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June 16, 2000

Re: Indian Point Unit No. 2
Docket No. 50-247

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555-0001

Subject: Response to the Staff's Requests for Additional Information (RAI) Regarding the Steam Generator Tube Examinations conducted during Spring of 2000 Outage, and the Root Cause Evaluation of the Steam Generator Tube Rupture Event of February 15, 2000 (TAC No. MA8219)

References:
1) NRC Letter to Con Edison dated March 14, 2000
2) NRC Letter to Con Edison dated March 24, 2000
3) NRC Letter to Con Edison dated April 28, 2000
4) Con Edison Letter to NRC dated April 14, 2000

Pursuant to 10 CFR 50.54(f), Consolidated Edison Company of New York, Inc. (Con Edison) hereby provides additional responses to the Staff's requests for additional information, which were provided to us in References 1 and 2. Also provided are our responses to the Staff's questions regarding the Root Cause Evaluation of the February 15, 2000 steam generator tube rupture event. This evaluation was previously transmitted to the Staff by Reference 4.

Specifically, this letter provides Con Edison's responses to Questions 1 and 5 identified in Reference 1, Questions 1, 12, and 21 identified in Reference 2, and Issues 1, 3, 8, 9, 10, 11 and 13 identified in Reference 3.

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

Should you or your staff have any concerns regarding this matter, please contact Mr. John McCann, Manager, Nuclear Safety & Licensing.

Sincerely,

Attachment

A001

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Attachment

Response to Questions Regarding Steam Generator Tube Examinations
Performed During Spring 2000 Outage

Consolidated Edison Company of New York, Inc.
Indian Point Unit No. 2
Docket No. 50-247
June 2000

NRC RAI Letter dated March 14, 2000

Question 1

Summarize your specific plans for inspecting the steam generators (SGs). Include the inspection plans identified by individual areas of the SGs from both the tube side and the secondary side of the SGs.

Reply

Specific plans for inspecting the IP-2 steam generators were previously provided to the NRC on June 2, 2000. Provided were the attached Sections 3.1 through 3.4 of the "Indian Point 2 Cycle 14 Condition Monitoring Assessment and Cycle 15 Operational Assessment (CMOA) for Degradation Mechanisms Other than PWSCC," and the attached Sections 3.1 and 3.2 of the "Indian Point 2 U-bend PWSCC Cycle 14 Condition Monitoring Assessment and Cycle 15 Operational Assessment (CMOA)." Table 3.1 of the Non U-bend CMOA lists the probes used in the individual areas of the steam generators. Secondary side inspection plans were also addressed in the above.

3.0 Inspections

3.1 Summary

The IP 2 primary side steam generator inspection plan for the 2R14 outage was developed in accordance with Section 3 of the EPRI PWR Steam Generator NDE Guidelines.

Inspection requirements were selected based on identification of forms of degradation considered active or having the potential to occur in the IP2 steam generators. During the course of the inspection program, additional testing was deemed necessary to achieve better data quality for the U-bend examination program and to verify results from inspections in the sludge pile.

Table 3.1 provides the details for the base scope and additional scope for the IP 2 steam generator inspection program.

Table 3.1 -Eddy Current Test Program RFO 14 - Base Scope vs. Actual

Location	Base Scope RFO14		Additional Scope RFO14
	Detection	Disposition	Detection and Disposition
U-bend R2-3	+Point MR		+Point HF
U-bend R4	+Point MR		+Point HF on +Point MR BDA
U-bend R5 to R11	Bobbin		
U-bend > R11	(Cecco-)Bobbin		
AVB	(Cecco-)Bobbin		
TSP Pass ≥ .640	Cecco-Bobbin		
TSP Pass < .640	+Point MR DIP	+Point MR DIP	
Dent Gage .610	Bobbin		
Free Span	(Cecco-)Bobbin	+Point MR	
Free Span Sludge Pile	Cecco-Bobbin	+Point MR	
TE to TTS+24	--		+Point MR
Top of TS	Cecco(-Bobbin)		+Point MR
TS Crevice	Cecco(-Bobbin)	+Point MR	+Point MR
Re-Roll F*	Cecco-Bobbin, Combo	Combo, Bobbin	+Point MR/Combo
Roll Transition	Cecco-Bobbin Combo	Combo, Bobbin	+Point MR/Combo
Tube End	Cecco-Bobbin	Cecco	+Point MR

Note: Probe designation in parentheses indicates that the probe module on a combination probe was either inactive or un-qualified for the application.

3.2 Expansion of Sludge Pile and Tubesheet Inspections

During "post-in-situ" eddy current inspections of R34C51 in steam generator 22, an axial indication was detected in the crevice region which had not been reported during the Cecco/bobbin inspection program After considering several options, including reanalysis of the Cecco data, the IP2 steam generator inspection program was expanded to include a +Point program to provide a complementary inspection of the sludge pile and tubesheet crevice regions. The program consisted of two elements, one for the SG hot legs and one for the cold legs.

3.2.1 Hot Leg RPC Program

A +Point RPC inspection program was performed in the hot leg sludge pile region of all four steam generators. The logic for the +Point inspection program, based on Revision 5 of the EPRI PWR Steam Generator NDE Guidelines, was as follows:

1. A sample of 20% of the tubes in steam generators 21, 22, 23 and 24 was inspected from tube end hot (TEH) to just below the first hot leg support plate (TSP1), a distance of approximately 48" above the top of tubesheet. This sample was concentrated in the sludge pile "kidney region".

2. Results from this 20% sample were analyzed to establish the maximum elevation above the tubesheet at which axial indications were found, identify the height of the sludge pile, and define the upper boundary for +Point inspections of the remaining tubes in each steam generator. The highest axial indication reported in the four steam generators was 12.89" above the top of tubesheet. The mean sludge pile height using data concentrated in the steam generator kidney regions fell into a range from 3.8" to 6.2".

3. To add conservatism to the program the inspection height for the remaining tubes was defined as 20" plus a 20% buffer, or 24" above the top of tubesheet.

4. The remaining 80% of the hot leg tubes in all steam generators were examined from TEH to a height of 24" above the top of tubesheet.

5. The need for expansion of the hot leg inspection program was based on paragraphs 3.5 and 3.6 of Revision 5 of the EPRI PWR Steam Generator NDE Guidelines.

    - If less than 5% of the total tubes inspected are degraded, with none defective, a C-1 condition exists

    - If between 5% and 10% of the total tubes inspected are degraded, or one or more tubes, but not more than 1% of the total tubes inspected are defective, a C-2 condition exists

    - If more than 10% of the total tubes inspected are degraded or more than 1% of the inspected tubes are defective, a C-3 condition exists

- For cracks:

  In the event crack indications were found in the upper 4" of the inspection zone, the upper extent of the inspection zone would be extended to a distance just below the first hot leg support plate for 100% of the tubes in that steam generator.

- For non-cracks:

  In the event non-crack indications, classified as defective (exceeding the plugging limit of 28% through-wall as measured by bobbin), were found in the upper 4" of the inspection zone the upper extent of the inspection zone would be extended to a height equal the original height plus 20% for all tubes in that steam generator.

3.2.2 Cold Leg RPC Program

A +Point RPC inspection program was performed in the cold leg region of all four steam generators. The logic for the +Point inspection program, based on Revision 5 of the EPRI PWR Steam Generator NDE Guidelines, was as follows:

1. A random sample of 20% of the tubes in steam generator 23 was inspected from tube end cold (TEC) to just below the first cold leg support plate (TSP1) and analyzed to establish the maximum elevation above the tubesheet at which indications were found and to identify the height of the sludge pile. This sample focused on the "kidney region" and fell into the same range as that found in the hot leg RPC program. No evidence of ODSCC was identified, however there were some "pit-like" indications with maximum elevation of 7.62" above the top of the cold leg tubesheet.

2. The remaining three steam generators; 21, 22 and 24 were inspected to a height of 24" above the top of tubesheet. A 20% sample of SGs 21 and 22 CL tubes were inspected, and a 40% sample of the tubes in SGs 23 and 24 was inspected.

3. Expansion of the cold leg inspection program was based on paragraphs 3.5 and 3.6 of Revision 5 of the EPRI PWR Steam Generator NDE Guidelines, identical to the expansion criteria for the hot leg program.

   - For cracks:

     If crack indications were found in the cold leg of a given steam generator, expand the inspection sample from 20% to 100% of that steam generator cold leg.

   - For non-cracks:

     In the event non-crack indications, classified as defective (exceeding the plugging limit of 28% through-wall as measured by bobbin), were found within the zone bounded by 20" above the top of tubesheet, expand the inspection sample from 20% to 40% of the tubes in that steam generator.

In the event non-crack indications, classified as defective (exceeding the plugging limit of 28% through-wall as measured by bobbin), were found in the upper 4" of the inspection zone, 1) the upper extent of the inspection zone would be extended to a height equal the original height plus 20% and 2) expand the inspection sample from 20% to 40% of the tubes in that steam generator.

3.2.3 Results

Steam Generator 21 Hot Leg

The steam generator 21 hot leg RPC program involved +Point inspection of 603 tubes from tube end hot (TEH) to just below the first hot leg support plate (TSP 1H), a distance of approximately 48" above the top of tubesheet. Examinations of the remaining 2344 tubes were conducted from tube end hot (TEH) to a distance of 24" above the top of tubesheet. One indication of ODSCC and 13 pit-like indications were identified, none requiring expansion of the inspection program.

Steam Generator 21 Cold Leg

The steam generator 21 cold leg RPC program involved +Point inspection of 589 tubes from tube end cold (TEC) to a distance of 24" above the top of tubesheet. No evidence of cracking was identified in this sample. Eleven new pits were identified, none requiring an expansion of the program.

Steam Generator 22 Hot Leg

The steam generator 22 hot leg RPC program involved +Point inspection of 619 tubes from tube end hot (TEH) to just below the first hot leg support plate (TSP 1H), or to a distance of approximately 48" above the top of tubesheet. Examinations of the remaining 2235 tubes were conducted from tube end hot (TEH) to a distance of 24" above the top of tubesheet. Four new ODSCC indications and 77 pit-like indications were identified, none requiring expansion of the inspection program.

Steam Generator 22 Cold Leg

The steam generator 22 cold leg RPC program involved +Point inspection of 571 tubes from tube end cold (TEC) to a distance of 24" above the top of tubesheet. No evidence of cracking was identified in this sample. Eight new pits were identified none requiring expansion of the program.

Steam Generator 23 Hot Leg

The steam generator 23 hot leg RPC program involved +Point inspection of 620 tubes from tube end hot (TEH) to just below the first hot leg support plate (TSP 1H), or to a distance of approximately 48" above the top of tubesheet. Examinations of the remaining 2339 tubes were conducted from tube end hot (TEH) to a distance of 24" above the top of tubesheet. One new ODSCC indication and 20 pit-like indications were identified, none requiring expansion of the inspection program.

Steam Generator 23 Cold Leg

The steam generator 23 cold leg RPC program involved +Point inspection of 592 tubes from tube end cold (TEC) to just below the first cold leg support plate (TSP 1C), or to a distance of approximately 48" above the top of tubesheet. No evidence of ODSCC was identified in this sample. However, six new pits were identified. One of the pits had a depth in excess of the plugging limit of 28%, thus it was necessary to expand the program. The expansion program involved inspection of an additional sample of 591 cold leg tubes from TEC to a distance of 24" above the top of the tubesheet. Eighteen pit-like indications were identified in the expanded program, none requiring further expansion.

Steam Generator 24 Hot Leg

The steam generator 24 hot leg RPC program involved +Point inspection of 626 tubes from tube end hot (TEH) to just below the first hot leg support plate (TSP 1H), or to a distance of approximately 48" above the top of tubesheet. Examinations of the remaining 2271 tubes were conducted from tube end hot (TEH) to a distance of 24" above the top of tubesheet. One new ODSCC indication and 2 pit-like indications were identified, none requiring expansion of the inspection program.

Steam Generator 24 Cold Leg

The steam generator 24 cold leg RPC program involved +Point inspection of 581 tubes from tube end cold (TEC) to a distance of approximately 24" above the top of tubesheet. No evidence of cracking was identified in this sample. However, two new pits were identified. One of the pits had a depth in excess of the plugging limit of 28%, thus it was necessary to expand the program. The expansion program involved inspection of an additional sample of 581 cold leg tubes from TEC to a distance of approximately 24" above the top of the tubesheet. Fifteen pit-like indications were identified in the expanded program, none requiring further expansion.

3.3 UTEC Inspections

Ultrasonic examinations were conducted with the Westinghouse UTEC system on a sample of tubes in IP 2 steam generator 22 to support the eddy current program in place during 2R14 for detection and disposition of axial ODSCC in the freespan sludge pile regions. Ultrasonic inspection was selected because it is not affected by copper-bearing sludge.

The system was calibrated and examinations performed by qualified personnel in accordance with Westinghouse Nuclear Services Division Field Service Procedure STD-FP-1995-7281, Rev. 3, "Generic UTEC Inspection With ROSA III Delivery".

The ultrasonic testing program was conducted in two phases. The first phase involved inspection of localized areas of sixteen tubes in the hot leg where Cecco and/or bobbin eddy current examinations had identified indications and where +Point examinations were used for confirmation. The second phase of the ultrasonic testing program involved inspections of twenty-three tubes, some containing known eddy current indications and others with no reported eddy current signals. The UTEC

examinations during the second phase were performed from just above the first support plate to the top of tubesheet on the hot leg side. Three tubes subject to full-length in-situ pressure testing were included in this population.

Steam generator 22 was identified for this investigation because it had 3 axial indications confirmed by +Point, the most in any of the steam generators

3.3.1 Inspection Program Phase 1

Cecco and/or bobbin indications reported in the 2R14, 2000 sludge pile inspection program for steam generator 22 were identified as candidates for the first UTEC investigation. Twenty-two tubes containing Cecco and/or bobbin sludge pile indications fell into this category. Of that total, axial indications (MAIs and SAIs) were confirmed with +Point in 3 tubes. The objective of this inspection was to confirm the adequacy of the +Point coil for confirmation in the presence of deposits and that the CECCO probe was conservatively overcalling indications.

Six of the tubes in the original population of 22 were peripheral tubes, or otherwise not accessible to the UTEC end effector. Sixteen tubes were accessible for the ultrasonic examination program, including the 3 tubes with axial indications confirmed by +Point.

Scan lengths were 4.5" for each area. For top of tubesheet scans, the extents were generally from 3.0" above the top of tubesheet to 1.5" below the top of tubesheet. For the elevated scans, the 4.5" scan distance was generally centered about the eddy current indication location.

Results for the Cecco, +Point and ultrasonic inspections (UTEC) are summarized in Table 3.3-1. In instances where the bobbin probe originally identified the indication and a re-review of Cecco data revealed a Cecco call, the Cecco result is listed.

Consistent with the results of the eddy current program, UTEC identified axial ODSCC in three tubes, and there was general agreement regarding pits and volumetric indications and tubes with no detectable degradation. The UTEC data were used for information only; UTEC was not the probe of record that was used for determining tube plugging requirements.

3.3.2 Inspection Program Phase 2

Twenty-three tubes in steam generator 22 were identified as candidates for the second UT investigation. All twenty-three tubes were examined from one inch above the first hot leg support plate to one inch below the top of tubesheet, with the exception of R3C24. Denting of R3C24 at support plate 1 limited the start position of the UTEC probe to a point slightly below the first support plate elevation.

Of the population of twenty-three tubes, seven had indications confirmed with +Point and sixteen had no detectable degradation. Three of the twenty-three tubes had been subject to full-length in-situ pressure testing prior to these ultrasonic tests. The three tubes inspected after pressure testing included R3C24, R33C51 and R35C51.

Results for the +Point and ultrasonic inspections (UTEC) are summarized in Table 3.3-2. Consistent with the +Point confirmation results, seven of the twenty-three tubes inspected showed reportable indications with the UTEC probe. Four tubes had multiple axial indications, two tubes had indications typical of pitting and one tube showed evidence of thinning and/or wear. The remaining sixteen tubes were identified as no detectable degradation (NDD).

3.3.3 Inspection Program Conclusions

Results of the ultrasonic investigation are consistent with those of the eddy current program where Cecco and bobbin probes are used for detection in the sludge pile region. All indications reported by Cecco and or bobbin were examined using the rotating +Point probe. Cecco and/or bobbin indications confirmed by +Point are repaired. Those not confirmed by +Point are dispositioned "no detectable degradation" (NDD).

The agreement between results from the eddy current program and the investigation by ultrasonic testing support the eddy current protocol in place at IP 2. Despite the observation that eddy current signal-to-noise ratios in the sludge pile region tend to vary due to the presence of copper-bearing sludge and deposits, the Cecco/bobbin combination and +Point tend to provide a conservative result. This conclusion is supported by the following See Table 3.5-1 for definitions):

- All OD axial indications (SAI and MAI) confirmed by +Point were confirmed by UTEC.
- No additional axial indications were found by ultrasonic inspection in areas where +Point did not confirm the Cecco and/or bobbin calls as OD axial degradation.
- Cecco and/or bobbin indications not confirmed by +Point were also reported as NDD by UTEC.
- There was general agreement between +Point and UTEC on volumetrics (VOL) and pits (PIT).

3.4 Other Inspections

Visual inspections of the SGs were performed with the objectives of assessing the condition of the TSPs, specifically flow slot hourglassing of the lower three and uppermost support plate, and to survey the periphery of the tube bundle for foreign objects. The inspections were recorded on video tape for review and analysis. The results of the examinations of the bundle and TSP structure are discussed in Appendix A, "Secondary Side Condition Monitoring and Operational Assessment". The survey for foreign objects resulted in removal of a number of them from the SGs. In addition, an inventory of objects that could not be removed was provided for evaluation of the damage potential from these objects (see Section 5.2.6).

During visual examination of the secondary side, a previously plugged tube was identified with a fishmouth rupture. The cause of this rupture was identified as a flow diode effect; water ingress into the tube occurs at cold conditions at an apparently leaking plug, subsequent heating of the tube causes pressurization of the tube and eventual burst. This condition does not challenge either structural or leakage requirements since the tube is already plugged, and leakage does not occur at operating conditions. If leakage occurred at operating conditions, pressurization of the tube would not have occurred. Also, this is not considered a degradation mechanism since the tube was previously plugged.

3.0 U-BEND INSPECTION RESULTS

3.1. Initial Mid-Range +Point Inspection

Following plant shutdown due to the leaking indication, the initial inspection focused on identification of the leaking tube and location of the flaw in the tube. Based on filling the secondary side of the SG, the leaking tube was identified as R2C5 in SG 4. A fiber optics visual exam from the ID was performed and identified the cause of the leakage as an axial indication at the apex of the U-bend on the extrados of the tube. Following characterization of the flaw in R2C5, the decision was made to proceed with a complete SG inspection as originally planned for the refueling outage scheduled for late April. In addition, refueling was performed during the outage so that the leaker outage represents EOC-14.

The initial inspection plan for the low row U-bends was to perform a 100% +Point inspection of the row 2 and row 3 U-bends in all 4 SGs. To establish confidence that cracking was limited to the expected row 2 conditions, the inspection was further expanded to include Row 4. A 620 mil, mid-range +Point coil on a flexible probe designed for the low radius U-bends was used for the inspection. This probe was EPRI Appendix H qualified for detection of axial and circumferential cracking in the low row U-bend region under ETSS #96511.

The midrange +Point inspection identified three axial PWSCC indications in Row 2 U-bends and none in row 3 or row 4. Two indications in SG 4 were found at R2C69 and R2C72. One indication was found in SG 1 at R2C87. R2C71 in SG 4, for which an indication was later identified, was found to be a restricted tube that would not pass the 620 probe and thus was not an inspectable tube with the midrange probe. However, the inspection with the midrange probe identified a large number of tubes (see discussion in Section 3.2 below) with inconclusive data due to noise signals in the U-bend (classified as "Bad Data" per NDE terminology). Data from these tubes could not be adequately analyzed. The bad NDE data was attributed to noise resulting from deposits of magnetite and copper on the tubes with additional contributions from coil lift-off due to tube ovality in the small radius U-bends. A tertiary review (additional primary, secondary, resolution process) of the U-bend data, supplementing the normal primary/secondary/resolution process, was conducted to further identify tubes with unacceptably noisy data and assess potential unreported indications. Repeat inspections of tubes with noisy data did not significantly reduce the number of tubes with such data. These inspection limitations led to an evaluation of alternate probes as described below.

3.2. High Frequency +Point Inspection

The detection of degradation using NDE techniques is dominated by the comparison of the degradation response to the response of other factors in the inspection environment or signal to noise (S/N) ratio. When the prior 1997 inspection data from R2C5 were reviewed, the signal to noise ratio was very low, and the indication would not have been expected to be called based on the probe and analysis guidelines in place. As a result of

the review of the 1997 data in which the R2C5 indication was identified, criteria were established to define unacceptable noise levels based on the signal characteristics of the R2C5 1997 +Point response. A large number of tubes were identified with unacceptable data. In order to improve the detection capability in the U-bend region under these circumstances, the signal to noise ratio for indications like that of R2C5 required improvement.

Several origins for the noise associated with the U-bend inspection were postulated. These were reduced to two main concerns 1) tube ovality and 2) OD deposits, where the nature of the OD deposits is a combination of copper and magnetite. Since the degradation associated with the indications found in the Indian Point-2 U-bends was found to be PWSCC originating on the inside surface of the tube, it was judged that increasing the eddy current test frequency would improve the S/N ratio when OD deposits are present. No improvement would be expected however for "noise" associated with tube ovality. The table below shows measurements of the mid-frequency +point coil response for a simulated copper deposit on the outside of a tube.

+Point Coil Response to Simulated Copper Deposits		
Frequency (kHz)	**Amplitude (Volts)**	**Phase (Deg.)**
600	0.6	79
400	1.2	36
300	1.8	10
100	5.0	-54

As the frequency of the inspection is increased, the deposit response decreases and its phase rotates in a clockwise direction. The impact of these two response characteristics is to allow separation of the response between the ID degradation and the OD deposits. The combined effect of the larger angle phase response of the deposits and an ID flaw (approximately 40° phase setup as throughwall) can be expected to increase the crack depth derived from the phase angle as a function of increased frequency.

It was concluded that a high frequency +Point probe offered the best available probe for inspection of the U-bends in the presence of deposits including copper. The high frequency probe was EPRI Appendix H qualified for detection per ETSSs #99997.1 and #99997.2 in order to support the Indian Point-2 inspection. Initially, the high frequency probe was used to inspect a few tubes to permit comparisons with the midrange +Point probe. The high frequency probe was found to have the best response, including reduction of the deposit noise levels at 800 kHz, and this frequency was applied for the inspection. A comparison of the midrange and high frequency probes is described below in Section 3.3. A complete 100% reinspection of Row 2 and Row 3 tubes in all four SGs was performed with the high frequency probe.

The high frequency inspection identified additional axial PWSCC indications in four tubes including R2C4, R2C71 and R2C74 in SG 4 and R2C85 in SG 3. The indication in R2C71, SG 4 identified with the 620 mil high frequency probe had been found to be a restricted or not inspectable tube with the 620 mil midrange probe. The remaining three indications

found with the high frequency probe were identified in tubes for which the U-bend midrange coil inspection data was classified as bad data (inadequate inspection). Sizing of the indications is described in Section 3.4.

Use of the high frequency +Point probe in the low signal to noise (BDA) tubes raised the issue of detectability of ODSCC due to the limited field extension of the high frequency coil at frequencies of 800 and 1000 kHz. First, it must be understood what BDA implied in the context of the Indian Point Unit 2 low row U-bend inspection. The mid-range probe exhibited a significant amount of data disregistry (such as irregularities in the indication contour due to probe slippage during rotation). This disregistry is typically caused by the mechanics of the probe rotation. A U-bend RPC is a coil riding against the tube surface in a shoe on the end of a cable (to achieve flexibility). The cable is rotated using a motor. The material of the shoe, its contact area and the length of the cable all contribute to friction, slowing of the motor and cable whipping (due to wind-up). This is a major source of the bad data reported for the mid-range probe. The high frequency probe exhibited a significantly improved data quality due to mechanical differences. The contributing factors were a smaller contact area due to the smaller coil and different shoe material leading to less friction, as well as a shorter cable length resulting in less of a wind-up effect.

In order to address the OD detection capability of the high frequency +Pt coil, a sampling of data was reviewed and compared to the mid-range +Pt coil at 300 and 400 kHz. The U-bend qualification data set included OD notches; however, they were not measured or recorded in the initial qualification. These signals were analyzed at Indian Point 2 after the qualification to determine the detectability of ODSCC using the high frequency probe. The graphics from the EPRI qualification data program clearly show a 36% OD circumferential notch and a 38% OD transverse notch at various frequencies. The calibration standard used to test those two tubes also clearly shows the 40% OD notch. Additionally, two tubes with sludge pile ODSCC axial indications in SG 2, tubes R33C51 and R35C51, were tested with the high frequency +Point probe and the indications were favorably compared with the 300 kHz midrange probe data on these tubes. Of the various frequencies of the high frequency +Point probe (1000, 800, 600, 400 and 300 kHz), 400 kHz shows the best response to the OD notches. The data analysts were required to scan and plot the 300 kHz and 400 kHz data for OD degradation in order to adequately detect OD indications with the high frequency probe at 400 kHz. Based on these studies, it was concluded that, the high frequency +Point provides adequate detectability with respect to OD degradation for the BDA tubes based on the similarity of the midrange probe 300 kHz and high frequency probe 400 kHz response of the calibration standard OD notches and two sludge pile ODSCC indications.

NRC RAI Letter dated March 14, 2000

Question 5

Address the basis for concluding that the leakage evident prior to the tube failure was from the eventual break and not from other locations.

Reply

Summary

A review of Indian Point 2 (IP2) steam generator (SG) operation during Cycle 14 indicates that a portion of the leakage prior to the tube failure may have originated from sources other than the tube that failed. During this last operating cycle, IP2 monitored a low level of leakage that remained stable for an extended period of time. This leakage was on the order of 1 gallon per day (gpd) or less from three of the four SGs. The presence of numerous leak limiting tube repairs combined with the results of the secondary side pressure leak test, which evidenced minor leakage from several previous repairs, suggests that at least a portion of the baseline leakage was originating from these repairs. Approximately two weeks prior to the tube failure, leakage increased in SG24 by 2.5 to 3 gpd. A portion, if not all of this increase is likely to have originated from the eventual break. There is reasonable basis to conclude, therefore, that a portion of the leakage evident prior to the tube failure was from other locations.

History of Operation

The SGs at IP2 are Westinghouse manufactured Model 44, which have a well documented operating history throughout the industry. Similar to operating experience at other utilities, SGs at IP2 have experienced tube degradation mechanisms leading to primary to secondary leakage. Such leakage has ranged from stable, low rates of leakage to increased leakage culminating in a forced shutdown. A history of SG leakage at IP2 is given in Table S1.Q5-1 (Reference S1.Q5-1). Minor baseline leakage has been documented for 12 of 14 operating cycles. Since 1976, IP2 has also experienced five forced shut downs due to SG leakage. In comparison the operating history of SGs at other plants is presented in Table S1.Q5-2 (Reference S1.Q5-2). With a few exceptions, other units have had more forced shutdowns due to leakage and a greater number of tubes degraded prior to replacement.

Primary to secondary leakage during IP2 Cycle 14 operation was considered to be low and stable until the weekend of February 5, 2000, when leakage was first reported to exhibit a nominal increase in SG24 (Reference S1.Q5-3). Until that time baseline leakage was essentially stable as shown in Figure S1.Q5-1 (Reference S1.Q5-4). The leakage from other SGs was about 1 gpd or less as indicated by N-16 monitors. The sum total leakage from all four SGs was in the range of 2 to 2.5 gpd as measured by the air ejector radiation monitor, R-45. Following a brief excursion to about 2.5 gpd, the leak rate in SG24 returned to about 1.1 gpd. Over the course of the next week, leakage from SG24 increased unsteadily to 3.4 gpd and then dipped back toward 3 gpd only minutes before the leakage event. At that point a tube located in SG24 tube at R2C5 abruptly failed and leaked at a rate in excess of 109 gpd (Reference S1.Q5-4).

Until the actual tube leak event on February 15, 2000, the low level baseline leakage that was measured was presumed to originate from sources related to previous leak limiting repairs that were performed in the SGs. These previous repairs, which are identified in Table S1.Q5-3, are discussed further.

Potential Sources of SG Leakage

1. Mechanical and Rolled Plugs

Mechanical and rolled plugs are virtually leak tight. Leakage from these repairs can be generally discounted in terms of their contribution to baseline operational leakage unless the plug or the installation is defective.

The potential for defective plugs exists, particularly if the plug is manufactured of Alloy 600. Alloy 600 plugs are known to be susceptible to primary water stress corrosion cracking (PWSCC). For this reason Con Edison was committed to a program of replacement of all mechanical plugs produced of Alloy 600, or repair of these plugs by installation of a PIP or PAP (which is discussed in Item 4, below). The remaining 185 plugs susceptible to failure were replaced this outage with mechanical plugs manufactured from Alloy 690. In addition Alloy 600 rolled plugs were inspected by eddy current testing to ensure the structural integrity of these plugs. None of these rolled plugs were defective as determined by inspections performed during Refueling Outage 14 (RFO 14).

The manner in which plugs are installed can also affect leak tight performance. One mechanical Alloy 690 plug that was installed during RFO 13, was removed and replaced with a welded plug of the same alloy. The installation parameters of the original mechanical plug, while acceptable, were deemed marginal due to an excessive mandrel pull distance as measured during installation the previous outage.

Any of the plugs that were removed could have contributed to the baseline leakage during the previous cycle of operation.

2. Explosively Bonded Plugs

Leakage from four explosively bonded plugs in previous cycles of operation caused one unscheduled shutdown at IP2. Explosively bonded plugs have a history of degrading and eventually leaking. Leakage typically increases slowly over time until it becomes visually detectable during an inspection at which point the offending plug can be replaced.

Leakage from explosively bonded plug represents a loss of both design and leak tight integrity. Since the degradation of these plugs (the mechanism is suspected to be PWSCC) evolves slowly and the leak rate remains relatively stable, degraded plugs do not present a significant challenge safety systems. Such leakage can affect reliable operation unless corrected.

In response to the earlier leakage event, all hot leg explosively bonded plugs (42 total) had been removed during a previous outage and replaced with Alloy 600 welded plugs. The remaining 42 cold leg explosively bonded plugs are being monitored for evidence of leakage in accordance with vendor recommendations. If evidence of leakage is detected during visual inspection of the tubesheet or during a secondary side pressure leak test, the affected plug will be replaced.

Based on the inspections performed this outage, the existing cold leg explosively bonded plugs are not suspected to have contributed to the baseline leakage.

3 Sentinel Plugs

Sentinel plugs are another potential source of leakage. Sentinel plugs are installed in sound tubes surrounding certain plugged defective tube that could sever, and by whipping in the turbulent flow of secondary side, damage adjacent tubes. Mechanical damage to a tube plugged with a sentinel plug would be detected when the damage progresses through wall causing the sentinel plug to leak through the 1/32 inch hole that is present in the plug by design. The maximum leakage from a sentinel plug is approximately 250 gpd (Reference S1.Q5-5), which is less than Plant Technical Specification limits, but sufficient to force a plant shut down since it exceeds administrative leak rate limits specified in plant operating procedures (Reference S1.Q5-6).

There are 26 sentinel plugs manufactured of Alloy 600 in service. Two of these plugs have been repaired with PAPs, which are discussed in Item 4, below. Sentinel plugs are potentially subject to the same stress corrosion cracking mechanism that causes failure in other plugs produced of this alloy. The sentinel hole precludes the occurrence of a high energy plug top release similar to the North Anna event of 1987, since the plugged tube is at primary pressure and full of water. Plug susceptibility to PWSCC places the long term structural integrity of the sentinel plug in question. This is not an immediate safety concern since the tube in which the plug was installed was sound at the time of installation.

Tubes plugged with a sentinel plug can not be inspected. The conduct of a secondary side pressure leak test, which produced no leakage from these plugs, indicates that sentinel plugs are unlikely to have contributed to the baseline leakage observed during the previous cycle of operation. This test also provides assurance that a sentinel plugged tubes will be leak tight at startup.

4. Plug Repair Devices: PIPs and PAPs

PIP and PAP plug repair devices were installed in Alloy 600 mechanical plugs (in lieu of plug removal) to prevent a plug top release incident similar to the North Anna event. PAPs were also installed in two sentinel plugs. During Cycle 14 operation there were 74 PIPs and 164 PAPs installed in the SGs. These repair devices are qualified as leak limiting repairs (References S1.Q5-7 and S1.Q5-8). The sum total of leakage, as indicated in Table 3, would not exceed administrative

leak limits (assuming that every device were to leak), and therefore would not be likely to cause an unscheduled shutdown. Thus, no specific action is required to address these repairs.

During the course of SG inspections one PIP was observed to be dripping (SG21 R2C14) and two PAPs exhibited boron rings that evidence potential leakage (SG23 R28C38 and R20C35). All three of these devices were removed by drilling and were replaced with Alloy 690 mechanical plugs. These repair devices could have contributed to the baseline leakage observed during Cycle 14 operation.

5. Re-Rolled Tubes

Re-rolling, termed F*, is qualified as an alternate repair method for tubes that contain defects in the hard roll region. Re-rolling establishes a leak limiting, structurally sound repair that allows the tube to remain in service. During Cycle 14, there were 706 rerolled tubes in service as indicated in Table S1.Q5-3. Qualification criteria for this repair were structural resistance to pullout from the tubesheet. The sum of leakage for all repairs must be less than operational limits. Thus, as long as structural integrity is maintained in accordance with the F* criterion, potential leakage through the tube to tubesheet interface will remain very low and will not affect reliable operation of the plant.

During the conduct of a secondary side pressure leak test, three tubes exhibited minor leakage (an occasional drop once every few minutes). It was determine by eddy current testing that these tubes, which had not been previously re-rolled, contained through wall circumferential cracks at the tube end. Since the location of these cracks allowed the tube to remain in service in accordance with the F* criterion and the leak rate was very low, these tubes were left in service. All tubes that remain in service based on the F* criterion have the potential to contribute to a baseline primary to secondary leak rate.

6. Miscellaneous Leakage Sources

During secondary side visual inspection, a previously plugged Row 1 tube was observed to have experienced a fish-mouth rupture. This tube was previously plugged during SG fabrication. Similar tube ruptures have been observed in the industry in tubes plugged with explosively bonded plugs. Analysis of this event (Reference S1.Q5-9) hypothesizes that the tube rupture is due to a flow diode effect that results in minor leakage into the tube during startup. The water content of the tube is unable to leak back past the plug at shutdown conditions. Eventually, the tube becomes water solid and ruptures when the trapped volume of water undergoes thermal expansion upon subsequent startup (heat up) of the plant.

The analysis further concludes that the ruptured tube is structurally stable and will not damage adjacent tubes, all of which are plugged. The contribution of flow

diode leakage to baseline leakage during the last cycle of operation is suspected to be low.

Conclusions

1. Baseline leakage of less than about 1 gpd was detected by the N-16 monitors from three of four SGs during the course of Cycle 14 operation.

2. Based on qualified leak rates of previous repairs, it is likely that a fraction, if not all, of this baseline leakage originated from previous leak limiting repairs.

3. Leakage from SG24 increased from about 1 gpd to less than 4 gpd over the course of two weeks preceding the tube leak. Based on engineering judgement most, if not all of this increase was from the defect located at the apex of the u-bend in tube R2C5 of SG24.

References

S1.Q5-1 "Indian Point 2 Steam Generator Data Book", Con Edison, December 1997.

S1.Q5-2 Westinghouse Report No. NSD-RLE-00-165 (Attachment): "Model 44 and 51 Steam Generator Tube Corrosion Performance Comparison to Indian Point 2", May 2000.

S1.Q5-3 E-mail from M. Huestis to M. Galler, February 7, 2000.

S1.Q5-4 Con Edison Indian Point 2: "SL-1 Report for CR 200000983 Steam Generator Tube Leak Alert", March 28, 2000.

S1.Q5-5 Westinghouse Safety Evaluation Checklist No. 88-01, NS-RCSL-C/L-88-5888, February 1988.

S1.Q5-6 Indian Point 2 Operating Procedure No. AOI 1.2, "Steam Generator Tube Leak."

S1.Q5-7 Framatome Technologies Report No. 51-1178025, "7/8 Ribbed Plug Alloy 690 Retainer Development Report," 1989.

S1.Q5-8 Westinghouse Report No. WCAP-12244, "Steam Generator Tube Plug Integrity Summary Report," Revsion 3, November 1989.

S1.Q5-9 Westinghouse Correspondence, "Fishmouth Tube Rupture", April 2000.

Table S1.Q5-1
Summary of Leakage from Steam Generator Tubes

Cycle	Event Date	Leak Rate*	SG	Location/Cause
1	3/75	0.004 gpm	22	TSH
2	11/76	**4 gpm (F)**	24	Dent 6C
3	8/79 RFO3	0.1 gpd	22	11 Tubes Leaking
4	4/81 RFO4	Unspecified	23	Dent 2C
5	8/81	**0.1 gpm**	23	Dent 3C
6	2/84	**0.25 gpm**	22	TTSH – Pit
7	2/86 RFO7	8.6 gpd** + Press. Test Leak	22, 23	Dent 4H
8	N/A	8.6 gpd**	22	Unknown**
9	7/88	**8.6 gpd** + Unspecified**	22	4 HL Explosive Plugs + TSH
10	N/A	8.6 gpd**	22	Unknown**
11	3/94 RFO11	8.6 gpd** + Unspecified	22, 24	HL Explosive Plug
12	3/95 RFO12	8.6 gpd**	22	Dent 3H – Axial (Leak since 84)
13	N/A	No Leakage Reported	N/A	N/A
14	2/00 RFO14	**3 gpd → 109 gpm**	24	R2 U-Bend (Entered RFO)

* Bolded entries indicate forced shutdown due to leakage

** Leakage source discovered in RFO12

Table S1.Q5-2
Existing Repairs During Cycle 14 Operation
and
Potential Leak Rates

Repair Device	No. of Repairs	Design Leak Rate	Failures for Shutdown[1]
A600 Clad Overlay[2]	736	Leak Tight	Unknown
A600 Welded Plugs	37	Leak Tight	Unknown
A600 Explosive Plug	42	Leak Tight	Unknown
A600 Rolled Plugs	167	Leak Tight	Unknown
A600 Mechancial Plugs	185	Leak Tight	Unknown
A600 Sentinel Plug	24	250 gpd average	1
PAP A600 Plug	164	0.0115 gpd	6521
PIP A600 Plug	74	0.114 gpd	658
A690 Welded Plugs	10	Leak Tight	Unknown
A690 Mechanical Plugs	1184	Leak Tight	Unknown
A690 Rolled Plugs	27	Leak Tight	Unknown
Re-rolled Tube End	706	<.1 gpd (estimated)	More than 300

Notes:

1. Failure implies a failure of the tube (in the case of a sentinel plug) or tube and repair device together. Assumption is that ensuing leak rate is at maximum qualified rate.
2. Repairs were performed on Row 1 during fabrication of the steam generators. A fishmouth rupture was detected during RFO14 in one tube repaired by this device

Figure S1.Q5-1

Overview of Westinghouse Model 44 Operating Experience

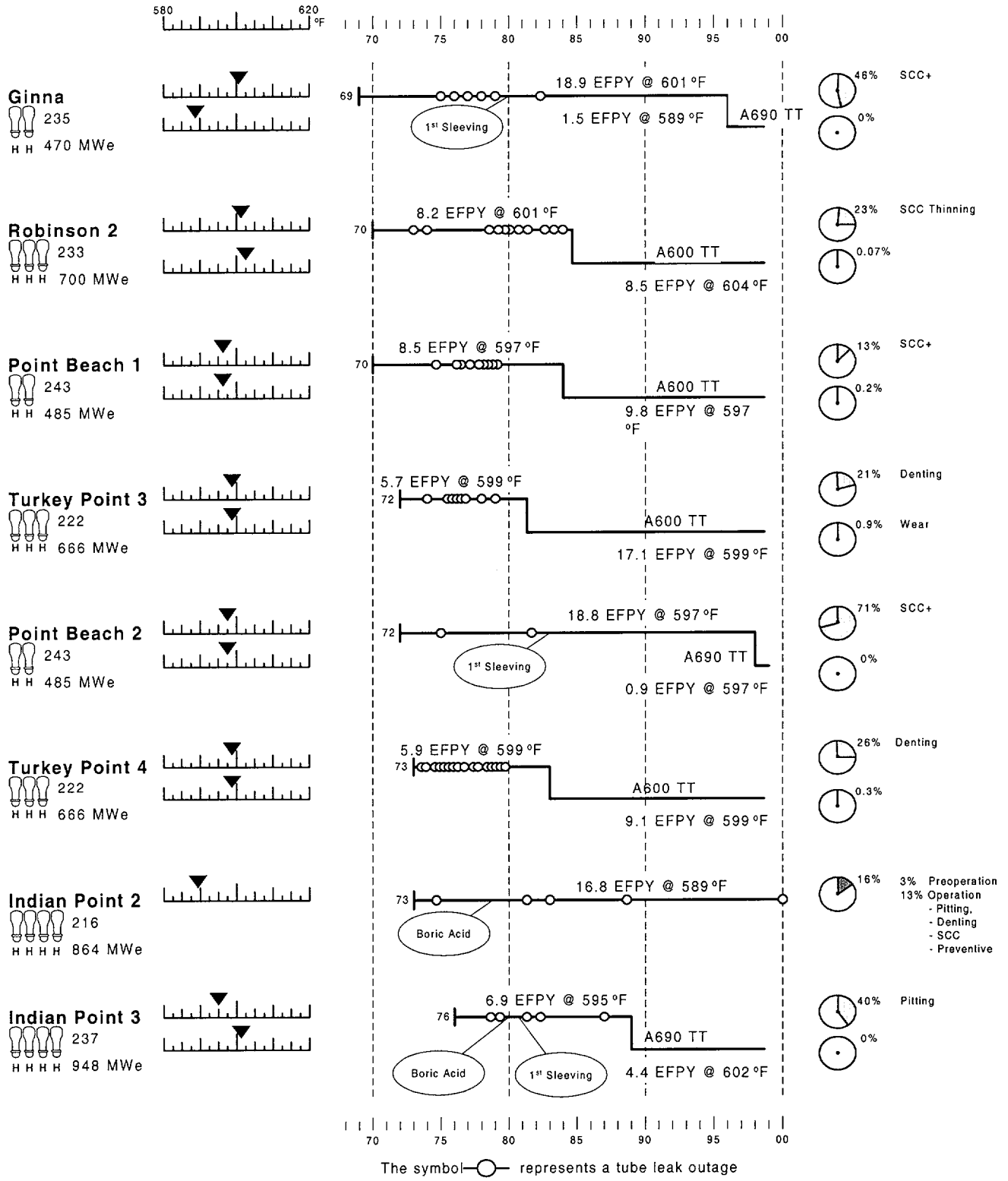


Figure S1.Q5-1

Figure S1.Q5-2

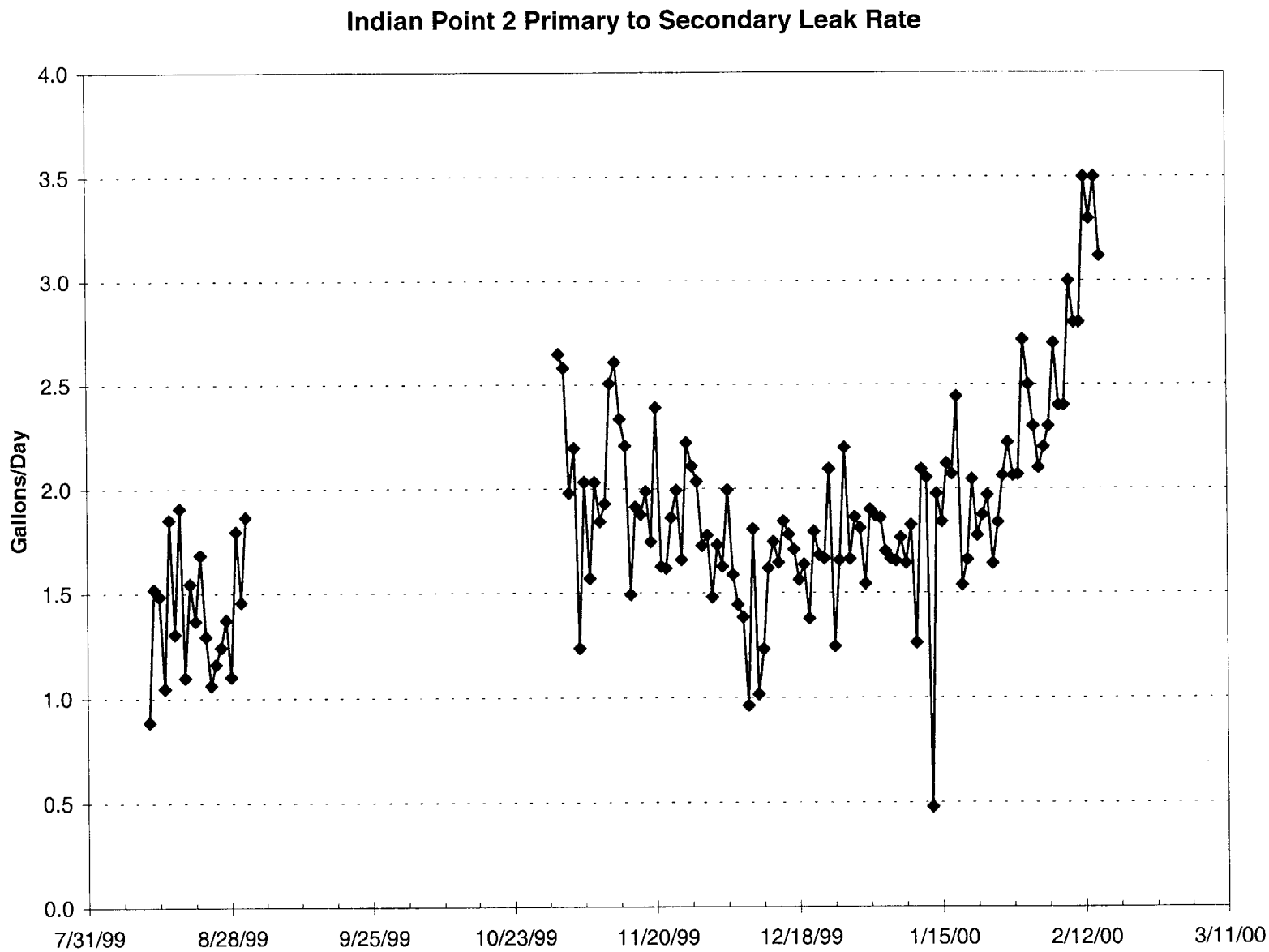


Figure S1.Q5-2

Figure S1.Q5-3

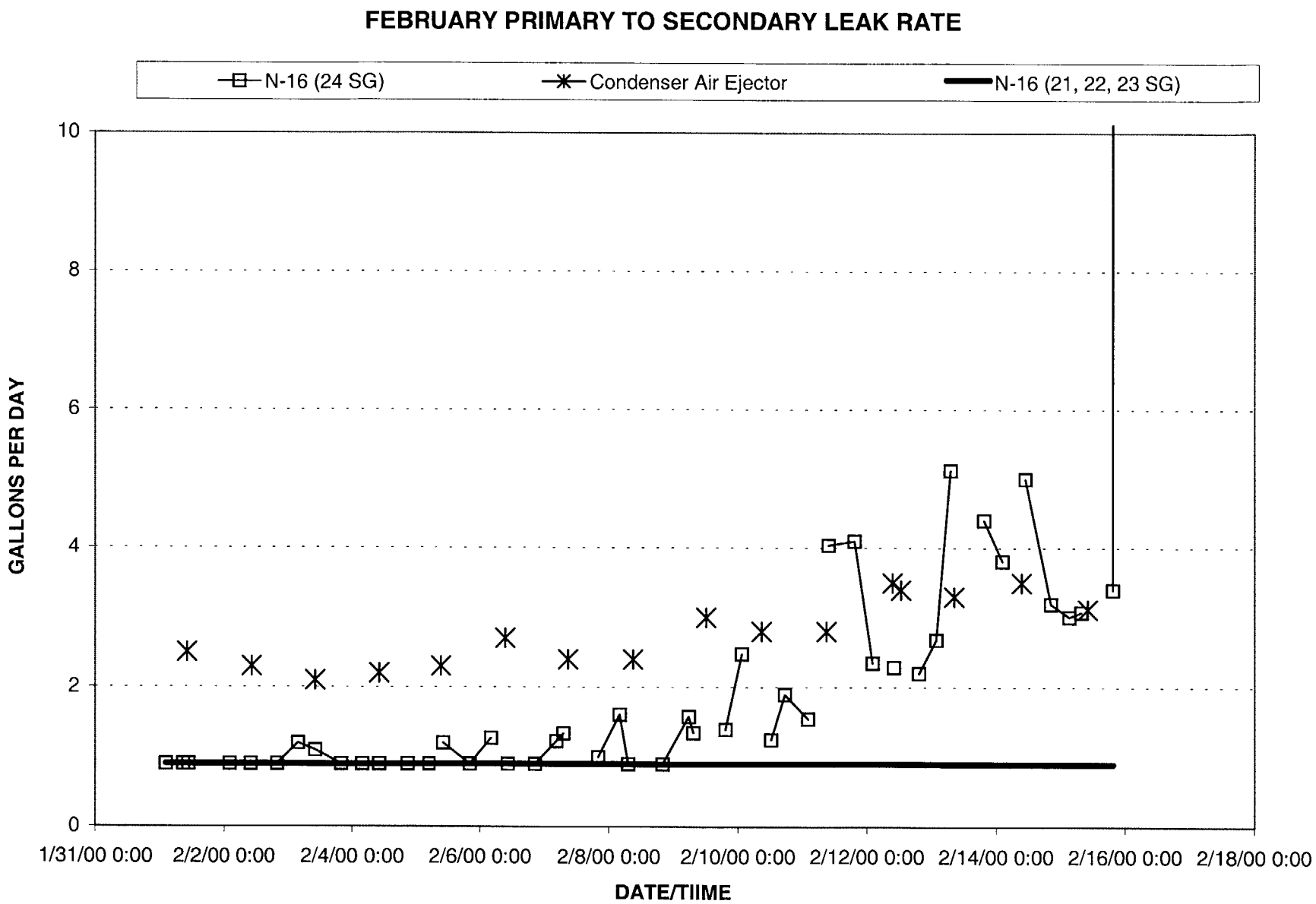


Figure S1.Q5-3

NRC RAI Letter dated March 24, 2000

Question 1

Provide the inspection results (i.e., number, location, size, type of indications found in all four steam generators) for both the 1997 and 2000 outage inspections. Also, provide a separate list of pluggable indications and reasons for plugging.

Reply

Tables 1, 3, 5, 7, 9, 11, 13, and 15 provide the lists of tubes with indications and types of indications found in 1997 and 2000. Tables 2, 4, 6, 8, 10, 12, 14, and 16 list the tubes plugged and the primary reason for the plugging. Not all tubes were plugged based on pluggable indications. Tubes were also plugged because of restrictions to a 610 probe, the inability to completely analyze the entire length of a tube and administratively for other preventive reasons. The reasons listed for tubes plugged in 1997 are those reported to the NRC after that refueling outage. A review of the tubes plugged for u-bend restrictions concluded that the probes did not pass through the top support plate, and were the result of probe geometry (length), probe cable rigidity, and operator efforts, rather than definite reductions of cross section in the u-bend region of the tubes. The answer to question 11of the RAI, dated April 28, 2000 discusses these restrictions in depth.
Table 17 shows the number and types of indications found in all four steam generators in 1997 and 2000.

Table 1 – Steam Generator 21, Indications 1997
Table 2 – Steam Generator 21, Tubes Plugged 1997
Table 3 – Steam Generator 21, Indications 2000
Table 4 – Steam Generator 21, Tubes Plugged 2000
Table 5 – Steam Generator 22, Indications 1997
Table 6 – Steam Generator 22, Tubes Plugged 1997
Table 7 – Steam Generator 22, Indications 2000
Table 8 – Steam Generator 22, Tubes Plugged 2000
Table 9 – Steam Generator 23, Indications 1997
Table 10 – Steam Generator 23, Tubes Plugged 1997
Table 11 – Steam Generator 23, Indications 2000
Table 12 – Steam Generator 23, Tubes Plugged 20000
Table 13 – Steam Generator 24, Indications 1997
Table 14 – Steam Generator 24, Tubes Plugged 1997
Table 15 – Steam Generator 24, Indications 2000
Table 16 – Steam Generator 24, Tubes Plugged 2000
Table 17 – Number and Type of Indications Found During Inspections in 1997 and 2000

Appendix A Abbreviations Used in Tables 1-17

Table 1, Steam Generator 21, Indications 1997

row	col	volts	defect	location	offset	probe	size
8	3	22.72	SPI	1C	0	C5	0.68
8	3	1.71	MAI	1C	0.05	ZP	0.68
14	3	94.72	SPI	1C	0.23	C5	0.7
17	4	0.3	7	TSH	15.27	C5	0.68
21	6	15.33	SPI	3C	-0.18	C5	0.7
2	7	0.3	SAI	TEC	13.94	ZP	0.68
2	7	0.31	NQI	TEC	14.38	C5	0.68
2	7	5.45	PI	TEC	14.1	C5	0.68
10	7	14.7	DRI	TEH	0.83	C5	0.7
10	7	3.14	MAI	TEH	1.5	RB	0.72
3	8	26.24	DRI	TEH	0.92	C5	0.68
3	8	10.58	MAI	TEH	1.62	RB	0.72
4	8	9.88	MAI	TEH	1.66	RB	0.72
4	8	39.39	DRI	TEH	1.51	C5	0.7
20	11	8.2	TSI	TSH	0.29	C5	0.7
3	16	7.04	MAI	TEH	1.69	RB	0.72
3	16	26.66	DRI	TEH	1.03	C5	0.68
30	16	18.16	SPI	3C	-0.29	C5	0.7
3	18	6.69	DRI	TEH	1	C5	0.68
3	18	40.99	DRI	TRH	0	C5	0.7
3	18	9.63	MAI	TEH	1.73	RB	0.72
8	20	0.53	PIT	TSC	0.74	ZP	0.68
8	20	1.2	2	TSC	0.93	C5	0.7
5	24	0.51	PIT	TSC	2.02	ZP	0.68
5	24	0.83	27	TSC	2.26	C5	0.68
8	26	0.4	33	TSC	6.76	C5	0.7
8	26	0.42	PIT	TSC	6.65	ZP	0.68
12	26	10.12	DRI	TEH	1.36	C5	0.7
12	26	8.08	SAI	TEH	1.01	RB	0.72
3	29	0.35	20	TSC	1.4	C5	0.68
30	29	5.26	SAI	TEH	1.81	RB	0.72
30	29	6.78	DRI	TEH	1.64	C5	0.7
4	30	13.63	DRI	TEH	0.99	C5	0.7
4	30	10.67	DRI	TEH	1	C5	0.7
7	31	0.56	10	TSC	7.88	C5	0.7
7	31	0.43	PIT	TSC	8.49	ZP	0.68
30	31	4.96	MAI	TEH	1.78	RB	0.72
30	31	10	DRI	TEH	0.9	C5	0.7
9	32	1.18	26	TSC	9.87	C5	0.7
9	32	0.24	PIT	TSC	9.78	ZP	0.68
8	33	0.2	PIT	TSC	10.56	ZP	0.68
8	33	0.34	19	TSC	10.68	C5	0.7
15	33	0.3	13	TSC	13.22	C5	0.7
25	33	31.76	DRI	TEH	0.92	C5	0.7
25	33	8.69	SAI	TEH	2.27	RB	0.72

9	34	0.34	24	TSC	10.36	C5	0.7
16	34	0.51	20	TSC	11.33	C5	0.7
14	35	7.23	MAI	TEH	1.58	RB	0.72
14	35	13.08	DRI	TEH	0.66	C5	0.7
3	36	12.89	DRI	TEH	1.01	C5	0.7
3	36	27.32	DRI	TEH	0.98	C5	0.7
5	36	13.3	DRI	TEH	1.02	C5	0.7
5	36	3.27	MAI	TEH	1.26	RB	0.72
14	36	3.48	MAI	TEH	1.09	RB	0.72
14	36	12.73	DRI	TEH	0.87	C5	0.7
30	37	30.68	DRI	TEH	1.49	C5	0.7
30	37	18.56	SAI	TEH	3.54	RB	0.72
13	38	18.69	DRI	TEH	0.91	C5	0.7
13	38	5.65	SAI	TEH	1.61	RB	0.72
14	38	11.9	SAI	TEH	1.59	RB	0.72
14	38	25.84	DRI	TEH	0.8	C5	0.7
20	38	21.79	DRI	TEH	0.62	C5	0.7
20	38	5.12	MAI	TEH	1.23	RB	0.72
23	38	1.04	MAI	TEH	1.76	RB	0.72
23	38	20.15	DRI	TEH	0.88	C5	0.7
23	38	3.32	DRI	TEH	1.51	C5	0.7
29	38		MAI	TEH	2.02	RB	0.72
29	38	21.16	DRI	TEH	0.97	C5	0.7
11	39	6.99	MCI	TEH	1.05	RB	0.72
11	39	4.14	MCI	TEH	1.23	ZP	0.68
11	39	4.42	DRI	TEH	1.26	C5	0.7
12	39	4.43	MAI	TEH	1.77	RB	0.72
12	39	20.74	DRI	TEH	1.05	C5	0.7
15	39	0.27	17	TSC	13.06	C5	0.7
15	39	0.31	23	TSC	12.64	C5	0.7
16	39	3.15	SAI	TEH	2.88	RB	0.72
16	39	10.26	DRI	TEH	1.44	C5	0.7
16	39	18.92	DRI	TRH	0	C5	0.7
17	39	21.24	SPI	1H	-0.37	C5	0.7
24	39	14.19	SPI	1H	-0.04	C5	0.7
27	39	6.07	DRI	TEH	1.3	C5	0.7
27	39	2.04	MAI	TEH	2.11	RB	0.72
14	40	28.69	DRI	TEH	0.65	C5	0.7
14	40	13.84	MAI	TEH	1.67	RB	0.72
14	40	0.57	14	TSC	10.88	C5	0.7
18	40	2.99	MAI	TEH	2.01	RB	0.72
18	40	21.08	DRI	TEH	0.54	C5	0.7
19	40	40.24	DRI	TEH	1.47	C5	0.7
19	40	4.76	MAI	TEH	2.02	RB	0.72
24	40	6.15	MAI	TEH	1.97	RB	0.72
24	40	28.2	DRI	TEH	0.66	C5	0.7
43	40	11.51	SPI	6H	-0.27	C5	0.7
9	41	0.24	PIT	TSC	11.96	ZP	0.68
9	41	0.28	32	TSC	12.65	C5	0.7

9	41	0.37	22	TSC	11.69	C5	0.7
9	41	0.33	PIT	TSC	12.37	ZP	0.68
12	41	0.59	21	TSC	4.46	C5	0.7
14	41	0.43	9	TSC	2.75	C5	0.7
20	41	20.01	DRI	TEH	0.77	C5	0.7
21	41	6.07	MAI	TEH	1.56	RB	0.72
21	41	25.82	DRI	TEH	0.75	C5	0.7
10	42	1.17	24	TSC	12.65	C5	0.7
10	42	0.56	PIT	TSC	12.77	ZP	0.68
18	42	9.18	MAI	TEH	1.67	RB	0.72
18	42	19.86	DRI	TEH	1.1	C5	0.7
19	42	3.57	MAI	TEH	1.76	RB	0.72
19	42	14.54	DRI	TEH	1.06	C5	0.7
20	42	10.14	SAI	TEH	1.77	RB	0.72
20	42	15.72	DRI	TEH	0.83	C5	0.7
20	42	0.29	17	TSH	8.77	C5	0.7
23	42	0.88	18	TSC	2.06	C5	0.7
30	42	6.85	TSI	TSH	0.65	C5	0.7
14	43	31.15	DRI	TEH	2.73	C5	0.7
17	43	0.29	25	TSC	12.15	C5	0.7
17	43	0.18	PIT	TSC	11.91	ZP	0.68
20	43	12.08	DRI	TEH	0.79	C5	0.7
22	43	0.76	27	TSC	2.32	C5	0.7
22	43	2.37	DRI	TEH	0.99	C5	0.7
24	43	0.67	25	TSC	1.76	C5	0.7
10	44	0.85	31	TSC	12.63	C5	0.7
10	44	0.5	15	TSC	13.44	C5	0.7
10	44	0.47	PIT	TSC	12.24	ZP	0.68
11	44	0.23	PIT	TSC	13.17	ZP	0.68
11	44	0.35	21	TSC	13.72	C5	0.7
13	44	7.74	DRI	TEH	1.16	C5	0.7
13	44	4.22	SAI	TEH	1.62	RB	0.72
23	44	5.46	MAI	TEH	1.92	RB	0.72
23	44	17.48	DRI	TEH	0.77	C5	0.7
24	44	0.3	23	TSC	1.81	C5	0.7
39	44	239	SPI	5C	0.8	C5	0.7
18	45	13.32	DRI	TEH	0.97	C5	0.7
21	45	12.63	TSI	TSH	0.2	C5	0.7
14	46	27.98	DRI	TEH	0.79	C5	0.7
18	46	7.67	MAI	TEH	1.72	RB	0.72
18	46	34.78	DRI	TEH	0.85	C5	0.7
18	46	0.64	20	TSH	9.39	C5	0.7
7	47	2.71	PIT	TSC	11.2	ZP	0.68
7	47	1.21	38	TSC	10.78	C5	0.7
7	47	1.89	PIT	TSC	11.04	ZP	0.68
18	47	0.9	32	TSH	9.27	C5	0.7
20	47	40.41	DRI	TEH	0.81	C5	0.7
21	47	42.44	DRI	TEH	0.87	C5	0.7
17	48	0.74	2	TSH	1.45	C5	0.7

21	48	17.09	DRI	TEH	1	C5	0.7
21	49	36.12	DRI	TEH	1.02	C5	0.7
21	50	5.1	MAI	TEH	1.28	RB	0.72
21	50	30.56	DRI	TKH	0	C5	0.7
21	51	7.15	MAI	TEH	1.45	RB	0.72
21	51	30.13	DRI	TEH	1.26	C5	0.7
44	51	34.4	TSI	TSC	0	C5	0.7
44	51	0.69	PIT	TSC	0.1	ZP	0.68
9	52	0.52	17	TSC	7.59	C5	0.7
9	52	0.37	PIT	TSC	7.84	ZP	0.68
10	52	0.78	30	TSC	8.23	C5	0.7
10	52	0.35	PIT	TSC	8.77	ZP	0.68
12	52	0.8	24	TSC	6.06	C5	0.7
14	52	0.33	8	TSC	7.97	C5	0.7
19	52	14.26	DRI	TEH	1.3	C5	0.7
19	52	22.32	MAI	TEH	1.75	RB	0.72
21	52	8.79	MAI	TEH	1.65	RB	0.72
21	52	7.63	DRI	TEH	1.16	C5	0.7
7	53	0.36	PIT	TSC	6.13	ZP	0.68
7	53	0.27	30	TSC	6.3	C5	0.68
20	53	1.1	7	TSC	3.11	C5	0.7
17	54	70.9	SPI	1H	0.57	C5	0.7
19	54	1.64	16	TSC	3.11	C5	0.7
20	54	1.26	12	TSC	3.13	C5	0.7
7	56	0.5	PIT	TSC	3.51	ZP	0.68
7	56	0.79	PIT	TSC	3.41	ZP	0.68
7	56	0.44	PIT	TSC	7.32	ZP	0.68
7	56	0.8	29	TSC	3.29	C5	0.7
13	56	0.65	21	TSC	5.5	C5	0.7
44	57	0.78	PIT	TSC	0.28	ZP	0.68
44	57	21.6	TSI	TSC	0	C5	0.7
6	58	0.35	PIT	TSC	5.14	ZP	0.68
6	58	0.66	22	TSC	5.38	C5	0.7
8	58	0.45	8	TSC	7.23	C5	0.7
8	58	0.35	PIT	TSC	7.88	ZP	0.68
21	58	11.16	SPI	4H	-0.27	C5	0.7
7	59	1.08	38	TSC	3.44	C5	0.7
7	59	0.51	PIT	TSC	3.83	ZP	0.68
9	59	0.4	26	TSC	8.04	C5	0.7
9	59	0.49	PIT	TSC	8.32	ZP	0.68
18	59	0.39	9	TSC	6.05	C5	0.7
18	59	0.19	PIT	TSC	6.78	ZP	0.68
43	59	9.99	SPI	2H	0.04	C5	0.7
4	60	40.19	SPI	1H	0.75	C5	0.7
7	60	0.31	PIT	TSC	4	ZP	0.68
7	60	0.83	11	TSC	3.7	C5	0.7
33	60	4.75	SPI	2H	0	C5	0.7
5	62	0.28	26	TSC	4.05	C5	0.7
7	62	3.6	MAI	TEH	1.94	RB	0.72

7	62	0.65	PIT	TSC	7.5	ZP	0.68
7	62	0.57	15	TSC	7.62	C5	0.7
7	62	14.87	DRI	TEH	1.15	C5	0.7
21	62	25.81	SPI	6H	-0.08	C5	0.7
2	63	17.11	SPI	1H	0.57	C5	0.68
6	63	0.17	PIT	TSC	4.73	ZP	0.68
6	63	0.6	15	TSC	5.11	C5	0.7
6	63	0.51	2	TSC	5.59	C5	0.7
6	63	0.22	PIT	TSC	4.57	ZP	0.68
38	63	4.63	SAI	TEH	1.81	RB	0.72
38	63	20.27	DRI	TEH	0.69	C5	0.7
12	64	142.6	DRI	TEH	1.02	C5	0.7
12	64	7.55	MAI	TEH	1.87	RB	0.72
6	65	1.02	31	TSC	5.93	C5	0.7
6	65	0.49	PIT	TSC	6.67	ZP	0.68
6	65	0.51	19	TSC	4.53	C5	0.7
4	66	0.09	PIT	TSC	3.41	ZP	0.68
4	66	0.27	16	TSC	3.4	C5	0.7
7	66	0.94	PIT	TSC	5.04	ZP	0.68
7	66	0.99	7	TSC	4.8	C5	0.7
9	66	0.58	PIT	TSC	3.97	ZP	0.68
9	66	0.58	31	TSC	4.25	C5	0.7
15	66	0.94	37	TSH	6.27	C5	0.7
8	68	0.24	PIT	TSC	4.16	ZP	0.68
8	68	0.46	5	TSC	4.9	C5	0.7
9	69	0.49	27	TSC	4.44	C5	0.7
9	69	0.36	13	TSC	3.96	C5	0.7
9	69	0.6	PIT	TSC	4.08	ZP	0.68
9	69	0.1	PIT	TSC	3.65	ZP	0.68
16	70	0.56	15	TSH	19.58	C5	0.7
6	71	0.25	32	TSH	17.12	C5	0.7
12	72	0.23	PIT	TSC	3.49	ZP	0.68
12	72	0.23	39	TSC	3.45	C5	0.7
12	73	0.44	12	TSH	10.69	C5	0.7
12	73	0.23	10	TSH	9.07	C5	0.7
3	80	18.94	DRI	TEH	1.37	C5	0.7
3	80	6.74	MAI	TEH	1.38	RB	0.72
15	81	0.42	7	TSH	26.51	C5	0.7
18	81	17.07	DRI	TEH	1.06	C5	0.7
26	83	0.84	5	TSH	15.98	C5	0.7
6	90	15.75	DRI	TEH	1.11	C5	0.7
6	90	3.17	SAI	TEH	1.5	RB	0.72

TABLE 2, Steam Generator 21, Tubes Plugged 1997

Row	Column	Location	Comments*
8	3	Within TSP 1C	Cecco SPI (MAI)
14	3	Within TSP 1C	Cecco SPI
21	6	Within TSP 3C	Cecco SPI
2	7	14.10 inches above TEC	Cecco PI (SAI)
2	9	U-bend RST	610 bobbin restricted
20	11	0.29 inch above TSH	Cecco TSI
30	16	Within TSP 3C	Cecco SPI
2	23	U-bend RST	610 bobbin restricted
30	37	3.54 inches above TEH	Roll transition indic.
16	39	2.88 inches above TEH	Roll transition indic.
17	39	Within TSP 1H	Cecco SPI
24	39	Within TSP 1H	Cecco SPI
43	40	Within TSP 6H	Cecco SPI
18	42	1.67 inch above TEH	Roll transition indic.
30	42	0.65 inch above TSH	Cecco TSI
39	44	Within TSP 5C	Cecco SPI
21	45	0.20 inch above TSH	Cecco TSI
21	51	1.45 inch above TEH	Roll transition indic.
44	51	Top of TSC	Cecco TSI
2	53	U-bend RST	610 bobbin restricted
2	54	U-bend RST	610 bobbin restricted
17	54	Within TSP 1H	Cecco SPI
4	55	U-bend RST	610 bobbin restricted
44	57	Top of TSC	Cecco TSI
21	58	Within TSP 4H	Cecco SPI
43	59	Within TSP 2H	Cecco SPI
4	60	Within TSP 1H	Cecco SPI
33	60	Within TSP 2H	Cecco SPI
2	62	610 +Point RST @ 1H	Admin/Plug
21	62	Within TSP 6H	Cecco SPI
2	63	Within TSP 1H	Cecco SPI
2	70	U-bend RST	610 bobbin restricted
13	89	610 +Point RST @ 6H	Admin/Plug
8	90	610 +Point RST @ 6H	Admin/Plug

