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Fred Dacimo
Vice President, Operations

December 8, 2003

Re: Indian Point Unit No. 3
Docket No. 50-286
NL-03-182

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

Subject: Steam Generator Tube Inservice Examination
Results For 2003 Refueling Outage 12 (R12)

Dear Sir:

Pursuant to Technical Specification 5.6.8, Entergy Nuclear Operations, Inc (Entergy) hereby submits a report of the Steam Generator (SG) inservice tube examination conducted during the 2003 refueling outage.


The inspection report is in attachment 1. The inspection exceeded the requirement to test 12 percent of the tubes in one SG. A full-length inspection was performed on 25 percent of the tubes in rows 3 to 45 and 26 percent of the tubes in rows 1 and 2. An inspection of the row 1 and 2 U-bend regions was performed on 60 percent of the SG 31 and 32 tubes and 100 percent of the SG 33 and 34 tubes. An inspection of the tube expansion transitions at the hot leg top of tube sheet was performed for 20 percent of the 31 and 32 SG tubes and 30 percent of the 32 and 33 SG tubes. All of the cold leg annulus and tube lane peripheral tube expansion transitions were inspected. The inspections used a bobbin coil or plus point rotating pancake coil. The inspection provided no indications of service-induced degradation in the SG. Twelve tubes were preventatively plugged as a result of magnetic permeability variations or measurable wall loss attributed to manufacturing anomalies or maintenance activities. No tubes met the criterion for repair and none were repaired.

No new regulatory commitments are being made by Entergy in this correspondence.

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Should you or your staff have any questions regarding this matter, please contact Mr. William Blair, Manager, Licensing at (914) 734-5336.

Sincerely,



Fred R. Dacimo
Vice President, Operations
Indian Point Energy Center

Attachment

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ATTACHMENT 1 TO NL-03-182

R12 STEAM GENERATOR TUBE INSERVICE EXAMINATION REPORT

Entergy Nuclear Operations, Inc
Indian Point Nuclear Generating Unit 3
Docket No. 50-286

Steam Generator Inspection Scope

The Indian Point Unit 3 refuel outage 12 (March 2003) steam generator eddy current inspection was the fifth in-service inspection (ISI) for the replacement steam generators installed in 1989. All four steam generators were examined marking the fourth inspection for each steam generator (SG). At the time of the inspection, the replacement steam generators had accumulated 8.8 effective full power years (EFPY) of operating time. The inspection scope is described below with details. The extent and numbers of tubes are provided in Table 1. Table 2 provides the acronyms used. The inspection scope exceeded the requirements in technical specification 5.5.8 to inspect 12% of the tubes in one SG.

Bobbin Inspections

Full Length: A full-length bobbin coil inspection was performed on a patterned basis of 25% of the open tubes in rows 3 through 45 of each SG (i.e., 756 tubes per SG or 3021 tubes total). Bobbin probes do not provide adequate data for the U-bend portions of the tubes in rows 1 and 2 so a combination of bobbin and plus point RPC was used in 26% of the tubes in those rows in each SG (72 tubes per SG or 288 tubes total) to achieve a full-length inspection of the tubes. The bobbin probe was used to examine the hot and cold leg straight sections in rows 1 and 2 and the remaining U-bend portion of the tubes were examined with plus point RPC. Three tubes from row 3 in 34 steam generator had restrictions to passing a 0.700" bobbin probe in the U-bend region so those sections were also inspected with plus point RPC probes.

Plus Point Rotating Pancake Coil (+PT RPC) Inspections

Low Row U-Bends: Sixty percent of the row 1 and 2 U-bend regions (top support plate cold to top support plate hot) in 31 and 32 steam generators (111 tubes per SG) were inspected with a plus point RPC probe. The inspected tubes had not been previously inspected. When combined with the 40% inspected since the SG were placed in service, this completed 100% of the row 1 and 2 U-bend population inspected with plus point RPC probes. One hundred percent of the row 1 and 2 U-bend regions in 33 and 34 steam generators (184 tubes per SG) were inspected with a plus point RPC probe. Previous inspections since the SG were placed in service looked at 20% of the tubes from rows 1 and 2 on a random basis.

