQI	0.21
56	91	LTS -0.15	NQI	5.56
56	98	13S +32.77	NQI	3.18
56	118	LTE +2.32	NQI	2.14
66	1	10S -0.78	NQI	0.43
66	126	07S -0.75	NQI	0.41
71	90	11S +8.95	NQI	1.07
71	104	09S +37.02	NQI	0.56
71	108	01S +31.12	NQI	0.20
75	73	07S -0.80	NQI	0.37
81	2	11S -0.77	NQI	0.47
81	36	12S -0.69	NQI	0.43
81	48	10S -0.70	NQI	0.37

TABLE 3A (continued)  
 A OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
81	59	08S -0.79	NQI	0.30
81	71	09S -0.88	NQI	0.34
81	131	10S -0.82	NQI	0.34
83	1	10S -0.68	NQI	0.45
86	74	11S +16.01	NQI	0.57
86	96	15S +22.37	NQI	0.71
91	37	01S +27.86	NQI	0.77
91	121	03S +12.62	NQI	0.18
96	70	04S +0.67	NQI	0.48
96	78	02S +15.90	NQI	0.26
96	83	06S +3.04	NQI	0.40
		07S +1.79	NQI	0.53
101	72	15S +2.31	NQI	0.42
101	88	09S +29.46	NQI	0.18
		09S +25.81	NQI	0.19
101	122	09S -0.71	NQI	0.45



TABLE 3A (continued)  
 A OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
106	86	04S +0.68	NQI	0.37
111	98	02S +3.94	NQI	0.28
116	20	06S +0.67	NQI	0.36
116	62	13S +29.19	NQI	0.14
121	72	03S +37.97	NQI	0.72
126	22	09S +0.68	NQI	0.40
126	92	15S +10.80 to +16.26	NQI	1.63
136	49	10S +33.31	NQI	0.68
141	18	15S +36.79	NQI	0.22
146	25	15S +15.59	NQI	1.83



TABLE 4A  
TUBES PLUGGED, A OTSG

TUBE	LOCATION	REASON FOR PLUGGING
39-116	UTE - 1.77"	Axial Crack-like Indication in roll transition
6-29	01S + 1.80"	(1)
16-41	12S - 22.14"	(1)
16-47	5S + 7.46" 02S - 18.02"	(1)
21-39	03S - 3.82"	Administrative (2)
31-59	11S + 17.58"	Administrative (2)
41-15	15S + 15.50"	(1)
56-98	14S - 3.33"	Volumetric Indication in Ding
61-88	10S + 9.82" 4S + 9.68" 4S - 10.38"	(1)
71-47	12S - 12.80" 12S - 9.67" 12S - 15.45"	(1)
71-63	07S + 16.26"	(1)
71-90	11S + 8.51"	Administrative (2)
71-104	10S - 2.81"	(1)
73-12	UTS + 0.41"	(1)
76-67 Multiple Locations	02S + 19.50"	(1)
86-96	15S + 21.94"	(1)
91-37	02S - 9.88"	(1)
96-73	03S + 1.27"	(1)
96-78	02S + 16.62"	(1)
96-83	06S + 3.23"	Administrative (2)
111-68	15S + 10.28"	(1)
121-37	09S - 14.91"	(1)
121-72	04S - 2.01"	(1)
126-73	05S - 11.66"	(1)
141-57	15S + 10.94"	(1)

TABLE 4A (continued)

Notes:

- (1) This tube contained a shallow, outside diameter, volumetric indication. Since it was also detected during a previous inspection, there is a high probability that the indication is likely a manufacturer buff mark (MBM). However, the decision to plug was made prior to NRC clarification that continued use of the MBM analysis code, where justified by previous history and MRPC characterization, is acceptable. Additional review will be performed to determine whether or not this indication was an MBM and as such, was not truly representative of a defective tube.
- (2) RPC characterization during Refuel Outage 9 in 1994 documented this indication as an MBM. However, the decision to plug was made prior to NRC clarification that continued use of the MBM code is acceptable. As a previously confirmed MBM this tube could have remained in service and it is therefore, not considered a defective tube.

Table 5A  
A OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND NTW VOLTS CHN DEG LOCATION

6	23	NDF			14S	+19.67
6	26	NDD				
		NDD				
		NDF			11S	+16.17
		MSG		P 1	0 L x W	0.13 x 0.11
		WAR	9	1.31 P 1	0 09S	+0.73
6	29	MSG		1	0 L x W	0.19 x 0.14
		VOL		0.96 1	103 01S	+1.80
6	39	NDF			08S	+0.68
8	27	NDF			06S	+12.02
		NDF			14S	+15.73
		NDF			15S	+12.40
		NDF			15S	+14.73
		NDF			UTS	+9.49
		MSG		P 1	0 L x W	0.29 x 0.15
		WAR	11	1.03 P 1	0 07S	-0.60
8	28	NDF			UTS	-17.89
		NDF			UTS	-18.59
		NDF			UTS	-19.93
		MSG		P 1	0 L x W	0.25 x 0.17
		WAR	13	1.97 P 1	0 09S	+0.69
10	33	NDF			01S	+0.11
		NDF			01S	+4.62
		NDF			11S	-14.99
		NDF			14S	-12.91
		NDF			14S	-14.92
		NDF			UTS	-11.53
11	2	NDF			08S	+0.67
		MSG		P 1	0 L x W	0.13 x 0.09
		WAR	6	0.89 P 1	0 12S	+0.76
11	7	MSG		P 1	0 L x W	0.15 x 0.13
		WAR	11	1.55 P 1	0 12S	+0.69
11	14	MSG		P 1	0 L x W	0.17 x 0.14
		WAR	9	0.76 P 1	0 09S	+0.67
11	58	NDF			12S	+0.64
11	64	NDF			12S	+0.64
16	9	NDF			07S	-0.60
16	41	MSG		1	0 L x W	0.17 x 0.14
		VOL		0.91 1	68 12S	-22.14
16	47	NDF			02S	-8.88
		NDF			02S	-9.65
		NDF			09S	-4.49
		NDF			11S	-9.89
		MSG		1	0 L x W	0.23 x 0.22

Table 5A (continued)  
A OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND NTM VOLTS CHN DEG LOCATION

	MSG	1	0 L x W	0.26 x 0.23	
	VOL	1.00 1	145 05S	+7.46	
	VOL	1.17 1	91 02S	-18.02	
16	52 NDF		10S	-7.77	
16	78 NDF		15S	-1.11	
21	1 MSG	P 1	0 L x W	0.13 x 0.12	WAR
	WAR	7 0.97 P 1	0 11S	+0.80	
21	11 NDF		06S	-16.60	
21	19 NDF		LTS	-3.04	
21	28 NDF		10S	+0.71	
21	30 NDF		LTS	+3.80	
21	39 NDF		08S	-6.36	
	MSG	1	0 L x W	0.22 x 0.21	
	VOL	1.42 1	114 03S	-2.82	
21	54 NDF		14S	-9.65	
	NDF		14S	-12.16	
26	55 NDF		12S	+2.58	
26	70 NDF		12S	+18.76	
26	90 NDF		10S	+6.11	
	NDF		10S	+14.75	
	NDF		10S	+24.11	
	NDF		10S	+33.93	
	NDF		10S	-3.97	
	NDF		10S	-13.60	
	NDF		13S	+16.68	
	NDF		15S	+20.95	
	NDF		15S	+40.08	
26	92 NDF		09S	-0.82	
	NDF		14S	+2.29	
	NDF		15S	+16.97	
27	89 NDF		LTE	+5.09	
31	13 NDF		LTS	+11.62	
31	59 MSG	1	0 L x W	0.74 x 0.21	
	VOL	2.15 1	66 11S	+17.58	
31	104 NDF		08S	-0.08	
36	78 NDF		05S	+12.75	
	NDF		06S	+0.18	
36	113 NDF		02S	-0.85	
41	15 MSG	1	0 L x W	1.38 x 0.38	
	VOL	1.13 1	81 15S	+15.50	
41	68 NDF		05S	+9.85	
41	116 MSG	P 1	0 L x W	0.16 x 0.13	WAR
	WAR	9 0.72 P 1	0 12S	+0.68	
42	40 NDF		06S	+10.01	
46	74 NDF		05S	+0.68	

Table 5A (continued)  
A OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND RTW VOLTS CHN DEG LOCATION

46	112	MSG		P 1	0 L x W	0.28 x 0.16	WAR
	WAR	14	1.68	P 1	0 08S	+0.64	
51	30	NDF			07S	-1.63	
56	74	NDF			LTS	+5.46	
56	91	NDF			LTS	-0.15	
56	98	MSG		1	0 L x W	0.14 x 0.13	
	PID		5.80	2	20 14S	-3.33	
	SVI		2.13	1	83 14S	-3.33	
56	118	NDF			LTE	+2.32	
61	67	NDF			13S	+30.51	
61	68	NDF			07S	+22.80	
	NDF				09S	+32.15	
61	88	NDF			02S	-17.97	
	NDF				02S	-18.44	
	NDF				03S	-8.72	
	MSG			1	0 L x W	0.18 x 0.18	
	MSG			1	0 L x W	0.21 x 0.19	
	MSG			1	0 L x W	0.21 x 0.19	
	VOL		1.01	1	74 10S	+9.82	
	VOL		1.27	1	72 04S	+9.68	
	VOL		1.41	1	105 04S	-10.38	
62	128	MSG		P 1	0 L x W	1.49 x 0.19	WAR
	WAR	15	1.57	P 1	0 10S	-0.02	
66	1	NDF			10S	-0.78	
66	71	NDF			11S	+6.27	
66	126	MSG		P 1	0 L x W	0.27 x 0.18	WAR
	WAR	9	0.86	P 1	0 07S	-0.69	
71	47	MSG		1	0 L x W	1.82 x 0.55	
	MSG			1	0 L x W	1.96 x 0.46	
	MSG			1	0 L x W	2.05 x 0.49	
	VOL		3.94	1	85 12S	-12.80	
	VOL		3.99	1	100 12S	-9.67	
	VOL		4.62	1	99 12S	-15.45	
71	63	MSG		1	0 L x W	0.20 x 0.17	
	VOL		1.42	1	54 07S	+16.26	
71	90	MSG		1	0 L x W	0.39 x 0.31	
	VOL		1.22	1	71 11S	+8.51	
71	104	MSG		1	0 L x W	0.39 x 0.18	
	VOL		1.05	1	59 10S	-2.81	
71	108	NDF			02S	-6.88	
71	129	NDF			15S	+2.63	
	MSG			P 1	0 L x W	1.46 x 0.14	WAR
	WAR	9	0.89	P 1	0 10S	-0.01	
71	130	NDF			08S	-0.78	
75	73	MSG		P 1	0 L x W	0.14 x 0.11	WAR

Table 5A (continued)  
A OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND #TW VOLTS CHN DEG LOCATION

	WAR	9	0.90	P 1	0 07S	-0.78		
76	67	NDF			02S	+1.05		
		NDF			03S	-1.57		
	MSG		1		0 L x W	0.22 x 0.14		
	MSG		1		0 L x W	0.61 x 0.43		
	MSG		1		0 L x W	0.85 x 0.24		
	MSG		1		36 L x W	0.69 x 0.27		
	VOL		1.11	1	84 02S	+19.50		
	VOL		1.11	1	86 15S	-2.77		
	VOL		1.63	1	61 02S	+34.88		
	VOL		2.73	1	113 03S	+17.23		
81	2	NDF			11S	-0.77		
81	36	MSG		P 1	0 L x W	0.57 x 0.13	WAR	
	WAR	14	2.45	P 1	0 12S	-0.63		
81	37	NDF			10S	-0.77		
81	48	MSG		P 1	0 L x W	0.21 x 0.13	WAR	
	WAR	8	1.34	P 1	0 10S	-0.63		
81	59	NDF			08S	-0.79		
81	71	NDF			09S	-0.88		
81	131	NDF			10S	-0.82		
83	1	MSG		P 1	0 L x W	0.23 x 0.15	WAR	
	WAR	8	1.34	P 1	0 10S	-0.69		
86	74	NDF			11S	+16.01		
86	96	MSG		1	0 L x W	0.14 x 0.09		
	VOL		0.55	1	103 15S	+21.94		
91	37	MSG		1	0 L x W	0.47 x 0.19		
	VOL		1.26	1	109 02S	-9.88		
91	92	NDF			04S	+0.66		
91	121	NDF			03S	+12.62		
96	70	MSG		P 1	0 L x W	0.11 x 0.10	WAR	
	WAR	13	1.40	P 1	0 04S	+0.73		
96	73	MSG		1	0 L x W	0.23 x 0.09		
	VOL		1.09	1	38 03S	+1.27		
96	78	MSG		1	0 L x W	0.20 x 0.09		
	VOL		1.17	1	99 02S	+16.62		
96	83	NDF			07S	+1.79		
	MSG		1		0 L x W	0.13 x 0.09		
	VOL		0.56	1	112 04S	+3.23		
101	72	NDF			15S	+2.31		
101	88	NDF			10S	-10.54		
	NDF				10S	-14.19		
101	122	NDF			09S	-0.71		
106	83	NDF			09S	+17.03		
106	86	NDF			04S	+0.68		
109	72	VOL		3.77	1	102 04S	-21.85	MEM