Note: * Notation in parenthesis indicates a characterization by +Point

Table 3, Steam Generator 21, Indications 2000

row	col	volts	defect	%	location	offset	probe	size
2	2	3.76	SAI		TEH	0.18	ZPANM	0.72
3	2	0.98	SAI		TEH	0.13	ZPANM	0.72
13	3	0.33	VOL	44	1H	0.85	ZPANM	0.68
13	3	39.85	PI		1H	0.91	CCAGC	0.7
2	4	9.39	MAI		TEH	0.25	ZPANM	0.72
3	4	4.58	SAI		TEH	0.2	ZPANM	0.72
12	4	0.52	VOL	17	1H	0.66	ZPADP	0.61
12	4	33.73	DRI		TEH	1.62	ZBALL	0.61
12	4	2.15	DRI		TEH	1.54	CCAGC	0.7
2	5	2.53	SAI		TEH	0.16	ZPANM	0.72
3	5	2.44	SAI		TEH	0.1	ZPANM	0.72
2	6	4.01	SAI		TEH	0.16	ZPANM	0.72
7	6	3.1	SAI		TEH	0.2	ZPANM	0.72
16	6	0.7	VOL		TSH	0.81	ZPANM	0.72
16	6	0.46	PIT		TSH	0.85	ZPANM	0.72
16	6	0.32	VOL	57	TSH	0.94	ZPANM	0.68
16	6	1.53	NQI		TSH	0.94	MBALL	0.7
16	6	18.59	PI		TSH	0.75	CCAGC	0.7
10	7	1.14	MAI		TEH	1.46	ZMAGR	0.72
10	7	20.22	DRI		TEH	0.68	CCAGC	0.7
10	7	27.61	DRI		TEH	1.45	CCAGC	0.7
14	7	4.03	SAI		TEH	0.16	ZPANM	0.72
16	7	0.28	PIT		TSH	0.76	ZPANM	0.72
16	7	0.36	PIT	41	TSH	0.87	ZPANM	0.68
16	7	0.43	PCT	61	TSH	1.09	MBALL	0.7
16	7	29.95	PI		TSH	0.65	CCAGC	0.7
3	8	2.11	MAI		TEH	2.1	ZMAGR	0.72
3	8	10.1	DRI		TEH	0.92	MBALL	0.7
3	8	18.68	DRI		TEH	0.92	CCAGC	0.68
3	8	9.98	DRI		TEH	1.08	CCAGC	0.68
4	8	0.62	MAI		TEH	1.74	ZMAGR	0.72
4	8	14.33	DRI		TEH	1.18	CCAGC	0.68
4	8	47.11	DRI		TEH	1.51	CCAGC	0.68
4	8	6.36	DRI		TEH	2.13	MBALL	0.7
4	8	35.48	DRI		TEH	1.51	CCAGC	0.7
14	8	1.27	SAI		TEH	0.13	ZPANM	0.72
15	8	0.96	SAI		TEH	0.15	ZPANM	0.72
25	8	1.06	SAI		TEH	0.26	ZPANM	0.72
4	9	2.22	MAI		TEH	0.11	ZPANM	0.72
21	9	1.95	MAI		TEH	1.37	ZPANM	0.72
2	10	6.73	MAI		TEH	0.24	ZPANM	0.72
4	10	3.22	MAI		TEH	0.18	ZPANM	0.72
2	11	3.98	SAI		TEH	0.16	ZPANM	0.72
4	11	5.21	MAI		TEH	0.38	ZPANM	0.72
21	11	0.38	MAI		TEH	0.93	ZPANM	0.72

14	12	1.64	SAI		TEH	0.12	ZPANM	0.72
2	13	4.93	SAI		TEH	0.2	ZPANM	0.72
7	13	1.27	SAI		TEH	0.1	ZPANM	0.72
29	13	0.82	SAI		TEH	0.02	ZPANM	0.72
3	14	1.38	SAI		TEH	0.1	ZPANM	0.72
3	14	1.44	SCI		TEH	1.27	ZPANM	0.72
4	14	3.96	SAI		TEH	0.12	ZPANM	0.72
31	15	0.35	PIT		TSH	0.16	ZPANM	0.72
31	15	0.34	PIT	51	TSH	0.2	ZPANM	0.68
31	15	20.6	TSI		TSH	0.23	CCAGC	0.7
31	15	16.59	TSI		TSH	0.21	CCAGC	0.7
2	16	2.04	SAI		TEH	0.23	ZPANM	0.72
3	16	22.42	DRI		TEH	1.26	ZBALL	0.61
3	16	20.09	DRI		TEH	1.31	MBALL	0.7
3	16	28.85	DRI		TEH	0.89	CCAGC	0.68
3	16	18.25	DRI		TEH	1.31	CCAGC	0.68
4	16	1.57	MAI		TEH	0.2	ZPANM	0.72
4	16	1.35	SAI		TEH	1.05	ZPANM	0.72
34	16	118	SPI		2C	0.28	CCAGC	0.7
4	17	2.56	MAI		TEH	1.58	ZMAGR	0.72
10	17	0.49	PIT		TSH	0.17	ZPANM	0.72
10	17	0.56	PIT		TSH	0.25	ZPANM	0.72
28	17	3.44	MAI		TEH	0.25	ZPANM	0.68
2	18	1.37	SAI		TEH	0.21	ZPANM	0.72
2	18	3.11	SAI		TEH	0.47	ZPANM	0.72
3	18	3.38	MAI		TEH	1.5	ZMAGR	0.72
3	18	34.11	DRI		TEH	1.34	MBALL	0.7
3	18	34.18	DRI		TEH	1.3	CCAGC	0.68
3	18	16.39	DRI		TEH	1.34	CCAGC	0.68
4	18	3.17	MAI		TEH	0.2	ZPANM	0.72
3	19	1.99	MAI		TEH	0.15	ZPANM	0.72
4	19	1.08	SAI		TEH	0.13	ZPANM	0.72
5	19	0.85	MAI		TEH	1.28	ZPANM	0.72
2	20	0.93	SAI		TEH	0.09	ZPANM	0.72
3	20	4.37	MAI		TEH	0.11	ZPANM	0.72
8	20	0.5	PIT	66	TSC	0.79	ZPANM	0.68
8	20	0.34	PIT	51	TSC	0.8	ZPANM	0.68
8	20	1.36	PCT	2	TSC	0.63	CCAGC	0.7
37	20	0.32	PIT		TSH	19.22	ZPANM	0.72
37	20	0.67	PCT	0	TSH	19.89	CCAGC	0.7
3	21	2.14	MAI		TEH	0.13	ZPANM	0.72
4	21	1.56	SAI		TEH	0.24	ZPANM	0.72
18	21	27.88	SPI		2H	0.33	CCAGC	0.7
18	21	8.89	SPI		5C	0.12	CCAGC	0.7
33	21	0.49	SAI		TEH	3.27	ZPANM	0.72
2	22	1.22	SAI		TEH	0.17	ZPANM	0.72
3	22	2.92	SAI		TEH	0.09	ZPANM	0.72
4	22	1.04	SAI		TEH	0.15	ZPANM	0.72
4	22	0.1	PIT	24	TSC	2.01	ZPANM	0.68

4	22	0.11	PIT	51	TSC	3.15	ZPANM	0.68
4	22	0.14	PCT	14	TSC	2.23	MBALL	0.7
4	22	0.2	PCT	5	TSC	3.43	MBALL	0.7
4	22	0.27	PCT	12	TSC	2.2	CCAGC	0.68
4	22	0.22	PCT	29	TSC	1.85	CCAGC	0.7
4	22	0.71	PCT	3	TSC	2.96	CCAGC	0.7
5	22	0.87	SAI		TEH	0.11	ZPANM	0.72
30	22	1.79	MAI		TEH	0.14	ZPANM	0.72
3	23	2.46	SAI		TEH	0.17	ZPANM	0.72
3	23	3.76	MCI		TEH	1.34	ZPANM	0.72
4	23	6.06	MCI		TEH	1.29	ZPANM	0.72
21	23	20.62	SPI		2H	-0.33	CCAGC	0.7
30	23	0.25	PIT		TSH	18.59	ZPANM	0.72
34	23	1.39	SAI		TEH	0.27	ZPANM	0.68
3	24	2	SAI		TEH	0.15	ZPANM	0.72
4	24	2.94	SAI		TEH	0.18	ZPANM	0.72
5	24	4.61	SAI		TEH	0.22	ZPANM	0.72
5	24	0.37	PIT	47	TSC	1.96	ZPANM	0.68
5	24	0.65	PIT	59	TSC	2.18	ZPANM	0.68
5	24	1.01	PCT	25	TSC	2.28	CCAGC	0.64
5	24	1.14	PCT	29	TSC	2.35	CCAGC	0.68
5	24	0.38	PCT	25	TSC	2.7	CCAGC	0.7
20	24	330.2	TSI		TSH	0.18	CCAGC	0.7
2	25	1.98	MAI		TEH	0.12	ZPANM	0.72
3	25	1.12	SAI		TEH	0.17	ZPANM	0.72
35	25	1.19	SAI		TEH	0.17	ZPANM	0.68
2	26	3.21	MAI		TEH	0.17	ZPANM	0.72
3	26	2.19	SAI		TEH	0.17	ZPANM	0.72
5	26	3.43	MAI		TEH	0.18	ZPANM	0.72
8	26	0.36	PIT	60	TSC	6.56	ZPANM	0.68
8	26	0.22	PCT	6	TSC	7.01	CCAGC	0.68
8	26	0.38	PCT	15	TSC	6.99	CCAGC	0.7
12	26	0.11	SAI		TEH	2.82	ZMAGR	0.72
12	26	13.1	DRI		TEH	1.36	CCAGC	0.7
32	26	0.2	PIT		TSH	0.21	ZPANM	0.72
26	27	0.9	MCI		TEH	1.55	ZPANM	0.72
28	27	3.65	SAI		TEH	0.12	ZPANM	0.72
2	28	1.8	MAI		TEH	0.27	ZPANM	0.72
20	28	1.19	SAI		TEH	1.25	ZPANM	0.72
35	28	0.84	MAI		TEH	0.2	ZPANM	0.72
30	29	1.9	SAI		TEH	1.27	ZMAGR	0.72
30	29	3.35	DRI		TEH	1.7	CCAGC	0.7
34	29	27.57	SPI		6C	1.01	CCAGC	0.7
2	30	1.63	SAI		TEH	0.11	ZPANM	0.72
4	30	15.91	DRI		TEH	0.73	CCAGC	0.7
4	30	24.95	DRI		TEH	1.23	CCAGC	0.7
5	30	1.51	MAI		TEH	1.31	ZPANM	0.72
6	31	1.99	SAI		TEH	0.24	ZPANM	0.72
7	31	2.66	SAI		TEH	0.28	ZPANM	0.72

7	31	0.2	PIT	47	TSC	8.35	ZPANM	0.68
7	31	0.55	PCT	7	TSC	8.4	CCAGC	0.7
26	31	0.21	PIT		TSH	9.86	ZPANM	0.72
30	31	1.74	MAI		TEH	1.44	ZMAGR	0.72
30	31	10.5	DRI		TEH	1.01	CCAGC	0.7
2	32	3.73	SAI		TEH	0.11	ZPANM	0.72
4	32	0.32	SAI		TEH	5.67	ZPANM	0.72
4	32	0.35	SAI		TEH	9.27	ZPANM	0.72
4	32	0.2	SAI		TEH	11.19	ZPANM	0.72
9	32	0.27	PIT	1	TSC	9.76	ZPANM	0.68
9	32	1.15	PCT	30	TSC	9.87	MBALL	0.7
9	32	1.22	PCT	14	TSC	9.9	CCAGC	0.68
9	32	1.5	PCT	28	TSC	10.07	CCAGC	0.7
14	32	1.58	SCI		TEH	1.09	ZPANM	0.72
21	32	0.41	PIT		TSH	1.72	ZPANM	0.72
2	33	4.01	MAI		TEH	0.13	ZPANM	0.72
7	33	0.28	PIT		TSC	9.8	ZPAMR	0.72
7	33	0.23	PCT	13	TSC	10.2	CCAGC	0.68
7	33	0.25	PCT	5	TSC	10.4	CCAGC	0.7
8	33	0.25	PIT	20	TSC	10.51	ZPANM	0.68
8	33	0.34	PCT	17	TSC	10.9	CCAGC	0.7
10	33	0.37	PIT	43	TSC	11.35	ZPANM	0.68
10	33	0.49	PCT	17	TSC	11.16	CCAGC	0.68
15	33	0.22	PIT		TSC	13.43	ZPAMR	0.72
15	33	0.21	PIT	63	TSC	12.79	ZPANM	0.68
15	33	0.26	PCT	0	TSC	12.81	CCAGC	0.68
15	33	0.41	PCT	0	TSC	13.15	CCAGC	0.7
25	33	3.34	MAI		TEH	1.9	ZMAGR	0.72
25	33	23.99	DRI		TEH	0.79	MBALL	0.7
25	33	14.96	DRI		TEH	0.6	CCAGC	0.7
2	34	7.64	SAI		TEH	0.13	ZPANM	0.72
6	34	0.61	SCI		TEH	1.28	ZPANM	0.72
9	34	1.3	MAI		TEH	1.4	ZPANM	0.72
30	34	1.38	MAI		TEH	1.52	ZPANM	0.72
39	34	1.57	MAI		TEH	1.25	ZPANM	0.72
2	35	5.61	MAI		TEH	0.06	ZPANM	0.72
12	35	0.11	PIT	8	TSC	12.71	ZPANM	0.68
12	35	0.45	PCT	24	TSC	12.65	CCAGC	0.7
14	35	2.61	MAI		TEH	1.56	ZMAGR	0.72
14	35	32.8	DRI		TEH	0.96	CCAGC	0.7
26	35	1.44	MAI		TEH	1.3	ZPANM	0.72
28	35	2.03	MAI		TEH	0.21	ZPANM	0.72
2	36	6.65	MAI		TEH	0.19	ZPANM	0.72
3	36	4.03	MAI		TEH	1.55	ZPANM	0.72
3	36	1.86	MAI		TEH	1.34	ZPANM	0.68
3	36	77.27	DRI		TEH	1.14	CCAGC	0.68
3	36	57.18	DRI		TEH	1.29	CCAGC	0.68
3	36	54.48	DRI		TEH	1.13	CCAGC	0.7
3	36	21.33	DRI		TEH	1.14	CCAGC	0.7

7	36	3.19	SAI		TEH	0.08	ZPANM	0.72
14	36	1.5	MCI		TEH	0.89	ZPANM	0.72
14	36	2.47	MAI		TEH	1.73	ZMAGR	0.72
14	36	25.2	DRI		TEH	0.87	CCAGC	0.7
20	36	1.09	SAI		TEH	0.15	ZPANM	0.72
44	36	132.7	SPI		2C	-0.18	CCAGC	0.7
2	37	7.71	MAI		TEH	0.09	ZPANM	0.72
4	37	1.02	MAI		TEH	1.37	ZPANM	0.72
4	37	0.51	MAI		TEH	3.45	ZPANM	0.72
4	37	0.3	SAI		TEH	3.77	ZMAGR	0.72
4	37	2.82	MAI		TEH	1.38	ZMAGR	0.72
4	37	28.88	DRI		TEH	1.5	CCAGC	0.68
7	37	1.73	MAI		TEH	1.34	ZPANM	0.72
12	37	0.68	SCI		TEH	1.1	ZPANM	0.72
18	37	2.76	SAI		TEH	0.38	ZPANM	0.72
43	37	2.84	SAI		TEH	0.03	ZPANM	0.72
43	37	2.01	SAI		TEH	1.66	ZPANM	0.72
2	38	7.55	MAI		TEH	0.16	ZPANM	0.72
4	38	1.49	SAI		TEH	0.1	ZPANM	0.72
13	38	2.27	MAI		TEH	1.4	ZMAGR	0.72
13	38	24.8	DRI		TEH	1.23	CCAGC	0.7
14	38	5.38	DRI		TEH	0.85	CCAGC	0.68
20	38	11.93	DRI		TEH	0.96	CCAGC	0.7
23	38	33.26	DRI		TEH	0.7	CCAGC	0.7
23	38	6.8	DRI		TEH	1.22	CCAGC	0.7
23	38	3.15	DRI		TEH	1.88	CCAGC	0.7
23	38	25.15	DRI		TEH	1.66	CCAGC	0.7
29	38	1.55	MAI		TEH	1.1	ZMAGR	0.72
29	38	0.43	VOL	63	TSC	2.26	ZPANM	0.68
29	38	30.05	DRI		TEH	1.15	CCAGC	0.7
29	38	0.56	PCT	26	TSC	2.08	CCAGC	0.7
2	39	14.74	MAI		TEH	0.12	ZPANM	0.72
4	39	3.57	SAI		TEH	0.16	ZPANM	0.72
8	39	0.51	MAI		TEH	1.34	ZPANM	0.72
11	39	15.29	DRI		TEH	1.25	MBALL	0.7
11	39	15.24	DRI		TEH	1.01	CCAGC	0.68
11	39	54.22	DRI		TEH	1.16	CCAGC	0.68
12	39	24.03	DRI		TEH	1.39	CCAGC	0.7
13	39	1.61	SCI		TEH	1.31	ZPANM	0.7
15	39	0.18	PIT	62	TSC	13.08	ZPANM	0.68
15	39	0.48	PCT	19	TSC	12.75	CCAGC	0.7
15	39	0.44	PCT	35	TSC	12.77	CCAGC	0.7
18	39	0.61	SCI		TEH	0.97	ZPANM	0.72
18	39	0.33	PIT	54	TSC	12.76	ZPANM	0.68
18	39	0.79	PCT	40	TSC	12.55	CCAGC	0.7
18	39	0.42	PCT	47	TSC	12.45	CCAGC	0.7
26	39	0.79	SAI		TEH	0.92	ZPANM	0.72
27	39	1	SAI		TEH	0	ZPANM	0.72
27	39	0.65	SAI		TEH	1.05	ZPANM	0.72

27	39	14.25	DRI		TEH	1.77	CCAGC	0.7
31	39	1.73	MAI		TEH	1.3	ZPANM	0.72
2	40	9.52	SAI		TEH	0.18	ZPANM	0.72
14	40	12.96	DRI		TEH	1.13	CCAGC	0.7
18	40	3.69	DRI		TEH	0.89	CCAGC	0.68
19	40	0.84	MAI		TEH	1.96	ZMAGR	0.72
19	40	32.98	DRI		TEH	1.23	CCAGC	0.68
19	40	71.62	DRI		TEH	1.36	CCAGC	0.68
19	40	16.41	DRI		TEH	1.23	CCAGC	0.7
19	40	33.17	DRI		TEH	1.31	CCAGC	0.7
22	40	0.87	SAI		TEH	0.23	ZPANM	0.72
23	40	1.13	SAI		TEH	0.12	ZPANM	0.72
24	40	1.48	MAI		TEH	1.54	ZMAGR	0.72
24	40	41.57	DRI		TEH	1.55	CCAGC	0.7
27	40	0.66	SAI		TEH	0.32	ZPANM	0.72
27	40	0.58	SAI		TEH	1.35	ZPANM	0.72
2	41	6.31	MAI		TEH	0.21	ZPANM	0.72
4	41	0.83	MAI		TEH	0.18	ZPANM	0.72
9	41	0.37	PIT		TSC	12.79	ZPAMR	0.72
9	41	0.2	PIT	53	TSC	12.34	ZPANM	0.68
9	41	0.26	PIT	39	TSC	12.75	ZPANM	0.68
9	41	0.46	PCT	18	TSC	12.82	CCAGC	0.7
12	41	0.37	MCI		TEH	1.37	ZPANM	0.72
13	41	3.63	MAI		TEH	1.28	ZMAGR	0.72
13	41	73.68	DRI		TEH	1.48	CCAGC	0.68
13	41	37.52	DRI		TEH	1.46	CCAGC	0.7
13	41	23.31	DRI		TEH	0.7	CCAGC	0.7
14	41	1.53	MAI		TEH	1.34	ZMAGR	0.72
14	41	59.89	DRI		TEH	1.52	CCAGC	0.68
14	41	94.28	DRI		TEH	1.51	CCAGC	0.7
17	41	0.72	SCI		TEH	1.28	ZPANM	0.72
20	41	32.03	DRI		TEH	1.13	CCAGC	0.7
21	41	0.95	MAI		TEH	1.38	ZMAGR	0.72
21	41	46.67	DRI		TEH	1.21	CCAGC	0.7
34	41	0.49	SAI		TSH	0.46	ZPANM	0.72
34	41	0.27	SAI		TSH	0.47	ZPANM	0.72
40	41	24.35	SPI		4C	-0.48	CCAGC	0.68
2	42	6.94	MAI		TEH	0.25	ZPANM	0.72
4	42	2.57	SAI		TEH	0.24	ZPANM	0.72
7	42	0.93	SAI		TEH	2.72	ZMAGR	0.72
7	42	35.45	DRI		TEH	1.5	CCAGC	0.68
7	42	18.6	DRI		TEH	1.64	CCAGC	0.68
7	42	33.88	DRI		TEH	1.62	CCAGC	0.68
7	42	14.49	DRI		TEH	1.78	CCAGC	0.68
7	42	26.83	DRI		TEH	0.08	CCAGC	0.7
7	42	15.52	DRI		TEH	1.68	CCAGC	0.7
9	42	0.27	PIT	56	TSC	11.71	ZPANM	0.68
9	42	0.14	PIT	59	TSC	11.96	ZPANM	0.68
9	42	0.27	PIT	58	TSC	12.2	ZPANM	0.68

9	42	0.4	PCT	25	TSC	11.76	CCAGC	0.68
9	42	0.42	PCT	5	TSC	12.4	CCAGC	0.68
9	42	0.52	PCT	1	TSC	12.68	CCAGC	0.68
9	42	0.42	PCT	17	TSC	11.76	CCAGC	0.68
9	42	0.74	PCT	10	TSC	12.4	CCAGC	0.68
9	42	0.59	PCT	1	TSC	12.68	CCAGC	0.68
10	42	0.29	PIT		TSC	12.93	ZPAMR	0.72
10	42	0.94	SAI		TEH	1.5	ZMAGR	0.72
10	42	0.32	PIT	31	TSC	12.41	ZPANM	0.68
10	42	0.86	PCT	24	TSC	13.15	CCAGC	0.68
10	42	163.6	DRI		TEH	0.65	CCAGC	0.7
10	42	10.62	PI		TSC	12.24	CCAGC	0.7
10	42	1.01	PCT	21	TSC	13.12	CCAGC	0.7
14	42	3.68	MAI		TEH	1.4	ZMAGR	0.72
14	42	42.54	DRI		TEH	1.46	CCAGC	0.68
14	42	25.29	DRI		TEH	1.72	CCAGC	0.7
19	42	0.74	MAI		TEH	1.6	ZMAGR	0.72
19	42	28.01	DRI		TEH	1.38	MBALL	0.7
19	42	30.47	DRI		TEH	1.38	CCAGC	0.68
19	42	12.53	DRI		TEH	1.48	CCAGC	0.68
20	42	13.09	DRI		TEH	1.17	MBALL	0.7
20	42	13.44	DRI		TEH	1.28	MBALL	0.7
20	42	21.02	DRI		TEH	1.18	CCAGC	0.7
22	42	12.8	TSI		TSH	-0.04	CCAGC	0.7
25	42	0.52	SCI		TEH	1.31	ZPANM	0.72
31	42	0.92	MAI		TEH	1.39	ZPANM	0.72
40	42	1.11	SPI		4C	-0.14	CCAGC	0.7
43	42	11.04	SPI		3C	-0.07	CCAGC	0.68
43	42	18.42	SPI		3C	-0.19	CCAGC	0.7
44	42	11.39	SPI		2C	0	CCAGC	0.7
44	42	70.96	SPI		2C	-0.23	CCAGC	0.7
2	43	6.27	MAI		TEH	0.34	ZPANM	0.72
8	43	0.29	PIT		TSC	13.06	ZPAMR	0.72
8	43	0.21	PIT	34	TSC	12.69	ZPANM	0.68
8	43	0.14	PIT	66	TSC	13.13	ZPANM	0.68
8	43	0.48	PCT	14	TSC	13.48	CCAGC	0.68
8	43	0.62	PCT	20	TSC	13.16	CCAGC	0.7
14	43	20.3	DRI		TEH	1.47	CCAGC	0.7
17	43	0.19	PIT		TSC	12.08	ZPAMR	0.72
17	43	0.24	PIT	70	TSC	12.38	ZPANM	0.68
17	43	5.21	PI		TSC	13	CCAGC	0.7
17	43	113.5	PI		TSC	13	CCAGC	0.7
19	43	0.78	PIT		TSC	11.81	ZPAMR	0.72
19	43	0.67	PCT	5	TSC	12.07	MBALL	0.7
20	43	14.57	DRI		TEH	2.83	MBALL	0.7
20	43	16.71	DRI		TEH	1.21	CCAGC	0.7
21	43	1.44	SAI		TEH	1.45	ZMAGR	0.72
21	43	34.36	DRI		TEH	1.62	CCAGC	0.7
22	43	23.66	DRI		TEH	0.91	MBALL	0.7

22	43	12.3	DRI		TEH	1.38	CCAGC	0.68
22	43	24.12	DRI		TEH	1.4	CCAGC	0.68
22	43	6.21	DRI		TEH	1	CCAGC	0.68
35	43	1.54	MAI		TEH	1.15	ZPANM	0.72
2	44	5.07	MAI		TEH	0.24	ZPANM	0.72
2	44	0.21	SAI		TEH	8.7	ZPANM	0.72
10	44	0.64	PIT	20	TSC	12.36	ZPANM	0.68
10	44	0.11	PIT	34	TSC	13.17	ZPANM	0.68
10	44	0.86	PCT	48	TSC	12.75	CCAGC	0.68
10	44	1.05	PCT	38	TSC	13.14	CCAGC	0.7
11	44	0.16	PIT	20	TSC	13.37	ZPANM	0.68
11	44	0.16	PIT		TSC	13.79	ZPANM	0.68
11	44	0.36	PCT	25	TSC	13.72	CCAGC	0.68
11	44	0.38	PCT	17	TSC	13.65	CCAGC	0.7
13	44	1.7	MAI		TEH	1.53	ZMAGR	0.72
13	44	8.61	DRI		TEH	1.16	CCAGC	0.7
13	44	34.18	DRI		TEH	2.59	CCAGC	0.7
14	44	2.33	MCI		TEH	1.48	ZPANM	0.72
18	44	3.8	SAI		TEH	0.12	ZPANM	0.68
20	44	0.64	MAI		TEH	1.48	ZMAGR	0.72
20	44	25.37	DRI		TEH	1.68	CCAGC	0.7
23	44	7.81	DRI		TEH	1.15	CCAGC	0.7
24	44	29.71	SPI		2H	0.02	CCAGC	0.7
26	44	0.29	MAI		TEH	1.76	ZMAGR	0.72
26	44	15.05	DRI		TEH	0.51	CCAGC	0.7
31	44	0.69	MAI		TEH	1.35	ZPANM	0.72
41	44	1.25	SAI		TEH	1.08	ZPANM	0.72
3	45	3.5	MAI		TEH	1.37	ZMAGR	0.72
3	45	28.4	DRI		TEH	1.15	MBALL	0.7
3	45	31.8	DRI		TEH	1.34	CCAGC	0.68
6	45	0.96	SAI		TEH	1.34	ZMAGR	0.72
6	45	21.26	DRI		TEH	1.11	CCAGC	0.68
6	45	11.92	DRI		TEH	1.39	CCAGC	0.68
6	45	19.92	DRI		TEH	1.71	CCAGC	0.68
6	45	12.83	DRI		TEH	1.75	CCAGC	0.68
6	45	17.35	DRI		TEH	1.25	CCAGC	0.7
13	45	1.36	MAI		TEH	1.55	ZMAGR	0.72
13	45	30.36	DRI		TEH	1.42	CCAGC	0.68
14	45	1.12	MAI		TEH	1.54	ZMAGR	0.72
14	45	12.99	DRI		TEH	1.18	CCAGC	0.7
18	45	25.26	DRI		TEH	1.25	CCAGC	0.7
27	45	3.81	MAI		TEH	1.16	ZPANM	0.72
27	45	2.62	MAI		TEH	2.96	ZPANM	0.72
35	45	7.43	SPI		3C	-0.02	CCAGC	0.7
2	46	3.03	SAI		TEH	0.12	ZPANM	0.72
3	46	4.54	MAI		TEH	1.47	ZMAGR	0.72
3	46	40.29	DRI		TEH	1.12	MBALL	0.7
3	46	70.75	DRI		TEH	1.06	CCAGC	0.68
14	46	29.88	DRI		TEH	1.2	CCAGC	0.7

18	46	0.48	PIT		TSC	11.28	ZPANM	0.72
18	46	0.2	PIT		TSC	11.6	ZPANM	0.72
18	46	0.35	PIT		TSC	12.5	ZPANM	0.72
18	46	8.19	DRI		TEH	0.82	CCAGC	0.7
18	46	17.39	DRI		TEH	1.2	CCAGC	0.7
18	46	0.69	PCT	0	TSC	11.82	CCAGC	0.7
18	46	0.96	PCT	0	TSC	12.83	CCAGC	0.7
20	46	0.65	PIT		TSH	13.7	ZPANM	0.68
27	46	1.4	MAI		TEH	1.13	ZPANM	0.68
31	46	1.62	MAI		TEH	1.42	ZPANM	0.72
31	46	0.89	MAI		TEH	2.89	ZPANM	0.72
42	46	1.04	SAI		TEH	1.35	ZPANM	0.72
6	47	1.34	MAI		TEH	0.09	ZPANM	0.72
7	47	1.25	PIT		TSC	9.94	ZPAMR	0.72
7	47	0.81	PIT	82	TSC	10.73	ZPANM	0.68
7	47	1.19	PCT	29	TSC	10.62	CCAGC	0.68
7	47	1.36	PCT	33	TSC	10.81	CCAGC	0.68
7	47	1.19	PCT	32	TSC	10.82	CCAGC	0.7
13	47	1.08	MAI		TEH	1.59	ZMAGR	0.72
13	47	1.17	MAI		TEH	1.31	ZMAGR	0.72
13	47	55.01	DRI		TEH	1.52	CCAGC	0.68
13	47	25.45	DRI		TEH	1.69	CCAGC	0.7
14	47	0.27	PIT		TSH	16.95	ZPANM	0.72
17	47	1.29	MAI		TEH	1.4	ZMAGR	0.72
17	47	42.92	DRI		TEH	1.44	CCAGC	0.68
17	47	20.34	DRI		TEH	1.39	CCAGC	0.7
19	47	0.53	PIT		TSH	6.82	ZPANM	0.72
20	47	28.03	DRI		TEH	1.14	CCAGC	0.7
20	47	58.85	DRI		TEH	1.32	CCAGC	0.7
21	47	29.4	DRI		TEH	0.98	CCAGC	0.7
21	47	58.64	DRI		TEH	1.21	CCAGC	0.7
36	47	0.81	SAI		TEH	1.51	ZPANM	0.72
43	47	1.29	MAI		TEH	1.43	ZPANM	0.72
2	48	6.93	MAI		TEH	0.36	ZPANM	0.72
2	48	0.46	MAI		TEH	9.94	ZPANM	0.72
6	48	1.57	MAI		TEH	1.39	ZMAGR	0.72
6	48	46.69	DRI		TEH	1.32	CCAGC	0.68
8	48	1.22	MAI		TEH	1.28	ZPANM	0.72
16	48	0.31	PIT		TSH	7.76	ZPANM	0.72
16	48	0.93	PCT	1	TSH	8.02	MBALL	0.7
17	48	1.09	SAI		TEH	1.42	ZMAGR	0.72
17	48	0.89	MAI		TEH	1.29	ZMAGR	0.72
17	48	19.38	DRI		TEH	1.35	CCAGC	0.7
19	48	2.39	MAI		TEH	0.1	ZPANM	0.68
21	48	36.37	DRI		TEH	1.02	CCAGC	0.7
21	48	35.82	DRI		TEH	1.23	CCAGC	0.7
23	48	2.92	MAI		TEH	0.08	ZPANM	0.68
24	48	9.5	MAI		TEH	0.12	ZPANM	0.68
27	48	10.94	SAI		TEH	0.13	ZPANM	0.68

3	49	1.95	SAI		TEH	0.08	ZPANM	0.72
3	49	1.73	MCI		TEH	1.25	ZPANM	0.72
5	49	0.46	PIT		TSC	2.08	ZPAMR	0.72
5	49	0.66	PCT	24	TSC	2.29	CCAGC	0.68
19	49	1.44	MCI		TEH	1.35	ZPANM	0.72
21	49	40.49	DRI		TEH	1.04	CCAGC	0.7
21	49	52.31	DRI		TEH	1.37	CCAGC	0.7
26	49	0.51	PIT		TSH	27.29	ZPANM	0.72
26	49	0.45	PCT	0	TSH	28.84	CCAGC	0.7
27	49	1.36	MAI		TEH	1.34	ZMAGR	0.72
27	49	16.73	DRI		TEH	1.4	CCAGC	0.7
35	49	0.95	MAI		TEH	1.24	ZPANM	0.72
41	49	0.48	SAI		TEH	1.42	ZPANM	0.72
41	49	26.99	SPI		6C	-0.1	CCAGC	0.68
21	50	28.95	DRI		TEH	1.46	CCAGC	0.7
36	50	7.78	SPI		5C	-0.3	CCAGC	0.68
7	51	0.27	PIT		TSC	7	ZPAMR	0.72
35	51	0.36	SAI		TEH	1.21	ZPANM	0.72
37	51	31.78	SPI		5C	0.02	CCAGC	0.7
2	52	5.72	MAI		TEH	0.15	ZPANM	0.72
3	52	0.82	SAI		TEH	0.19	ZPANM	0.72
9	52	0.12	PIT	1	TSC	7.37	ZPANM	0.68
9	52	0.1	PIT	1	TSC	8.38	ZPANM	0.68
9	52	0.07	PIT	69	TSC	9.4	ZPANM	0.68
9	52	0.55	PCT	14	TSC	7.86	CCAGC	0.68
9	52	0.31	PCT	57	TSC	9.61	CCAGC	0.68
9	52	0.67	PCT	1	TSC	7.79	CCAGC	0.7
10	52	0.14	PIT	39	TSC	8.51	ZPANM	0.68
10	52	0.45	PCT	23	TSC	8.49	CCAGC	0.68
10	52	0.78	PCT	26	TSC	8.47	CCAGC	0.7
14	52	0.07	PIT	56	TSC	7.68	ZPANM	0.68
14	52	0.48	PCT	19	TSC	7.86	MBALL	0.7
14	52		PCT	1	TSC	7.97	CCAGC	0.68
19	52	28.1	DRI		TEH	1.31	MBALL	0.7
19	52	138.4	DRI		TEH	1.32	CCAGC	0.68
19	52	20.8	DRI		TEH	1.32	CCAGC	0.68
21	52	24.14	DRI		TEH	1.64	CCAGC	0.7
21	52	37.05	SPI		5C	0.27	CCAGC	0.7
7	53	0.31	PIT		TSC	6.08	ZPAMR	0.72
7	53	0.1	PIT	38	TSC	6.36	ZPANM	0.68
7	53	0.36	NQI		TSC	6.66	CCAGC	0.7
9	53	0.38	PIT		TSC	7.1	ZPAMR	0.72
9	53	0.2	PIT		TSC	8.54	ZPAMR	0.72
9	53	0.13	PIT	60	TSC	7.22	ZPANM	0.68
9	53	0.07	PIT	55	TSC	8.74	ZPANM	0.68
9	53	0.97	NQI		TSC	7.52	CCAGC	0.68
9	53	1.05	PCT	10	TSC	6.95	CCAGC	0.68
9	53	0.24	PCT	61	TSC	8.41	CCAGC	0.68
9	53	1	PCT	10	TSC	6.66	CCAGC	0.7

9	53	0.27	PCT	61	TSC	8.66	CCAGC	0.7
13	53	1.37	MCI		TEH	1.32	ZPANM	0.7
15	53	1.36	MCI		TEH	1.26	ZPANM	0.72
17	53	1.1	MCI		TEH	1.3	ZPANM	0.72
19	53	0.73	MCI		TEH	1.23	ZPANM	0.72
21	53	1.56	MCI		TEH	1.26	ZPANM	0.72
21	53	1.78	MAI		TEH	2.62	ZPANM	0.72
20	54	1.21	MCI		TEH	1.33	ZPANM	0.72
21	54	1.5	SAI		TEH	0.1	ZPANM	0.72
21	54	0.47	SAI		TEH	1.71	ZMAGR	0.72
21	54	0.37	MAI		TEH	1.39	ZMAGR	0.72
21	54	21.85	DRI		TEH	1.08	CCAGC	0.7
21	55	2.75	MAI		TEH	1.44	ZMAGR	0.72
21	55	25.38	DRI		TEH	1.12	CCAGC	0.7
2	56	2.03	MAI		TEH	0.15	ZPANM	0.72
7	56	0.07	PIT	20	TSC	3.06	ZPANM	0.68
7	56	0.16	PIT	18	TSC	6.89	ZPANM	0.68
7	56	0.76	PCT	31	TSC	3.31	CCAGC	0.68
7	56	0.36	PCT	14	TSC	7.2	CCAGC	0.68
7	56	0.75	PCT	31	TSC	3.55	CCAGC	0.7
7	56	0.62	PCT	15	TSC	7	CCAGC	0.7
2	57	5.37	MAI		TEH	0.21	ZPANM	0.72
7	57	0.3	PIT		TSC	3.16	ZPAMR	0.72
7	57	0.91	PCT	20	TSC	3.59	CCAGC	0.68
7	57	0.92	PCT	14	TSC	2.98	CCAGC	0.7
21	57	429.9	SPI		3H	0.27	CCAGC	0.7
34	57	45.02	SPI		2H	-0.1	CCAGC	0.7
34	57	45.02	SPI		2H	-0.1	CCAGC	0.7
38	57	488.8	SPI		2H	0.33	CCAGC	0.7
2	58	3.49	MAI		TEH	0.18	ZPANM	0.72
4	58	1.45	MAI		TEH	0.15	ZPANM	0.72
6	58	0.38	PIT		TSC	0.85	ZPAMR	0.72
6	58	0.19	PIT		TSC	4.38	ZPAMR	0.72
6	58	0.77	PIT		TSC	4.61	ZPAMR	0.72
6	58	0.1	PIT	70	TSC	0.91	ZPANM	0.68
6	58	0.15	PIT	67	TSC	5.17	ZPANM	0.68
6	58	0.79	PCT	29	TSC	0.89	CCAGC	0.68
6	58	11.57	PI		TSC	1.18	CCAGC	0.68
6	58	0.65	PCT	23	TSC	5.08	CCAGC	0.68
6	58	0.7	PCT	22	TSC	5.21	CCAGC	0.7
8	58	0.26	PIT		TSC	6.86	ZPAMR	0.72
8	58	0.08	PIT	66	TSC	7.57	ZPANM	0.68
8	58	0.41	PCT	21	TSC	7.66	CCAGC	0.68
8	58	0.46	PCT	26	TSC	7.19	CCAGC	0.7
8	58	0.45	PCT	14	TSC	7.69	CCAGC	0.7
27	58	0.14	PIT	68	TSC	0.51	ZPANM	0.68
27	58	13.58	TSI		TSC	0.48	CCAGC	0.7
2	59	7.71	MAI		TEH	0.18	ZPANM	0.72
4	59	3.17	MAI		TEH	0.14	ZPANM	0.72

5	59	1.29	SAI		TEH	0.13	ZPANM	0.72
7	59	0.39	PIT		TSC	6.31	ZPAMR	0.72
7	59	0.46	PIT		TSC	6.43	ZPAMR	0.72
7	59	0.2	PIT		TSC	7.02	ZPAMR	0.72
7	59	0.14	PIT	39	TSC	3.36	ZPANM	0.68
7	59	0.15	PIT	24	TSC	6.77	ZPANM	0.68
7	59	0.07	PIT	43	TSC	7.39	ZPANM	0.68
7	59	1.08	PCT	43	TSC	3.69	CCAGC	0.7
7	59	0.3	PCT	22	TSC	7.67	CCAGC	0.7
7	59	1.3	PCT	49	TSC	3.64	CCAGC	0.7
7	59	0.63	PCT	0	TSC	6.82	CCAGC	0.7
7	59	0.36	PCT	0	TSC	7.55	CCAGC	0.7
9	59	0.33	PIT		TSC	7.64	ZPAMR	0.72
9	59	0.12	PIT	41	TSC	8.1	ZPANM	0.68
9	59	0.41	PCT	24	TSC	8.09	CCAGC	0.68
9	59	0.61	PCT	1	TSC	8.59	CCAGC	0.7
18	59	0.07	PIT	55	TSC	6.48	ZPANM	0.68
18	59	0.39	PCT	8	TSC	6.3	CCAGC	0.7
40	59	0.78	SAI		TEH	1.61	ZPANM	0.68
7	60	0.1	PIT	67	TSC	3.53	ZPANM	0.68
7	60	0.09	PIT	59	TSC	3.65	ZPANM	0.68
7	60	1.27	PCT	24	TSC	3.61	CCAGC	0.68
7	60	1.24	PCT	1	TSC	3.56	MBALL	0.7
2	61	6.88	MAI		TEH	0.12	ZPANM	0.72
5	61	0.79	SAI		TEH	0.1	ZPANM	0.72
11	61	0.25	PIT		TSC	6.56	ZPAMR	0.72
18	61	0.88	SAI		TEH	11.42	ZPANM	0.72
3	62	0.64	SAI		TEH	0.17	ZPANM	0.72
5	62	2.31	SAI		TEH	1.24	ZPANM	0.72
5	62	0.37	PCT	20	TSC	4.56	EBALL	0.7
5	62	0.06	PIT	26	TSC	4.6	ZPANM	0.68
5	62	0.33	PCT	23	TSC	4.2	CCAGC	0.68
5	62	0.28	PCT	14	TSC	4.44	CCAGC	0.68
5	62	0.31	PCT	35	TSC	4.2	CCAGC	0.68
6	62	3.98	SAI		TEH	0.18	ZPANM	0.72
7	62	2.46	MAI		TEH	1.55	ZMAGR	0.72
7	62	0.06	PIT	48	TSC	5.54	ZPANM	0.68
7	62	0.12	PIT	1	TSC	6	ZPANM	0.68
7	62	0.08	PIT	20	TSC	7.17	ZPANM	0.68
7	62	30.59	DRI		TEH	1.06	CCAGC	0.68
7	62	15.63	DRI		TEH	1.25	CCAGC	0.68
7	62	0.22	PCT	11	TSC	6.2	CCAGC	0.68
7	62	0.41	PCT	31	TSC	6.38	CCAGC	0.68
7	62	0.69	PCT	29	TSC	7.36	CCAGC	0.68
7	62	14.95	DRI		TEH	1.31	MBALL	0.7
7	62	0.62	PCT	13	TSC	6.01	CCAGC	0.7
7	62	0.47	PCT	26	TSC	6.45	CCAGC	0.7
7	62	0.71	PCT	29	TSC	7.3	CCAGC	0.7
7	62	15.48	DRI		TEH	1.13	CCAGC	0.7

37	62	0.49	MAI		TEH	0.06	ZPANM	0.72
6	63	0.06	PIT	60	TSC	4.51	ZPANM	0.68
6	63	0.04	PIT	61	TSC	4.72	ZPANM	0.68
6	63	0.06	PIT	20	TSC	5.21	ZPANM	0.68
6	63	0.57	PCT	34	TSC	4.72	CCAGC	0.68
6	63	0.62	PCT	20	TSC	5.2	CCAGC	0.68
6	63	0.56	PCT	6	TSC	4.94	CCAGC	0.7
6	63	0.49	PCT	38	TSC	5.34	CCAGC	0.7
8	63	0.75	PIT		TSC	2.78	ZPAMR	0.72
8	63	1.41	PCT	26	TSC	2.87	CCAGC	0.68
8	63	1.66	PCT	18	TSC	2.92	CCAGC	0.7
9	63	0.21	PIT		TSC	6.48	ZPAMR	0.72
38	63	1.56	MAI		TEH	1.62	ZMAGR	0.72
38	63	33.01	DRI		TEH	1.08	MBALL	0.7
38	63	36.53	DRI		TEH	1.09	CCAGC	0.68
38	63	71.18	DRI		TEH	1.1	CCAGC	0.68
2	64	2.6	SCI		TEH	0.1	ZPANM	0.72
12	64	2.63	MAI		TEH	1.48	ZMAGR	0.72
12	64	29.92	DRI		TEH	1.27	MBALL	0.7
12	64	31.76	DRI		TEH	1.17	CCAGC	0.68
12	64	35.67	DRI		TEH	1.19	CCAGC	0.68
2	65	0.45	SAI		TEH	0.25	ZPANM	0.72
6	65	0.54	PIT	48	TSC	0.37	ZPANM	0.68
6	65	0.16	PIT	57	TSC	0.32	ZPANM	0.68
6	65	0.17	PIT	61	TSC	4.57	ZPANM	0.68
6	65	0.14	PIT	62	TSC	6.29	ZPANM	0.68
6	65	1.08	PCT	24	TSC	6.01	CCAGC	0.64
6	65	1.09	PCT	24	TSC	6	CCAGC	0.68
6	65	13.67	PI		TSC	6.05	CCAGC	0.68
6	65	0.84	PCT	24	TSC	6.21	CCAGC	0.7
9	65	0.27	PIT		TSC	5.52	ZPAMR	0.72
15	65	3.21	MAI		TEH	1.46	ZMAGR	0.72
15	65	21.57	DRI		TEH	1.59	CCAGC	0.7
2	66	1.35	MAI		TEH	0.24	ZPANM	0.72
4	66	0.03	PIT	31	TSC	3.03	ZPANM	0.68
4	66	0.03	PIT	18	TSC	3.56	ZPANM	0.68
4	66	0.29	PCT	21	TSC	3.51	CCAGC	0.68
4	66	0.37	PCT	1	TSC	3.49	CCAGC	0.7
7	66	1.16	MAI		TEH	1.3	ZMAGR	0.72
7	66	0.13	PIT	57	TSC	4.8	ZPANM	0.68
7	66	13.54	DRI		TEH	1.02	CCAGC	0.68
7	66	0.57	PCT	12	TSC	4.48	CCAGC	0.68
7	66	0.8	PCT	2	TSC	4.56	CCAGC	0.7
9	66	0.17	PIT	47	TSC	4.05	ZPANM	0.68
9	66	0.73	PCT	25	TSC	4.22	CCAGC	0.68
9	66	0.76	PCT	29	TSC	4.32	MBALL	0.7
28	66	9.28	SPI		2H	0.1	CCAGC	0.7
2	67	1.86	MAI		TEH	0.26	ZPANM	0.72
4	67	3.28	SAI		TEH	8.16	ZPANM	0.72

4	67	1.81	SAI		TEH	9.92	ZPANM	0.72
11	67	0.32	SAI		TEH	1.13	ZPANM	0.72
17	67	0.54	PIT		TSC	0.66	ZPANM	0.72
17	67	1.06	PIT		TSC	0.83	ZPANM	0.72
21	67	5.79	SPI		2H	0.14	CCAGC	0.7
23	67	9.37	SPI		3H	-0.06	CCAGC	0.7
37	67	0.2	MAI		TEH	1.47	ZPANM	0.7
40	67	1.38	SAI		TEH	0.12	ZPANM	0.7
5	68	1.19	SAI		TEH	0.22	ZPANM	0.72
7	68	2.11	MAI		TEH	0.23	ZPANM	0.72
8	68	1.97	SAI		TEH	1.22	ZPANM	0.72
8	68	0.39	PIT		TSC	0.46	ZPANM	0.72
8	68	0.25	PIT		TSC	4.83	ZPANM	0.72
8	68	0.22	PIT		TSC	4.27	ZPAMR	0.72
8	68	0.09	PIT	64	TSC	4.58	ZPANM	0.68
8	68	0.44	PCT	12	TSC	4.47	CCAGC	0.68
8	68	0.36	PCT	1	TSC	4.78	MBALL	0.7
9	68	2.1	MAI		TEH	1.49	ZMAGR	0.72
9	68	29.82	DRI		TEH	1.22	CCAGC	0.7
11	68	0.88	PIT		TSH	5.64	ZPANM	0.72
2	69	1.97	MAI		TEH	0.23	ZPANM	0.72
5	69	1.52	MAI		TEH	0.27	ZPANM	0.72
7	69	3.31	MAI		TEH	0.23	ZPANM	0.72
9	69	0.17	PIT		TSC	3.7	ZPANM	0.72
9	69	0.58	PIT		TSC	4.19	ZPANM	0.72
9	69	0.1	PIT		TSC	3.58	ZPAMR	0.72
9	69	0.47	PIT		TSC	3.98	ZPAMR	0.72
9	69	0.05	PIT	66	TSC	3.83	ZPANM	0.68
9	69	0.14	PIT	52	TSC	4.24	ZPANM	0.68
9	69	0.43	PCT	57	TSC	4.29	CCAGC	0.7
7	70	1.02	SAI		TEH	0.17	ZPANM	0.72
2	71	12.2	MAI		TEH	0.3	ZPANM	0.72
4	71	1.6	SAI		TEH	0.24	ZPANM	0.72
2	72	12.15	TSI		TSH	0.06	CCAGC	0.7
9	72	0.43	PIT		TSH	1.5	ZPANM	0.68
12	72	0.07	PIT	46	TSC	3.65	ZPANM	0.68
12	72	0.16	PCT	59	TSC	3.76	MBALL	0.7
15	72	5.29	SPI		5C	-0.1	CCAGC	0.7
2	73	6.9	MAI		TEH	0.25	ZPANM	0.72
4	73	0.8	SAI		TEH	0.11	ZPANM	0.72
23	73	1.57	SPI		1C	-0.31	CCAGC	0.7
25	73	8.2	SPI		2H	0.14	CCAGC	0.7
4	74	1.32	SAI		TEH	0.2	ZPANM	0.72
2	75	10.62	MAI		TEH	0.2	ZPANM	0.72
18	75	11.12	SPI		3H	-0.17	CCAGC	0.68
2	76	8.45	MAI		TEH	0.19	ZPANM	0.72
2	76	1.44	DRI		TEH	0.85	CCAGC	0.7
3	76	3.28	SAI		TEH	0.22	ZPANM	0.72
18	76	1.74	SAI		TEH	0.25	ZPANM	0.72

10	78	0.51	MAI		TEH	5.91	ZPANM	0.72
15	79	0.92	MAI		TEH	1.46	ZPANM	0.7
3	80	3.15	DRI		TEH	1.44	MBALL	0.7
3	80	12.6	DRI		TEH	1.37	CCAGC	0.68
3	80	6.95	DRI		TEH	1.49	CCAGC	0.68
3	80	25.03	DRI		TEH	1.78	CCAGC	0.7
18	80	0.82	MAI		TEH	1.28	ZMAGR	0.72
18	80	28.62	DRI		TEH	1.05	CCAGC	0.7
7	81	2.88	SAI		TEH	0.21	ZPANM	0.7
11	81	2.46	SAI		TEH	0.23	ZPANM	0.7
18	81	29.11	DRI		TEH	1.05	MBALL	0.7
18	81	33.38	DRI		TEH	1.14	CCAGC	0.7
2	82	2.82	MAI		TEH	0.28	ZPANM	0.7
27	82	2.37	SAI		TEH	0.09	ZPANM	0.7
2	83	18.55	DRI		TEH	1.37	ZBALL	0.61
2	83	8.47	DRI		TEH	1.37	MBALL	0.7
2	83	14.57	DRI		TEH	1.48	CCAGC	0.68
2	83	12.19	DRI		TEH	1.98	CCAGC	0.68
3	83	3.05	SAI		TEH	0.21	ZPANM	0.7
6	83	3.63	SAI		TEH	0.24	ZPANM	0.7
12	83	1.3	MAI		TEH	1.26	ZMAGR	0.72
12	83	19.17	DRI		TEH	1.49	CCAGC	0.68
14	83	1.62	MAI		TEH	1.46	ZPANM	0.7
18	83	1.27	MAI		TEH	1.27	ZPANM	0.7
21	83	8.58	SPI		2H	-0.12	CCAGC	0.68
2	84	2.59	MAI		TEH	0.16	ZPANM	0.72
2	84	3.2	MAI		TEH	0.22	ZPANM	0.7
3	84	3.09	SAI		TEH	0.23	ZPANM	0.7
5	84	1.37	SAI		TEH	0.19	ZPANM	0.7
11	84	3.41	SAI		TEH	0.41	ZPANM	0.7
18	84	1.9	SAI		TEH	1.19	ZPANM	0.7
6	85	0.68	SAI		TEH	0.19	ZPANM	0.7
11	85	3.07	SAI		TEH	0.2	ZPANM	0.7
11	85	1.38	SAI		TEH	1.33	ZPANM	0.7
5	86	1.13	MAI		TEH	0.16	ZPANM	0.7
6	86	1.62	MAI		TEH	0.17	ZPANM	0.7
7	86	0.71	MAI		TEH	0.19	ZPANM	0.7
11	86	1.45	MAI		TEH	0.24	ZPANM	0.7
12	86	1.81	MAI		TEH	0.22	ZPANM	0.7
13	86	1.64	SAI		TEH	0.21	ZPANM	0.7
2	87	8.19	MAI		TEH	0.18	ZPANM	0.7
2	87	3.9	MAI		6C	6.57	ZPUHF	0.62
2	87	2.12	MAI		6C	6.57	ZPUHF	0.62
2	87	5.88	MAI		6C	6.57	ZPUHF	0.62
2	87	2.23	MAI		6C	6.57	ZPUHF	0.62
2	87	3.51	MAI		6C	6.57	ZPUHF	0.62
2	87	7.77	MAI		6C	7.13	ZPUHF	0.62
2	87	5.12	MAI		6C	7.13	ZPUHF	0.62
2	87	2.91	MAI		6C	7.13	ZPUHF	0.62

2	87	4.72	MAI		6C	7.13	ZPUHF	0.62
2	87	2.93	MAI		6C	7.13	ZPUHF	0.62
2	87	2.05	MAI		6C	7.31	ZPUHF	0.62
2	87	1.88	MAI		6C	7.31	ZPUHF	0.62
2	87	5.1	MAI		6C	7.31	ZPUHF	0.62
2	87	3.3	MAI		6C	7.31	ZPUHF	0.62
2	87	3.23	MAI		6C	7.31	ZPUHF	0.62
2	87	1.01	SAI	53	6H	6.31	ZPUMB	0.62
2	87	1.04	SAI	56	6H	6.92	ZPUMB	0.62
2	87	1.03	SAI	60	6H	7.13	ZPUMB	0.62
2	87	1.43	SAI	63	6H	6.3	ZPUMB	0.62
2	87	0.85	SAI	61	6H	6.82	ZPUMB	0.62
2	87	0.79	SAI	61	6H	7	ZPUMB	0.62
6	87	2.57	MAI		TEH	0.27	ZPANM	0.7
8	87	1.89	MAI		TEH	0.22	ZPANM	0.7
2	88	4.17	MAI		TEH	0.14	ZPANM	0.72
2	88	6.47	MAI		TEH	0.21	ZPANM	0.7
5	88	1.56	MAI		TEH	0.2	ZPANM	0.7
6	88	2.57	MAI		TEH	0.22	ZPANM	0.7
7	88	1.02	SAI		TEH	0.19	ZPANM	0.7
8	88	4.12	MAI		TEH	0.26	ZPANM	0.7
12	88	1.4	SAI		TEH	0.17	ZPANM	0.7
2	89	9.56	MAI		TEH	0.21	ZPANM	0.7
6	89	3.91	SAI		TEH	0.31	ZPANM	0.7
7	89	3.36	MAI		TEH	0.22	ZPANM	0.7
2	90	7.76	MAI		TEH	0.18	ZPANM	0.7
4	90	2.06	SAI		TEH	0.19	ZPANM	0.7
6	90	9.58	SAI		TEH	1.41	ZMAGR	0.72
6	90	19.15	DRI		TEH	0.68	CCAGC	0.7
6	91	3.58	MAI		TEH	0.22	ZPANM	0.7

Table 4, Steam Generator 21, Tubes Plugged 2000

Row	Col	Primary Reason for Plugging
2	2	Row 2 NDD - Customer Decision to Plug
2	3	Row 2 NDD - Customer Decision to Plug
13	3	Volumetric Indication
2	4	Row 2 NDD - Customer Decision to Plug
12	4	Volumetric Indication
2	5	Row 2 NDD - Customer Decision to Plug
2	6	Row 2 NDD - Customer Decision to Plug
16	6	Pitting
16	7	Pitting
2	10	Row 2 NDD - Customer Decision to Plug
2	11	Row 2 NDD - Customer Decision to Plug
2	12	Row 2 NDD - Customer Decision to Plug
2	13	Row 2 NDD - Customer Decision to Plug
31	15	Cecco Top of Tubesheet Indication
2	16	Row 2 NDD - Customer Decision to Plug
34	16	Cecco Support Plate Indication
2	17	Row 2 NDD - Customer Decision to Plug
4	17	Failed F* Criteria for Dia. or Dist.
10	17	Pitting
2	18	Row 2 NDD - Customer Decision to Plug
2	19	Row 2 NDD - Customer Decision to Plug
2	20	Row 2 NDD - Customer Decision to Plug
8	20	Pitting by RPC/<28% or DEP by Bobbin
37	20	Pitting by RPC/<28% or DEP by Bobbin
2	21	Row 2 NDD - Customer Decision to Plug
18	21	Cecco Support Plate Indication
33	21	Failed F* Criteria for Dia. or Dist.
2	22	Row 2 NDD - Customer Decision to Plug
4	22	Pitting
21	23	Cecco Support Plate Indication
30	23	Pitting
2	24	Row 2 NDD - Customer Decision to Plug
5	24	Pitting
20	24	Cecco Top of Tubesheet Indication
2	25	Row 2 NDD - Customer Decision to Plug
2	26	Row 2 NDD - Customer Decision to Plug
8	26	Pitting by RPC/<28% or DEP by Bobbin
32	26	Pitting
2	27	Row 2 NDD - Customer Decision to Plug
2	28	Row 2 NDD - Customer Decision to Plug
2	29	Row 2 NDD - Customer Decision to Plug
34	29	Cecco Support Plate Indication
2	30	Row 2 NDD - Customer Decision to Plug
7	31	Pitting by RPC/<28% or DEP by Bobbin
26	31	Pitting
41	31	Restricted to 0.610" Bobbin Probe at 4C
2	32	Crevice ODSCC Indication
4	32	Crevice ODSCC Indication

9	32	Pitting
21	32	Pitting
2	33	Row 2 NDD - Customer Decision to Plug
7	33	Pitting by RPC/<28% or DEP by Bobbin
8	33	Pitting by RPC/<28% or DEP by Bobbin
10	33	Pitting by RPC/<28% or DEP by Bobbin
15	33	Pitting by RPC/<28% or DEP by Bobbin
2	34	Row 2 NDD - Customer Decision to Plug
2	35	Row 2 NDD - Customer Decision to Plug
12	35	Pitting by RPC/<28% or DEP by Bobbin
2	36	Row 2 NDD - Customer Decision to Plug
44	36	Cecco Support Plate Indication
2	37	Row 2 NDD - Customer Decision to Plug
4	37	Crevice ODSCC Indication
2	38	Row 2 NDD - Customer Decision to Plug
29	38	Volumetric Indication/<28% by Bobbin
2	39	Row 2 NDD - Customer Decision to Plug
15	39	Pitting
18	39	Pitting
2	40	Row 2 NDD - Customer Decision to Plug
2	41	Restricted to 0.610" Bobbin Probe at 3C
9	41	Pitting by RPC/<28% or DEP by Bobbin
34	41	ODSCC Indication Above TSH
40	41	Cecco Support Plate Indication
2	42	Row 2 NDD - Customer Decision to Plug
9	42	Pitting by RPC/<28% or DEP by Bobbin
10	42	Pitting by RPC/<28% or DEP by Bobbin
22	42	Cecco Top of Tubesheet Indication
40	42	Cecco Support Plate Indication
43	42	Cecco Support Plate Indication
44	42	Cecco Support Plate Indication
2	43	Row 2 NDD - Customer Decision to Plug
8	43	Pitting by RPC/<28% or DEP by Bobbin
17	43	Pitting by RPC/<28% or DEP by Bobbin
19	43	Pitting by RPC/<28% or DEP by Bobbin
2	44	Crevice ODSCC Indication
10	44	Pitting
11	44	Pitting by RPC/<28% or DEP by Bobbin
24	44	Cecco Support Plate Indication
2	45	Row 2 NDD - Customer Decision to Plug
27	45	Failed F* Criteria for Dia. or Dist.
35	45	Cecco Support Plate Indication
2	46	Row 2 NDD - Customer Decision to Plug
18	46	Pitting by RPC/<28% or DEP by Bobbin
20	46	Pitting
31	46	Failed F* Criteria for Dia. or Dist.
7	47	Pitting
13	47	Failed F* Criteria for Dia. or Dist.
14	47	Pitting
19	47	Pitting
2	48	Crevice ODSCC Indication
8	48	Failed F* Criteria for Dia. or Dist.