Hot Leg Expansion Transitions: Twenty percent of the tube expansion transitions at the hot leg top of tube sheet (HL TTS +/-3 inches) not inspected since the SGs were placed in service were inspected with plus point RPC in 31 and 32 steam generators (644 tubes per generator) on a patterned basis. Previously, 40% of the tubes had been inspected bringing the total population inspected to date to 60% in 31 and 32 steam generators. Thirty percent of the tube expansion transitions at the hot leg top of tube sheet not inspected since the SGs were placed in service were inspected with plus point RPC in 33 and 34 steam generators (965 tubes per SG) on a patterned basis. The selected sample population was biased to capture all annulus and tube lane peripheral tubes not previously inspected. Previously, 20% of the tubes had been inspected bringing the total population inspected to date to 50% in 33 and 34 steam generators.

Cold Leg Expansion Transitions: All of the annulus and tube lane peripheral tube expansion transitions (CL TTS +/-3 inches) on the cold legs in all four steam generators were inspected with plus point RPC to look for any evidence of low level loose part wear (270 tubes per SG 31, 32, and 33, and 268 tubes for 34 SG which had 2 tubes plugged previously).

Special Interest Inspections: All dent and ding indications found with bobbin in the straight leg tube sections of the hot leg measuring greater than 5 volts were inspected with plus point RPC. This totaled 7 tubes from the four steam generators. Two cold leg expansion transitions that had pre-service bobbin indications of transitions that were too high were examined with plus point RPC. Three volumetric indications at the top of the tube sheet in 3 peripheral tubes previously identified in 1999 were re-inspected in 3R12 with plus point RPC to monitor for growth and re-size the depths with a new eddy current technique. Fifty other plus point RPC inspections were performed in the four SGs to investigate and characterize indications such as volumetrics, possible loose parts, trackable anomalies and non-quantifiable indications found with the bobbin probe.

Scope Expansions: During the initial bobbin inspection of the row 1 hot leg straight sections, three volumetric indications were found approximately 15.5 inches above the top of the tube sheet. The indication was attributed to wear from contact with a latching pin on sludge lance equipment that was used for the first time in 2001. No eddy current inspections were performed during that outage. Based on a review of the sludge lance equipment design, the bobbin inspection of the row 1 hot and cold straight leg tube sections was expanded to 20 tubes in each leg to capture and buffer other potential contact points. A total of 9 volumetric indications were found in 8 tubes with depths ranging from 8 to 26% through wall (TW).

Indications of Imperfections

A summary of indications found during the R12 steam generator inspection is presented in Table 3. Detailed listings of the indications for each steam generator are provided in tables 4 through 7. For reference, Table 8 provides a description of the location codes used to document the indications and Figure 1 provides a tube sheet map.

There were four indications identified that meet the technical specification criteria for degradation (i.e., wall loss depths exceeding 20% through wall (TW)). No indications exceeded the 39% TW criteria for a defective tube. Eight other indications with measurable wall loss ranging from 8 to 16% TW were found in seven tubes.

None of the 12 tubes with indications of measurable wall loss could be attributed to service conditions. The three volumetric indications at the top of the tube sheet in peripheral tubes were originally attributed to possible loose part wear when discovered in 1999 but closer examination of the indications revealed that two of the indications extended slightly below the top of the tube sheet. It is more likely that the indications were anomalies from the manufacturing process that were too small to be found with the bobbin probe used during the pre-service inspection. The voltage indications for the three volumetric indications did not change from the 1999 values indicating no growth but the reported depths increased because of a change to a more conservative sizing standard used in 2003.

The remaining eight volumetric indications were found in seven row 1 tubes coinciding with the locations of latch pins on the sludge lance equipment used in 2001. A visual inspection of two of the indications confirmed that the wear scars faced the tube lane consistent with the theory that the wear was the result of contact with sludge lance equipment inserted down the tube lane in the steam generators.