Table 5A (continued)  
A OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW	TUBE	IND	RTW	VOLTS	CHI	DEG	LOCATION	EXTENT	LEG	PROBE	CAL	ANLST	COMMENTS
111	46	MSG		1			0 L x W	0.42	x	0.25			
		VOL		1.22	1		79 15S					+10.28	
111	98	NDF					02S					+3.94	
111	113	NDF					15S					-0.85	
113	68	VOL		2.47	1		172 06S					+18.92	MBM
116	20	NDF					06S					+0.67	
116	62	NDF					14S					-6.81	
121	1	NDF					08S					+0.79	
121	28	MSG				P 1	0 L x W	0.10	x	0.09			MAR
		MAR	5	0.83	P 1		0 01S					+0.69	
121	37	MSG				1	0 L x W	1.18	x	0.25			
		VOL		1.80	1		105 09S					-14.91	
121	72	MSG				1	0 L x W	2.05	x	0.27			
		VOL		2.16	1		115 04S					-2.01	
126	22	MSG				P 1	0 L x W	0.13	x	0.12			MAR
		MAR	9	1.53	P 1		0 09S					+0.74	
126	73	MSG				1	0 L x W	0.31	x	0.18			
		VOL		1.46	1		127 05S					-11.66	
126	92	NDF					15S					+10.88 to +1°	
131	70	NDF					03S					-11.14	
131	89	NDF					15C					+5.58	
136	49	NDF			3		11S					-4.69	
141	18	NDF					UTS					-9.58	
141	57	MSG				1	0 L x W	0.24	x	0.14			
		VOL		1.03	1		48 15S					+10.94	
144	21	MSG				P 1	0 L x W	0.26	x	0.17			MAR
		MAR	11	1.98	P 1		0 07S					-0.66	
146	25	NDF					15S					+15.59	

Total Indications Found = 208

Total Tubes Found = 104

**TABLE 1B**  
**B OTSG**  
**Tubes with Bobbin Indications 1-19%TW (1S Sample)**

ROW	COL	IND	%TW	VOLTS	LOCATION
36	57	ODI	5	0.63	09S - 0.84
56	58	ODI	19	0.24	04S +0.71
66	72	ODI	10	1.46	07S - 0.75
81	48	ODI	18	0.31	04S - 0.86
81	56	ODI	19	0.37	09S +0.62
82	118	ODI	16	0.39	10S +0.74
86	25	ODI	16	0.46	07S - 0.82
86	126	ODI	2	0.44	03S +0.45
116	48	ODI	11	0.32	07S - 0.78
121	63	ODI	4	0.56	07S - 0.80
126	53	ODI	9	0.72	07S - 0.83
126	64	ODI	16	0.58	07S - 0.80
126	68	ODI	4	0.44	07S - 0.83
131	58	ODI	10	0.64	07S -0.77
131	67	ODI	3	0.60	07S -0.77
141	41	ODI	19	0.28	14S - 0.81
141	57	ODI	15	0.65	07S - 0.86
151	3	ODI	9	0.48	10S -0.08



**TABLE 1B (continued)**  
**B OTSG**  
**Tubes with Bobbin Indications 1-19%TW (2S Sample)**

ROW	COL	IND	%TW	VOLTS	LOCATION	
1	15	ODI	3	0.39	09S	+0.64
6	39	ODI	8	0.69	08S	+0.71
31	44	ODI	14	0.23	03S	- 0.70
36	71	ODI	3	0.39	07S	- 0.83
41	38	ODI	5	1.13	09S	- 0.74
56	78	ODI	3	0.55	01S	- 0.77
61	66	ODI	14	0.72	07S	- 0.80
71	48	ODI	13	0.74	09S	+0.57
71	62	ODI	2	0.57	09S	+0.68
76	119	ODI	5	0.57	08S	+0.62
81	59	ODI	12	0.19	05S	- 0.84
81	65	ODI	16	0.84	10S	- 0.72
81	122	ODI	8	0.92	07S	- 0.71
86	108	ODI	14	0.35	06S	- 0.79
86	112	ODI	5	0.38	02S	- 0.81
86	125	ODI	19	0.48	07S	+0.00
106	38	ODI	11	0.84	07S	- 0.87
106	118	ODI	13	0.51	08S	- 0.71
116	80	ODI	3	0.63	07S	- 0.83
121	48	ODI	8	0.41	07S	- 0.87
121	64	ODI	10	0.49	07S	- 0.75
126	42	ODI	14	0.36	03S	- 0.82
126	66	ODI	19	0.52	07S	- 0.80

**TABLE 1B (continued)**  
**B OTSG**  
**Tubes with Bobbin Indications 1-19%TW (2S Sample)**

ROW	COL	IND	%TW	VOLTS	LOCATION	
129	40	ODI	5	0.47	07S	-0.84
131	50	ODI	19	0.80	07S	- 0.79
131	81	ODI	14	0.42	13S	- 0.76
131	82	ODI	11	0.53	13S	- 0.80
131	83	ODI	8	0.54	10S	- 0.85
136	13	ODI	1	0.87	15S	- 0.79
136	42	ODI	8	0.30	07S	- 0.81
136	49	ODI	15	0.76	07S	- 0.77
136	79	ODI	4	0.50	13S	- 0.79
146	16	ODI	6	0.42	07S	- 0.80
146	18	ODI	1	0.49	07S	- 0.79
146	19	ODI	5	0.63	07S	- 0.77
151	1	ODI	9	0.43	10S	- 0.75
151	4	ODI	19	0.38	10S	- 0.73
151	13	ODI	2	0.61	10S	+0.62
		ODI	15	0.46	13S	+0.54
		ODI	16	0.96	10S	- 0.76

**TABLE 1B (continued)**  
**B OTSG**  
**Tubes with Bobbin Indications 1-19%TW (4S Sample)**

ROW	COL	IND	%TW	VOLTS	LOCATION	
2	27	ODI	14	0.63	09S	+0.57
6	44	ODI	15	0.54	07S	- 0.82
6	47	ODI	13	0.51	08S	+0.66
6	49	ODI	13	0.44	09S	- 0.82
6	50	ODI	8	0.56	10S	- 0.85
7	20	ODI	14	1.14	07S	+ 0.57
16	34	ODI	7	0.28	04S	- 0.67
23	86	ODI	19	1.04	07S	+0.60
36	9	ODI	5	0.55	09S	- 0.81
36	12	ODI	4	0.47	08S	- 0.76
36	64	ODI	5	0.48	03S	- 0.74
41	62	ODI	14	0.38	03S	- 0.69
41	101	ODI	15	0.31	06S	- 0.80
51	78	ODI	5	0.42	03S	-0.78
56	21	ODI	3	0.70	05S	- 1.06
56	122	ODI	9	0.92	07S	- 0.81
61	26	ODI	5	0.93	06S	- 0.91
66	37	ODI	17	1.20	09S	- 0.73
66	57	ODI	12	0.33	07S	- 0.78
66	106	ODI	7	0.58	07S	- 0.82
71	55	ODI	14	0.77	09S	- 0.82
81	12	ODI	14	0.51	09S	-0.63
81	16	ODI	7	0.85	09S	- 0.66

**TABLE 1 B (continued)**  
**B OTSG**  
**Tubes with Bobbin Indications 1-19%TW (4S Sample)**

ROW	COL	IND	%TW	VOLTS	LOCATION	
81	49	ODI	6	0.48	09S	+0.74
81	64	ODI	18	1.23	10S	- 0.66
81	126	ODI	7	0.69	08S	+0.63
81	127	ODI	15	0.31	07S	- 0.77
82	2	ODI	9	0.30	12S	- 0.79
86	110	ODI	3	0.26	05S	- 0.84
86	124	ODI	6	0.96	08S	+0.66
91	1	ODI	17	0.38	13S	- 0.94
96	125	ODI	11	0.48	09S	+0.65
97	5	ODI	2	0.91	07S	+0.64
100	5	ODI	12	0.64	07S	-0.11
		ODI	12	0.96	09S	+0.56
111	111	ODI	10	0.34	07S	- 0.77
111	114	ODI	10	0.34	09S	+0.63
116	5	ODI	11	0.41	07S	- 0.10
116	39	ODI	8	0.54	03S	- 0.72
116	58	ODI	13	0.30	03S	- 0.81
116	107	ODI	7	0.42	08S	+0.71
116	111	ODI	19	0.44	10S	- 0.74
121	38	ODI	9	0.62	07S	- 0.79

**TABLE 1B (continued)**  
**B OTSG**  
**Tubes with Bobbin Indications 1-19%TW (4S Sample)**

ROW	COL	IND	%TW	VOLTS	LOCATION
121	91	ODI	4	0.35	07S - 0.85
121	103	ODI	3	0.39	09S - 0.76
126	44	ODI	1	0.42	03S - 0.79
126	62	ODI	17	0.46	07S - 0.79
131	57	ODI	11	0.19	07S - 0.91
131	66	ODI	13	0.46	07S - 0.82
131	90	ODI	9	0.42	10S - 0.65
136	32	ODI	17	1.25	07S - 0.79
136	34	ODI	17	0.38	07S - 0.85
141	1	ODI	11	0.30	10S - 0.60
141	29	ODI	11	0.89	13S -0.85
141	42	ODI	19	0.46	07S - 0.79
146	11	ODI	8	0.40	07S - 0.08
146	17	ODI	12	0.59	07S - 0.87
146	48	ODI	9	0.60	10S - 0.73
151	8	ODI	4	0.25	07S - 0.73
		ODI	19	0.35	10S - 0.84
151	12	ODI	8	0.67	10S - 0.75
151	15	ODI	5	0.62	10S - 0.75
		ODI	17	0.69	10S +0.64

**TABLE 2B**  
**B OTSG**  
**Tubes with Bobbin Indications 20-39%TW (1S Sample)**

ROW	TUBE	LOCATION	B.A.CODE	%TW	VOLTS
1	14	09S +0.69	ODI	38	0.35
16	38	07S - 0.83	ODI	34	0.51
41	56	03S - 0.76	ODI	33	0.45
46	71	03S - 0.78	ODI	28	0.54
66	111	05S +0.68	ODI	26	0.84
71	72	07S +0.67	ODI	38	0.20
76	68	07S - 0.77	ODI	33	0.77
76	100	02S - 0.66	ODI	35	0.52
91	119	07S - 0.83	ODI	20	0.38
136	1	10S +0.66	ODI	21	0.76
136	15	15S - 0.86	ODI	31	0.43