16	48	Pitting by RPC/<28% or DEP by Bobbin
5	49	Pitting by RPC/<28% or DEP by Bobbin
26	49	Pitting by RPC/<28% or DEP by Bobbin
41	49	Cecco Support Plate Indication
2	50	Row 2 NDD - Customer Decision to Plug
36	50	Cecco Support Plate Indication
7	51	Pitting by RPC/<28% or DEP by Bobbin
37	51	Cecco Support Plate Indication
2	52	Row 2 NDD - Customer Decision to Plug
9	52	Pitting
10	52	Pitting by RPC/<28% or DEP by Bobbin
14	52	Pitting by RPC/<28% or DEP by Bobbin
21	52	Cecco Support Plate Indication
7	53	Pitting
9	53	Pitting
13	53	Failed F* Criteria for Dia. or Dist.
21	53	Failed F* Criteria for Dia. or Dist.
2	55	Row 2 NDD - Customer Decision to Plug
2	56	Row 2 NDD - Customer Decision to Plug
7	56	Pitting
2	57	Row 2 NDD - Customer Decision to Plug
7	57	Pitting by RPC/<28% or DEP by Bobbin
21	57	Cecco Support Plate Indication
34	57	Cecco Support Plate Indication
38	57	Cecco Support Plate Indication
2	58	Row 2 NDD - Customer Decision to Plug
6	58	Pitting
8	58	Pitting by RPC/<28% or DEP by Bobbin
27	58	Cecco Top of Tubesheet Indication
2	59	Row 2 NDD - Customer Decision to Plug
7	59	Pitting
9	59	Pitting by RPC/<28% or DEP by Bobbin
18	59	Pitting by RPC/<28% or DEP by Bobbin
2	60	Row 2 NDD - Customer Decision to Plug
7	60	Pitting by RPC/<28% or DEP by Bobbin
2	61	Row 2 NDD - Customer Decision to Plug
11	61	Pitting by RPC/<28% or DEP by Bobbin
18	61	Crevice ODSCC Indication
5	62	Pitting
7	62	Pitting
6	63	Pitting
8	63	Pitting by RPC/<28% or DEP by Bobbin
9	63	Pitting by RPC/<28% or DEP by Bobbin
2	64	Row 2 NDD - Customer Decision to Plug
2	65	Row 2 NDD - Customer Decision to Plug
6	65	Pitting by RPC/<28% or DEP by Bobbin
9	65	Pitting
2	66	Row 2 NDD - Customer Decision to Plug
4	66	Pitting by RPC/<28% or DEP by Bobbin
7	66	Pitting by RPC/<28% or DEP by Bobbin
9	66	Pitting
28	66	Cecco Support Plate Indication

2	67	Row 2 NDD - Customer Decision to Plug
4	67	Crevice ODSCC Indication
17	67	Pitting by RPC/<28% or DEP by Bobbin
21	67	Cecco Support Plate Indication
23	67	Cecco Support Plate Indication
2	68	Row 2 NDD - Customer Decision to Plug
8	68	Pitting by RPC/<28% or DEP by Bobbin
11	68	Pitting
2	69	Row 2 NDD - Customer Decision to Plug
9	69	Pitting
2	71	Row 2 NDD - Customer Decision to Plug
2	72	Cecco Top of Tubesheet Indication
9	72	Pitting
12	72	Pitting
15	72	Cecco Support Plate Indication
2	73	Row 2 NDD - Customer Decision to Plug
23	73	Cecco Support Plate Indication
25	73	Cecco Support Plate Indication
2	74	Row 2 NDD - Customer Decision to Plug
2	75	Row 2 NDD - Customer Decision to Plug
3	75	Bad Data with U-Bend +Pt
18	75	Cecco Support Plate Indication
2	76	Row 2 NDD - Customer Decision to Plug
2	77	Bad Data with U-Bend +Pt
10	78	Crevice ODSCC Indication
2	79	Row 2 NDD - Customer Decision to Plug
2	80	Row 2 NDD - Customer Decision to Plug
2	81	Row 2 NDD - Customer Decision to Plug
2	82	Row 2 NDD - Customer Decision to Plug
2	83	Row 2 NDD - Customer Decision to Plug
21	83	Cecco Support Plate Indication
2	84	Row 2 NDD - Customer Decision to Plug
2	87	U-Bend PWSCC Indication
3	87	In-situ Tested NDD Tube
2	88	Row 2 NDD - Customer Decision to Plug
2	89	Row 2 NDD - Customer Decision to Plug
2	90	Row 2 NDD - Customer Decision to Plug
2	92	Row 2 NDD - Customer Decision to Plug

Table 5, Steam Generator 22, Indications 1997

row	col	volts	defect	location	offset	probe	size
8	1	1.89	PI	TEH	3.42	C5	0.7
8	1	0.39	VOL	TEH	4.11	ZP	0.72
21	6	146.5	DRI	TEH	1.48	C5	0.68
21	6	0.82	SAI	TEH	2.14	RB	0.72
17	9	5.6	TSI	TSC	0.19	C5	0.7
10	10	8.38	TSI	TSH	0	C5	0.7
27	12	0.24	18	TSC	12.07	C5	0.7
30	12	0.37	PIT	TSH	14.6	ZP	0.68
30	12	0.77	PIT	TSH	13.51	ZP	0.68
30	12	1.17	9	TSH	13.66	C5	0.68
4	14	2.5	DRI	TEH	1.4	C5	0.68
4	14	0.61	MAI	TEH	1.13	RB	0.72
9	16	1.1	SAI	TEH	4.48	ZP	0.72
9	16	0.79	NQI	TEH	6.51	C5	0.7
9	16	4.57	PI	TEH	5.11	C5	0.7
8	17	1.05	PI	TEH	4.56	C5	0.7
8	17	0.22	MAI	TEH	5.42	ZP	0.72
21	17	4.71	TSI	TSH	0.51	C5	0.7
35	17	0.24	PIT	TSH	0.87	ZP	0.68
35	17	0.54	4	TSH	1.03	C5	0.68
24	19	0.79	12	TSH	8.08	C5	0.7
10	20	16.16	TSI	TSC	-0.13	C5	0.7
10	20	1.34	DTI	TSC	0.26	C5	0.7
37	20	0.71	PIT	TSH	3.94	ZP	0.68
37	20	2.54	33	TSH	4.72	ZP	0.68
37	20	1.51	14	TSH	4.38	ZM	0.61
37	20	2.3	30	TSH	4.58	C5	0.64
17	21	0.79	6	TSH	23	C5	0.7
31	21	5.16	TSI	TSC	0	C5	0.7
38	21	0.29	PIT	TSH	3.59	ZP	0.68
38	21	1.96	26	TSH	4.33	ZP	0.68
38	21	0.66	32	TSH	3.84	ZP	0.68
38	21	0.2	PIT	TSH	3.65	ZP	0.68
16	23	0.63	PIT	TSC	0.42	ZP	0.68
16	23	14.16	TSI	TSC	-0.01	C5	0.7
29	23	6.17	TSI	TSC	0	C5	0.7
34	23	5.19	TSI	TSC	0.29	C5	0.7
37	23	0.39	36	TSH	2.62	C5	0.7
38	23	0.74	9	TSC	13.23	C5	0.7
38	23	0.23	PIT	TSC	13.3	ZP	0.68
28	25	0.49	28	TSH	5.93	C5	0.7
34	27	0.75	15	TSH	13.28	C5	0.7
38	27	0.7	6	TSH	12.84	C5	0.7
4	28	0.15	SAI	TEH	11.59	ZP	0.72
4	28	0.52	PI	TEH	6.35	C5	0.68

4	28	1.05	MAI	TEH	6.8	ZP	0.72
4	28	0.68	PI	TEH	8.73	C5	0.68
4	28	3.27	PI	TEH	8.73	C5	0.68
4	28	2.52	PI	TEH	8.58	C5	0.7
4	28	0.62	NQI	TEH	8.58	C5	0.7
4	28	4.76	PI	TEH	6.35	C5	0.68
33	28	0.61	14	TSH	19.42	C5	0.7
34	28	0.61	PIT	TSH	0.98	ZP	0.68
34	28	0.57	PIT	TSH	1.31	ZP	0.68
34	28	0.56	4	TSH	0.86	C5	0.7
34	28	0.6	6	TSH	1.22	C5	0.7
34	28	0.38	PIT	TSH	7.31	ZP	0.68
36	28	0.87	20	TSH	17.7	C5	0.7
36	28	0.7	17	TSH	20.81	C5	0.7
41	28	0.18	PIT	TSC	13.32	ZP	0.68
41	28	0.42	30	TSC	12.94	C5	0.7
4	29	0.64	SAI	TEH	8.95	ZP	0.72
4	29	0.26	SAI	TEH	7.61	ZP	0.72
4	29	0.34	SAI	TEH	6.41	ZP	0.72
4	29	0.76	NQI	TEH	9.09	C5	0.7
4	29	2.92	PI	TEH	10.53	C5	0.7
4	29	0.2	SAI	TEH	7.03	ZP	0.72
14	29	0.75	3	TSH	15.45	C5	0.7
14	29	0.56	9	TSH	15.99	C5	0.7
36	29	0.62	4	TSH	33.74	C5	0.7
6	30	0.86	17	TSC	3.14	C5	0.7
9	32	0.49	11	TSC	9.69	C5	0.7
7	33	1.6	6	TSC	3.6	C5	0.7
7	33	0.67	14	TSC	2.7	C5	0.7
7	33	0.32	9	TSC	6.14	C5	0.7
10	33	2.26	32	TSC	4.53	C5	0.7
10	33	1.32	PIT	TSC	4.09	ZP	0.68
28	34	0.33	24	TSH	22.88	C5	0.7
7	36	0.48	11	TSC	5.02	C5	0.7
7	36	0.67	7	TSC	4.8	C5	0.64
9	36	0.79	3	TSC	8.03	C5	0.7
9	36	0.21	PIT	TSC	8.99	ZP	0.68
43	36	5.37	TSI	TSC	-0.08	C5	0.7
43	36	5.84	TSI	TSC	0	C5	0.7
43	36	0.4	PIT	TSC	0	ZP	0.68
7	37	0.53	27	TSC	4.68	C5	0.7
7	37	0.31	PIT	TSC	5.6	ZP	0.68
8	37	0.4	27	TSC	8.67	C5	0.7
8	37	0.19	PIT	TSC	8.95	ZP	0.68
41	37	7.62	TSI	TSC	0.02	C5	0.7
43	37	0.27	PIT	TSC	0	ZP	0.68
43	37	12.13	TSI	TSC	-0.23	C5	0.7
42	38	0.14	4	TSC	9.36	C5	0.7
42	38	0.28	PIT	TSC	9.28	ZP	0.68

7	39	0.46	14	TSC	6.28	C5	0.7
14	39	0.07	PIT	TSC	3.2	ZP	0.68
14	39	0.25	15	TSC	3.34	C5	0.7
12	40	0.67	15	TSC	4.37	C5	0.7
15	40	0.64	1	TSC	3.34	C5	0.7
35	40	0.2	PIT	TSH	4.72	ZP	0.68
35	40	0.25	2	TSH	4.84	C5	0.68
14	41	0.71	17	TSC	4	C5	0.7
31	41	0.93	20	TSH	0.69	C5	0.68
31	41	0.18	PIT	TSH	0.55	ZP	0.68
31	41	1.17	20	TSH	0.66	C5	0.7
12	42	0.91	24	TSC	4.85	C5	0.7
12	42	0.09	PIT	TSC	5.15	ZP	0.68
12	42	0.85	29	TSC	4.96	C5	0.68
14	42	0.73	13	TSC	4.15	C5	0.7
15	42	0.74	22	TSC	3.83	C5	0.7
13	43	0.4	8	TSC	3.87	C5	0.7
13	43	0.34	5	TSC	3.85	C5	0.68
14	43	0.39	26	TSC	3.05	C5	0.7
24	43	0.44	PIT	TSH	4.9	ZP	0.68
24	43	0.58	13	TSH	23.97	C5	0.7
30	43	0.22	PIT	TSH	3.66	ZP	0.68
30	43	0.55	25	TSH	3.25	C5	0.7
39	43	0.25	PIT	TSH	9.94	ZP	0.68
39	43	0.21	1	TSH	9.67	C5	0.7
15	44	0.44	29	TSC	3.06	C5	0.7
15	44	0.4	15	TSC	4.43	C5	0.7
41	44	8.36	SPI	5H	0.32	C5	0.7
44	44	0.38	31	TSC	10.11	C5	0.7
44	44	0.47	13	TSC	9.02	C5	0.7
44	44	0.19	PIT	TSC	10.32	ZP	0.68
13	45	0.44	17	TSC	3.67	C5	0.7
13	45	0.63	5	TSC	2.73	C5	0.68
14	45	0.71	13	TSC	3.39	C5	0.7
15	45	0.22	11	TSC	3.06	C5	0.7
21	45	0.62	11	TSC	0.4	C5	0.7
13	46	0.34	13	TSC	3.95	C5	0.7
13	46	0.4	12	TSC	3.98	C5	0.68
17	46	0.7	8	TSH	8.86	C5	0.7
24	46	0.56	7	TSH	0.99	C5	0.7
26	46	0.73	8	TSH	0.82	C5	0.7
28	46	0.4	29	TSC	1.52	C5	0.7
25	47	0.76	31	TSC	1.08	C5	0.7
28	47	0.74	8	TSC	0.88	C5	0.7
2	48	1.25	18	TSH	0.77	C5	0.68
2	48	0.62	MAI	TEH	3.72	ZP	0.68
2	48	2.29	PI	TEH	5.65	C5	0.68
2	48	0.38	NQI	TEH	3.42	C5	0.68
2	48	0.46	MAI	TEH	6.38	ZP	0.68

2	48	0.46	68	TEH	6.38	ZP	0.68
2	48	0.49	51	TEH	4.05	ZP	0.68
10	48	0.79	26	TSC	3.82	C5	0.7
10	48	0.58	23	TSC	3.86	C5	0.7
25	49	1.67	24	TSH	7.48	C5	0.7
25	49	0.49	PIT	TSH	6.76	ZP	0.68
34	49	10.5	PI	TSH	0.39	C5	0.7
34	49	0.64	61	TSH	0.87	ZP	0.68
34	49	6.85	PI	TSH	0.37	C5	0.7
34	49	2.42	47	TSH	0.63	C5	0.7
34	49	1.25	MAI	TSH	0.24	ZP	0.68
34	49	2.1	50	TSH	0.28	C5	0.7
34	49	10.65	PI	TSH	0.66	C5	0.7
34	49	10.65	PI	TSH	0.76	C5	0.7
34	50	3.76	40	TSH	0.64	C5	0.7
34	50	0.21	86	TSH	0.53	ZP	0.68
34	50	0.74	MAI	TSH	0.25	ZP	0.68
34	50	8.22	PI	TSH	0.62	C5	0.7
35	50	0.77	12	TSH	0.31	C5	0.7
35	50	0.18	PIT	TSH	0.35	ZP	0.68
22	51	5.3	DRI	TEH	1.98	C5	0.7
22	51	1.09	MAI	TEH	1.28	RB	0.72
24	51	0.18	MAI	TEH	1.37	RB	0.72
24	51	10.12	DRI	TEH	1.97	C5	0.7
2	52	5.96	TSI	TSH	0	C5	0.68
35	52	0.74	38	TSH	0.97	C5	0.7
7	53	0.44	24	TSC	5.35	C5	0.7
7	53	1.22	26	TSC	5.03	C5	0.68
18	53	0.72	19	TSH	1.88	C5	0.7
34	54	1.11	28	TSH	0.88	C5	0.7
35	54	21.56	PI	TSH	0.78	C5	0.7
35	54	1.36	34	TSH	0.72	C5	0.7
35	54	1.64	PI	TEH	4.59	C5	0.7
35	54	5.5	DRI	TEH	1.88	C5	0.7
35	54	0.33	SAI	TSH	0.86	ZP	0.72
35	54	0.69	SAI	TSH	0.28	ZP	0.72
35	54	0.33	MAI	TSH	0.18	ZP	0.72
35	54	0.24	49	TSH	0.96	ZP	0.72
35	54	0.18	47	TSH	0.38	ZP	0.72
35	54	0.28	SAI	TEH	5.09	ZP	0.68
35	54	0.69	42	TSH	0.37	ZP	0.72
35	54	0.34	SAI	TEH	5.57	ZP	0.72
35	54	0.25	SAI	TEH	5.51	RB	0.72
35	54	0.52	SAI	TSH	0.3	ZP	0.68
7	55	0.51	PIT	TSC	6	ZP	0.68
7	55	2.25	18	TSC	4.57	C5	0.68
8	55	0.35	5	TSH	11.86	C5	0.7
32	55	2.79	MAI	TEH	3.16	ZP	0.72
32	55	15.39	PI	TEH	6.22	C5	0.7

32	55	5.25	NQI	TEH	7.51	C5	0.7
32	55	12.5	PI	TEH	7.51	C5	0.7
7	56	2.09	17	TSC	3.84	C5	0.7
7	56	2.35	23	TSC	4.06	C5	0.7
5	57	1.03	18	TSC	3.81	C5	0.7
7	57	2.51	27	TSC	4.08	C5	0.7
33	57	2.55	PI	TEH	4.92	C5	0.7
33	57	0.55	SCI	TEH	3.27	ZP	0.72
33	57	0.24	MAI	TEH	8.04	ZP	0.72
33	57	0.89	MAI	TEH	3.23	ZP	0.72
4	58	3.12	PI	TEH	8.77	C5	0.7
4	58	0.43	SAI	TEH	13.26	ZP	0.72
4	58	4.89	PI	TEH	12.94	C5	0.7
4	58	0.24	SAI	TEH	9.53	ZP	0.72
6	58	1.18	23	TSC	3.66	C5	0.68
7	58	3.28	18	TSC	3.92	C5	0.68
7	58	2.42	13	TSC	4.13	C5	0.7
39	58	0.23	PIT	TSC	8.39	ZP	0.68
39	58	0.3	PIT	TSC	8.29	ZP	0.68
39	58	0.21	15	TSC	10.07	C5	0.7
29	59	0.96	PI	TEH	3.9	C5	0.7
29	59	0.18	SAI	TEH	4.32	ZP	0.72
29	59	0.26	SAI	TEH	3.69	ZP	0.72
9	60	0.1	MAI	TEH	5.9	ZP	0.68
9	60	0.07	56	TEH	6.12	ZP	0.68
9	60	0.91	PI	TEH	7.42	C5	0.7
11	61	1.36	15	TSC	4.3	C5	0.7
24	61	1.43	11	TSC	1.48	C5	0.7
7	62	3.03	22	TSC	4.3	C5	0.68
7	62	1.92	20	TSC	4.68	C5	0.7
7	62	0.67	PIT	TSC	4.21	ZP	0.68
9	62	0.68	28	TSC	4.02	C5	0.7
22	64	2.93	7	TSH	0.94	C5	0.7
22	64	3.22	TSI	TSH	-0.3	C5	0.7
3	65	0.14	MAI	TEH	6.13	ZP	0.72
3	65	1.48	PI	TEH	8.53	C5	0.7
7	65	0.75	30	TSC	6.11	C5	0.7
7	65	1.03	26	TSC	6.04	C5	0.68
7	66	0.62	PIT	TSC	5.35	ZP	0.68
7	66	0.79	31	TSC	6.39	C5	0.7
7	66	0.92	20	TSC	6.09	C5	0.68
20	66	10.82	TSI	TSH	-0.3	C5	0.7
8	67	0.62	6	TSC	5.61	C5	0.68
8	67	0.65	16	TSC	5.75	C5	0.7
23	68	0.77	MAI	TEH	2.82	ZP	0.72
23	68	0.34	MAI	TEH	12.69	ZP	0.72
23	68	0.2	MAI	TEH	10.08	ZP	0.72
23	68	6.14	PI	TEH	6.67	C5	0.7
3	71	0.62	22	TSC	1.37	C5	0.68

4	71	0.37	MAI	TEH	5.92	ZP	0.72
4	71	1.95	PI	TEH	7.55	C5	0.7
21	71	0.32	MAI	TEH	5.5	ZP	0.72
21	71	2.87	PI	TEH	4.5	C5	0.7
23	71	0.4	MAI	TEH	3.22	ZP	0.72
23	71	0.99	PI	TEH	4.02	C5	0.7
36	71	1.56	SAI	2H	-0.03	ZD	0.61
12	72	49.77	DRI	TEH	0.63	C5	0.7
12	72	10.87	MAI	TEH	0.61	RB	0.72
38	72	8	SPI	6C	-0.36	C5	0.7
15	73	0.48	PI	TEH	7.6	C5	0.7
15	73	4.12	PI	TEH	7.6	C5	0.7
15	73	0.48	SAI	TEH	7.83	ZP	0.72
15	73	3.59	PI	TEH	6.62	C5	0.7
27	73	2.08	PI	TEH	7.35	C5	0.7
27	73	0.45	SAI	TEH	8.54	ZP	0.72
27	73	0.21	SAI	TEH	6.93	ZP	0.72
4	75	3.27	PI	TEH	7.41	C5	0.7
4	75	3.9	PI	TEH	5.47	C5	0.68
4	75	0.4	MAI	TEH	6.51	ZP	0.72
4	75	0.53	NQI	TEH	5.47	C5	0.68
4	77	7.14	TSI	TSH	0.22	C5	0.7
7	77	0.2	MAI	TEH	8.32	ZP	0.68
7	77	0.2	30	TEH	8.32	ZP	0.68
7	77	1.8	PI	TEH	8.68	C5	0.7
21	77	7.24	DRI	TEH	1.71	C5	0.7
21	77	0.77	SAI	TEH	3.36	RB	0.72
24	77	4.13	MAI	TEH	1.23	RB	0.72
24	77	8.44	DRI	TEH	1.31	C5	0.7
7	80	9.41	PI	TEH	4.7	C5	0.7
7	80	0.87	50	TEH	4.06	ZP	0.68
7	80	0.77	MAI	TEH	4.06	ZP	0.68
7	80	0.54	SAI	TEH	2.91	ZP	0.68
7	80	0.1	MAI	TEH	8.61	ZP	0.68
7	80	0.47	43	TEH	11.53	ZP	0.68
13	81	10.93	TSI	TSH	-0.04	C5	0.7
25	81	0.72	4	TSH	1.09	C5	0.7
8	83	10.29	TSI	TSH	-0.11	C5	0.7

TABLE 6, Steam Generator 22 Tubes Plugged 1997

Row	Column	Location	Comments*
8	1	4.11 inches above TEH	Cecco PI (VOL)
21	6	1.48 inches above TEH	Roll transition indic.
17	9	0.19 inch above TSC	Cecco TSI
10	10	Top of TSH	Cecco TSI
2	12	U-bend RST	610 bobbin restricted
2	13	640 +Point BDA @ 6H, 6C	Admin/Plug
9	16	4.48 inches above TEH	Cecco PI (SAI)
8	17	4.56 inches above TEH	Cecco PI (MAI)
21	17	0.51 inch above TSH	Cecco TSI
2	18	640 +Point BDA @ 6H, 6C	Admin/Plug
10	20	0.13 inch below TSC	Cecco TSI
2	21	U-bend RST	610 bobbin restricted
31	21	Top of TSC	Cecco TSI
2	22	U-bend RST	610 bobbin restricted
3	22	U-bend RST	610 bobbin restricted
4	22	640 +Point BDA @ 6C	Admin/Plug
16	23	0.01 inch below TSC	Cecco TSI
29	23	Top of TSC	Cecco TSI
34	23	0.29 inch above TSC	Cecco TSI
2	26	U-bend RST	610 bobbin restricted
2	28	640 +Point BDA @ 6H	Admin/Plug
4	28	8.58 inches above TEH	Cecco PI (MAI)
4	29	10.53 inches above TEH	Cecco PI (SAI)
43	36	0.08 inch below TSC	Cecco TSI
3	37	U-bend RST	610 bobbin restricted
41	37	0.02 inch above TSC	Cecco TSI
43	37	0.23 inch below TSC	Cecco TSI (PIT)
41	44	Within TSP 5H	Cecco SPI
2	48	5.65 inch above TEH	Cecco PI (MAI)
34	49	0.39 inch above TSH	Cecco PI (MAI)
34	50	0.62 inch above TSH	Cecco PI (MAI)
2	52	U-bend RST	610 bobbin restricted
35	54 In-Situ Tested	4.59 inches above TEH	Cecco PI (SAI)
32	55 In-Situ Tested	7.51 inches above TEH	Cecco PI (MAI)
33	57	4.92 inches above TEH	Cecco PI (MAI)
4	58	8.77 inches above TEH	Cecco PI (SAI)
29	59	3.90 inches above TEH	Cecco PI (SAI)
9	60	7.42 inches above TEH	Cecco PI (MAI)
2	62	U-bend RST	610 bobbin restricted
2	63	U-bend RST	610 bobbin restricted

Note: * Notation in parenthesis indicates a characterization by +Point Continued

TABLE 6 Steam Generator 22 (Continued)

Row	Column	Location	Comments
22	64	0.30 inch below TSH	Cecco TSI
3	65	8.53 inches above TEH	Cecco PI (MAI)
20	66	0.30 inch below TSH	Cecco TSI
23	68 In-Situ Tested	6.67 inches above TEH	Cecco PI (MAI)
4	71	7.55 inches above TEH	Cecco PI (MAI)
21	71	4.50 inches above TEH	Cecco PI (MAI)
23	71	4.02 inches above TEH	Cecco PI (MAI)
36	71	Within TSP 2H	SAI
38	72	Within TSP 6C	Cecco SPI
15	73	6.62 inches above TEH	Cecco PI (SAI)
27	73	7.35 inches above TEH	Cecco PI (SAI)
4	75	7.41 inches above TEH	Cecco PI (MAI)
4	77	0.22 inch above TSH	Cecco TSI
7	77	8.68 inches above TEH	Cecco PI (MAI)
21	77	3.36 inches above TEH	Cecco DRI (SAI)
24	77 In-Situ Tested	1.31 inches above TEH	Roll transition indic.
7	80	4.70 inches above TEH	Cecco PI (MAI)
13	81	0.04 inch below TSH	Cecco TSI
8	83	0.11 inch below TSH	Cecco TSI
2	85	U-bend RST	610 bobbin restricted
2	89	U-bend RST	610 bobbin restricted

Table 7, Steam Generator 22, Indications 2000

row	col	volts	defect	%	location	offset	probe	size
5	1	1.67	SAI		TEH	0.13	ZPACC	0.7
5	2	0.72	SAI		TEH	0.11	ZPACC	0.7
5	3	1.21	SAI		TEH	0.14	ZPACC	0.7
10	3	0.2	PIT		TSH	0.61	ZPAMC	0.7
2	4	2.94	MAI		TEH	0.32	ZPACC	0.7
6	4	0.26	PIT		TSH	0	ZPACC	0.7
9	4	2.6	MAI		TEH	0	ZPANM	0.72
12	4	1.98	SAI		TEH	2.88	ZPACC	0.7
8	5	0.53	MAI		TEH	0.27	ZPACC	0.7
8	5	0.32	PIT		TSH	3.16	ZPACC	0.7
8	5	0.29	PIT		TSH	3.51	ZPACC	0.7
8	5	0.27	PIT		TSH	3.54	ZPACC	0.7
9	5	0.77	MAI		TEH	0.22	ZPACC	0.7
10	5	0.73	SAI		TEH	0.25	ZPACC	0.7
12	6	3.44	SAI		TEH	0.26	ZPACC	0.7
20	6	1.58	SCI		TEH	0.15	ZPACC	0.7
7	7	0	PIT		TSH	0.3	ZPACC	0.7
13	7	0.73	SAI		TEH	0.04	ZPACC	0.7
17	7	1.96	PCT	22	AV4	0	CCAGC	0.7
2	8	2.52	SAI		TEH	0.19	ZPANM	0.72
16	8	0.21	PIT		TSH	0.67	ZPACC	0.7
16	8	0.37	PIT		TSH	1.14	ZPACC	0.7
7	9	0	PIT		TSH	0.44	ZPACC	0.7
8	10	0.17	SAI		TEH	5.16	ZPACC	0.7
17	10	0.22	PIT		TSH	0.84	ZPACC	0.7
19	11	0.34	PIT		TSH	4.42	ZPACC	0.7
27	11	1.87	SCI		TEH	0.3	ZPACC	0.7
28	11	1.22	SAI		TEH	0.45	ZPACC	0.7
19	12	1.24	MAI		TEH	0.11	ZPACC	0.7
23	12	1.61	SAI		TEH	0.15	ZPACC	0.7
23	12	0.37	PIT		TSH	0.55	ZPACC	0.7
24	12	2.66	SAI		TEH	0.13	ZPACC	0.7
25	12	1.07	SAI		TEH	0.44	ZPACC	0.7
27	12	0.64	PIT		TSH	1.71	ZPACC	0.7
28	12	0.47	PIT		TSH	3.38	ZPACC	0.7
28	12	0.66	PCT	11	TSH	3.81	CCAGC	0.7
28	12	0.71	PIT	6	TSH	3.64	ZPANM	0.68
28	12	1.52	PCT	6	TSH	3.85	CCAGC	0.7
29	12	0.44	PIT		TSH	4.04	ZPADP	0.61
29	12	0.38	PIT		TSH	4.24	ZPADP	0.61
29	12	0.24	PIT		TSH	7.15	ZPADP	0.61
30	12	1.1	PCT	20	TSH	13.66	CCAGC	0.7
30	12	1.07	PCT	7	TSH	13.16	CCAGC	0.7
30	12	1.15	PCT	18	TSH	13.32	CCAGC	0.7
30	12	1.52	PCT	20	TSH	13.18	CCAGC	0.68

30	12	1.28	PCT	13	TSH	13.17	CCAGC	0.64
30	12	1.11	SCI		TEH	0.28	ZPACC	0.7
30	12	0.38	PIT	0	TSH	13.94	ZPANM	0.68
6	13	3.7	MAI		TEH	0.19	ZPACC	0.7
8	13	0.26	VOL	43	TSC	6.72	ZPANM	0.68
8	13	11.25	PI		TSC	7.22	CCAGC	0.7
20	13	0.22	PIT		TSH	0.31	ZPACC	0.7
22	13	1.45	PCT	4	TSH	1.16	CCAGC	0.68
22	13	0.57	PCT	3	TSH	1.03	CCAGC	0.7
22	13	0.57	PCT	3	TSH	1.03	CCAGC	0.7
22	13	0.69	SAI		TEH	0.19	ZPACC	0.7
22	13	0.35	PIT		TSH	0.97	ZPACC	0.7
22	13	0.74	PIT	0	TSH	1.02	ZPANM	0.68
23	13	0.65	SAI		TEH	0.18	ZPACC	0.7
23	13	0.45	PIT		TSH	1.17	ZPACC	0.7
23	13	0.48	PIT		TSH	4.3	ZPACC	0.7
23	13	0.49	PIT	0	TSH	1.12	ZPANM	0.68
23	13	0.57	PIT	0	TSH	4.26	ZPANM	0.68
23	13	0.1	PCT	10	TSH	1.15	CCAGC	0.7
23	13	0.22	PCT	10	TSH	1.17	CCAGC	0.7
23	13	0.35	PCT	16	TSH	4.31	CCAGC	0.7
24	13	2.12	MAI		TEH	0.12	ZPACC	0.7
26	13	0.19	PIT		TSH	9.35	ZPACC	0.7
26	13	0.77	SAI		TEH	0.14	ZPACC	0.7
26	13	0.35	PIT		TSH	0.34	ZPACC	0.7
27	13	2.71	MAI		TEH	0.08	ZPACC	0.7
27	13	0.34	PIT		TSH	1.52	ZPACC	0.7
28	13	0.63	PIT		TSH	2.32	ZPACC	0.7
28	13	0.44	PIT	35	TSH	2.45	ZPANM	0.68
28	13	0.73	PCT	17	TSH	2.28	CCAGC	0.68
28	13	1.5	PCT	13	TSH	2.32	CCAGC	0.7
28	13	0.75	PCT	17	TSH	2.23	CCAGC	0.7
29	13	0.31	PIT		TSH	5.87	ZPACC	0.7
29	13	0.41	PIT		TSH	7.99	ZPACC	0.7
29	13	0.23	PIT		TSH	11.14	ZPACC	0.7
29	13	0.28	PIT		TSH	1.07	ZPACC	0.7
30	13	0.35	PCT	21	TSH	5.35	CCAGC	0.64
30	13	0.56	PCT	3	TSH	5.22	CCAGC	0.7
30	13	0.52	PCT	5	TSH	1.79	CCAGC	0.7
30	13	2.53	PCT	72	TSH	0.39	CCAGC	0.7
30	13	1.02	PCT	1	TSH	5.18	CCAGC	0.7
30	13	1.04	PCT	6	TSH	1.74	CCAGC	0.7
30	13	30.08	TSI		TSH	0.37	CCAGC	0.7
30	13	0.8	PCT	3	TSH	1.78	CCAGC	0.64
30	13	3.15	PCT	74	TSH	0.43	CCAGC	0.64
30	13	0.51	PIT	0	TSH	5.17	ZPANM	0.68
30	13	0.33	PIT	11	TSH	1.72	ZPANM	0.68
30	13	0.89	VOL	19	TSH	0.33	ZPANM	0.68
30	13	2.37	SCI		TEH	0.14	ZPACC	0.7

30	13	0.39	PIT		TSH	5.03	ZPACC	0.7
30	13	0.9	VOL		TSH	0.33	ZPACC	0.7
30	13	3.26	SCI		TEH	0.24	ZPACC	0.7
30	13	1.47	PCT	67	TSH	0.42	CCAGC	0.7
3	14	19.23	SCI		TEH	0	ZPANM	0.72
4	14	0.4	PI		TEH	7.62	CCAGC	0.64
4	14	0.18	MAI		TEH	7.09	ZPANM	0.68
4	14	10.29	DRI		TEH	1.19	MBALL	0.7
4	14	10.29	DRI		TEH	1.19	CCAGC	0.64
4	14	8.38	DRI		TEH	1.46	CCAGC	0.64
20	14	0.34	PIT		TSH	1.34	ZPACC	0.7
22	14	0.21	PIT		TSH	0.7	ZPACC	0.7
22	14	0.33	PIT		TSH	6.07	ZPACC	0.7
23	14	0.26	PIT		TSH	0.78	ZPACC	0.7
24	14	0.97	SAI		TEH	0.39	ZPACC	0.7
24	14	0.34	PIT		TSH	0.81	ZPACC	0.7
8	15	0.21	SAI		TEH	8.83	ZPACC	0.7
8	15	0.25	SAI		TEH	14.15	ZPACC	0.7
25	15	0.48	PIT		TSH	0.33	ZPACC	0.7
27	15	1.42	MAI		TEH	0.07	ZPACC	0.7
31	15	0.18	PIT		TSH	13.06	ZPACC	0.7
31	15	1.85	SAI		TSH	0.58	ZPACC	0.7
31	15	0.51	PIT		TSH	2.29	ZPACC	0.7
31	15	0.8	SAI		TSH	0.57	ZPACC	0.7
31	15	0.35	PIT		TSH	12.38	ZPACC	0.7
33	15	0.28	PIT		TSH	12.68	ZPACC	0.7
33	15	0.34	PIT		TSH	13.2	ZPACC	0.7
33	15	0.29	PIT		TSH	13.65	ZPACC	0.7
33	15	0.47	PIT		TSH	14.43	ZPACC	0.7
8	16	0.17	SAI		TEH	4.86	ZPACC	0.7
27	16	1.47	SAI		TEH	0.12	ZPACC	0.7
30	16	0.51	PIT		TSH	5.67	ZPACC	0.7
31	16	0.2	PIT		TSH	13.37	ZPACC	0.7
33	16	0.48	PIT		TSH	15.67	ZPACC	0.7
3	17	9.9	SCI		TEH	0.02	ZPANM	0.72
27	17	0.82	MAI		TEH	0.12	ZPACC	0.7
28	17	0.46	PIT		TSH	1.17	ZPACC	0.7
29	17	1.09	MAI		TEH	0.07	ZPACC	0.7
32	17	0.3	PIT		TSH	5.67	ZPACC	0.7
32	17	0.3	PIT		TSH	8.25	ZPACC	0.7
3	18	6.46	SCI		TEH	0	ZPANM	0.72
29	18	1.21	MAI		TEH	0.15	ZPACC	0.7
30	18	0.41	PIT		TSH	16.21	ZPACC	0.7
35	18	0.37	PIT		TSH	0.35	ZPACC	0.7
35	18	0.31	PIT		TSH	6.27	ZPACC	0.7
36	19	0.3	PIT		TSH	5	ZPACC	0.7
30	20	0.35	PIT		TSH	9.35	ZPACC	0.7
30	20	0.26	PIT		TSH	6.43	ZPACC	0.7
30	20	0.38	PIT		TSH	6.85	ZPACC	0.7

33	20	0.46	PIT		TSH	1.32	ZPACC	0.7
33	20	0.53	PIT		TSH	10.69	ZPACC	0.7
36	20	2.71	SCI		TEH	0.19	ZPACC	0.7
37	20	0.47	PIT		TSH	4.5	ZPACC	0.7
37	20	1.8	PIT		TSH	4.2	ZPACC	0.7
37	20	0.61	PIT	21	TSH	4.31	ZPANM	0.68
37	20	4.26	PCT	27	TSH	4.51	ZBALL	0.61
37	20	2.93	PCT	30	TSH	4.7	CCAGC	0.64
37	20	2.15	PCT	34	TSH	4.59	CCAGC	0.7
37	20	3.53	PCT	37	TSH	4.66	CCAGC	0.7
4	21	1.11	PCT	0	TSH	21.83	CCAGC	0.68
4	21	0.36	PIT		TSH	21.95	ZPACC	0.7
4	21	2	PIT		TSH	21.59	ZPACC	0.7
14	21	1.62	SAI		TEH	0.09	ZPACC	0.7
30	21	0.57	PIT		TSH	0.22	ZPACC	0.7
32	21	0.37	PIT		TSH	0.9	ZPACC	0.7
35	21	1.79	SAI		TEH	0.07	ZPACC	0.7
38	21	1.21	PCT	20	TSH	4.21	CCAGC	0.68
38	21	1.77	PCT	28	TSH	4.2	CCAGC	0.7
38	21	0.54	PCT	34	TSH	3.59	CCAGC	0.7
38	21	2.54	PCT	26	TSH	4.29	CCAGC	0.7
38	21	24.73	PI		TSH	3.98	CCAGC	0.7
38	21	14.91	PI		TSH	3.44	CCAGC	0.7
38	21	0.4	PCT	34	TSH	3.64	CCAGC	0.68
38	21	0.35	VOL	20	TSH	4.46	ZPANM	0.68
38	21	0.2	VOL	24	TSH	3.91	ZPANM	0.68
38	21	1.37	PIT		TSH	4.13	ZPACC	0.7
38	21	0.38	PIT		TSH	3.6	ZPACC	0.7
38	21	0.95	PCT	23	TSH	3.75	CCAGC	0.7
33	22	0.27	PIT		TSH	0.78	ZPACC	0.7
33	22	0.25	PIT		TSH	0.98	ZPACC	0.7
28	23	0.47	PIT		TSH	1.88	ZPACC	0.7
35	23	0.28	PIT		TSH	1.35	ZPACC	0.7
35	23	0.3	PIT		TSH	1.68	ZPACC	0.7
35	23	0.21	PIT		TSH	0.8	ZPACC	0.7
35	23	0.3	PIT		TSH	1.08	ZPACC	0.7
3	24	0.53	NQI		TEH	4.93	CCAGC	0.64
3	24	3.49	NQI		TEH	11.02	CCAGC	0.64
3	24	29.07	PI		TEH	10.96	CCAGC	0.64
3	24	0.45	NQI		TEH	10.13	CCAGC	0.64
3	24	1.08	NQI		TEH	8.82	CCAGC	0.64
3	24	17.81	PI		TEH	6.63	CCAGC	0.64
3	24	2.56	NQI		TEH	6.58	CCAGC	0.64
3	24	3.94	NQI		TEH	5.83	CCAGC	0.64
3	24	10.03	PI		TEH	11.12	CCAGC	0.64
3	24	3.81	MAI	77	TEH	5.52	ZPANM	0.68
3	24	0.77	NQI		TEH	4.83	CCAGC	0.64
3	24	0.43	NQI		TEH	9.95	CCAGC	0.7
3	24	3.36	MAI	78	TEH	10.49	ZPANM	0.68

3	24	0.37	MAI	58	TEH	8.74	ZPANM	0.68
3	24	31.99	PI		TEH	5.96	CCAGC	0.64
3	24	0.42	NQI		TEH	4.27	CCAGC	0.68
3	24	1.01	NQI		TEH	4.6	CCAGC	0.68
3	24	3.64	NQI		TEH	5.59	CCAGC	0.68
3	24	2.27	NQI		TEH	6.22	CCAGC	0.68
3	24	1.01	NQI		TEH	8.73	CCAGC	0.68
3	24	0.4	NQI		TEH	10.17	CCAGC	0.68
3	24	3.32	NQI		TEH	11.12	CCAGC	0.68
3	24	0.48	NQI		TEH	4.33	CCAGC	0.7
3	24	0.97	NQI		TEH	4.76	CCAGC	0.7
3	24	3.67	NQI		TEH	5.62	CCAGC	0.7
3	24	1.01	NQI		TEH	8.62	CCAGC	0.7
3	24	3.2	NQI		TEH	10.78	CCAGC	0.7
3	24	2.59	NQI		TEH	5.8	CCAGC	0.68
3	24	1.27	MAI	62	TEH	4.64	ZPANM	0.68
3	24	2.33	NQI		TEH	6.25	CCAGC	0.7
3	24	0.77	PI		TEH	4.13	CCAGC	0.68
3	24	0.14	SAI		TEH	13.16	ZPANM	0.68
3	24	0.1	SAI		TEH	13.96	ZPANM	0.68
3	24	0.13	SAI		TEH	15.05	ZPANM	0.68
3	24	3.93	MAI		TEH	5.9	ZPANM	0.68
3	24	1.26	PI		TEH	2.68	CCAGC	0.68
3	24	0.98	NQI		TEH	3.18	CCAGC	0.68
3	24	1.21	MAI	60	TEH	4.28	ZPANM	0.68
3	24	0.62	NQI		TEH	3.89	CCAGC	0.68
3	24	2.3	NQI		TEH	4.22	CCAGC	0.68
3	24	2.39	PI		TEH	4.95	CCAGC	0.68
3	24	5.65	NQI		TEH	5.24	CCAGC	0.68
3	24	1.31	PI		TEH	5.63	CCAGC	0.68
3	24	0.74	NQI		TEH	6.27	CCAGC	0.68
3	24	0.32	PI		TEH	5.99	CCAGC	0.68
3	24	5.24	PI		TEH	10.36	CCAGC	0.68
3	24	0.83	PI		TEH	3.76	CCAGC	0.68
3	24	4.26	NQI		TEH	10.62	CCAGC	0.68
3	24	0.53	MAI		TEH	3.37	ZPANM	0.68
3	24	0.62	NQI		TEH	9.84	CCAGC	0.68
3	24	0.35	PI		TEH	9.56	CCAGC	0.68
3	24	0.34	NQI		TEH	9.43	CCAGC	0.68
3	24	0.57	NQI		TEH	9.02	CCAGC	0.68
3	24	0.61	PI		TEH	8.2	CCAGC	0.68
3	24	0.98	PI		TEH	7.92	CCAGC	0.68
3	24	0.45	NQI		TEH	7.4	CCAGC	0.68
3	24	0.49	PI		TEH	7.33	CCAGC	0.68
3	24	0.32	PI		TEH	6.99	CCAGC	0.68
3	24	0.57	NQI		TEH	6.9	CCAGC	0.68
3	24	1.15	NQI		TEH	8.35	CCAGC	0.68
14	24	0.79	PIT		TSH	19.5	ZPACC	0.7
34	24	0.15	PIT		TSH	1.14	ZPACC	0.7

34	24	0.33	PIT		TSH	1.52	ZPACC	0.7
34	24	0.16	PIT		TSH	0.9	ZPACC	0.7
35	24	0.28	PIT		TSH	1.82	ZPACC	0.7
35	24	0.17	PIT		TSH	1.31	ZPACC	0.7
10	25	0.46	PIT		TSH	8.66	ZPACC	0.7
14	25	0.31	PIT		TSH	7.22	ZPACC	0.7
14	25	0.55	PIT		TSH	7.63	ZPACC	0.7
21	25	0.86	PIT		TSH	1.49	ZPACC	0.7
21	25	0.5	PIT		TSH	25.42	ZPACC	0.7
21	25	0.32	PCT	0	TSH	25.95	CCAGC	0.7
32	25	1	PI		TEH	3.34	CCAGC	0.7
32	25	0.25	VOL		TSH	0.47	ZPAMC	0.7
34	25	0.45	PIT		TSH	0.96	ZPACC	0.7
36	25	0.49	PIT		TSH	0.23	ZPACC	0.7
36	25	0.39	PIT		TSH	0.63	ZPACC	0.7
36	25	0.24	PIT		TSH	1.51	ZPACC	0.7
37	25	0.34	PIT		TSH	4.97	ZPACC	0.7
7	26	0.59	PIT	6	TSH	1.21	ZPANM	0.68
7	26	2.11	PCT	34	TSH	1.22	MBALL	0.7
7	26	2.92	PCT	26	TSH	1.07	CCAGC	0.68
7	26	1.5	PCT	37	TSH	1.01	CCAGC	0.7
7	26	2.07	PCT	31	TSH	1.45	CCAGC	0.7
13	26	0.39	PIT		TSH	16.95	ZPACC	0.7
13	26	1.18	PIT		TSH	16.76	ZPACC	0.7
13	26	1.48	PIT		TSH	17.25	ZPACC	0.7
33	26	98.58	TSI		TSH	0.49	CCAGC	0.7
34	26	1.28	PIT		TSH	0.6	ZPACC	0.7
34	26	0.55	PIT		TSH	0.98	ZPACC	0.7
35	26	1.87	PIT		TSH	0.05	ZPACC	0.7
35	26	1.22	PIT		TSH	0.69	ZPACC	0.7
35	26	1.09	PIT		TSH	1.03	ZPACC	0.7
35	26	9.37	TSI		TSH	0.16	CCAGC	0.7
2	27	2.15	MAI		TEH	0.28	ZPACC	0.7
4	27	0.47	SAI		TEH	11.74	ZPACC	0.7
4	27	0.7	SAI		TEH	12.94	ZPACC	0.7
8	27	0.97	MAI		TEH	0.24	ZPACC	0.7
18	27	213.5	TSI		TSC	-0.16	CCAGC	0.7
35	27	0.27	PIT	0	TSH	1.29	ZPANM	0.68
35	27	118.4	PI		TSH	1.41	CCAGC	0.7
36	27	0.21	PIT		TSH	0.72	ZPACC	0.7
36	27	0.18	PIT		TSH	1.72	ZPACC	0.7
38	27	0.58	PIT		TSH	6.39	ZPACC	0.7
3	28	0.16	SAI		TEH	4.19	ZPACC	0.7
7	28	2.56	SCI		TEH	0.25	ZPACC	0.7
34	28	0.34	PIT	3	TSH	0.96	ZPANM	0.68
34	28	0.98	PCT	1	TSH	1.34	CCAGC	0.7
34	28	0.57	PCT	1	TSH	1.03	CCAGC	0.7
34	28	0.49	PIT	0	TSH	1.23	ZPANM	0.68
34	28	0.3	PIT	8	TSH	7.29	ZPANM	0.68

41	28	0.16	PIT	13	TSC	11.38	ZPANM	0.68
41	28	0.26	PIT	13	TSC	12.85	ZPANM	0.68
41	28	0.19	PCT	0	TSC	11.8	CCAGC	0.7
41	28	0.44	PCT	13	TSC	13.13	CCAGC	0.7
9	29	0.33	PIT		TSC	3.93	ZPAMR	0.72
9	29	0.54	PCT	0	TSC	4.01	MBALL	0.7
9	29	0.94	PCT	0	TSC	4.04	MBALL	0.7
30	29	0.25	PIT		TSH	0.23	ZPACC	0.7
30	29	0.29	PIT		TSH	1.3	ZPACC	0.7
32	29	0.26	PIT		TSH	0.69	ZPACC	0.7
33	29	0.16	PIT		TSH	0.36	ZPACC	0.7
38	29	0.19	PIT		TSH	0.07	ZPACC	0.7
38	29	0.14	PIT		TSH	1.34	ZPACC	0.7
38	29	0.33	PIT		TSH	14.59	ZPACC	0.7
38	29	0.2	PIT	33	TSH	0.14	ZPANM	0.68
38	29	0.17	PIT	17	TSH	1.41	ZPANM	0.68
38	29	14.6	TSI		TSH	0.1	CCAGC	0.7
4	30	0.25	SAI		TEH	7.74	ZPACC	0.7
6	30	0.21	SAI		TEH	9.2	ZPACC	0.7
6	30	0.11	SAI		TEH	12.4	ZPACC	0.7
35	30	0.4	PIT		TSH	0.91	ZPACC	0.7
35	30	0.26	PIT		TSH	1.18	ZPACC	0.7
35	30	0.21	PIT		TSH	1.33	ZPACC	0.7
35	30	0.52	PIT		TSH	0.42	ZPACC	0.7
37	30	0.29	PIT		TSH	7.29	ZPACC	0.7
40	30	0.38	PIT		TSH	5.89	ZPACC	0.7
40	30	0.28	PIT		TSH	5.92	ZPACC	0.7
8	31	0.16	SAI		TEH	7.71	ZPACC	0.7
35	31	0.25	PIT		TSH	1.22	ZPACC	0.7
11	33	0.67	PIT		TSC	5.54	ZPAMR	0.72
13	34	10.96	MCI		TEH	0.12	ZPACC	0.7
15	34	2.45	SAI		TEH	0.12	ZPACC	0.7
38	34	0.34	PIT		TSH	12.42	ZPACC	0.7
38	34	0.24	PIT		TSH	13.69	ZPACC	0.7
2	35	5.82	MAI		TEH	0.29	ZPACC	0.7
24	35	0.92	NQI		AV2	-2.14	CCAGC	0.7
2	36	5.24	MAI		TEH	0.37	ZPACC	0.7
9	36	0.32	PIT	3	TSC	8.43	ZPANM	0.68
9	36	0.91	PCT	2	TSC	8.31	CCAGC	0.7
7	37	0.35	PIT	7	TSC	5.55	ZPANM	0.68
7	37	0.61	PCT	30	TSC	4.78	CCAGC	0.7
7	37	0.22	PIT		TSC	4.91	ZPANM	0.68
8	37	0.39	PCT	17	TSC	8.82	CCAGC	0.7
8	37	0.19	PIT	3	TSC	8.86	ZPANM	0.68
44	37	3.75	MCI		TEH	0.14	ZPANM	0.72
44	38	6.04	MCI		TEH	0.09	ZPANM	0.72
15	39	1.08	PIT		TSC	9.4	ZPANM	0.72
15	39	3.08	PCT	0	TSC	9.27	MBALL	0.7
44	39	4.25	SCI		TEH	0.14	ZPANM	0.72

45	39	2.02	SCI		TEH	0.22	ZPACC	0.7
2	40	10.66	MAI		TEH	0.18	ZPACC	0.7
5	40	1.55	SAI		TEH	0.2	ZPACC	0.7
35	40	0.27	VOL	0	TSH	4.95	ZPANM	0.68
35	40	11.55	PI		TSH	4.37	CCAGC	0.7
45	40	1.84	MCI		TEH	0.11	ZPANM	0.72
2	41	6.53	MAI		TEH	0.24	ZPACC	0.7
4	41	0.98	SAI		TEH	0.23	ZPACC	0.7
36	41	6.21	SPI		5H	-0.14	CCAGC	0.7
44	41	2.58	SCI		TEH	0.14	ZPANM	0.72
24	43	0.4	PIT	33	TSH	4.75	ZPANM	0.68
24	43	1.05	PCT	17	TSH	4.87	CCAGC	0.64
24	43	0.8	PCT	19	TSH	4.84	MBALL	0.7
24	43	0.71	PCT	12	TSH	4.92	CCAGC	0.68
30	43	0.23	PIT	21	TSH	3.35	ZPANM	0.68
30	43	0.44	PCT	26	TSH	3.33	CCAGC	0.7
5	44	2.53	MAI		TEH	0.16	ZPACC	0.7
44	44	0.86	PCT	18	TSC	10.05	CCAGC	0.68
44	44	0.61	PIT	0	TSC	8.97	ZPANM	0.68
44	44	0.47	PIT	0	TSC	9.52	ZPANM	0.68
44	44	0.63	PIT	0	TSC	10.01	ZPANM	0.68
44	44	0.41	PCT	38	TSC	9.05	MBALL	0.7
44	44	0.37	PCT	30	TSC	9.57	MBALL	0.7
44	44	0.44	PCT	8	TSC	10.2	MBALL	0.7
44	44	0.49	PCT	16	TSC	9.21	CCAGC	0.68
44	44	0.47	PCT	34	TSC	9.58	CCAGC	0.68
4	45	2.66	SAI		TEH	0.26	ZPACC	0.7
6	45	3.78	MAI		TEH	0.24	ZPACC	0.7
4	46	2.23	SAI		TEH	0.06	ZPACC	0.7
32	47	0.09	SAI		TEH	5.13	ZPANM	0.68
32	47	0.12	SAI		TEH	12.37	ZPANM	0.68
32	47	0.93	PI		TEH	5.18	CCAGC	0.7
33	47	1.27	MAI		TEH	0.1	ZPANM	0.68
45	47	2.98	MCI		TEH	0.13	ZPANM	0.72
3	48	1.18	SCI		TEH	0.38	ZPACC	0.7
8	48	0.7	SAI		TEH	0.04	ZPACC	0.7
32	48	1.6	MAI		TEH	3.03	ZPACC	0.7
32	48	4.95	PI		TSH	0.68	CCAGC	0.7
32	48	0.8	NQI		TSH	0.68	CCAGC	0.7
32	48	0.74	PI		TEH	11.47	CCAGC	0.7
32	48	1.02	PI		TEH	11.33	CCAGC	0.7
32	48	0.71	PI		TEH	5.73	CCAGC	0.7
32	48	0.16	SAI		TSH	0.73	ZPANM	0.68
32	48	0.31	SAI		TEH	11.9	ZPANM	0.68
32	48	0.27	SAI		TEH	12.11	ZPANM	0.68
32	48	0.09	SAI		TEH	4.79	ZPANM	0.68
10	49	0.56	MAI		TEH	0.08	ZPACC	0.7
13	49	0.13	PIT		TSH	11.79	ZPACC	0.72
13	49	0.15	PIT		TSH	11.76	ZPACC	0.72

25	49	0.37	PIT		TSH	27.68	ZPACC	0.72
25	49	0.47	VOL	47	TSH	7.05	ZPANM	0.68
25	49	1.76	NQI		TSH	7.05	MBALL	0.7
25	49	0.39	PIT		TSH	6.48	ZPACC	0.72
33	49	0.26	SAI		TSH	0.77	ZPACC	0.7
33	49	0.33	SAI		TSH	1.66	ZPACC	0.7
33	49	0.16	SAI		TSH	0.36	ZPANM	0.72
33	49	0.19	SAI		TSH	1.24	ZPANM	0.72
33	49	1.96	PI		TSH	0.65	CCAGC	0.7
33	50	0.2	VOL		TSH	0.94	ZPANM	0.72
33	50	0.24	VOL		TSH	0.86	ZPANM	0.68
33	50	0.33	PI		TEH	9.47	CCAGC	0.7
35	50	1.15	PCT	17	TSH	0.43	CCAGC	0.68
35	50	17.32	PI		TSH	0.27	CCAGC	0.7
35	50	0.31	VOL		TSH	0.6	ZPANM	0.72
35	50	0.12	VOL	37	TSH	0.38	ZPANM	0.68
35	50	0.87	PCT	12	TSH	0.49	CCAGC	0.7
35	50	0.67	PI		TSH	-0.19	CCAGC	0.68
45	50	3.41	MAI		TEH	0.3	ZPANM	0.68
22	51	6.23	DRI		TEH	2.06	CCAGC	0.7
23	51	0.53	PIT		TSH	3.13	ZPANM	0.68
24	51	4.64	DRI		TEH	2.33	CCAGC	0.7
24	51	0.49	SAI		TEH	2.48	ZMAGR	0.72
25	51	0.53	PIT		TSC	2.18	ZPAMR	0.72
25	51	0.61	PCT	17	TSC	2.51	MBALL	0.7
33	51	0.4	SAI	48	TSH	1.08	ZPANM	0.68
33	51	0.95	MAI		TSH	1.07	ZPANM	0.72
33	51	0.72	NQI		TSH	1.62	CCAGC	0.7
33	51	6.31	PI		TSH	0.68	CCAGC	0.7
33	51	0.99	NQI		TSH	1.13	CCAGC	0.68
33	51	7.98	PI		TSH	0.61	CCAGC	0.68
33	51	0.5	MAI	30	TSH	1.31	ZPANM	0.68
33	51	10.34	PI		TSH	-0.01	CCAGC	0.68
33	51	1.51	MAI		TSH	0.65	ZPANM	0.68
33	51	0.36	MAI		TSH	1.44	ZPANM	0.72
33	51	1.1	MAI		TSH	0.99	ZPANM	0.72
33	51	7.23	NQI		TSH	1.32	CCAGC	0.68
33	51	0.61	MAI		TSH	0.55	ZPUHF	0.62
34	51	1.82	PI		TEH	4.93	CCAGC	0.7
34	51	1.51	NQI		TEH	8.36	CCAGC	0.68
34	51	1.43	PI		TEH	9.27	CCAGC	0.68
34	51	4.79	NQI		TEH	9.63	CCAGC	0.68
34	51	0.58	PI		TEH	9.76	CCAGC	0.68
34	51	125.9	PI		TSH	0.89	CCAGC	0.68
34	51	260.4	NQI		TSH	1.21	CCAGC	0.68
34	51	0.69	MAI	66	TSH	0.89	ZPANM	0.68
34	51	0.52	NQI		TSH	1	CCAGC	0.64
34	51	2.72	NQI		TSH	0.7	CCAGC	0.68
34	51	13.19	PI		TSH	0.62	CCAGC	0.7

34	51	1.25	NQI		TSH	0.89	CCAGC	0.7
34	51	0.78	NQI		TSH	0.97	CCAGC	0.7
34	51	2.41	PI		TEH	6.89	CCAGC	0.68
34	51	1.1	PI		TEH	8.23	CCAGC	0.68
34	51	24.35	PI		TSH	0.17	CCAGC	0.68
34	51	4.17	NQI		TEH	3.91	CCAGC	0.68
34	51	3.54	NQI		TEH	7.82	CCAGC	0.68
34	51	4.18	MAI		TEH	8.02	ZPANM	0.68
34	51	3.47	NQI		TEH	7.44	CCAGC	0.68
34	51	1.08	PI		TEH	3.34	CCAGC	0.68
34	51	2.56	NQI		TEH	4.53	CCAGC	0.68
34	51	4.72	PI		TEH	4.78	CCAGC	0.68
34	51	1.03	NQI		TEH	4.87	CCAGC	0.68
34	51	4.86	NQI		TEH	6.04	CCAGC	0.68
34	51	1.17	PI		TEH	6.12	CCAGC	0.68
34	51	2.17	PI		TEH	7.55	CCAGC	0.68
34	51	1.75	NQI		TEH	7.04	CCAGC	0.68
34	51	1.3	MAI		TEH	6.85	ZPANM	0.68
34	51	1.89	NQI		TEH	5.36	CCAGC	0.68
34	51	16.56	MAI		TSH	1.4	ZPANM	0.68
35	51	1.21	NQI		TSH	0.77	CCAGC	0.7
35	51	2.25	NQI		TEH	5.89	CCAGC	0.68
35	51	65.33	PI		TSH	0.41	CCAGC	0.68
35	51	6.3	NQI		TSH	0.62	CCAGC	0.68
35	51	0.54	MAI	54	TSH	0.44	ZPANM	0.68
35	51	13.66	PI		TSH	0.48	CCAGC	0.68
35	51	10.61	PI		TSH	0.6	CCAGC	0.7
35	51	1.35	NQI		TSH	0.93	CCAGC	0.7
35	51	1.82	MAI		TSH	0.49	ZPANM	0.68
35	51	1.35	NQI		TSH	0.76	CCAGC	0.68
35	51	1.01	NQI		TEH	3.82	CCAGC	0.68
35	51	1.12	SAI		TEH	6.13	ZPANM	0.68
35	51	0.41	SAI		TEH	5.21	ZPANM	0.68
35	51	0.65	SAI		TEH	3.93	ZPANM	0.68
35	51	1.05	MAI		TSH	0.35	ZPUHF	0.62
35	51	1.4	MAI		TSH	0.65	ZPANM	0.72
35	51	1.42	MAI		TSH	0.6	ZPANM	0.72
35	51	0.72	SAI		TSH	0.22	ZPANM	0.72
35	51	2.71	PI		TEH	5.57	CCAGC	0.68
35	51	1.08	NQI		TEH	5.02	CCAGC	0.68
35	52	0.73	MAI		TSH	0.87	ZPACC	0.7
35	52	1.42	NQI		TSH	0.71	CCAGC	0.7
35	52	15.36	PI		TSH	0.68	CCAGC	0.68
35	52	0.4	MAI		TSH	0.75	ZPANM	0.68
36	52	1.4	SAI		TEH	0.04	ZPANM	0.72
43	52	1.34	MAI		TEH	0.2	ZPACC	0.7
7	53	5.31	SCI		TEH	0.12	ZPANM	0.72
43	53	0.58	PCT	15	TSH	1.07	CCAGC	0.7
43	53	14.88	PI		TSH	1.29	CCAGC	0.64

43	53	16.29	PI		TSH	1.26	CCAGC	0.64
43	53	5.24	SCI		TEH	0.18	ZPANM	0.72
43	53	0.42	PCT	25	TSH	1.08	CCAGC	0.64
43	53	0.61	PIT		TSH	0.91	ZPANM	0.72
43	53	0.29	VOL	33	TSH	0.94	ZPANM	0.68
43	53	0.42	PCT	17	TSH	1.05	CCAGC	0.64
4	54	2.48	MAI		TEH	0.12	ZPANM	0.72
33	54	0.39	MAI		TSH	1.05	ZPACC	0.7
33	54	0.18	SAI		TSH	0.5	ZPANM	0.72
33	54	0.28	SAI		TSH	0.81	ZPANM	0.72
34	54	0.46	MAI		TSH	0.81	ZPANM	0.72
34	54	5.28	PI		TSH	0.71	CCAGC	0.7
34	54	0.37	MAI		TSH	0.57	ZPANM	0.68
34	54	0.63	MAI		TSH	0.79	ZPACC	0.7
34	54	0.43	MAI		TSH	0.87	ZPANM	0.68
36	54	1.23	MAI		TEH	2.25	ZPANM	0.68
36	54	0.34	SAI		TEH	3.14	ZPANM	0.68
36	54	0.22	SAI		TEH	4.47	ZPANM	0.68
41	54	0.31	MAI		TEH	5.5	ZPANM	0.72
2	55	2.72	MAI		TEH	0.08	ZPANM	0.72
5	55	1.88	PCT	1	TSC	1.64	CCAGC	0.64
5	55	2.08	PCT	1	TSC	1.74	CCAGC	0.68
5	55	2.06	PCT	1	TSC	1.55	CCAGC	0.7
5	55	0.72	PIT	14	TSC	1.7	ZPANM	0.68
5	55	0.67	PIT		TSC	1.67	ZPACC	0.7
5	55	3.62	PCT	1	TSC	1.45	MBALL	0.7
7	55	0.29	PIT	73	TSC	4.18	ZPANM	0.68
7	55	0.31	PIT	54	TSC	7.35	ZPANM	0.68
7	55	2.02	PCT	8	TSC	4.22	MBALL	0.7
7	55	0.45	PCT	23	TSC	6.89	MBALL	0.7
7	55	1.85	PCT	11	TSC	4.16	CCAGC	0.68
7	55	0.42	PCT	23	TSC	6.93	CCAGC	0.68
7	55	1.72	PCT	5	TSC	4.37	CCAGC	0.7
7	55	0.45	PCT	17	TSC	7.3	CCAGC	0.7
31	55	0.19	MAI		TEH	4.25	ZPANM	0.72
2	56	4.65	MAI		TEH	0.22	ZPANM	0.72
28	56	2.31	SAI		TEH	0.2	ZPANM	0.72
29	56	0.41	PIT		TSH	3.28	ZPANM	0.72
34	56	0.56	MAI		TEH	2.96	ZPANM	0.72
37	56	1.43	SAI		TEH	0.11	ZPANM	0.72
38	56	0.88	SAI		TEH	0.05	ZPANM	0.72
40	56	0.17	PIT		TSH	24.09	ZPANM	0.72
40	56	0.35	PCT	0	TSH	25.44	MBALL	0.7
42	56	0.34	PIT		TSH	9.29	ZPANM	0.72
43	56	4.39	MCI		TEH	0.1	ZPANM	0.72
43	56	0.22	PIT		TSH	10.29	ZPANM	0.72
2	57	4.31	MAI		TEH	0.09	ZPANM	0.72
5	57	0.66	PCT	12	TSC	3	MBALL	0.7
5	57	0.7	PCT	16	TSC	3.12	CCAGC	0.64

5	57	0.12	PIT	16	TSC	2.71	ZPANM	0.68
7	57	2.06	MCI		TEH	0.36	ZPANM	0.72
8	57	0.21	SAI		TEH	8.44	ZPANM	0.72
35	57	1.65	SAI		TEH	0.03	ZPANM	0.72
36	57	1.31	SAI		TEH	0.11	ZPANM	0.72
38	57	0.83	SAI		TEH	0.08	ZPANM	0.72
42	57	0.36	PIT		TSH	26.33	ZPANM	0.72
42	57	0.67	PCT	0	TSH	27.18	MBALL	0.7
43	57	6.23	MCI		TEH	0.2	ZPANM	0.72
7	58	0.42	PIT		TSC	0.09	ZPANM	0.68
7	58	38.61	PI		TSC	0.13	CCAGC	0.68
7	58	1.29	PIT		TSC	0.07	ZPAMR	0.72
29	58	0.28	MAI		TEH	3	ZPANM	0.72
32	58	0.22	PIT		TSH	13.15	ZPANM	0.72
32	58	7.43	SPI		5C	-0.34	CCAGC	0.68
34	58	3.47	MAI		TEH	0.17	ZPANM	0.72
34	58	1.08	MAI		TEH	2.55	ZPANM	0.72
35	58	2.14	MAI		TEH	0.12	ZPANM	0.72
35	58	1.1	MAI		TEH	2.75	ZPANM	0.72
36	58	4.95	MAI		TEH	0.15	ZPANM	0.72
37	58	1.3	SAI		TEH	2.63	ZPANM	0.72
37	58	0.1	SAI		TEH	4.2	ZPANM	0.72
38	58	0.11	SAI		TEH	4.2	ZPANM	0.72
43	58	2.03	SAI		TEH	0.19	ZPANM	0.72
14	59	6.54	TSI		TSC	0	CCAGC	0.7
28	59	0.16	SAI		TEH	6.06	ZPANM	0.72
35	59	0.45	SAI		TEH	2.46	ZPANM	0.72
35	59	0.27	SAI		TEH	3.62	ZPANM	0.72
36	59	1.38	MAI		TEH	2.6	ZPANM	0.72
37	59	1.1	MAI		TEH	0.22	ZPACC	0.7
39	59	0.2	VOL	0	TSH	9.72	ZPANM	0.68
39	59	13.87	PI		TSH	8.68	CCAGC	0.68
43	59	1.65	MCI		TEH	0.29	ZPANM	0.72
43	59	0.17	VOL	14	TSH	28.47	ZPANM	0.68
28	60	0.47	SAI		TEH	3.22	ZPANM	0.72
29	60	1.83	SAI		TEH	0.18	ZPANM	0.72
34	60	1.33	MAI		TEH	2.73	ZPANM	0.72
34	60	5.04	MAI		TEH	0.17	ZPANM	0.72
36	60	1.04	MAI		TEH	2.57	ZPANM	0.72
16	61	0.17	SAI		TEH	11.27	ZPACC	0.72
17	61	2.24	MAI		TEH	2.9	ZPACC	0.72
28	61	0.44	SAI		TEH	2.49	ZPANM	0.72
31	61	0.74	SAI		TEH	2.88	ZPANM	0.72
34	61	1.94	SAI		TEH	0.13	ZPANM	0.72
34	61	0.98	MAI		TEH	2.93	ZPANM	0.72
36	61	1.36	SAI		TEH	2.57	ZPANM	0.72
41	61	0.49	SAI		TSH	0.22	ZPACC	0.7
41	61	0.59	SAI		TSH	0.21	ZPANM	0.72
7	62	0.52	PIT		TSC	3.61	ZPAMR	0.72

7	62	0.34	PIT		TSC	4.07	ZPANM	0.68
7	62	1.66	PCT	16	TSC	4.25	CCAGC	0.7
28	62	1.18	SAI		TEH	2.56	ZPANM	0.72
29	62	0.47	SAI		TEH	0.1	ZPANM	0.72
12	63	0.11	SAI		TEC	2.18	ZMAGR	0.72
12	63	6.94	DRI		TEC	1.29	MBALL	0.7
12	63	4.8	DRI		TEC	0.97	CCAGC	0.7
17	63	0.24	MAI		TEH	3.57	ZPANM	0.68
19	63	0.16	PCT	0	TSH	30.82	MBALL	0.7
19	63	0.31	PIT		TSH	30.24	ZPANM	0.68
20	63	1.07	SAI		TEH	2.62	ZPANM	0.68
35	63	0.16	SAI		TEH	7.13	ZPANM	0.72
35	63	0.11	SAI		TEH	6.45	ZPANM	0.72
2	64	2.5	MAI		TEH	0.16	ZPANM	0.72
34	64	2.32	MAI		TEH	0.18	ZPANM	0.72
38	64	0.19	VOL	12	TSH	16.26	ZPANM	0.68
38	64	122.3	PI		TSH	16.63	CCAGC	0.7
2	65	2.3	SCI		TEH	0.38	ZPANM	0.72
2	65	0.17	SAI		TEH	11.25	ZPANM	0.72
4	65	0.74	SAI		TEH	0.24	ZPANM	0.72
23	65	0.4	PIT		TSC	2.56	ZPAMR	0.72
37	65	2.47	MAI		TEH	0.16	ZPANM	0.72
2	66	8.71	MAI		TEH	0.2	ZPANM	0.72
5	66	0.17	SAI		TEH	3.82	ZPANM	0.72
7	66	0.53	PIT	55	TSC	6.38	ZPANM	0.68
7	66	3.81	SPI		6H	-0.9	CCAGC	0.68
7	66	0.82	PCT	20	TSC	6.44	CCAGC	0.68
7	66	0.84	PCT	46	TSC	6.72	CCAGC	0.7
11	66	1.21	SAI		TEH	2.76	ZPANM	0.72
15	66	0.12	SAI		TEH	3.81	ZPANM	0.72
16	66	0.37	PIT		TSH	1.48	ZPANM	0.72
23	66	0.56	MCI		TEH	2.82	ZPANM	0.72
23	66	0.15	MAI		TEH	5.66	ZPANM	0.72
31	66	3.68	MAI		TEH	0.17	ZPANM	0.72
2	67	3.41	MAI		TEH	0.24	ZPANM	0.72
23	67	0.4	MAI		TEH	3.07	ZPANM	0.72
29	67	0.12	MAI		TEH	3.52	ZPANM	0.72
3	68	0.25	MAI		TEH	4.3	ZPANM	0.72
11	68	0.86	SAI		TEH	2.84	ZPANM	0.72
22	69	1.02	MAI		TEH	2.91	ZPANM	0.72
23	69	0.28	MAI		TEH	3.2	ZPANM	0.72
25	69	0.98	SAI		TEH	2.95	ZPANM	0.72
2	70	2.07	MAI		TEH	0.08	ZPANM	0.72
4	70	1.01	PCT	21	TSC	0.98	CCAGC	0.7
4	70	0.22	PIT	9	TSC	0.7	ZPANM	0.68
4	70	1.03	PCT	6	TSC	0.85	CCAGC	0.68
13	70	1.69	SAI		TEH	2.56	ZPANM	0.72
16	70	3.43	MAI		TEH	2.39	ZPANM	0.72
20	70	0.92	SAI		TEH	2.72	ZPANM	0.68

20	70	0.11	PI		TEH	7.63	CCAGC	0.7
21	70	0.22	MAI		TEH	4.88	ZPANM	0.68
21	70	0.47	PI		TEH	5.47	CCAGC	0.7
23	70	0.22	MAI		TEH	4.84	ZPANM	0.68
23	70	0.3	MAI	53	TEH	3.57	ZPANM	0.68
23	70	1.07	NQI		TEH	3.21	CCAGC	0.7
23	70	1.79	PI		TEH	6.67	CCAGC	0.7
39	70	2.69	PCT	28	AV3	0	CCAGC	0.7
39	70	3.46	PCT	31	AV2	0	CCAGC	0.7
2	71	4.32	MAI		TEH	0.35	ZPANM	0.72
2	71	0.07	MAI		TEH	4.87	ZPANM	0.72
10	71	0.12	SAI		TEH	3.64	ZPANM	0.72
12	71	0.1	SAI		TEH	7.07	ZPANM	0.68
12	71	0.32	PI		TEH	5.82	CCAGC	0.7
17	71	0.4	PIT		TSC	1.77	ZPAMR	0.72
17	71	1.59	PCT	0	TSC	2.25	CCAGC	0.7
19	71	0.27	MAI		TEH	4.35	ZPANM	0.68
19	71	0.69	PI		TEH	6.67	CCAGC	0.7
34	71	1.84	MAI		TEH	0.28	ZPANM	0.72
2	72	5.33	MAI		TEH	0.16	ZPANM	0.72
8	72	0.62	SAI		TEH	0.08	ZPANM	0.72
11	72	0.37	PIT		TSH	1.05	ZPANM	0.72
12	72	46.58	DRI		TEH	0.66	MBALL	0.7
12	72	35.01	DRI		TEH	0.46	CCAGC	0.7
12	72	7.61	DRI		TEH	0.69	CCAGC	0.7
19	72	0.62	MAI		TEH	4.35	ZPANM	0.68
19	72	3.22	PI		TEH	4.84	CCAGC	0.7
21	72	0.23	SAI		TEH	3.92	ZPANM	0.68
21	72	0.73	PI		TEH	11.04	CCAGC	0.7
2	73	5	MAI		TEH	0.17	ZPANM	0.72
4	73	0.2	MAI		TEH	3.78	ZPANM	0.72
7	73	1.78	PCT	24	TSC	1.56	CCAGC	0.7
7	73	0.54	PIT		TSC	1.41	ZPAMR	0.72
18	73	0.18	MAI		TEH	3.41	ZPANM	0.72
31	73	1	SAI		TEH	0.11	ZPANM	0.72
2	74	4.35	MAI		TEH	0.31	ZPACC	0.7
4	74	0.25	MAI		TEH	5.77	ZPANM	0.72
12	74	1.07	SAI		TEH	2.99	ZPANM	0.72
13	74	0.94	SAI		TEH	3.33	ZPANM	0.72
16	74	0.19	MAI		TEH	4.92	ZPANM	0.72
18	74	0.22	MAI		TEH	3.34	ZPANM	0.72
36	74	0.16	PIT		TSH	26.62	ZPANM	0.72
6	75	0.47	SAI		TEH	0.21	ZPACC	0.7
16	75	0.17	MAI		TEH	3.2	ZPANM	0.68
16	75	1.63	PI		TEH	2.48	CCAGC	0.68
17	75	0.16	MAI		TEH	5.79	ZPANM	0.68
17	75	1.53	PI		TEH	4.51	CCAGC	0.68
18	75	0.83	PI		TEH	4.08	CCAGC	0.68
18	75	0.17	MAI		TEH	5.3	ZPANM	0.72

21	75	0.26	MAI		TEH	5.58	ZPANM	0.68
21	75	2.03	PI		TEH	3.9	CCAGC	0.68
2	76	2.54	MAI		TEH	0.17	ZPACC	0.7
15	76	0.21	SAI		TEH	3.26	ZPANM	0.68
17	76	1.39	SAI		TEH	2.56	ZPANM	0.68
17	76	0.41	PI		TEH	15.32	CCAGC	0.68
18	76	10.69	PI		TEH	2.92	CCAGC	0.68
18	76	6.45	PI		TEH	7.73	CCAGC	0.68
18	76	4.46	PI		TEH	5.03	CCAGC	0.68
18	76	5.92	PI		TEH	4.03	CCAGC	0.68
18	76	8.82	PI		TEH	3.27	CCAGC	0.68
18	76	1.86	MAI	69	TEH	2.51	ZPANM	0.68
18	76	0.19	MAI		TEH	6.16	ZPANM	0.68
18	76	5.99	PI		TEH	3.57	CCAGC	0.68
23	76	0.11	SAI		TEH	6.08	ZPANM	0.68
23	76	0.51	PI		TEH	6.23	CCAGC	0.68
31	76	7.49	SPI		5C	0.02	CCAGC	0.7
33	76	0.23	PIT		TSH	9.41	ZPANM	0.72
33	76	0.18	PIT		TSH	22.52	ZPANM	0.72
33	76	0.39	PCT	0	TSH	22.78	CCAGC	0.7
2	77	4.27	MAI		TEH	0.27	ZPANM	0.72
8	77	1.22	SAI		TEH	3.06	ZPANM	0.72
9	77	0.2	MAI		TEH	6.03	ZPANM	0.72
15	77	0.44	MAI		TEH	6.86	ZPANM	0.68
15	77	0.23	SAI	59	TEH	4.32	ZPANM	0.68
15	77	0.34	SAI	42	TEH	7.5	ZPANM	0.68
15	77	0.24	MAI	37	TEH	10.27	ZPANM	0.68
15	77	0.69	NQI		TEH	7.21	MBALL	0.7
15	77	0.55	NQI		TEH	7.1	CCAGC	0.68
15	77	1.53	PI		TEH	9.59	CCAGC	0.68
15	77	0.64	NQI		TEH	7.34	CCAGC	0.7
16	77	0.18	MAI		TEH	6.24	ZPANM	0.68
16	77	2.49	PI		TEH	8.02	CCAGC	0.68
19	77	0.11	MAI		TEH	9.67	ZPANM	0.68
19	77	1.36	PI		TEH	9.72	CCAGC	0.68
20	77	1.82	PI		TEH	3.85	CCAGC	0.68
20	77	0.26	MAI		TEH	4.06	ZPANM	0.68
22	77	3.89	SAI		TEH	0.17	ZPANM	0.68
23	77	4.99	MAI		TEH	0.11	ZPANM	0.68
2	78	3.86	MAI		TEH	0.25	ZPANM	0.72
7	78	0.21	MAI		TEH	7.34	ZPANM	0.72
11	78	0.09	SAI		TEH	4.66	ZPANM	0.68
11	78	0.79	PI		TEH	14.06	CCAGC	0.68
13	78	0.71	PI		TEH	3.39	CCAGC	0.68
13	78	0.23	SAI		TEH	4.23	ZPANM	0.68
15	78	1.47	PI		TEH	6.55	CCAGC	0.68
15	78	0.15	SAI		TEH	9.67	ZPANM	0.68
15	78	0.14	SAI		TEH	3.03	ZPANM	0.68
15	78	0.24	SAI		TEH	6.48	ZPANM	0.68

15	78	0.1	SAI		TEH	7.69	ZPANM	0.68
16	78	0.28	MAI		TEH	7.97	ZPANM	0.68
16	78	0.77	PI		TEH	7.86	CCAGC	0.68
17	78	1.2	SAI		TEH	2.64	ZPANM	0.68
17	78	1.76	PI		TEH	6.81	CCAGC	0.68
33	78	0.52	NQI		TSH	1.62	MBALL	0.7
33	78	0.63	NQI		TSH	1.57	CCAGC	0.7
33	78	0.44	NQI		TSH	1.32	CCAGC	0.68
33	78	0.29	VOL	4	TSH	1.45	ZPANM	0.68
33	78	0.37	VOL		TSH	1.42	ZPANM	0.72
33	78	1	VOL		TSH	1.41	ZPANM	0.72
33	78	8.9	PI		TSH	1.59	CCAGC	0.68
10	79	0.25	MAI		TEH	4.06	ZPANM	0.72
17	79	0.16	MAI		TEH	7.24	ZPANM	0.68
17	79	1.34	PI		TEH	6.61	CCAGC	0.68
2	80	4.81	MAI		TEH	0.18	ZPANM	0.72
11	80	0.21	MAI		TEH	4.36	ZPANM	0.72
16	80	0.16	MAI		TEH	7.24	ZPANM	0.68
16	80	1.09	PI		TEH	6.12	CCAGC	0.68
2	81	3.34	MAI		TEH	0.2	ZPANM	0.72
15	81	0.13	SAI		TEH	10.75	ZPANM	0.68
15	81	0.86	PI		TEH	9.83	CCAGC	0.68
30	81	0.44	PIT		TSH	9.52	ZPANM	0.72
2	82	4	MAI		TEH	0.18	ZPANM	0.72
2	83	2.49	MAI		TEH	0.23	ZPANM	0.72
20	83	2.33	SAI		TEH	2.94	ZPANM	0.72
7	84	1.3	SAI		TEH	2.95	ZPANM	0.72
11	84	0.3	PIT		TSH	0.98	ZPANM	0.72
14	84	0.62	SAI		TEH	3.91	ZPANM	0.72
14	84	0.54	SAI		TEH	7.9	ZPANM	0.72
9	85	0.16	SAI		TEH	3.86	ZPANM	0.72
9	85	0.08	SAI		TEH	6.36	ZPANM	0.72
22	85	1.44	MAI		TEH	0	ZPANM	0.72
2	86	5.81	MAI		TEH	0.06	ZPANM	0.72
10	86	0.39	PIT		TSH	0.82	ZPANM	0.72
7	87	2.33	MAI		TEH	0.11	ZPANM	0.72
16	87	0.9	SAI		TEH	0.08	ZPANM	0.72
18	87	2.23	MAI		TEH	0.07	ZPANM	0.72
7	88	3.16	SAI		TEH	0.11	ZPANM	0.72
2	90	5.79	MAI		TEH	0.23	ZPANM	0.72
5	90	4.26	MAI		TEH	0.09	ZPANM	0.72
6	90	4.37	MAI		TEH	0.11	ZPANM	0.72
11	90	0.93	SAI		TEH	0.14	ZPANM	0.72
2	91	1.28	MAI		TEH	0.15	ZPANM	0.72
8	91	3.88	SAI		TEH	0.08	ZPANM	0.72