The remaining indications of imperfections were consistent with what had been found in previous inspections. No indications of loose part wear was found during this inspection.

Identification of Tubes Plugged

Table 9 identifies the individual tubes that were plugged and the reasons for removal from service.

A total of 12 tubes were administratively plugged during the R12 inspection with Westinghouse (W) mechanical plugs fabricated from Alloy 690. No tubes were repaired. A total of 8 tubes were plugged due to volumetric indications attributed to wear caused by sludge lancing equipment used during the previous refueling outage. Three adjacent peripheral tubes in 32 SG were plugged due to volumetric indications at the top of the tube sheet that are believed to be manufacturing anomalies. One tube was plugged that did not have any indications of degradation but exhibited magnetic permeability variations that reduced the sensitivity for detecting small flaws. None of the tubes plugged met EPRI PWR Steam Generator Examination Guidelines, Revision 5 criterion for requiring repair and all indications were less than the technical specification repair limit. No crack-like indications were reported.

Conclusions:

The results of this steam generator inspection provided no indications of service-induced degradation occurring in the replacement steam generators after 8.8 effective full power years (EFPY) of service. No tube wear from contact with wear structures was identified as well as no corrosion related degradation. All indications with measurable wall loss were attributed to manufacturing anomalies or maintenance activities and were preventatively plugged to maximize the integrity of the steam generator tubing. One tube with a significant permeability variation over the length of the expansion transition inspection was plugged to ensure that the initiation of any potential degradation would not be left in-service undetected.

Table 1
Summary of 3R12 Steam Generator Inspection Scope

| Routine Inspections (number of tubes and percent of tube population) | | | | | | |
|---|--|---------------|-------------------|-------------------|--------------------|--------------------|
| Total | Inspection | Extent | 31 SG | 32 SG | 33 SG | 34 SG |
| 2928 25% | 0.720" bobbin FL Rows 4-45 full length | TEC-TEH | 732 25% | 732 25% | 732 25% | 732 25% |
| 93 25% | 0.700" bobbin Row 3 U-bends | 6C-6H | 24 26% | 24 26% | 24 26% | 21 23% |
| 3 1% | 0.680" +PT RPC Row 3 bobbin restricted | 6C-6H | 0 | 0 | 0 | 3 3% |
| 288 26% | 0.720" bobbin HL SL Rows 1-3 HL straight leg | 6H-TEH | 72 26% | 72 26% | 72 26% | 72 26% |
| 288 26% | 0.720" bobbin CL SL Rows 1-3 CL straight leg | 6C-TEC | 72 26% | 72 26% | 72 26% | 72 26% |
| 590 80% | 0.680" +PT RPC Row 1-2 U-bends | 6C-6H | 111 60% | 111 60% | 184 100% | 184 100% |
| 3218 25% | HL TTS +PT RPC | TTS +/-3" | 644 20% | 644 20% | 965 30% | 965 30% |
| 1078 8% | CL TTS +PT RPC Annulus/Tubelane | TTS +/-3" | 270 8% | 270 8% | 270 8% | 268 8% |
| Special Interest Inspections (number of tubes only) | | | | | | |
| Total | Inspection | Extent | 31 SG | 32 SG | 33 SG | 34 SG |
| 80 | 0.720" bobbin HL SL Row 1 expansion for sludge lance rail wear | 6H-TEH | 20 | 20 | 20 | 20 |
| 80 | 0.720" bobbin CL SL Row 1 expansion for sludge lance rail wear | 6C-TEC | 20 | 20 | 20 | 20 |
| 4 | 0.720" bobbin FL | TEC-TEH | 0 | 4 | 0 | 0 |
| 21 | HL TTS +PT RPC VOLs, PLPs, TRA | TTS +/-3" | 6 | 4 | 6 | 5 |
| 7 | HL +PT RPC dent/ding | Various | 1 | 2 | 2 | 2 |
| 24 | Miscellaneous HL | Various | 9 | 13 | 2 | 0 |
| 2 | CL TTS +PT RPC Transition too high | TTS +/-3" | 1 | 0 | 0 | 1 |
| 5 | Miscellaneous CL | Various | 0 | 2 | 2 | 1 |