**TABLE 2B (continued)**  
**B OTSG**  
**Tubes with Bobbin Indications 20-39%TW (2S Sample)**

ROW	TUBE	LOCATION	B.A.CODE	%TW	VOLTS
7	30	07S - 0.85	ODI	34	0.69
		08S +0.65	ODI	39	1.22
26	9	09S +0.50	ODI	24	0.58
27	94	08S +0.51	ODI	23	0.91
31	7	08S - 0.80	ODI	30	0.58
36	19	03S - 0.73	ODI	24	0.39
		09S - 0.78	ODI	24	0.65
36	92	03S - 0.78	ODI	25	0.63
41	7	07S +0.64	ODI	32	0.31
46	67	07S - 0.72	ODI	32	0.77
51	6	09S - 0.79	ODI	27	0.41
56	57	07S - 0.83	ODI	26	0.23
61	124	09S +0.62	ODI	22	0.34
66	126	04S +0.69	ODI	20	1.38
71	38	07S - 0.79	ODI	36	1.07
71	59	09S +0.72	ODI	35	0.45
		08S - 0.71	ODI	37	0.23
71	60	09S - 0.71	ODI	25	0.35



**TABLE 2B(continued)**  
**B OTSG**  
**Tubes with Bobbin Indications 20-39%TW (2S Sample)**

ROW	TUBE	LOCATION	B.A.CODE	%TW	VOLTS
81	121	07S - 0.83	ODI	22	0.54
82	117	14S - 0.81	ODI	23	0.40
86	7	09S +0.57	ODI	37	0.51
86	53	07S -0.87	ODI	29	0.87
86	80	04S - 0.72	ODI	32	0.16
86	123	12S - 0.72	ODI	21	0.38
96	70	07S - 0.80	ODI	20	0.78
101	10	07S - 0.11	ODI	39	0.42
105	122	07S - 0.80	ODI	21	0.42
106	92	03S - 0.75	ODI	30	0.34
116	49	07S - 0.80	ODI	38	1.25
121	49	07S - 0.78	ODI	20	0.47
121	56	14S - 0.69	ODI	23	0.47
136	55	03S - 0.72	ODI	21	0.55
136	79	07S - 0.75	ODI	23	0.39
		10S - 0.75	ODI	34	0.38
146	26	09S - 0.79	ODI	23	0.99
		07S +0.73	ODI	28	0.48
		08S - 0.76	ODI	37	1.11
146	51	07S +0.96	ODI	35	1.37
151	2	10S - 0.76	ODI	21	0.53

**TABLE 2B (continued)**  
**B OTSG**  
**Tubes with Bobbin Indications 20-39%TW (4S Sample)**

ROW	TUBE	LOCATION	B.A.CODE	%TW	VOLTS
2	27	10S - 0.71	ODI	30	0.55
6	46	08S - 0.85	ODI	31	0.90
8	31	09S - 0.85	ODI	20	0.42
11	59	09S +0.65	ODI	38	0.76
21	38	09S - 0.79	ODI	27	0.62
21	40	09S - 0.78	ODI	30	0.58
26	23	03S - 0.77	ODI	33	0.47
31	8	07S +0.65	ODI	32	0.41
31	42	09S - 0.83	ODI	39	0.95
31	45	09S - 0.83	ODI	20	0.31
31	58	03S -0.73	ODI	22	0.48
36	47	07S - 0.86	ODI	25	0.75
41	11	08S - 0.70	ODI	38	0.49
46	12	03S - 0.77	ODI	39	0.51
51	37	09S - 0.76	ODI	24	0.80
51	50	07S - 0.76	ODI	23	0.35

**TABLE 2B (continued)**  
**B OTSG**  
**Tubes with Bobbin Indications 20-39%TW (4S Sample)**

ROW	TUBE	LOCATION	B.A.CODE	%TW	VOLTS
66	5	09S - 0.76	ODI	26	0.59
66	58	07S - 0.65	ODI	34	0.84
71	49	09S +0.70	ODI	34	0.50
71	51	09S +0.73	ODI	28	0.67
71	57	09S +0.70	ODI	31	0.32
71	71	06S +0.75	ODI	22	0.18
		08S - 0.64	ODI	27	0.37
71	111	05S +0.63	ODI	28	0.43
76	64	07S - 0.62	ODI	32	1.61
76	101	13S - 0.80	ODI	26	0.48
76	120	05S - 0.80	ODI	26	0.33
		09S - 0.78	ODI	33	0.59
86	6	09S +0.00	ODI	30	0.93
86	115	07S - 0.81	ODI	21	0.41
91	87	03S - 0.80	ODI	24	0.45
96	66	07S - 0.84	ODI	28	1.09
106	61	07S - 0.81	ODI	29	1.53
106	97	02S - 0.78	ODI	39	0.60

**TABLE 2B (continued)**  
**B OTSG**  
**Tubes with Bobbin Indications 20-39%TW (4S Sample)**

ROW	TUBE	LOCATION	B.A.CODE	%TW	VOLTS
111	71	03S - 0.80	ODI	33	0.59
116	50	07S - 0.84	ODI	37	0.68
116	52	07S - 0.80	ODI	31	0.37
116	81	07S - 0.74	ODI	28	0.48
121	45	07S - 0.75	ODI	38	0.92
121	68	07S - 0.75	ODI	28	0.71
121	78	03S - 0.63	ODI	36	0.85
121	104	10S - 0.81	ODI	29	0.39
126	13	07S - 0.82	ODI	24	0.39
126	43	07S - 0.75	ODI	20	0.42
126	44	02S - 0.95	ODI	24	0.26
136	45	07S - 0.80	ODI	29	1.48
141	39	07S - 0.88	ODI	27	0.51
141	49	07S - 0.87	ODI	24	0.47
146	14	07S - 0.76	ODI	30	1.52
146	30	07S - 0.11	ODI	35	0.50
146	49	10S - 0.74	ODI	26	0.49
151	5	10S - 0.73	ODI	28	0.34
151	10	10S - 0.79	ODI	39	0.40

**TABLE 3B**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (1S Sample)**

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
7	19	08S	-0.79	NQI	0.50
46	44	LTS	+14.39	NQI	0.72
		LTS	+5.82	NQI	0.79
		LTS	+8.45	NQI	0.81
		LTS	+6.50	NQI	0.84
		LTS	+10.12	NQI	1.06
46	79	09S	- 1.44	NQI	0.19
		08S	+37.22	NQI	0.25
51	48	LTS	+9.22	NQI	0.75
		LTS	+6.72	NQI	0.86
		07S	- 0.93	NQI	0.53
51	83	05S	- 0.75	NQI	0.21
56	51	LTS	+8.14	NQI	0.74
61	28	07S	- 0.76	NQI	0.41
61	42	07S	- 0.88	NQI	1.04
81	128	07S	- 0.80	NQI	0.28

**TABLE 3B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (1S Sample)**

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
85	72	06S - 0.77	NQI	0.38
86	126	07S +0.00	NQI	0.47
		07S +0.66	NQI	0.60
91	6	09S +0.64	NQI	0.71
91	7	09S +0.60	NQI	0.53
91	42	10S - 0.66	NQI	0.34
91	122	12S +4.25	NQI	0.28
96	4	09S +0.64	NQI	0.67
96	29	LTS +26.57	NQI	0.77
116	35	07S - 0.78	NQI	0.76
116	74	02S +35.89	NQI	0.20
126	2	10S +0.64	NQI	0.41
126	11	UTS +21.34	NQI	0.77
136	25	07S - 0.80	NQI	0.36

**TABLE 3B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (1S Sample)**

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
41	45	LTS	+9.15	BVT	0.30
		LTS	+6.00	BVT	0.39
		LTS	+13.28	BVT	0.46
46	44	LTS	+11.93	BVT	0.23
		LTS	+15.55	BVT	0.27
		LTS	+11.31	BVT	0.40
		LTS	+13.09	BVT	0.53
		LTS	+7.29	BVT	0.55
		LTS	+24.17	BVT	0.67
51	48	LTS	+7.26	BVT	0.29
		LTS	+6.25	BVT	0.31
		LTS	+12.07	BVT	0.41
		LTS	+7.98	BVT	0.43
		LTS	+10.98	BVT	0.59
56	42	LTS	+11.16	BVT	0.53
		LTS	+11.19	BVT	0.59



**TABLE 3B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (1S Sample)**

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
56	51	LTS	+8.55	BVT	0.21
		LTS	+5.54	BVT	0.25
		LTS	+13.79	BVT	0.28
		LTS	+7.61	BVT	0.36
		LTS	+10.45	BVT	0.46
		LTS	+12.64	BVT	0.57
61	82	LTS	+8.34	BVT	0.38
81	94	LTS	+17.52	BVT	0.33
86	35	LTS	+13.81	BVT	0.22
		LTS	+12.15	BVT	0.42
		LTS	+13.43	BVT	0.53
91	37	LTS	+12.11	BVT	0.30
		LTS	+10.53	BVT	0.52
96	29	LTS	+13.32	BVT	0.21
		LTS	+9.93	BVT	0.28
		LTS	+6.84	BVT	0.29

**TABLE 3B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (1S Sample)**

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
		LTS	+7.55	BVT	0.30
		LTS	+11.36	BVT	0.35
96	30	LTS	+7.66	BVT	0.23
		LTS	+11.97	BVT	0.36
		LTS	+8.12	BVT	0.53
101	32	LTS	+13.70	BVT	0.50
116	44	LTS	+16.18	BVT	0.41
		LTS	+12.31	BVT	0.51

**TABLE 3 B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (2S Sample)**

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
6	7	07S -0.71	NQI	0.41
7	30	08S - 0.82	NQI	0.65
		04S -1.02	NQI	0.71
		09S -0.96	NQI	1.46
		15S +10.81	ADI	1.24
16	6	09S -0.97	NQI	0.65
16	77	09S +0.68	NQI	0.89
26	9	09S +2.68	NQI	0.30
		11S +11.44	NQI	0.40
		10S +9.57	NQI	0.57
27	94	08S +8.88	NQI	0.33
		07S +29.79	NQI	0.34
		08S +9.79	NQI	0.42
		11S +9.42	NQI	0.46
		14S +13.61	NQI	0.58
		10S +17.72	NQI	0.60

**TABLE 3 B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (2S Sample)**

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
		14S +25.97	NQI	0.62
		10S +7.27	NQI	0.67
		11S +19.31	NQI	0.67
		12S +10.49	NQI	0.68
		11S +10.36	NQI	0.73
		13S +13.24	NQI	0.75
		11S +29.43	NQI	0.82
		12S +20.06	NQI	0.89
		13S +2.85	NQI	0.95
		12S +11.22	NQI	0.96
		09S +0.64	NQI	0.53
31	5	03S - 0.79	NQI	0.68
31	52	14S +13.63	NQI	0.41
36	67	13S +32.85	NQI	0.16
		13S +32.05	NQI	0.29
37	41	LTS +7.09	NQI	0.75

**TABLE 3B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (2S Sample)**

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
41	24	03S +7.61	NQI	0.97
46	37	LTS +11.06	NQI	0.74
		LTS +8.04	NQI	0.84
		LTS +6.52	NQI	0.89
		LTS +10.70	NQI	1.06
50	35	LTS +9.15	NQI	1.33
51	105	LTS - 1.33	NQI	0.52
56	41	03S +3.31	NQI	0.56
56	97	01S +0.76	NQI	0.54
59	13	LTS - 1.40	NQI	0.82
59	39	03S - 0.84	NQI	0.41
61	27	09S - 0.79	NQI	0.70
61	54	06S +0.70	NQI	0.17
61	122	10S +5.90	ADI	0.59
71	26	07S +0.59	NQI	0.33
71	42	09S +0.77	NQI	0.60

**TABLE 3 B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (2S Sample)**

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
71	78	15S +0.86	NQI	0.25
71	96	05S +26.03	NQI	0.19
71	114	14S +4.87	NQI	0.17
81	60	14S +25.87	NQI	0.15
81	125	03S - 0.57	NQI	0.45
86	53	09S - 0.82	NQI	0.49
86	85	06S - 0.90	NQI	0.27
96	51	06S +0.65	NQI	0.70
96	67	06S +0.63	NQI	0.33
101	37	LTS +17.59	NQI	0.79
101	41	LTS +15.10	NQI	0.88
111	63	08S +32.18	NQI	0.18
116	70	03S +35.29	ADI	1.08
116	26	15S - 0.93	NQI	0.49
136	3	10S +0.56	NQI	0.88
141	4	10S +0.64	NQI	0.45
141	61	05S +0.34	NQI	0.34