Table 8, Steam Generator 22, Tubes Plugged 2000

Row	Col	Primary Reason for Plugging
10	3	Pitting
2	4	Row 2 NDD - Customer Decision to Plug
6	4	Pitting
8	5	Pitting
2	6	Row 2 NDD - Customer Decision to Plug
7	7	Pitting
2	8	Row 2 NDD - Customer Decision to Plug
16	8	Pitting
7	9	Pitting
17	10	Pitting
2	11	Row 2 NDD - Customer Decision to Plug
19	11	Pitting by RPC/<28% or DEP by Bobbin
23	12	Pitting
27	12	Pitting
28	12	Pitting by RPC/<28% or DEP by Bobbin
29	12	Pitting
30	12	Pitting by RPC/<28% or DEP by Bobbin
8	13	Volumetric Indication
20	13	Pitting
22	13	Pitting by RPC/<28% or DEP by Bobbin
23	13	Pitting by RPC/<28% or DEP by Bobbin
26	13	Pitting
27	13	Pitting
28	13	Pitting by RPC/<28% or DEP by Bobbin
29	13	Pitting
30	13	Cecco Top of Tubesheet Indication
4	14	Crevice ODSCC Indication
20	14	Pitting
22	14	Pitting
23	14	Pitting
24	14	Pitting
29	14	Loose Part Preventative Plug
8	15	Crevice ODSCC Indication
25	15	Pitting
31	15	Volumetric Indication/Loose Part Wear
33	15	Pitting
8	16	Crevice ODSCC Indication
30	16	Pitting
31	16	Pitting
33	16	Pitting
28	17	Pitting
32	17	Pitting
30	18	Pitting
35	18	Pitting
36	19	Pitting
30	20	Pitting
33	20	Pitting
37	20	Pitting/Restricted to .610" Probe at 3H

4	21	Pitting by RPC/<28% or DEP by Bobbin
30	21	Pitting
32	21	Pitting
38	21	Pitting
33	22	Pitting
4	23	Bad Data - Uninspectable Location
28	23	Pitting
35	23	Pitting
3	24	Crevice ODSCC Indication
14	24	Pitting
34	24	Pitting
35	24	Pitting
10	25	Pitting
14	25	Pitting
21	25	Pitting by RPC/<28% or DEP by Bobbin
32	25	Volumetric Indication
34	25	Pitting
36	25	Pitting
37	25	Pitting
7	26	Pitting
13	26	Pitting
33	26	Cecco Top ofTubesheet Indication
34	26	Pitting
35	26	Cecco Top ofTubesheet Indication
2	27	Row 2 NDD - Customer Decision to Plug
4	27	Crevice ODSCC Indication
18	27	Cecco Top ofTubesheet Indication
35	27	Pitting
36	27	Pitting
38	27	Pitting
3	28	Failed F* Criteria for Dia. or Dist.
34	28	Pitting by RPC/<28% or DEP by Bobbin
41	28	Pitting by RPC/<28% or DEP by Bobbin
9	29	Pitting by RPC/<28% or DEP by Bobbin
30	29	Pitting
32	29	Pitting
33	29	Pitting
38	29	Cecco Top ofTubesheet Indication
4	30	Crevice ODSCC Indication
6	30	Crevice ODSCC Indication
35	30	Pitting
37	30	Pitting
40	30	Pitting
8	31	Crevice ODSCC Indication
35	31	Pitting
11	33	Pitting by RPC/<28% or DEP by Bobbin
2	34	Row 2 NDD - Customer Decision to Plug
38	34	Pitting
2	35	Row 2 NDD - Customer Decision to Plug
24	35	NQI In U-Bend - Past RPC Range
2	36	Row 2 NDD - Customer Decision to Plug

9	36	Pitting by RPC/<28% or DEP by Bobbin
7	37	Pitting
8	37	Pitting by RPC/<28% or DEP by Bobbin
15	39	Pitting by RPC/<28% or DEP by Bobbin
2	40	Row 2 NDD - Customer Decision to Plug
35	40	Volumetric Indication
2	41	Row 2 NDD - Customer Decision to Plug
36	41	Cecco Tube Support Indication
24	43	Pitting by RPC/<28% or DEP by Bobbin
30	43	Pitting by RPC/<28% or DEP by Bobbin
44	44	Pitting
32	47	Crevice ODSCC Indication
32	48	Crevice ODSCC Indication
13	49	Pitting
25	49	Pitting by RPC/<28% or DEP by Bobbin
33	49	ODSCC Indication Above TSH
33	50	Volumetric Indication
35	50	Volumetric Indication/<28% by Bobbin
23	51	Pitting
25	51	Pitting by RPC/<28% or DEP by Bobbin
33	51	ODSCC Indication Above TSH
34	51	Crevice ODSCC Indication
35	51	ODSCC Indication Above TSH
35	52	ODSCC Indication Above TSH
43	53	Pitting by RPC/<28% or DEP by Bobbin
33	54	ODSCC Indication Above TSH
34	54	ODSCC Indication Above TSH
41	54	Crevice ODSCC Indication
2	55	Row 2 NDD - Customer Decision to Plug
5	55	Pitting by RPC/<28% or DEP by Bobbin
7	55	Pitting by RPC/<28% or DEP by Bobbin
31	55	Crevice ODSCC Indication
2	56	Row 2 NDD - Customer Decision to Plug
29	56	Pitting
34	56	Crevice ODSCC Indication
40	56	Pitting by RPC/<28% or DEP by Bobbin
42	56	Pitting
43	56	Pitting
2	57	Row 2 NDD - Customer Decision to Plug
5	57	Pitting by RPC/<28% or DEP by Bobbin
8	57	Crevice ODSCC Indication
42	57	Pitting by RPC/<28% or DEP by Bobbin
7	58	Pitting
32	58	Cecco Tube Support Indication
35	58	Failed F* Criteria for Dia. or Dist.
37	58	Crevice ODSCC Indication
14	59	Cecco Top ofTubesheet Indication
28	59	Crevice ODSCC Indication
35	59	Crevice ODSCC Indication
39	59	Pitting
43	59	Volumetric Indication

16	61	Crevice ODSCC Indication
31	61	Failed F* Criteria for Dia. or Dist.
36	61	Failed F* Criteria for Dia. or Dist.
41	61	ODSCC Indication Above TSH
7	62	Pitting by RPC/<28% or DEP by Bobbin
28	62	Failed F* Criteria for Dia. or Dist.
12	63	Failed F* Criteria for Dia. or Dist.
17	63	Crevice ODSCC Indication
19	63	Pitting by RPC/<28% or DEP by Bobbin
35	63	Crevice ODSCC Indication
2	64	Row 2 NDD - Customer Decision to Plug
38	64	Volumetric Indication
2	65	Crevice ODSCC Indication
23	65	Pitting by RPC/<28% or DEP by Bobbin
2	66	Row 2 NDD - Customer Decision to Plug
7	66	Cecco Tube Support Indication
16	66	Pitting
23	66	Crevice ODSCC Indication
2	67	Row 2 NDD - Customer Decision to Plug
23	67	Crevice ODSCC Indication
2	68	Row 2 NDD - Customer Decision to Plug
3	68	Crevice ODSCC Indication
2	69	Row 2 NDD - Customer Decision to Plug
23	69	Crevice ODSCC Indication
2	70	Row 2 NDD - Customer Decision to Plug
4	70	Pitting by RPC/<28% or DEP by Bobbin
20	70	Crevice ODSCC Indication
21	70	Crevice ODSCC Indication
23	70	Crevice ODSCC Indication
2	71	Crevice ODSCC Indication
12	71	Crevice ODSCC Indication
17	71	Pitting by RPC/<28% or DEP by Bobbin
19	71	Crevice ODSCC Indication
2	72	Row 2 NDD - Customer Decision to Plug
11	72	Pitting
19	72	Crevice ODSCC Indication
21	72	Crevice ODSCC Indication
2	73	Row 2 NDD - Customer Decision to Plug
4	73	Crevice ODSCC Indication
7	73	Pitting by RPC/<28% or DEP by Bobbin
18	73	Crevice ODSCC Indication
2	74	Row 2 NDD - Customer Decision to Plug
4	74	Crevice ODSCC Indication
16	74	Crevice ODSCC Indication
18	74	Crevice ODSCC Indication
36	74	Pitting by RPC/<28% or DEP by Bobbin
17	75	Crevice ODSCC Indication
18	75	Crevice ODSCC Indication
21	75	Crevice ODSCC Indication
2	76	Row 2 NDD - Customer Decision to Plug
17	76	Crevice ODSCC Indication

18	76	Crevice ODSCC Indication
23	76	Crevice ODSCC Indication
31	76	Cecco Tube Support Indication
33	76	Pitting by RPC/<28% or DEP by Bobbin
2	77	Row 2 NDD - Customer Decision to Plug
9	77	Crevice ODSCC Indication
15	77	Crevice ODSCC Indication
16	77	Crevice ODSCC Indication
19	77	Crevice ODSCC Indication
20	77	Crevice ODSCC Indication
2	78	Row 2 NDD - Customer Decision to Plug
7	78	Crevice ODSCC Indication
11	78	Crevice ODSCC Indication
15	78	Crevice ODSCC Indication
16	78	Crevice ODSCC Indication
17	78	Crevice ODSCC Indication
33	78	Volumetric Indication
10	79	Crevice ODSCC Indication
17	79	Crevice ODSCC Indication
2	80	Row 2 NDD - Customer Decision to Plug
11	80	Crevice ODSCC Indication
16	80	Crevice ODSCC Indication
2	81	Row 2 NDD - Customer Decision to Plug
15	81	Crevice ODSCC Indication
30	81	Pitting
2	82	Row 2 NDD - Customer Decision to Plug
2	83	Row 2 NDD - Customer Decision to Plug
7	84	Failed F* Criteria for Dia. or Dist.
11	84	Pitting
14	84	Crevice ODSCC Indication
9	85	Crevice ODSCC Indication
2	86	Row 2 NDD - Customer Decision to Plug
10	86	Pitting
2	90	Row 2 NDD - Customer Decision to Plug
2	91	Row 2 NDD - Customer Decision to Plug
2	92	Row 2 NDD - Customer Decision to Plug

Table 9, Steam Generator 23, Indications 1997

row	col	volts	defect	location	offset	probe	size
4	1	20.74	DRI	TEH	1.32	C5	0.7
5	1	0.65	MAI	TEH	1.15	RB	0.72
5	1	7.95	DRI	TEH	1.32	C5	0.7
3	2	11.81	DRI	TEH	1.3	C5	0.7
4	2	47.6	DRI	TEH	1.39	C5	0.7
5	2	10.13	DRI	TEH	1.32	C5	0.7
5	2	1.44	MAI	TEH	1.2	RB	0.72
5	2	24.44	DRI	TEH	0.95	C5	0.68
4	3	14.89	DRI	TEH	1.87	C5	0.7
5	3	1.46	MAI	TEH	1.51	RB	0.72
5	3	9.59	DRI	TEH	1.36	C5	0.7
6	3	8.18	DRI	TEH	1.36	C5	0.7
6	3	1.46	MAI	TEH	1.29	RB	0.72
7	3	12.24	DRI	TEH	1.34	C5	0.7
7	3	1.4	MAI	TEH	1.38	RB	0.72
8	3	17.18	DRI	TEH	1.38	C5	0.7
8	3	0.38	MAI	TEH	1.33	RB	0.72
3	4	9.95	DRI	TEH	0.97	C5	0.68
3	4	36.75	DRI	TEH	1.45	C5	0.64
4	4	12.76	DRI	TEH	1.38	C5	0.7
5	4	33.19	DRI	TEH	1.41	C5	0.7
7	4	1.94	MAI	TEH	1.28	RB	0.72
7	4	11.22	DRI	TEH	1.42	C5	0.7
8	4	12	DRI	TEH	1.38	C5	0.7
8	4	0.66	MAI	TEH	1.26	RB	0.72
4	5	26.59	DRI	TEH	1.32	C5	0.7
5	5	1.58	MAI	TEH	1.37	RB	0.72
5	5	11.42	DRI	TEH	1.45	C5	0.7
7	5	15.3	DRI	TEH	1.38	C5	0.7
7	5	0.53	MAI	TEH	1.27	RB	0.72
9	5	24.49	DRI	TEH	1.39	C5	0.7
4	6	0.97	MAI	TEH	1.48	RB	0.72
4	6	12.86	DRI	TEH	1.07	C5	0.7
5	6	9.55	DRI	TEH	0.95	C5	0.7
5	6	1.16	MAI	TEH	1.32	RB	0.72
6	6	2.46	DRI	TEH	1.36	C5	0.7
6	6	0.98	SAI	TEH	1.43	RB	0.72
21	6	1.16	SAI	TEH	1.21	RB	0.72
21	6	8.14	DRI	TEH	0.99	C5	0.68
3	7	28.31	DRI	TEH	1.06	C5	0.64
3	7	7.9	DRI	TEH	0.97	C5	0.68
4	7	2.17	DRI	TEH	1.54	C5	0.68
4	7	8.83	DRI	TEH	1.3	C5	0.64
5	7	20.33	DRI	TEH	1.2	C5	0.7
5	7	0.77	MAI	TEH	1.46	RB	0.72
7	7	2.81	MAI	TEH	1.25	RB	0.72
7	7	35.79	DRI	TEH	1.32	C5	0.7
3	8	19.66	DRI	TEH	1.24	C5	0.7

28	11	3.64	SAI	6C	0.17	ZD	0.61
4	12	1.69	MAI	TEH	1.26	RB	0.72
4	12	12.44	DRI	TEH	1.55	C5	0.7
4	12	13.75	DRI	TEH	1.39	C5	0.64
27	13	1.1	23	TSH	16.97	C5	0.7
31	15	0.49	36	TSH	0.53	C5	0.7
31	15	0.71	31	TSH	0.58	C5	0.7
31	15	0.96	25	TSH	0.5	EL	0.7
33	15	2.46	VOL	TSH	0.41	ZP	0.68
33	15	16.56	TSI	TSH	0.87	C5	0.7
33	16	30.14	TSI	TSH	-0.02	C5	0.7
33	16	1.34	VOL	TSH	0.08	ZP	0.68
8	17	24.42	DRI	TEC	0.67	C5	0.7
4	18	21.89	DRI	TEH	1.35	C5	0.7
4	18	3.69	MAI	TEH	2.75	RB	0.72
3	19	0.47	MAI	TEH	1.57	RB	0.72
3	19	7.59	DRI	TEH	1.55	C5	0.7
35	19	0.42	49	TSH	0.56	C5	0.7
35	19	111	PI	TSH	0.46	C5	0.7
35	19	0.52	45	TSH	0.66	C5	0.7
35	19	0.28	PIT	TSH	0.59	ZP	0.68
35	19	8.01	PI	TSH	0.5	C5	0.7
3	20	9.73	DRI	TEH	1.55	C5	0.7
3	20	2.79	MAI	TEH	1.64	RB	0.72
4	20	5.07	MAI	TEH	1.44	RB	0.72
4	20	30.16	DRI	TEH	1.46	C5	0.7
4	21	15.55	DRI	TEH	0.74	C5	0.68
36	21	6.27	TSI	TSH	0.63	C5	0.7
36	21	0.14	PIT	TSH	0.15	ZP	0.68
3	22	2.64	DRI	TEH	1.57	C5	0.64
3	22	15.65	DRI	TEH	1	C5	0.68
4	22	13.55	DRI	TEH	0.96	C5	0.68
4	22	17.32	DRI	TEH	0.73	C5	0.64
12	23	13.16	SPI	1C	-0.53	C5	0.7
33	24	1.07	7	6H	23.8	C5	0.7
10	27	1.04	20	TSH	0.78	C5	0.7
20	27	0.69	2	TSH	2.43	C5	0.7
20	27	1.72	PIT	TSH	1.91	ZP	0.68
26	27	0.59	MAI	TEC	1.62	RB	0.72
26	27	8.08	DRI	TEC	0.71	C5	0.7
29	27	15.41	DRI	TEC	0.88	C5	0.7
29	27	0.72	MAI	TEC	1.58	RB	0.72
21	28	0.34	PIT	TSH	1.89	ZC	0.72
21	28	0.48	14	TSH	1.87	C5	0.7
23	29	0.88	12	TSH	0.99	C5	0.7
24	29	0.86	19	TSH	0.36	C5	0.7
24	29	0.35	PIT	TSH	0.71	ZP	0.68
24	29	0.99	22	TSH	0.86	C5	0.7
24	29	0.9	14	TSH	0.8	C5	0.7
25	29	0.79	26	TSH	1.13	C5	0.7
25	29	0.82	29	TSH	1.2	C5	0.7

25	29	0.7	11	TSH	0.82	C5	0.7
25	30	0.58	12	TSH	0.82	C5	0.7
20	31	1.02	12	TSH	1.16	C5	0.7
24	31	0.58	17	TSH	1.38	C5	0.7
24	31	0.57	PIT	TSH	1.83	ZC	0.72
28	32	10.8	DRI	TEC	1.88	C5	0.7
28	32	0.51	MAI	TEC	1.64	RB	0.72
27	33	0.99	27	6H	4.65	C5	0.7
27	33	0.77	16	6H	8.35	C5	0.7
40	33	0.14	VOL	TSH	0.05	ZP	0.68
40	33	4.28	TSI	TSH	0	C5	0.68
20	34	0.99	24	TSH	1.14	C5	0.7
25	34	2.85	DRI	TEH	2.62	C5	0.7
7	35	1.7	PIT	TSC	0.58	ZP	0.68
7	35	45.67	PI	TSC	-0.45	C5	0.7
43	35	0.41	PIT	TSC	14.34	ZP	0.68
43	35	0.51	23	TSC	14.43	C5	0.7
25	36	12.73	DRI	TEH	2.51	C5	0.7
25	37	1.19	DRI	TEH	1.25	C5	0.7
25	37	9.89	DRI	TEH	2.68	C5	0.7
25	38	13.03	DRI	TEH	0.68	C5	0.7
25	38	0.74	MAI	TEH	3.12	RB	0.72
27	38	4.07	DRI	TEH	2.14	C5	0.7
27	38	1.02	MAI	TEH	3.02	RB	0.72
31	38	23.2	TSI	TSH	0.44	C5	0.7
31	38	0.4	PIT	TSH	0.47	ZP	0.68
41	38	8.88	DRI	TEH	2.62	C5	0.7
25	39	0.58	19	TSH	0.77	C5	0.7
25	39	33.64	DRI	TEH	2.38	C5	0.7
26	39	0.99	MAI	TEH	2.91	RB	0.72
26	39	3.15	DRI	TEH	3.21	C5	0.7
29	39	3.62	DRI	TEH	2.68	C5	0.7
31	39	3.62	DRI	TEH	2.72	C5	0.7
31	39	15.7	DRI	TRH	0	C5	0.7
36	39	12.14	DRI	TEH	3.3	C5	0.7
25	40	6	DRI	TEH	1.83	C5	0.7
44	40	44.98	SPI	3H	0.14	C5	0.68
25	41	8.45	DRI	TEH	4.25	C5	0.7
25	41	8.06	DRI	TEH	3.11	C5	0.7
27	41	17.3	DRI	TEH	1.55	C5	0.7
27	41	1.44	MAI	TEH	3.09	RB	0.72
29	41	2.73	DRI	TEH	2.24	C5	0.7
25	42	12.39	DRI	TEH	3.16	C5	0.7
25	42	26.58	DRI	TEH	1.33	C5	0.7
26	42	2.61	30	AV3	0	C5	0.7
28	42	3.3	DRI	TEH	2.65	C5	0.7
29	42	22.49	DRI	TEH	2.52	C5	0.7
31	42	3.13	DRI	TEH	2.7	C5	0.7
44	42	0.8	MAI	TEH	1.58	RB	0.72
44	42	7.25	DRI	TEH	1.31	C5	0.7
45	42	7.14	DRI	TEH	0.68	C5	0.7

45	42	1.97	MAI	TEH	1.37	RB	0.72
18	43	0.92	15	TSH	2.04	C5	0.7
18	43	1.17	18	TSH	2	C5	0.7
19	43	8.67	DRI	TEH	3.88	C5	0.7
20	43	1.16	25	TSH	1.28	C5	0.7
20	43	1.17	22	TSH	1.25	C5	0.7
21	43	0.5	VOL	TSH	1.63	ZC	0.72
21	43	0.5	35	TSH	0.9	C5	0.7
23	43	2.33	MAI	TEH	3.22	RB	0.72
23	43	17.33	DRI	TEH	3.03	C5	0.7
25	43	27.53	DRI	TEH	1.18	C5	0.7
25	43	41.8	DRI	TEH	2.51	C5	0.7
28	43	1.81	DRI	TEH	2.95	C5	0.7
29	43	4.08	DRI	TEH	3.32	C5	0.7
31	43	3.43	MAI	TEH	3.33	RB	0.72
31	43	3.91	DRI	TEH	2.87	C5	0.7
32	43	2.22	DRI	TEH	3	C5	0.7
32	43	6.82	MAI	TEH	3.16	RB	0.72
33	43	6.65	DRI	TEH	2.44	C5	0.7
33	43	1.3	MAI	TEH	3.27	RB	0.72
19	44	0.65	PIT	TSH	1.94	ZC	0.72
19	44	1.15	32	TSH	1.94	C5	0.7
23	44	2.97	DRI	TEH	1.49	C5	0.7
23	44	1.61	MAI	TEH	1.19	RB	0.72
24	44	0.6	30	TSH	1.25	C5	0.7
25	44	154.6	DRI	TEH	1.75	C5	0.7
25	44	2.51	DRI	TEH	0.76	C5	0.7
26	44	70.75	DRI	TEH	1.64	C5	0.7
27	44	112.7	DRI	TEH	1.44	C5	0.7
27	44	0.58	MAI	TEH	3.52	RB	0.72
28	44	54.33	DRI	TEH	2.36	C5	0.7
29	44	44.79	DRI	TEH	1.29	C5	0.7
30	44	41.39	DRI	TEH	2.15	C5	0.7
31	44	17	DRI	TEH	2.6	C5	0.7
31	44	113.9	DRI	TEH	1.77	C5	0.7
33	44	3.3	MAI	TEH	1.69	RB	0.72
33	44	7.23	DRI	TEH	1.23	C5	0.7
34	44	2.48	MAI	TEH	1.71	RB	0.72
34	44	9.41	DRI	TEH	1.4	C5	0.7
35	44	22.43	DRI	TEH	1.44	C5	0.7
35	44	3.74	MAI	TEH	1.58	RB	0.72
37	44	9.93	DRI	TEH	2.75	C5	0.7
37	44	9.98	DRI	TEH	1.1	C5	0.7
41	44	13.67	DRI	TEH	1.35	C5	0.7
41	44	6.43	MAI	TEH	1.7	RB	0.72
43	44	37.23	DRI	TEH	1.35	C5	0.7
10	45	0.51	35	TSC	7.96	C5	0.7
10	45	0.51	PIT	TSC	7.71	ZP	0.68
19	45	0.84	15	TSH	2.64	C5	0.7
19	45	0.47	3	TSH	2.87	C5	0.7
19	45	1.54	15	TSH	2.09	C5	0.7

24	45	66.53	DRI	TEH	1.47	C5	0.7
24	45	2.16	MAI	TEH	1.5	RB	0.72
25	45	38.61	DRI	TEH	3.23	C5	0.7
25	45	36.98	DRI	TEH	1.56	C5	0.7
26	45	18.63	DRI	TEH	1.64	C5	0.7
27	45	96.79	DRI	TEH	1.38	C5	0.7
28	45	71.35	DRI	TEH	1.33	C5	0.7
29	45	30.24	DRI	TEH	1.61	C5	0.7
29	45	16.36	DRI	TEH	2.82	C5	0.7
30	45	9.81	DRI	TEH	1.45	C5	0.7
31	45	12.51	DRI	TEH	1.42	C5	0.7
31	45	93.94	DRI	TEH	2.95	C5	0.7
32	45	29.72	DRI	TEH	1.35	C5	0.7
34	45	3.3	MAI	TEH	1.43	RB	0.72
34	45	21.11	DRI	TEH	1.24	C5	0.7
34	45	1.15	MAI	TEH	3.33	RB	0.72
36	45	13.55	DRI	TEH	1.08	C5	0.7
36	45	4.13	MAI	TEH	1.7	RB	0.72
36	45	21.3	DRI	TEH	1.03	C5	0.7
37	45	20.1	DRI	TEH	1.24	C5	0.7
39	45	4.43	MAI	TEH	1.67	RB	0.72
39	45	21.21	DRI	TEH	1.23	C5	0.7
39	45	44.78	DRI	TEH	1.09	C5	0.7
41	45	53.6	DRI	TEH	1.08	C5	0.7
41	45	2.37	MAI	TEH	1.67	RB	0.72
42	45	8.18	DRI	TEH	1.4	C5	0.7
44	45	36.23	DRI	TEH	1.07	C5	0.68
16	46	36.33	DRI	TEH	1.23	C5	0.7
18	46	6.71	DRI	TEH	2.57	C5	0.7
23	46	11.65	DRI	TEH	0.74	C5	0.7
23	46	7.74	DRI	TEH	2.46	C5	0.7
25	46	5.62	DRI	TEH	3.74	C5	0.7
25	46	62.26	DRI	TEH	1.85	C5	0.7
26	46	27.93	DRI	TEH	1.63	C5	0.7
27	46	31.77	DRI	TEH	1.66	C5	0.7
28	46	35.7	DRI	TEH	1.4	C5	0.7
28	46	15.59	DRI	TEH	2.74	C5	0.7
29	46	26.19	DRI	TEH	1.59	C5	0.7
30	46	1.11	25	TSH	0.55	C5	0.7
30	46	24.35	DRI	TEH	1.44	C5	0.7
30	46	5.76	DRI	TEH	2.8	C5	0.7
31	46	35.16	DRI	TEH	1.23	C5	0.7
32	46	16.06	MAI	TEH	1.63	RB	0.72
32	46	0.51	13	TSH	12.16	C5	0.7
32	46	9.35	DRI	TEH	1.06	C5	0.7
33	46	77.23	DRI	TEH	1.73	C5	0.7
33	46	237.8	DRI	TEH	0.86	C5	0.7
33	46	9.99	DRI	TEH	1.27	C5	0.7
33	46	4.11	DRI	TEH	2.79	C5	0.7
34	46	2.02	MAI	TEH	1.16	RB	0.72
34	46	4.66	DRI	TEH	1.33	C5	0.7

35	46	34.88	DRI	TEH	1.13	C5	0.7
35	46	43.62	DRI	TEH	1.91	C5	0.7
37	46	42.27	DRI	TEH	1.31	C5	0.7
38	46	11.47	DRI	TEH	2.49	C5	0.7
38	46	66.32	DRI	TEH	1.29	C5	0.7
39	46	16.68	DRI	TEH	1.3	C5	0.7
39	46	1.59	MAI	TEH	1.49	RB	0.72
40	46	12.12	DRI	TEH	1.36	C5	0.7
42	46	4.92	MAI	TEH	1.74	RB	0.72
42	46	101.6	DRI	TEH	1.33	C5	0.7
43	46	64.55	DRI	TEH	1.25	C5	0.7
44	46	9.95	DRI	TEH	1	C5	0.7
44	46	100.2	DRI	TEH	1.32	C5	0.7
44	46	27.37	DRI	TEH	1.38	C5	0.7
45	46	3.85	DRI	TEH	1.13	C5	0.7
45	46	2.69	MAI	TEH	1.47	RB	0.72
18	47	1.51	5	TSH	2.43	C5	0.7
23	47	12.49	DRI	TEH	1.39	C5	0.7
25	47	1.18	6	TSC	1.49	C5	0.7
25	47	34.42	DRI	TEH	1.19	C5	0.7
26	47	15.61	DRI	TEH	0.96	C5	0.7
27	47	34.12	DRI	TEH	1.13	C5	0.7
28	47	22.95	DRI	TEH	1.13	C5	0.7
29	47	0.2	SAI	TSH	1.28	ZP	0.68
29	47	13.97	DRI	TEH	0.95	C5	0.7
29	47	0.2	47	TSH	1.38	ZP	0.68
29	47	12.33	DRI	TKH	0	C5	0.7
29	47	1.11	51	TSH	0.94	C5	0.7
29	47	107.1	PI	TSH	0.8	C5	0.7
29	47	65.81	DRI	TEH	0.63	C5	0.7
29	47	342.3	DRI	TEH	1.26	C5	0.7
30	47	7.13	DRI	TEH	0.99	C5	0.7
31	47	35.66	DRI	TEH	0.84	C5	0.7
32	47	17.5	DRI	TEH	0.9	C5	0.7
33	47	91.98	DRI	TEH	0.93	C5	0.68
33	47	45.79	DRI	TEH	0.77	C5	0.7
34	47	18.96	DRI	TEH	0.94	C5	0.7
35	47	11.54	DRI	TEH	0.99	C5	0.7
37	47	15.65	DRI	TEH	0.96	C5	0.7
38	47	4.05	MAI	TEH	1.68	RB	0.72
38	47	4.39	DRI	TKH	0	C5	0.7
40	47	141	DRI	TEH	0.97	C5	0.7
41	47	17.92	DRI	TEH	0.93	C5	0.7
42	47	14.38	DRI	TEH	0.98	C5	0.7
43	47	28.58	DRI	TEH	1.13	C5	0.68
43	47	9.64	DRI	TEH	0.9	C5	0.7
44	47	28.26	DRI	TEH	1.11	C5	0.7
44	47	22.54	DRI	TEH	1.17	C5	0.68
10	48	0.46	29	TSC	10.66	C5	0.7
20	48	1.37	19	TSH	1.72	C5	0.7
23	48	32.79	DRI	TEH	0.81	C5	0.7

23	48	6.56	DRI	TEH	2.18	C5	0.7
25	48	24.5	DRI	TEH	2.58	C5	0.7
25	48	6.96	DRI	TEH	1.9	C5	0.7
26	48	36.66	DRI	TEH	1.09	C5	0.7
28	48	13.71	DRI	TEH	0.78	C5	0.7
28	48	9.99	DRI	TEH	2.15	C5	0.7
29	48	40.04	DRI	TEH	0.91	C5	0.7
30	48	9.85	DRI	TEH	0.95	C5	0.7
31	48	14.23	DRI	TEH	0.68	C5	0.7
32	48	10.07	DRI	TEH	2.35	C5	0.7
32	48	19.68	DRI	TEH	1.03	C5	0.7
33	48	4.1	MAI	TEH	1.66	RB	0.72
33	48	21.8	DRI	TKH	0	C5	0.7
34	48	7.08	MAI	TEH	3.86	RB	0.72
34	48	7.34	DRI	TEH	0.69	C5	0.7
34	48	13.45	DRI	TEH	0.99	C5	0.7
35	48	25.18	DRI	TEH	0.72	C5	0.7
35	48	6.19	DRI	TEH	2.3	C5	0.7
36	48	30.19	DRI	TEH	0.96	C5	0.7
37	48	38.92	DRI	TEH	0.99	C5	0.7
40	48	226.5	DRI	TEH	1.12	C5	0.7
40	48	13.06	DRI	TEH	1.08	C5	0.7
40	48	20.28	DRI	TEH	0.75	C5	0.7
40	48	34.97	DRI	TEH	1.01	C5	0.68
41	48	13.61	DRI	TEH	1.07	C5	0.7
41	48	2.86	MAI	TEH	1.51	RB	0.72
42	48	17.05	DRI	TEH	0.99	C5	0.7
42	48	5	MAI	TEH	1.61	RB	0.72
43	48	13.45	DRI	TEH	1.05	C5	0.7
44	48	25.98	DRI	TEH	1.3	C5	0.7
44	48	39.51	DRI	TEH	1.09	C5	0.68
45	48	4.12	DRI	TEH	1.5	C5	0.64
45	48	16.31	DRI	TEH	1.01	C5	0.7
45	48	16.53	DRI	TEH	1.17	C5	0.68
23	49	16	DRI	TEH	0.89	C5	0.7
24	49	27.02	DRI	TEH	1.21	C5	0.7
25	49	49.84	DRI	TEH	1.34	C5	0.7
25	49	4.7	DRI	TEH	2.45	C5	0.7
26	49	24.94	DRI	TEH	1.51	C5	0.7
27	49	28.77	DRI	TEH	0.99	C5	0.7
27	49	4.41	DRI	TEH	2.66	C5	0.7
28	49	33.6	DRI	TEH	1.25	C5	0.7
28	49	5.83	DRI	TEH	3.62	C5	0.7
28	49	8.24	DRI	TEH	2.25	C5	0.7
29	49	8.88	DRI	TEH	2.68	C5	0.7
29	49	18.4	DRI	TEH	1.2	C5	0.7
30	49	12.54	DRI	TEH	1.2	C5	0.7
31	49	25.74	DRI	TEH	1.33	C5	0.7
31	49	9.51	SPI	3H	0.1	C5	0.7
32	49	17.88	DRI	TEH	2.29	C5	0.7
32	49	26.18	DRI	TEH	1.77	C5	0.7

33	49	29.01	DRI	TEH	0.7	C5	0.68
33	49	34.28	DRI	TEH	1.22	C5	0.7
34	49	24.72	DRI	TEH	1.33	C5	0.7
35	49	36.84	DRI	TEH	0.87	C5	0.7
35	49	6.02	DRI	TEH	2.44	C5	0.7
36	49	14.79	DRI	TEH	0.81	C5	0.7
37	49	17.99	DRI	TEH	1.04	C5	0.7
38	49	19.81	DRI	TEH	1.11	C5	0.7
39	49	29.44	DRI	TEH	1.03	C5	0.7
40	49	18.14	DRI	TEH	1.08	C5	0.7
41	49	30.21	DRI	TEH	0.87	C5	0.7
42	49	28.15	DRI	TEH	1.03	C5	0.7
43	49	12.58	DRI	TEH	1.12	C5	0.7
14	50	26.26	DRI	TEH	1.3	C5	0.7
23	50	12.99	DRI	TEH	2.83	C5	0.7
23	50	5.85	DRI	TEH	1.23	C5	0.7
24	50	14.25	DRI	TEH	1.21	C5	0.7
24	50	2.5	SAI	TEH	1.94	RB	0.72
25	50	39.34	DRI	TEH	1.02	C5	0.7
25	50	6.5	DRI	TEH	2.34	C5	0.7
26	50	29.92	DRI	TEH	1.01	C5	0.7
26	50	3.31	35	AV2	0	C5	0.7
27	50	98.51	DRI	TEH	0.95	C5	0.7
28	50	61.99	DRI	TEH	1.14	C5	0.7
29	50	43.48	DRI	TEH	1.08	C5	0.7
29	50	3.95	DRI	TEH	2.93	C5	0.7
30	50	8.07	DRI	TEH	1.22	C5	0.7
31	50	49.87	DRI	TEH	0.97	C5	0.7
32	50	23.8	DRI	TEH	1.19	C5	0.7
32	50	30.53	DRI	TEH	2.76	C5	0.7
33	50	3.5	MAI	TEH	1.54	RB	0.72
33	50	19.96	DRI	TEH	0.93	C5	0.7
33	50	13.45	DRI	TEH	0.89	C5	0.68
34	50	2.96	DRI	TEH	2.72	C5	0.7
34	50	21.51	DRI	TEH	1.24	C5	0.7
34	50	6.05	MAI	TEH	3.85	RB	0.72
35	50	15.47	DRI	TEH	1.18	C5	0.7
35	50	6.15	DRI	TEH	2.65	C5	0.7
37	50	42.44	DRI	TEH	1.03	C5	0.7
38	50	14.08	DRI	TEH	0.93	C5	0.7
39	50	10.46	DRI	TEH	0.99	C5	0.7
40	50	21.3	DRI	TEH	1.11	C5	0.7
41	50	12.37	DRI	TEH	0.93	C5	0.7
42	50	11.31	DRI	TEH	1.01	C5	0.7
43	50	33.18	DRI	TEH	1.08	C5	0.68
43	50	29.7	DRI	TEH	1.01	C5	0.7
44	50	45.82	DRI	TEH	0.85	C5	0.7
44	50	26.3	DRI	TEH	0.99	C5	0.68
45	50	55.72	DRI	TEH	1.1	C5	0.68
45	50	14.8	DRI	TEH	0.87	C5	0.7
14	51	27.67	DRI	TEH	1.16	C5	0.7

15	51	46.96	DRI	TEH	1.27	C5	0.7
23	51	40.81	DRI	TEH	0.89	C5	0.7
24	51	0.82	3	TSC	1.35	C5	0.7
25	51	9.26	DRI	TEH	2.64	C5	0.7
25	51	50.56	DRI	TEH	1.02	C5	0.7
26	51	40.97	DRI	TEH	1.2	C5	0.7
27	51	52.08	DRI	TEH	1.43	C5	0.7
27	51	10.2	DRI	TEH	3.05	C5	0.7
28	51	58.14	DRI	TEH	1.08	C5	0.7
28	51	5.15	DRI	TEH	2.56	C5	0.7
29	51	10.04	DRI	TEH	2.52	C5	0.7
29	51	58.98	DRI	TEH	1.42	C5	0.7
30	51	26.77	DRI	TEH	0.84	C5	0.7
31	51	38.85	DRI	TEH	0.98	C5	0.7
32	51	5.39	DRI	TEH	2.71	C5	0.7
32	51	30.99	DRI	TEH	0.94	C5	0.7
34	51	31.03	DRI	TEH	1.27	C5	0.7
34	51	10.91	DRI	TEH	2.65	C5	0.7
35	51	16.09	DRI	TEH	0.86	C5	0.7
35	51	2.68	DRI	TEH	2.28	C5	0.7
36	51	16.09	DRI	TEH	1.29	C5	0.7
37	51	10.59	DRI	TEH	1.31	C5	0.7
38	51	40.69	DRI	TEH	1.32	C5	0.7
39	51	2.78	DRI	TEH	2.37	C5	0.7
39	51	40.72	DRI	TEH	1.03	C5	0.7
40	51	30.05	DRI	TEH	1.27	C5	0.7
41	51	50.57	DRI	TEH	0.93	C5	0.7
42	51	30.94	DRI	TEH	1.15	C5	0.7
42	51	23.16	DRI	TEH	1	C5	0.68
43	51	24.02	DRI	TEH	1.35	C5	0.68
43	51	9.29	DRI	TEH	1.11	C5	0.7
44	51	29.32	DRI	TEH	0.91	C5	0.7
44	51	18.62	DRI	TEH	0.98	C5	0.68
45	51	15.1	DRI	TEH	1.43	C5	0.7
45	51	19.17	DRI	TEH	1.26	C5	0.68
3	52	7.58	DRI	TEH	0.82	C5	0.68
3	52	10.78	DRI	TEH	1.02	C5	0.64
9	52	2.74	MAI	TEH	1.84	RB	0.72
9	52	22.6	DRI	TEH	0.58	C5	0.7
11	52	14.71	DRI	TEH	1.26	C5	0.7
13	52	3.94	MAI	TEH	1.78	RB	0.72
13	52	49.46	DRI	TEH	0.96	C5	0.7
14	52	51.66	DRI	TEH	0.83	C5	0.7
15	52	44.17	DRI	TEH	0.95	C5	0.7
17	52	28.65	DRI	TEH	0.82	C5	0.7
18	52	3.74	DRI	TEH	2.07	C5	0.7
18	52	0.65	MAI	TEH	1.8	RB	0.72
20	52	6.26	DRI	TEH	1.12	C5	0.7
20	52	3.47	MAI	TEH	1.88	RB	0.72
21	52	32.45	DRI	TEH	1.02	C5	0.7
22	52	41.51	DRI	TEH	1.4	C5	0.7

23	52	17.94	DRI	TEH	0.75	C5	0.7
24	52	21.57	DRI	TEH	1.35	C5	0.7
25	52	40.05	DRI	TEH	1.4	C5	0.7
25	52	31.91	DRI	TEH	2.87	C5	0.7
26	52	13.89	DRI	TEH	1.15	C5	0.7
27	52	61.72	DRI	TEH	0.79	C5	0.7
28	52	27.15	DRI	TEH	1.29	C5	0.7
29	52	6.49	DRI	TEH	2.31	C5	0.7
29	52	48.19	DRI	TEH	0.79	C5	0.7
30	52	51.22	DRI	TEH	0.97	C5	0.7
31	52	6.46	DRI	TEH	2.18	C5	0.7
31	52	12.39	DRI	TEH	1.09	C5	0.7
32	52	15.9	DRI	TEH	1.31	C5	0.7
32	52	28.66	DRI	TEH	2.19	C5	0.7
33	52	17.57	DRI	TEH	2.2	C5	0.68
33	52	32.18	DRI	TEH	1.16	C5	0.68
33	52	18.16	DRI	TEH	0.85	C5	0.7
33	52	10.41	DRI	TEH	2.38	C5	0.7
34	52	28.93	DRI	TEH	0.77	C5	0.7
35	52	3.07	DRI	TEH	2.37	C5	0.7
35	52	39.11	DRI	TEH	1.07	C5	0.7
36	52	17.19	DRI	TEH	0.94	C5	0.7
37	52	49.91	DRI	TEH	1.23	C5	0.7
38	52	22.86	DRI	TEH	0.89	C5	0.7
39	52	23.26	DRI	TEH	0.88	C5	0.7
40	52	9.3	DRI	TEH	1.32	C5	0.7
40	52	11.99	DRI	TEH	1.17	C5	0.68
41	52	18.88	DRI	TEH	1.2	C5	0.7
42	52	14.81	DRI	TEH	1.28	C5	0.7
43	52	19.71	DRI	TEH	1.26	C5	0.7
44	52	64.45	DRI	TEH	1.08	C5	0.68
44	52	0.55	16	TSH	12	C5	0.7
44	52	5.88	DRI	TEH	0.95	C5	0.7
45	52	25.71	DRI	TEH	1.2	C5	0.7
45	52	2.11	DRI	TEH	1.27	C5	0.64
45	52	30.53	DRI	TEH	1.18	C5	0.68
4	53	12.34	DRI	TEH	0.86	C5	0.64
4	53	21.41	DRI	TEH	1.18	C5	0.68
15	53	19.92	DRI	TEH	0.84	C5	0.7
16	53	30.67	DRI	TEH	1.32	C5	0.7
17	53	8.57	DRI	TEH	1.19	C5	0.7
21	53	14.46	DRI	TEH	1.32	C5	0.7
22	53	12.66	DRI	TEH	1.31	C5	0.7
23	53	9.13	DRI	TEH	1.12	C5	0.7
24	53	23.26	DRI	TEH	1.02	C5	0.7
24	53	2.39	DRI	TEH	2.36	C5	0.7
25	53	10.49	DRI	TEH	2.56	C5	0.7
25	53	22.05	DRI	TEH	1.32	C5	0.7
26	53	21.69	DRI	TEH	1.52	C5	0.7
27	53		MAI	TEH	3.5	RB	0.72
27	53	27.26	DRI	TEH	1.25	C5	0.7

28	53	27.06	DRI	TEH	1.37	C5	0.7
28	53	5.1	DRI	TEH	2.23	C5	0.7
29	53	3.14	DRI	TEH	2.77	C5	0.7
29	53	12.24	DRI	TEH	1.34	C5	0.7
30	53	11.36	DRI	TEH	1.07	C5	0.7
30	53	2.53	DRI	TEH	2.6	C5	0.7
31	53	25.35	DRI	TEH	1.28	C5	0.7
32	53	9.81	DRI	TEH	2.36	C5	0.7
32	53	38.59	DRI	TEH	1.38	C5	0.7
33	53	6.49	DRI	TEH	2.25	C5	0.7
33	53	17.48	DRI	TEH	1.24	C5	0.7
34	53	10.25	DRI	TEH	1.15	C5	0.7
35	53	5.96	DRI	TEH	2.32	C5	0.7
36	53	8.13	DRI	TEH	0.59	C5	0.7
37	53	7.06	DRI	TEH	2.36	C5	0.7
37	53	13.14	DRI	TEH	1.38	C5	0.7
38	53	24.56	DRI	TEH	1.42	C5	0.7
41	53	16.65	DRI	TEH	1.06	C5	0.68
41	53	15.62	DRI	TEH	1.03	C5	0.7
42	53	11.68	DRI	TEH	1.27	C5	0.7
43	53	16.33	DRI	TEH	1.38	C5	0.7
45	53	11.23	DRI	TEH	1.24	C5	0.7
45	53	0.88	DRI	TEH	1.31	C5	0.64
45	53	20.15	DRI	TEH	1.18	C5	0.68
12	54	13.83	DRI	TEH	1.09	C5	0.7
13	54	4.84	MAI	TEH	1.71	RB	0.72
13	54	11.37	DRI	TEH	0.93	C5	0.7
14	54	16.84	DRI	TEH	1.19	C5	0.7
15	54	12.26	DRI	TEH	0.74	C5	0.7
15	54	6.08	MAI	TEH	1.7	RB	0.72
16	54	3.21	DRI	TEH	2.43	C5	0.7
16	54	7.28	DRI	TEH	0.99	C5	0.7
17	54	15.63	DRI	TEH	1.1	C5	0.7
19	54	13.75	DRI	TEH	1.29	C5	0.7
20	54	14.35	DRI	TEH	1.4	C5	0.7
21	54	15.85	DRI	TEH	1.28	C5	0.7
22	54	26.84	DRI	TEH	0.97	C5	0.7
23	54	19.41	DRI	TEH	1.07	C5	0.7
24	54	24.32	DRI	TEH	1.3	C5	0.7
24	54	6.47	DRI	TEH	2.77	C5	0.7
25	54	62.93	DRI	TEH	1.4	C5	0.7
25	54	10.6	DRI	TEH	3.12	C5	0.7
26	54	17.53	DRI	TEH	1.22	C5	0.7
27	54	17.83	DRI	TEH	1.16	C5	0.7
27	54	8.37	DRI	TEH	2.59	C5	0.7
28	54	4.09	DRI	TEH	2.65	C5	0.7
28	54	51.03	DRI	TEH	1.09	C5	0.7
29	54	8.58	DRI	TEH	2.65	C5	0.7
29	54	18.81	DRI	TEH	1.19	C5	0.7
30	54	6.5	DRI	TEH	1.09	C5	0.7
31	54	30.41	DRI	TEH	0.97	C5	0.7

31	54	7.2	DRI	TEH	2.53	C5	0.7
33	54	10.67	DRI	TEH	0.89	C5	0.7
34	54	32.7	DRI	TEH	1.1	C5	0.68
34	54	47.01	DRI	TEH	1.54	C5	0.7
35	54	14.62	DRI	TEH	1.23	C5	0.7
35	54	18.31	DRI	TEH	2.7	C5	0.7
37	54	16.18	DRI	TEH	1.12	C5	0.7
37	54	18.69	DRI	TEH	2.42	C5	0.7
38	54	4.42	DRI	TEH	2.43	C5	0.7
38	54	26.8	DRI	TEH	1.34	C5	0.7
39	54	14.79	DRI	TEH	1.56	C5	0.7
40	54	13.55	DRI	TEH	1.5	C5	0.7
43	54	28.81	DRI	TEH	0.93	C5	0.7
43	54	4.25	DRI	TEH	2.45	C5	0.7
44	54	23.96	MAI	TEH	1.44	RB	0.72
44	54	11.11	DRI	TEH	1.15	C5	0.7
4	55	15.13	DRI	TEH	-0.28	C5	0.7
4	55	2.99	MAI	TEH	1.74	RB	0.72
10	55	0.26	SAI	TEH	13.5	ZP	0.68
10	55	0.26	25	TEH	13.5	ZP	0.68
10	55	1.64	PI	TEH	13.38	C5	0.7
13	55	11.64	DRI	TEH	1.01	C5	0.7
15	55	7.51	DRI	TEH	1.06	C5	0.7
16	55	12.32	DRI	TEH	1.29	C5	0.7
17	55	8.69	DRI	TEH	0.99	C5	0.7
17	55	1.87	MAI	TEH	1.76	RB	0.72
21	55	10.97	DRI	TEH	1.3	C5	0.7
22	55	15.72	DRI	TEH	1.23	C5	0.7
23	55	31.1	DRI	TEH	1.18	C5	0.7
24	55	19.83	DRI	TEH	1.32	C5	0.7
25	55	31.44	DRI	TEH	1.28	C5	0.7
25	55	7.91	DRI	TEH	2.63	C5	0.7
26	55	19.2	DRI	TEH	0.91	C5	0.7
26	55	1.49	DRI	TEH	2.99	C5	0.7
27	55	24.25	DRI	TEH	1	C5	0.7
28	55	10.42	DRI	TEH	1.02	C5	0.7
28	55	8.74	DRI	TEH	2.65	C5	0.7
29	55	8	DRI	TEH	2.59	C5	0.7
29	55	39.53	DRI	TEH	1.1	C5	0.7
30	55	20.95	DRI	TEH	1.31	C5	0.7
31	55	4.63	DRI	TEH	2.38	C5	0.7
31	55	16.81	DRI	TEH	1.43	C5	0.7
32	55	47.9	DRI	TEH	1.2	C5	0.7
32	55	7.15	DRI	TEH	2.62	C5	0.7
33	55	4.9	DRI	TEH	2.28	C5	0.7
33	55	29.4	DRI	TEH	1.16	C5	0.7
34	55	4.79	DRI	TEH	0.98	C5	0.7
35	55	16.3	DRI	TEH	1.03	C5	0.7
36	55	13.75	DRI	TEH	1.03	C5	0.7
36	55	2.77	DRI	TEH	2.54	C5	0.7
37	55	10.03	DRI	TEH	2.54	C5	0.7

37	55	36.87	DRI	TEH	1.13	C5	0.7
38	55	21.78	DRI	TEH	1.19	C5	0.7
39	55	16.78	MAI	TEH	1.43	RB	0.72
39	55	16.4	DRI	TEH	1.17	C5	0.7
40	55	26.1	DRI	TEH	0.97	C5	0.7
41	55	25.48	DRI	TEH	1.19	C5	0.7
41	55	5.95	DRI	TEH	2.7	C5	0.7
42	55	10.33	DRI	TEH	1.25	C5	0.7
44	55	15.01	DRI	TEH	1.04	C5	0.64
44	55	19.22	DRI	TEH	1.34	C5	0.64
44	55	34.01	DRI	TEH	0.95	C5	0.68
2	56	10.88	DRI	TEH	1.33	C5	0.68
2	56	7.38	DRI	TEH	0.96	C5	0.64
12	56	12.16	DRI	TEH	1.35	C5	0.7
16	56	24.85	DRI	TEH	1.03	C5	0.7
17	56	15.13	DRI	TEH	1.32	C5	0.7
18	56	22.86	DRI	TEH	0.95	C5	0.7
19	56	2.65	MAI	TEH	1.72	RB	0.72
19	56	9.93	DRI	TEH	1.3	C5	0.7
20	56	0.69	MAI	TEH	1.53	RB	0.72
20	56	11.15	DRI	TEH	1.37	C5	0.7
21	56	3.49	MAI	TEH	1.68	RB	0.72
21	56	28.77	DRI	TEH	1.4	C5	0.7
22	56	30.07	DRI	TEH	1.04	C5	0.7
23	56	28.02	DRI	TEH	1.32	C5	0.7
24	56	21.29	DRI	TEH	1.33	C5	0.7
24	56	1.91	DRI	TEH	2.63	C5	0.7
26	56	16.09	DRI	TEH	1.19	C5	0.7
27	56	15.09	DRI	TEH	2.77	C5	0.7
27	56	24.33	DRI	TEH	1.01	C5	0.7
28	56	6.27	DRI	TEH	2.97	C5	0.7
29	56	14.26	DRI	TEH	1.34	C5	0.7
29	56	10.95	DRI	TEH	2.48	C5	0.7
30	56	41.81	DRI	TEH	1.13	C5	0.7
30	56	3.87	DRI	TEH	2.8	C5	0.7
31	56	32.28	DRI	TEH	1.48	C5	0.7
32	56	8.71	DRI	TEH	1.03	C5	0.7
32	56	3.91	DRI	TEH	2.66	C5	0.7
33	56	3.63	DRI	TEH	2.51	C5	0.7
33	56	10.86	DRI	TEH	1.31	C5	0.7
34	56	24.17	DRI	TEH	1.03	C5	0.7
35	56	15.79	DRI	TEH	1.57	C5	0.7
35	56	25.83	DRI	TEH	2.48	C5	0.7
36	56	9.84	DRI	TEH	1.22	C5	0.7
37	56	28.8	DRI	TEH	1.04	C5	0.7
37	56	9.22	DRI	TEH	2.45	C5	0.7
38	56	23.92	DRI	TEH	1.54	C5	0.7
39	56	7.63	DRI	TEH	1.16	C5	0.7
40	56	25.23	DRI	TEH	1.02	C5	0.7
41	56	4.58	DRI	TEH	2.74	C5	0.7
41	56	20.86	DRI	TEH	1.56	C5	0.7

43	56	10.76	DRI	TEH	0.81	C5	0.68
44	56	16.41	DRI	TEH	1.08	C5	0.64
44	56	28.62	DRI	TEH	1.03	C5	0.68
44	56	28.67	DRI	TEH	1.37	C5	0.64
4	57	21.65	DRI	TEH	1.28	C5	0.7
4	57	4.52	MAI	TEH	1.65	RB	0.72
8	57	16.5	DRI	TEH	0.9	C5	0.7
15	57	4.18	MAI	TEH	1.52	RB	0.72
15	57	27.54	DRI	TEH	0.94	C5	0.7
16	57	1.35	MAI	TEH	0.91	RB	0.72
16	57	12.62	DRI	TEH	0.88	C5	0.7
17	57	10.85	DRI	TEH	1.21	C5	0.7
17	57	3.35	MAI	TEH	1.68	RB	0.72
18	57	5.85	DRI	TEH	1.43	C5	0.7
21	57	12.21	DRI	TEH	1.2	C5	0.7
22	57	0.84	DRI	TEH	2.51	C5	0.7
23	57	1.11	DRI	TEH	2.54	C5	0.7
23	57	3.34	MAI	TEH	1.64	RB	0.72
23	57	1.48	MAI	TEH	2.93	RB	0.72
24	57	17.06	DRI	TEH	1.28	C5	0.7
25	57	31.43	DRI	TEH	1.04	C5	0.7
25	57	0.59	35	TSC	0.83	C5	0.7
25	57	0.77	PIT	TSC	1.17	ZP	0.68
25	57	9.12	DRI	TEH	2.51	C5	0.7
26	57	30.96	DRI	TEH	1.32	C5	0.7
27	57	22.9	DRI	TEH	1.19	C5	0.7
28	57	16.16	DRI	TEH	1.21	C5	0.7
29	57	3.57	DRI	TEH	2.35	C5	0.7
29	57	18.16	DRI	TEH	1.07	C5	0.7
30	57	17.54	DRI	TEH	1.43	C5	0.7
31	57	44.37	DRI	TEH	1.57	C5	0.7
31	57	7.83	DRI	TEH	2.64	C5	0.7
32	57	32.75	DRI	TEH	2.86	C5	0.7
32	57	78.29	DRI	TEH	1.29	C5	0.7
33	57	144.6	DRI	TEH	0.94	C5	0.7
34	57	128.9	DRI	TEH	0.82	C5	0.7
35	57	29.91	DRI	TEH	2.45	C5	0.7
36	57	17.02	DRI	TEH	1.46	C5	0.7
37	57	7.99	DRI	TEH	1.25	C5	0.7
38	57	15.96	DRI	TEH	1.33	C5	0.7
38	57	5.44	DRI	TEH	2.56	C5	0.7
39	57	3.4	DRI	TEH	2.53	C5	0.7
39	57	18.5	DRI	TEH	1.2	C5	0.7
40	57	9.86	DRI	TEH	1.25	C5	0.7
40	57	31.75	DRI	TEH	1.3	C5	0.7
40	57	5.48	DRI	TEH	2.63	C5	0.7
42	57	4.66	DRI	TEH	1.12	C5	0.7
42	57	16.81	MAI	TEH	1.77	RB	0.72
43	57	7.22	DRI	TEH	0.9	C5	0.7
43	57	64.82	SPI	6H	-0.54	C5	0.7
44	57	15.09	DRI	TEH	1.26	C5	0.68

44	57	66.29	DRI	TEH	1.37	C5	0.7
3	58	8.87	DRI	TEH	1.18	C5	0.64
3	58	72.17	DRI	TEH	1.37	C5	0.7
3	58	2.73	MAI	TEH	1.75	RB	0.72
8	58	72.01	DRI	TEH	1.38	C5	0.7
8	58	3.04	MAI	TEH	1.8	RB	0.72
12	58	16.88	DRI	TEH	1.01	C5	0.7
12	58	2.15	MAI	TEH	1.67	RB	0.72
15	58	10.96	DRI	TEH	1.07	C5	0.7
15	58	0.72	MAI	TEH	1.6	RB	0.72
15	58	1.01	MAI	TEH	3.07	RB	0.72
16	58	20.01	DRI	TEH	1.09	C5	0.7
17	58	4.99	MAI	TEH	3.1	RB	0.72
17	58	16.67	DRI	TEH	1.13	C5	0.7
18	58	35.59	DRI	TEH	0.45	C5	0.7
18	58	10.17	DRI	TEH	2.32	C5	0.7
20	58	7.7	DRI	TEH	1.21	C5	0.7
21	58	0.73	18	TSC	1.64	C5	0.7
21	58	41.6	DRI	TEH	0.74	C5	0.7
22	58	16.88	DRI	TEH	1.54	C5	0.7
22	58	0.86	17	TSC	1.77	C5	0.7
23	58	10.85	SPI	4C	0.31	C5	0.7
23	58	36.15	DRI	TEH	0.74	C5	0.7
24	58	50.2	DRI	TEH	1.45	C5	0.7
25	58	7.5	DRI	TEH	2.61	C5	0.7
25	58	17.59	DRI	TEH	1.04	C5	0.7
26	58	36.94	DRI	TEH	0.74	C5	0.7
27	58	18.16	DRI	TEH	1.24	C5	0.7
27	58	4.86	DRI	TEH	2.49	C5	0.7
28	58	4.26	DRI	TEH	2.79	C5	0.7
28	58	24.32	DRI	TEH	1.19	C5	0.7
30	58	11	DRI	TEH	1.38	C5	0.7
31	58	19.8	DRI	TEH	1.23	C5	0.7
32	58	24.43	DRI	TEH	1	C5	0.7
32	58	6.67	DRI	TEH	2.27	C5	0.7
33	58	23.36	DRI	TEH	1.16	C5	0.7
33	58	4.55	DRI	TEH	2.52	C5	0.7
34	58	6.71	DRI	TKH	0	C5	0.7
34	58	9.44	MAI	TEH	1.81	RB	0.72
35	58	2.78	DRI	TEH	2.44	C5	0.7
35	58	8.57	DRI	TEH	1.08	C5	0.7
36	58	16.03	DRI	TEH	1.16	C5	0.7
36	58	3.86	DRI	TEH	2.56	C5	0.7
37	58	14.37	DRI	TEH	1.1	C5	0.7
38	58	5.94	DRI	TEH	2.49	C5	0.7
38	58	12.64	DRI	TEH	1.23	C5	0.7
39	58	9.83	MAI	TEH	1.51	RB	0.72
39	58	10	DRI	TKH	0	C5	0.7
41	58	5.71	MAI	TEH	1.57	RB	0.72
41	58	6.4	DRI	TEH	1.17	C5	0.7
42	58	16.07	MAI	TEH	1.43	RB	0.72

42	58	12.56	DRI	TKH	0	C5	0.7
3	59	19.56	DRI	TEH	1.11	C5	0.7
4	59	1.49	MAI	TEH	1.87	RB	0.72
4	59	23.39	DRI	TEH	1.37	C5	0.7
5	59	1.47	MAI	TEH	1.9	RB	0.72
5	59	10.62	DRI	TEH	1.41	C5	0.7
8	59	35.62	DRI	TEH	0.73	C5	0.7
8	59	5.66	DRI	TEH	2.77	C5	0.7
9	59	0.44	SAI	TEH	8.35	ZP	0.68
9	59	0.25	SAI	TEH	12.23	ZP	0.68
9	59	0.25	6	TEH	12.48	ZP	0.68
9	59	0.23	4	TEH	11.15	ZP	0.68
9	59	0.22	SAI	TEH	10.12	ZP	0.68
9	59	0.44	26	TEH	9.05	ZP	0.68
9	59	2.14	PI	TEH	11.62	C5	0.7
9	59	107.5	PI	TEH	7.57	C5	0.7
10	59	11.31	DRI	TEH	1.14	C5	0.7
13	59	14.34	DRI	TEH	1.32	C5	0.7
14	59	15.48	DRI	TEH	1.35	C5	0.7
15	59	2.06	MAI	TEH	2.97	RB	0.72
15	59	0.8	MAI	TEH	1.26	RB	0.72
15	59	17.8	DRI	TEH	2.34	C5	0.7
16	59	4.45	MAI	TEH	1.6	RB	0.72
16	59	24.3	DRI	TEH	2.31	C5	0.7
17	59	27.08	DRI	TEH	1.29	C5	0.7
18	59	54.21	DRI	TEH	4.44	C5	0.7
18	59	6.09	DRI	TEH	0.8	C5	0.7
22	59	10.6	DRI	TEH	1.19	C5	0.7
23	59	0.78	MAI	TEH	3.51	RB	0.72
23	59	12.51	DRI	TEH	1.02	C5	0.7
23	59	2.35	MAI	TEH	1.05	RB	0.72
23	59	4.84	MAI	TEH	1.43	RB	0.72
24	59	11.55	DRI	TEH	0.96	C5	0.7
24	59	26.74	DRI	TEH	1.63	C5	0.7
26	59	14.53	DRI	TEH	1.33	C5	0.7
26	59	9.29	DRI	TEH	2.46	C5	0.7
27	59	19.82	DRI	TEH	1.53	C5	0.7
28	59	9.61	DRI	TEH	2.76	C5	0.7
29	59	29.4	DRI	TEH	1.28	C5	0.7
30	59	14.6	DRI	TEH	1.25	C5	0.7
31	59	18.98	DRI	TEH	1.36	C5	0.7
32	59	29.32	DRI	TEH	1.22	C5	0.7
32	59	22.8	DRI	TEH	2.61	C5	0.7
33	59	10.43	DRI	TEH	1.15	C5	0.7
33	59	8.17	DRI	TEH	2.14	C5	0.7
34	59	11.49	DRI	TEH	1.21	C5	0.7
35	59	28.81	DRI	TEH	1.26	C5	0.7
37	59	18.4	DRI	TEH	1.24	C5	0.7
39	59	14.54	DRI	TEH	1.3	C5	0.7
41	59	31.3	DRI	TEH	2.68	C5	0.7
42	59	5.28	DRI	TEH	1.19	C5	0.7

2	60	14.85	DRI	TEH	1.22	C5	0.64
2	60	7.77	DRI	TEH	1.33	C5	0.68
3	60	28.86	DRI	TEH	0.95	C5	0.7
5	60	15.24	DRI	TEH	1.52	C5	0.7
8	60	56.61	DRI	TEH	0.92	C5	0.68
8	60	84.49	DRI	TEH	1.45	C5	0.7
8	60	66.82	DRI	TEH	1.28	C5	0.7
13	60	13.1	DRI	TEH	1.2	C5	0.7
14	60	7.36	DRI	TEH	1.51	C5	0.7
14	60	1.8	MAI	TEH	1.56	RB	0.72
15	60	20.22	DRI	TEH	1.2	C5	0.7
16	60	21.45	DRI	TEH	1.15	C5	0.7
16	60	1.22	MAI	TEH	3.58	RB	0.72
17	60	18.43	DRI	TEH	1.13	C5	0.7
18	60	21.72	DRI	TEH	1.16	C5	0.7
19	60	25.33	DRI	TEH	1.34	C5	0.7
20	60	17.38	DRI	TEH	1.15	C5	0.7
20	60	0.59	SAI	TEH	1.65	RB	0.72
21	60	14.6	DRI	TEH	0.87	C5	0.7
22	60	24.27	DRI	TEH	0.91	C5	0.7
23	60	28.37	DRI	TEH	1.01	C5	0.7
24	60	17.65	DRI	TEH	0.84	C5	0.7
25	60	17.06	DRI	TEH	0.97	C5	0.7
27	60	20.44	DRI	TEH	1.15	C5	0.7
28	60	23.99	DRI	TEH	1.13	C5	0.7
28	60	3.69	MAI	TEH	1.25	RB	0.72
28	60	0.94	MAI	TEH	3.35	RB	0.72
29	60	6.15	DRI	TEH	1.2	C5	0.7
31	60	7.87	DRI	TEH	1.22	C5	0.7
31	60	3.17	MAI	TEH	1.87	RB	0.72
32	60	32.03	DRI	TEH	0.93	C5	0.7
32	60	17.77	DRI	TEH	2.66	C5	0.7
34	60	23.99	DRI	TEH	1.2	C5	0.7
40	60	29.9	DRI	TEH	2.62	C5	0.7
40	60	68.07	DRI	TEH	1.11	C5	0.7
41	60	0.34	12	TSH	11.82	C5	0.7
3	61	29.34	DRI	TEH	1.36	C5	0.7
4	61	27.88	DRI	TEH	1.37	C5	0.7
5	61	0.71	MAI	TEH	1.55	RB	0.72
5	61	4.73	DRI	TEH	0.75	C5	0.7
6	61	0.88	MAI	TEH	1.55	RB	0.72
6	61	15.19	DRI	TEH	1.28	C5	0.7
8	61	18.53	DRI	TEH	0.47	C5	0.7
8	61	4.53	MAI	TEH	1.46	RB	0.72
9	61	16.17	DRI	TEH	0.73	C5	0.7
9	61	1.22	MAI	TEH	1.55	RB	0.72
10	61	2.36	MAI	TEH	1.55	RB	0.72
10	61	30.89	DRI	TEH	1.56	C5	0.7
13	61	0.54	MAI	TEH	3.1	RB	0.72
13	61	4.69	MAI	TEH	1.06	RB	0.72
13	61	12.03	DRI	TEH	1.17	C5	0.7

17	61	7.71	DRI	TEH	1.23	C5	0.7
17	61	1.85	MAI	TEH	1.56	RB	0.72
18	61	2.23	MAI	TEH	1.11	RB	0.72
18	61	9.57	DRI	TEH	1.05	C5	0.7
23	61	365.3	DRI	TEH	0.75	C5	0.7
23	61	36.39	DRI	TEH	0.85	C5	0.7
23	61	1.25	MAI	TEH	1.6	RB	0.72
24	61	14.9	DRI	TEH	0.66	C5	0.7
25	61	10.74	DRI	TEH	1.02	C5	0.7
27	61	9.99	DRI	TEH	1.11	C5	0.7
28	61	12.77	DRI	TEH	0.77	C5	0.7
29	61	21.78	DRI	TEH	0.8	C5	0.7
30	61	1.36	MAI	TEH	1.57	RB	0.72
30	61	5.43	DRI	TEH	1.06	C5	0.7
31	61	1.03	MAI	TEH	1.93	RB	0.72
31	61	5.44	DRI	TEH	1.08	C5	0.7
32	61	50.68	DRI	TEH	0.81	C5	0.7
32	61	53.72	DRI	TEH	1.11	C5	0.7
33	61	26.93	DRI	TEH	1.08	C5	0.7
34	61	52.71	DRI	TEH	1.06	C5	0.7
35	61	19.12	DRI	TEH	0.8	C5	0.7
37	61	14.24	DRI	TEH	1.14	C5	0.7
40	61	37.25	DRI	TEH	1.47	C5	0.7
11	62	41.75	DRI	TEH	0.58	C5	0.7
12	62	39.49	DRI	TEH	1.24	C5	0.7
12	62	32.81	DRI	TEH	2.59	C5	0.7
13	62	10.06	DRI	TEH	1.79	C5	0.7
16	62	13.12	DRI	TEH	1.23	C5	0.7
18	62	10.75	DRI	TEH	1.56	C5	0.7
21	62	14.87	DRI	TEH	1.33	C5	0.7
22	62	21.79	DRI	TEH	1.1	C5	0.7
23	62	17.68	DRI	TEH	1.21	C5	0.7
24	62	24.48	DRI	TEH	1.48	C5	0.7
25	62	18.49	DRI	TEH	0.45	C5	0.7
26	62	55.56	DRI	TEH	0.84	C5	0.7
26	62	1.99	MAI	TEH	1.76	RB	0.72
27	62	10.28	DRI	TEH	1.35	C5	0.7
28	62	41.54	DRI	TEH	0.75	C5	0.7
29	62	10.53	DRI	TEH	2.19	C5	0.7
29	62	16.93	DRI	TEH	1.25	C5	0.7
30	62	45.08	DRI	TEH	1.09	C5	0.7
32	62	14.28	DRI	TEH	1.56	C5	0.7
32	62	14.98	DRI	TEH	0.56	C5	0.7
33	62	196.8	DRI	TEH	0.95	C5	0.7
34	62	45.77	DRI	TEH	0.73	C5	0.7
34	62		MAI	TEH	1.8	RB	0.72
36	62	2.07	SAI	TEH	3.25	RB	0.72
36	62	7.91	DRI	TEH	1.99	C5	0.7
37	62	1.02	MAI	TEH	1.66	RB	0.72
37	62	27.44	DRI	TEH	0.57	C5	0.7
40	62	1.72	MAI	TEH	1.84	RB	0.72