Table 2
Eddy Current Data Acronyms

| 3-Letter Codes | Description | Other Acronyms | Description |
|-----------------------|------------------------------|-----------------------|--|
| DNG | Ding | 3R12 | Unit 3-12 th Refueling Outage |
| DNT | Dent | CL | Cold Leg |
| FSD | Freespan Differential Signal | FL | Full Length |
| MBM | Manufacturing Buff Mark | HL | Hot Leg |
| PLP | Possible Loose Part | +PT | Plus Point |
| PVN | Permeability Variation | RPC | Rotating Pancake Coil |
| TRA | Trackable Anomaly | SL | Straight Leg Section |
| VOL | Volumetric Signal | SG | Steam Generator |
| TTS | Top Tube Sheet | TEC | Tube End Cold |
| BPH | Baffle Plate Hot | THE | Tube End Hot |
| BPC | Baffle Plate Cold | TSC | Tube sheet cold |
| | | TSH | Tube sheet hot |

Table 3
3R12 Inspection Results - Overall Summary

| Total | Indications | SG 31 | SG 32 | SG 33 | SG 34 |
|----------------|--------------------------|--------------|---------------|---------------|----------------|
| 31 / 28 | # DNG's / # Tubes | 4 / 4 | 7 / 7 | 6 / 6 | 14 / 11 |
| 34 / 21 | # DNT's / # Tubes | 2 / 2 | 0 / 0 | 0 / 0 | 32 / 19 |
| 25 / 14 | # FSD's / # Tubes | 9 / 5 | 3 / 3 | 10 / 3 | 3 / 3 |
| 24 / 22 | # MBM's / # Tubes | 5 / 4 | 10 / 9 | 4 / 4 | 5 / 5 |
| 4 / 4 | # PLP's / # Tubes | 3 / 3 | 0 / 0 | 0 / 0 | 1 / 1 |
| 5 / 4 | # PVN's / # Tubes | 2 / 2 | 0 / 0 | 0 / 0 | 1 / 1 |
| 1 / 1 | # TRA's / # Tubes | 0 / 0 | 1 / 1 | 0 / 0 | 0 / 0 |
| 12 / 11 | # VOL's / # Tubes | 0 / 0 | 6 / 6 | 4 / 3 | 2 / 2 |

Table 4
Indications of Imperfections in 31 Steam Generator – 3RF12

| Tube | | 3-Letter Code | Volts | Percent Depth | Location of Indication | | |
|------|-----|---------------|-------|---------------|------------------------|--------|-------|
| Row | Col | | | | Support | Inch1 | Inch2 |
| 29 | 17 | DNG | 2.25 | | 1C | +27.91 | |
| 38 | 34 | DNG | 3.10 | | 3C | +27.48 | |
| 44 | 49 | DNG | 3.07 | | 3C | +2.00 | |
| 19 | 66 | DNG | 2.16 | | AV6 | +3.51 | |
| 39 | 26 | DNT | 2.31 | | AV2 | -0.60 | |
| 18 | 50 | DNT | 2.10 | | BPH | +0.06 | |
| 35 | 26 | FSD | 0.30 | | 1C | +15.08 | |
| 35 | 26 | FSD | 0.32 | | 1C | +23.34 | |
| 22 | 34 | FSD | 0.25 | | 3C | +44.66 | |
| 22 | 34 | FSD | 0.21 | | 2C | +29.64 | |
| 22 | 34 | FSD | 0.29 | | 1C | +31.64 | |
| 22 | 34 | FSD | 0.18 | | TSC | +8.48 | |
| 41 | 42 | FSD | 0.49 | | 1C | +14.90 | |
| 6 | 49 | FSD | 0.93 | | 4C | +43.72 | |
| 19 | 81 | FSD | 0.24 | | 2H | +47.62 | |
| 24 | 10 | MBM | 2.27 | | 5H | +8.85 | |
| 3 | 34 | MBM | 4.41 | | 4H | +48.62 | |
| 3 | 34 | MBM | 4.59 | | 4H | +48.24 | |
| 44 | 50 | MBM | 2.48 | | 2C | +49.37 | |
| 8 | 58 | MBM | 2.24 | | 2C | +3.89 | |
| 24 | 46 | PLP | 0.72 | | TSH | +0.09 | |
| 27 | 10 | PVN | 2.20 | | 1C | +32.66 | |
| 28 | 29 | PVN | 4.07 | | TSH | -4.96 | 5.04 |