**TABLE 3B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (2S Sample)**

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
31	37	LTS	+24.17	BVT	0.41
		LTS	+22.53	BVT	0.49
36	44	LTS	+7.84	BVT	0.54
37	41	LTS	+29.30	BVT	0.31
		LTS	+10.17	BVT	0.33
		LTS	+22.54	BVT	0.50
		LTS	+11.79	BVT	0.51
41	72	LTS	+9.37	BVT	0.13
46	37	LTS	+5.36	BVT	0.40
		LTS	+8.74	BVT	0.55
46	46	LTS	+12.02	BVT	0.29
		LTS	+11.30	BVT	0.29
		LTS	+15.73	BVT	0.55
		LTS	+8.45	BVT	0.56
		LTS	+13.03	BVT	0.56
46	49	LTS	+14.26	BVT	0.27



**TABLE 3B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (2S Sample)**

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
5	35	LTS	+13.65	BVT	0.19
		LTS	+10.51	BVT	0.29
		LTS	+9.55	BVT	0.32
		LTS	+12.66	BVT	0.35
		LTS	+12.15	BVT	0.38
		LTS	+10.99	BVT	0.57
		LTS	+16.70	BVT	0.58
51	79	LTS	+9.93	BVT	0.23
		LTS	+13.65	BVT	0.44
59	39	LTS	+15.80	BVT	0.29
		LTS	+12.73	BVT	0.48
		LTS	+11.29	BVT	0.50
61	38	LTS	+9.38	BVT	0.44
81	96	LTS	+12.26	BVT	0.65
82	95	LTS	+10.16	BVT	0.15
		LTS	+11.05	BVT	0.20

**TABLE 3B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (2S Sample)**

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
		LTS	+13.59	BVT	0.29
		LTS	+7.28	BVT	0.59
85	98	LTS	+9.65	BVT	0.30
86	24	LTS	+12.77	BVT	0.42
86	99	LTS	+9.27	BVT	0.28
96	39	LTS	+16.25	BVT	0.26
		LTS	+16.29	BVT	0.29
		LTS	+7.67	BVT	0.29
		LTS	+7.67	BVT	0.29
		LTS	+14.83	BVT	0.41
		LTS	+14.84	BVT	0.44
96	40	LTS	+13.18	BVT	0.23
		LTS	+10.22	BVT	0.25
96	41	LTS	+11.94	BVT	0.52
96	45	LTS	+12.10	BVT	0.37
96	47	LTS	+14.35	BVT	0.31

**TABLE 3B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (2S Sample)**

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
101	37	LTS	+18.25	BVT	0.36
		LTS	+11.47	BVT	0.54
101	41	LTS	+16.27	BVT	0.43
		LTS	+11.96	BVT	0.48
101	42	LTS	+17.37	BVT	0.21
		LTS	+6.73	BVT	0.37
106	35	LTS	+11.35	BVT	0.27
		LTS	+8.58	BVT	0.32
		LTS	+10.79	BVT	0.34
		LTS	+8.81	BVT	0.40
		LTS	+6.44	BVT	0.41
106	47	LTS	+14.96	BVT	0.30
		LTS	+14.31	BVT	0.48
		LTS	+9.64	BVT	0.54
111	41	LTS	+7.32	BVT	0.17
		LTS	+14.93	BVT	0.21

**TABLE 3B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (2S Sample)**

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TURE	ELEV.			
		LTS	+12.40	BVT	0.22
		LTS	+13.98	BVT	0.30
		LTS	+10.34	BVT	0.31
		LTS	+6.68	BVT	0.32
		LTS	+8.28	BVT	0.43
		LTS	+10.57	BVT	0.48
		LTS	+8.92	BVT	0.68
111	43	LTS	+25.08	BVT	0.21
		LTS	+26.38	BVT	0.41
116	41	LTS	+8.75	BVT	0.27
116	43	LTS	+5.82	BVT	0.16
		LTS	+9.11	BVT	0.25
		LTS	+6.28	BVT	0.32
		LTS		BVT	
		LTS		BVT	
		LTS		BVT	

**TABLE 3B (continued)**  
**B OTSG**  
**NON-QUANTIFIABLE INDICATIONS (4S Sample)**

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
1	5	10S - 0.14	NQI	0.28
6	12	08S - 0.14	NQI	0.51
6	26	09S - 0.77	NQI	0.44
6	44	09S - 0.89	NQI	0.81
		09S - 0.89	NQI	0.81
11	2	10S - 0.75	NQI	0.49
11	9	08S - 0.75	NQI	0.38
16	66	15S +14.75 TO 28.92	ADI	1.30
		13S +23.28 TO +23.32	ADI	1.95
16	75	08S +0.66	NQI	0.61
21	40	07S - 0.98	NQI	0.35
23	68	LTE +11.61	NQI	3.02
21	85	02S +14.73	NQI	0.20
26	26	03S - 0.77	NQI	0.43
26	39	03S - 0.79	NQI	0.18
26	94	07S +0.63	NQI	0.91
31	70	12S +30.14	NQI	0.45

TABLE 3B (continued)  
 B OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
36	8	08S - 0.73	NQI	0.31
36	40	LTS +6.91	NQI	0.71
		LTS +21.35	NQI	0.74
		LTS +23.18	NQI	0.90
41	47	LTS +9.44	NQI	0.87
46	8	09S +0.56	NQI	0.27
46	39	09S - 0.77	NQI	0.56
46	55	03S - 0.89	NQI	0.46
46	74	14S +23.09	NQI	0.27
46	83	LTS +2.48	NQI	4.66
46	111	06S +17.97	NQI	0.29
51	17	07S - 0.69	NQI	0.33
51	33	09S - 0.67	NQI	0.36
51	49	LTS +7.36	NQI	0.85
53	124	09S - 0.87	NQI	0.39
56	28	11S +31.13	NQI	0.63

TABLE 3B (continued)  
 B OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
56	39	07S - 0.75	NQI	0.80
56	44	LTS +6.03	NQI	0.78
		LTS +6.62	NQI	0.86
		LTS +8.42	NQI	0.93
56	50	LTS +7.89	NQI	0.72
		LTS +12.14	NQI	0.83
56	80	05S +22.86	NQI	0.41
56	85	07S +27.55	NQI	0.21
56	127	07S - 0.73	NQI	0.38
57	52	LTS +7.27	NQI	0.73
58	38	LTS +14.78	NQI	0.70
		LTS 10.02	NQI	0.85
		LTS 12.35	NQI	1.21
		LTS +9.49	NQI	1.35
		LTS +7.42	NQI	1.67
61	26	06S - 0.74	NQI	0.73
61	44	03S - 0.75	NQI	0.44



TABLE 3B (continued)  
B OTSG  
NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
61	50	07S - 0.75	NQI	0.54
61	72	01S +30.55	NQI	0.28
65	28	LTS +10.33	NQI	0.74
66	28	LTS +8.73	NQI	0.79
71	43	09S +0.70	NQI	0.56
71	51	03S - 0.78	NQI	0.74
71	54	09S +0.63	NQI	0.40
71	55	07S - 0.75	NQI	0.77
76	103	04S +0.51	NQI	0.36
76	120	07S - 0.75	NQI	0.45
76	121	08S +0.62	NQI	0.31
78	52	03S - 0.78	NQI	0.53
81	62	09S +0.77	NQI	0.43
81	78	05S +0.67	NQI	0.28
88	6	01S +26.09	NQI	0.58
91	71	06S +33.26	NQI	0.43

TABLE 3B (continued)  
 B OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
91	126	07S - 0.74	NQI	0.27
96	28	09S - 0.80	NQI	1.34
96	116	15S +16.90	NQI	0.32
		15S +24.87	NQI	0.61
101	1	03S - 0.80	NQI	0.35
101	6	09S +0.74	NQI	0.33
101	7	04S +27.12	NQI	0.47
101	24	09S - 0.85	NQI	0.71
101	31	LTS +11.98	NQI	0.75
		LTS +12.46	NQI	0.78
101	35	07S - 0.78	NQI	0.42
101	74	07S +8.63	NQI	0.67
101	91	LTS +8.96	NQI	0.89
101	93	LTS +5.31	NQI	0.72
		LTS +7.49	NQI	0.80
111	17	UTS +2.90	NQI	0.29

TABLE 3B (continued)  
 B OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
111	66	07S - 0.78	NQI	0.70
111	71	07S - 0.78	NQI	0.45
111	74	07S +20.86	NQI	0.38
114	26	UTS +4.10	NQI	0.21
116	34	UTS +2.96	NQI	0.45
116	50	08S +21.01	NQI	0.59
		08S +28.88	NQI	0.75
		09S +14.29	NQI	0.83
		08S +19.31	NQI	0.37
		09S +3.70	NQI	0.45
116	61	07S - 0.83	NQI	0.33
116	75	03S - 0.73	NQI	0.22
116	97	10S +2.28	NQI	0.16
122	21	LTE +16.97	NQI	0.60
126	8	14S +27.04	NQI	0.67
126	59	12S +3.51	NQI	0.17

TABLE 3B (continued)  
B OTSG  
NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION			BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.		
126	76	15S +32.81	NQI	0.22
126	98	15S +32.94	NQI	0.15
		06S +19.30	NQI	0.17
131	23	UTS +3.52	NQI	0.51
131	31	UTS +17.56	NQI	0.94
136	28	07S - 0.85	NQI	0.29
141	20	12S +12.54	NQI	0.23
141	26	07S - 0.84	NQI	0.27
151	15	07S +1.11	NQI	0.26
151	16	10S +10.43	NQI	0.23
		07S +1.01	NQI	0.21

TABLE 3B (continued)  
B OTSG  
NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
6	35	LTS	+8.58	BVT	0.16
26	71	LTS	+2.91	BVT	0.63
36	39	LTS	+15.30	BVT	0.22
		LTS	+9.50	BVT	0.29
		LTS	+6.36	BVT	0.43
36	40	LTS	+29.98	BVT	0.25
		LTS	+8.66	BVT	0.33
		LTS	+9.84	BVT	0.34
		LTS	+30.38	BVT	0.37
		LTS	+25.13	BVT	0.42
		LTS	+8.19	BVT	0.44
		LTS	+26.17	BVT	0.51
		LTS	+10.46	BVT	0.53
		LTS	+28.46	BVT	0.61
		LTS	+26.65	BVT	0.66
37	93	LTS	+6.36	BVT	0.68

TABLE 3B (continued)  
B OTSC  
NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
41	47	LTS	+9.13	BVT	0.31
		LTS	+14.18	BVT	0.57
46	41	LTS	+8.57	BVT	0.48
46	75	LTS	+10.79	BVT	0.11
		LTS	+7.76	BVT	0.16
		LTS	+10.54	BVT	0.17
47	34	LTS	+9.98	BVT	0.36
51	34	LTS	+8.03	BVT	0.30
		LTS	+5.49	BVT	0.54
51	35	LTS	+8.24	BVT	0.33
51	42	LTS	+16.38	BVT	0.27
		LTS	+7.93	BVT	0.47
51	47	LTS	+9.48	BVT	0.16
51	49	LTS	+16.41	BVT	0.29
		LTS	+12.29	BVT	0.36
		LTS	+11.12	BVT	0.43
		LTS	+11.65	BVT	0.46

TABLE 3B (continued)  
 B OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
		LTS	+7.64	BVT	0.58
		LTS	+14.45	BVT	0.61
51	55	LTS	+7.67	BVT	0.33
51	65	LTS	+8.07	BVT	0.25
51	80	LTS	+8.68	BVT	0.29
56	28	LTS	+7.26	BVT	0.17
56	31	LTS	+7.72	BVT	0.20
56	32	LTS	+7.76	BVT	0.28
		LTS	+12.06	BVT	0.35
		LTS	+8.56	BVT	0.59
56	35	LTS	+8.40	BVT	0.46
56	44	LTS	+8.95	BVT	0.44
		LTS	+12.38	BVT	0.63
		LTS	+7.55	BVT	0.64
		LTS	+9.77	BVT	0.69
		LTS	+11.20	BVT	0.69
56	49	LTS	+9.41	BVT	0.37