40	62	32.55	DRI	TEH	0.49	C5	0.7
42	62	2	MAI	TEH	1.65	RB	0.72
42	62	52.04	DRI	TEH	0.53	C5	0.7
8	63	68.63	DRI	TEH	1.16	C5	0.7
13	63	122.2	DRI	TEH	1.48	C5	0.7
14	63	23.69	DRI	TEH	1.64	C5	0.7
15	63	17.71	DRI	TEH	1.77	C5	0.7
16	63	9.32	DRI	TEH	1.27	C5	0.7
16	63	26.17	DRI	TEH	1.6	C5	0.7
17	63	62.59	DRI	TEH	1.73	C5	0.7
18	63	3.52	DRI	TEH	1.87	C5	0.7
21	63	140	DRI	TEH	1.51	C5	0.7
24	63	27.11	DRI	TEH	1.33	C5	0.7
25	63	16.72	DRI	TEH	1.57	C5	0.7
26	63	11.52	DRI	TEH	1.31	C5	0.68
26	63	9.66	DRI	TEH	1.65	C5	0.7
27	63	21.27	DRI	TEH	1.17	C5	0.7
27	63	10.11	DRI	TEH	1.42	C5	0.7
28	63	2	MAI	TEH	1.73	RB	0.72
28	63	9.01	DRI	TEH	1.22	C5	0.7
29	63	12.69	DRI	TEH	3.12	C5	0.7
30	63	17.7	DRI	TEH	1.54	C5	0.7
31	63	1.09	MAI	TEH	1.79	RB	0.72
31	63	10.2	DRI	TEH	0.82	C5	0.7
32	63	21.57	DRI	TEH	0.99	C5	0.68
32	63	6.78	DRI	TEH	2.71	C5	0.68
33	63	36.75	DRI	TEH	1.67	C5	0.7
34	63	32.21	DRI	TEH	1.63	C5	0.7
37	63	0.98	MAI	TEH	1.66	RB	0.72
37	63	40.91	DRI	TEH	1.67	C5	0.7
40	63	16.48	DRI	TEH	1.68	C5	0.7
40	63	0.76	MAI	TEH	2.98	RB	0.72
23	64	2.02	MAI	TEH	1.77	RB	0.72
23	64	44.59	DRI	TEH	1.6	C5	0.7
24	64	1.38	MAI	TEH	1.16	RB	0.72
24	64	6.5	DRI	TEH	2.35	C5	0.7
29	64	17.58	DRI	TEH	1.29	C5	0.7
33	64	7.6	DRI	TEH	1.72	C5	0.7
33	64	2.05	MAI	TEH	2.31	RB	0.72
16	65	11.81	DRI	TEH	1.64	C5	0.7
16	65	1.68	MAI	TEH	0	RB	0.72
17	65	21.3	DRI	TEH	1.38	C5	0.7
21	65	19.28	DRI	TEH	1.92	C5	0.7
22	65	3.46	DRI	TEH	1.74	C5	0.7
22	65	12.53	DRI	TEH	2.4	C5	0.7
22	65	1.53	DRI	TEH	1.14	C5	0.7
22	65	850.1	DRI	TEH	0.98	C5	0.7
22	65	73.67	DRI	TEH	2.17	C5	0.7
22	65	39.28	DRI	TEH	0.79	C5	0.7
23	65	7.34	DRI	TEH	3.46	C5	0.7
23	65	3.3	DRI	TEH	1.82	C5	0.7

24	65	66.38	DRI	TEH	1.27	C5	0.7
25	65	13.19	DRI	TEH	0.44	C5	0.7
26	65	22.69	DRI	TEH	0.88	C5	0.7
29	65	22.81	DRI	TEH	3.72	C5	0.7
29	65	23.58	DRI	TEH	1.28	C5	0.7
31	65	43.45	DRI	TEH	1.11	C5	0.7
32	65	8.65	DRI	TEH	1.45	C5	0.7
33	65	26.72	DRI	TEH	0.91	C5	0.7
37	65	14.42	DRI	TEH	1.62	C5	0.7
38	65	20.28	DRI	TEH	1.64	C5	0.7
40	65	31.42	DRI	TEH	1.68	C5	0.7
3	66	31.35	DRI	TEH	1.36	C5	0.7
4	66	37.76	DRI	TEH	0.92	C5	0.68
4	66	96.76	DRI	TEH	0.89	C5	0.7
7	66	35.35	DRI	TEH	1.16	C5	0.7
7	66	0.84	SAI	TEH	1.9	RB	0.72
8	66	17.3	DRI	TEH	0.74	C5	0.7
8	66	35.78	DRI	TEH	1.01	C5	0.7
12	66	43.4	DRI	TEH	1.64	C5	0.7
14	66	0.74	SAI	TEH	0.96	RB	0.72
14	66	11.43	DRI	TEH	0.89	C5	0.7
16	66	155.6	DRI	TEH	1.37	C5	0.7
18	66	37.18	DRI	TEH	2.67	C5	0.7
22	66	2.62	SAI	TEH	1.33	RB	0.72
22	66	36.21	DRI	TEH	0.76	C5	0.7
23	66	5.83	SAI	TEH	1.5	RB	0.72
23	66	82.52	DRI	TEH	0.84	C5	0.7
24	66	58.2	DRI	TEH	1.4	C5	0.7
25	66	4.82	DRI	TEH	2.96	C5	0.7
25	66	13.06	DRI	TEH	1.46	C5	0.7
25	66	4.82	DRI	TEH	4.27	C5	0.7
25	66	24.82	DRI	TEH	3.02	C5	0.7
29	66	26.54	DRI	TEH	1.47	C5	0.7
32	66	32.52	DRI	TEH	1.56	C5	0.7
32	66	0.22	MAI	TEH	1.87	RB	0.72
33	66	61.48	DRI	TEH	1.37	C5	0.7
37	66	42.84	DRI	TEH	1.62	C5	0.7
37	66	1.16	SAI	TEH	1.81	RB	0.72
38	66	27.92	DRI	TEH	1.65	C5	0.7
38	66	2.86	MAI	TEH	0.2	RB	0.72
38	66	0.58	MAI	TEH	2.98	RB	0.72
16	67	42.61	DRI	TEH	0.72	C5	0.7
18	67	13.93	DRI	TEH	2.54	C5	0.7
23	67	28.17	DRI	TEH	1.28	C5	0.7
23	67	55.79	DRI	TEH	2.42	C5	0.7
24	67	106.1	DRI	TEH	1.04	C5	0.7
25	67	3.17	DRI	TEH	2.04	C5	0.7
25	67	7.53	DRI	TEH	1.47	C5	0.7
29	67	2.02	DRI	TEH	2.47	C5	0.7
29	67	10.6	DRI	TEH	1.45	C5	0.7
29	67	11.17	DRI	TEH	3.79	C5	0.7

31	67	29.89	DRI	TEH	1.01	C5	0.7
31	67	1.89	SAI	TEH	1.95	RB	0.72
32	67	66.44	DRI	TEH	1.17	C5	0.7
32	67	31.63	DRI	TEH	2.45	C5	0.7
23	68	10.63	DRI	TEH	1.41	C5	0.7
23	68	21.94	DRI	TEH	2.61	C5	0.7
24	68	23.35	DRI	TEH	1.3	C5	0.7
26	68	1.7	MAI	TEH	1.81	RB	0.72
26	68	12.52	DRI	TEH	0.93	C5	0.68
28	68	3.6	DRI	TEH	2.71	C5	0.7
29	68	73.16	DRI	TEH	1.47	C5	0.7
29	68	9.19	DRI	TEH	2.83	C5	0.7
31	68	18.34	DRI	TEH	0.95	C5	0.7
32	68	11.83	DRI	TEH	1.01	C5	0.7
8	69	24.52	DRI	TEH	0.87	C5	0.7
8	69	1.03	SAI	TEH	1.71	RB	0.72
19	69	7.43	DRI	TEH	1.5	C5	0.7
19	69	2.19	MAI	TEH	1.65	RB	0.72
20	69	3.47	DRI	TEH	1.44	C5	0.7
23	69	7.77	DRI	TEH	1.67	C5	0.7
24	69	15.68	DRI	TEH	1.32	C5	0.7
25	69	7.01	DRI	TEH	1.62	C5	0.7
26	69	28.7	DRI	TEH	1.62	C5	0.7
27	69	2.1	MAI	TEH	0.24	RB	0.72
27	69	1.38	SAI	TEH	2.97	RB	0.72
27	69	4.09	DRI	TEH	2.21	C5	0.7
28	69	1.01	MAI	TEH	0.27	RB	0.72
28	69	0.42	MAI	TEH	3.02	RB	0.72
28	69	6.61	DRI	TEH	1.13	C5	0.7
29	69	9.82	DRI	TEH	1.15	C5	0.7
29	69	9.99	DRI	TEH	2.44	C5	0.7
30	69	16.9	DRI	TEH	1.07	C5	0.7
32	69	17.46	DRI	TEH	1.56	C5	0.7
3	70	3.12	MAI	TEH	1.56	RB	0.72
3	70	12.28	DRI	TEH	1.46	C5	0.7
7	70	39.32	DRI	TEH	1.21	C5	0.7
7	70	3.18	MAI	TEH	2.5	RB	0.72
19	70	14.61	DRI	TEH	1.44	C5	0.7
19	70	2	SAI	TEH	1.63	RB	0.72
20	70	4.4	DRI	TEH	1.14	C5	0.7
20	70	2.56	DRI	TEH	2.37	C5	0.7
20	70	1.1	MAI	TEH	3.18	RB	0.72
20	70	1.54	MAI	TEH	1.61	RB	0.72
22	70	141.3	DRI	TEH	0.89	C5	0.7
22	70	10.18	DRI	TEH	1.15	C5	0.7
23	70	1.68	MAI	TEH	0.15	RB	0.72
23	70	6.69	DRI	TEH	1.54	C5	0.7
24	70	9.91	DRI	TEH	1.21	C5	0.7
25	70	6.09	DRI	TEH	2.87	C5	0.7
29	70	9.02	DRI	TEH	1.22	C5	0.7
30	70	17.61	DRI	TEH	1.5	C5	0.7

30	70	1.16	MAI	TEH	1.89	RB	0.72
17	71	4.35	DRI	TEH	2.86	C5	0.7
22	71	3.53	SAI	TEH	1.53	RB	0.72
22	71	8.94	DRI	TEH	1.46	C5	0.7
24	71	10.9	DRI	TEH	1.14	C5	0.7
25	71	3.9	MAI	TEH	0.24	RB	0.72
25	71	1.62	MAI	TEH	1.69	RB	0.72
25	71	10.57	DRI	TEH	1.5	C5	0.7
26	71	10.7	DRI	TEH	1.45	C5	0.7
26	71	2.35	MAI	TEH	1.72	RB	0.72
29	71	13.79	DRI	TEH	1.41	C5	0.7
30	71	8.27	DRI	TEH	1.41	C5	0.7
31	71	15.2	DRI	TEH	1.47	C5	0.7
34	71	18.06	DRI	TEH	1.43	C5	0.7
34	71	4.67	SAI	TEH	1.79	RB	0.72
4	72	18.53	DRI	TEH	1.37	C5	0.7
10	72	2.47	1	TSC	1.28	C5	0.7
10	72	1.01	PIT	TSC	1.12	ZP	0.68
17	72	1	SAI	TEH	2.73	RB	0.72
17	72	14.84	DRI	TEH	1.38	C5	0.7
19	72	17.93	DRI	TEH	1.04	C5	0.7
20	72	1.04	SAI	TEH	3.29	RB	0.72
20	72	3.7	MAI	TEH	1.68	RB	0.72
20	72	16.06	DRI	TEH	1.48	C5	0.7
23	72	3.3	DRI	TEH	1.11	C5	0.7
23	72	10.57	DRI	TEH	1.36	C5	0.7
23	72	2.18	DRI	TEH	2.54	C5	0.7
24	72	6.08	DRI	TEH	1.21	C5	0.7
28	72	10.39	DRI	TEH	1.53	C5	0.7
28	72	1.37	SAI	TEH	1.91	RB	0.72
29	72	6.41	DRI	TEH	2.55	C5	0.7
29	72	15.81	DRI	TEH	1.29	C5	0.7
30	72	21.34	SPI	1H	-0.08	C5	0.7
31	72	8.92	DRI	TEH	1.28	C5	0.7
31	72	2.11	MAI	TEH	1.98	RB	0.72
32	72	2.06	SAI	TEH	3.33	RB	0.72
32	72	1.2	SAI	TEH	1.82	RB	0.72
32	72	6.98	DRI	TEH	1.32	C5	0.7
17	73	23.3	DRI	TEH	1.24	C5	0.7
18	73	0.39	MAI	TEH	1.4	RB	0.72
18	73	4.51	DRI	TEH	1.25	C5	0.7
20	73	9.06	DRI	TEH	1.19	C5	0.7
20	73	8.63	SAI	TEH	1.52	RB	0.72
21	73	16.7	DRI	TEH	1.23	C5	0.7
23	73	24.62	DRI	TEH	0.88	C5	0.7
25	73	4.79	DRI	TEH	0.92	C5	0.7
27	73	3.35	DRI	TEH	2.42	C5	0.7
27	73	14.26	DRI	TEH	1.31	C5	0.7
28	73	4.19	DRI	TEH	1.36	C5	0.7
29	73	1.76	DRI	TEH	2.41	C5	0.7
29	73	9.21	DRI	TEH	1.1	C5	0.7

30	73	10.92	DRI	TEH	1.38	C5	0.7
31	73	3.47	DRI	TEH	1.22	C5	0.7
32	73	4.99	MAI	TEH	1.62	RB	0.72
32	73	12.35	DRI	TEH	1.4	C5	0.7
17	74	15.39	DRI	TEH	1.33	C5	0.7
20	74	13.56	DRI	TEH	1.17	C5	0.7
22	74	12.97	DRI	TEH	1.18	C5	0.7
23	74	11.12	DRI	TEH	1.36	C5	0.7
24	74	15.73	DRI	TEH	1.42	C5	0.7
27	74	7.68	DRI	TEH	1.19	C5	0.7
27	74	1.3	MAI	TEH	1.81	RB	0.72
29	74	5.61	DRI	TEH	2.53	C5	0.7
29	74	17.15	DRI	TEH	1.46	C5	0.7
30	74	17.19	DRI	TEH	1.21	C5	0.7
14	75	7.33	DRI	TEH	1.01	C5	0.7
24	75	12.53	DRI	TEH	1.25	C5	0.7
25	75	2.16	DRI	TEH	2.84	C5	0.7
25	75	15.11	DRI	TEH	1.33	C5	0.7
12	76	6.91	DRI	TEH	1.09	C5	0.7
17	76	16.54	DRI	TEH	1.22	C5	0.7
20	76	14	DRI	TEH	1.09	C5	0.7
24	76	11.12	DRI	TEH	0.7	C5	0.7
18	77	15.75	DRI	TEH	0.82	C5	0.7
18	77	1.14	SAI	TEH	0.9	RB	0.72
20	77	22.17	DRI	TEH	1.14	C5	0.7
22	77	13.04	DRI	TEH	1.07	C5	0.7
23	77	20.61	DRI	TEH	0.96	C5	0.7
24	77	14.5	DRI	TEH	1.19	C5	0.7
25	77	22.19	DRI	TEH	1.09	C5	0.7
28	77	16.59	DRI	TEH	0.63	C5	0.7
29	77	14.18	DRI	TEH	1.24	C5	0.7
16	78	19.1	DRI	TEH	1.11	C5	0.7
18	78	16.26	DRI	TEH	1.15	C5	0.7
20	78	7.77	DRI	TEH	1.07	C5	0.7
20	78	1.42	MAI	TEH	1.2	RB	0.72
24	78	6.42	DRI	TEH	1.11	C5	0.7
25	78	8.96	DRI	TEH	0.87	C5	0.7
30	79	7.36	DRI	TEH	1.01	C5	0.7
19	80	43.1	DRI	TEH	1.29	C5	0.7
20	80	0.56	MAI	TEH	1.2	RB	0.72
20	80	5.1	DRI	TEH	1.33	C5	0.7
21	80	10.59	DRI	TEH	0.63	C5	0.7
14	81	10.92	DRI	TEH	1.24	C5	0.7
18	81	17.55	DRI	TEH	2.58	C5	0.7
18	81	2.71	MAI	TEH	1.03	RB	0.72
10	82	32.55	DRI	TEH	1.2	C5	0.7
13	82	2.27	DRI	TEH	1.28	C5	0.7
14	82	23.52	DRI	TEH	1.56	C5	0.7
16	82	52.34	DRI	TEH	1.22	C5	0.7
18	82	25.32	DRI	TEH	1.41	C5	0.7
23	82	12.45	DRI	TEH	1.21	C5	0.7

23	82	3.67	SAI	TEH	1.68	RB	0.72
10	83	41	DRI	TEH	1.22	C5	0.7
17	83	8.02	DRI	TEH	1.12	C5	0.7
17	83	0.92	SAI	TEH	1.34	RB	0.72
18	83	11.21	DRI	TEH	0.94	C5	0.7
21	83	21.58	DRI	TEH	1.28	C5	0.7
22	83	37.51	DRI	TEH	1.21	C5	0.7
22	83	0.57	MAI	TEH	1.85	RB	0.72
23	83	10.33	DRI	TEH	1.16	C5	0.7
24	83	4.44	DRI	TEH	1.24	C5	0.7
24	83	0.88	SAI	TEH	1.97	RB	0.72
14	84	10.21	DRI	TEH	1.14	C5	0.7
16	84	15.33	DRI	TEH	1.17	C5	0.7
17	84	16.27	DRI	TEH	1.24	C5	0.7
18	84	4.66	DRI	TEH	0.92	C5	0.7
21	84	12.7	DRI	TEH	0.9	C5	0.7
22	84	5.91	DRI	TEH	0.92	C5	0.7
23	84	1.35	DRI	TEH	1.22	C5	0.7
23	84	0.8	DRI	TEH	2.48	C5	0.7
2	85	8.58	DRI	TEH	2.02	C5	0.64
2	85	1.82	MAI	TEH	2.03	RB	0.72
2	85	2.66	MAI	TEH	0.36	RB	0.72
11	85	18.09	DRI	TEH	1.04	C5	0.7
14	85	9.74	DRI	TEH	1.24	C5	0.7
6	88	11.61	DRI	TEH	1.4	C5	0.7

TABLE 10, Steam Generator 23 Tubes Plugged 1997

Row	Column	Location	Comments*
3	2	Support plate study	Admin/Plug
3	3	Support plate study	Admin/Plug
3	4	Support plate study	Admin/Plug
3	5	Support plate study	Admin/Plug
3	6	Support plate study	Admin/Plug
3	7	Support plate study	Admin/Plug
3	8	Support plate study	Admin/Plug
3	9	Support plate study	Admin/Plug
3	10	Support plate study	Admin/Plug
3	11	Support plate study	Admin/Plug
28	11	Within TSP 6C	SAI
3	12	Support plate study	Admin/Plug
3	13	Support plate study	Admin/Plug
3	14	Support plate study	Admin/Plug
33	15	0.87 inch above TSH	Cecco TSI (VOL)
33	16	0.02 inch below TSH	Cecco TSI (VOL)
35	19	0.56 inch above TSH	Cecco PI/49%
36	21	0.63 inch above TSH	Cecco TSI (PIT)
12	23	Within TSP 1C	Cecco SPI
26	27	0.71 inch above TEC	Roll transition indic.
2	29	Support plate study	Admin/Plug
2	30	Support plate study	Admin/Plug
3	31	U-bend RST	610 bobbin restricted
2	33	Support plate study	Admin/Plug
40	33	Top of TSH	Cecco TSI (VOL)
7	35	0.45 inch below TSC	Cecco PI (PIT)
44	36	610 +Point BDA @ 3C	Admin/Plug
44	37	610 +Point BDA @ 3C, 5C	Admin/Plug
31	38	0.44 inch above TSH	Cecco TSI (PIT)
44	40	Within TSP 3H	Cecco SPI
2	43	Support plate study	Admin/Plug
21	43	0.90 inch above TSH	Cecco 35 (VOL)
29	47	0.80 inch above TSH	Cecco PI/51% (SAI)
2	49	U-bend RST	610 bobbin restricted
31	49	Within TSP 3H	Cecco SPI
44	54	Transition roll region	Adj. PAP obstruction
10	55	13.38 inches above TEH	Cecco PI (SAI)
43	57	Within TSP 6H	Cecco SPI
23	58	Within TSP 4C	Cecco SPI
9	59	11.62 inches above TEH	Cecco PI (SAI)
40	59	610 +Point RST @ 2C	Admin/Plug
2	60	Support plate study	Admin/Plug
38	71	610 +Point RST @ 6C	Admin/Plug
30	72	Within TSP 1H	Cecco SPI
4	81	610 +Point BDA @ 4C	Admin/Plug

Note: * Notation in parenthesis indicates a characterization by +Point

Table 11, Steam Generator 23, Indications 2000

row	col	volts	defect	%	location	offset	probe	size
4	1	34.59	DRI		TEH	1.32	CCAGC	0.7
4	1	98.67	DRI		TEH	1.32	CCAGC	0.7
5	1	11.09	DRI		TEH	1.1	CCAGC	0.68
5	1	30.81	DRI		TEH	1.32	CCAGC	0.7
7	1	2.93	SAI		TEH	1.33	ZMAGR	0.72
7	1	34.43	DRI		TEH	1.16	CCAGC	0.68
7	1	12.85	DRI		TEH	1.38	CCAGC	0.7
4	2	28.53	DRI		TEH	1.39	CCAGC	0.7
4	2	49.7	DRI		TEH	1.27	MBALL	0.7
4	2	61.24	DRI		TEH	1.29	CCAGC	0.7
5	2	31.2	DRI		TEH	1.12	CCAGC	0.68
5	2	28.74	DRI		TEH	1.33	CCAGC	0.7
6	2	0.59	MAI		TEH	1.35	ZMAGR	0.72
6	2	13.85	DRI		TEH	1.3	CCAGC	0.68
6	2	12.67	DRI		TEH	1.33	CCAGC	0.7
8	2	0.63	SAI		TEH	1.39	ZMAGR	0.72
8	2	24.86	DRI		TEH	1.22	CCAGC	0.68
8	2	15.74	DRI		TEH	1.49	CCAGC	0.7
4	3	1.77	DRI		TEH	1.84	CCAGC	0.7
4	3	42.5	DRI		TEH	1.33	CCAGC	0.7
4	3	35.88	DRI		TEH	1.28	MBALL	0.7
5	3	8.47	DRI		TEH	1.36	CCAGC	0.7
5	3	15.78	DRI		TEH	1.28	CCAGC	0.68
6	3	24.08	DRI		TEH	1.27	CCAGC	0.68
6	3	10.99	DRI		TEH	1.45	CCAGC	0.7
7	3	27.09	DRI		TEH	1.16	CCAGC	0.68
7	3	17.09	DRI		TEH	1.34	CCAGC	0.7
8	3	3.81	DRI		TEH	1.36	CCAGC	0.7
13	3	29.81	SPI		1C	0	CCAGC	0.7
4	4	21.58	DRI		TEH	1.41	CCAGC	0.7
5	4	32.6	DRI		TEH	1.33	CCAGC	0.68
5	4	23.76	DRI		TEH	1.31	CCAGC	0.7
7	4	18.31	DRI		TEH	1.24	CCAGC	0.68
7	4	18.15	DRI		TEH	1.42	CCAGC	0.7
8	4	9.12	DRI		TEH	1.24	CCAGC	0.7
9	4	1.94	MAI		TEH	1.39	ZMAGR	0.72
9	4	30.63	DRI		TEH	1.34	CCAGC	0.68
9	4	29.47	DRI		TEH	1.44	CCAGC	0.7
4	5	37.01	DRI		TEH	1.26	CCAGC	0.7
5	5	31.21	DRI		TEH	1.16	CCAGC	0.68
5	5	20.95	DRI		TEH	1.45	CCAGC	0.7
7	5	15.95	DRI		TEH	1.31	CCAGC	0.68
7	5	9.48	DRI		TEH	1.38	CCAGC	0.7
9	5	19.57	DRI		TEH	1.36	CCAGC	0.68
9	5	39.27	DRI		TEH	1.39	CCAGC	0.7
4	6	20.09	DRI		TEH	1.07	CCAGC	0.7
5	6	25.2	DRI		TEH	1.05	CCAGC	0.68
5	6	19.48	DRI		TEH	0.95	CCAGC	0.7

6	6	13.25	DRI		TEH	1.04	CCAGC	0.7
6	6	5.7	DRI		TEH	1.3	CCAGC	0.68
21	6	21.7	DRI		TEH	1.26	CCAGC	0.7
21	6	1.59	SAI		TEH	1.25	ZMAGR	0.72
21	6	11.45	DRI		TEH	1.25	CCAGC	0.68
4	7	26.21	DRI		TEH	1.17	CCAGC	0.68
4	7	44.62	DRI		TEH	1.3	CCAGC	0.7
5	7	15.69	DRI		TEH	1.12	CCAGC	0.68
5	7	16.59	DRI		TEH	1.2	CCAGC	0.7
7	7	15.69	DRI		TEH	1.29	CCAGC	0.68
7	7	18.13	DRI		TEH	1.32	CCAGC	0.7
18	7	329.7	SPI		2C	0.06	CCAGC	0.7
22	7	27.1	SPI		1C	0.1	CCAGC	0.7
22	8	131.1	SPI		3C	0.04	CCAGC	0.7
24	8	40.72	SPI		3C	0.12	CCAGC	0.7
4	9	1.58	SAI		TEH	1.33	ZMAGR	0.72
18	9	14.32	SPI		5C	0.2	CCAGC	0.7
21	9	2.73	MAI		TEH	1.36	ZMAGR	0.72
21	9	23.45	DRI		TEH	1.46	CCAGC	0.7
19	10	24.68	DRI		TEH	1.97	CCAGC	0.7
19	10	1.26	SAI		TEH	1.28	ZMAGR	0.72
19	10	26.93	DRI		TEH	1.34	MBALL	0.7
5	11	8.89	DRI		TEH	1.37	CCAGC	0.7
5	11	0.96	SAI		TEH	1.37	ZMAGR	0.72
5	11	9.36	DRI		TEH	1.2	CCAGC	0.68
11	11	0.82	SAI		TEH	1.41	ZPANM	0.72
16	11	0.97	SAI		TEH	1.42	ZPANM	0.72
4	12	18.91	DRI		TEH	1.39	CCAGC	0.68
4	12	22.42	DRI		TEH	1.39	CCAGC	0.7
4	13	0.62	SCI		TEH	1.23	ZPAMC	0.7
4	14	3.67	MAI		TEH	1.39	ZPANM	0.72
5	15	1.33	SAI		TEH	1.47	ZPANM	0.72
31	15	0.22	PIT		TSH	0.54	ZPANM	0.72
31	15	0.48	PCT	20	TSH	0.68	MBALL	0.7
31	15	0.21	VOL		TSH	0.47	ZPANM	0.68
34	16	20.99	TSI		TSH	0.35	CCAGC	0.7
4	18	3.7	SAI		TEH	0.09	ZPANM	0.72
4	18	46.65	DRI		TEH	1.34	CCAGC	0.68
4	18	20.11	DRI		TEH	1.35	CCAGC	0.7
2	19	7.12	MAI		TEH	0.17	ZPANM	0.72
3	19	41.47	DRI		TEH	1.55	CCAGC	0.68
3	19	31.98	DRI		TEH	1.55	CCAGC	0.7
24	19	231.2	SPI		2C	0.02	CCAGC	0.7
2	20	3.79	MAI		TEH	0.22	ZPANM	0.72
3	20	10.96	DRI		TEH	1.28	CCAGC	0.7
4	20	27.94	DRI		TEH	1.6	CCAGC	0.7
14	20	0.23	PIT		TSH	0.39	ZPANM	0.72
30	20	37.64	SPI		3C	-0.16	CCAGC	0.7
2	21	12.58	DRI		TEH	1.67	CCAGC	0.7
3	21	1.21	MAI		TEH	1.25	ZMAGR	0.72
3	21	17.9	DRI		TEH	0.91	CCAGC	0.68

3	21	12.51	DRI		TEH	1.44	CCAGC	0.7
4	21	10.69	DRI		TEH	1.24	MBALL	0.7
4	21	16.4	DRI		TEH	1.08	CCAGC	0.7
4	21	9.19	DRI		TEH	1.13	CCAGC	0.7
2	22	2.3	MAI		TEH	0.19	ZPANM	0.72
3	22	3.25	MAI		TEH	0.31	ZPANM	0.72
3	22	5.86	DRI		TEH	1.28	MBALL	0.7
3	22	0.68	DRI		TEH	1.42	CCAGC	0.64
3	22	7.69	DRI		TEH	1.57	CCAGC	0.64
3	22	7.47	DRI		TEH	1	CCAGC	0.64
3	22	13.42	DRI		TEH	1.21	CCAGC	0.64
4	22	21.88	DRI		TEH	1.09	CCAGC	0.64
4	22	4.01	DRI		TEH	1.78	CCAGC	0.7
4	22	29.11	DRI		TEH	1.16	CCAGC	0.7
4	22	12.83	DRI		TEH	1.11	CCAGC	0.7
4	22	8.52	DRI		TEH	1.72	CCAGC	0.68
4	22	15.67	DRI		TEH	1.21	CCAGC	0.68
4	22	8.61	DRI		TEH	1.78	CCAGC	0.64
4	22	46.68	DRI		TEH	1.11	CCAGC	0.68
2	23	1.02	MAI		TEH	0.22	ZPANM	0.72
2	24	3.42	MAI		TEH	0.16	ZPANM	0.72
3	24	4.32	SAI		TEH	0.16	ZPANM	0.72
12	24	0.55	PIT		TSH	0.48	ZPANM	0.68
2	25	3.17	MAI		TEH	0.15	ZPANM	0.72
3	26	0.43	SAI		TEH	0.01	ZPACC	0.72
5	26	1.3	SAI		TEH	0.11	ZPACC	0.72
8	26	2.04	MAI		TEH	0.05	ZPACC	0.72
8	26	1.97	MAI		TEH	0.22	ZPACC	0.72
16	26	0.21	PIT		TSH	1.98	ZPACC	0.72
2	27	8.33	MAI		TEH	0.26	ZPACC	0.72
2	27	1.85	MAI		TEH	2.61	ZPACC	0.72
13	27	0.22	PIT		TSH	32.83	ZPACC	0.72
17	27	0.49	MCI		TEC	1.22	ZPANM	0.72
20	27	0.38	PIT	3	TSH	2.33	ZPANM	0.68
20	27	0.73	PCT	24	TSH	2.26	MBALL	0.7
29	27	1	MAI		TEC	2.05	ZMAGR	0.72
29	27	29.27	DRI		TEC	1.38	MBALL	0.7
29	27	32.19	DRI		TEC	0.97	CCAGC	0.7
2	28	7.41	MAI		TEH	0.12	ZPACC	0.72
2	28	1.37	SAI		TEH	2.59	ZPACC	0.72
3	28	1.65	MAI		TEH	0.22	ZPACC	0.72
5	28	0.94	SAI		TEH	0.17	ZPACC	0.72
7	28	1.6	PIT		TSC	0.85	ZPANM	0.72
7	28	0.45	PCT	0	TSC	0.7	MBALL	0.7
21	28	0.33	PIT		TSH	1.88	ZPACC	0.72
21	28	0.24	PIT	29	TSH	2.05	ZPANM	0.68
21	28	0.49	PCT	14	TSH	2.22	MBALL	0.7
4	29	4.53	SAI		TEH	0.17	ZPANM	0.72
23	29	0.11	PIT	41	TSH	0.93	ZPANM	0.68
23	29	1.07	PCT	5	TSH	0.98	CCAGC	0.7
24	29	16.51	PI		TSH	0.64	CCAGC	0.7

24	29	4.47	PI		TSH	0.89	CCAGC	0.7
24	29	0.13	PIT	48	TSH	0.9	ZPANM	0.68
24	29	0.25	PIT	24	TSH	0.69	ZPANM	0.68
25	29	0.25	PIT	28	TSH	1.21	ZPANM	0.68
25	29	0.49	PCT	25	TSH	0.88	MBALL	0.7
25	29	0.73	PCT	37	TSH	1.21	MBALL	0.7
25	29	0.21	PIT	16	TSH	0.98	ZPANM	0.68
5	31	3.08	SAI		TEH	0.22	ZPANM	0.72
16	31	0.67	MAI		TEC	1.18	ZPANM	0.72
24	31	0.14	PIT	39	TSH	1.4	ZPANM	0.68
24	31	0.86	PCT	9	TSH	1.5	MBALL	0.7
25	31	0.6	MAI		TEC	1.27	ZPANM	0.72
40	31	0.31	PIT		TSH	14.3	ZPACC	0.72
41	31	6.79	MCI		TEH	0.04	ZPACC	0.72
12	32	0.23	PIT		TSH	1.38	ZPAMR	0.72
25	32	0.3	PIT		TSH	1.09	ZPAMR	0.72
25	32	0.34	PIT	26	TSH	1.07	ZPANM	0.68
25	32	52.49	PI		TSH	0.87	CCAGC	0.7
28	32	1	SAI		TEH	2.93	ZPAMR	0.72
28	32	0.82	MAI		TEC	1.81	ZMAGR	0.72
28	32	14.45	DRI		TEC	1.38	CCAGC	0.7
36	32	0.66	SAI		TEH	3.07	ZPACC	0.72
4	33	2.45	MAI		TEH	0.29	ZPACC	0.72
25	33	1.86	SAI		TEH	2.84	ZPANM	0.72
25	33	1.2	SAI		TEH	3.14	ZPANM	0.7
27	33	0.7	VOL		6H	4.73	ZPUHF	0.62
27	33	1.2	NQI		6H	4.84	MBALL	0.7
31	33	0.87	SAI		TEH	0.3	ZPACC	0.72
31	33	4.43	SAI		TEH	2.89	ZPACC	0.72
41	33	4.86	SCI		TEH	0.12	ZPANM	0.72
2	34	5.96	MAI		TEH	0.2	ZPACC	0.72
3	34	2.18	MAI		TEH	0.37	ZPACC	0.72
4	34	0.85	SAI		TEH	0.4	ZPACC	0.72
5	34	1.35	SAI		TEH	0.2	ZPACC	0.72
20	34	0.54	PIT		TSC	0.7	ZPANM	0.72
20	34	0.41	PIT		TSC	0.64	ZPANM	0.72
25	34	24.2	DRI		TEH	2.62	CCAGC	0.7
28	34	1.12	MAI		TEH	3.11	ZPANM	0.7
32	34	1.24	SAI		TEH	0.15	ZPACC	0.72
32	34	1.01	SAI		TEH	3.31	ZPACC	0.72
33	34	0.86	MAI		TEH	3.02	ZPACC	0.72
34	34	0.71	SAI		TEH	0.23	ZPACC	0.72
2	35	1.52	MAI		TEH	0.28	ZPACC	0.72
3	35	3.61	MAI		TEH	0.27	ZPACC	0.72
8	35	1.31	SAI		TEH	0.32	ZPACC	0.72
25	35	1.6	MAI		TEH	3.09	ZPANM	0.72
25	35	0.96	MAI		TEH	3.06	ZPANM	0.72
25	35	0.64	MAI		TEH	3.88	ZPANM	0.7
28	35	2.31	MAI		TEH	3.01	ZPANM	0.72
28	35	1.07	MAI		TEH	3.25	ZPANM	0.7
28	35	0.83	MAI		TEH	3.72	ZPANM	0.7

32	35	0.41	MAI		TEH	10.34	ZPANM	0.72
33	35	9.57	DRI		TEH	2.67	CCAGC	0.7
33	35	1.54	MAI		TEH	2.54	ZMAGR	0.72
37	35	1.94	MAI		TEH	2.53	ZPAMC	0.7
43	35	0.34	PIT	58	TSC	14.04	ZPANM	0.68
43	35	17.23	PI		TSC	14.02	CCAGC	0.7
43	35	0.48	PCT	22	TSC	14.46	CCAGC	0.7
44	35	3.03	MCI		TEH	0.21	ZPANM	0.72
2	36	1.21	MAI		TEH	0.2	ZPACC	0.72
3	36	2.55	MAI		TEH	0.26	ZPACC	0.72
4	36	0.67	SAI		TEH	0.31	ZPACC	0.72
5	36	0.57	PCT	0	TSC	1.32	MBALL	0.7
5	36	0.71	PIT		TSC	1.02	ZPANM	0.72
19	36	0.36	PIT		TSC	1.62	ZPANM	0.72
25	36	8.47	DRI		TEH	2.51	CCAGC	0.7
25	36	13.09	DRI		TEH	2.7	MBALL	0.7
37	36	1.77	MAI		TEH	3.46	ZPANM	0.72
43	36	4.8	SCI		TEH	0.25	ZPANM	0.72
2	37	2.24	MAI		TEH	0.32	ZPACC	0.72
3	37	3.59	MAI		TEH	0.19	ZPACC	0.72
4	37	1.48	SAI		TEH	0.2	ZPACC	0.72
23	37	1.01	PIT		TSC	0.44	ZPANM	0.72
23	37	3.07	PI		TSC	0.18	CCAGC	0.7
23	37	1.08	SAI		TEH	1.46	ZPANM	0.7
25	37	3.44	DRI		TEH	1.06	MBALL	0.7
25	37	6.14	DRI		TEH	2.72	MBALL	0.7
25	37	7.64	DRI		TEH	0.49	CCAGC	0.68
25	37	18.26	DRI		TEH	0.95	CCAGC	0.68
25	37	7.66	DRI		TEH	2.43	CCAGC	0.68
25	37	4.2	DRI		TEH	2.72	CCAGC	0.68
27	37	1.69	SAI		TEH	2.96	ZPANM	0.72
31	37	1.23	MAI		TEH	2.93	ZPANM	0.72
32	37	0.17	SAI		TEH	8.15	ZPANM	0.72
37	37	1.12	MAI		TEH	2.9	ZPANM	0.72
2	38	1.42	MAI		TEH	0.15	ZPACC	0.72
3	38	4.58	MAI		TEH	0.31	ZPACC	0.72
3	38	0.63	SAI		TEH	2.88	ZPACC	0.72
4	38	0.97	MAI		TEH	0.34	ZPACC	0.72
5	38	1.3	MAI		TEH	0.32	ZPACC	0.72
6	38	0.71	PIT		TSC	1.61	ZPANM	0.72
6	38	0.3	PCT	24	TSC	2.18	MBALL	0.7
10	38	0.62	PCT	0	TSC	2.21	CCAGC	0.68
10	38	0.76	PIT		TSC	1.9	ZPANM	0.72
10	38	0.41	PCT	0	TSC	1.73	MBALL	0.7
22	38	0.49	PIT		TSC	0.16	ZPANM	0.72
22	38	3.78	PI		TSC	0.23	CCAGC	0.7
25	38	7.35	DRI		TEH	0.93	MBALL	0.7
25	38	5.36	DRI		TEH	3.09	MBALL	0.7
25	38	55.48	DRI		TEH	0.68	CCAGC	0.7
27	38	6.66	DRI		TEH	2.88	MBALL	0.7
27	38	5.27	DRI		TEH	2.14	CCAGC	0.7

32	38	0.54	SAI		TEH	12.48	ZPANM	0.72
36	38	1.11	MAI		TEH	0.16	ZPAMC	0.7
41	38	7.58	DRI		TEH	2.4	CCAGC	0.7
2	39	2.09	MAI		TEH	0.28	ZPACC	0.72
3	39	2.59	MAI		TEH	0.16	ZPACC	0.72
5	39	1.31	SAI		TEH	0.28	ZPACC	0.72
5	39	0.84	MAI		TEH	2.87	ZPACC	0.72
24	39	0.22	PIT	42	TSH	1.26	ZPANM	0.68
24	39	1.28	PCT	23	TSH	1.43	MBALL	0.7
25	39	34.48	DRI		TEH	0.97	MBALL	0.7
25	39	7.07	DRI		TEH	1.87	MBALL	0.7
25	39	30.47	DRI		TEH	1.22	CCAGC	0.7
25	39	8.05	DRI		TEH	2.38	CCAGC	0.7
26	39	5.27	DRI		TEH	2.68	MBALL	0.7
26	39	4.23	DRI		TEH	3.21	CCAGC	0.7
26	39	6.96	DRI		TEH	1.79	CCAGC	0.7
29	39	5.46	DRI		TEH	2.29	MBALL	0.7
29	39	2.58	DRI		TEH	2.68	CCAGC	0.7
31	39	0.4	SAI		TEH	4.46	ZMAGR	0.72
31	39	12.69	DRI		TEH	2.41	MBALL	0.7
31	39	13.43	DRI		TEH	2.72	CCAGC	0.7
33	39	3.3	MAI		TEH	0.19	ZPANM	0.72
36	39	10.22	DRI		TEH	3.09	CCAGC	0.7
36	39	20.38	DRI		TEH	2.65	MBALL	0.7
37	39	3.04	SAI		TEH	0.19	ZPANM	0.72
2	40	1.91	MAI		TEH	0.17	ZPAMC	0.7
3	40	2.28	MAI		TEH	0.28	ZPACC	0.72
4	40	0.85	SAI		TEH	0.43	ZPACC	0.72
21	40	0.58	PIT		TSC	1.63	ZPANM	0.72
21	40	1.16	NQI		TSC	1.76	MBALL	0.7
25	40	5.67	DRI		TEH	1.57	MBALL	0.7
25	40	14.72	DRI		TEH	0.74	CCAGC	0.7
25	40	9.2	DRI		TEH	1.83	CCAGC	0.7
28	40	1.73	MAI		TEH	1.04	ZPANM	0.7
29	40	18.13	DRI		TEH	1.01	CCAGC	0.7
29	40	43.43	DRI		TEH	1.15	MBALL	0.7
29	40	0.85	SAI		TEH	2.93	ZMAGR	0.72
30	40	1.67	SAI		TEH	3.12	ZPANM	0.72
31	40	0.58	MAI		TEH	0.2	ZPANM	0.72
31	40	1.12	MAI		TEH	3.13	ZPANM	0.72
36	40	2.25	MAI		TEH	0.22	ZPANM	0.72
37	40	5.56	MAI		TEH	0.22	ZPANM	0.72
37	40	1.32	MAI		TEH	3.03	ZPANM	0.72
43	40	3.64	SAI		TEH	0.1	ZPANM	0.72
3	41	6.03	MAI		TEH	0.17	ZPAMC	0.7
19	41	1.4	MAI		TEH	3.67	ZPANM	0.7
23	41	8.74	DRI		TEH	2.79	CCAGC	0.7
23	41	0.74	MAI		TEH	2.89	ZMAGR	0.72
25	41	17.56	DRI		TEH	0.7	CCAGC	0.7
25	41	16.76	DRI		TEH	2.45	CCAGC	0.7
25	41	18.59	DRI		TEH	2.7	CCAGC	0.7

27	41	45.11	DRI		TEH	1.1	CCAGC	0.7
27	41	36.04	DRI		TEH	1.65	CCAGC	0.7
28	41	1.57	MAI		TEH	3.18	ZPANM	0.7
29	41	11.2	DRI		TEH	1.23	MBALL	0.7
29	41	17.78	DRI		TEH	2.24	CCAGC	0.7
30	41	0.48	SAI		TEH	2.86	ZPANM	0.72
31	41	1.38	MAI		TEH	2.73	ZPANM	0.72
31	41	27.75	SPI		4C	0.08	CCAGC	0.7
32	41	0.42	MCI		TEH	1.23	ZPANM	0.72
32	41	0.57	SAI		TEH	2.82	ZPANM	0.72
36	41	1.11	MAI		TEH	0.23	ZPANM	0.72
37	41	4.7	MAI		TEH	0.28	ZPANM	0.72
37	41	2.68	MAI		TEH	2.96	ZPANM	0.72
42	41	2.31	MAI		TEH	0.11	ZPANM	0.72
43	41	1.85	SAI		TEH	0.29	ZPANM	0.72
45	41	233.2	SPI		1H	0	CCAGC	0.7
45	41	48.97	SPI		1H	0	CCAGC	0.68
2	42	2.05	MAI		TEH	0.19	ZPAMC	0.7
3	42	3.24	MAI		TEH	0.22	ZPAMC	0.7
17	42	0.56	SAI		TEH	2.64	ZPAMC	0.7
19	42	10.93	DRI		TEH	1.55	CCAGC	0.7
19	42	0.18	MAI		TEH	1.38	ZPANM	0.7
19	42	0.65	MAI		TEH	1.9	ZMAGR	0.72
19	42	13.19	DRI		TEH	1.15	CCAGC	0.68
20	42	1.25	SAI		TEH	2.45	ZPAMC	0.7
22	42	0.62	PIT		TSC	2.05	ZPANM	0.72
24	42	1.33	MCI		TEH	1.36	ZPANM	0.7
25	42	24.73	DRI		TEH	0.66	CCAGC	0.7
25	42	45.34	DRI		TEH	1.08	CCAGC	0.7
25	42	11.94	DRI		TEH	2.81	CCAGC	0.7
26	42	3.09	PCT	30	AV3	-0.08	CCAGC	0.7
27	42	2.27	SAI		TEH	0.24	ZPANM	0.7
27	42	0.47	MAI		TEH	3.52	ZPANM	0.7
28	42	27	DRI		TEH	2.31	CCAGC	0.7
28	42	15.85	DRI		TEH	2.37	CCAGC	0.7
29	42	22.58	DRI		TEH	2.52	MBALL	0.7
29	42	24.1	DRI		TEH	2.25	CCAGC	0.7
29	42	28.15	DRI		TEH	1.17	MBALL	0.7
31	42	12.38	DRI		TEH	2.4	CCAGC	0.7
31	42	18.59	DRI		TEH	2.43	CCAGC	0.7
33	42	3.92	MAI		TEH	0.18	ZPANM	0.72
33	42	0.96	MAI		TEH	3.04	ZPANM	0.72
35	42	1.69	MAI		TEH	0.21	ZPANM	0.72
35	42	0.82	MAI		TEH	2.9	ZPANM	0.72
36	42	5.68	MAI		TEH	0.21	ZPANM	0.72
36	42	1.34	SAI		TEH	2.93	ZPANM	0.72
37	42	4.25	MAI		TEH	0.18	ZPANM	0.72
37	42	2.11	SAI		TEH	2.88	ZPANM	0.72
41	42	1.18	SAI		TEH	0.18	ZPANM	0.72
42	42	1.23	SAI		TEH	0.2	ZPANM	0.72
43	42	2.2	SAI		TEH	0.22	ZPANM	0.72

44	42	9.13	DRI		TEH	1.43	CCAGC	0.68
45	42	12.38	DRI		TEH	1.39	CCAGC	0.68
45	42	20.82	DRI		TEH	2.28	CCAGC	0.68
45	42	21.96	DRI		TEH	2.22	MBALL	0.7
45	42	4.92	SCI		TEH	0.16	ZPANM	0.72
3	43	4.9	MAI		TEH	0.2	ZPAMC	0.7
17	43	1.62	MAI		TEH	3.02	ZPANM	0.72
19	43	14.19	DRI		TEH	2.39	MBALL	0.7
19	43	28.2	DRI		TEH	4	CCAGC	0.7
20	43	1.8	MAI		TEH	0.16	ZPANM	0.72
22	43	2.12	MAI		TEH	3.03	ZPANM	0.72
23	43	11.56	DRI		TEH	2.69	CCAGC	0.68
23	43	7.61	DRI		TEH	3.3	CCAGC	0.7
25	43	38.84	DRI		TEH	1.2	CCAGC	0.7
25	43	12.51	DRI		TEH	2.81	MBALL	0.7
25	43	55.89	DRI		TEH	1.47	MBALL	0.7
25	43	14.38	DRI		TEH	2.81	CCAGC	0.7
28	43	0.92	MAI		TEH	4.03	ZMAGR	0.72
28	43	28.23	DRI		TEH	3.43	CCAGC	0.68
29	43	0.65	MAI		TEH	3.86	ZMAGR	0.72
29	43	37.15	DRI		TEH	3.66	MBALL	0.7
29	43	36.07	DRI		TEH	3.32	CCAGC	0.68
29	43	26.94	DRI		TEH	3.62	CCAGC	0.68
30	43	1.63	SAI		TEH	2.6	ZPANM	0.72
31	43	24.07	DRI		TEH	2.68	CCAGC	0.68
31	43	23.14	DRI		TEH	2.41	CCAGC	0.68
31	43	0.28	SAI		TEH	5.46	ZMAGR	0.72
31	43	22.88	DRI		TEH	1.86	MBALL	0.7
32	43	22.18	DRI		TEH	1.87	MBALL	0.7
32	43	21.39	DRI		TEH	2.52	CCAGC	0.68
32	43	16.98	DRI		TEH	2.72	CCAGC	0.68
33	43	9.3	DRI		TEH	2.44	CCAGC	0.68
33	43	11.94	DRI		TEH	2.32	CCAGC	0.68
33	43	15.27	DRI		TEH	2.38	CCAGC	0.68
33	43	7.18	DRI		TEH	2.53	CCAGC	0.68
33	43	9.62	DRI		TEH	2.36	MBALL	0.7
33	43	3.23	MAI		TEH	0.2	ZPANM	0.72
33	43	2.29	DRI		TEH	2.43	CCAGC	0.68
35	43	2.38	SAI		TEH	2.6	ZPANM	0.72
36	43	2.36	MAI		TEH	0.15	ZPANM	0.72
37	43	1.46	MAI		TEH	0.18	ZPANM	0.72
37	43	2.21	MAI		TEH	2.69	ZPANM	0.72
43	43	1.69	SAI		TEH	3.22	ZPANM	0.72
43	43	1.74	SCI		TEH	0.26	ZPANM	0.72
43	43	1.24	MAI		TEH	0.37	ZPANM	0.72
44	43	1.14	SCI		TEH	0.12	ZPANM	0.72
45	43	5.66	SCI		TEH	0.16	ZPANM	0.72
3	44	5.39	MAI		TEH	0.24	ZPAMC	0.7
3	44	0.86	MAI		TEH	2.72	ZPAMC	0.7
3	44	22.97	DRI		TEH	2.26	CCAGC	0.7
14	44	1.51	SAI		TEH	0.08	ZPANM	0.72

16	44	0.72	SAI		TEH	1.14	ZPANM	0.72
19	44	2.98	SAI		TEH	3.27	ZPANM	0.72
19	44	0.71	PCT	27	TSH	2.52	CCAGC	0.68
19	44	1.47	PCT	19	TSH	1.98	CCAGC	0.68
19	44	18.38	PI		TSH	1.79	CCAGC	0.68
19	44	0.68	PCT	39	TSH	2.21	MBALL	0.7
19	44	0.23	PIT	37	TSH	2.24	ZPANM	0.68
19	44	0.39	PIT		TSH	2.32	ZPANM	0.72
19	44	1.33	PCT	10	TSH	1.75	MBALL	0.7
19	44	2.11	MAI		TEH	0.18	ZPANM	0.72
19	44	0.44	PIT	60	TSH	1.75	ZPANM	0.68
20	44	1.62	MAI		TEH	0.21	ZPANM	0.72
21	44	1.24	SAI		TEH	0.18	ZPANM	0.72
23	44	9.05	DRI		TEH	1.4	CCAGC	0.68
23	44	2.08	MAI		TEH	0.97	ZMAGR	0.72
23	44	53	DRI		TEH	1.74	MBALL	0.7
23	44	10.55	DRI		TEH	1.04	CCAGC	0.68
24	44	85.01	DRI		TEH	1.61	CCAGC	0.68
24	44	2.61	MAI		TEH	1.74	ZMAGR	0.72
24	44	81.73	DRI		TEH	1.46	MBALL	0.7
25	44	8.9	DRI		TEH	3.43	CCAGC	0.68
25	44	1.07	MAI		TEH	4.29	ZMAGR	0.72
25	44	127.8	DRI		TEH	1.56	MBALL	0.7
25	44	4.53	DRI		TEH	0.6	CCAGC	0.68
25	44	129.2	DRI		TEH	1.56	CCAGC	0.68
25	44	57.39	DRI		TEH	1.7	CCAGC	0.68
26	44	75.55	DRI		TEH	1.62	CCAGC	0.68
26	44	100.5	DRI		TEH	1.46	CCAGC	0.68
26	44	0.84	MAI		TEH	2.95	ZMAGR	0.72
26	44	96.17	DRI		TEH	1.4	MBALL	0.7
27	44	14.58	DRI		TEH	1.48	MBALL	0.7
27	44	83.92	DRI		TEH	1.48	CCAGC	0.68
27	44	71.32	DRI		TEH	1.62	CCAGC	0.68
28	44	6.54	DRI		TEH	2.57	CCAGC	0.68
28	44	44.7	DRI		TEH	1.12	MBALL	0.7
28	44	45.98	DRI		TEH	1.38	CCAGC	0.68
28	44	24.05	DRI		TEH	1.51	CCAGC	0.68
29	44	37.53	DRI		TEH	1.45	CCAGC	0.68
29	44	49.05	DRI		TEH	1.28	CCAGC	0.68
29	44	0.39	PIT		TSH	14.77	ZPANM	0.72
29	44	52.22	DRI		TEH	2.68	MBALL	0.7
30	44	35.16	DRI		TEH	1.43	MBALL	0.7
30	44	34.16	DRI		TEH	1.26	CCAGC	0.68
30	44	26.1	DRI		TEH	1.86	CCAGC	0.68
31	44	0.25	SAI		TEH	4.19	ZMAGR	0.72
31	44	17.24	DRI		TEH	2.37	CCAGC	0.68
31	44	49.64	DRI		TEH	1.42	CCAGC	0.68
31	44	50.66	DRI		TEH	1.41	CCAGC	0.68
31	44	50.09	DRI		TEH	1.41	MBALL	0.7
33	44	26.57	DRI		TEH	1.14	MBALL	0.7
33	44	34.37	DRI		TEH	1.32	CCAGC	0.68

33	44	26.54	DRI		TEH	1.48	CCAGC	0.68
34	44	31.05	DRI		TEH	1.3	CCAGC	0.68
34	44	23	DRI		TEH	1.43	CCAGC	0.68
34	44	1.78	PCT	26	AV4	0	MBALL	0.7
34	44	24.74	DRI		TEH	1.31	MBALL	0.7
35	44	18.34	DRI		TEH	1.04	CCAGC	0.7
35	44	18.84	DRI		TEH	1.41	MBALL	0.7
36	44	2.83	MAI		TEH	0.44	ZPANM	0.72
37	44	102	DRI		TEH	1.14	CCAGC	0.7
37	44	1.53	MAI		TEH	4.95	ZPANM	0.72
37	44	14.16	DRI		TEH	2.29	CCAGC	0.7
37	44	42.03	DRI		TEH	1.36	MBALL	0.7
37	44	1.51	MAI		TEH	3.11	ZPANM	0.72
37	44	5.39	MAI		TEH	1.47	ZPANM	0.72
37	44	1.54	MAI		TEH	0.3	ZPANM	0.72
37	44	220.6	SPI		2H	0.49	CCAGC	0.7
37	44	0.41	MAI		TEH	4.38	ZPANM	0.72
39	44	0.78	MCI		TEH	1.87	ZPANM	0.72
39	44	18.7	DRI		TEH	1.34	MBALL	0.7
39	44	25.92	DRI		TEH	1.29	CCAGC	0.7
39	44	24.74	DRI		TEH	1.22	CCAGC	0.7
40	44	42.85	DRI		TEH	1.25	MBALL	0.7
40	44	43.26	DRI		TEH	1.1	CCAGC	0.7
40	44	2.67	MAI		TEH	1.83	ZMAGR	0.72
41	44	42.16	DRI		TEH	1.12	CCAGC	0.7
41	44	67.85	DRI		TEH	1.18	CCAGC	0.7
41	44	31.71	DRI		TEH	1.11	MBALL	0.7
42	44	1.23	MAI		TEH	1.47	ZMAGR	0.72
42	44	28.77	DRI		TEH	1.29	CCAGC	0.7
43	44	39.42	DRI		TEH	1.2	CCAGC	0.7
44	44	41.86	DRI		TEH	1.48	CCAGC	0.7
44	44	1.2	MAI		TEH	1.54	ZPANM	0.72
44	44	1.3	MAI		TEH	1.4	ZMAGR	0.72
44	44	52.25	DRI		TEH	0.89	CCAGC	0.7
45	44	3.38	SCI		TEH	0.16	ZPANM	0.72
3	45	3.36	MAI		TEH	0.17	ZPAMC	0.7
5	45	1.48	SAI		TEH	0.14	ZPAMC	0.7
10	45	0.33	PIT	18	TSC	7.59	ZPANM	0.68
10	45	11.57	PI		TSC	7.5	CCAGC	0.68
10	45	0.58	PCT	10	TSC	8.06	CCAGC	0.68
10	45	5.04	PI		TSC	7.69	CCAGC	0.7
10	45	0.49	PCT	31	TSC	7.7	CCAGC	0.7
16	45	0.68	SAI		TEH	3.06	ZPANM	0.72
17	45	2.35	SAI		TEH	0.09	ZPANM	0.72
17	45	0.44	PIT		TSH	6.42	ZPANM	0.72
19	45	1.32	MAI		TEH	0.17	ZPANM	0.72
22	45	4.6	MAI		TEH	0.14	ZPANM	0.72
23	45	3.87	MAI		TEH	0.4	ZPANM	0.72
24	45	53.86	DRI		TEH	1.17	MBALL	0.7
24	45	60.85	DRI		TEH	1.44	CCAGC	0.68
24	45	24.82	DRI		TEH	1.78	CCAGC	0.68

25	45	8.05	DRI		TEH	3.47	CCAGC	0.68
25	45	111.7	DRI		TEH	1.56	MBALL	0.7
25	45	2.36	MAI		TEH	3.09	ZMAGR	0.72
25	45	222.9	DRI		TEH	1.56	CCAGC	0.68
25	45	116.6	DRI		TEH	1.54	CCAGC	0.68
26	45	63.61	DRI		TEH	1.65	MBALL	0.7
26	45	64.22	DRI		TEH	1.44	CCAGC	0.68
26	45	51.73	DRI		TEH	1.65	CCAGC	0.68
27	45	19.11	DRI		TEH	1.38	MBALL	0.7
27	45	65.73	DRI		TEH	1.38	CCAGC	0.68
27	45	51.98	DRI		TEH	1.51	CCAGC	0.68
28	45	20.22	DRI		TEH	1.33	MBALL	0.7
28	45	63.79	DRI		TEH	1.33	CCAGC	0.68
28	45	48.27	DRI		TEH	1.49	CCAGC	0.68
29	45	35.61	DRI		TEH	1.19	MBALL	0.7
29	45	52.36	DRI		TEH	1.61	CCAGC	0.7
29	45	31.39	DRI		TEH	2.82	CCAGC	0.7
30	45	30.21	DRI		TEH	1.06	CCAGC	0.68
30	45	22.89	DRI		TEH	1.4	CCAGC	0.68
30	45	38.38	DRI		TEH	1.06	CCAGC	0.7
31	45	14.89	DRI		TEH	2.94	CCAGC	0.68
31	45	47.9	DRI		TEH	1.33	CCAGC	0.7
31	45	19.66	DRI		TEH	2.54	CCAGC	0.7
31	45	17.02	DRI		TEH	1.34	CCAGC	0.68
31	45	37.34	DRI		TEH	1.33	CCAGC	0.68
31	45	22.74	DRI		TEH	2.82	CCAGC	0.68
32	45	46.92	DRI		TEH	1.32	CCAGC	0.68
32	45	32.26	DRI		TEH	1.34	CCAGC	0.68
32	45	57.55	DRI		TEH	1.32	CCAGC	0.7
33	45	2.43	MAI		TEH	0.21	ZPANM	0.72
33	45	0.67	SAI		TEH	3.02	ZPANM	0.72
34	45	31.16	DRI		TEH	1.24	CCAGC	0.7
34	45	79.78	SPI		4H	0.12	CCAGC	0.7
34	45	51.51	DRI		TEH	1.27	CCAGC	0.7
35	45	1.64	MAI		TEH	0.18	ZPANM	0.72
35	45	0.69	SAI		TEH	3.01	ZPANM	0.72
36	45	25.43	DRI		TEH	1.17	MBALL	0.7
36	45	21.35	DRI		TEH	1.03	CCAGC	0.7
37	45	6.77	DRI		TEH	1.24	CCAGC	0.7
37	45	18.36	DRI		TEH	1.31	CCAGC	0.7
38	45	2.36	MAI		TEH	0.22	ZPANM	0.72
39	45	31.58	DRI		TEH	1.33	CCAGC	0.68
39	45	39.19	DRI		TEH	1.33	CCAGC	0.7
39	45	22.3	DRI		TEH	1.12	CCAGC	0.68
40	45	1.52	MAI		TEH	2.04	ZMAGR	0.72
40	45	39.39	DRI		TEH	1.37	CCAGC	0.68
40	45	48.98	DRI		TEH	1.37	CCAGC	0.7
40	45	11.31	DRI		TEH	1.12	CCAGC	0.7
41	45	21.82	DRI		TEH	1.37	CCAGC	0.68
41	45	9.37	DRI		TEH	1.37	CCAGC	0.68
41	45	26.68	DRI		TEH	1.37	CCAGC	0.7

41	45	6.26	DRI		TEH	1.46	CCAGC	0.7
42	45	34.41	DRI		TEH	1.58	CCAGC	0.68
42	45	47.76	DRI		TEH	1.19	CCAGC	0.7
42	45	40.28	DRI		TEH	1.19	CCAGC	0.68
42	45	11.43	DRI		TEH	1.22	CCAGC	0.7
43	45	1.93	SAI		TEH	0.19	ZPANM	0.72
44	45	17.9	DRI		TEH	1.16	MBALL	0.7
44	45	20.67	DRI		TEH	1.13	CCAGC	0.68
44	45	23.51	DRI		TEH	1.49	CCAGC	0.68
3	46	2.24	MAI		TEH	0.22	ZPAMC	0.7
4	46	0.8	MAI		TEH	0.23	ZPAMC	0.7
5	46	1.33	SAI		TEH	0.2	ZPAMC	0.7
8	46	1.69	SAI		TEH	0.17	ZPAMC	0.7
10	46	2.01	SAI		TEH	0.17	ZPAMC	0.7
12	46	1.34	SAI		TEH	0.22	ZPANM	0.72
14	46	1.39	SAI		TEH	0.13	ZPANM	0.72
16	46	0.67	SAI		TEH	3.09	ZMAGR	0.72
16	46	18.14	DRI		TEH	1.1	MBALL	0.7
16	46	14.67	DRI		TEH	0.99	CCAGC	0.68
16	46	36.87	DRI		TEH	1.24	CCAGC	0.68
18	46	0.36	SAI		TEH	3.94	ZMAGR	0.72
18	46	20.86	DRI		TEH	2.52	MBALL	0.7
18	46	21.41	DRI		TEH	2.57	CCAGC	0.68
18	46	17.92	DRI		TEH	2.6	CCAGC	0.68
19	46	1.25	SAI		TEH	2.96	ZPANM	0.72
19	46	2.12	MAI		TEH	0.21	ZPANM	0.72
22	46	5.07	SPI		3H	0	CCAGC	0.68
22	46	1.84	MAI		TEH	0.16	ZPANM	0.72
22	46	0.15	PIT		TSH	0	ZPANM	0.72
23	46	12.35	DRI		TEH	2.99	CCAGC	0.68
23	46	1.19	SAI		TEH	4.13	ZMAGR	0.72
23	46	28.8	DRI		TEH	1.06	MBALL	0.7
23	46	17.56	DRI		TEH	2.31	MBALL	0.7
23	46	14.55	DRI		TEH	3.28	MBALL	0.7
23	46	8.96	DRI		TEH	1.08	CCAGC	0.68
23	46	29.47	DRI		TEH	1.19	CCAGC	0.68
23	46	14.67	DRI		TEH	2.15	CCAGC	0.68
23	46	9.31	DRI		TEH	2.72	CCAGC	0.68
24	46	7.8	TSI		TSH	0.98	CCAGC	0.68
25	46	85.49	DRI		TEH	1.38	CCAGC	0.64
25	46	122.9	DRI		TEH	1.85	CCAGC	0.64
25	46	120.1	DRI		TEH	1.58	MBALL	0.7
25	46	122.4	DRI		TEH	1.55	CCAGC	0.68
25	46	0.76	SAI		TEH	2.93	ZMAGR	0.72
26	46	56.22	DRI		TEH	1.24	MBALL	0.7
26	46	60.4	DRI		TEH	1.36	CCAGC	0.68
26	46	59.3	DRI		TEH	1.58	CCAGC	0.68
27	46	45.15	DRI		TEH	1.6	CCAGC	0.68
27	46	30.8	DRI		TEH	1.33	MBALL	0.7
27	46	49.72	DRI		TEH	1.33	CCAGC	0.68
28	46	42.18	DRI		TEH	2.7	CCAGC	0.68

28	46	60.35	DRI		TEH	1.37	CCAGC	0.68
28	46	56.82	DRI		TEH	1.32	CCAGC	0.68
28	46	1.76	MAI		TEH	2.54	ZMAGR	0.72
28	46	54.21	DRI		TEH	1.17	MBALL	0.7
29	46	0.21	MAI	17	TSH	1.27	ZPANM	0.68
29	46	0.35	NQI		TSH	1.2	CCAGC	0.7
29	46	0.16	NQI		TSH	1.67	CCAGC	0.7
29	46	17.46	DRI		TEH	1.3	CCAGC	0.7
29	46	3.06	NQI		TSH	1.61	CCAGC	0.68
29	46	2.16	NQI		TSH	1.01	CCAGC	0.68
29	46	50.61	DRI		TEH	1.6	CCAGC	0.68
29	46	63.85	DRI		TEH	1.31	CCAGC	0.68
29	46	17.07	PI		TSH	2.2	CCAGC	0.68
29	46	16.46	PI		TSH	1.81	CCAGC	0.68
29	46	3.48	NQI		TSH	1.66	CCAGC	0.68
29	46	1.66	MAI		TEH	3.08	ZMAGR	0.72
29	46	0.64	NQI		TSH	2.26	MBALL	0.7
29	46	2.95	NQI		TSH	1.73	MBALL	0.7
29	46	1.08	MAI		TSH	0.91	ZPANM	0.68
29	46	54.09	DRI		TEH	1.23	MBALL	0.7
29	46	0.47	MAI	40	TSH	0.97	ZPANM	0.68
30	46	0.11	MAI	72	TSH	0.46	ZPANM	0.68
30	46	1.4	NQI		TSH	0.6	CCAGC	0.7
30	46	10.03	DRI		TEH	1.26	CCAGC	0.7
30	46	2.06	NQI		TSH	0.98	CCAGC	0.68
30	46	13.91	DRI		TEH	2.86	CCAGC	0.68
30	46	35.98	DRI		TEH	1.29	CCAGC	0.68
30	46	7.37	PI		TSH	0.44	CCAGC	0.68
30	46	1.12	SAI		TEH	2.96	ZMAGR	0.72
30	46	1.45	NQI		TSH	1.26	MBALL	0.7
30	46	32.59	DRI		TEH	1.26	MBALL	0.7
30	46	0.6	MAI		TSH	0.66	ZPANM	0.68
30	46	2.1	NQI		TSH	1.1	CCAGC	0.68
30	46	19.83	DRI		TEH	1.58	CCAGC	0.68
31	46	0.55	NQI		TSH	1.47	CCAGC	0.7
31	46	46.78	DRI		TEH	1.29	CCAGC	0.68
31	46	40.65	DRI		TEH	1.47	CCAGC	0.68
31	46	25.34	PI		TSH	0.66	CCAGC	0.68
31	46	3.23	NQI		TSH	1	CCAGC	0.68
31	46	1.86	NQI		TSH	1.54	CCAGC	0.68
31	46	0.84	NQI		TSH	1.85	CCAGC	0.68
31	46	0.34	NQI		TSH	1.18	CCAGC	0.7
31	46	0.21	NQI		TSH	1.85	CCAGC	0.7
31	46	0.66	MAI	42	TSH	1.35	ZPANM	0.68
31	46	10.9	DRI		TEH	1.61	CCAGC	0.7
31	46	2.96	NQI		TSH	1.84	CCAGC	0.68
31	46	7.23	NQI		TSH	1.2	CCAGC	0.68
31	46	10.97	PI		TSH	0.72	CCAGC	0.68
31	46	22.02	PI		TSH	1.01	CCAGC	0.68
31	46	1.92	NQI		TSH	1.85	MBALL	0.7
31	46	3.09	NQI		TSH	1.44	MBALL	0.7

31	46	4.73	NQI		TSH	1.21	MBALL	0.7
31	46	33.23	DRI		TEH	1.25	MBALL	0.7
31	46	1.25	MAI		TSH	0.96	ZPANM	0.68
31	46	1.74	NQI		TSH	2.16	CCAGC	0.68
32	46	2.87	MAI		TEH	1.4	ZMAGR	0.72
32	46	6.41	DRI		TEH	1.04	CCAGC	0.7
32	46	19.7	DRI		TEH	1.06	CCAGC	0.68
32	46	12.69	DRI		TEH	1.33	CCAGC	0.68
33	46	36.5	DRI		TEH	1.27	CCAGC	0.68
33	46	38.54	DRI		TEH	1.53	CCAGC	0.68
33	46	6.78	DRI		TEH	2.96	CCAGC	0.68
33	46	8.32	DRI		TEH	1.23	CCAGC	0.7
34	46	3.42	DRI		TEH	1.35	CCAGC	0.7
34	46	17.64	DRI		TEH	1.33	CCAGC	0.68
34	46	20.44	DRI		TEH	1.48	CCAGC	0.68
35	46	27.13	DRI		TEH	1.11	CCAGC	0.7
35	46	54.51	DRI		TEH	1.13	CCAGC	0.7
35	46	9.62	DRI		TEH	1.91	CCAGC	0.7
36	46	1.04	SAI		TEH	3.72	ZMAGR	0.72
36	46	316.7	DRI		TEH	2.41	CCAGC	0.7
36	46	3.45	DRI		TEH	1.13	CCAGC	0.7
37	46	41.43	DRI		TEH	1.23	CCAGC	0.68
37	46	36.68	DRI		TEH	1.38	CCAGC	0.68
37	46	44.68	DRI		TEH	1.23	CCAGC	0.7
37	46	10.51	DRI		TEH	1.15	CCAGC	0.7
38	46	35.11	DRI		TEH	1.16	CCAGC	0.68
38	46	9.69	DRI		TEH	1.17	CCAGC	0.7
38	46	41.14	DRI		TEH	1.16	CCAGC	0.7
38	46	12.3	DRI		TEH	1.38	CCAGC	0.68
38	46	20.99	DRI		TEH	2.57	CCAGC	0.68
39	46	4.63	DRI		TEH	1.31	CCAGC	0.7
39	46	15.76	DRI		TEH	1.3	MBALL	0.7
39	46	20.99	DRI		TEH	1.3	CCAGC	0.68
39	46	8.81	DRI		TEH	1.54	CCAGC	0.68
40	46	7.37	DRI		TEH	1.25	CCAGC	0.7
40	46	30.63	DRI		TEH	1.36	CCAGC	0.7
40	46	26.65	DRI		TEH	1.36	CCAGC	0.68
40	46	20.77	DRI		TEH	1.33	CCAGC	0.68
42	46	26.62	DRI		TEH	1.25	MBALL	0.7
42	46	38.35	DRI		TEH	1.2	CCAGC	0.7
42	46	5.57	DRI		TEH	1.47	CCAGC	0.7
43	46	32.73	DRI		TEH	1.24	MBALL	0.7
43	46	20.62	DRI		TEH	1.25	CCAGC	0.7
43	46	7.97	DRI		TEH	1.34	CCAGC	0.7
44	46	27.89	DRI		TEH	1.18	MBALL	0.7
44	46	202.2	DRI		TEH	1.33	CCAGC	0.7
44	46	7.2	DRI		TEH	1.18	CCAGC	0.7
45	46	11.14	DRI		TEH	1.54	MBALL	0.7
45	46	116.3	DRI		TEH	1.26	CCAGC	0.7
45	46	4.84	DRI		TEH	1.35	CCAGC	0.7
5	47	0.84	SAI		TEH	0.13	ZPAMC	0.7