Table 5
Indications of Imperfections in 32 Steam Generator – 3RF12

| Tube | | 3-Letter Code | Volts | Percent Depth | Location of Indication | | |
|------|-----|---------------|-------|---------------|------------------------|--------|-------|
| Row | Col | | | | Support | Inch1 | Inch2 |
| 31 | 17 | DNG | 2.10 | | AV6 | +2.99 | |
| 35 | 25 | DNG | 4.38 | | 5H | +11.18 | |
| 15 | 26 | DNG | 2.20 | | 5H | +3.64 | |
| 27 | 34 | DNG | 2.29 | | AV5 | +8.57 | |
| 8 | 42 | DNG | 3.03 | | 6H | +31.49 | |
| 23 | 58 | DNG | 2.23 | | 6H | +17.06 | |
| 37 | 66 | DNG | 2.15 | | 3C | +12.58 | |
| 16 | 26 | FSD | 0.32 | | 3H | +16.36 | |
| 2 | 57 | FSD | 0.21 | | 3C | +3.10 | |
| 41 | 65 | FSD | 0.51 | | 2C | +33.67 | |
| 31 | 17 | MBM | 2.34 | | AV6 | +3.45 | |
| 3 | 18 | MBM | 2.41 | | BPC | +15.48 | |
| 34 | 18 | MBM | 3.72 | | 4H | +41.80 | |
| 22 | 26 | MBM | 3.35 | | 3H | +26.89 | |
| 28 | 34 | MBM | 2.92 | | 4H | +19.20 | |
| 32 | 42 | MBM | 2.24 | | 4H | +13.71 | |
| 32 | 42 | MBM | 2.14 | | 5H | +20.09 | |
| 5 | 49 | MBM | 3.09 | | 3H | +36.46 | |
| 19 | 74 | MBM | 2.16 | | TSH | +18.76 | |
| 28 | 81 | MBM | 2.87 | | AV5 | -1.94 | |
| 5 | 37 | TRA | 0.12 | | TSH | +0.13 | |
| 1 | 9 | VOL | 0.18 | 8 | TSC | +16.01 | |
| 41 | 28 | VOL | 0.41 | 34 | TSH | -0.07 | |
| 40 | 29 | VOL | 0.38 | 32 | TSH | +0.15 | |
| 41 | 29 | VOL | 0.26 | 24 | TSH | +0.00 | |
| 1 | 66 | VOL | 0.29 | 13 | TSC | +18.16 | |
| 1 | 85 | VOL | 0.26 | 11 | TSH | +16.67 | |