TABLE 3B (continued)  
 B OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
56	50	LTS	+9.48	BVT	0.26
		LTS	+13.39	BVT	0.30
		LTS	+9.70	BVT	0.33
		LTS	+13.93	BVT	0.39
		LTS	+15.10	BVT	0.43
		LTS	+6.18	BVT	0.45
		LTS	+10.57	BVT	0.50
56	53	LTS	+11.18	BVT	0.42
		LTS	+5.27	BVT	0.46
56	82	LTS	+13.94	BVT	0.26
		LTS	+7.07	BVT	0.48
57	52	LTS	+6.67	BVT	0.15
		LTS	+8.50	BVT	0.37
		LTS	+5.15	BVT	0.41
58	38	LTS	+16.52	BVT	0.34
		LTS	+13.38	BVT	0.53

TABLE 3B (continued)  
 B OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
		LTS	+11.17	BVT	0.60
		LTS	+5.68	BVT	0.64
61	25	LTS	+6.85	BVT	0.34
61	26	LTS	+8.89	BVT	0.20
		LTS	+7.17	BVT	0.28
		LTS	+6.94	BVT	0.29
		LTS	+8.65	BVT	0.30
		LTS	+12.73	BVT	0.44
		LTS	+12.44	BVT	0.48
		LTS	+15.32	BVT	0.55
		LTS	+15.07	BVT	0.64
61	29	LTS	+14.30	BVT	0.22
		LTS	+12.09	BVT	0.23
		LTS	+7.49	BVT	0.28
		LTS	+10.52	BVT	0.38
61	48	LTS	+6.85	BVT	0.25

TABLE 3B (continued)  
 B OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
		LTS	+9.14	BVT	0.57
		LTS	+10.80	BVT	0.58
65	27	LTS	+10.34	BVT	0.32
		LTS	+11.72	BVT	0.34
65	28	LTS	+8.15	BVT	0.24
		LTS	+6.86	BVT	0.27
		LTS	+9.41	BVT	0.32
		LTS	+14.26	BVT	0.34
		LTS	+12.48	BVT	0.35
		LTS	+11.54	BVT	0.44
		LTS	+6.46	BVT	0.55
		LTS	+8.64	BVT	0.56
66	28	LTS	+6.33	BVT	0.24
		LTS	+12.39	BVT	0.26
		LTS	+15.20	BVT	0.47
		LTS	+7.59	BVT	0.48

TABLE 3B (continued)  
 B OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
66	36	LTS	+10.29	BVT	0.33
66	52	LTS	+14.30	BVT	0.28
73	39	LTS	+14.28	BVT	0.39
81	98	LTS	+11.74	BVT	0.41
81	104	LTS	+8.41	BVT	0.18
82	94	LTS	+12.02	BVT	0.22
		LTS	+7.36	BVT	0.37
85	99	LTS	+13.13	BVT	0.19
		LTS	+7.01	BVT	0.33
		LTS	+9.83	BVT	0.34
		LTS	+10.86	BVT	0.46
86	30	LTS	+7.48	BVT	0.37
86	32	LTS	+10.96	BVT	0.45
		LTS	+10.24	BVT	0.51
86	94	LTS	+16.90	BVT	0.26
		LTS	+12.12	BVT	0.28
		LTS	+14.60	BVT	0.28

TABLE 3B (continued)  
B OTSG  
NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
		LTS	+14.96	BVT	0.47
		LTS	+8.83	BVT	0.56
		LTS	+7.84	BVT	0.64
91	23	LTS	+12.14	BVT	0.21
		LTS	+14.98	BVT	0.36
		LTS	+27.59	BVT	0.39
		LTS	+10.82	BVT	0.39
		LTS	+28.17	BVT	0.39
		LTS	+9.56	BVT	0.45
91	43	LTS	+5.88	BVT	0.28
91	93	LTS	+9.36	BVT	0.23
91	97	LTS	+13.27	BVT	0.20
		LTS	+9.95	BVT	0.40
96	28	LTS	+7.66	BVT	0.47
96	43	LTS	+13.09	BVT	0.31
96	44	LTS	+8.85	BVT	0.23
		LTS	+6.52	BVT	0.27

TABLE 3B (continued)  
 B OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
101	31	LTS	+30.15	BVT	0.32
		LTS	+9.74	BVT	0.44
		LTS	+14.81	BVT	0.44
		LTS	+13.58	BVT	0.45
		LTS	+26.04	BVT	0.46
		LTS	+28.19	BVT	0.51
		LTS	+11.37	BVT	0.54
		LTS	+8.09	BVT	0.56
101	43	LTS	+9.31	BVT	0.38
101	48	LTS	+11.42	BVT	0.26
101	91	LTS	+27.03	BVT	0.20
		LTS	+6.23	BVT	0.35
		LTS	+10.16	BVT	0.46
101	93	LTS	+12.49	BVT	0.30
		LTS	+13.93	BVT	0.34
		LTS	+8.06	BVT	0.35

TABLE 3B (continued)  
B OTSG  
NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
		LTS	+8.06	BVT	0.35
		LTS	+11.18	BVT	0.36
		LTS	+8.46	BVT	0.36
		LTS	+6.67	BVT	0.67
101	98	LTS	+13.21	BVT	0.26
106	33	LTS	+12.72	BVT	0.47
106	42	LTS	+14.93	BVT	0.18
		LTS	+16.50	BVT	0.47
106	50	LTS	+13.67	BVT	0.34
106	74	LTS	+9.25	BVT	0.24
106	87	LTS	+16.22	BVT	0.22
		LTS	+6.11	BVT	0.39
111	33	LTS	+9.24	BVT	0.38
111	45	LTS	+16.42	BVT	0.32
111	47	LTS	+8.98	BVT	0.29
113	48	LTS	+7.92	BVT	0.21



TABLE 3B (continued)  
 B OTSG  
 NON-QUANTIFIABLE INDICATIONS (4S Sample)

INDICATION LOCATION				BOBBIN ANALYSIS CODE	BOBBIN VOLTAGE
ROW	TUBE	ELEV.			
		LTS	+11.53	BVT	0.25
		LTS	+24.71	BVT	0.31
		LTS	+10.50	BVT	0.32
		LTS	+9.46	BVT	0.34
		LTS	+14.32	BVT	0.36
		LTS	+15.31	BVT	0.39
		LTS	+16.66	BVT	0.53
		LTS	+15.07	BVT	0.57
		LTS	+13.71	BVT	0.57
116	42	LTS	+5.13	BVT	0.21
		LTS	+12.30	BVT	0.26
		LTS	+7.70	BVT	0.27
		LTS	+23.21	BVT	0.65
129	41	LTS	+21.25	BVT	0.30

TABLE 4B  
TUBES PLUGGED, B OTSG

TUBE	LOCATION	REASON FOR PLUGGING
23-68	LTE + 11.61"	(1)
41-24	03S + 7.61"	(1)
46-83	LTS + 2.48"	(1)
56-28	11S + 31.13"	(1)
56-41	03S + 3.31"	(1)
61-122	10S + 5.90"	(1)
73-24	UTS + 0.00"	(1)
77-48	UTS - 0.13"	(1)
89-34	LTS + 12.21"	Insitu Sample (> 1.25 V)
101-7	04S + 27.12"	(1)
122-21	LTE + 16.97"	(1)
126-11	UTS - 21.34"	(1)
131-31	UTS + 20.52"	(1)
43-80	12S + 6.70"	Administrative (2)
50-35	LTS + 9.15"	Insitu Sample (> 1.25 V)
58-38	LTS + 7.42"	Insitu Sample (> 1.25 V)
83-56	01S + 31.02"	Administrative (2)
96-116	15S + 16.90" 15S + 24.87"	Administrative (2)

Notes:

- (1) This tube contained a shallow, outside diameter, volumetric indication. Since it was also detected during a previous inspection, there is a high probability that the indication is likely a manufacturer buff mark (MBM). However, the decision to plug was made prior to NRC clarification that continued use of the MBM analysis code, where justified by previous history and MRPC characterization, is acceptable. Additional review will be performed to determine whether or not this indication was an MBM and as such, was not truly representative of a defective tube.
- (2). Indications located in the upper free span. The tubes were plugged since previous inspections had confirmed as pits.

Table 5B  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND RTM VOLTS CHM DEG LOCATION

1	5	NDF			10S	-0.14
6	7	NDF			07S	-0.71
6	12	NDF			08S	-0.14
6	26	NDF			09S	-0.77
6	35	NDF			LTS	+8.58
6	44	MSG	P 1	0 L x W	0.16 x 0.12	WAR
	WAR	11	0.99	P 1	0 09S	-0.87
7	19	NDF			08S	-0.78
7	30	NDF			04S	-1.02
	NDF				15S	+10.81 to +1*
	MSG		P 1	0 L x W	0.19 x 0.14	WAR
	MSG		P 1	0 L x W	0.40 x 0.14	WAR
	MSG		P 1	0 L x W	0.46 x 0.16	WAR
	WAR	13	1.16	P 1	0 08S	-0.79
	WAR	18	1.73	P 1	0 08S	+0.71
	WAR	22	2.35	P 1	0 09S	-0.74
11	2	MSG	P 1	0 L x W	0.14 x 0.11	WAR
	WAR	14	1.11	P 1	0 10S	-0.79
11	9	MSG	P 1	0 L x W	0.18 x 0.16	WAR
	WAR	8	0.55	P 1	0 08S	-0.71
16	6	NDF			09S	-0.97
16	66	RIC			15S	+14.75 to +2*
	NDF				15S	+23.28 to +2*
	NDF				15S	+14.75 to +2*
16	75	NDF			08S	+0.66
16	77	MSG	P 1	0 L x W	0.20 x 0.13	WAR
	WAR	11	0.98	P 1	0 09S	+0.75
21	40	MSG	P 1	0 L x W	0.15 x 0.08	WAR
	WAR	9	0.82	P 1	0 07S	-0.78
21	85	NDF			02S	+14.73
26	9	NDF			09S	+2.68
	NDF				10S	+9.57
	NDF				11S	+11.44
	MSG		P 1	0 L x W	0.45 x 0.12	WAR
	WAR	14	1.07	P 1	69 09S	+0.70
26	26	MSG	P 1	0 L x W	0.15 x 0.14	WAR
	WAR	11	1.08	P 1	0 03S	-0.76
26	39	NDF			03S	-0.79
26	71	NDF			LTS	+2.91
26	94	MSG	P 1	0 L x W	0.23 x 0.13	WAR
	WAR	8	0.74	P 1	0 07S	+0.76
27	94	NDF			07S	-10.21
	NDF				08S	+8.88
	NDF				08S	-10.21
	NDF				08S	-10.21

Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND ATM VOLTS CHN DEG LOCATION

	NDF		10S		+7.72
	NDF		10S		+17.72
	NDF		11S		+9.42
	NDF		11S		+10.34
	NDF		11S		+19.31
	NDF		11S		+29.43
	NDF		12S		+10.49
	NDF		12S		+11.22
	NDF		12S		+20.06
	NDF		13S		+2.85
	NDF		13S		+13.24
	NDF		14S		+13.61
	NDF		14S		+25.97
	MSG	P 1	0 L x W	0.15 x 0.12	WAR
	MSG	P 1	0 L x W	0.61 x 0.17	WAR
	WAR	17	1.46 P 1	0 09S	+0.87
	WAR	24	2.64 P 1	0 08S	+0.67
31	5 MSG		P 1	0 L x W	0.13 x 0.11 WAR
	WAR	15	1.10 P 1	0 03S	-0.75
31	37 NDF		LTS		+24.17
	VOL	0.39 1	78 LTS		+22.77
	MSG	1	0 L x W	0.16 x 0.11	+22.77
31	52 NDF		14S		+13.63
31	70 NDF		13S		-6.86
36	8 NDF		08S		-0.73
36	39 NDF		LTS		+9.50
	NDF		LTS		+15.46
	VOL	0.44 1	13 LTS		+6.46
	MSG	1	0 L x W	0.12 x 0.10	+6.46
36	40 NDF		LTS		+8.19
	NDF		LTS		+8.66
	NDF		LTS		+9.84
	NDF		LTS		+26.18
	NDF		LTS		+30.28
	PRC		LTS		+6.91
	PRC		LTS		+21.35
	PRC		LTS		+23.18
	MSG		SEE NEXT EXAM THIS CAL		
	MSG	1	0 L x W	0.10 x 0.10	
	MSG	1	0 L x W	0.11 x 0.10	
	MSG	1	0 L x W	0.14 x 0.11	
	VOL	0.55 1	73 LTS		+10.70
	VOL	0.63 1	75 LTS		+29.81
	VOL	0.66 1	106 LTS		+33.24
	VOL	0.72 1	76 LTS		+28.32



Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND RTW VOLTS CHN DEG LOCATION

				PRC		LTS	+10.70
				PRC		LTS	+11.07
				MSG	1	0 L x W	0.12 x 0.12
				MSG	1	0 L x W	0.15 x 0.14
				MSG	1	0 L x W	0.15 x 0.15
				MSG	1	0 L x W	0.18 x 0.14
				VOL	0.44 1	100 LTS	+8.64
				VOL	0.59 1	72 LTS	+10.88
				VOL	0.75 1	84 LTS	+10.65
				VOL	1.63 1	37 LTS	+8.03
				VOL	1.21 1	118 LTS	+6.41
				MSG	1	0 L x W	0.16 x 0.14 +8.64
46	39			MSG	P 1	0 L x W	0.13 x 0.13 WAR
				WAR	13	1.23 P 1	0 09S -0.71
46	41			NDF		LTS	+8.61
46	44			NDF		LTS	+7.29
				NDF		LTS	+8.45
				NDF		LTS	+11.31
				NDF		LTS	+11.93
				NDF		LTS	+13.09
				NDF		LTS	+15.55
				NDF		LTS	+24.17
				PRC		LTS	+5.83
				PRC		LTS	+6.50
				PRC		LTS	+8.45
				PRC		LTS	+10.12
				PRC		LTS	+14.39
				MSG	1	0 L x W	0.13 x 0.11
				MSG	1	0 L x W	0.14 x 0.10
				MSG	1	0 L x W	0.14 x 0.13
				MSG	1	0 L x W	0.19 x 0.13
				VOL	0.60 1	44 LTS	+14.60
				VOL	0.65 1	128 LTS	+6.72
				VOL	0.82 1	104 LTS	+5.97
				VOL	0.87 1	77 LTS	+10.41
46	46			NDF		LTS	+11.30
				NDF		LTS	+12.02
				VOL	0.66 1	64 LTS	+15.79
				VOL	0.68 1	77 LTS	+8.40
				VOL	0.78 1	70 LTS	+13.15
				MSG	1	0 L x W	0.15 x 0.08 +13.15
				MSG	1	0 L x W	0.15 x 0.10 +15.79
				MSG	1	0 L x W	0.15 x 0.14 + 8.40
46	41			NDF		LTS	+14.26
46	55			NDF		03S	-0.89

Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IMD BTM VOLTS CHG DEG LOCATION

46	74 RIC			14S	+23.09
	NDF			15S	+11.91
46	75 NDF			LTS	+7.76
	NDF			LTS	+10.54
	NDF			LTS	+10.79
46	79 NDF			09S	-1.44
	NDF			09S	-1.78
46	83 MSG	1	0 L x W	0.40 x 0.19	
	VOL	1.33 1	63 LTS		+2.54
46	111 NDF			06S	+17.97
47	14 NDF			LTS	+9.98
50	15 NDF			LTS	+10.51
	NDF			LTS	+10.99
	NDF			LTS	+12.15
	NDF			LTS	+13.65
	PRC			LTS	+9.15
	NDF	1		LTS	+16.70
	MSG		SEE NEXT TUBE THIS CAL		
	MSG	1	0 L x W	0.18 x 0.18	
	VOL	0.34 1	75 LTS		+12.94
	VOL	0.59 1	62 LTS		+9.74
	VOL	0.83 1	55 LTS		+8.90
	MSG	1	0 L x W	0.12 x 0.10	+12.94
	MSG	1	0 L x W	0.14 x 0.10	+9.74
51	17 MSG	P 1	0 L x W	0.16 x 0.15	MAR
	MAR	12	1.05 P 1	0 07S	-0.76
51	33 MSG	P 1	0 L x W	0.15 x 0.09	MAR
	MAR	13	1.22 P 1	0 09S	-0.73
51	34 NDF			LTS	+8.83
	VOL	0.75 1	55 LTS		+5.69
	MSG	1	0 L x W	0.14 x 0.10	+5.69
51	35 NDF			LTS	+8.24
51	42 NDF			LTS	+7.93
	NDF			LTS	+16.38
51	47 NDF			LTS	+9.48
51	48 NDF			LTS	+6.25
	NDF			LTS	+7.26
	NDF			LTS	+7.98
	NDF			LTS	+9.22
	NDF			LTS	+10.98
	NDF			LTS	+12.07
	PRC			LTS	+6.72
	PRC			LTS	+9.23
	MSG	1	0 L x W	0.13 x 0.11	
	VOL	0.65 1	56 LTS		+6.74



Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROM TUBE IND RTW VOLTS CHN DEG LOCATION

	MSG	P 1	0 L x W	0.17 x 0.17 MAR
	MAR 14	1.32 P 1	0 07S	-0.73
51	49 NDF		LTS	+7.89
	NDF		LTS	+11.92
	PRC		LTS	+7.57
	NDF	1	LTS	+12.49
	MSG	1	0 L x W	0.16 x 0.15
	VOL	0.36 1	78 LTS	+16.61
	VOL	0.52 1	34 LTS	+14.65
	VOL	0.73 1	46 LTS	+4.78
	VOL	0.74 1	61 LTS	+11.35
	MSG	1	0 L x W 0.10 x 0.09	+16.61
	MSG	1	0 L x W 0.12 x 0.11	+11.35
	MSG	1	0 L x W 0.16 x 0.11	+14.65
51	55 NDF		LTS	+7.67
51	65 NDF		LTS	+8.07
51	79 NDF		LTS	+9.93
	NDF		LTS	+13.65
51	80 MSG	1	L x W	0.12 x 0.11 + 8.9
	VOL	0.29 1	57 LTS	+8.98
51	83 NDF		05S	-0.75
51	105 NDF		LTS	-1.33
53	124 NDF		09S	-6.87
56	28 NDF		LTS	+7.26
	MSG	1	0 L x W	1.50 x 0.31
	VOL	1.41 1	84 11S	+30.17
56	31 NDF		LTS	+7.72
56	32 NDF		LTS	+8.56
	VOL	0.39 1	48 LTS	+8.83
	VOL	0.60 1	32 LTS	+12.51
	MSG	1	0 L x W 0.15 x 0.13	+ 8.83
	MSG	1	0 L x W 0.15 x 0.13	+12.51
56	35 NDF		LTS	+6.40
56	39 MSG	P 1	0 L x W	0.16 x 0.11 MAR
	MAR 19	1.92 P 1	0 07S	-0.71
56	41 MSG	1	0 L x W	0.28 x 0.18
	VOL	1.80 1	102 03S	+3.47
56	42 NDF		LTS	+11.19
	NDF		LTS	+11.54
56	44 NDF		LTS	+7.55
	NDF		LTS	+8.95
	NDF		LTS	+9.94
	NDF		LTS	+11.40
	NDF		LTS	+12.78
	PRC		LTS	+6.03

Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ACM TUBE IND RTM VOLTS CMN DEG LOCATION

			PRC		LTS	+6.62
			PRC		LTS	+8.42
			MSG	1	0 L x W	0.15 x 0.14
			MSG	1	0 L x W	0.17 x 0.16
			MSG	1	0 L x W	0.20 x 0.13
			VOL	0.73 1	74 LTS	+6.30
			VOL	0.82 1	80 LTS	+6.98
			VOL	0.85 1	85 LTS	+8.80
56	49	NDF			LTS	+9.41
56	50	NDF			LTS	+13.39
		NDF			LTS	+13.93
		NDF			LTS	+15.10
		PRC			LTS	+8.07
		PRC			LTS	+12.14
			MSG	1	0 L x W	0.14 x 0.13
			MSG	1	0 L x W	0.17 x 0.15
			VOL	0.44 1	86 LTS	+9.93
			VOL	0.60 1	86 LTS	+10.79
			VOL	0.65 1	53 LTS	+12.37
			VOL	0.71 1	75 LTS	+9.73
			VOL	0.82 1	107 LTS	+6.32
			VOL	0.85 1	270 LTS	+6.31
			MSG	1	0 L x W	0.14 x 0.11 +9.93
			MSG	1	0 L x W	0.12 x 0.12 +10.79
			MSG	1	0 L x W	0.19 x 0.14 + 9.73
			MSG	1	0 L x W	0.20 x 0.17 + 6.31
56	51	NDF			LTS	+5.54
		NDF			LTS	+7.61
		NDF			LTS	+12.64
		PRC			LTS	+8.14
			MSG	1	0 L x W	0.20 x 0.16
			VOL	1.09 1	153 LTS	+8.41
			VOL	1.14 1	111 LTS	+10.86
			VOL	1.15 1	132 LTS	+13.09
			VOL	1.25 1	38 LTS	+8.32
			MSG	1	0 L x W	0.18 x 0.17 +8.41
			MSG	1	0 L x W	0.16 x 0.12 +13.09
			MSG	1	0 L x W	0.17 x 0.13 +10.86
56	53	NDF			LTS	+5.27
		VOL	0.70 1	76 LTS	+12.06	
		MSG	1	0 L x W	0.12 x 0.11 +12.06	
56	80	NDF			OSL	+22.86
56	82	VOL	0.53 1	80 LTS	+13.87	
		VOL	0.76 1	44 LTS	+7.08	
		MSG	1	0 L x W	0.10 x 0.10+13.8	

Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND BTM VOLTS CHN DEG LOCATION

	MSG		1	0 L x H	0.13 x 0.12	7.0
56	85	NDP		07S		+27.55
56	97	NDP		01S		+0.76
56	127	MSG	P 1	0 L x W	0.14 x 0.11	WAR
	WAR	10	1.18 P 1	0 07S		-0.79
57	52	NDP		LTS		+5.15
	NDP			LTS		+6.67
	NDP			LTS		+8.95
	PRC			LTS		+7.27
	MSG		1	0 L x W	0.15 x 0.11	
	VOL		0.51 1	67 LTS		+7.36
58	38	NDP		LTS		+6.03
	NDP			LTS		+11.17
	NDP			LTS		+13.38
	NDP			LTS		+16.52
	PRC			LTS		+7.42
	PRC			LTS		+9.49
	PRC			LTS		+10.02
	PRC			LTS		+12.35
	PRC			LTS		+14.70
	MSG		1	0 L x W	0.11 x 0.11	
	MSG		1	0 L x W	0.15 x 0.13	
	MSG		1	0 L x W	0.17 x 0.15	
	MSG		1	0 L x W	0.17 x 0.15	
	MSG		1	0 L x W	0.18 x 0.14	
	VOL		0.67 1	134 LTS		+14.59
	VOL		0.91 1	72 LTS		+9.50
	VOL		1.06 1	41 LTS		+7.42
	VOL		1.09 1	103 LTS		+10.02
	VOL		1.22 1	101 LTS		+12.32
59	13	NDP		LTS		-1.40
59	39	NDP		LTS		+15.80
	VOL		1.22 1	128 LTS		+11.64
	VOL		1.28 1	82 LTS		+13.13
	MSG		1	0 L x W	0.11 x 0.10	+13.13
	MSG		1	0 L x W	0.14 x 0.10	+11.64
	MSG		P 1	0 L x W	0.14 x 0.14	WAR
	WAR	11	1.03 P 1	0 03S		-0.77
61	25	NDP		LTS		+6.85
61	26	NDP		LTS		+6.85
	NDP			LTS		+6.94
	NDP			LTS		+7.17
	NDP			LTS		+8.65
	NDP			LTS		+8.89
	NDP			LTS		+12.44