14	47	0.81	PCT	14	TSC	7.62	MBALL	0.7
14	47	2.04	SAI		TEH	1.23	ZPANM	0.72
14	47	1.91	SAI		TEH	3.33	ZPANM	0.72
14	47	0.33	PIT		TSC	7.32	ZPANM	0.72
17	47	0.37	PIT		TSH	5.49	ZPANM	0.72
22	47	22.28	DRI		TEH	1.33	CCAGC	0.7
22	47	1.4	SAI		TEH	2.6	ZMAGR	0.72
23	47	20.83	DRI		TEH	1.45	CCAGC	0.7
25	47	77.54	DRI		TEH	1.15	MBALL	0.7
25	47	30.64	DRI		TEH	4.56	CCAGC	0.7
25	47	16.39	DRI		TEH	3.76	CCAGC	0.7
25	47	16.55	DRI		TEH	3.2	CCAGC	0.7
25	47	76.3	DRI		TEH	1.1	MBALL	0.7
25	47	1.42	MAI		TEH	3.76	ZMAGR	0.72
25	47	0.69	SAI		TEH	3.96	ZMAGR	0.72
25	47	2.18	SAI		TEH	4.04	ZPANM	0.72
25	47	2.42	MAI		TEH	3.4	ZPANM	0.72
25	47	4.48	MAI		TEH	1.69	ZPANM	0.72
25	47	82.75	DRI		TEH	1.65	CCAGC	0.7
26	47	46.79	DRI		TEH	1.35	CCAGC	0.7
26	47	51.26	DRI		TEH	1.35	CCAGC	0.7
27	47	60.07	DRI		TEH	1.27	CCAGC	0.7
27	47	49.99	DRI		TEH	1.57	CCAGC	0.7
28	47	25.63	DRI		TEH	1.2	CCAGC	0.7
28	47	20.07	DRI		TEH	1.56	CCAGC	0.7
30	47	34.81	DRI		TEH	1.09	MBALL	0.7
30	47	34.72	DRI		TEH	1.4	CCAGC	0.7
30	47	32.65	DRI		TEH	1.47	CCAGC	0.7
31	47	55.63	DRI		TEH	1.29	CCAGC	0.7
31	47	1.2	NQI		TSH	0.54	CCAGC	0.7
31	47	40.84	DRI		TEH	1.17	CCAGC	0.7
31	47	0.2	SAI	85	TSH	1.59	ZPANM	0.68
31	47	0.56	SAI	31	TSH	0.52	ZPANM	0.68
31	47	16.73	PI		TSH	1.61	CCAGC	0.68
31	47	1.89	NQI		TSH	0.89	CCAGC	0.68
31	47	15.09	PI		TSH	0.83	CCAGC	0.68
31	47	1.28	NQI		TSH	0.85	MBALL	0.7
31	47	33.23	DRI		TEH	1.19	MBALL	0.7
31	47	0.31	SAI		TSH	1.38	ZPANM	0.68
31	47	0.52	SAI		TSH	0.67	ZPANM	0.68
31	47	0.61	SAI		TSH	0.39	ZPANM	0.68
31	47	0.52	SAI		TSH	1.31	ZPANM	0.72
31	47	11.78	PI		TSH	1.49	CCAGC	0.7
31	47	0.78	SAI		TSH	0.62	ZPANM	0.72
31	47	1.05	SAI		TSH	0.33	ZPANM	0.72
31	47	13.36	PI		TSH	0.56	CCAGC	0.68
32	47	39.49	DRI		TEH	0.71	CCAGC	0.7
33	47	112.1	DRI		TEH	1.11	CCAGC	0.68
33	47	52.86	DRI		TEH	1.25	CCAGC	0.68
33	47	101.8	DRI		TEH	1.67	CCAGC	0.68
33	47	78.8	DRI		TEH	1.11	MBALL	0.7

34	47	54.28	DRI		TEH	1.13	CCAGC	0.7
35	47	104.6	DRI		TEH	0.99	CCAGC	0.7
35	47	23.9	DRI		TEH	0.71	CCAGC	0.7
35	47	33.8	DRI		TEH	1.11	CCAGC	0.7
36	47	8.99	MAI		TEH	0.2	ZPANM	0.72
37	47	17.41	DRI		TEH	0.96	CCAGC	0.7
37	47	79.13	DRI		TEH	0.8	CCAGC	0.7
37	47	15.82	DRI		TEH	1.18	CCAGC	0.7
38	47	17.69	DRI		TEH	0.97	CCAGC	0.7
38	47	49.27	DRI		TEH	1.43	CCAGC	0.7
40	47	74.16	DRI		TEH	0.87	CCAGC	0.7
40	47	48.47	DRI		TEH	1.32	CCAGC	0.7
41	47	74.22	DRI		TEH	0.93	CCAGC	0.7
41	47	41.1	DRI		TEH	1.35	CCAGC	0.7
41	47	19.52	DRI		TEH	1.2	CCAGC	0.7
42	47	63	DRI		TEH	0.98	CCAGC	0.7
42	47	88.77	DRI		TEH	1.25	CCAGC	0.7
42	47	52.81	DRI		TEH	1.39	CCAGC	0.7
43	47	20.36	DRI		TEH	1.13	MBALL	0.7
43	47	22.47	DRI		TEH	1.13	CCAGC	0.64
43	47	26.78	DRI		TEH	1.15	CCAGC	0.68
43	47	25.34	DRI		TEH	1.4	CCAGC	0.68
44	47	21.87	DRI		TEH	0.85	CCAGC	0.68
44	47	14	DRI		TEH	1.3	CCAGC	0.68
44	47	30.62	DRI		TEH	1.11	CCAGC	0.64
44	47	5.36	DRI		TEH	0.9	MBALL	0.7
17	48	0.29	PIT		TSH	3.57	ZPAMC	0.7
22	48	1.37	SAI		TEH	2.43	ZPANM	0.72
23	48	0.76	MAI		TEH	4.04	ZMAGR	0.72
23	48	27.66	DRI		TEH	1.21	CCAGC	0.7
23	48	9.24	DRI		TEH	2.58	CCAGC	0.7
24	48	26.65	DRI		TEH	1.43	CCAGC	0.7
24	48	0.99	MAI		TEH	1.47	ZMAGR	0.72
25	48	101.5	DRI		TEH	1	MBALL	0.7
25	48	98.17	DRI		TEH	1.71	CCAGC	0.7
25	48	35.68	DRI		TEH	3.05	CCAGC	0.7
25	48	20.19	DRI		TEH	2.57	MBALL	0.7
25	48	19.56	DRI		TEH	2.93	MBALL	0.7
25	48	118.9	DRI		TEH	1.44	MBALL	0.7
25	48	0.45	PIT		TSC	3.79	ZPANM	0.72
25	48	10.08	MAI		TEH	2.83	ZMAGR	0.72
25	48	0.99	PCT	0	TSC	3.65	MBALL	0.7
26	48	51.53	DRI		TEH	1.31	CCAGC	0.7
26	48	63.79	DRI		TEH	1.55	CCAGC	0.7
28	48	10.85	DRI		TEH	1.16	CCAGC	0.7
28	48	16.66	DRI		TEH	1.25	CCAGC	0.7
28	48	10.16	DRI		TEH	2.6	CCAGC	0.7
29	48	140.7	DRI		TEH	1.27	CCAGC	0.7
30	48	27.4	DRI		TEH	1.18	MBALL	0.7
30	48	53.7	DRI		TEH	1	CCAGC	0.7
30	48	32.97	DRI		TEH	1.13	CCAGC	0.7

31	48	36.77	DRI		TEH	1.18	CCAGC	0.7
31	48	0.4	SAI		TEH	3.67	ZMAGR	0.72
32	48	17.79	DRI		TEH	2.34	CCAGC	0.7
32	48	56.5	DRI		TEH	1	CCAGC	0.7
32	48	1.15	MAI		TEH	3.53	ZMAGR	0.72
33	48	59.98	DRI		TEH	1.48	CCAGC	0.7
34	48	78.49	DRI		TEH	0.99	CCAGC	0.7
34	48	18.87	DRI		TEH	2.49	CCAGC	0.7
35	48	19.29	DRI		TEH	2.3	CCAGC	0.7
35	48	115.6	DRI		TEH	0.72	CCAGC	0.7
35	48	6.24	DRI		TEH	2.3	CCAGC	0.7
35	48	8.58	DRI		TEH	0.72	CCAGC	0.7
35	48	36.01	DRI		TEH	1.19	CCAGC	0.7
36	48	72.44	DRI		TEH	1.25	CCAGC	0.7
36	48	69.24	DRI		TEH	0.96	CCAGC	0.7
36	48	80.95	DRI		TEH	0.96	CCAGC	0.7
37	48	41.71	DRI		TEH	0.99	CCAGC	0.7
37	48	90.69	DRI		TEH	0.99	CCAGC	0.7
37	48	51.71	DRI		TEH	1.19	CCAGC	0.7
39	48	5.77	MAI		TEH	0.09	ZPANM	0.72
40	48	31.49	DRI		TEH	1.37	CCAGC	0.7
40	48	37.87	DRI		TEH	1.41	MBALL	0.7
40	48	31.12	DRI		TEH	1.21	CCAGC	0.7
40	48	71.5	DRI		TEH	1.12	CCAGC	0.7
40	48	32.92	DRI		TEH	1.2	CCAGC	0.68
40	48	27.84	DRI		TEH	1.15	CCAGC	0.68
40	48	25.87	DRI		TEH	1.21	CCAGC	0.64
40	48	105.6	DRI		TEH	1.17	CCAGC	0.7
41	48	4.35	DRI		TEH	1.17	CCAGC	0.7
41	48	30.29	DRI		TEH	1.51	CCAGC	0.7
42	48	36.08	DRI		TEH	1.25	CCAGC	0.7
42	48	17.06	DRI		TEH	1.25	CCAGC	0.7
43	48	14.19	DRI		TEH	1.32	CCAGC	0.7
43	48	20.33	DRI		TEH	1.05	CCAGC	0.7
44	48	23.05	DRI		TEH	1	MBALL	0.7
44	48	26.45	DRI		TEH	0.95	CCAGC	0.64
44	48	28.54	DRI		TEH	0.83	CCAGC	0.68
44	48	17.17	DRI		TEH	1.43	CCAGC	0.68
45	48	23.71	DRI		TEH	1.33	CCAGC	0.7
45	48	26.9	DRI		TEH	1.2	CCAGC	0.7
45	48	18.65	DRI		TEH	1.2	MBALL	0.7
45	48	20.73	DRI		TEH	1.33	CCAGC	0.64
45	48	24	DRI		TEH	1.33	CCAGC	0.68
3	49	2.52	MAI		TEH	0.19	ZPAMC	0.7
6	49	4.22	SAI		TEH	0.19	ZPAMC	0.7
22	49	0.67	MAI		TEH	0.17	ZPANM	0.72
22	49	2.06	MAI		TEH	2.9	ZPANM	0.72
23	49	31.14	DRI		TEH	1.14	CCAGC	0.7
23	49	7.66	DRI		TEH	2.97	CCAGC	0.7
24	49	19.18	DRI		TEH	1.16	CCAGC	0.7
24	49	22.19	DRI		TEH	1.43	CCAGC	0.7

25	49	91.98	DRI		TEH	1.4	MBALL	0.7
25	49	99.5	DRI		TEH	0.99	MBALL	0.7
25	49	100.8	DRI		TEH	1.56	CCAGC	0.7
25	49	4.71	DRI		TEH	2.9	CCAGC	0.7
25	49	0.56	MAI		TEH	2.86	ZMAGR	0.72
26	49	49.68	DRI		TEH	1.7	CCAGC	0.7
27	49	5.18	DRI		TEH	3.05	CCAGC	0.7
27	49	136.9	DRI		TEH	1.22	CCAGC	0.7
27	49	88.22	DRI		TEH	1.4	CCAGC	0.7
28	49	15.44	DRI		TEH	3.15	CCAGC	0.7
28	49	45.19	DRI		TEH	1.6	CCAGC	0.7
28	49	85.38	DRI		TEH	2.15	CCAGC	0.7
29	49	0.59	MAI		TEH	4.31	ZMAGR	0.72
29	49	54.21	DRI		TEH	1.2	CCAGC	0.7
29	49	13.29	DRI		TEH	2.68	CCAGC	0.7
30	49	34.24	DRI		TEH	1.2	CCAGC	0.7
32	49	55.81	DRI		TEH	1.77	CCAGC	0.7
32	49	25.83	DRI		TEH	2.29	CCAGC	0.7
32	49	13.43	DRI		TEH	3.96	CCAGC	0.7
33	49	33.02	DRI		TEH	1.09	MBALL	0.7
33	49	54.87	DRI		TEH	1.19	CCAGC	0.68
33	49	47.6	DRI		TEH	1.19	CCAGC	0.68
33	49	39.3	DRI		TEH	1.36	CCAGC	0.64
33	49	43.29	DRI		TEH	1.22	CCAGC	0.64
34	49	149.6	DRI		TEH	1.33	CCAGC	0.7
34	49	59.29	DRI		TEH	1.14	CCAGC	0.7
34	49	59.66	DRI		TEH	1.33	CCAGC	0.7
35	49	91.47	DRI		TEH	0.87	CCAGC	0.7
35	49	13.71	DRI		TEH	2.44	CCAGC	0.7
35	49	24.02	DRI		TEH	1.06	CCAGC	0.7
35	49	21.38	DRI		TEH	1.26	CCAGC	0.7
35	49	27.33	DRI		TEH	1.03	CCAGC	0.7
35	49	23.9	DRI		TEH	2.8	CCAGC	0.7
36	49	27.07	DRI		TEH	1.07	CCAGC	0.7
36	49	44.12	DRI		TEH	0.81	CCAGC	0.7
36	49	25.25	DRI		TEH	1.26	CCAGC	0.7
37	49	6.15	DRI		TEH	1.03	CCAGC	0.7
37	49	41.13	DRI		TEH	1.03	CCAGC	0.7
37	49	16.44	DRI		TEH	1.1	CCAGC	0.7
38	49	8.58	DRI		TEH	0.96	CCAGC	0.7
38	49	24.89	DRI		TEH	1.39	CCAGC	0.7
38	49	23.55	DRI		TEH	1.35	CCAGC	0.7
38	49	35.62	DRI		TEH	1.11	CCAGC	0.7
39	49	32.73	DRI		TEH	1.05	CCAGC	0.7
39	49	55.9	DRI		TEH	1.41	CCAGC	0.7
39	49	1.75	TSI		TSC	0.26	CCAGC	0.7
39	49	31.77	DRI		TEH	1.03	CCAGC	0.7
39	49	56	DRI		TEH	1.41	CCAGC	0.7
40	49	21.84	DRI		TEH	1.08	CCAGC	0.7
40	49	67.83	DRI		TEH	1.31	CCAGC	0.7
41	49	38.83	DRI		TEH	1.2	CCAGC	0.7

41	49	14.48	DRI		TEH	1.2	CCAGC	0.7
42	49	20.16	DRI		TEH	1.03	CCAGC	0.7
42	49	37.67	DRI		TEH	1.03	CCAGC	0.7
42	49	39.84	DRI		TEH	1.25	CCAGC	0.7
43	49	15.18	DRI		TEH	1.12	CCAGC	0.7
6	50	1.09	SAI		TEH	0.18	ZPAMC	0.7
12	50	2.03	SAI		TEH	0.22	ZPANM	0.72
13	50	21.48	DRI		TEH	1.37	CCAGC	0.7
13	50	0.81	SAI		TEH	1.29	ZMAGR	0.72
14	50	22.64	DRI		TEH	1.12	MBALL	0.7
14	50	25.79	DRI		TEH	1.37	CCAGC	0.7
23	50	1.83	MAI		TEH	3.71	ZMAGR	0.72
23	50	30.47	DRI		TEH	1.21	CCAGC	0.7
23	50	11.24	DRI		TEH	3.3	CCAGC	0.7
23	50	18.49	DRI		TEH	3.36	CCAGC	0.7
23	50	21.18	DRI		TEH	4.5	CCAGC	0.7
24	50	16.54	DRI		TEH	1.01	CCAGC	0.7
24	50	32.64	DRI		TEH	1.41	CCAGC	0.7
25	50	105.8	DRI		TEH	1.25	CCAGC	0.7
25	50	86.73	DRI		TEH	1.42	CCAGC	0.7
25	50	1.55	SAI		TEH	3.02	ZMAGR	0.72
25	50	7.04	DRI		TEH	2.8	CCAGC	0.7
26	50	48.93	DRI		TEH	1.13	CCAGC	0.7
26	50	3.35	PCT	32	AV2	-0.01	CCAGC	0.7
27	50	47.59	DRI		TEH	0.59	CCAGC	0.7
28	50	75.3	DRI		TEH	1.48	CCAGC	0.7
29	50	55.47	DRI		TEH	1.08	CCAGC	0.7
29	50	1.8	DRI		TEH	2.93	CCAGC	0.7
30	50	46.73	DRI		TEH	1.22	CCAGC	0.7
30	50	19.08	DRI		TEH	2.63	CCAGC	0.7
31	50	21.73	DRI		TEH	0.97	CCAGC	0.68
31	50	74.76	DRI		TEH	0.97	CCAGC	0.7
31	50	71.83	DRI		TEH	1.21	CCAGC	0.7
31	50	34.12	DRI		TEH	0.96	CCAGC	0.7
31	50	57.34	DRI		TEH	1.3	CCAGC	0.68
31	50	62.31	DRI		TEH	1.42	CCAGC	0.68
32	50	27.94	DRI		TEH	2.76	CCAGC	0.7
32	50	3.56	MAI		TEH	3.21	ZMAGR	0.72
32	50	73.61	DRI		TEH	1.19	CCAGC	0.7
32	50	80.09	DRI		TEH	2.09	CCAGC	0.7
33	50	29.16	DRI		TEH	1.35	CCAGC	0.68
33	50	34.29	DRI		TEH	1.19	CCAGC	0.68
33	50	26.63	DRI		TEH	1.21	CCAGC	0.64
33	50	29.71	DRI		TEH	1.14	MBALL	0.7
34	50	39.99	DRI		TEH	1.24	CCAGC	0.7
34	50	88.28	DRI		TEH	2.72	CCAGC	0.7
34	50	29.78	DRI		TEH	1.24	CCAGC	0.7
34	50	7.5	DRI		TEH	2.72	CCAGC	0.7
35	50	42.67	DRI		TEH	1.18	CCAGC	0.7
35	50	16.27	DRI		TEH	2.65	CCAGC	0.7
35	50	40.72	DRI		TEH	1.26	CCAGC	0.7

35	50	25.03	DRI		TEH	2.65	CCAGC	0.7
35	50	45.17	DRI		TEH	1.25	CCAGC	0.7
35	50	20.24	DRI		TEH	2.61	CCAGC	0.7
36	50	2.41	MAI		TEH	0.15	ZPANM	0.72
37	50	123.9	DRI		TEH	0.91	CCAGC	0.7
37	50	69.87	DRI		TEH	1.03	CCAGC	0.7
38	50	41.17	DRI		TEH	0.95	CCAGC	0.7
38	50	16.16	DRI		TEH	0.83	CCAGC	0.7
39	50	14.81	DRI		TEH	1.18	CCAGC	0.7
39	50	87.66	DRI		TEH	1.09	CCAGC	0.7
40	50	78.86	DRI		TEH	1.11	CCAGC	0.7
41	50	35.44	DRI		TEH	1.07	CCAGC	0.7
41	50	43.55	DRI		TEH	0.93	CCAGC	0.7
41	50	37.03	DRI		TEH	1.31	CCAGC	0.7
42	50	33.5	DRI		TEH	1.01	CCAGC	0.7
43	50	29.6	DRI		TEH	1.08	CCAGC	0.7
44	50	49.81	DRI		TEH	1.67	CCAGC	0.68
44	50	58.63	DRI		TEH	1.28	MBALL	0.7
44	50	17.88	DRI		TEH	0.9	CCAGC	0.64
44	50	42.59	DRI		TEH	1.3	CCAGC	0.68
45	50	32.49	DRI		TEH	1.35	CCAGC	0.68
45	50	20.18	DRI		TEH	1.16	CCAGC	0.68
45	50	15.18	DRI		TEH	1.09	MBALL	0.7
45	50	13.52	DRI		TEH	1.31	CCAGC	0.64
3	51	1.46	SAI		TEH	0.16	ZPAMC	0.7
6	51	1.68	SAI		TEH	0.12	ZPAMC	0.7
13	51	0.5	SAI		TEH	0.21	ZPANM	0.72
14	51	50.83	DRI		TEH	1.32	CCAGC	0.7
15	51	54.77	DRI		TEH	1.59	CCAGC	0.7
20	51	0.31	PIT		TSH	1.53	ZPANM	0.72
22	51	1.53	SAI		TEH	0.15	ZPAMC	0.7
23	51	23.4	DRI		TEH	1.28	CCAGC	0.7
25	51	1.82	MAI		TEH	2.9	ZMAGR	0.72
25	51	106.7	DRI		TEH	1.47	CCAGC	0.7
25	51	11.55	DRI		TEH	2.5	CCAGC	0.7
26	51	57.66	DRI		TEH	1.17	CCAGC	0.7
27	51	56.86	DRI		TEH	1.09	CCAGC	0.7
27	51	8.65	DRI		TEH	3.1	CCAGC	0.7
27	51	0.82	VOL		TSH	3.28	ZPANM	0.72
27	51	0.58	MAI		TEH	3.71	ZPANM	0.72
27	51	7.31	MMI		TEH	1.24	ZPANM	0.72
28	51	16.05	DRI		TEH	2.28	CCAGC	0.7
28	51	42.9	DRI		TEH	0.65	CCAGC	0.7
29	51	79	DRI		TEH	1.42	CCAGC	0.7
30	51	27.31	DRI		TEH	1.27	CCAGC	0.7
31	51	86.3	DRI		TEH	1.25	CCAGC	0.7
31	51	119.1	DRI		TEH	0.98	CCAGC	0.7
31	51	72.32	DRI		TEH	1.26	CCAGC	0.7
32	51	39.21	DRI		TEH	0.94	CCAGC	0.7
32	51	10.91	DRI		TEH	2.71	CCAGC	0.7
33	51	1.61	MAI		TEH	0.39	ZPANM	0.72

34	51	38.93	DRI		TEH	1.27	CCAGC	0.7
35	51	41.59	DRI		TEH	0.55	CCAGC	0.7
35	51	268	DRI		TEH	2.15	CCAGC	0.7
35	51	30.77	DRI		TEH	0.86	CCAGC	0.7
35	51	11.7	DRI		TEH	2.28	CCAGC	0.7
36	51	0.35	PIT		TSH	4.21	ZPANM	0.72
36	51	83.02	DRI		TEH	1.29	CCAGC	0.7
36	51	36.53	DRI		TEH	1.29	CCAGC	0.7
37	51	84.22	DRI		TEH	1.31	CCAGC	0.7
37	51	45.92	DRI		TEH	0.85	CCAGC	0.7
38	51	109.6	TSI		TSH	0.24	CCAGC	0.7
38	51	79.24	DRI		TEH	1.32	CCAGC	0.7
38	51	89.69	DRI		TEH	0.95	CCAGC	0.7
38	51	122.3	TSI		TSH	0.23	CCAGC	0.7
39	51	43.31	DRI		TEH	0.94	CCAGC	0.7
39	51	11.35	DRI		TEH	2.2	CCAGC	0.7
39	51	66.46	DRI		TEH	1.03	CCAGC	0.7
39	51	9.04	DRI		TEH	2.37	CCAGC	0.7
40	51	29.11	DRI		TEH	1.27	CCAGC	0.7
40	51	58.52	DRI		TEH	1.02	CCAGC	0.7
41	51	65.37	DRI		TEH	0.88	CCAGC	0.7
41	51	28.87	DRI		TEH	1.38	CCAGC	0.7
42	51	56.69	DRI		TEH	1.01	MBALL	0.7
42	51	44.81	DRI		TEH	1.15	CCAGC	0.64
42	51	54.76	DRI		TEH	1.23	CCAGC	0.68
42	51	32.99	DRI		TEH	1.45	CCAGC	0.68
43	51	19.47	DRI		TEH	1.45	CCAGC	0.68
43	51	16.26	DRI		TEH	1.13	MBALL	0.7
43	51	20.24	DRI		TEH	1.61	CCAGC	0.64
43	51	22.83	DRI		TEH	1.21	CCAGC	0.68
44	51	29.94	DRI		TEH	1.35	CCAGC	0.68
44	51	37.87	DRI		TEH	1.17	CCAGC	0.68
44	51	36.58	DRI		TEH	1.26	MBALL	0.7
44	51	30.62	DRI		TEH	1.29	CCAGC	0.64
45	51	21.46	DRI		TEH	1.26	MBALL	0.7
45	51	24.26	DRI		TEH	1.43	CCAGC	0.64
45	51	21.96	DRI		TEH	1.1	CCAGC	0.68
45	51	23.98	DRI		TEH	1.48	CCAGC	0.68
3	52	7.1	DRI		TEH	1.2	CCAGC	0.64
3	52	13.97	DRI		TEH	1.25	CCAGC	0.7
3	52	18.52	DRI		TEH	1.2	CCAGC	0.7
3	52	21.01	DRI		TEH	1.33	CCAGC	0.68
3	52	6.36	DRI		TEH	1.2	CCAGC	0.68
6	52	0.91	SAI		TEH	1.29	ZMAGR	0.72
6	52	12.28	DRI		TEH	1.19	CCAGC	0.7
9	52	0.68	MAI		TEH	1.18	ZMAGR	0.72
9	52	32.67	DRI		TEH	1.43	CCAGC	0.7
11	52	23.79	DRI		TEH	1.26	CCAGC	0.7
13	52	40.47	DRI		TEH	1.14	CCAGC	0.7
14	52	19.72	DRI		TEH	0.98	CCAGC	0.7
15	52	0.26	SAI		TEH	3.06	ZMAGR	0.72

15	52	17.36	DRI		TEH	0.95	CCAGC	0.7
17	52	38.72	DRI		TEH	0.63	CCAGC	0.7
18	52	0.7	SAI		TEH	1.08	ZMAGR	0.72
18	52	5.41	DRI		TEH	2.07	CCAGC	0.7
19	52	1.13	MAI		TEH	0.23	ZPANM	0.72
20	52	0.95	SAI		TEH	1.47	ZMAGR	0.72
20	52	21.07	DRI		TEH	1.33	CCAGC	0.7
21	52	33.48	DRI		TEH	0.88	CCAGC	0.7
22	52	35.69	DRI		TEH	1.54	CCAGC	0.7
23	52	0.92	NQI		6H	56.29	CCAGC	0.7
23	52	59.71	DRI		TEH	0.99	CCAGC	0.7
24	52	53.59	DRI		TEH	1.69	CCAGC	0.7
25	52	2.99	MAI		TEH	3.32	ZMAGR	0.72
25	52	84.82	DRI		TEH	1.12	CCAGC	0.7
25	52	26.95	DRI		TEH	3.17	CCAGC	0.7
26	52	31.54	DRI		TEH	1.02	CCAGC	0.7
27	52	1.36	MAI		TEH	3.2	ZMAGR	0.72
27	52	27.49	DRI		TEH	1.22	CCAGC	0.7
28	52	29.16	DRI		TEH	1.21	CCAGC	0.7
29	52	36.27	DRI		TEH	0.88	CCAGC	0.7
29	52	7.81	DRI		TEH	2.2	CCAGC	0.7
30	52	45.21	DRI		TEH	1.23	CCAGC	0.7
30	52	40.88	DRI		TEH	1.04	CCAGC	0.7
30	52	34.84	DRI		TEH	1.28	CCAGC	0.7
31	52	2.44	MAI		TEH	2.57	ZMAGR	0.72
31	52	346.9	DRI		TEH	1.04	CCAGC	0.7
31	52	40.35	DRI		TEH	2.22	CCAGC	0.7
32	52	51.54	DRI		TEH	1.6	CCAGC	0.7
32	52	51.15	DRI		TEH	2.01	CCAGC	0.7
32	52	5.19	MAI		TEH	2.6	ZMAGR	0.72
33	52	29.05	DRI		TEH	1.21	MBALL	0.7
33	52	33.98	DRI		TEH	3.03	MBALL	0.7
33	52	42.15	DRI		TEH	1.3	CCAGC	0.68
33	52	32.21	DRI		TEH	1.33	CCAGC	0.68
33	52	18	DRI		TEH	2.67	CCAGC	0.68
33	52	29.46	DRI		TEH	3.06	CCAGC	0.68
34	52	49.07	DRI		TEH	1.11	CCAGC	0.7
35	52	11.44	DRI		TEH	1.89	CCAGC	0.7
35	52	42.65	DRI		TEH	1.14	CCAGC	0.7
35	52	36.35	DRI		TEH	0.96	CCAGC	0.7
35	52	9.76	DRI		TEH	2.47	CCAGC	0.7
36	52	26.97	DRI		TEH	0.91	CCAGC	0.7
36	52	21.67	DRI		TEH	1.16	CCAGC	0.7
37	52	54.34	DRI		TEH	1.17	CCAGC	0.7
37	52	31.17	DRI		TEH	1.11	CCAGC	0.7
38	52	59.78	DRI		TEH	1.06	CCAGC	0.7
38	52	31.94	DRI		TEH	0.99	CCAGC	0.7
39	52	31.79	DRI		TEH	1.23	CCAGC	0.7
39	52	85.01	DRI		TEH	1.23	CCAGC	0.7
40	52	15.36	DRI		TEH	1.37	CCAGC	0.7
41	52	28.86	DRI		TEH	1.49	CCAGC	0.7

42	52	20.01	DRI		TEH	1.53	CCAGC	0.7
43	52	30.65	DRI		TEH	1.05	CCAGC	0.7
43	52	23.24	DRI		TEH	1.12	CCAGC	0.7
44	52	0.55	PCT	13	TSH	13.64	CCAGC	0.68
44	52	0.45	PCT	20	TSH	13.54	CCAGC	0.7
44	52	20.26	DRI		TEH	1.4	CCAGC	0.7
44	52	20.44	DRI		TEH	1.4	CCAGC	0.68
44	52	0.31	PCT	26	TSH	13.65	CCAGC	0.64
44	52	44.81	DRI		TEH	1.4	CCAGC	0.64
44	52	0.15	PIT		TSH	13.11	ZPANM	0.68
44	52	31.67	DRI		TEH	1.4	CCAGC	0.7
45	52	20.21	DRI		TEH	0.94	CCAGC	0.64
45	52	18.79	DRI		TEH	0.94	CCAGC	0.68
45	52	20.64	DRI		TEH	0.94	CCAGC	0.7
45	52	20.4	DRI		TEH	1.04	CCAGC	0.7
4	53	27.54	DRI		TEH	1.27	CCAGC	0.68
4	53	17.01	DRI		TEH	1.18	CCAGC	0.7
4	53	21.75	DRI		TEH	1.32	CCAGC	0.68
4	53	20.01	DRI		TEH	1.13	CCAGC	0.64
4	53	19.89	DRI		TEH	0.95	CCAGC	0.7
4	53	19.6	DRI		TEH	1.39	CCAGC	0.64
5	53	0.87	SAI		TEH	0.19	ZPAMC	0.7
15	53	15.08	DRI		TEH	0.65	CCAGC	0.7
15	53	15.33	DRI		TEH	0.96	CCAGC	0.7
16	53	63.72	DRI		TEH	1.26	CCAGC	0.7
16	53	62.16	DRI		TEH	1.4	CCAGC	0.7
17	53	25.72	DRI		TEH	1.28	CCAGC	0.7
17	53	22.63	DRI		TEH	1.44	CCAGC	0.7
17	53	0.31	PIT		TSH	1.57	ZPANM	0.72
21	53	58.51	DRI		TEH	1.45	CCAGC	0.7
21	53	16.54	DRI		TEH	1.14	CCAGC	0.7
22	53	22.11	DRI		TEH	1.11	CCAGC	0.7
22	53	27.32	DRI		TEH	1.24	CCAGC	0.7
23	53	38.52	DRI		TEH	1.17	CCAGC	0.7
23	53	46.15	DRI		TEH	1.22	CCAGC	0.7
24	53	57.89	DRI		TEH	0.65	CCAGC	0.7
24	53	65.88	DRI		TEH	1.22	CCAGC	0.7
25	53	40.69	DRI		TEH	1.28	CCAGC	0.7
25	53	23.47	DRI		TEH	2.84	CCAGC	0.7
25	53	46.34	DRI		TEH	1.57	CCAGC	0.7
26	53	52.08	DRI		TEH	1.78	CCAGC	0.7
26	53	3.79	PCT	34	AV2	0.06	CCAGC	0.7
27	53	30.36	DRI		TEH	1.22	CCAGC	0.7
28	53	39.65	DRI		TEH	1.51	CCAGC	0.7
28	53	11.09	DRI		TEH	2.38	CCAGC	0.7
29	53	47.1	DRI		TEH	1.17	CCAGC	0.7
30	53	19.07	DRI		TEH	0.99	CCAGC	0.7
31	53	68.4	DRI		TEH	1.23	CCAGC	0.7
32	53	33.88	DRI		TEH	1.03	CCAGC	0.7
32	53	18.64	DRI		TEH	2.52	CCAGC	0.7
33	53	73.34	DRI		TEH	1.34	CCAGC	0.7

33	53	69.53	DRI		TEH	1.13	CCAGC	0.7
33	53	61	DRI		TEH	1.32	CCAGC	0.7
34	53	44.83	DRI		TEH	1.18	CCAGC	0.7
34	53	37.57	DRI		TEH	1.17	CCAGC	0.7
34	53	43.91	DRI		TEH	1.18	CCAGC	0.7
35	53	25.85	DRI		TEH	1.32	CCAGC	0.7
35	53	9.71	DRI		TEH	1.18	CCAGC	0.7
35	53	29.61	DRI		TEH	1.17	CCAGC	0.7
36	53	26.26	DRI		TEH	0.94	CCAGC	0.7
37	53	1.28	SAI		TEH	3.85	ZMAGR	0.72
37	53	73.47	DRI		TEH	1.08	CCAGC	0.7
37	53	9.97	DRI		TEH	2.45	CCAGC	0.7
38	53	33.38	DRI		TEH	1.12	CCAGC	0.7
39	53	5.5	MAI		TEH	0.39	ZPANM	0.72
39	53	0.49	SAI		TEH	3.42	ZPANM	0.72
41	53	28.3	DRI		TEH	1.42	CCAGC	0.7
42	53	19.89	DRI		TEH	1.28	CCAGC	0.7
43	53	23.93	DRI		TEH	1.36	CCAGC	0.7
45	53	13.21	DRI		TEH	1.29	CCAGC	0.64
45	53	20.13	DRI		TEH	1.29	CCAGC	0.68
45	53	21.15	DRI		TEH	1.29	CCAGC	0.7
45	53	21.85	DRI		TEH	1.29	CCAGC	0.7
45	53	19.22	DRI		TEH	1.34	CCAGC	0.64
3	54	2.08	SAI		TEH	0.16	ZPAMC	0.7
8	54	0.92	SAI		TEH	0.15	ZPAMC	0.7
12	54	29.58	DRI		TEH	1.28	CCAGC	0.7
12	54	42.89	DRI		TEH	1.09	CCAGC	0.7
13	54	24.73	DRI		TEH	1.31	CCAGC	0.7
14	54	34.24	DRI		TEH	1.19	CCAGC	0.7
15	54	1.23	SAI		TEH	2.9	ZMAGR	0.72
15	54	51.89	DRI		TEH	1.04	CCAGC	0.7
16	54	26.6	DRI		TEH	1.12	CCAGC	0.7
16	54	8.74	DRI		TEH	2.4	CCAGC	0.7
17	54	40.98	DRI		TEH	0.94	CCAGC	0.7
17	54	41.77	DRI		TEH	1.26	CCAGC	0.7
19	54	27.18	DRI		TEH	1.29	CCAGC	0.7
20	54	18.04	DRI		TEH	1.4	CCAGC	0.7
21	54	1.42	SAI		TEH	4.39	ZMAGR	0.72
21	54	21.44	DRI		TEH	1.28	CCAGC	0.7
22	54	49.19	DRI		TEH	1.16	CCAGC	0.7
22	54	48.33	DRI		TEH	1.23	CCAGC	0.7
23	54	34.85	DRI		TEH	1.16	MBALL	0.7
23	54	16.26	DRI		TEH	0.83	CCAGC	0.7
24	54	52.43	DRI		TEH	1.19	CCAGC	0.7
24	54	86.46	DRI		TEH	1.69	CCAGC	0.7
24	54	45.88	DRI		TEH	3.16	CCAGC	0.7
25	54	99.4	DRI		TEH	1.21	CCAGC	0.7
25	54	13.98	DRI		TEH	3.12	CCAGC	0.7
25	54	90.76	DRI		TEH	1.4	CCAGC	0.7
26	54	34.22	DRI		TEH	1.22	CCAGC	0.7
26	54	34.89	DRI		TEH	1.22	CCAGC	0.7

27	54	54.23	DRI		TEH	1.16	CCAGC	0.7
27	54	45.12	DRI		TEH	1.22	CCAGC	0.7
27	54	11.63	DRI		TEH	2.4	CCAGC	0.7
28	54	109.4	DRI		TEH	1.18	CCAGC	0.7
28	54	15.24	DRI		TEH	2.52	CCAGC	0.7
28	54	62.89	DRI		TEH	1.17	CCAGC	0.7
28	54	0.53	MAI		TEH	2.56	ZMAGR	0.72
29	54	9.87	DRI		TEH	2.62	CCAGC	0.7
29	54	47.62	DRI		TEH	1.19	CCAGC	0.7
30	54	21.46	DRI		TEH	1.24	CCAGC	0.7
31	54	56.52	DRI		TEH	1.1	CCAGC	0.7
33	54	11.3	DRI		TEH	0.89	CCAGC	0.7
33	54	14.88	DRI		TEH	1.07	CCAGC	0.7
34	54	90.37	DRI		TEH	1.21	CCAGC	0.7
34	54	56.84	DRI		TEH	1.14	MBALL	0.7
34	54	62.75	DRI		TEH	1.14	CCAGC	0.7
35	54	15.5	DRI		TEH	2.34	CCAGC	0.7
35	54	70.53	DRI		TEH	1.09	CCAGC	0.7
36	54	0.85	SAI		TEH	1.7	ZPANM	0.72
36	54	26.41	DRI		TEH	0.95	CCAGC	0.7
37	54	2.67	MAI		TEH	1.19	ZPANM	0.72
37	54	3.82	MAI		TEH	1.28	ZPANM	0.68
37	54	50.49	DRI		TEH	1.08	CCAGC	0.7
37	54	27.48	DRI		TEH	2.61	CCAGC	0.7
38	54	8.75	DRI		TEH	2.39	CCAGC	0.7
38	54	42.53	DRI		TEH	0.94	CCAGC	0.7
39	54	48.91	DRI		TEH	1.06	CCAGC	0.7
40	54	53.47	DRI		TEH	1.08	CCAGC	0.7
40	54	50.47	DRI		TEH	1.13	CCAGC	0.7
43	54	52.44	DRI		TEH	1.43	CCAGC	0.7
2	55	6.46	MAI		TEH	0.23	ZPAMC	0.7
2	55	0.71	MCI		TEH	1.22	ZPAMC	0.7
4	55	0.15	PIT		TSH	8.77	ZPAMC	0.7
4	55	7.93	DRI		TEH	2.48	CCAGC	0.7
6	55	0.74	SAI		TEH	0.15	ZPAMC	0.7
11	55	1.31	SAI		TEH	1.48	ZMAGR	0.72
11	55	11.98	DRI		TEH	1.3	CCAGC	0.7
13	55	28.08	DRI		TEH	1.11	CCAGC	0.7
15	55	23.06	DRI		TEH	0.57	CCAGC	0.7
16	55	44.16	DRI		TEH	1.27	CCAGC	0.7
16	55	37.57	DRI		TEH	1.29	CCAGC	0.7
17	55	30.11	DRI		TEH	0.66	CCAGC	0.7
21	55	39.19	DRI		TEH	1.13	CCAGC	0.7
21	55	66.08	DRI		TEH	1.3	CCAGC	0.7
22	55	32.65	DRI		TEH	1.23	CCAGC	0.7
22	55	40.07	DRI		TEH	1.27	CCAGC	0.7
23	55	41.59	DRI		TEH	1.18	CCAGC	0.7
23	55	46.47	DRI		TEH	1.25	CCAGC	0.7
24	55	45.08	DRI		TEH	1.45	CCAGC	0.68
24	55	28.68	DRI		TEH	1.17	CCAGC	0.7
24	55	37.96	DRI		TEH	1.32	CCAGC	0.7

24	55	30.75	DRI		TEH	1.26	CCAGC	0.68
25	55	33.07	DRI		TEH	1.51	CCAGC	0.68
25	55	11.62	DRI		TEH	2.63	CCAGC	0.7
25	55	40.18	DRI		TEH	1.28	CCAGC	0.7
25	55	30.85	DRI		TEH	1.18	CCAGC	0.7
25	55	0.26	PCT	4	TSC	1.05	CCAGC	0.7
25	55	24.17	DRI		TEH	0.89	CCAGC	0.7
25	55	27.16	DRI		TEH	1.33	CCAGC	0.68
25	55	21.61	DRI		TEH	0.99	CCAGC	0.68
25	55	0.58	PIT		TSC	0.83	ZPANM	0.72
25	55	0.28	PCT	7	TSC	1.09	CCAGC	0.68
25	55	13.21	DRI		TEH	2.86	CCAGC	0.68
26	55	51.27	DRI		TEH	0.91	CCAGC	0.7
26	55	16.86	DRI		TEH	1.11	CCAGC	0.7
26	55	36.19	DRI		TEH	1.25	CCAGC	0.7
27	55	42.84	DRI		TEH	1	CCAGC	0.7
27	55	45.17	DRI		TEH	1.15	CCAGC	0.7
28	55	33.96	DRI		TEH	1.19	CCAGC	0.7
28	55	29.59	DRI		TEH	3.13	CCAGC	0.7
28	55	46.07	DRI		TEH	0.91	CCAGC	0.7
29	55	0.27	PIT		TSH	19.57	ZPANM	0.72
29	55	0.95	SAI		TEH	4.48	ZMAGR	0.72
29	55	80	DRI		TEH	1	CCAGC	0.7
29	55	16	DRI		TEH	2.48	CCAGC	0.7
30	55	40.07	DRI		TEH	1.08	CCAGC	0.7
31	55	9.12	DRI		TEH	2.33	CCAGC	0.7
31	55	1.73	SAI		TEH	2.78	ZMAGR	0.72
31	55	42.42	DRI		TEH	0.94	CCAGC	0.7
32	55	59.87	DRI		TEH	1.08	CCAGC	0.7
32	55	22.38	DRI		TEH	2.45	CCAGC	0.7
33	55	317.6	DRI		TEH	1.22	CCAGC	0.7
34	55	18.24	DRI		TEH	1.02	CCAGC	0.7
34	55	26.67	DRI		TEH	1.09	CCAGC	0.7
35	55	1.48	SAI		TEH	3.18	ZMAGR	0.72
35	55	38.43	DRI		TEH	1.3	CCAGC	0.7
36	55	24.69	DRI		TEH	1.18	CCAGC	0.7
37	55	35.73	DRI		TEH	1.08	CCAGC	0.7
37	55	153.2	DRI		TEH	2.22	CCAGC	0.7
38	55	46.82	DRI		TEH	1.19	CCAGC	0.7
38	55	54.4	DRI		TEH	1.56	CCAGC	0.7
38	55	49.39	DRI		TEH	1.23	MBALL	0.7
39	55	47	DRI		TEH	1.17	CCAGC	0.7
40	55	64.87	DRI		TEH	0.97	CCAGC	0.7
41	55	19.93	DRI		TEH	1.19	CCAGC	0.7
41	55	17.9	DRI		TEH	2.7	CCAGC	0.7
42	55	55.33	DRI		TEH	1.25	CCAGC	0.7
44	55	24.94	DRI		TEH	1.53	CCAGC	0.7
44	55	43.89	DRI		TEH	1.34	CCAGC	0.7
44	55	20.84	DRI		TEH	1.35	CCAGC	0.64
44	55	20.87	DRI		TEH	1.31	CCAGC	0.68
44	55	65.13	DRI		TEH	1.44	CCAGC	0.68

2	56	4.95	DRI		TEH	1.33	CCAGC	0.7
2	56	16.39	DRI		TEH	1.37	CCAGC	0.7
2	56	15.97	DRI		TEH	1.22	CCAGC	0.68
2	56	35.5	DRI		TEH	1.12	CCAGC	0.68
2	56	21.51	DRI		TEH	1.22	CCAGC	0.68
2	56	14.29	DRI		TEH	1.21	CCAGC	0.64
2	56	15.02	DRI		TEH	1.63	CCAGC	0.64
6	56	0.48	MAI		TEH	0.19	ZPAMC	0.7
11	56	0.96	SAI		TEH	1.58	ZMAGR	0.72
11	56	13.04	DRI		TEH	1.22	CCAGC	0.7
12	56	44.14	DRI		TEH	1.18	CCAGC	0.7
14	56	1.15	SAI		TEH	3.01	ZMAGR	0.72
14	56	38.84	DRI		TEH	1.01	CCAGC	0.7
16	56	47.81	DRI		TEH	1.03	CCAGC	0.7
16	56	68.03	DRI		TEH	1.29	CCAGC	0.7
17	56	33.73	DRI		TEH	1.27	CCAGC	0.7
17	56	30.71	DRI		TEH	1.32	CCAGC	0.7
18	56	36.92	DRI		TEH	0.95	CCAGC	0.7
18	56	54.45	DRI		TEH	1.21	CCAGC	0.7
19	56	21.41	DRI		TEH	1.3	CCAGC	0.7
20	56	1.66	MAI		TEH	1.29	ZMAGR	0.72
20	56	28.31	DRI		TEH	1.25	CCAGC	0.7
20	56	37.71	DRI		TEH	1.37	CCAGC	0.7
21	56	46.11	DRI		TEH	0.98	CCAGC	0.7
21	56	35.75	DRI		TEH	1.27	CCAGC	0.7
22	56	27.46	DRI		TEH	1.04	CCAGC	0.7
22	56	49.7	DRI		TEH	1.27	CCAGC	0.7
23	56	53.23	DRI		TEH	1.19	CCAGC	0.7
23	56	33.56	DRI		TEH	1.06	CCAGC	0.7
24	56	33.43	DRI		TEH	1.15	CCAGC	0.7
24	56	36.25	DRI		TEH	1.33	CCAGC	0.7
26	56	63.63	DRI		TEH	1.19	CCAGC	0.7
26	56	33.72	DRI		TEH	1.19	CCAGC	0.7
27	56	0.61	SAI		TEH	4.22	ZMAGR	0.72
27	56	83.97	DRI		TEH	1.01	CCAGC	0.7
27	56	9.18	DRI		TEH	2.77	CCAGC	0.7
28	56	25.59	DRI		TEH	1.37	CCAGC	0.7
28	56	15.47	DRI		TEH	2.63	CCAGC	0.7
29	56	74.29	DRI		TEH	1.36	CCAGC	0.7
29	56	171.5	DRI		TEH	2.47	CCAGC	0.7
29	56	52.62	DRI		TEH	1.29	CCAGC	0.7
30	56	44.84	DRI		TEH	1.13	CCAGC	0.7
31	56	28.98	DRI		TEH	1.48	CCAGC	0.7
32	56	17.58	DRI		TEH	1.03	CCAGC	0.7
32	56	11.34	DRI		TEH	2.66	CCAGC	0.7
33	56	23.86	DRI		TEH	1.31	CCAGC	0.68
33	56	8.76	DRI		TEH	2.51	CCAGC	0.7
33	56	30.88	DRI		TEH	1.33	CCAGC	0.7
33	56	14.99	DRI		TEH	1.31	CCAGC	0.7
33	56	29.25	DRI		TEH	1.43	CCAGC	0.68
33	56	1.24	MAI		TEH	3.51	ZMAGR	0.72

33	56	9.67	DRI		TEH	2.51	CCAGC	0.68
34	56	50.2	DRI		TEH	1.29	CCAGC	0.7
34	56	51.14	DRI		TEH	1.03	CCAGC	0.68
34	56	48.52	DRI		TEH	1.37	CCAGC	0.68
34	56	37.45	DRI		TEH	1.03	CCAGC	0.7
35	56	41.23	DRI		TEH	2.5	CCAGC	0.7
35	56	60.54	DRI		TEH	1.16	CCAGC	0.7
35	56	39.39	DRI		TEH	1.36	MBALL	0.7
35	56	33.06	DRI		TEH	2.62	MBALL	0.7
36	56	39.4	DRI		TEH	1.14	CCAGC	0.7
37	56	150.9	DRI		TEH	1.27	CCAGC	0.7
37	56	109.7	DRI		TEH	2.6	CCAGC	0.7
37	56	61.16	DRI		TEH	1.04	CCAGC	0.7
37	56	15.34	DRI		TEH	2.45	CCAGC	0.7
38	56	27	DRI		TEH	1.54	CCAGC	0.7
39	56	54.92	DRI		TEH	1.16	CCAGC	0.7
40	56	44.97	DRI		TEH	1.2	MBALL	0.7
40	56	58.89	DRI		TEH	1.02	CCAGC	0.7
40	56	47.88	DRI		TEH	1.38	CCAGC	0.7
41	56	26.07	DRI		TEH	1.2	MBALL	0.7
41	56	24.89	DRI		TEH	1.26	CCAGC	0.68
41	56	24.81	DRI		TEH	1.35	CCAGC	0.68
41	56	9.29	DRI		TEH	2.46	CCAGC	0.68
41	56	23.93	DRI		TEH	1.26	CCAGC	0.7
41	56	16.49	DRI		TEH	1.56	CCAGC	0.7
41	56	15.7	DRI		TEH	2.74	CCAGC	0.7
43	56	63.05	DRI		TEH	0.95	CCAGC	0.7
43	56	535.8	SPI		1H	-0.12	CCAGC	0.7
43	56	31.92	DRI		TEH	0.81	CCAGC	0.7
43	56	535.8	SPI		1H	-0.12	CCAGC	0.7
44	56	17.52	DRI		TEH	1.37	CCAGC	0.64
44	56	15.83	DRI		TEH	1.39	CCAGC	0.68
44	56	66.27	DRI		TEH	1.5	CCAGC	0.68
44	56	20.49	DRI		TEH	1.33	CCAGC	0.68
44	56	20.51	DRI		TEH	1.35	CCAGC	0.7
2	57	5.36	MAI		TEH	0.13	ZPAMC	0.7
3	57	2.67	MAI		TEH	0.17	ZPAMC	0.7
4	57	1.88	SAI		TEH	1.3	ZMAGR	0.72
4	57	11.66	DRI		TEH	1.28	CCAGC	0.7
5	57	0.89	SAI		TEH	0.12	ZPAMC	0.7
8	57	16.75	DRI		TEH	0.95	CCAGC	0.68
8	57	15.77	DRI		TEH	1.26	CCAGC	0.7
9	57	0.24	PIT		TSH	1.66	ZPAMC	0.7
13	57	1.13	SAI		TEH	1.33	ZMAGR	0.72
13	57	8.65	DRI		TEH	1.11	CCAGC	0.7
15	57	24.63	DRI		TEH	0.81	CCAGC	0.7
15	57	29.27	DRI		TEH	1.31	CCAGC	0.7
15	57	32.44	DRI		TEH	0.94	CCAGC	0.7
15	57	27.18	DRI		TEH	1.32	CCAGC	0.7
16	57	31	DRI		TEH	0.88	CCAGC	0.7
17	57	37.19	DRI		TEH	1.21	CCAGC	0.7

18	57	26.9	DRI		TEH	1.31	CCAGC	0.7
18	57	21.14	DRI		TEH	1.43	CCAGC	0.7
19	57	3.04	MCI		TEH	1.13	ZPANM	0.72
21	57	36.22	DRI		TEH	1.2	CCAGC	0.7
22	57	34.51	DRI		TEH	1.06	CCAGC	0.7
23	57	17.68	DRI		TEH	1.13	CCAGC	0.7
23	57	11.1	DRI		TEH	2.54	CCAGC	0.7
24	57	37.72	DRI		TEH	1.21	CCAGC	0.7
24	57	24.38	DRI		TEH	1.28	CCAGC	0.7
25	57	0.97	PIT		TSC	1.09	ZPANM	0.72
25	57	0.37	PIT	20	TSC	1.31	ZPANM	0.68
25	57	50.94	DRI		TEH	1.04	CCAGC	0.7
25	57	59.52	DRI		TEH	1.15	CCAGC	0.7
25	57	19.29	DRI		TEH	2.51	CCAGC	0.7
26	57	51.21	DRI		TEH	1.09	CCAGC	0.7
26	57	47.73	DRI		TEH	1.32	CCAGC	0.7
27	57	113.6	DRI		TEH	0.86	CCAGC	0.7
27	57	58.1	DRI		TEH	1.3	CCAGC	0.7
28	57	64.15	DRI		TEH	1.07	CCAGC	0.7
28	57	27.36	DRI		TEH	1.39	CCAGC	0.7
29	57	11.32	DRI		TEH	0.73	CCAGC	0.7
29	57	21.29	DRI		TEH	1.49	CCAGC	0.7
29	57	52.14	DRI		TEH	2.6	CCAGC	0.7
30	57	14.01	DRI		TEH	1.43	CCAGC	0.7
31	57	12.06	DRI		TEH	1.37	CCAGC	0.7
31	57	8.67	DRI		TEH	2.69	CCAGC	0.7
32	57	58.83	DRI		TEH	1.22	CCAGC	0.7
32	57	2.25	DRI		TEH	2.59	CCAGC	0.7
32	57	1.72	MAI		TEH	3.72	ZMAGR	0.72
33	57	49.94	DRI		TEH	1.15	CCAGC	0.7
34	57	0.84	MAI		TEH	3.5	ZMAGR	0.72
34	57	22.31	DRI		TEH	1.14	CCAGC	0.7
35	57	28.21	DRI		TEH	2.48	CCAGC	0.7
36	57	14.34	DRI		TEH	1.15	CCAGC	0.7
36	57	68.7	DRI		TEH	1.29	MBALL	0.7
37	57	20.68	DRI		TEH	1.17	CCAGC	0.7
38	57	29.34	DRI		TEH	1.19	CCAGC	0.7
38	57	11.68	DRI		TEH	2.57	CCAGC	0.7
39	57	98	DRI		TEH	1.21	MBALL	0.7
39	57	18.07	DRI		TEH	0.98	CCAGC	0.7
39	57	35.58	DRI		TEH	2.53	CCAGC	0.7
40	57	15.41	DRI		TEH	0.96	CCAGC	0.7
40	57	4.75	DRI		TEH	2.42	CCAGC	0.7
42	57	10.64	DRI		TEH	0.97	CCAGC	0.7
44	57	28.62	DRI		TEH	0.98	MBALL	0.7
44	57	4.18	DRI		TEH	1.49	CCAGC	0.68
44	57	12.92	DRI		TEH	1.05	CCAGC	0.68
44	57	12.89	DRI		TEH	1.12	CCAGC	0.68
2	58	5.35	MAI		TEH	0.21	ZPAMC	0.7
3	58	20.41	DRI		TEH	1.25	ZBALL	0.61
3	58	30.67	DRI		TEH	1.18	CCAGC	0.7

3	58	26.07	DRI		TEH	1.29	CCAGC	0.7
4	58	0.78	SAI		TEH	0.16	ZPAMC	0.7
5	58	1.13	MAI		TEH	0.15	ZPAMC	0.7
8	58	29.62	DRI		TEH	0.97	CCAGC	0.68
8	58	53.9	DRI		TEH	1.38	CCAGC	0.7
9	58	0.16	PIT		TSH	7.91	ZPAMC	0.7
10	58	1.46	MAI		TEH	1.53	ZMAGR	0.72
10	58	24.3	DRI		TEH	1.52	CCAGC	0.68
10	58	8.94	DRI		TEH	1.78	CCAGC	0.7
12	58	19.1	DRI		TEH	1.02	CCAGC	0.7
15	58	18.72	DRI		TEH	1.2	CCAGC	0.7
16	58	32.51	DRI		TEH	1.21	CCAGC	0.7
17	58	39.82	DRI		TEH	1.03	CCAGC	0.7
18	58	22.58	DRI		TEH	2.37	CCAGC	0.7
19	58	1.8	SAI		TEH	1.31	ZMAGR	0.72
19	58	27.21	DRI		TEH	1.51	CCAGC	0.7
20	58	19.48	DRI		TEH	1.36	CCAGC	0.7
21	58	6.91	DRI		TEH	0.9	CCAGC	0.7
21	58	31.03	DRI		TEH	1.24	CCAGC	0.7
22	58	0.13	PIT		TSC	0.58	ZPANM	0.68
22	58	28.81	DRI		TEH	1.57	CCAGC	0.7
22	58	0.18	PCT	12	TSC	0.95	CCAGC	0.7
22	58	1.07	PCT	16	TSC	1.8	CCAGC	0.7
24	58	63.86	DRI		TEH	1.13	CCAGC	0.7
24	58	40.84	DRI		TEH	1.37	CCAGC	0.7
25	58	53.16	DRI		TEH	1.17	MBALL	0.7
25	58	57.85	DRI		TEH	1.22	CCAGC	0.68
25	58	34.33	DRI		TEH	1.41	CCAGC	0.68
25	58	31.9	DRI		TEH	2.4	CCAGC	0.68
26	58	72.94	DRI		TEH	1.2	CCAGC	0.68
26	58	53.08	DRI		TEH	1.28	CCAGC	0.68
26	58	43	DRI		TEH	1.04	CCAGC	0.7
27	58	51.62	DRI		TEH	1.62	CCAGC	0.7
27	58	6.53	DRI		TEH	2.37	CCAGC	0.7
27	58	18.49	DRI		TEH	0.94	CCAGC	0.7
28	58	7.13	DRI		TEH	2.65	CCAGC	0.7
28	58	31.22	DRI		TEH	1.09	CCAGC	0.7
30	58	43.66	DRI		TEH	0.91	CCAGC	0.7
30	58	48.61	DRI		TEH	1.27	CCAGC	0.7
31	58	13.47	DRI		TEH	1.14	CCAGC	0.7
32	58	36.59	DRI		TEH	1.3	CCAGC	0.68
32	58	33.21	DRI		TEH	1.01	CCAGC	0.7
32	58	25.15	DRI		TEH	2.56	CCAGC	0.7
32	58	48.01	DRI		TEH	1.45	CCAGC	0.68
32	58	1.31	MAI		TEH	3.49	ZMAGR	0.72
32	58	0.98	MAI		TEH	3.71	ZMAGR	0.72
32	58	22.4	DRI		TEH	2.73	CCAGC	0.68
32	58	19.11	DRI		TEH	0.92	CCAGC	0.68
33	58	8.98	DRI		TEH	1.15	CCAGC	0.7
33	58	26.61	DRI		TEH	2.89	CCAGC	0.7
34	58	0.68	SAI		TEH	2.74	ZMAGR	0.72

34	58	11.65	DRI		TEH	1.11	CCAGC	0.7
35	58	8.66	DRI		TEH	1.07	CCAGC	0.7
35	58	14.12	DRI		TEH	2.78	CCAGC	0.7
35	58	0.32	SAI		TEH	3.39	ZMAGR	0.72
36	58	47.52	DRI		TEH	1.35	CCAGC	0.68
36	58	10.25	DRI		TEH	2.46	CCAGC	0.68
36	58	17.89	DRI		TEH	0.8	CCAGC	0.7
36	58	45.4	DRI		TEH	1.27	CCAGC	0.7
36	58	8.63	DRI		TEH	2.64	CCAGC	0.7
36	58	34.14	DRI		TEH	1.16	CCAGC	0.7
36	58	48.6	DRI		TEH	1.35	CCAGC	0.7
36	58	5.7	DRI		TEH	2.56	CCAGC	0.7
36	58	37.53	DRI		TEH	1.16	CCAGC	0.68
37	58	44.97	DRI		TEH	1.31	MBALL	0.7
37	58	29.23	DRI		TEH	1.27	CCAGC	0.68
37	58	46.29	DRI		TEH	1.27	CCAGC	0.68
38	58	35.43	DRI		TEH	1.2	MBALL	0.7
38	58	38.77	DRI		TEH	1.24	CCAGC	0.68
38	58	32.24	DRI		TEH	1.24	CCAGC	0.68
38	58	8.05	DRI		TEH	2.3	CCAGC	0.68
39	58	6.35	DRI		TEH	1.06	CCAGC	0.7
41	58	14.12	DRI		TEH	1.36	CCAGC	0.68
41	58	21.48	DRI		TEH	1.49	CCAGC	0.68
41	58	12.07	DRI		TEH	1.32	MBALL	0.7
41	58	0.9	SAI		TEH	3.55	ZMAGR	0.72
42	58	13.14	DRI		TEH	1.36	CCAGC	0.68
43	58	0.64	SAI		TEH	1.52	ZMAGR	0.72
43	58	5.77	DRI		TEH	1.2	CCAGC	0.7
3	59	28.48	DRI		TEH	1.11	CCAGC	0.7
4	59	0.32	MAI		TEH	1.35	ZMAGR	0.72
4	59	20.96	DRI		TEH	1.37	CCAGC	0.7
5	59	26.45	DRI		TEH	1.75	CCAGC	0.68
6	59	1.69	SAI		TEH	0.15	ZPAMC	0.7
8	59	0.19	PIT	1	TSC	5.09	ZPANM	0.68
8	59	26.6	DRI		TEH	1.4	CCAGC	0.7
8	59	5.1	PI		TSC	4.58	CCAGC	0.7
8	59	38.51	DRI		TEH	1.8	CCAGC	0.68
10	59	15.29	DRI		TEH	0.98	CCAGC	0.68
12	59	2.78	MAI		TEH	1.41	ZMAGR	0.72
12	59	28.89	DRI		TEH	1.28	CCAGC	0.68
12	59	31.55	DRI		TEH	1.47	CCAGC	0.68
12	59	26.04	DRI		TEH	1.28	CCAGC	0.7
13	59	25.25	DRI		TEH	1.4	CCAGC	0.68
13	59	26.57	DRI		TEH	1.32	CCAGC	0.7
13	59	27.82	DRI		TEH	1.32	CCAGC	0.68
14	59	48.72	DRI		TEH	1.5	CCAGC	0.7
14	59	0.91	SAI		TEH	2.7	ZMAGR	0.72
15	59	22.5	DRI		TEH	1.86	CCAGC	0.68
15	59	23.35	DRI		TEH	2.53	CCAGC	0.68
15	59	21.69	DRI		TEH	2.49	CCAGC	0.7
16	59	28.92	DRI		TEH	2.38	CCAGC	0.7

17	59	80.53	DRI		TEH	1.39	CCAGC	0.7
17	59	6.49	SPI		1H	0.57	CCAGC	0.7
18	59	31.4	DRI		TEH	1.02	CCAGC	0.7
18	59	44.23	DRI		TEH	2.74	CCAGC	0.7
21	59	0.34	MAI		TEH	1.42	ZMAGR	0.72
21	59	64.92	DRI		TEH	0.81	CCAGC	0.7
22	59	13.88	DRI		TEH	0.97	CCAGC	0.7
22	59	28.05	DRI		TEH	1.08	CCAGC	0.7
23	59	16.92	DRI		TEH	1.07	CCAGC	0.7
23	59	27.33	DRI		TEH	1.28	CCAGC	0.7
24	59	8.3	DRI		TEH	1	CCAGC	0.7
24	59	33.19	DRI		TEH	1.14	CCAGC	0.7
24	59	12.17	DRI		TEH	0.96	CCAGC	0.7
24	59	25.16	DRI		TEH	1.2	CCAGC	0.7
26	59	34.13	DRI		TEH	1.13	CCAGC	0.7
26	59	31.06	DRI		TEH	1.63	CCAGC	0.7
27	59	0.86	SAI		TEH	4.49	ZMAGR	0.72
27	59	13.64	DRI		TEH	0.9	CCAGC	0.7
27	59	30.52	DRI		TEH	1.31	CCAGC	0.7
27	59	17.03	DRI		TEH	1.53	CCAGC	0.7
28	59	29.67	DRI		TEH	1.13	CCAGC	0.7
28	59	33.94	DRI		TEH	1.25	CCAGC	0.7
28	59	31.33	DRI		TEH	1.25	CCAGC	0.68
28	59	19.4	DRI		TEH	1.46	CCAGC	0.68
29	59	50.06	DRI		TEH	1.27	CCAGC	0.7
29	59	44.31	DRI		TEH	1.71	CCAGC	0.7
30	59	35.38	DRI		TEH	1.13	CCAGC	0.7
30	59	38.21	DRI		TEH	1.47	CCAGC	0.7
31	59	0.14	SAI		TEH	2.75	ZMAGR	0.72
31	59	25.24	DRI		TEH	1.38	CCAGC	0.7
32	59	23.66	DRI		TEH	1.47	CCAGC	0.68
32	59	15.4	DRI		TEH	2.6	CCAGC	0.68
32	59	20.4	DRI		TEH	1.01	CCAGC	0.68
32	59	35.99	DRI		TEH	1.12	MBALL	0.7
33	59	38.01	DRI		TEH	1.33	CCAGC	0.68
33	59	28.25	DRI		TEH	1.55	CCAGC	0.68
33	59	8.56	DRI		TEH	2.48	CCAGC	0.68
33	59	32.14	DRI		TEH	1.3	MBALL	0.7
34	59	0.48	SAI		TEH	3.02	ZMAGR	0.72
34	59	17.75	DRI		TEH	1.12	CCAGC	0.7
35	59	25.4	DRI		TEH	0.98	CCAGC	0.7
36	59	1.62	MAI		TEH	1.4	ZMAGR	0.72
36	59	20.12	DRI		TEH	1.29	CCAGC	0.7
37	59	25.55	DRI		TEH	1.24	CCAGC	0.7
38	59	5.09	SAI		TEH	0.2	ZPANM	0.72
39	59	53.39	DRI		TEH	1.16	MBALL	0.7
39	59	10.29	DRI		TEH	1.03	CCAGC	0.7
39	59	53.64	DRI		TEH	1.19	CCAGC	0.7
41	59	12.08	DRI		TEH	2.72	CCAGC	0.68
41	59	28.4	DRI		TEH	1.21	MBALL	0.7
41	59	23.23	DRI		TEH	2.57	MBALL	0.7

41	59	27.02	DRI		TEH	1.31	CCAGC	0.68
41	59	54.1	DRI		TEH	1.35	CCAGC	0.68
41	59	29.79	DRI		TEH	2.5	CCAGC	0.68
42	59	28.59	DRI		TEH	1.28	MBALL	0.7
42	59	28.89	DRI		TEH	1.29	CCAGC	0.68
42	59	36.58	DRI		TEH	1.42	CCAGC	0.68
43	59	2.31	MAI		TEH	1.53	ZMAGR	0.72
43	59	23.81	DRI		TEH	0.87	CCAGC	0.7
43	59	36.12	DRI		TEH	1.13	CCAGC	0.7
3	60	43.37	DRI		TEH	0.95	CCAGC	0.7
5	60	26.21	DRI		TEH	1.3	CCAGC	0.7
5	60	19.32	DRI		TEH	1.05	CCAGC	0.68
5	60	26.62	DRI		TEH	1.3	CCAGC	0.7
8	60	46.65	DRI		TEH	1.28	CCAGC	0.7
8	60	16.51	DRI		TEH	1.71	CCAGC	0.68
9	60	7.87	TSI		TSH	0.55	CCAGC	0.68
9	60	7.5	TSI		TSH	0.54	CCAGC	0.7
13	60	17.54	DRI		TEH	1.47	CCAGC	0.7
14	60	35.73	DRI		TEH	1.6	CCAGC	0.7
15	60	19.58	DRI		TEH	1.25	CCAGC	0.7
16	60	20.67	DRI		TEH	1.55	CCAGC	0.7
17	60	68.63	DRI		TEH	1.53	CCAGC	0.7
17	60	78.52	DRI		TEH	1.17	CCAGC	0.7
18	60	55.84	DRI		TEH	1.21	CCAGC	0.7
18	60	65.48	DRI		TEH	1.26	CCAGC	0.7
19	60	62.9	DRI		TEH	1.42	CCAGC	0.7
19	60	47.99	DRI		TEH	1.78	CCAGC	0.7
20	60	16.97	DRI		TEH	1.49	CCAGC	0.7
21	60	38.33	DRI		TEH	1.06	CCAGC	0.7
21	60	35.78	DRI		TEH	1.19	CCAGC	0.7
22	60	30.7	DRI		TEH	1.08	CCAGC	0.7
22	60	30.82	DRI		TEH	1.23	CCAGC	0.7
23	60	65.05	DRI		TEH	0.79	CCAGC	0.7
24	60	42.16	DRI		TEH	0.93	CCAGC	0.7
24	60	46.93	DRI		TEH	1.33	CCAGC	0.7
25	60	28.7	DRI		TEH	1.46	CCAGC	0.7
27	60	24.5	DRI		TEH	1.29	CCAGC	0.7
28	60	13.97	DRI		TEH	0.93	CCAGC	0.7
28	60	32.04	DRI		TEH	0.99	CCAGC	0.7
29	60	18.19	DRI		TEH	1.46	CCAGC	0.7
31	60	1.63	MAI		TEH	1.32	ZMAGR	0.72
31	60	15.68	DRI		TEH	1.05	CCAGC	0.7
32	60	35.86	DRI		TEH	1.08	CCAGC	0.68
32	60	9.92	DRI		TEH	2.54	CCAGC	0.68
32	60	27.35	DRI		TEH	0.94	CCAGC	0.68
32	60	34.61	DRI		TEH	0.94	CCAGC	0.7
33	60	1.2	SAI		TEH	2.62	ZMAGR	0.72
33	60	15.14	DRI		TEH	2.51	CCAGC	0.68
33	60	15.13	DRI		TEH	2.85	CCAGC	0.68
34	60	50.18	DRI		TEH	0.78	CCAGC	0.7
35	60	3.95	MAI		TEH	1.28	ZMAGR	0.72