Table 6
Indications of Imperfections in 33 Steam Generator – 3RF12

| Tube | | 3-Letter Code | Volts | Percent Depth | Location of Indication | | |
|------|-----|---------------|-------|---------------|------------------------|--------|-------|
| Row | Col | | | | Locn | Inch1 | Inch2 |
| 37 | 25 | DNG | 2.48 | | 3H | +48.28 | |
| 7 | 33 | DNG | 6.02 | | 6H | +4.10 | |
| 11 | 34 | DNG | 2.13 | | 5C | +18.91 | |
| 29 | 41 | DNG | 2.37 | | AV1 | +4.04 | |
| 20 | 49 | DNG | 2.26 | | 6H | +15.91 | |
| 27 | 58 | DNG | 4.19 | | 5C | +24.88 | |
| 37 | 34 | FSD | 0.42 | | 3C | +7.34 | |
| 38 | 42 | FSD | 0.64 | | 1H | +48.99 | |
| 31 | 58 | FSD | 0.21 | | 3H | +23.29 | |
| 31 | 58 | FSD | 0.24 | | 4C | +15.39 | |
| 31 | 58 | FSD | 0.33 | | 3C | +9.16 | |
| 31 | 58 | FSD | 0.38 | | 3C | +17.44 | |
| 31 | 58 | FSD | 0.35 | | 3C | +42.53 | |
| 31 | 58 | FSD | 0.40 | | 2C | +27.86 | |
| 31 | 58 | FSD | 0.30 | | 2C | +36.30 | |
| 31 | 58 | FSD | 0.35 | | 2C | +44.58 | |
| 30 | 42 | MBM | 2.11 | | 4H | +28.02 | |
| 29 | 50 | MBM | 2.08 | | 2H | +45.78 | |
| 21 | 66 | MBM | 2.06 | | 1H | +2.91 | |
| 20 | 73 | MBM | 2.07 | | AV6 | +14.44 | |
| 2 | 18 | PVN | 2.06 | | 5C | +31.62 | |
| 2 | 18 | PVN | 2.01 | | 5C | +33.31 | |
| 1 | 8 | VOL | 0.20 | 9 | TSC | +16.51 | |
| 1 | 27 | VOL | 0.30 | 12 | TSC | +17.86 | |
| 1 | 27 | VOL | 0.43 | 16 | TSH | +18.04 | |
| 1 | 66 | VOL | 0.74 | 26 | TSH | +15.62 | |

Indications of Imperfections in 34 Steam Generator – 3RF12

Continued on next page

Table 7 (cont'd)
Indications of Imperfections in 34 Steam Generator – 3RF12

| Tube | | 3-Letter Code | Volts | Percent Depth | Location of Indications | | |
|------|-----|---------------|-------|---------------|-------------------------|--------|-------|
| Row | Col | | | | Support | Inch1 | Inch2 |
| 39 | 66 | DNT | 2.32 | | 5C | +0.63 | |
| 40 | 66 | DNT | 4.31 | | 5C | -0.36 | |
| 40 | 66 | DNT | 6.01 | | 5C | +0.74 | |
| 23 | 74 | DNT | 2.29 | | 1H | -0.22 | |
| 30 | 74 | DNT | 2.27 | | AV4 | -0.60 | |
| 30 | 74 | DNT | 2.59 | | AV5 | -0.55 | |
| 12 | 89 | DNT | 2.03 | | 5H | +0.60 | |
| 12 | 90 | DNT | 2.09 | | 5H | +0.69 | |
| 1 | 10 | FSD | 0.37 | | 4C | +11.16 | |
| 28 | 82 | FSD | 0.44 | | 4C | +15.24 | |
| 1 | 86 | FSD | 1.16 | | TSC | +20.32 | |
| 3 | 50 | MBM | 3.96 | | 2C | +23.08 | |
| 1 | 64 | MBM | 2.01 | | 5C | +45.03 | |
| 5 | 66 | MBM | 2.26 | | TSH | +1.87 | |
| 14 | 66 | MBM | 3.12 | | 4C | +45.58 | |
| 1 | 84 | MBM | 2.03 | | 2H | +31.36 | |
| 4 | 45 | PLP | 0.20 | | TSH | +0.49 | |
| 42 | 50 | PVN | 1.69 | | 4C | +10.33 | |
| 1 | 8 | VOL | 0.24 | 10 | TSH | +16.69 | |
| 1 | 84 | VOL | 0.28 | 11 | TSC | +16.92 | |