MRPC CHARACTERIZATION AND DEPTH SIZING

ROM	TUBE	IND	WTH	VOLTS	CYCL	DEG	LOCATION
1	6X4	1	1	100	1	1	1
2	6X4	1	1	100	1	1	1
3	6X4	1	1	100	1	1	1
4	6X4	1	1	100	1	1	1
5	6X4	1	1	100	1	1	1
6	6X4	1	1	100	1	1	1
7	6X4	1	1	100	1	1	1
8	6X4	1	1	100	1	1	1
9	6X4	1	1	100	1	1	1
10	6X4	1	1	100	1	1	1
11	6X4	1	1	100	1	1	1
12	6X4	1	1	100	1	1	1
13	6X4	1	1	100	1	1	1
14	6X4	1	1	100	1	1	1
15	6X4	1	1	100	1	1	1
16	6X4	1	1	100	1	1	1
17	6X4	1	1	100	1	1	1
18	6X4	1	1	100	1	1	1
19	6X4	1	1	100	1	1	1
20	6X4	1	1	100	1	1	1
21	6X4	1	1	100	1	1	1
22	6X4	1	1	100	1	1	1
23	6X4	1	1	100	1	1	1
24	6X4	1	1	100	1	1	1
25	6X4	1	1	100	1	1	1
26	6X4	1	1	100	1	1	1
27	6X4	1	1	100	1	1	1
28	6X4	1	1	100	1	1	1
29	6X4	1	1	100	1	1	1
30	6X4	1	1	100	1	1	1
31	6X4	1	1	100	1	1	1
32	6X4	1	1	100	1	1	1
33	6X4	1	1	100	1	1	1
34	6X4	1	1	100	1	1	1
35	6X4	1	1	100	1	1	1
36	6X4	1	1	100	1	1	1
37	6X4	1	1	100	1	1	1
38	6X4	1	1	100	1	1	1
39	6X4	1	1	100	1	1	1
40	6X4	1	1	100	1	1	1
41	6X4	1	1	100	1	1	1
42	6X4	1	1	100	1	1	1
43	6X4	1	1	100	1	1	1
44	6X4	1	1	100	1	1	1
45	6X4	1	1	100	1	1	1
46	6X4	1	1	100	1	1	1
47	6X4	1	1	100	1	1	1
48	6X4	1	1	100	1	1	1
49	6X4	1	1	100	1	1	1
50	6X4	1	1	100	1	1	1
51	6X4	1	1	100	1	1	1
52	6X4	1	1	100	1	1	1
53	6X4	1	1	100	1	1	1
54	6X4	1	1	100	1	1	1
55	6X4	1	1	100	1	1	1
56	6X4	1	1	100	1	1	1
57	6X4	1	1	100	1	1	1
58	6X4	1	1	100	1	1	1
59	6X4	1	1	100	1	1	1
60							

WDF			LTS	+12.73
WDF			LTS	+15.07
WDF			LTS	+15.32
MSG		P 1	0 L x W	0.16 x 0.11 MAR
MAR	10	0.93 P 1	0 06S	-0.77
MSG		P 1	0 L x W	0.19 x 0.13 MAR
MAR	10	1.79 P 1	0 09S	-0.75
WDF			07S	-0.76
WDF			LTS	+7.83
WDF			LTS	+12.09
WDF			LTS	+14.30
VOL		0.57 1	71 LTS	+10.70
MSG		1	0 L x W	0.13 x 0.12 +10.70
WDF			LTS	+9.38
MSG		P 1	0 L x W	0.16 x 0.15 MAR
MAR	10	1.70 P 1	0 07S	-0.75
MSG		P 1	0 L x W	0.15 x 0.15 MAR
MAR	11	0.96 P 1	0 03S	-0.69
VOL		0.46 1	49 LTS	+13.37
VOL		0.61 1	113 LTS	+9.61
VOL		0.74 1	27 LTS	+8.06
VOL		0.75 1	45 LTS	+6.76
MSG		1	0 L x W	0.13 x 0.11 + 6.76
MSG		1	0 L x W	0.13 x 0.11 + 8.06
MSG		1	0 L x W	0.13 x 0.11 + 9.61
MSG		1	0 L x W	0.13 x 0.12 +11.37
MSG		P 2	0 L x W	0.13 x 0.12 MAR
MAR	10	0.88 P 1	0 07S	-0.71
WDF			06S	+0.70
WDF			02S	-7.45
WDF			LTS	+8.34
MSG		1	0 L x W	0.55 x 0.19
VOL		0.97 1	94 10S	+5.79
VOL		0.78 1	62 15S	+9.29 MBM
VOL		1.29 1	50 15S	+20.28 MBM
VOL		2.02 1	126 15S	+23.61 MBM
VOL		2.03 1	83 15S	+1.42 MBM
WDF			LTS	+10.34
WDF			LTS	+11.72
WDF			LTS	+6.46
WDF			LTS	+8.15
WDF			LTS	+11.54
WDF			LTS	+12.40
WDF			LTS	+14.26
PRC			LTS	+10.33

Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND ATM VOLTS CHN DEG LOCATION

				MSG	1		0 L x W	0.12 x 0.11	
				MSG	1		0 L x W	0.15 x 0.15	
				VOL	0.29	1	137 LTS	+8.85	
				VOL	0.34	1	45 LTS	+10.88	
				VOL	0.50	1	22 LTS	+6.78	
				VOL	0.60	1	53 LTS	+8.74	
				VOL	1.42	1	130 LTS	+8.92	
				MSG	1		0 L x W	0.15 x 0.14 + 6.70	
				MSG	1		0 L x W	0.16 x 0.15 + 8.85	
				MSG	1		0 L x W	0.17 x 0.16 + 9.92	
46	28						LTS	+6.33	
							LTS	+7.59	
							LTS	+12.39	
							LTS	+15.20	
							LTS	+8.73	
				MSG	1		0 L x W	0.15 x 0.05	
				VOL	0.78	1	46 LTS	+8.77	
46	36						LTS	+10.29	
66	52						LTS	+14.30	
71	26						07S	+0.59	
71	42						09S	+0.77	
71	43			MSG	P 1		0 L x W	0.39 x 0.18 MAR	
								+0.85	
71	51			MSG	P 1		0 L x W	0.22 x 0.15 MAR	
								-0.79	
71	54			BLP			09R	+0.63	
71	55			MSG	P 1		0 L x W	0.18 x 0.16 MAR	
								-0.78	
71	78						15S	+0.86	
71	96						05S	+26.03	
71	114						14S	+4.67	
73	39						LTS	+14.28	
76	103						04S	+0.51	
76	120						07S	-0.75	
76	121						08S	+0.62	
78	52			MSG	P 1		0 L x W	0.15 x 0.05 MAR	
								-0.67	
81	60						14S	+25.87	
81	62						09S	+0.77	
81	78						05S	+0.67	
81	94						LTS	+17.52	
81	96			VOL	0.25	1	71 LTS	+12.36	
				MSG	1		0 L x W	0.12 x 0.10+12.3	
81	98			VOL	0.28	1	94 LTS	+10.49	
				MSG	1		0 L x W	0.13 x 0.12+10.4	

Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND VTM VOLTS CMR DEG LOCATION

81	104	NDF			LTS		+8.41
81	125	MSG		P 1	0 L x W	0.18 x 0.09	WAR
		WAR	12	0.86 P 1	0 03S		-8.42
81	128	NDF			07S		-8.80
92	94	NDF			LTS		+7.36
		VOL		0.44 1	106 LTS		+12.13
		MSG		1	0 L x W	0.11 x 0.09	+12.1
82	95	NDF			LTS		+18.16
		NDF			LTS		+11.85
		NDF			LTS		+13.59
		VOL		0.79 1	34 LTS		+7.46
		MSG		1	0 L x W	0.12 x 0.10	+7.4
83	56	VOL		6.82 1	88 01S		+31.08
85	72	MSG		P 1	0 L x W	0.09 x 0.07	WAR
		WAR	6	0.42 P 1	0 06S		-8.79
85	98	NDF			LTS		+9.65
85	99	NDF			LTS		+9.83
		NDF			LTS		+13.13
		VOL		0.47 1	78 LTS		+11.29
		VOL		0.77 1	61 LTS		+7.54
		MSG		1	0 L x W	0.13 x 0.11	+11.2
		MSG		1	1 L x W	0.11 x 0.09	+7.5
86	24	VOL		0.53 1	273 LTS		+13.04
		MSG		1	0 L x W	0.14 x 0.12	+13.04
86	30	NDF			LTS		+7.48
86	32	NDF			LTS		+18.94
		MSG			SEE NEXT EXAM THIS CAL		
		VOL		0.13 1	49 LTS		+18.69
		MSG		1	0 L x W	0.16 x 0.13	+18.69
86	35	NDF			LTS		+12.15
		NDF			LTS		+13.43
		NDF			LTS		+13.81
86	53	MSG		P 1	0 L x W	0.23 x 0.20	WAR
		WAR	10	1.01 P 1	0 09S		-8.65
86	85	NDF			06S		-8.90
86	94	NDF			LTS		+8.83
		NDF			LTS		+12.12
		NDF			LTS		+14.60
		NDF			LTS		+14.96
		NDF			LTS		+16.90
		VOL		1.00 1	67 LTS		+8.06
		MSG		1	0 L x W	0.13 x 0.11	+8.0
86	99	VOL		0.45 1	62 LTS		+9.60
		MSG		1	0 L x W	0.13 x 0.11	+9.6
86	126	NDF			07S		+8.00

Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

RCM TUBE IND 4TW VOLTS CHN DEG LOCATION

					07S	+0.66
88	6 RIC				01S	+26.09
	NDF				01S	+26.09
	NDF				02S	-11.91
88	43 NDD					
89	43 NDD					
90	42 NDD					
91	6 MSG	P 1	0 L x W	0.50 x 0.19	MAR	
	MAR	17	2.38 P 1	0 09S		+0.69
91	7 MSG	P 1	0 L x W	0.56 x 0.18	MAR	
	MAR	11	1.41 P 1	0 09S		+0.68
91	23 NDF				LTS	+12.14
	NDF				LTS	+14.98
	NDF				LTS	+27.59
	NDF				LTS	+28.17
	VOL	0.10 1	51 LTS			+9.60
	VOL	0.33 1	113 LTS			+10.90
	MSG	1	0 L x W	0.13 x 0.09		+10.90
	MSG	1	0 L x W	0.13 x 0.12		+9.60
91	37 NDF				LTS	+12.11
	VOL	0.41 1	99 LTS			+10.48
	MSG	1	0 L x W	0.18 x 0.11		+10.48
91	42 NDF				10S	-0.66
91	43 VOL	0.44 1	71 LTS			+5.86
	MSG	1	0 L x W	0.12 x 0.11		+5.86
91	71 NDF				06S	+33.26
91	93 NDF				LTS	+9.36
91	97 NDF				LTS	+13.27
	VOL	0.48 1	73 LTS			+10.50
	MSG	1	0 L x W	0.08 x 0.07		+10.5
91	122 NDF				12S	+4.25
91	126 NDF				07S	-0.74
92	42 NDD					
93	41 NDD					
96	4 MSG	P 1	0 L x W	0.45 x 0.18	MAR	
	MAR	16	2.53 P 1	0 09S		+0.74
96	28 VOL	0.54 1	62 LTS			+7.62
	MSG	1	0 L x W	0.12 x 0.10		+7.62
	MSG	P 1	0 L x W	0.19 x 0.19	MAR	
	MAR	23	3.36 P 1	0 09S		-0.71
96	29 RIC					
	RIC					
	NDF				LTS	+6.84
	NDF				LTS	+6.85
	NDF				LTS	+7.55



Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND RTW VCLTS COG DEG LOCATION