35	60	16.81	DRI		TEH	1.13	CCAGC	0.7
37	60	0.22	MAI		TEH	1.38	ZMAGR	0.72
37	60	9.65	DRI		TEH	1.01	CCAGC	0.7
40	60	29.31	DRI		TEH	0.97	CCAGC	0.7
40	60	83.8	DRI		TEH	1.13	CCAGC	0.7
40	60	25.79	DRI		TEH	2.51	CCAGC	0.7
41	60	0.12	PIT		TSH	11.19	ZPANM	0.72
41	60	0.08	PIT		TSH	11.41	ZPANM	0.68
41	60	0.2	PCT	30	TSH	11.54	MBALL	0.7
41	60	0.26	PCT	22	TSH	11.88	CCAGC	0.7
3	61	35.55	DRI		TEH	1.36	CCAGC	0.7
4	61	24.41	DRI		TEH	1.38	CCAGC	0.68
4	61	31.3	DRI		TEH	1.17	MBALL	0.7
4	61	28.56	DRI		TEH	1.27	CCAGC	0.68
5	61	13.62	DRI		TEH	0.98	CCAGC	0.7
5	61	8.76	DRI		TEH	0.89	CCAGC	0.7
5	61	8.15	DRI		TEH	0.89	CCAGC	0.68
5	61	7.97	DRI		TEH	1.01	CCAGC	0.64
5	61	1.03	MAI		TEH	1.38	ZMAGR	0.72
5	61	15.51	DRI		TEH	0.85	CCAGC	0.64
6	61	0.73	MAI		TEH	1.37	ZMAGR	0.72
6	61	25.02	DRI		TEH	1.34	CCAGC	0.68
8	61	0.3	PIT		TSC	3.77	ZPANM	0.72
8	61	40.13	DRI		TEH	1.44	CCAGC	0.7
8	61	0.53	PCT	59	TSC	3.75	CCAGC	0.7
8	61	1.66	MAI		TEH	1.4	ZMAGR	0.72
8	61	0.3	PIT	29	TSC	3.94	ZPANM	0.68
8	61	23.17	DRI		TEH	0.6	CCAGC	0.68
9	61	30.22	DRI		TEH	0.48	CCAGC	0.68
9	61	26.21	DRI		TEH	1.15	CCAGC	0.68
9	61	41	DRI		TEH	0.73	CCAGC	0.7
9	61	28.23	DRI		TEH	1.23	CCAGC	0.7
10	61	34.29	DRI		TEH	1.35	CCAGC	0.68
10	61	54.44	DRI		TEH	1.56	CCAGC	0.7
12	61	2.54	MAI		TEH	1.57	ZMAGR	0.72
12	61	26.01	DRI		TEH	0.91	CCAGC	0.7
13	61	21.83	DRI		TEH	1.39	CCAGC	0.7
13	61	24.06	DRI		TEH	0.98	CCAGC	0.7
16	61	3.9	MAI		TEH	1.53	ZMAGR	0.72
16	61	37.27	DRI		TEH	0.89	CCAGC	0.7
17	61	29.61	DRI		TEH	1.25	CCAGC	0.7
17	61	37.65	DRI		TEH	1.4	CCAGC	0.7
18	61	12.02	DRI		TEH	1.27	CCAGC	0.7
18	61	3.29	SAI		TEH	2.95	ZMAGR	0.72
21	61	36.53	DRI		TEH	1.35	CCAGC	0.7
21	61	17.69	MAI		TEH	1.52	ZMAGR	0.72
21	61	35.51	DRI		TEH	1.14	CCAGC	0.7
23	61	1.12	MAI		TEH	1.34	ZMAGR	0.72
23	61	33.38	DRI		TEH	1.2	CCAGC	0.68
23	61	24.42	DRI		TEH	1.2	CCAGC	0.68
23	61	23.57	DRI		TEH	1.19	CCAGC	0.7

24	61	26.09	DRI		TEH	0.82	CCAGC	0.7
25	61	19.23	DRI		TEH	0.8	CCAGC	0.7
25	61	3.75	MAI		TEH	2.47	ZMAGR	0.72
27	61	19.7	DRI		TEH	1.29	CCAGC	0.7
27	61	20.07	DRI		TEH	1.27	CCAGC	0.68
27	61	18.97	DRI		TEH	1.27	CCAGC	0.68
28	61	40.12	DRI		TEH	1.23	CCAGC	0.7
29	61	30.29	DRI		TEH	1.08	CCAGC	0.7
30	61	3.71	MAI		TEH	1.21	ZMAGR	0.72
30	61	27.72	DRI		TEH	1.12	CCAGC	0.7
31	61	3.63	MAI		TEH	1.27	ZMAGR	0.72
31	61	39.02	DRI		TEH	1.13	CCAGC	0.7
32	61	24.3	DRI		TEH	0.86	CCAGC	0.7
32	61	74.78	DRI		TEH	1.23	CCAGC	0.7
32	61	60.66	DRI		TEH	1.23	CCAGC	0.7
33	61	45.12	DRI		TEH	0.89	CCAGC	0.7
34	61	0.26	MAI		TEH	3.71	ZMAGR	0.72
34	61	36.82	DRI		TEH	1.1	CCAGC	0.7
35	61	17.54	DRI		TEH	0.86	CCAGC	0.7
37	61	15.93	DRI		TEH	0.89	CCAGC	0.7
37	61	8.13	DRI		TEH	1.34	CCAGC	0.7
40	61	38.34	DRI		TEH	1.21	CCAGC	0.7
40	61	32.96	DRI		TEH	1.19	MBALL	0.7
40	61	15.3	DRI		TEH	1.04	CCAGC	0.7
3	62	4.46	MAI		TEH	0.16	ZPAMC	0.7
4	62	1.22	MAI		TEH	1.31	ZPAMC	0.7
5	62	0.52	MAI		TEH	1.3	ZPAMC	0.7
6	62	0.72	SAI		TEH	1.39	ZMAGR	0.72
6	62	28.09	DRI		TEH	1.36	CCAGC	0.68
6	62	9.51	DRI		TEH	1.64	CCAGC	0.7
11	62	40.72	DRI		TEH	1.38	CCAGC	0.7
11	62	0.62	MAI		TEH	6.07	ZPANM	0.72
11	62	23.98	DRI		TEH	0.96	CCAGC	0.7
12	62	27.94	DRI		TEH	2.68	CCAGC	0.68
12	62	19.73	DRI		TEH	1.52	CCAGC	0.68
12	62	42.4	DRI		TEH	1.28	MBALL	0.7
12	62	31.36	DRI		TEH	2.6	MBALL	0.7
12	62	39.1	DRI		TEH	1.24	CCAGC	0.68
13	62	21.66	DRI		TEH	1.35	MBALL	0.7
13	62	13.91	DRI		TEH	1.3	CCAGC	0.68
13	62	20.46	DRI		TEH	1.57	CCAGC	0.68
14	62	0.97	MAI		TEH	1.52	ZMAGR	0.72
14	62	12.77	DRI		TEH	1.63	CCAGC	0.7
15	62	1.86	MAI		TEH	1.51	ZMAGR	0.72
15	62	11.2	DRI		TEH	1.24	CCAGC	0.7
15	62	40.06	DRI		TEH	2.05	CCAGC	0.7
16	62	35.55	DRI		TEH	0.93	CCAGC	0.7
16	62	32.67	DRI		TEH	1.05	CCAGC	0.7
18	62	8.98	DRI		TEH	0.69	CCAGC	0.7
18	62	2.88	DRI		TEH	1.6	CCAGC	0.7
20	62	5.21	MAI		TEH	1.24	ZMAGR	0.72

20	62	15.16	DRI		TEH	1.07	CCAGC	0.7
21	62	34.87	DRI		TEH	1.18	CCAGC	0.7
22	62	19.88	DRI		TEH	0.87	CCAGC	0.7
23	62	33.76	DRI		TEH	1.02	CCAGC	0.7
24	62	9.8	DRI		TEH	1.31	CCAGC	0.7
25	62	4.97	MAI		TEH	1.36	ZPANM	0.72
25	62	15.83	DRI		TEH	0.94	MBALL	0.7
25	62	19.78	DRI		TEH	0.41	CCAGC	0.68
25	62	13.09	DRI		TEH	0.95	CCAGC	0.68
25	62	6.08	SPI		3H	0.26	CCAGC	0.68
26	62	26.87	DRI		TEH	1.31	MBALL	0.7
26	62	30.69	DRI		TEH	1.26	CCAGC	0.68
26	62	6.37	MAI		TEH	1.14	ZMAGR	0.72
26	62	27.17	DRI		TEH	1.26	CCAGC	0.68
27	62	40.6	DRI		TEH	1.18	CCAGC	0.7
28	62	33.57	DRI		TEH	1	CCAGC	0.7
28	62	53.5	DRI		TEH	1.17	CCAGC	0.7
29	62	25.65	DRI		TEH	0.97	CCAGC	0.7
29	62	5.25	DRI		TEH	2.54	CCAGC	0.7
30	62	37.84	DRI		TEH	0.81	CCAGC	0.7
31	62	19.3	DRI		TEH	1.39	CCAGC	0.68
31	62	21.78	DRI		TEH	1.24	CCAGC	0.7
31	62	3.32	MAI		TEH	1.41	ZMAGR	0.72
32	62	38.65	DRI		TEH	1.56	CCAGC	0.7
32	62	56.91	DRI		TEH	1.02	CCAGC	0.7
33	62	55.44	DRI		TEH	1.04	CCAGC	0.68
33	62	40.31	DRI		TEH	1.55	CCAGC	0.68
33	62	39.94	DRI		TEH	1.44	CCAGC	0.7
34	62	18.37	DRI		TEH	1.3	CCAGC	0.68
34	62	8.48	DRI		TEH	1.03	CCAGC	0.7
34	62	19.64	DRI		TEH	1.16	CCAGC	0.68
34	62	6.95	DRI		TEH	1.03	CCAGC	0.68
34	62	3.59	MAI		TEH	1.18	ZMAGR	0.72
34	62	18.13	DRI		TEH	1.31	CCAGC	0.7
36	62	30.42	DRI		TEH	1.46	CCAGC	0.68
36	62	51.8	DRI		TEH	1.54	CCAGC	0.68
36	62	20.76	DRI		TEH	1.31	CCAGC	0.7
37	62	28.73	DRI		TEH	0.85	CCAGC	0.7
40	62	25.79	DRI		TEH	1.27	CCAGC	0.7
40	62	13.57	MAI		TEH	1.28	ZMAGR	0.72
40	62	23.81	DRI		TEH	1.22	MBALL	0.7
40	62	6.99	DRI		TEH	1.08	CCAGC	0.7
42	62	9.16	DRI		TEH	1.06	CCAGC	0.7
42	62	2.64	MAI		TEH	1.38	ZMAGR	0.72
3	63	0.64	SAI		TEH	1.23	ZMAGR	0.72
3	63	13.09	DRI		TEH	1.19	CCAGC	0.7
3	63	16.48	DRI		TEH	1.21	CCAGC	0.7
8	63	15.6	DRI		TEH	1.16	CCAGC	0.7
9	63	1.07	MAI		TEH	0.15	ZPAMC	0.7
10	63	2.53	MAI		TEH	1.32	ZMAGR	0.72
10	63	19.39	DRI		TEH	1.12	CCAGC	0.7

13	63	46.38	DRI		TEH	1.16	CCAGC	0.7
13	63	47.76	DRI		TEH	1.18	CCAGC	0.7
14	63	27.51	DRI		TEH	1.36	CCAGC	0.7
14	63	54.27	DRI		TEH	1.28	CCAGC	0.7
15	63	12	DRI		TEH	1.28	CCAGC	0.7
15	63	41.4	DRI		TEH	1.85	CCAGC	0.7
16	63	25.06	DRI		TEH	1.25	CCAGC	0.7
16	63	10.68	DRI		TEH	1.38	CCAGC	0.7
17	63	33.83	DRI		TEH	1	CCAGC	0.7
17	63	16.15	DRI		TEH	1.4	CCAGC	0.7
18	63	23.96	DRI		TEH	2.17	CCAGC	0.7
21	63	17.67	DRI		TEH	1.17	CCAGC	0.7
24	63	26.06	DRI		TEH	1.06	CCAGC	0.7
24	63	35.27	DRI		TEH	1.14	CCAGC	0.7
25	63	0.73	SAI		TEH	2.89	ZMAGR	0.72
25	63	36.89	DRI		TEH	1.07	CCAGC	0.7
25	63	39.14	DRI		TEH	1.21	CCAGC	0.7
26	63	23.7	DRI		TEH	1.4	CCAGC	0.7
26	63	8.69	DRI		TEH	1.41	CCAGC	0.7
27	63	20.08	DRI		TEH	1.13	CCAGC	0.7
27	63	27.61	DRI		TEH	1.43	CCAGC	0.7
27	63	33.44	DRI		TEH	1.01	CCAGC	0.7
28	63	16.22	DRI		TEH	1.19	CCAGC	0.7
28	63	21.94	DRI		TEH	1.21	CCAGC	0.7
28	63	8.91	MAI		TEH	1.29	ZMAGR	0.72
29	63	15.63	DRI		TEH	0.74	CCAGC	0.7
29	63	45.43	DRI		TEH	1.18	CCAGC	0.7
29	63	23.52	DRI		TEH	2.78	CCAGC	0.7
30	63	25.54	DRI		TEH	1.36	CCAGC	0.7
30	63	15.46	DRI		TEH	1.17	CCAGC	0.7
30	63	31.9	DRI		TEH	1.26	CCAGC	0.7
30	63	28.19	DRI		TEH	1.33	CCAGC	0.7
31	63	12.35	DRI		TEH	1.26	CCAGC	0.7
32	63	8.76	DRI		TEH	2.77	CCAGC	0.7
32	63	24.49	DRI		TEH	1.04	CCAGC	0.7
33	63	0.62	MAI		TEH	3.08	ZMAGR	0.72
33	63	14.59	DRI		TEH	1.25	CCAGC	0.7
34	63	31.64	DRI		TEH	1.4	CCAGC	0.68
34	63	29.7	DRI		TEH	1.5	CCAGC	0.68
34	63	26.39	DRI		TEH	1.47	CCAGC	0.7
37	63	21.56	DRI		TEH	1.32	CCAGC	0.68
37	63	20.88	DRI		TEH	1.12	CCAGC	0.7
37	63	38.78	DRI		TEH	1.27	CCAGC	0.68
38	63	34.14	DRI		TEH	1.22	CCAGC	0.68
38	63	16.57	DRI		TEH	1.48	CCAGC	0.68
38	63	23.03	DRI		TEH	1.44	CCAGC	0.7
38	63	12.93	MAI		TEH	1.29	ZMAGR	0.72
39	63	10.02	MAI		TEH	1.44	ZMAGR	0.72
39	63	29.8	DRI		TEH	1.42	CCAGC	0.68
39	63	17.82	DRI		TEH	1.52	CCAGC	0.68
39	63	17.93	DRI		TEH	1.32	CCAGC	0.7

40	63	12.37	MAI		TEH	1.33	ZMAGR	0.72
40	63	21.42	DRI		TEH	1.48	CCAGC	0.68
40	63	36.47	DRI		TEH	1.46	CCAGC	0.68
40	63	26.22	DRI		TEH	1.38	MBALL	0.7
42	63	1.12	SAI		TEH	4.25	ZMAGR	0.72
42	63	1.23	MAI		TEH	1.66	ZMAGR	0.72
42	63	9.96	DRI		TEH	1.11	CCAGC	0.7
2	64	5.42	MAI		TEH	0.21	ZPAMC	0.7
3	64	2.08	MAI		TEH	0.18	ZPAMC	0.7
9	64	0.13	MAI		TEH	6.72	ZPANM	0.72
12	64	0.43	MAI		TEH	0.92	ZMAGR	0.72
12	64	5.62	DRI		TEH	0.87	CCAGC	0.68
12	64	0.32	MAI		TEH	8.69	ZPANM	0.72
12	64	10.75	DRI		TEH	0.53	CCAGC	0.7
17	64	1.91	MAI		TEH	1.7	ZMAGR	0.72
17	64	9.65	DRI		TEH	1.43	CCAGC	0.7
18	64	1.39	MAI		TEH	2.95	ZPANM	0.72
19	64	0.77	MAI		TEH	1.64	ZMAGR	0.72
19	64	7.97	DRI		TEH	0.55	CCAGC	0.7
20	64	18.81	DRI		TEH	1.45	CCAGC	0.7
20	64	5.26	MAI		TEH	1.33	ZMAGR	0.72
21	64	18.38	DRI		TEH	1.11	CCAGC	0.7
21	64	0.84	SAI		TEH	1.03	ZMAGR	0.72
21	64	23.29	DRI		TEH	1.06	CCAGC	0.7
22	64	8.82	MAI		TEH	1.41	ZMAGR	0.72
22	64	29.72	DRI		TEH	1.03	CCAGC	0.7
22	64	12.32	DRI		TEH	1.1	CCAGC	0.7
23	64	8.19	MAI		TEH	1.33	ZMAGR	0.72
23	64	19.99	DRI		TEH	1.04	CCAGC	0.68
23	64	39.02	DRI		TEH	1.28	CCAGC	0.68
23	64	21.19	DRI		TEH	1.04	CCAGC	0.7
24	64	24.72	DRI		TEH	1.09	CCAGC	0.68
24	64	20.29	DRI		TEH	1.09	CCAGC	0.68
24	64	8	MAI		TEH	1.17	ZMAGR	0.72
24	64	22.81	DRI		TEH	1.09	CCAGC	0.7
27	64	0.63	MAI		TEH	3.09	ZMAGR	0.72
27	64	22.47	DRI		TEH	1.18	CCAGC	0.68
27	64	25.23	DRI		TEH	1.24	CCAGC	0.68
27	64	26.21	DRI		TEH	1.18	CCAGC	0.7
28	64	23.94	DRI		TEH	1.28	CCAGC	0.7
28	64	1.31	MAI		TEH	1.68	ZMAGR	0.72
28	64	18.63	DRI		TEH	1.41	CCAGC	0.68
29	64	32.3	DRI		TEH	1.31	CCAGC	0.7
29	64	15.9	DRI		TEH	1.01	CCAGC	0.7
29	64	40.72	DRI		TEH	0.98	CCAGC	0.68
29	64	11.17	DRI		TEH	1.04	CCAGC	0.68
29	64	29.05	DRI		TEH	1.31	CCAGC	0.68
32	64	0.7	MAI		TEH	1.56	ZMAGR	0.72
32	64	8.22	DRI		TEH	1.14	CCAGC	0.7
33	64	27.68	DRI		TEH	1.22	CCAGC	0.7
33	64	16.93	DRI		TEH	1.35	CCAGC	0.7

35	64	24.08	DRI		TEH	1.24	CCAGC	0.7
35	64	8.74	DRI		TEH	1.32	CCAGC	0.7
35	64	2.33	MAI		TEH	2.98	ZMAGR	0.72
36	64	5.99	SAI		TEH	0.35	ZPANM	0.72
40	64	1.26	MAI		TEH	1.26	ZMAGR	0.72
40	64	17.48	DRI		TEH	0.73	CCAGC	0.7
2	65	3.17	MAI		TEH	0.14	ZPAMC	0.7
3	65	0.78	MAI		TEH	0.16	ZPAMC	0.7
12	65	0.44	PIT	47	TSH	0.26	ZPANM	0.68
12	65	18.51	TSI		TSH	0.29	CCAGC	0.7
12	65	39.87	DRI		TEH	1.08	CCAGC	0.7
12	65	0.39	PIT		TSH	0.26	ZPANM	0.72
12	65	0.42	PIT		TSH	0.24	ZPANM	0.72
12	65	42.55	DRI		TEH	1.48	CCAGC	0.7
12	65	2.26	MAI		TEH	1.47	ZMAGR	0.72
14	65	1.63	MAI		TEH	1.53	ZMAGR	0.72
14	65	6.4	DRI		TEH	1.38	CCAGC	0.7
16	65	18.45	DRI		TEH	1.4	CCAGC	0.7
16	65	25.3	DRI		TEH	1.53	CCAGC	0.7
17	65	34.27	DRI		TEH	1.13	CCAGC	0.7
17	65	46.99	DRI		TEH	1.65	CCAGC	0.7
18	65	0.87	MAI		TEH	1.6	ZMAGR	0.72
18	65	7.19	DRI		TEH	1.18	CCAGC	0.7
21	65	55.57	DRI		TEH	1.46	CCAGC	0.7
21	65	26.5	DRI		TEH	0.96	CCAGC	0.7
22	65	9.05	DRI		TEH	0.87	CCAGC	0.7
22	65	30.55	DRI		TEH	1.16	CCAGC	0.7
22	65	29.68	DRI		TEH	1.18	CCAGC	0.7
22	65	30.52	DRI		TEH	1.73	CCAGC	0.7
22	65	72.99	DRI		TEH	2.59	CCAGC	0.7
23	65	0.39	MAI		TEH	3.54	ZMAGR	0.72
23	65	7.62	DRI		TEH	3.15	CCAGC	0.7
23	65	47.63	DRI		TEH	1.49	CCAGC	0.7
23	65	3.17	MAI		TEH	0.14	ZPANM	0.68
23	65	4.37	MAI		TEH	1.17	ZPANM	0.68
23	65	32.65	DRI		TEH	0.76	CCAGC	0.7
24	65	1.28	MAI		TEH	2.88	ZMAGR	0.72
24	65	19.31	DRI		TEH	0.89	CCAGC	0.7
24	65	26.82	DRI		TEH	1.24	CCAGC	0.7
25	65	36.4	DRI		TEH	0.72	CCAGC	0.7
25	65	1.17	MAI		TEH	3.56	ZMAGR	0.72
25	65	19.62	DRI		TEH	0.65	CCAGC	0.7
26	65	36.29	DRI		TEH	1.23	CCAGC	0.7
29	65	9.72	DRI		TEH	1.03	CCAGC	0.68
29	65	26.62	DRI		TEH	1.12	CCAGC	0.68
29	65	58.66	DRI		TEH	1.41	CCAGC	0.68
29	65	15.57	DRI		TEH	2.83	CCAGC	0.68
29	65	6.15	DRI		TEH	3.82	CCAGC	0.68
29	65	12.14	DRI		TEH	0.88	CCAGC	0.7
29	65	34.17	DRI		TEH	1.12	CCAGC	0.7
29	65	1.77	SAI		TEH	4.21	ZMAGR	0.72

30	65	0.41	SAI		TEH	1.76	ZMAGR	0.72
30	65	12.87	DRI		TEH	1.35	CCAGC	0.7
31	65	41.42	DRI		TEH	1.46	CCAGC	0.7
31	65	53.4	DRI		TEH	1.34	CCAGC	0.7
32	65	38.54	DRI		TEH	1.09	CCAGC	0.7
32	65	21.2	DRI		TEH	1.37	CCAGC	0.7
33	65	22.91	DRI		TEH	1.01	CCAGC	0.7
33	65	27.91	DRI		TEH	1.31	CCAGC	0.7
33	65	16.38	DRI		TEH	1.17	CCAGC	0.7
33	65	27.92	DRI		TEH	1.33	CCAGC	0.7
35	65	2.82	MAI		TEH	0.18	ZMAGR	0.72
35	65	7.66	DRI		TEH	1	CCAGC	0.7
37	65	43.79	DRI		TEH	1.39	CCAGC	0.68
37	65	14.04	DRI		TEH	1.3	CCAGC	0.7
37	65	46.09	DRI		TEH	1.3	CCAGC	0.7
37	65	29.15	DRI		TEH	1.3	CCAGC	0.68
38	65	26.93	DRI		TEH	1.3	CCAGC	0.7
40	65	159.6	DRI		TEH	1.36	CCAGC	0.7
3	66	41.57	DRI		TEH	1.36	CCAGC	0.7
3	66	69.69	DRI		TEH	1.19	MBALL	0.7
3	66	24.91	DRI		TEH	1.29	CCAGC	0.7
4	66	29.85	DRI		TEH	1.21	CCAGC	0.7
4	66	24.91	DRI		TEH	1.19	CCAGC	0.7
4	66	20.44	DRI		TEH	1.22	MBALL	0.7
7	66	0.72	MAI		TEH	1.42	ZMAGR	0.72
7	66	26.66	DRI		TEH	1.16	CCAGC	0.7
8	66	23.81	DRI		TEH	1.01	CCAGC	0.7
9	66	0.99	SAI		TEH	0.19	ZPAMC	0.7
12	66	8.92	PI		TEH	7.79	CCAGC	0.7
12	66	1.28	SAI		TEH	7.1	ZPANM	0.72
12	66	1.41	SAI	25	TEH	7.83	ZPANM	0.68
12	66	18.52	DRI		TEH	1.51	CCAGC	0.7
14	66	2.1	MAI		TEH	1.11	ZMAGR	0.72
14	66	49.18	DRI		TEH	0.78	CCAGC	0.7
16	66	33.79	DRI		TEH	1.25	CCAGC	0.7
18	66	18.18	DRI		TEH	1.28	CCAGC	0.68
18	66	11.24	DRI		TEH	2.82	CCAGC	0.68
18	66	15.96	DRI		TEH	1.35	CCAGC	0.7
21	66	4.87	MAI		TEH	1.42	ZMAGR	0.72
21	66	6.52	DRI		TEH	0.97	CCAGC	0.7
22	66	1.96	MAI		TEH	1.09	ZMAGR	0.72
22	66	16.51	DRI		TEH	1.27	CCAGC	0.7
22	66	16.38	DRI		TEH	1.1	CCAGC	0.68
22	66	15.77	DRI		TEH	1.1	CCAGC	0.68
23	66	2.22	MAI		TEH	1.56	ZMAGR	0.72
23	66	28.99	DRI		TEH	1.15	CCAGC	0.7
24	66	0.51	MAI		TEH	3.69	ZMAGR	0.72
24	66	67.7	DRI		TEH	1.38	CCAGC	0.7
25	66	0.98	SAI		TEH	4.33	ZMAGR	0.72
25	66	79.32	DRI		TEH	1.25	CCAGC	0.7
25	66	11.31	DRI		TEH	2.67	CCAGC	0.7

26	66	18.79	DRI		TEH	1.29	CCAGC	0.7
28	66	3.92	MAI		TEH	1.31	ZMAGR	0.72
28	66	18.7	DRI		TEH	1.13	CCAGC	0.7
29	66	2.75	MAI		TEH	3.53	ZMAGR	0.72
29	66	62.76	DRI		TEH	1.25	CCAGC	0.7
29	66	11.44	DRI		TEH	3.35	CCAGC	0.7
32	66	0.34	SAI		TEH	1.67	ZMAGR	0.72
32	66	7.91	DRI		TEH	1.1	CCAGC	0.7
33	66	106	DRI		TEH	1.25	CCAGC	0.7
37	66	22.46	DRI		TEH	1.56	CCAGC	0.68
37	66	25.87	DRI		TEH	1.42	CCAGC	0.68
37	66	1.11	SCI		TEH	1.5	ZPANM	0.68
37	66	15.21	DRI		TEH	1.3	CCAGC	0.7
38	66	0.45	SAI		TEH	4.77	ZMAGR	0.72
38	66	48.86	DRI		TEH	1.3	CCAGC	0.7
41	66	11.36	SPI		4C	0.09	CCAGC	0.7
3	67	2.39	MAI		TEH	0.16	ZPAMC	0.7
5	67	0.5	MAI		TEH	1.4	ZMAGR	0.72
5	67	16.45	DRI		TEH	0.78	CCAGC	0.68
5	67	6.62	DRI		TEH	1.04	CCAGC	0.7
6	67	0.9	PIT		TSC	0.56	ZPANM	0.72
6	67	0.87	PCT	14	TSC	0.83	CCAGC	0.7
10	67	15	DRI		TEH	1.09	CCAGC	0.7
10	67	0.63	MAI		TEH	1.52	ZMAGR	0.72
13	67	3.04	MAI		TEH	1.47	ZMAGR	0.72
13	67	31.67	DRI		TEH	1.25	CCAGC	0.7
14	67	2.6	MAI		TEH	1.5	ZMAGR	0.72
14	67	21.25	DRI		TEH	1.34	CCAGC	0.7
16	67	28.52	DRI		TEH	1.2	CCAGC	0.7
18	67	25.66	DRI		TEH	1.17	CCAGC	0.7
18	67	0.97	MAI		TEH	2.72	ZMAGR	0.72
22	67	33.49	DRI		TEH	1.16	CCAGC	0.7
22	67	0.42	MAI		TEH	1.04	ZMAGR	0.72
23	67	96.09	DRI		TEH	1.29	CCAGC	0.7
24	67	13.49	DRI		TEH	1.17	CCAGC	0.7
25	67	5.61	DRI		TEH	2.6	CCAGC	0.7
29	67	1.49	MAI		TEH	4.24	ZMAGR	0.72
29	67	19.05	DRI		TEH	1.4	CCAGC	0.7
29	67	13.58	DRI		TEH	2.72	CCAGC	0.7
29	67	10.62	DRI		TEH	3.5	CCAGC	0.7
31	67	1.43	MAI		TEH	1.67	ZMAGR	0.72
31	67	25.93	DRI		TEH	1.19	CCAGC	0.7
32	67	25.69	DRI		TEH	1.15	CCAGC	0.7
32	67	3.4	DRI		TEH	2.84	CCAGC	0.7
32	67	0.8	MAI		TEH	3.91	ZMAGR	0.72
35	67	5.7	MAI		TEH	0.16	ZPANM	0.72
13	68	1.55	MCI		TEH	1.36	ZPANM	0.72
16	68	2.51	SAI		TEH	1.62	ZMAGR	0.72
16	68	25.12	DRI		TEH	1.39	CCAGC	0.7
17	68	37.33	DRI		TEH	1.43	CCAGC	0.7
17	68	2.64	MAI		TEH	1.6	ZMAGR	0.72

18	68	2.52	MCI		TEH	1.3	ZPANM	0.72
19	68	1.6	MCI		TEH	1.4	ZPANM	0.72
21	68	2.17	MCI		TEH	1.5	ZPANM	0.72
21	68	19.49	DRI		TEH	0.99	CCAGC	0.7
22	68	6.44	MAI		TEH	1.32	ZMAGR	0.72
22	68	24.95	DRI		TEH	1.32	CCAGC	0.7
23	68	61.16	DRI		TEH	1.37	CCAGC	0.7
24	68	47.35	DRI		TEH	1.46	CCAGC	0.7
25	68	5.9	MAI		TEH	0.97	ZMAGR	0.72
25	68	42.62	DRI		TEH	1.19	CCAGC	0.7
25	68	1.91	MAI		TEH	1.45	ZMAGR	0.72
26	68	34.66	DRI		TEH	0.97	CCAGC	0.7
26	68	2.95	MAI		TEH	1.31	ZMAGR	0.72
27	68	1.18	MAI		TEH	2.65	ZMAGR	0.72
27	68	30.08	DRI		TEH	0.89	CCAGC	0.7
27	68	23.91	DRI		TEH	1.39	CCAGC	0.7
28	68	0.23	MAI		TEH	2.77	ZMAGR	0.72
28	68	25.21	DRI		TEH	0.92	CCAGC	0.7
29	68	11.7	DRI		TEH	2.88	CCAGC	0.7
29	68	19.96	DRI		TEH	1.39	CCAGC	0.7
30	68	23.71	DRI		TEH	1.42	CCAGC	0.7
30	68	8.62	DRI		TEH	0.94	CCAGC	0.7
30	68	1.47	MAI		TEH	1.45	ZMAGR	0.72
31	68	53.12	DRI		TEH	1.19	CCAGC	0.7
32	68	0.25	SAI		TEH	2.85	ZMAGR	0.72
32	68	28.74	DRI		TEH	1.37	CCAGC	0.7
33	68	3.08	MAI		TEH	0.2	ZPANM	0.72
34	68	2.22	MAI		TEH	0.29	ZPANM	0.72
37	68	0.71	MAI		TEH	0.22	ZPANM	0.72
2	69	2.17	SAI		TEH	0.16	ZPAMC	0.7
6	69	0.78	SAI		TEH	0.08	ZPAMC	0.7
8	69	0.46	PIT		TSC	1.44	ZPANM	0.72
19	69	0.39	SAI		TEH	1.45	ZMAGR	0.72
19	69	24.94	DRI		TEH	1.17	CCAGC	0.68
19	69	22.59	DRI		TEH	1.21	CCAGC	0.68
19	69	23.65	DRI		TEH	1.11	CCAGC	0.7
20	69	45.73	DRI		TEH	1.49	CCAGC	0.7
23	69	27.04	DRI		TEH	2.22	CCAGC	0.7
23	69	17.09	DRI		TEH	1.81	CCAGC	0.68
23	69	0.84	SCI		TEH	1.37	ZPANM	0.72
23	69	2.72	MAI		TEH	0.23	ZPANM	0.72
23	69	7.74	DRI		TEH	1.81	CCAGC	0.68
24	69	25.78	DRI		TEH	1.37	CCAGC	0.7
25	69	39.31	DRI		TEH	1.4	CCAGC	0.68
25	69	24.23	DRI		TEH	1.4	CCAGC	0.68
25	69	27.18	DRI		TEH	1.29	CCAGC	0.7
26	69	28.35	DRI		TEH	1.42	CCAGC	0.7
27	69	5.59	DRI		TEH	2.65	CCAGC	0.68
27	69	11.67	DRI		TEH	1.37	CCAGC	0.7
27	69	24.33	DRI		TEH	1.25	CCAGC	0.68
27	69	0.22	SAI		TEH	4.49	ZMAGR	0.72

28	69	7.25	DRI		TEH	1.13	CCAGC	0.7
29	69	24.75	DRI		TEH	1.17	MBALL	0.7
29	69	40.26	DRI		TEH	2.4	MBALL	0.7
29	69	24.72	DRI		TEH	1.37	CCAGC	0.68
29	69	15.5	DRI		TEH	1.42	CCAGC	0.68
29	69	37.91	DRI		TEH	2.72	CCAGC	0.68
29	69	18.18	DRI		TEH	2.75	CCAGC	0.68
30	69	16.95	DRI		TEH	1.25	CCAGC	0.7
30	69	0.7	NQI		AV1	13.21	CCAGC	0.7
31	69	0.6	SAI		TEH	0.35	ZPANM	0.72
32	69	23.88	DRI		TEH	1.48	CCAGC	0.7
33	69	1.06	MAI		TEH	0.37	ZPANM	0.72
35	69	2.78	MAI		TEH	0.26	ZPANM	0.72
36	69	0.47	SAI		TEH	0.39	ZPANM	0.72
2	70	2.69	MAI		TEH	0.23	ZPAMC	0.7
2	70	0.22	SAI		TEH	7.47	ZPAMC	0.7
3	70	0.13	SAI		TEH	6.58	ZPAMC	0.7
3	70	0.56	MAI		TEH	1.39	ZMAGR	0.72
3	70	34.23	DRI		TEH	1.46	CCAGC	0.7
4	70	0.17	MAI		TEH	9.49	ZPAMC	0.7
7	70	0.95	MAI		TEH	1.29	ZMAGR	0.72
7	70	19.26	DRI		TEH	1.21	CCAGC	0.7
11	70	0.24	PIT		TSC	1.05	ZPANM	0.72
14	70	0.31	PIT		TSC	1	ZPANM	0.72
14	70	0.3	PIT		TSC	1.27	ZPANM	0.72
14	70	1.03	PCT	0	TSC	0.72	CCAGC	0.7
14	70	1.05	PCT	0	TSC	1.23	CCAGC	0.7
17	70	2.14	SAI		TEH	2.88	ZPANM	0.72
18	70	33.92	DRI		TEH	1.41	CCAGC	0.7
18	70	2.86	MAI		TEH	1.33	ZMAGR	0.72
19	70	15.94	DRI		TEH	1.47	CCAGC	0.7
20	70	18.46	DRI		TEH	1.13	CCAGC	0.68
20	70	26.22	DRI		TEH	1.23	CCAGC	0.68
20	70	7.12	DRI		TEH	2.54	CCAGC	0.68
20	70	11.05	DRI		TEH	3.3	CCAGC	0.68
20	70	24.06	DRI		TEH	1.11	CCAGC	0.7
20	70	11.37	DRI		TEH	3.26	CCAGC	0.7
21	70	2.4	SAI		TEH	0.25	ZPANM	0.72
22	70	19.5	DRI		TEH	1.08	CCAGC	0.7
23	70	0.75	MAI		TEH	2.8	ZMAGR	0.72
23	70	24.2	DRI		TEH	1.33	CCAGC	0.7
24	70	52.98	DRI		TEH	1.1	CCAGC	0.7
25	70	5.9	DRI		TEH	2.88	CCAGC	0.7
28	70	2.99	SAI		TEH	0.37	ZPANM	0.72
28	70	0.91	SAI		TEH	3.04	ZPANM	0.72
29	70	0.21	SAI		TEH	3.35	ZMAGR	0.72
29	70	26	DRI		TEH	1.5	CCAGC	0.7
30	70	24.9	DRI		TEH	1.37	CCAGC	0.68
30	70	1.35	MAI		TEH	1.58	ZMAGR	0.72
30	70	24.83	DRI		TEH	1.28	MBALL	0.7
30	70	24.99	DRI		TEH	1.37	CCAGC	0.68

32	70	10.17	DRI		TEH	2.81	CCAGC	0.7
32	70	1.42	MAI		TEH	2.58	ZMAGR	0.72
35	70	0.35	MAI		TEH	0.21	ZPANM	0.72
2	71	3.92	MAI		TEH	0.15	ZPAMC	0.7
3	71	7.41	SAI		TEH	0.17	ZPAMC	0.7
9	71	1.42	NQI		TSC	0.97	CCAGC	0.68
9	71	0.46	PIT		TSC	0.08	ZPANM	0.72
9	71	0.53	PIT		TSC	0.42	ZPANM	0.72
9	71	1.52	PCT	44	TSC	0.91	MBALL	0.7
9	71	9.86	PI		TSC	0.35	CCAGC	0.68
10	71	0.44	PIT		TSC	0.83	ZPANM	0.72
11	71	1.7	MCI		TEH	1.47	ZPANM	0.72
13	71	0.19	PIT		TSC	1.22	ZPANM	0.72
13	71	0.22	PIT		TSC	1.73	ZPANM	0.72
13	71	0.84	PCT	0	TSC	1.39	CCAGC	0.7
16	71	1.98	SAI		TEH	0.32	ZPANM	0.72
17	71	24.79	DRI		TEH	1.37	CCAGC	0.7
17	71	7.89	DRI		TEH	2.76	CCAGC	0.7
20	71	1.45	MAI		TEH	3.21	ZPANM	0.72
21	71	1.46	SAI		TEH	0.33	ZPANM	0.72
22	71	1.81	PCT	26	AV2	0	CCAGC	0.7
22	71	1.89	PCT	26	AV1	0	CCAGC	0.7
22	71	12.67	DRI		TEH	1.47	CCAGC	0.7
23	71	0.93	SAI		TEH	2.88	ZMAGR	0.72
23	71	38.99	DRI		TEH	1.37	CCAGC	0.7
24	71	28.91	DRI		TEH	1.04	CCAGC	0.7
24	71	11.05	DRI		TEH	1.1	CCAGC	0.7
25	71	0.64	SAI		TEH	2.97	ZMAGR	0.72
25	71	29.15	DRI		TEH	1.36	CCAGC	0.7
26	71	26.86	DRI		TEH	1.51	CCAGC	0.7
26	71	2.36	PCT	29	AV2	0	CCAGC	0.7
27	71	2.94	SAI		TEH	3.31	ZPANM	0.72
28	71	2.18	SAI		TEH	0.22	ZPANM	0.72
28	71	2.09	SAI		TEH	3.29	ZPANM	0.72
29	71	1.03	MAI		TEH	2.75	ZMAGR	0.72
29	71	21.75	DRI		TEH	1.41	CCAGC	0.68
29	71	18.9	DRI		TEH	1.76	CCAGC	0.68
29	71	20.4	DRI		TEH	1.33	CCAGC	0.7
30	71	14.13	DRI		TEH	1.39	CCAGC	0.68
30	71	23.32	DRI		TEH	1.39	CCAGC	0.68
30	71	13.2	DRI		TEH	1.25	MBALL	0.7
31	71	25.86	DRI		TEH	1.3	CCAGC	0.7
31	71	27.87	DRI		TEH	1.41	CCAGC	0.7
32	71	2.3	SAI		TEH	0.36	ZPANM	0.72
34	71	32.71	DRI		TEH	1.65	CCAGC	0.7
2	72	5.26	MAI		TEH	0.19	ZPAMC	0.7
3	72	4.22	MAI		TEH	0.18	ZPAMC	0.7
4	72	29.54	DRI		TEH	1.37	CCAGC	0.7
10	72	2.33	PCT	8	TSC	1.32	CCAGC	0.7
10	72	2.79	PCT	3	TSC	1.45	MBALL	0.7
10	72	0.62	PIT		TSC	1.01	ZPANM	0.72

10	72	0.74	PIT		TSC	0.95	ZPANM	0.72
10	72	0.29	PIT		TSC	0.93	ZPANM	0.72
10	72	0.6	PIT		TSC	1.29	ZPAMC	0.7
10	72	0.81	PIT		TSC	1.34	ZPANM	0.72
12	72	0.72	PIT		TSC	1.96	ZPANM	0.72
12	72	0.92	PCT	22	TSC	1.48	CCAGC	0.7
14	72	1.06	SCI		TEH	1.2	ZPANM	0.72
16	72	8.31	DRI		TEH	1.35	CCAGC	0.7
16	72	0.7	SAI		TEH	1.8	ZMAGR	0.72
17	72	10.72	DRI		TEH	2.69	CCAGC	0.7
17	72	13.6	DRI		TEH	1.08	CCAGC	0.7
19	72	27.82	DRI		TEH	0.89	CCAGC	0.7
19	72	29.88	DRI		TEH	1.22	CCAGC	0.7
20	72	11.9	DRI		TEH	1.06	CCAGC	0.7
21	72	1.53	MAI		TEH	0.21	ZPANM	0.72
22	72	0.68	MCI		TEH	1.31	ZPANM	0.72
23	72	14.44	DRI		TEH	1.61	CCAGC	0.7
23	72	12.08	DRI		TEH	1.01	CCAGC	0.7
23	72	28.8	DRI		TEH	1.18	CCAGC	0.7
24	72	7.48	DRI		TEH	1.1	CCAGC	0.7
24	72	25.05	DRI		TEH	1.2	CCAGC	0.7
25	72	0.97	SAI		TEH	0.2	ZPANM	0.72
25	72	0.76	SAI		TEH	2.68	ZPANM	0.72
27	72	2.15	SAI		TEH	2.59	ZPANM	0.72
28	72	0.83	MAI		TEH	2.99	ZMAGR	0.72
28	72	16.79	DRI		TEH	1.43	CCAGC	0.68
28	72	21.66	DRI		TEH	1.53	CCAGC	0.68
28	72	22.25	DRI		TEH	1.35	CCAGC	0.7
29	72	11.02	DRI		TEH	1.01	CCAGC	0.7
29	72	10.13	DRI		TEH	3.18	CCAGC	0.7
29	72	1.02	MAI		TEH	4.57	ZMAGR	0.72
29	72	15.93	DRI		TEH	2.96	CCAGC	0.7
29	72	27.04	DRI		TEH	1.36	CCAGC	0.7
31	72	28.74	DRI		TEH	1.27	CCAGC	0.7
32	72	16.3	DRI		TEH	1.48	CCAGC	0.7
33	72	3.07	MAI		TEH	0.2	ZPANM	0.72
34	72	0.9	SAI		TEH	0.39	ZPANM	0.72
35	72	0.65	MAI		TEH	0.3	ZPANM	0.72
2	73	7.35	MAI		TEH	0.12	ZPAMC	0.7
3	73	5.55	MAI		TEH	0.16	ZPAMC	0.7
10	73	0.43	PIT		TSC	0.81	ZPANM	0.72
11	73	0.75	SCI		TEH	1.54	ZPANM	0.72
11	73	0.65	PIT		TSC	0.75	ZPANM	0.72
17	73	43.38	DRI		TEH	1.33	CCAGC	0.7
18	73	10.19	DRI		TEH	1.44	CCAGC	0.7
19	73	0.19	SAI		TEH	7.29	ZPANM	0.72
19	73	0.27	MAI		TEH	9.91	ZPANM	0.72
19	73	0.09	SAI		TEH	6.01	ZPANM	0.72
19	73	0.08	SAI		TEH	7.78	ZPANM	0.72
19	73	0.17	SAI		TEH	8	ZPAMC	0.7
19	73	0.32	MAI		TEH	7.31	ZPAMC	0.7

19	73	0.29	SAI		TEH	6.23	ZPAMC	0.7
19	73	0.09	SAI		TEH	8.59	ZPAMC	0.7
20	73	0.78	MAI		TEH	2.73	ZMAGR	0.72
20	73	27.15	DRI		TEH	1.59	CCAGC	0.7
21	73	18.74	DRI		TEH	1.15	CCAGC	0.7
23	73	33.87	DRI		TEH	1.36	CCAGC	0.7
24	73	0.47	SAI		TEH	1.17	ZPANM	0.72
25	73	11.82	DRI		TEH	1.15	CCAGC	0.7
27	73	31.29	DRI		TEH	1.11	CCAGC	0.7
27	73	11.55	DRI		TEH	2.66	CCAGC	0.7
28	73	17.81	DRI		TEH	1.11	CCAGC	0.7
29	73	24.87	DRI		TEH	2.56	MBALL	0.7
29	73	18.21	DRI		TEH	1.31	CCAGC	0.68
29	73	7.98	DRI		TEH	2.67	CCAGC	0.68
30	73	1.89	SAI		TEH	1.48	ZMAGR	0.72
30	73	18.4	DRI		TEH	1.07	CCAGC	0.7
31	73	25.08	DRI		TEH	1.18	CCAGC	0.7
32	73	23.79	DRI		TEH	1.55	CCAGC	0.68
32	73	19.88	DRI		TEH	1.34	MBALL	0.7
32	73	21.37	DRI		TEH	1.36	CCAGC	0.68
35	73	1	MAI		TEH	0.22	ZPANM	0.72
2	74	4.01	MAI		TEH	0.23	ZPAMC	0.7
3	74	8.25	MAI		TEH	0.15	ZPAMC	0.7
4	74	2.46	MAI		TEH	0.15	ZPAMC	0.7
4	74	1.76	SAI		TEH	0.85	ZPAMC	0.7
16	74	0.74	MCI		TEH	0.27	ZPANM	0.72
17	74	25.49	DRI		TEH	1.14	CCAGC	0.7
20	74	17.31	DRI		TEH	1.09	CCAGC	0.7
22	74	20.33	DRI		TEH	1.16	CCAGC	0.7
22	74	1.53	MAI		TEH	2.96	ZMAGR	0.72
23	74	22.52	DRI		TEH	1.16	CCAGC	0.7
24	74	25.18	DRI		TEH	1.42	CCAGC	0.7
24	74	0.87	MAI		TEH	3.63	ZMAGR	0.72
25	74	3.03	MAI		TEH	0.24	ZPANM	0.72
25	74	0.4	SCI		TEH	1.28	ZPANM	0.72
27	74	12.93	DRI		TEH	1.26	CCAGC	0.7
28	74	4.24	MAI		TEH	0.14	ZPANM	0.72
29	74	21.15	DRI		TEH	1.15	CCAGC	0.7
30	74	18.28	DRI		TEH	1.24	CCAGC	0.7
31	74	0.83	SCI		TEH	1.35	ZPANM	0.72
32	74	1.77	MCI		TEH	1.28	ZPANM	0.72
33	74	0.77	SCI		TEH	1.4	ZPANM	0.72
36	74	0.58	SCI		TEH	1.36	ZPANM	0.72
2	75	5.15	MAI		TEH	0.22	ZPAMC	0.7
3	75	4.78	MAI		TEH	0.16	ZPAMC	0.7
4	75	4.44	MAI		TEH	0.13	ZPAMC	0.7
11	75	1.54	MCI		TEH	1.2	ZPANM	0.72
12	75	0.38	MAI		TEH	8.86	ZPANM	0.72
14	75	5.82	DRI		TEH	1.31	CCAGC	0.7
14	75	33.78	DRI		TEH	1.03	CCAGC	0.7
16	75	0.95	SAI		TEH	0.19	ZPANM	0.72

17	75	1.26	SCI		TEH	1.52	ZPANM	0.72
17	75	4.2	MAI		TEH	0.33	ZPANM	0.72
20	75	2.17	MCI		TEH	1.35	ZPANM	0.72
21	75	2.44	MAI		TEH	0.39	ZPANM	0.72
23	75	4.26	SAI		TEH	0.25	ZPANM	0.72
24	75	27.83	DRI		TEH	1.09	CCAGC	0.7
25	75	22.24	DRI		TEH	0.98	CCAGC	0.7
25	75	6.23	DRI		TEH	3.06	CCAGC	0.7
29	75	0.85	SAI		TEH	1.1	ZMAGR	0.72
29	75	19.26	DRI		TEH	1.61	CCAGC	0.68
29	75	13.18	DRI		TEH	1.41	CCAGC	0.68
29	75	21.57	DRI		TEH	1.2	MBALL	0.7
31	75	0.78	MCI		TEH	1.54	ZPANM	0.72
32	75	1.11	SAI		TEH	0.32	ZPANM	0.72
33	75	3.4	SAI		TEH	0.4	ZPANM	0.72
35	75	0.29	PIT		TSH	13.05	ZPANM	0.72
2	76	0.26	MAI		TEH	7.1	ZPAMC	0.7
3	76	5.68	MAI		TEH	0.15	ZPAMC	0.7
4	76	1.38	SAI		TEH	0.94	ZPAMC	0.7
4	76	5.32	SAI		TEH	0.18	ZPAMC	0.7
12	76	30.73	DRI		TEH	1.28	CCAGC	0.7
12	76	34.93	DRI		TEH	1.32	CCAGC	0.68
12	76	25.61	DRI		TEH	1.58	CCAGC	0.68
13	76	0.86	MCI		TEH	1.38	ZPAMC	0.7
16	76	2.18	MAI		TEH	0.15	ZPAMC	0.7
17	76	26.64	DRI		TEH	1.45	CCAGC	0.68
17	76	41.22	DRI		TEH	1.28	CCAGC	0.7
18	76	1.68	MCI		TEH	1.14	ZPAMC	0.7
18	76	1.15	SAI		TEH	0.15	ZPAMC	0.7
18	76	0.75	MAI		TEH	1.08	ZPAMC	0.7
20	76	28.78	DRI		TEH	1.13	CCAGC	0.7
23	76	1.11	MAI		TEH	2.8	ZMAGR	0.72
23	76	9.01	DRI		TEH	1.14	CCAGC	0.7
24	76	10.21	DRI		TEH	1	CCAGC	0.7
24	76	22	DRI		TEH	1.09	CCAGC	0.7
25	76	2.79	SAI		TEH	3.74	ZPANM	0.72
27	76	1.7	MCI		TEH	1.6	ZPANM	0.72
29	76	3.41	MAI		TEH	0.33	ZPANM	0.72
29	76	2.08	MAI		TEH	3.42	ZPANM	0.72
30	76	1.06	MCI		TEH	1.42	ZPANM	0.72
3	77	5.3	MAI		TEH	0.15	ZPAMC	0.7
4	77	4.51	MAI		TEH	0.1	ZPAMC	0.7
16	77	2.34	SAI		TEH	0.13	ZPAMC	0.7
18	77	34.17	DRI		TEH	1.06	CCAGC	0.7
19	77	0.15	SAI		TEH	9.48	ZPAMC	0.7
20	77	43.54	DRI		TEH	1.12	CCAGC	0.7
20	77	38.74	DRI		TEH	1.39	CCAGC	0.7
22	77	22.56	DRI		TEH	1.14	CCAGC	0.7
23	77	25.62	DRI		TEH	1.07	CCAGC	0.7
24	77	18.39	DRI		TEH	1.16	CCAGC	0.7
25	77	18.65	DRI		TEH	1.2	CCAGC	0.7

26	77	1.4	MCI		TEH	1.41	ZPANM	0.72
27	77	1.06	SAI		TEH	2.52	ZMAGR	0.72
27	77	11.33	DRI		TEH	1.23	CCAGC	0.7
28	77	12.69	DRI		TEH	1.47	CCAGC	0.7
29	77	33.49	DRI		TEH	1.13	CCAGC	0.7
32	77	2.37	MAI		TEH	1.43	ZMAGR	0.72
32	77	18.76	DRI		TEH	1.34	CCAGC	0.7
33	77	1.91	SCI		TEH	1.52	ZPAMC	0.7
33	77	0.72	VOL		TSH	18.71	ZPANM	0.72
33	77	2.62	VOL		TSH	18.71	ZPAMC	0.7
33	77	2.33	SCI		TEH	1.81	ZPANM	0.72
3	78	7.59	MAI		TEH	0.11	ZPAMC	0.7
4	78	5.41	MAI		TEH	0.11	ZPAMC	0.7
16	78	126.1	DRI		TEH	1.41	CCAGC	0.68
16	78	123.8	DRI		TEH	1.43	CCAGC	0.7
16	78	27.25	DRI		TEH	1.58	CCAGC	0.7
18	78	59.69	DRI		TEH	1.25	CCAGC	0.7
18	78	65.28	DRI		TEH	1.37	CCAGC	0.7
18	78	63.03	DRI		TEH	1.09	CCAGC	0.68
18	78	62.39	DRI		TEH	1.25	CCAGC	0.68
20	78	12.34	DRI		TEH	1.1	CCAGC	0.7
20	78	17.54	DRI		TEH	1.49	CCAGC	0.7
24	78	34.63	DRI		TEH	1.35	CCAGC	0.7
24	78	44.89	DRI		TEH	1.48	CCAGC	0.7
25	78	19.78	DRI		TEH	1.34	CCAGC	0.7
28	78	0.8	SAI		TEH	0.19	ZPAMC	0.7
32	78	3.38	MAI		TEH	0.19	ZPAMC	0.7
2	79	3.84	MAI		TEH	0.18	ZPAMC	0.7
3	79	6.59	MAI		TEH	0.15	ZPAMC	0.7
4	79	2.33	MAI		TEH	0.15	ZPAMC	0.7
4	79	1.09	MAI		TEH	1.19	ZPAMC	0.7
16	79	3.41	SAI		TEH	0.16	ZPAMC	0.7
17	79	1.59	MAI		TEH	0.21	ZPAMC	0.7
18	79	3.77	SAI		TEH	0.11	ZPAMC	0.7
18	79	1.02	MAI		TEH	1	ZPAMC	0.7
20	79	4.29	SAI		TEH	0.15	ZPAMC	0.7
23	79	0.55	MMI		TEH	1.11	ZPAMC	0.7
25	79	2.42	MAI		TEH	0.19	ZPAMC	0.7
27	79	1.36	MAI		TEH	0.17	ZPAMC	0.7
30	79	27.18	DRI		TEH	1.28	CCAGC	0.7
30	79	39.14	DRI		TEH	1.47	CCAGC	0.7
2	80	4.82	MAI		TEH	0.14	ZPAMC	0.7
3	80	8.45	MAI		TEH	0.11	ZPAMC	0.7
4	80	0.87	SAI		TEH	0.2	ZPAMC	0.7
10	80	1.28	SAI		TEH	0.17	ZPAMC	0.7
14	80	0.63	SAI		TEH	0.39	ZPAMC	0.7
16	80	0.69	SAI		TEH	0.43	ZPAMC	0.7
19	80	48.22	DRI		TEH	1.29	CCAGC	0.68
19	80	44.1	DRI		TEH	1.28	CCAGC	0.7
19	80	38.89	DRI		TEH	1.29	CCAGC	0.68
19	80	3.19	SAI		TEH	1.26	ZPANM	0.68

20	80	17.58	DRI		TEH	1.18	CCAGC	0.68
21	80	20.83	DRI		TEH	0.79	CCAGC	0.68
21	80	20.83	DRI		TEH	0.85	CCAGC	0.68
22	80	2.19	MAI		TEH	1.64	ZMAGR	0.72
22	80	1.45	MAI		TEH	1.38	ZPANM	0.68
22	80	35.62	DRI		TEH	1.35	CCAGC	0.68
27	80	3.68	SAI		TEH	0.15	ZPAMC	0.7
29	80	3.22	SAI		TEH	0.21	ZPAMC	0.7
3	81	5.41	MAI		TEH	0.16	ZPAMC	0.7
3	81	0.76	MAI		TEH	1.2	ZPAMC	0.7
5	81	0.52	SCI		TEH	1.25	ZPAMC	0.7
14	81	2.54	MAI		TEH	1.37	ZPANM	0.68
14	81	24.01	DRI		TEH	1.12	CCAGC	0.68
14	81	23.28	DRI		TEH	1.2	CCAGC	0.68
14	81	21.29	DRI		TEH	1.3	CCAGC	0.7
18	81	17.14	DRI		TEH	0.99	CCAGC	0.7
18	81	3.9	MAI		TEH	1.1	ZPANM	0.68
18	81	20.87	DRI		TEH	0.94	CCAGC	0.68
18	81	10.78	DRI		TEH	0.98	CCAGC	0.68
21	81	1.72	MAI		TEH	0.18	ZPAMC	0.7
29	81	3.6	SAI		TEH	0.16	ZPAMC	0.7
29	81	5.5	SAI		TEH	0.17	ZPAMC	0.7
2	82	4.63	MAI		TEH	0.16	ZPAMC	0.7
3	82	7.39	MAI		TEH	0.14	ZPAMC	0.7
4	82	1.98	MAI		TEH	1.44	ZMAGR	0.72
4	82	23.34	DRI		TEH	0.86	CCAGC	0.7
5	82	1.41	SAI		TEH	0.13	ZPAMC	0.7
8	82	0.59	SAI		TEH	0.2	ZPAMC	0.7
10	82	57.72	DRI		TEH	0.99	CCAGC	0.7
10	82	38.83	DRI		TEH	1.15	CCAGC	0.7
13	82	3.36	DRI		TEH	1.26	CCAGC	0.68
16	82	33.57	DRI		TEH	1.25	CCAGC	0.68
16	82	53.69	DRI		TEH	1.28	CCAGC	0.68
16	82	58.27	DRI		TEH	1.43	CCAGC	0.7
18	82	42.42	DRI		TEH	1.21	CCAGC	0.7
18	82	1.26	MAI		TEH	0.18	ZPANM	0.68
18	82	1.9	MAI		TEH	1.24	ZPANM	0.68
18	82	39.21	DRI		TEH	1.33	CCAGC	0.68
18	82	34.88	DRI		TEH	1.42	CCAGC	0.68
19	82	0	SAI		TEH	0.99	ZPAMC	0.7
19	82	0.6	MAI		TEH	0.37	ZPAMC	0.7
19	82	1.65	SAI		TEH	0.93	ZPAMC	0.7
21	82	0.77	SAI		TEH	0.39	ZPAMC	0.7
23	82	2.69	SAI		TEH	1.47	ZMAGR	0.72
23	82	27.88	DRI		TEH	1.06	CCAGC	0.68
23	82	43.31	DRI		TEH	1.2	CCAGC	0.68
23	82	26.46	DRI		TEH	1.23	MBALL	0.7
28	82	3.6	SAI		TEH	0.21	ZPAMC	0.7
3	83	4.79	MAI		TEH	0.16	ZPAMC	0.7
3	83	0.62	MAI		TEH	1.01	ZPAMC	0.7
4	83	2.65	MAI		TEH	0.14	ZPAMC	0.7

4	83	1.5	MAI		TEH	1.17	ZPAMC	0.7
11	83	18.19	SPI		6H	-0.18	CCAGC	0.7
11	83	15.03	SPI		6C	0.08	CCAGC	0.7
14	83	0.91	MAI		TEH	0.14	ZPAMC	0.7
16	83	2.93	SAI		TEH	0.19	ZPAMC	0.7
17	83	1.83	SAI		TEH	1.17	ZMAGR	0.72
17	83	31.04	DRI		TEH	1.23	CCAGC	0.7
18	83	13.75	DRI		TEH	1.14	CCAGC	0.7
20	83	0.66	SAI		TEH	1.36	ZMAGR	0.72
20	83	15.64	DRI		TEH	1.08	CCAGC	0.7
21	83	37.35	DRI		TEH	1.33	MBALL	0.7
21	83	21.12	DRI		TEH	1.28	CCAGC	0.68
21	83	36.45	DRI		TEH	1.31	CCAGC	0.68
21	83	31.49	DRI		TEH	1.28	CCAGC	0.7
22	83	36.5	DRI		TEH	1.21	CCAGC	0.7
22	83	0.62	MAI		TEH	1.1	ZMAGR	0.72
22	83	64.2	DRI		TEH	1.24	MBALL	0.7
22	83	40.86	DRI		TEH	1.21	CCAGC	0.68
22	83	60.75	DRI		TEH	1.34	CCAGC	0.68
23	83	9.21	DRI		TEH	1.16	CCAGC	0.7
24	83	0.74	SAI		TEH	1.39	ZMAGR	0.72
24	83	15.46	DRI		TEH	1.24	CCAGC	0.7
25	83	3.9	SAI		TEH	0.19	ZPAMC	0.7
2	84	4.55	MAI		TEH	0.16	ZPAMC	0.7
3	84	6.19	MAI		TEH	0.14	ZPAMC	0.7
4	84	1.01	SAI		TEH	0.27	ZPAMC	0.7
5	84	0.7	SAI		TEH	0.16	ZPAMC	0.7
14	84	19.28	DRI		TEH	1.14	CCAGC	0.7
15	84	1.51	SAI		TEH	1.4	ZMAGR	0.72
15	84	18.47	DRI		TEH	1.06	CCAGC	0.7
16	84	26.75	DRI		TEH	1.1	CCAGC	0.7
17	84	24.85	DRI		TEH	1.24	CCAGC	0.7
18	84	16.38	DRI		TEH	0.8	CCAGC	0.7
21	84	26.4	DRI		TEH	1.1	CCAGC	0.7
22	84	26.72	DRI		TEH	1.17	CCAGC	0.7
23	84	1.59	DRI		TEH	1.68	CCAGC	0.7
23	84	10.63	DRI		TEH	2.76	CCAGC	0.7
2	85	0.98	SAI		6H	5.93	ZPUHF	0.62
2	85	9.6	DRI		TEH	1.6	CCAGC	0.68
2	85	17.62	DRI		TEH	1.31	CCAGC	0.68
2	85	16.3	DRI		TEH	1.5	CCAGC	0.64
2	85	0.5	SAI		TEH	1.01	ZPAMC	0.7
2	85	15.59	DRI		TEH	1.32	CCAGC	0.64
2	85	11.66	DRI		TEH	1.28	MBALL	0.7
2	85	1.19	SAI		6H	5.51	ZPUHF	0.62
2	85	3.3	SAI		6H	5.93	ZPUHF	0.62
2	85	1.36	SAI		6H	5.93	ZPUHF	0.62
2	85	1.76	SAI		6H	5.93	ZPUHF	0.62
2	85	2.27	SAI		6H	5.93	ZPUHF	0.62
2	85	14.29	DRI		TEH	1.31	MBALL	0.7
2	85	5.35	MAI		TEH	0.24	ZPANM	0.68

2	85	7.15	MAI		TEH	0.16	ZPAMC	0.7
2	85	1.13	MAI		TEH	1.41	ZPANM	0.68
3	85	2.28	MAI		TEH	0.17	ZPAMC	0.7
4	85	0.99	SAI		TEH	0.18	ZPAMC	0.7
4	85	1.46	MAI		TEH	1.22	ZPAMC	0.7
14	85	90.66	DRI		TEH	1.25	MBALL	0.7
14	85	119.8	DRI		TEH	1.2	CCAGC	0.7
14	85	35.69	DRI		TEH	1.24	CCAGC	0.7
18	85	3.96	SAI		TEH	0.19	ZPAMC	0.7
23	85	10.5	SPI		6H	0.02	CCAGC	0.7
3	86	3.12	MAI		TEH	0.16	ZPAMC	0.7
5	86	1.5	MAI		TEH	0.28	ZPAMC	0.7
13	86	1.22	SAI		TEH	0.32	ZPAMC	0.7
14	86	1.13	SAI		TEH	0.3	ZPAMC	0.7
15	86	0.88	SCI		TEH	0.35	ZPAMC	0.7
17	86	0.74	SAI		TEH	0.38	ZPAMC	0.7
19	86	2.15	MAI		TEH	0.32	ZPAMC	0.7
20	86	5.54	SCI		TEH	0.3	ZPAMC	0.7
22	86	0.37	SAI		TEH	1.33	ZMAGR	0.72
22	86	29.73	DRI		TEH	1.1	CCAGC	0.7
22	86	16.57	DRI		TEH	1.28	CCAGC	0.64
22	86	19.2	DRI		TEH	1.37	CCAGC	0.68
2	87	7.42	MAI		TEH	0.13	ZPAMC	0.7
2	87	1.4	SAI		TEH	1.15	ZPAMC	0.7
2	87	19.2	DRI		TEH	1.19	ZBALL	0.61
2	87	31.88	DRI		TEH	1.29	MBALL	0.7
2	87	34.29	DRI		TEH	1.29	CCAGC	0.64
2	87	38.15	DRI		TEH	1.22	CCAGC	0.68
3	87	3.61	MAI		TEH	0.11	ZPAMC	0.7
4	87	4.36	MAI		TEH	0.16	ZPAMC	0.7
5	87	0.84	SAI		TEH	0.14	ZPAMC	0.7
10	87	1.4	SAI		TEH	0.2	ZPAMC	0.7
2	88	8.19	MAI		TEH	0.12	ZPAMC	0.7
3	88	6.39	MAI		TEH	0.08	ZPAMC	0.7
3	88	0.14	SAI		TSH	11.29	ZPAMC	0.7
3	88	3.58	MAI		TEH	0.13	ZPAMC	0.7
3	88	0.13	SAI		TSH	9.84	ZPAMC	0.7
2	89	4.46	MAI		TEH	0.22	ZPAMC	0.7
3	89	4.07	MAI		TEH	0.16	ZPAMC	0.7
3	89	0.82	SAI		TEH	1.59	ZPAMC	0.7
5	89	2.85	MAI		TEH	0.06	ZPAMC	0.7
2	90	2.66	MAI		TEH	0.17	ZPAMC	0.7
3	90	2.81	MAI		TEH	0.1	ZPAMC	0.7
5	90	1.2	SAI		TEH	0.29	ZPAMC	0.7
12	90	0.09	PIT		TSH	10.6	ZPAMC	0.7
2	91	3.03	MAI		TEH	0.17	ZPAMC	0.7
3	91	2.93	MAI		TEH	0.16	ZPAMC	0.7
3	91	0.71	SAI		TEH	1.13	ZPAMC	0.7
2	92	2.87	SAI		TEH	0.2	ZPAMC	0.7
4	92	2.82	MAI		TEH	0.05	ZPAMC	0.7

Table 12, Steam Generator 23, Tubes Plugged 2000

Row	Col	Primary Reason for Plugging
13	3	Cecco Support Plate Indication
18	7	Cecco Support Plate Indication
22	7	Cecco Support Plate Indication
22	8	Cecco Support Plate Indication
24	8	Cecco Support Plate Indication
18	9	Cecco Support Plate Indication
31	15	Pitting by RPC/<28% or DEP by Bobbin
34	16	Cecco Top of Tubesheet Indication
2	19	Row 2 NDD - Customer Decision to Plug
24	19	Cecco Support Plate Indication
2	20	Row 2 NDD - Customer Decision to Plug
14	20	Pitting
30	20	Cecco Support Plate Indication
2	21	Row 2 NDD - Customer Decision to Plug
2	22	Row 2 NDD - Customer Decision to Plug
2	23	Row 2 NDD - Customer Decision to Plug
2	24	Row 2 NDD - Customer Decision to Plug
12	24	Pitting
2	25	Row 2 NDD - Customer Decision to Plug
2	26	Row 2 NDD - Customer Decision to Plug
16	26	Pitting
2	27	Row 2 NDD - Customer Decision to Plug
13	27	Pitting by RPC/<28% or DEP by Bobbin
17	27	Failed F* Criteria for Dia. or Dist.
20	27	Pitting by RPC/<28% or DEP by Bobbin
29	27	Failed F* Criteria for Dia. or Dist.
2	28	Row 2 NDD - Customer Decision to Plug
7	28	Pitting by RPC/<28% or DEP by Bobbin
21	28	Pitting by RPC/<28% or DEP by Bobbin
23	29	Pitting by RPC/<28% or DEP by Bobbin
24	29	Pitting
25	29	Pitting
42	30	Bad Data - Uninspectable Location
16	31	Failed F* Criteria for Dia. or Dist.
24	31	Pitting by RPC/<28% or DEP by Bobbin
25	31	Failed F* Criteria for Dia. or Dist.
40	31	Pitting
12	32	Pitting
25	32	Pitting
28	32	Failed F* Criteria for Dia. or Dist.
27	33	Volumetric Indication
2	34	Row 2 NDD - Customer Decision to Plug
20	34	Pitting by RPC/<28% or DEP by Bobbin
2	35	Row 2 NDD - Customer Decision to Plug
25	35	Failed F* Criteria for Dia. or Dist.
28	35	Failed F* Criteria for Dia. or Dist.
32	35	Crevice ODSCC Indication
43	35	Pitting by RPC/<28% or DEP by Bobbin

2	36	Row 2 NDD - Customer Decision to Plug
5	36	Pitting by RPC/<28% or DEP by Bobbin
19	36	Pitting by RPC/<28% or DEP by Bobbin
2	37	Row 2 NDD - Customer Decision to Plug
23	37	Pitting
27	37	Failed F* Criteria for Dia. or Dist.
32	37	Crevice ODSCC Indication
37	37	Failed F* Criteria for Dia. or Dist.
2	38	Row 2 NDD - Customer Decision to Plug
6	38	Pitting by RPC/<28% or DEP by Bobbin
10	38	Pitting by RPC/<28% or DEP by Bobbin
22	38	Pitting
32	38	Crevice ODSCC Indication
2	39	Row 2 NDD - Customer Decision to Plug
24	39	Pitting by RPC/<28% or DEP by Bobbin
2	40	Row 2 NDD - Customer Decision to Plug
21	40	Pitting
29	40	Failed F* Criteria for Dia. or Dist.
30	40	Failed F* Criteria for Dia. or Dist.
31	40	Failed F* Criteria for Dia. or Dist.
2	41	Row 2 NDD - Customer Decision to Plug
23	41	Failed F* Criteria for Dia. or Dist.
28	41	Failed F* Criteria for Dia. or Dist.
31	41	Cecco Support Plate Indication
32	41	Failed F* Criteria for Dia. or Dist.
45	41	Cecco Support Plate Indication
2	42	Row 2 NDD - Customer Decision to Plug
17	42	Failed F* Criteria for Dia. or Dist.
22	42	Pitting by RPC/<28% or DEP by Bobbin
37	42	Failed F* Criteria for Dia. or Dist.
22	43	Failed F* Criteria for Dia. or Dist.
31	43	Failed F* Criteria for Dia. or Dist.
3	44	Customer Decision to Plug
19	44	Pitting
29	44	Pitting
37	44	Cecco Support Plate Indication
10	45	Pitting
17	45	Pitting
34	45	Cecco Support Plate Indication
19	46	Failed F* Criteria for Dia. or Dist.
22	46	Cecco Support Plate Indication
24	46	Cecco Top of Tubesheet Indication
29	46	ODSCC Indication Above TSH
30	46	ODSCC Indication Above TSH
31	46	ODSCC Indication Above TSH
14	47	Pitting by RPC/<28% or DEP by Bobbin
17	47	Pitting
25	47	Failed F* Criteria for Dia. or Dist.
31	47	ODSCC Indication Above TSH
17	48	Pitting
22	48	Failed F* Criteria for Dia. or Dist.