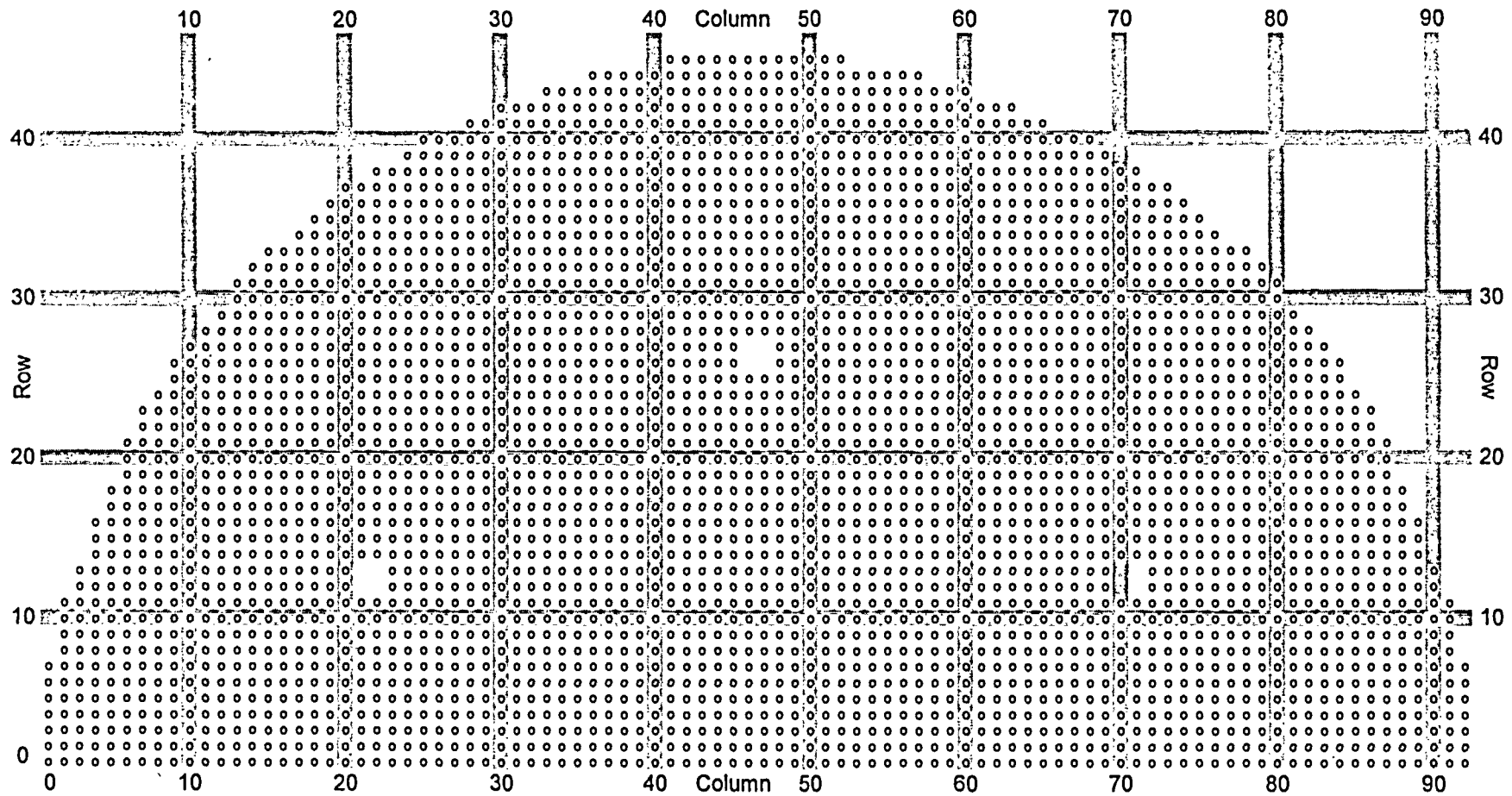
Table 8
Steam Generator Elevation Locations