				LTS	+7.55	
				LTS	+9.93	
				LTS	+9.93	
				LTS	+11.36	
				LTS	+11.36	
				LTS	+13.32	
				LTS	+13.32	
				LTS	+26.57	
			1	0 L x W 0.10 x 0.08		
			1	11 LTS	+26.21	
96	30	VOL	1	94 LTS	+11.98	
		VOL	1	101 LTS	+0.10	
		VOL	1	64 LTS	+7.75	
		MSG	1	0 L x W 0.10 x 0.08 + 0.10		
		MSG	1	0 L x W 0.12 x 0.08 +11.98		
		MSG	1	0 L x W 0.13 x 0.11 + 7.75		
96	39	VOL	1	52 LTS	+7.62	
		VOL	1	99 LTS	+16.17	
		VOL	1	80 LTS	+14.75	
		MSG	1	0 L x W 0.11 x 0.09 + 7.62		
		MSG	1	0 L x W 0.13 x 0.11 +14.75		
		MSG	1	0 L x W 0.14 x 0.10 +16.17		
96	40	KDF		LTS	+10.23	
		KDF		LTS	+12.10	
96	41	KDF		LTS	+11.94	
96	43	KDF		LTS	+13.09	
96	44	KDF		LTS	+6.53	
		KDF		LTS	+8.85	
96	45	KDF		LTS	+12.10	
96	47	VOL	0.55 1	49 LTS	+14.59	
		MSG	1	0 L x W 0.12 x 0.12 +14.59		
96	51	KDF		06S	+0.65	
96	67	KDF		06S	+0.63	
96	116	KDF		15S	+16.90	
		KDF		15S	+24.87	
		VOL	0.22 1	88 15S	+23.61	
		VOL	0.42 1	61 15S	+25.42	
97	39	KDO				
98	40	KDO				
98	41	KDO				
100	33	VOL	2.40 1	120 UTS	+19.79	MEM
100	43	KDO				
101	1	MSG		P 1 0 L x W 0.10 x 0.15		WAR
		WAR	7	0.99 P 1 0 03S	-0.74	
101	6	MSG		P 1 0 L x W 0.14 x 0.11		WAR

Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND RTM VOLTS CHN DEG LOCATION

		MAR	10	1.29 P 1	0 09S	+0.72
101	7 MSG			1	0 L x W	0.31 x 0.26
	VOL			0.97 1	91 04S	+27.58
101	24 MSG			P 1	0 L x W	0.15 x 0.09 WAR
	WAR	8		1.06 P 1	0 09S	-0.73
101	31 RIC					
	NDF				LTS	+13.58
	NDF				LTS	+14.81
	NDF				LTS	+28.19
	NDF				LTS	+30.15
	PRC				LTS	+11.98
	PRC				LTS	+12.46
	MSG			1	0 L x W	0.13 x 0.11
	MSG			1	0 L x W	0.13 x 0.11
	VOL			0.54 1	52 LTS	+7.98
	VOL			0.54 1	52 LTS	+7.98
	VOL			0.65 1	141 LTS	+11.18
	VOL			0.74 1	68 LTS	+12.83
	VOL			1.00 1	114 LTS	+9.59
	VOL			1.02 1	149 LTS	+12.54
	VOL			1.11 1	137 LTS	+25.72
	MSG			1	0 L x W	0.12 x 0.11 +9.59
	MSG			1	0 L x W	0.12 x 0.12 +7.98
	MSG			1	0 L x W	0.12 x 0.12 +7.98
	MSG			1	0 L x W	0.13 x 0.11 +25.72
	MSG			1	0 L x W	0.14 x 0.12 +11.18
101	32 NDF				LTS	+13.70
101	35 NDF				OTS	-0.75
101	37 PRC				LTS	+17.59
	MSG			1	0 L x W	0.11 x 0.10
	VOL			0.44 1	108 LTS	+13.38
	VOL			1.03 1	108 LTS	+17.90
	VOL			1.37 1	99 LTS	+17.44
	MSG			1	0 L x W	0.11 x 0.09 +11.38
	MSG			1	0 L x W	0.11 x 0.09 +17.90
101	41 NDF				LTS	+11.96
	PRC				LTS	+14.87
	MSG			1	0 L x W	0.13 x 0.11
	VOL			0.91 1	122 LTS	+14.82
	VOL			2.68 1	67 LTS	+21.16
	MSG			1	0 L x W	0.19 x 0.18 +21.16
101	42 NDF				LTS	+17.37
	VOL			0.68 1	88 LTS	+6.65
	MSG			1	0 L x W	0.10 x 0.09 + 6.65
101	43 RIC					

Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND 1TW VOLTS CHN DEG LOCATION

				LTS	+9.31
101	48	VOL	0.35 1	311 LTS	+11.58
		MSG	1	0 L x W 0.10 x 0.09	+11.58
101	74	NDF		07S	+8.63
101	91	NDF		LTS	+6.23
		NDF		LTS	+10.16
		NDF		LTS	+27.03
		PRC		LTS	+8.96
		MSG	1	0 L x W 0.07 x 0.10	
		VOL	0.58 1	108 LTS	+9.33
101	93	RBD		LTS	+5.00
		RBD		LTS	+7.49
		NDF		LTS	+6.67
		NDF		LTS	+8.06
		NDF		LTS	+8.46
		NDF		LTS	+11.18
		NDF		LTS	+12.49
		NDF		LTS	+13.93
		PRC		LTS	+5.31
		PRC		LTS	+7.49
		MSG		SEE ENTRY ON CAL 1019	
		MSG	1	0 L x W 0.13 x 0.10	
		MSG	1	0 L x W 0.14 x 0.08	
		VOL	0.34 1	117 LTS	+7.56
		VOL	0.84 1	69 LTS	+5.23
101	98	NDF		LTS	+13.21
106	33	NDF		LTS	+12.72
106	35	VOL	0.05 1	73 LTS	+9.10
		VOL	0.48 1	66 LTS	+11.20
		VOL	0.53 1	76 LTS	+11.79
		VOL	0.54 1	105 LTS	+9.26
		VOL	0.58 1	109 LTS	+6.81
		MSG	1	0 L x W 0.09 x 0.06	+ 9.10
		MSG	1	0 L x W 0.11 x 0.10	+11.20
		MSG	1	0 L x W 0.11 x 0.11	+11.79
		MSG	1	0 L x W 0.13 x 0.10	+ 9.26
		MSG	1	0 L x W 0.13 x 0.11	+ 6.81
106	42	NDF		LTS	+14.93
		VOL	0.77 1	135 LTS	+16.48
		MSG	1	0 L x W 0.12 x 0.11	+16.48
106	47	NDF		LTS	+14.31
		NDF		LTS	+14.96
		VOL	0.43 1	89 LTS	+9.85
		MSG	1	0 L x W 0.18 x 0.16	+ 9.85
106	50	NDF		LTS	+13.67

Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TIME IND STM VOLTS CHW DEG LOCATION

106	74	NDF			LTS	+9.25
106	87	NDF			LTS	+16.22
		VOL	0.47	1	43 LTS	+6.39
		MSG		1	0 L x W 0.13 x 0.11	+6.2
111	17	NDF			UTS	+2.90
111	33	VOL	0.83	1	113 LTS	+9.08
		MSG		1	0 L x W 0.13 x 0.11	+9.08
111	41	NDF			LTS	+6.68
		NDF			LTS	+7.32
		NDF			LTS	+12.46
		NDF			LTS	+14.93
		VOL	0.42	1	140 LTS	+10.37
		VOL	0.44	1	99 LTS	+10.56
		VOL	0.47	1	73 LTS	+8.26
		VOL	0.59	1	115 LTS	+13.93
		VOL	1.09	1	99 LTS	+8.85
		MSG		1	0 L x W 0.09 x 0.08	+8.26
		MSG		1	0 L x W 0.11 x 0.09	+10.37
		MSG		1	0 L x W 0.12 x 0.10	+10.56
		MSG		1	0 L x W 0.13 x 0.11	+13.93
		MSG		1	0 L x W 0.16 x 0.15	+8.85
111	43	NDF			LTS	+25.33
		NDF			LTS	+26.38
111	45	NDF			LTS	+16.42
111	47	NDF			LTS	+8.98
111	63	NDF			OTS	+32.18
111	66	MSG		P 1	0 L x W 0.11 x 0.09	WAR
		WAR	8	0.41 P 1	0 07S	-0.68
111	71	MSG		P 1	0 L x W 0.12 x 0.11	WAR
		WAR	13	1.02 P 1	0 07S	-0.72
111	74	NDF			OTS	+20.86
111	48	NDF			LTS	+7.92
		NDF			LTS	+9.46
		NDF			LTS	+18.83
		NDF			LTS	+11.53
		NDF			LTS	+15.31
		NDF			LTS	+16.94
		NDF			LTS	+24.71
		VOL	0.49	1	114 LTS	+13.99
		VOL	0.66	1	74 LTS	+14.57
		VOL	0.79	1	45 LTS	+15.36
		MSG		1	0 L x W 0.10 x 0.08	+14.57
		MSG		1	0 L x W 0.11 x 0.11	+15.36
		MSG		1	0 L x W 0.12 x 0.12	+13.99
114	26	NDF			UTS	+4.10

Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND ATW VOLTS CHN DEG LOCATION

116	34	NDF			UTS	+2.96	
116	35	MSG	P 1	0 L x W	0.17 x 0.15	WAR	
		WAR	10	1.35 P 1	0 07S	-0.74	
116	41	NDF			LTS	+8.75	
116	42	NDF			LTS	+5.13	
		NDF			LTS	+7.70	
		NDF			LTS	+12.30	
		VOL	0.52 1	86	LTS	+23.32	
		MSG	1	0 L x W	0.11 x 0.10	+23.26	
116	43	NDF			LTS	+5.82	
		NDF			LTS	+6.28	
		NDF			LTS	+9.11	
116	44	NDF			LTS	+12.31	
		NDF			LTS	+16.18	
116	50	NDF			08S	+19.31	
		NDF			08S	+21.01	
		NDF			08S	+28.88	
		NDF			09S	+3.70	
		NDF			09S	+14.29	
116	61	MSG	P 1	0 L x W	0.11 x 0.09	WAR	
		WAR	8	0.59 P 1	0 07S	-0.80	
116	70	NDF			03S	+35.29	
116	74	NDF			02S	+35.89	
116	75	NDF			03S	-0.73	
116	97	NDF			10S	+2.28	
122	21	RIC			LTS	+16.97	
		MSG	1	0 L x W	0.37 x 0.25		
		VOL	1.92 1	90	LTS	-6.70	
122	93	NDD					
		NDD					
126	2	MSG	P 1	0 L x W	0.26 x 0.13	WAR	
		MSG	P 1	0 L x W	0.30 x 0.18	WAR	
		WAR	10	1.23 P 1	0 10S	-0.69	
		WAR	13	1.67 P 1	0 10S	+0.70	
126	8	RIC			14S	+27.04	
		NDF			15S	-7.96	
126	11	RIC			UTS	+21.34	
		MSG	1	0 L x W	0.62 x 0.31		
		VOL	2.17 1	74	UTS	+21.25	
126	26	MSG	P 1	0 L x W	0.13 x 0.08	WAR	
		WAR	7	1.94 P 1	0 15S	-0.76	
126	59	NDF			12S	+3.51	
126	76	NDF			15S	+32.18	
126	98	NDF			06S	+19.30	
		NDF			15S	+32.94	

Table 5B (continued)  
B OTSG  
MRPC CHARACTERIZATION AND DEPTH SIZING

ROW TUBE IND RTW VOLTS CMR DEG LOCATION

129	41	NDF			LTS	+21.25
131	23	NDF			UTS	+1.52
131	31	NDF			UTS	+17.56
		MSG	1		0 L x W	0.49 x 0.31
		VOL	1.27	1	92 UTS	+20.52
134	3	MSG		P 1	0 L x W	0.30 x 0.18 WAR
		WAR	10	1.28	P 1 0 10S	+0.69
136	25	NDF			07S	-0.80
136	28	NDF			07S	-0.85
138	53	NDF			06S	+10.87
141	6	MSG		P 1	0 L x W	0.15 x 0.15 WAR
		MSG		P 1	0 L x W	0.19 x 0.14 WAR
		WAR	7	0.88	P 1 0 10S	-0.69
		WAR	21	2.92	P 1 0 10S	+0.70
141	20	NDF			12S	+12.54
141	26	NDF			07S	-0.84
41	61	NDF			05S	+0.34
51	15	NDF			07S	+1.11
151	16	NDF			07S	+1.01
		NDF			10S	+10.43

Total Indications Found = 785

Total Tubes Found = 252