| Location Code | Support Structure Description | Distance from Tube End or Note |
|----------------------|--|---------------------------------------|
| TEH | Tube End Hot Leg | 0.00" |
| TSH | Tubesheet Hot (secondary face) | 22.01" |
| BPH | Baffle Plate Hot (flow distribution baffle) | 45.39" |
| 1H | 1 st Tube Support Plate on Hot Leg | 73.84" |
| 2H | 2 nd Tube Support Plate on Hot Leg | 126.23" |
| 3H | 3 rd Tube Support Plate on Hot Leg | 178.62" |
| 4H | 4 th Tube Support Plate on Hot Leg | 231.01" |
| 5H | 5 th Tube Support Plate on Hot Leg | 283.40" |
| 6H | 6 th Tube Support Plate on Hot Leg | 331.79" |
| AV1 | 1 st Anti-Vibration Bar Support | Rows 9 to 45 only |
| AV2 | 2 nd Anti-Vibration Bar Support | Rows 14 to 45 only |
| AV3 | 3 rd Anti-Vibration Bar Support | Rows 25 to 45 only |
| AV4 | 4 th Anti-Vibration Bar Support | Rows 25 to 45 only |
| AV5 | 5 th Anti-Vibration Bar Support | Rows 14 to 45 only |
| AV6 | 6 th Anti-Vibration Bar Support | Rows 9 to 45 only |
| 6C | 6 th Tube Support Plate on Cold Leg | 331.79" |
| 5C | 5 th Tube Support Plate on Cold Leg | 283.40" |
| 4C | 4 th Tube Support Plate on Cold Leg | 231.01" |
| 3C | 3 rd Tube Support Plate on Cold Leg | 178.62" |
| 2C | 2 nd Tube Support Plate on Cold Leg | 126.23" |
| 1C | 1 st Tube Support Plate on Cold Leg | 73.84" |
| BPC | Baffle Plate Cold (flow distribution baffle) | 45.39" |
| TSC | Tubesheet Cold Leg (secondary face) | 22.01" |
| TEC | Tube End Cold Leg | 0.00" |

Table 9
Locations of Indications Plugged During 3R12

| SG | Row | Col | Location | Code | Depth | Reason for Plugging |
|----|-----|-----|----------------------------|------|------------|--|
| 31 | 28 | 29 | TSH +0.00" | PVN | n/a | Plugged preventatively due to PVN |
| 32 | 40 | 29 | TSH +0.15" | VOL | 32% | Manufacturing Anomaly or Artifact Entergy decision to preventatively plug |
| | 41 | 28 | TSH +0.12" | VOL | 34% | Manufacturing Anomaly or Artifact Entergy decision to preventatively plug |
| | 41 | 29 | TSH +0.05" | VOL | 24% | Manufacturing Anomaly or Artifact Entergy decision to preventatively plug |
| | 1 | 9 | TSC +16.01" | VOL | 8% | Sludge lance rail wear Entergy decision to preventatively plug |
| | 1 | 66 | TSC +18.16 | VOL | 13% | Sludge lance rail wear Entergy decision to preventatively plug |
| | 1 | 85 | TSH +16.67" | VOL | 11% | Sludge lance rail wear Entergy decision to preventatively plug |
| 33 | 1 | 8 | TSC +16.51" | VOL | 9% | Sludge lance rail wear Entergy decision to preventatively plug |
| | 1 | 27 | TSC +17.86" TSH +18.04" | VOL | 12% 16% | Sludge lance rail wear Entergy decision to preventatively plug |
| | 1 | 66 | TSH +15.72" | VOL | 26% | Sludge lance rail wear Entergy decision to preventatively plug |
| 34 | 1 | 8 | TSH +16.69" | VOL | 10% | Sludge lance rail wear Entergy decision to preventatively plug |
| | 1 | 84 | TSC +16.92" | VOL | 11% | Sludge lance rail wear Entergy decision to preventatively plug |

Figure 1



Steam Generator Tubesheet Map (one leg)
Westinghouse Model 44F (Indian Point 3)
Column 1 is the nozzle side of SG