23	48	Failed F* Criteria for Dia. or Dist.
25	48	Pitting by RPC/<28% or DEP by Bobbin
39	49	Cecco Top of Tubesheet Indication
2	51	Row 2 NDD - Customer Decision to Plug
20	51	Pitting
27	51	Crevice ODSCC Indication
36	51	Pitting
38	51	Cecco Top of Tubesheet Indication
23	52	Non-Quantifiable Indication
44	52	Pitting by RPC/<28% or DEP by Bobbin
4	53	U-Bend Not Inspectable/RST at Lower TSP's
17	53	Pitting
29	54	Failed F* Criteria for Dia. or Dist.
36	54	Failed F* Criteria for Dia. or Dist.
2	55	Row 2 NDD - Customer Decision to Plug
4	55	Pitting
25	55	Pitting by RPC/<28% or DEP by Bobbin
29	55	Pitting
2	56	Bad Data with U-Bend +Pt
43	56	Cecco Support Plate Indication
2	57	Row 2 NDD - Customer Decision to Plug
9	57	Pitting
25	57	Pitting
2	58	Row 2 NDD - Customer Decision to Plug
9	58	Pitting
22	58	Pitting by RPC/<28% or DEP by Bobbin
32	58	Failed F* Criteria for Dia. or Dist.
8	59	Pitting
17	59	Cecco Support Plate Indication
9	60	Cecco Top of Tubesheet Indication
41	60	Pitting by RPC/<28% or DEP by Bobbin
8	61	Pitting by RPC/<28% or DEP by Bobbin
25	62	Cecco Support Plate Indication
11	62	Crevice ODSCC Indication
29	62	Failed F* Criteria for Dia. or Dist.
42	63	Failed F* Criteria for Dia. or Dist.
2	64	Row 2 NDD - Customer Decision to Plug
9	64	Crevice ODSCC Indication
12	64	Crevice ODSCC Indication
2	65	Row 2 NDD - Customer Decision to Plug
12	65	Cecco Top of Tubesheet Indication
12	66	Crevice ODSCC Indication
41	66	Cecco Support Plate Indication
6	67	Pitting by RPC/<28% or DEP by Bobbin
4	68	Bad Data - Uninspectable Location
21	68	Failed F* Criteria for Dia. or Dist.
2	69	Row 2 NDD - Customer Decision to Plug
8	69	Pitting by RPC/<28% or DEP by Bobbin
30	69	Non-Quantifiable Indication
2	70	Crevice ODSCC Indication
3	70	Crevice ODSCC Indication

4	70	Crevice ODSCC Indication
11	70	Pitting by RPC/<28% or DEP by Bobbin
14	70	Pitting by RPC/<28% or DEP by Bobbin
2	71	Row 2 NDD - Customer Decision to Plug
9	71	Pitting by RPC/<28% or DEP by Bobbin
10	71	Pitting by RPC/<28% or DEP by Bobbin
13	71	Pitting by RPC/<28% or DEP by Bobbin
27	71	Failed F* Criteria for Dia. or Dist.
28	71	Failed F* Criteria for Dia. or Dist.
2	72	Row 2 NDD - Customer Decision to Plug
10	72	Pitting by RPC/<28% or DEP by Bobbin
12	72	Pitting by RPC/<28% or DEP by Bobbin
25	72	Failed F* Criteria for Dia. or Dist.
2	73	Row 2 NDD - Customer Decision to Plug
10	73	Pitting by RPC/<28% or DEP by Bobbin
11	73	Pitting
19	73	Crevice ODSCC Indication
2	74	Row 2 NDD - Customer Decision to Plug
2	75	Row 2 NDD - Customer Decision to Plug
12	75	Crevice ODSCC Indication
35	75	Pitting
2	76	Crevice ODSCC Indication
30	76	Failed F* Criteria for Dia. or Dist.
19	77	Crevice ODSCC Indication
33	77	Pitting by RPC/<28% or DEP by Bobbin
2	79	Row 2 NDD - Customer Decision to Plug
2	80	Row 2 NDD - Customer Decision to Plug
2	82	Row 2 NDD - Customer Decision to Plug
11	83	Cecco Support Plate Indication
2	84	Row 2 NDD - Customer Decision to Plug
9	84	Restricted to 0.610" Bobbin Probe at 4C
2	85	U-Bend PWSCC Indication
23	85	Cecco Support Plate Indication
2	87	Row 2 NDD - Customer Decision to Plug
2	88	Row 2 NDD - Customer Decision to Plug
3	88	ODSCC Indication Above TSH
2	89	Row 2 NDD - Customer Decision to Plug
2	90	Row 2 NDD - Customer Decision to Plug
12	90	Pitting
2	91	Row 2 NDD - Customer Decision to Plug
3	91	Failed F* Criteria for Dia. or Dist.
2	92	Row 2 NDD - Customer Decision to Plug

Table 13, Steam Generator 24, Indications 1997

row	col	volts	defect	%	location	offset	probe	size
7	2	1.31	27	27	TSH	0.72	C5	0.7
7	2	7.81	TSI		TSH	0.06	C5	0.7
7	2	1.37	29	29	TSH	0.44	C5	0.7
4	6	0.16	VOL		6C	0	ZD	0.61
15	7	2.24	DRI		TEH	2.58	C5	0.7
15	7	2.95	DRI		TEH	2.44	EL	0.7
10	8	0.83	MAI		TEH	3.6	RB	0.72
10	8	19.01	DRI		TEH	3.87	C5	0.7
15	8	20.64	DRI		TEH	2.75	C5	0.7
12	13	21.85	DRI		TEH	2.67	C5	0.7
10	15	25.1	DRI		TEC	1.09	C5	0.7
10	15	19.53	MAI		TEC	1.71	RB	0.72
29	15	0.35	1	1	TSC	10.03	C5	0.68
29	15	0.35	15	15	TSC	12.56	C5	0.68
31	15	1.38	PIT		TSC	1.91	ZP	0.68
31	15	1	22	22	TSC	1.12	EL	0.7
31	15	2.75	PIT		TSC	1.2	ZP	0.68
31	15	1.12	41	41	TSC	1.32	C5	0.7
31	15	0.36	34	34	TSC	2.07	C5	0.7
31	15	0.42	5	5	TSC	1.83	EL	0.7
20	16	0.16	DRI		TEH	-0.39	C5	0.7
31	16	1.11	37	37	TSC	1.2	C5	0.7
31	16	3.66	PIT		TSC	1.2	ZP	0.68
31	16	1.8	27	27	TSC	1.23	ZM	0.61
13	17	0.55	48	48	TEH	3.9	ZP	0.68
13	17	2.84	PI		TEH	3.37	C5	0.7
13	17	0.72	MAI		TEH	3.63	ZP	0.68
26	17	19.28	SPI		6C	-0.57	C5	0.7
12	23	3.74	DRI		TEH	2.65	C5	0.7
18	23	24.39	DRI		TEH	2.42	C5	0.7
12	24	17.44	DRI		TEH	2.33	C5	0.7
9	25	0.18	27	27	TEH	10.05	ZP	0.68
9	25	0.18	MAI		TEH	7.52	ZP	0.68
9	25	1.41	PI		TEH	5.96	C5	0.7
32	25	2.46	30	30	AV2	0	EL	0.7
32	25	2.2	29	29	AV3	0	EL	0.7
4	26	0.87	PIT		TSC	0.23	ZP	0.68
4	26	16.68	TSI		TSC	0	C5	0.68
19	26	6.1	DRI		TEH	1.75	C5	0.7
23	26	9.86	DRI		TEH	2.05	C5	0.7
19	27	11.94	DRI		TEH	1.61	C5	0.7
5	28	0.92	PIT		TSC	0.15	ZP	0.68
5	28	100.6	TSI		TSC	-0.1	C5	0.7
17	28	9.23	DRI		TEH	1.39	C5	0.7
18	28	1.06	PIT		TSC	1.29	ZP	0.68
18	28	0.5	23	23	TSC	1.28	C5	0.7
19	28	8	DRI		TEH	1.89	C5	0.7
19	28	1.61	MAI		TEH	2.93	RB	0.72

23	28	9.82	DRI		TEH	2.16	C5	0.7
26	28	12.88	DRI		TEH	2.33	C5	0.7
26	28	20.16	DRI		TEH	1.81	EL	0.7
5	29	0.12	PIT		TSC	3.28	ZP	0.68
5	29	0.36	35	35	TSC	3.77	C5	0.7
5	29	0.19	PIT		TSC	0.15	ZP	0.68
10	29	0.56	MAI		TEH	6.48	ZP	0.68
10	29	0.49	37	37	TEH	6.48	ZP	0.68
10	29	2.22	PI		TEH	5.88	C5	0.7
16	29	3.37	29	29	TSH	1.29	C5	0.7
16	29	4.1	PI		TSH	-2.62	C5	0.7
16	29	0.42	VOL		TSH	-1.07	ZP	0.68
16	29	0.94	VOL		TSH	16.28	ZP	0.68
17	29	5.74	DRI		TEH	2.54	C5	0.7
19	29	5.37	DRI		TEH	1.59	C5	0.7
22	29	1.53	19	19	TSH	1.14	C5	0.7
26	29	7.84	DRI		TEH	1.97	C5	0.7
26	29	0.83	MAI		TEH	3.01	RB	0.72
33	29	7.2	DRI		TEH	1.93	C5	0.7
26	30	7.84	DRI		TEH	1.69	C5	0.7
27	30	3.68	PI		TEH	9.64	C5	0.7
27	30	0.38	25	25	TEH	10.2	ZP	0.68
27	30	0.38	MAI		TEH	3.36	ZP	0.68
2	31	7.47	SPI		5H	0	C5	0.68
26	31	10.02	DRI		TEH	2	C5	0.7
26	31	1.57	MAI		TEH	2.94	RB	0.72
36	31	7.39	SPI		3H	-0.32	C5	0.7
24	32	2.85	32	32	AV2	0	EL	0.7
26	32	2.54	31	31	AV3	0	EL	0.7
26	32	7.65	DRI		TEH	2.69	C5	0.7
17	33	9.86	DRI		TEH	2.29	C5	0.7
18	33	2.35	PIT		TSC	4.41	ZP	0.68
18	33	0.91	15	15	TSC	4.17	C5	0.7
20	33	8.86	DRI		TEH	1.8	C5	0.7
20	33	0.53	34	34	TSC	2.77	C5	0.7
24	33	2.49	30	30	AV2	0	EL	0.7
27	33	0.17	SCI		TEH	3.09	ZP	0.68
27	33	3.71	PI		TEH	5.77	C5	0.7
27	33	0.83	88	88	TEH	4.06	ZP	0.68
27	33	1.61	MAI		TEH	3.17	ZP	0.68
19	34	0.81	35	35	TSC	2.89	C5	0.7
24	34	1.35	23	23	AV4	0	EL	0.7
24	34	1.87	27	27	AV2	0	EL	0.7
25	34	3.03	33	33	AV2	0	EL	0.7
25	34	2.69	31	31	AV4	0	EL	0.7
27	34	7.42	PI		TEH	3	C5	0.7
27	34	2.2	MAI		TEH	3.15	ZP	0.68
27	34	0.59	98	98	TEH	3.71	ZP	0.68
31	34	2.23	29	29	AV4	0	EL	0.7
44	35	9.71	SPI		5H	0.27	C5	0.7
14	36	0.45	19	19	TSC	2.51	C5	0.7

25	36	1	27	27	TSC	1.27	C5	0.7
25	36	1.72	PIT		TSC	1.37	ZP	0.68
35	36	16.83	TSI		TSH	-0.14	C5	0.7
30	37	2.75	32	32	AV4	0	EL	0.7
30	37	3.22	34	34	AV3	0	EL	0.7
6	38	0.28	36	36	TSC	5.07	C5	0.7
6	38	1.04	PIT		TSC	4.73	ZP	0.68
32	38	1.62	25	25	AV3	0	EL	0.7
13	40	2.92	MAI		TEH	3.07	RB	0.72
13	40	10.26	DRI		TEH	2.6	C5	0.7
26	40	1.56	24	24	AV3	0	EL	0.7
29	40	0.98	8	8	TSC	0.52	C5	0.7
29	40	1.28	PIT		TSC	0.52	ZP	0.68
35	40	5.12	30	30	AV3	0	C5	0.7
35	40	2.32	30	30	AV3	0	EL	0.7
35	41	2.06	28	28	AV3	0	EL	0.7
35	42	2.37	30	30	AV3	0	EL	0.7
35	42	1.53	24	24	AV4	0	EL	0.7
27	43	30.13	SPI		6H	-0.28	C5	0.7
28	43	10.71	DRI		TEH	3.03	C5	0.7
16	45	0.65	9	9	TSC	4.78	C5	0.7
20	46	24.82	DRI		TEH	2.2	C5	0.7
28	46	11.31	DRI		TEH	2.26	C5	0.7
28	46	0.23	30	30	TSC	0.92	C5	0.7
38	46	4.09	DRI		TEH	0.92	C5	0.68
38	46	2.26	SAI		TEH	1.75	RB	0.72
17	47	0.84	6	6	TSC	5.36	C5	0.7
24	47	0.62	8	8	TSC	1.24	C5	0.7
42	47	9.28	TSI		TSC	-0.08	C5	0.7
16	48	10.58	SPI		4H	0.34	C5	0.7
18	48	0.66	19	19	TSH	3.88	C5	0.7
44	48	0.54	PIT		TSC	9.29	ZP	0.68
44	48	0.62	14	14	TSC	9.18	C5	0.7
22	49	0.43	35	35	TSC	1.88	C5	0.7
41	49	44.03	SAI		TEH	3.53	RB	0.72
41	49	2.6	DRI		TEH	1.18	C5	0.68
42	49	3.11	MAI		TEH	3.93	RB	0.72
42	49	1.99	DRI		TEH	1.23	C5	0.68
44	49	0.43	PIT		TSC	4.16	ZP	0.68
44	49	0.9	27	27	TSC	4.4	C5	0.7
22	50	0.71	16	16	TSC	2.23	C5	0.7
45	50	0.23	PIT		TSC	11.25	ZP	0.68
45	50	0.34	26	26	TSC	11.61	C5	0.7
20	51	0.47	12	12	TSC	2.82	C5	0.7
45	51	0.25	24	24	TSH	0.58	C5	0.68
45	51	0.1	PIT		TSH	0	ZP	0.68
45	51	0.17	PIT		TSH	0.46	ZP	0.68
8	52	0.49	27	27	TSC	8.36	C5	0.68
8	52	0.51	12	12	TSC	7.17	C5	0.64
8	52	0.46	23	23	TSC	8.12	C5	0.64
8	52	0.33	PIT		TSC	6.8	ZP	0.68

8	52	0.42	PIT		TSC	7.58	ZP	0.68
8	52	0.61	PIT		TSC	8.53	ZP	0.68
8	52	0.49	27	27	TSC	7.43	C5	0.68
8	52	0.54	35	35	TSC	8.12	C5	0.7
8	52	0.51	12	12	TSC	7.32	C5	0.7
36	54	1.89	27	27	AV3	0	C5	0.7
4	55	4.35	TSI		TSC	0.3	C5	0.68
7	55	23.72	SAI		TEC	1.29	RB	0.72
7	55	16.2	DRI		TEC	0.54	C5	0.7
24	55	0.77	24	24	TSH	0.98	C5	0.7
10	57	0.71	26	26	TSC	7.84	C5	0.7
10	57	0.58	28	28	TSC	7.98	EL	0.7
8	60	0.56	34	34	TSC	4.31	C5	0.7
8	60	0.21	PIT		TSC	4.15	ZP	0.68
15	60	0.78	11	11	TSC	3.72	EL	0.7
15	60	0.5	38	38	TSC	3.74	C5	0.7
24	60	1.3	34	34	TSH	1.85	C5	0.7
24	60	0.14	PIT		TSH	1.82	ZP	0.68
24	60	0.35	PIT		TSH	1.79	ZP	0.68
17	63	1.26	10	10	TSH	4.81	EL	0.7
17	63	1.14	24	24	TSH	5.12	C5	0.7
2	64	5.68	DRI		TEH	2.29	C5	0.68
2	65	35.82	DRI		TEH	2.46	C5	0.68
2	65	3.14	MAI		TEH	3	RB	0.72
2	66	16.39	TSI		TSH	-0.08	C5	0.64
23	66	11.28	SPI		6H	-0.16	C5	0.7
2	67	2.14	SAI		6H	7.74	ZB	0.62
2	67	32.41	DRI		TEH	1.9	C5	0.68
2	67	31.13	DRI		TEH	2.54	C5	0.64
2	67	15.79	TSI		TSH	0.68	C5	0.64
27	71	2.04	7	7	TSH	25.15	C5	0.7
8	78	5.41	SPI		3H	-0.36	C5	0.7
9	90	0.8	6	6	TSC	14.37	C5	0.7

TABLE 14, Steam Generator 24 Tubes Plugged 1997

Row	Column	Location	Comments*
7	2	0.06 inch above TSH	Cecco TSI
4	6	Center of 6C	VOL
2	7	610 +Point RST @ 6C	Admin/Plug
10	15	1.09 inch above TEC	Roll transition indic.
29	15	Restriction at 6H	610 bobbin restricted
31	15	1.32 inches above TSC	41%
13	17	3.37 inches above TEH	Cecco PI (48%, MAI)
26	17	Within TSP 6C	Cecco SPI
9	25	5.96 inches above TEH	Cecco PI (MAI)
4	26	Top of TSC	Cecco TSI (PIT)
5	28	0.10 inch below TSC	Cecco TSI (PIT)
10	29	5.88 inches above TEH	Cecco PI (MAI)
16	29	2.62 inches below TSH	Cecco PI (VOL)
27	30	9.64 inches above TEH	Cecco PI (MAI)
2	31	Within TSP 5H	Cecco SPI
36	31	Within TSP 3H	Cecco SPI
27	33 In-Situ Tested	5.77 inches above TEH	Cecco PI (MAI, SCI)
27	34 In-Situ Tested	3.00 inches above TEH	Cecco PI (98%, MAI)
44	35	Within TSP 5H	Cecco SPI
35	36	0.14 inch below top of TSH	Cecco TSI
13	40	2.60 inches above TEH	Roll transition indic.
27	43	Within TSP 6H	Cecco SPI
42	47	0.08 inch below TSC	Cecco TSI
16	48	Within TSP 4H	Cecco SPI
4	55	0.30 inch above TSC	Cecco TSI
40	59	610 +Point BDA @ 2H	Admin/Plug
41	63	610 +Point BDA @ 6H	Admin/Plug
2	66	0.8 inch below TSH	Cecco TSI
23	66	Within TSP 6H	Cecco SPI
2	67	Apex of U-bend	SAI
2	76	610 +Point RST @ 5C, 6C	Admin/Plug
8	78	Within TSP 3H	Cecco SPI
8	90	610 +Point BDA @ 2H	Admin/Plug

Note: * Notation in parenthesis indicates a characterization by +Point

Table 15, Steam Generator 24, Indications 2000

row	col	volts	defect	%	location	offset	probe	size
3	2	1.05	MAI		TEH	0.14	ZPANM	0.72
6	2	10.79	SPI		3H	0.06	CCAGC	0.68
3	3	3.55	MAI		TEH	0.17	ZPANM	0.72
7	3	2.66	MAI		TEH	0.2	ZPANM	0.72
12	3	0.26	SAI		TEH	7.61	ZPANM	0.72
2	4	1.46	SAI		6H	5.88	ZPUHF	0.62
3	4	4.16	SAI		TEH	0.22	ZPANM	0.72
4	4	4.68	MAI		TEH	0.29	ZPANM	0.72
5	4	4.48	SAI		TEH	0.12	ZPANM	0.72
6	4	2.03	SAI		TEH	0.02	ZPANM	0.72
8	4	2.25	SAI		TEH	0.16	ZPANM	0.72
13	4	0.42	PCT	0	TSH	27	MBALL	0.7
13	4	0.65	PCT	0	TSH	26.95	CCAGC	0.7
13	4	0.3	VOL		TSH	26.14	ZPANM	0.72
2	5	49.83	SAI		6H	6.91	ZPUMB	0.62
5	5	2.42	SAI		TEH	0.2	ZPANM	0.72
8	5	2.7	SAI		TEH	0.27	ZPANM	0.72
12	5	0.21	MAI		TEH	6.73	ZPANM	0.72
10	6	0.26	MAI		TEH	3.45	ZPANM	0.72
10	6	2.2	PI		TEH	3.38	CCAGC	0.7
10	6	1.84	PI		TEH	3.45	CCAGC	0.68
10	6	0.21	MAI	77	TEH	3.22	ZPANM	0.68
10	7	2.14	PI		TEH	6.26	CCAGC	0.7
10	7	0.34	NQI		TEH	6.36	CCAGC	0.7
10	7	0.37	NQI		TEH	6.64	CCAGC	0.7
10	7	0.33	NQI		TEH	6.83	CCAGC	0.68
10	7	2.83	PI		TEH	6.53	CCAGC	0.68
10	7	0.42	NQI		TEH	6.57	MBALL	0.7
10	7	0.29	MAI	67	TEH	2.76	ZPANM	0.68
10	7	0.36	MAI		TEH	3.51	ZPANM	0.72
10	7	0.22	MAI		TEH	3.64	ZPANM	0.72
10	7	2.06	PI		TEH	6.23	CCAGC	0.7
15	7	3.7	MAI		TEH	4.59	ZPANM	0.72
15	7	1.27	MAI	60	TEH	4.8	ZMAGR	0.72
15	7	1.07	MAI		TEH	4.9	ZMAGR	0.72
15	7	5.56	DRI		TEH	2.46	CCAGC	0.7
15	7	6.26	DRI		TEH	2.61	CCAGC	0.7
3	8	4.7	SAI		TEH	0.14	ZPANM	0.72
4	8	5.19	SAI		TEH	0.13	ZPANM	0.72
5	8	5.06	SAI		TEH	0.13	ZPANM	0.72
10	8	11.69	DRI		TEH	3.41	CCAGC	0.68
10	8	3.92	DRI		TEH	3.5	CCAGC	0.68
10	8	6.59	DRI		TEH	3.51	MBALL	0.7
10	8	9.25	DRI		TEH	3.54	CCAGC	0.7
10	8	14.03	DRI		TEH	3.79	CCAGC	0.7
15	8	9.53	DRI		TEH	2.55	CCAGC	0.7
15	8	0.99	MAI		TEH	4.88	ZMAGR	0.72
4	9	1	MAI		TEH	0.16	ZPANM	0.72

10	9	0.25	SAI		TEH	3.66	ZPANM	0.72
23	9	0.76	MAI		TEH	0.11	ZPANM	0.72
10	10	2.28	MAI		TEH	0.31	ZPANM	0.72
3	11	3.79	SAI		TEH	0.17	ZPANM	0.72
4	11	4.77	SAI		TEH	0.21	ZPANM	0.72
24	11	0.76	MAI		TEH	0.06	ZPANM	0.72
3	12	1.44	SAI		TEH	0.06	ZPANM	0.72
4	12	3.39	SAI		TEH	0.07	ZPANM	0.72
5	12	3.76	SAI		TEH	0.1	ZPANM	0.72
7	12	2.52	MAI		TEH	0.14	ZPANM	0.72
12	12	0.36	SAI		TEH	3.1	ZPANM	0.72
18	12	124	SPI		3H	0.29	CCAGC	0.7
4	13	6.3	SAI		TEH	0.21	ZPANM	0.72
5	13	1.98	SAI		TEH	0.16	ZPANM	0.72
8	13	1.92	MAI		TEH	0.17	ZPANM	0.72
12	13	21.86	DRI		TEH	2.77	CCAGC	0.7
24	13	0.59	SAI		TEH	0.09	ZPANM	0.72
27	13	1.08	MAI		TEH	0.09	ZPANM	0.72
3	14	1.66	SAI		TEH	0.1	ZPANM	0.72
4	14	2.81	MAI		TEH	0.13	ZPANM	0.72
9	14	3.6	SAI		TEH	0.12	ZPANM	0.72
16	14	0.11	SAI		TEH	3.04	ZPANM	0.72
16	14	0.14	SAI		TEH	8.9	ZPANM	0.72
16	14	0.14	SAI		TEH	10.66	ZPANM	0.72
18	14	0.85	SAI		TEH	2.58	ZPANM	0.72
3	15	6.9	SAI		TEH	0.13	ZPANM	0.72
4	15	1.6	SAI		TEH	0.13	ZPANM	0.72
8	15	4.04	SAI		TEH	0.14	ZPANM	0.72
16	15	0.12	MAI		TEH	3.39	ZPANM	0.72
16	15	0.12	MAI		TEH	11.34	ZPANM	0.72
18	15	0.79	SAI		TEH	3	ZPANM	0.72
32	15	0.42	MAI		TEH	0.12	ZPANM	0.72
4	16	4.46	SAI		TEH	0.26	ZPANM	0.72
5	16	0.52	SAI		TEH	1.83	ZPANM	0.72
8	16	4.08	SAI		TEH	0.12	ZPANM	0.72
8	16	3.97	SAI		TEH	0.07	ZPANM	0.72
11	16	1.34	SAI		TEH	0.13	ZPANM	0.72
12	16	0.36	SAI		TEH	1.48	ZPANM	0.72
20	16	13.92	DRI		TEH	3.12	CCAGC	0.7
31	16	1.02	PCT	25	TSC	1.28	MBALL	0.7
31	16	0.65	PIT		TSC	1.13	ZPANM	0.68
32	16	0.15	MAI		TEH	0.24	ZPANM	0.72
3	17	2.87	SAI		TEH	0.09	ZPANM	0.72
3	17	2.94	SAI		TEH	0.13	ZPANM	0.72
4	17	5.56	SAI		TEH	0.12	ZPANM	0.72
5	17	2.89	SAI		TEH	0.13	ZPANM	0.72
7	17	1.72	SAI		TEH	0.1	ZPANM	0.72
9	17	0.46	SAI		TEH	1.36	ZPANM	0.72
10	17	0.53	SAI		TEH	1.14	ZPANM	0.72
18	17	1.58	SAI		TEH	2.83	ZPANM	0.72
33	17	1.69	SAI		TEH	0.35	ZPANM	0.72

3	18	4.5	SAI		TEH	0.13	ZPANM	0.72
11	18	2.56	SAI		TEH	0.09	ZPANM	0.72
15	18	0.45	SAI		TEH	1.04	ZPANM	0.72
16	18	0.23	MAI		TEH	11.19	ZPANM	0.72
30	18	1.39	SAI		TEH	0.13	ZPANM	0.72
3	19	5.57	SAI		TEH	0.17	ZPANM	0.72
3	19	5.65	SAI		TEH	0.05	ZPANM	0.72
4	19	1.06	SAI		TEH	0.14	ZPANM	0.72
5	19	3.29	SAI		TEH	0.13	ZPANM	0.72
10	19	2.62	SAI		TEH	0.12	ZPANM	0.72
11	19	3.46	SAI		TEH	0.14	ZPANM	0.72
15	19	1.4	SAI		TEH	2.57	ZPANM	0.72
15	19	0.22	MAI		TEH	3.62	ZPANM	0.72
18	19	0.14	SAI		TEH	7.85	ZPANM	0.72
19	19	13.87	SPI		5H	0	CCAGC	0.7
26	19	6.6	SAI		TEH	0.18	ZPANM	0.72
30	19	0.48	SAI		TEH	1.41	ZPANM	0.72
3	20	4.84	SAI		TEH	0.08	ZPANM	0.72
3	20	5.03	SAI		TEH	0.2	ZPANM	0.72
3	20	0.26	SCI		TEH	2.92	ZPANM	0.72
5	20	2.1	SAI		TEH	0.09	ZPANM	0.72
10	20	2.36	SAI		TEH	0.13	ZPANM	0.72
11	20	1.7	SAI		TEH	0.16	ZPANM	0.72
16	20	0.18	SAI		TEH	10.87	ZPANM	0.72
16	20	0.96	MAI		TEH	3.5	ZPANM	0.72
18	20	5.8	SPI		2H	0	CCAGC	0.7
33	20	3	SAI		TEH	0.21	ZPANM	0.72
3	21	4.64	SAI		TEH	0.14	ZPANM	0.72
4	21	5.62	SAI		TEH	0.21	ZPANM	0.72
18	21	1.91	MAI		TEH	3.26	ZPANM	0.72
26	21	6.43	SAI		TEH	0.2	ZPANM	0.72
26	21	1.99	SAI		TEH	3.05	ZPANM	0.72
33	21	0.39	MAI		TEH	1.54	ZPANM	0.72
3	22	0.65	SAI		TEH	3.7	ZPANM	0.72
3	22	5.32	SAI		TEH	0.14	ZPANM	0.72
4	22	5.57	SAI		TEH	0.16	ZPANM	0.72
5	22	2.5	SAI		TEH	0.14	ZPANM	0.72
12	22	1.29	SAI		TEH	3.32	ZPANM	0.72
16	22	0.49	SAI		TEH	2.86	ZPANM	0.72
17	22	4.13	SAI		TEH	0.17	ZPANM	0.72
18	22	4.05	MAI	82	TEH	2.86	ZPANM	0.68
18	22	27.72	DRI		TEH	2.69	CCAGC	0.7
18	22	0.21	SAI		TEH	3.51	ZMAGR	0.72
18	22	0.12	SAI	48	TEH	3.89	ZPANM	0.68
18	22	0.33	SAI	43	TEH	3.42	ZPANM	0.68
18	22	2.59	SAI	96	TEH	0.18	ZPANM	0.68
18	22	0.31	SAI		TEH	3.67	ZPANM	0.72
18	22	4.47	MAI		TEH	3.13	ZPANM	0.72
18	22	3.42	MAI		TEH	0.11	ZPANM	0.72
18	22	0.13	SAI	50	TEH	3.71	ZPANM	0.68
20	22	2.33	MAI		TEH	0.11	ZPANM	0.72

20	22	1.11	SAI		TEH	3.59	ZPANM	0.72
26	22	6.15	SAI		TEH	0.17	ZPANM	0.72
28	22	5.93	SAI		TEH	0.08	ZPANM	0.72
38	22	0.34	SAI		TEH	1.92	ZPANM	0.72
3	23	1.38	MAI		TEH	0.09	ZPANM	0.72
8	23	0.47	VOL		TSC	0.59	ZPANM	0.72
8	23	0.97	PCT	0	TSC	0.61	CCAGC	0.7
12	23	0.33	SAI		TEH	2.61	ZPANM	0.72
12	23	0.25	SAI		TEH	2.76	ZPANM	0.72
12	23	7.62	DRI		TEH	2.46	CCAGC	0.7
17	23	4.72	MAI		TEH	0.21	ZPANM	0.72
18	23	6.31	DRI		TEH	2.54	CCAGC	0.7
20	23	0.42	SAI		TEH	3.91	ZPANM	0.72
20	23	0.51	SAI		TEH	7.66	ZPANM	0.72
20	23	0.39	SAI		TEH	3.78	ZPANM	0.72
26	23	1.03	SAI		TEH	2.89	ZPANM	0.72
3	24	3.48	MAI		TEH	0.19	ZPANM	0.72
4	24	2.91	MAI		TEH	0.11	ZPANM	0.72
5	24	4.71	MAI		TEH	0.12	ZPANM	0.72
10	24	1.12	SAI		TEH	3.37	ZPANM	0.72
12	24	7.62	DRI		TEH	2.51	CCAGC	0.7
18	24	5.42	MAI	89	TEH	3.42	ZMAGR	0.72
18	24	19.53	DRI		TEH	1.7	CCAGC	0.7
20	24	0.28	MAI		TEH	3.56	ZPANM	0.72
21	24	0.13	SAI		TEH	12.09	ZPANM	0.72
21	24	0.4	MAI		TEH	6	ZPANM	0.72
3	25	2.04	SAI		TEH	0.21	ZPANM	0.72
3	25	0.51	PIT		TSH	0.25	ZPANM	0.72
4	25	7.84	SAI		TEH	0.15	ZPANM	0.72
10	25	0.56	PIT		TSC	0.94	ZPANM	0.72
10	25	1.09	PCT	0	TSC	0.73	CCAGC	0.7
14	25	17.35	TSI		TSC	-0.22	CCAGC	0.7
14	25	0.34	PIT		TSC	0.32	ZPANM	0.68
14	25	0.44	PIT		TSC	0.39	ZPANM	0.68
23	25	5.57	SAI		TEH	0.05	ZPANM	0.72
32	25	1.24	PCT	21	AV3	0	MBALL	0.7
32	25	1.9	PCT	26	AV2	0	MBALL	0.7
5	26	6.73	MAI		TEH	0.16	ZPANM	0.72
8	26	0.45	PIT		TSC	0.85	ZPANM	0.72
8	26	0.59	PCT	0	TSC	0.84	CCAGC	0.7
17	26	2.73	SAI		TEH	0.19	ZPANM	0.72
17	26	0.5	PIT		TSC	0.38	ZPANM	0.72
17	26	30.89	TSI		TSC	0.22	CCAGC	0.7
19	26	10.23	DRI		TEH	2.15	CCAGC	0.7
19	26	17.06	DRI		TEH	2.57	CCAGC	0.7
20	26	0.34	SAI		TEH	3.03	ZPANM	0.72
23	26	0.73	SAI		TEH	2.65	ZPANM	0.72
23	26	12.08	DRI		TEH	2.2	CCAGC	0.7
39	26	1.18	PCT	20	AV2	0	MBALL	0.7
39	26	1.25	PCT	21	AV3	0	MBALL	0.7
40	26	1.89	PCT	26	AV3	0	CCAGC	0.64

18	27	0.67	PCT	6	TSC	1.4	CCAGC	0.7
18	27	0.24	PIT		TSC	1	ZPANM	0.72
18	27	0.32	PIT		TSC	1.31	ZPANM	0.72
19	27	17.71	DRI		TEH	2.1	CCAGC	0.7
20	27	1.48	SAI		TEH	0.08	ZPANM	0.72
27	27	1.21	SAI		TEH	2.8	ZPANM	0.72
30	27	0.38	SAI		TSH	12.89	ZPACC	0.7
30	27	0.44	SAI		TSH	10.09	ZPANM	0.72
4	28	1.63	MAI		TEH	0.17	ZPANM	0.72
14	28	0.49	PIT		TSC	2.02	ZPANM	0.72
14	28	0.36	PIT		TSC	2.14	ZPANM	0.68
14	28	0.69	PCT	23	TSC	2.13	CCAGC	0.7
17	28	0.77	MAI		TEH	0.06	ZPANM	0.72
17	28	8.02	DRI		TEH	1.88	CCAGC	0.7
17	28	1.91	MAI		TEH	2.78	ZPANM	0.72
18	28	0.37	PIT		TSC	1.17	ZPANM	0.72
18	28	0.17	PIT		TSC	1.24	ZPANM	0.68
18	28	0.34	PCT	71	TSC	1.27	MBALL	0.7
18	28	0.46	PCT	57	TSC	1.27	CCAGC	0.7
19	28	0.56	SAI		TEH	2.57	ZPANM	0.72
19	28	5.94	DRI		TEH	2.37	CCAGC	0.7
20	28	1.06	SAI		TEH	3.13	ZPANM	0.72
22	28	0.5	SAI		TEH	0.09	ZPANM	0.72
23	28	0.66	SAI		TEH	2.63	ZPANM	0.72
23	28	5.67	DRI		TEH	2.37	CCAGC	0.7
26	28	7.62	SAI		TEH	0.17	ZPANM	0.72
26	28	10.81	DRI		TEH	2.3	CCAGC	0.7
26	28	14.11	DRI		TEH	2.49	CCAGC	0.7
3	29	0.73	SAI		TEH	0.17	ZPANM	0.72
4	29	3.56	MAI		TEH	0.07	ZPANM	0.72
5	29	0.34	PCT	39	TSC	4.32	CCAGC	0.68
5	29	0.16	PCT	28	TSC	3.51	CCAGC	0.7
5	29	0.3	PCT	38	TSC	4.1	CCAGC	0.7
5	29	0.27	PIT		TSC	4.01	ZPANM	0.68
5	29	2.94	MAI		TEH	0.25	ZPANM	0.72
5	29	0.2	PCT	7	TSC	3.67	CCAGC	0.68
5	29	0.09	PIT		TSC	3.63	ZPANM	0.68
17	29	33.45	DRI		TEH	2.25	CCAGC	0.7
19	29	101.9	DRI		TEH	2.05	CCAGC	0.7
21	29	1.2	SAI		TEH	2.63	ZPANM	0.72
25	29	1.66	SAI		TEH	2.29	ZPANM	0.72
26	29	33.15	DRI		TEH	1.85	CCAGC	0.7
33	29	9.71	DRI		TEH	3.35	CCAGC	0.7
33	29	19.21	DRI		TEH	1.93	CCAGC	0.7
33	29	8.68	DRI		TEH	2.9	CCAGC	0.7
33	29	1.01	SAI	32	TEH	4.43	ZMAGR	0.72
33	29	7.35	DRI		TEH	2.29	CCAGC	0.7
4	30	2.72	SAI		TEH	0.18	ZPANM	0.72
19	30	165.3	DRI		TEH	2.75	CCAGC	0.7
19	30	1.74	SAI	86	TEH	2.98	ZMAGR	0.72
19	30	8.98	DRI		TEH	2.55	CCAGC	0.68

19	30	9.05	DRI		TEH	2.92	CCAGC	0.7
23	30	1.82	MAI		TEH	2.64	ZPANM	0.72
26	30	6.54	DRI		TEH	2.83	CCAGC	0.7
28	30	0.55	VOL	4	6H	2.21	ZPUMB	0.62
28	30	1.37	NQI		6H	2.13	CCAGC	0.7
5	31	3.9	MAI		TEH	0.22	ZPANM	0.72
19	31	2.23	SAI		TEH	3.01	ZPANM	0.72
19	31	1.29	SAI		TEH	5.42	ZMAGR	0.72
19	31	7.85	DRI		TEH	2.15	CCAGC	0.7
23	31	2.32	SAI		TEH	0.16	ZPANM	0.72
24	31	1.27	PCT	20	AV2	0	MBALL	0.7
24	31	1.96	PCT	25	AV4	0	MBALL	0.7
25	31	1.82	PCT	24	AV3	0	MBALL	0.7
26	31	7.05	DRI		TEH	2	CCAGC	0.68
26	31	3.13	PI		TEH	4.9	CCAGC	0.7
26	31	5.97	DRI		TEH	2.28	CCAGC	0.7
26	31	4.75	DRI		TEH	2.11	MBALL	0.7
26	31	2.48	PI		TEH	7.62	CCAGC	0.7
26	31	5.1	PI		TEH	4.67	CCAGC	0.7
26	31	1.14	PI		TEH	7.74	CCAGC	0.7
26	31	7.55	DRI		TEH	2	CCAGC	0.7
26	31	29.85	DRI		TEH	2.02	CCAGC	0.68
26	31	0.18	MAI		TEH	9.85	ZMAGR	0.72
26	31	0.17	MAI	1	TEH	9.3	ZPANM	0.68
26	31	0.24	MAI	28	TEH	7.73	ZPANM	0.68
26	31	1.37	MAI	61	TEH	3.9	ZPANM	0.68
26	31	0.31	MAI		TEH	3.03	ZPANM	0.72
26	31	2.19	PI		TEH	7.95	CCAGC	0.68
26	31	5.75	PI		TEH	4.53	CCAGC	0.68
27	31	0.29	MAI		TEH	3.77	ZPANM	0.72
11	32	0.39	PIT		TSC	6.09	ZPANM	0.72
11	32	0.39	PCT	8	TSC	5.98	CCAGC	0.7
20	32	2.72	MAI	56	TEH	3	ZMAGR	0.72
20	32	15.33	DRI		TEH	2.76	CCAGC	0.68
21	32	1.46	SAI		TEH	2.78	ZPANM	0.72
23	32	1.38	MAI		TEH	2.8	ZPANM	0.72
24	32	0.11	SAI		TEH	4.08	ZPANM	0.72
26	32	0.41	SAI	60	TEH	5.12	ZMAGR	0.72
26	32	2	PCT	26	AV3	0	MBALL	0.7
26	32	2.55	PCT	30	AV3	0	CCAGC	0.68
26	32	4.79	DRI		TEH	2.62	CCAGC	0.64
29	32	0.11	SAI		TEH	6.01	ZPANM	0.72
30	32	1.78	PCT	25	AV2	0	MBALL	0.7
31	32	1.46	PCT	23	AV2	0	MBALL	0.7
33	32	0.62	SAI		TEH	1.58	ZPANM	0.72
35	32	1.04	PCT	20	AV2	0	CCAGC	0.64
35	32	1.51	PCT	18	AV2	0	CCAGC	0.68
35	32	0.94	PCT	18	AV2	0	MBALL	0.7
41	32	1.68	SAI		TEH	0.05	ZPANM	0.72
13	33	2.77	SAI		TEH	3.14	ZPANM	0.68
13	33	0.47	SAI		TEH	3.28	ZMAGR	0.72

13	33	7.71	DRI		TEH	2.45	CCAGC	0.7
17	33	7.97	DRI		TEH	2.23	CCAGC	0.7
20	33	11.52	DRI		TEH	1.61	CCAGC	0.7
23	33	1.11	SAI		TEH	3.06	ZPANM	0.72
24	33	1.78	PCT	25	AV2	0	CCAGC	0.68
24	33	2.04	PCT	27	AV2	0	MBALL	0.7
26	33	3.13	SAI		TEH	3.18	ZPANM	0.72
28	33	1.97	PCT	26	AV2	0	MBALL	0.7
28	33	1.39	PCT	23	AV2	0	MBALL	0.7
33	33	5.48	SAI		TEH	0.12	ZPANM	0.72
16	34	0.91	MAI		TEH	2.72	ZPANM	0.72
17	34	1.48	SAI		TEH	2.83	ZPANM	0.72
19	34	1.52	SAI		TEH	2.57	ZPANM	0.72
23	34	6.51	SAI		TEH	0.11	ZPANM	0.72
23	34	1.17	MAI		TEH	2.65	ZPANM	0.72
24	34	0.13	VOL	6	TSH	12.11	ZPANM	0.68
24	34	4.75	PI		TSH	11.83	CCAGC	0.68
24	34	4.53	PI		TSH	10.49	CCAGC	0.68
24	34	1.17	PI		TSH	7.97	CCAGC	0.68
24	34	14.83	PI		TSH	5.88	CCAGC	0.68
24	34	1.51	PCT	24	AV2	0	MBALL	0.7
24	34	1.34	PCT	22	AV4	0	MBALL	0.7
24	34	0.21	VOL	6	TSH	8.3	ZPANM	0.68
24	34	0.36	VOL	3	TSH	8.03	ZPANM	0.68
24	34	0.36	VOL	3	TSH	6.39	ZPANM	0.68
24	34	0.69	SAI	62	TSH	-20.19	ZPANM	0.68
24	34	0.45	PIT		TSH	7.68	ZPANM	0.72
24	34	0.87	SAI		TEH	2.48	ZPANM	0.72
24	34	2.82	DRI		TEH	1.26	CCAGC	0.68
24	34	0.44	VOL	3	TSH	10.2	ZPANM	0.68
25	34	1.5	PCT	24	AV2	0	CCAGC	0.64
25	34	2.2	PCT	28	AV4	0	CCAGC	0.68
25	34	2.52	PCT	29	AV4	0	CCAGC	0.64
25	34	2.4	PCT	28	AV4	0	MBALL	0.7
25	34	2.3	PCT	28	AV2	0	MBALL	0.7
25	34	2.14	PCT	28	AV2	0	CCAGC	0.68
28	34	0.39	MAI		TEH	3.23	ZPANM	0.72
28	34	0.13	SAI		TEH	7.55	ZPANM	0.72
29	34	0.41	MAI		TEH	3.22	ZPANM	0.72
31	34	1.42	PCT	23	AV3	0	MBALL	0.7
31	34	2	PCT	26	AV4	0	MBALL	0.7
19	35	1.85	PCT	26	AV1	0	MBALL	0.7
23	35	6.3	SAI		TEH	0.16	ZPANM	0.72
26	35	10.64	SPI		6H	-0.33	CCAGC	0.7
26	35	0.77	SAI		TEH	3.41	ZPANM	0.72
26	35	0.81	SAI		TEH	2.56	ZPANM	0.72
31	35	0.97	PCT	18	AV1	0	MBALL	0.7
31	35	1.93	PCT	26	AV3	0	MBALL	0.7
31	35	1.31	PCT	19	AV1	0	CCAGC	0.64
31	35	1.71	PCT	25	AV3	0	CCAGC	0.64
37	35	0.76	SAI		TEH	1.55	ZPANM	0.72

6	36	0.19	PIT		TSC	4.69	ZPANM	0.72
9	36	0.25	PIT		TSC	6.94	ZPANM	0.72
9	36	0.81	PCT	16	TSC	7.23	CCAGC	0.7
19	36	0.72	SAI		TEH	2.62	ZPANM	0.72
25	36	0.27	PIT		TSC	1.21	ZPANM	0.68
25	36	1.11	PCT	23	TSC	1.29	MBALL	0.7
28	36	2.65	PCT	29	AV2	0	MBALL	0.7
31	36	1.75	PCT	25	AV1	0	MBALL	0.7
31	36	1.88	PCT	26	AV1	0	MBALL	0.7
5	37	4.37	SAI		TEH	0.07	ZPANM	0.72
16	37	0.84	MAI		TEH	2.48	ZPACC	0.72
16	37	1.02	SAI		TEH	2.53	ZPANM	0.72
17	37	0.61	SAI		TEH	2.79	ZPACC	0.72
17	37	1.02	SAI		TEH	2.63	ZPANM	0.72
20	37	1.54	PCT	23	AV2	0	MBALL	0.7
20	37	1.89	PCT	26	AV4	0	MBALL	0.7
24	37	0.33	MAI		TEH	5.52	ZPANM	0.72
27	37	1.03	PIT		TSC	1.13	ZPANM	0.72
27	37	2	PCT	10	TSC	1.19	MBALL	0.7
33	37	3.96	MAI		TEH	0.16	ZPANM	0.72
35	37	2.8	MAI		TEH	0.17	ZPANM	0.72
6	38	0.15	PIT		TSC	5.13	ZPANM	0.68
6	38	0.24	PCT	38	TSC	4.97	CCAGC	0.7
13	38	1.81	SAI		TEH	2.9	ZPANM	0.72
13	38	2.55	SAI	63	TEH	3.38	ZMAGR	0.72
13	38	93.1	DRI		TEH	2.44	CCAGC	0.7
13	38	22.81	SPI		3H	-0.37	CCAGC	0.7
32	38	3.41	PCT	32	AV3	0	MBALL	0.7
36	38	2.71	PCT	29	AV4	0	MBALL	0.7
6	39	0.78	PCT	24	TSC	2.16	CCAGC	0.7
6	39	0.69	PIT		TSC	1.71	ZPANM	0.72
26	39	1.44	MAI		TEH	2.85	ZPANM	0.72
29	39	0.39	MAI		TEH	3.03	ZPANM	0.72
31	39	2.02	PCT	26	AV3	0	MBALL	0.7
33	39	2.07	SAI		TEH	0.13	ZPANM	0.72
35	39	2.04	PCT	27	AV3	0	MBALL	0.7
37	39	2.07	PCT	27	AV3	0	MBALL	0.7
38	39	1.38	MAI	78	TEH	2.58	ZPANM	0.68
38	39	13.84	DRI		TEH	2.98	CCAGC	0.7
38	39	0.4	MAI		TEH	2.98	ZMAGR	0.72
38	39	0.35	SCI	59	TEH	2.25	ZPANM	0.68
38	39	0.87	MAI		TEH	4.27	ZPANM	0.72
38	39	0.53	SCI		TEH	3.22	ZPANM	0.72
38	39	0.71	DRI		TEH	4.29	MBALL	0.7
44	39	10.24	TSI		TSH	0.06	CCAGC	0.68
22	40	1.64	PCT	24	AV2	0	MBALL	0.7
22	40	1.43	PCT	23	AV2	0	MBALL	0.7
26	40	1.76	PCT	24	AV3	0	MBALL	0.7
26	40	1.72	PCT	25	AV3	0	MBALL	0.7
29	40	0.18	PIT		TSC	0.56	ZPANM	0.68
29	40	0.92	PCT	7	TSC	0.56	MBALL	0.7

29	40	0.74	PCT	5	TSC	0.62	CCAGC	0.68
29	40	0.14	PIT		TSC	0.6	ZPANM	0.68
33	40	0.82	MAI		TEH	2.9	ZPANM	0.72
35	40	2.11	PCT	26	AV1	0	CCAGC	0.7
35	40	5.12	PCT	37	AV3	0	CCAGC	0.7
39	40	0.45	SAI		TEH	3.94	ZMAGR	0.72
39	40	0.49	SAI		TEH	3.35	ZPANM	0.72
39	40	0.62	SAI		TEH	4.19	ZPANM	0.72
29	41	0.45	PIT		TSC	1.49	ZPANM	0.72
30	41	0.33	MAI		TEH	3.06	ZPANM	0.72
35	41	3.89	PCT	34	AV3	0	CCAGC	0.7
35	41	1.5	PCT	23	AV3	0	MBALL	0.7
9	42	0.42	MAI		TEH	4.69	ZPANM	0.72
9	42	0.32	SAI		TEH	5.47	ZPANM	0.72
15	42	0.17	SAI		TEH	1.41	ZPANM	0.72
16	42	80.16	DRI		TEH	2.09	CCAGC	0.7
16	42	2.38	SAI	59	TEH	2.62	ZMAGR	0.72
16	42	38.07	DRI		TEH	2.28	MBALL	0.7
17	42	1.46	MAI		TEH	2.66	ZPANM	0.72
20	42	1.63	MAI		TEH	2.83	ZPANM	0.72
21	42	0.98	PCT	13	TSC	3.29	CCAGC	0.68
21	42	1.05	PCT	12	TSC	3.31	MBALL	0.7
21	42	1.08	PCT	34	TSC	3.35	CCAGC	0.64
21	42	0.14	VOL	59	TSC	3.28	ZPANM	0.68
21	42	1.33	PCT	24	TSC	3.23	ZBALL	0.61
21	42	1.49	MAI		TEH	2.75	ZPANM	0.72
21	42	0.28	PIT		TSC	3.02	ZPANM	0.72
21	42	0.91	MAI		TEH	2.82	ZPACC	0.7
26	42	0.35	SAI		TEH	2.64	ZPANM	0.72
26	42	0.15	SAI		TEH	2.33	ZPANM	0.72
27	42	0.17	MAI		TEH	2.83	ZPANM	0.72
28	42	1.27	PCT	16	AV3	0	CCAGC	0.68
28	42	2.22	PCT	28	AV3	0	MBALL	0.7
29	42	0.19	MAI		TEH	3.4	ZPANM	0.72
29	42	1.85	PCT	26	AV3	0	CCAGC	0.68
29	42	1.63	PCT	24	AV3	0	MBALL	0.7
32	42	0.53	MAI		TEH	3.28	ZPANM	0.72
35	42	5.39	PCT	38	AV3	0	CCAGC	0.7
35	42	3.99	PCT	34	AV4	0	CCAGC	0.7
36	42	2.01	PCT	26	AV3	0	MBALL	0.7
39	42	0.33	MAI		TEH	5.69	ZPACC	0.72
39	42	0.08	MAI		TEH	5.65	ZMAGR	0.72
39	42	0.81	SCI	71	TEH	3.07	ZMAGR	0.72
39	42	11.81	DRI		TEH	2.58	CCAGC	0.7
2	43	6.43	TSI		TSC	0.11	CCAGC	0.7
3	43	1.28	MAI		TEH	0.09	ZPANM	0.72
5	43	3.98	MAI		TEH	0.15	ZPANM	0.72
7	43	1.41	PCT	38	TSC	1.97	MBALL	0.7
7	43	1.02	PIT		TSC	1	ZPANM	0.72
7	43	1.85	NQI		TSC	1.97	CCAGC	0.68
15	43	0.3	SAI		TEH	1.41	ZPANM	0.72

25	43	0.83	SAI		TEH	2.4	ZPANM	0.72
28	43	0.62	MAI		TEH	3.57	ZMAGR	0.72
28	43	12.23	DRI		TEH	2.99	CCAGC	0.68
28	43	14.66	DRI		TEH	3.39	CCAGC	0.68
28	43	14.5	DRI		TEH	3.4	MBALL	0.7
30	43	3.46	PCT	31	AV2	0	CCAGC	0.7
36	43	79.65	SPI		5C	0.23	CCAGC	0.7
36	43	2.09	MAI		TEH	3.3	ZPANM	0.72
42	43	0.09	SAI	18	TSH	0.36	ZPANM	0.68
42	43	23.98	TSI		TSH	0	CCAGC	0.7
13	44	0.5	SAI		TEH	2.71	ZPANM	0.72
28	44	1.43	MAI		TEH	3.28	ZPANM	0.7
31	44	0.74	SAI		TEH	2.95	ZPANM	0.7
36	44	2.03	MAI		TEH	2.86	ZPACC	0.72
36	44	1.49	MAI		TEH	2.96	ZPANM	0.72
16	45	1.86	MAI		TEH	2.61	ZPANM	0.72
16	45	1.48	MAI		TEH	2.53	ZPACC	0.72
23	45	0.39	SAI		TEH	2.6	ZPANM	0.72
13	46	23.98	SPI		5C	0.29	CCAGC	0.7
20	46	0.82	MAI	94	TEH	3.89	ZMAGR	0.72
20	46	7.33	DRI		TEH	2.39	CCAGC	0.7
20	46	5.34	DRI		TEH	3.47	CCAGC	0.7
28	46	12.71	DRI		TEH	2.57	CCAGC	0.68
28	46	14.34	DRI		TEH	2.39	CCAGC	0.68
28	46	3.35	DRI		TEH	2.37	CCAGC	0.64
28	46	11.33	DRI		TEH	2.15	MBALL	0.7
38	46	10.1	DRI		TEH	2.73	CCAGC	0.68
43	46	51.3	SPI		4C	-0.08	CCAGC	0.7
28	47	2.48	PCT	29	AV2	-0.06	CCAGC	0.68
28	47	3.49	PCT	33	AV3	-0.17	CCAGC	0.68
28	47	2.56	PCT	28	AV2	0	MBALL	0.7
28	47	3.36	PCT	32	AV3	0	MBALL	0.7
30	47	174.9	SPI		1H	0.46	CCAGC	0.7
30	47	2.16	PCT	26	AV3	0	MBALL	0.7
31	47	1.53	PCT	22	AV2	0	MBALL	0.7
31	47	1.6	PCT	22	AV3	0	MBALL	0.7
3	48	5.48	SAI		TEH	0.05	ZPANM	0.72
3	48	5.65	MAI		TEH	0.1	ZPANM	0.72
23	48	0.8	SAI		TEH	2.61	ZPANM	0.72
3	49	5.89	MAI		TEH	0.17	ZPANM	0.72
30	49	143.3	SPI		2H	-0.25	CCAGC	0.7
41	49	11.11	DRI		TEH	1.21	CCAGC	0.68
41	49	11.59	DRI		TEH	1.22	CCAGC	0.7
42	49	0.54	SAI	38	TEH	3.7	ZPANM	0.68
44	49	5.23	PI		TSC	4.16	CCAGC	0.7
44	49	0.34	VOL	42	TSC	4.08	ZPANM	0.68
44	49	0.47	PCT	42	TSC	3.85	CCAGC	0.7
6	50	0.45	PIT		TSC	1.34	ZPANM	0.72
6	50	0.96	PCT	0	TSC	1.29	CCAGC	0.7
45	50	0.27	PIT		TSC	11.44	ZPANM	0.68
45	50	0.41	PCT	3	TSC	11.21	MBALL	0.7

45	50	0.29	PCT	30	TSC	11.22	CCAGC	0.68
4	51	5.76	MAI		TEH	0.17	ZPANM	0.72
20	51	2.15	PCT	26	AV2	0	MBALL	0.7
21	51	1.84	PCT	24	AV3	0	MBALL	0.7
21	51	553.3	SPI		1H	0.82	CCAGC	0.7
21	51	1.34	PCT	20	AV2	0	MBALL	0.7
22	51	1.06	PCT	18	AV2	0	MBALL	0.7
45	51	0.33	PCT	64	TSH	0.63	CCAGC	0.68
45	51	8.4	TSI		TSH	0.78	CCAGC	0.68
45	51	96.62	TSI		TSH	0.06	CCAGC	0.7
45	51	0.59	PCT	78	TSH	0.67	CCAGC	0.7
45	51	0.21	PIT		TSH	-0.05	ZPANM	0.68
45	51	0.19	PIT		TSH	0.4	ZPANM	0.7
45	51	0.13	PIT		TSH	-0.08	ZPANM	0.7
45	51	192.7	PI		TSH	0.51	CCAGC	0.7
45	51	0.17	PIT		TSH	0.47	ZPANM	0.68
8	52	0.47	PCT	17	TSC	7.45	CCAGC	0.7
8	52	0.54	PCT	22	TSC	8.3	CCAGC	0.7
8	52	0.47	PCT	17	TSC	6.24	CCAGC	0.7
8	52	0.51	PIT		TSC	8.11	ZPANM	0.68
8	52	0.3	PIT		TSC	7.25	ZPANM	0.68
8	52	0.33	PIT		TSC	6.45	ZPANM	0.68
10	52	0.41	PCT	26	TSC	6.48	CCAGC	0.7
10	52	0.63	PIT		TSC	6.25	ZPANM	0.72
33	52	1.52	SAI		TEH	0.14	ZPANM	0.7
32	53	128.5	SPI		5H	0.08	CCAGC	0.7
18	54	0.55	PIT		TSC	7.18	ZPANM	0.72
19	54	32.42	SPI		5C	0	CCAGC	0.7
36	54	2.68	PCT	29	AV3	0	MBALL	0.7
7	55	12.28	SAI		TEC	1.04	ZMAGR	0.72
7	55	86.85	DRI		TEC	0.6	CCAGC	0.7
20	55	0.24	SAI		TEH	15.86	ZPANM	0.72
33	55	2.14	SAI		TEH	0.14	ZPANM	0.7
8	56	0.2	PCT	10	TSC	6.35	ZBALL	0.61
8	56	0.19	PIT		TSC	5.77	ZPANM	0.68
8	56	0.24	PCT	10	TSC	6.2	CCAGC	0.7
10	56	0.31	PIT		TSH	0.38	ZPANM	0.72
10	57	0.84	PIT		TSC	7.26	ZPANM	0.72
10	57	0.16	PIT		TSC	8.02	ZPANM	0.68
10	57	0.27	PIT		TSC	8.15	ZPANM	0.68
10	57	0.59	PCT	29	TSC	7.95	MBALL	0.7
10	57	0.68	PCT	17	TSC	8.14	CCAGC	0.7
17	57	0.46	PIT		TSH	3.07	ZPANM	0.72
17	57	9.48	PI		TSH	3.14	CCAGC	0.7
17	57	0.45	PIT		TSH	3.18	ZPANM	0.68
17	57	0.81	PCT	54	TSH	3.03	CCAGC	0.7
8	59	0.16	PIT		TSC	3.49	ZPACC	0.7
8	59	0.3	PIT		TSC	3.49	ZPANM	0.72
8	59	0.24	PIT		TSC	4.13	ZPANM	0.68
8	59	2.41	PCT	1	TSC	4.13	CCAGC	0.68
8	59	0.18	PCT	12	TSC	4.2	CCAGC	0.7

8	60	0.19	PIT		TSC	4.12	ZPANM	0.68
8	60	2.42	PI		TSC	4.8	CCAGC	0.7
8	60	0.46	PCT	32	TSC	4.28	CCAGC	0.7
8	60	0.16	PIT		TSC	4.96	ZPANM	0.68
8	60	0.11	PIT		TSC	4.69	ZPANM	0.72
8	60	0.16	PIT		TSC	3.89	ZPANM	0.72
8	60	0.21	PIT		TSC	4.11	ZPANM	0.68
8	60	0.14	PIT		TSC	3.91	ZPANM	0.72
21	60	0.19	PIT		TSC	3.55	ZPANM	0.72
21	60	1.73	PCT	21	TSC	3.62	CCAGC	0.7
24	60	0.16	PIT		TSH	1.64	ZPANM	0.68
24	60	1.36	PCT	34	TSH	1.67	CCAGC	0.7
24	60	0.41	PIT		TSH	1.76	ZPANM	0.68
24	60	0.4	PIT		TSH	1.65	ZPANM	0.68
24	60	0.39	PIT		TSH	1.63	ZPANM	0.72
24	60	0.15	PIT		TSH	1.7	ZPANM	0.68
17	63	1.06	PCT	12	TSH	4.81	CCAGC	0.7
17	63	1.06	MAI		TEH	0.03	ZPANM	0.72
17	63	0.27	PIT		TSH	4.7	ZPANM	0.68
17	63	0.32	PIT		TSH	5.54	ZPANM	0.68
2	64	7.78	DRI		TEH	2.79	CCAGC	0.64
5	64	14.53	SPI		6C	-0.31	CCAGC	0.68
2	65	7.08	DRI		TEH	2.29	CCAGC	0.7
26	65	11.12	SAI		TEC	1.39	ZMAGR	0.72
26	65	56.88	DRI		TEC	1.22	CCAGC	0.7
10	66	0.35	SAI		TEH	1.12	ZPANM	0.72
16	66	0.6	PCT	16	TSC	1.25	CCAGC	0.7
16	66	0.16	PIT		TSC	0.59	ZPANM	0.72
16	66	0.45	PIT		TSC	1.16	ZPANM	0.72
16	66	0.64	PCT	0	TSC	0.96	CCAGC	0.7
2	69	0.67	SAI	50	6H	7.22	ZPUMB	0.62
2	69	1.57	SAI	67	6H	5.97	ZPUMB	0.62
2	69	1.19	SAI		6H	7.41	ZPUMB	0.62
2	69	2.67	SAI		6H	5.92	ZPUMB	0.62
2	69	0.6	SAI	75	6H	7.15	ZPUHF	0.62
2	69	1.74	SAI	75	6H	5.93	ZPUHF	0.62
2	69	0.7	MAI	67	6H	6.37	ZPUHF	0.62
25	70	2.55	PCT	29	AV2	0	CCAGC	0.7
2	71	3.62	SAI		6H	6.12	ZPUHF	0.62
3	71	19.39	DRI		TEC	2.55	CCAGC	0.7
3	71	34.93	DRI		TEC	2.15	CCAGC	0.68
3	71	2.14	MCI		TEC	1.95	ZPANM	0.72
3	71	1.22	MAI		TEC	1.86	ZPANM	0.72
11	71	0.52	PIT		TSC	0.64	ZPAMR	0.72
11	71	1.23	PCT	1	TSC	0.74	CCAGC	0.7
2	72	1.04	BDA		6H	5.94	ZPUMB	0.62
2	72	2	SAI	51	6C	5.79	ZPUMB	0.62
11	73	15.05	SPI		4H	0.17	CCAGC	0.7
18	73	5.69	SPI		5H	0.14	CCAGC	0.7
2	74	0.85	SAI	51	6H	6.92	ZPUHF	0.62
26	75	25.46	SPI		2H	-0.06	CCAGC	0.68

30	76	5.88	SPI		2H	0.21	CCAGC	0.7
27	77	12.63	SPI		4H	0.19	CCAGC	0.7
22	78	8.2	SPI		3H	0.28	CCAGC	0.7
25	82	27.98	SPI		1C	-0.1	CCAGC	0.7
9	85	5.35	SPI		5H	-0.1	CCAGC	0.68
5	86	1.56	SAI		TEH	3.28	ZPACC	0.72
5	87	901.7	TSI		TSH	-0.04	CCAGC	0.7
5	87	1.39	SAI		TEH	3.27	ZPACC	0.72

Table 16, Steam Generator 24, Tubes Plugged 2000

Row	Col	Primary Reason for Plugging
2	1	Row 2 NDD - Customer Decision to Plug
6	2	Cecco Support Plate Indication
2	3	Row 2 NDD - Customer Decision to Plug
12	3	Crevice ODSCC Indication
2	4	U-Bend PWSCC
13	4	Volumetric Indication/<28% by Bobbin
2	5	Bad Data with U-Bend +Pt
12	5	Crevice ODSCC Indication
2	6	Row 2 NDD - Customer Decision to Plug
10	7	Crevice ODSCC Indication
2	10	Row 2 NDD - Customer Decision to Plug
2	11	Row 2 NDD - Customer Decision to Plug
2	12	Row 2 NDD - Customer Decision to Plug
18	12	Cecco Support Plate Indication
2	13	Row 2 NDD - Customer Decision to Plug
2	14	Row 2 NDD - Customer Decision to Plug
16	14	Crevice ODSCC Indication
18	14	Failed F* Criteria for Dia. or Dist.
2	15	Row 2 NDD - Customer Decision to Plug
16	15	Crevice ODSCC Indication
18	15	Failed F* Criteria for Dia. or Dist.
2	16	Row 2 NDD - Customer Decision to Plug
31	16	Pitting by RPC/<28% or DEP by Bobbin
18	17	Failed F* Criteria for Dia. or Dist.
2	18	Row 2 NDD - Customer Decision to Plug
16	18	Crevice ODSCC Indication
2	19	Row 2 NDD - Customer Decision to Plug
18	19	Crevice ODSCC Indication
19	19	Cecco Support Plate Indication
30	19	Failed F* Criteria for Dia. or Dist.
2	20	Row 2 NDD - Customer Decision to Plug
3	20	Failed F* Criteria for Dia. or Dist.
16	20	Crevice ODSCC Indication
18	20	Cecco Support Plate Indication
2	21	Row 2 NDD - Customer Decision to Plug
18	21	Failed F* Criteria for Dia. or Dist.
26	21	Failed F* Criteria for Dia. or Dist.
2	22	Row 2 NDD - Customer Decision to Plug
3	22	Failed F* Criteria for Dia. or Dist.
12	22	Failed F* Criteria for Dia. or Dist.
20	22	Failed F* Criteria for Dia. or Dist.
38	22	Failed F* Criteria for Dia. or Dist.
2	23	Bad Data with U-Bend +Pt
8	23	Volumetric Indication/<28% by Bobbin
20	23	Crevice ODSCC Indication
20	24	Crevice ODSCC Indication
21	24	Crevice ODSCC Indication
3	25	Pitting

10	25	Pitting by RPC/<28% or DEP by Bobbin
14	25	Cecco Top of Tubesheet Indication
2	26	Row 2 NDD - Customer Decision to Plug
8	26	Pitting by RPC/<28% or DEP by Bobbin
17	26	Cecco Top of Tubesheet Indication
2	27	Row 2 NDD - Customer Decision to Plug
18	27	Pitting by RPC/<28% or DEP by Bobbin
30	27	ODSCC Indication Above TSH
2	28	Row 2 NDD - Customer Decision to Plug
14	28	Pitting by RPC/<28% or DEP by Bobbin
18	28	Pitting
2	29	Row 2 NDD - Customer Decision to Plug
5	29	Pitting
2	30	Row 2 NDD - Customer Decision to Plug
28	30	Volumetric Indication
19	31	Failed F* Criteria for Dia. or Dist.
26	31	Crevice ODSCC Indication
27	31	Crevice ODSCC Indication
2	32	Row 2 NDD - Customer Decision to Plug
11	32	Pitting by RPC/<28% or DEP by Bobbin
24	32	Crevice ODSCC Indication
29	32	Crevice ODSCC Indication
2	33	Row 2 NDD - Customer Decision to Plug
24	34	Pitting
28	34	Crevice ODSCC Indication
29	34	Crevice ODSCC Indication
26	35	Cecco Top of Tubesheet Indication
6	36	Pitting by RPC/<28% or DEP by Bobbin
9	36	Pitting by RPC/<28% or DEP by Bobbin
25	36	Pitting by RPC/<28% or DEP by Bobbin
24	37	Crevice ODSCC Indication
27	37	Pitting by RPC/<28% or DEP by Bobbin
6	38	Pitting
13	38	Cecco Support Plate Indication
6	39	Pitting by RPC/<28% or DEP by Bobbin
29	39	Crevice ODSCC Indication
38	39	Crevice ODSCC Indication
44	39	Cecco Top of Tubesheet Indication
29	40	Pitting by RPC/<28% or DEP by Bobbin
29	41	Pitting by RPC/<28% or DEP by Bobbin
30	41	Crevice ODSCC Indication
9	42	Crevice ODSCC Indication
21	42	Pitting
29	42	Crevice ODSCC Indication
32	42	Crevice ODSCC Indication
39	42	Crevice ODSCC Indication
2	43	Cecco Top of Tubesheet Indication
7	43	Pitting by RPC/<28% or DEP by Bobbin
36	43	Cecco Support Plate Indication
42	43	Cecco Top of Tubesheet Indication
2	44	Row 2 NDD - Customer Decision to Plug

36	44	Failed F* Criteria for Dia. or Dist.
2	45	Row 2 NDD - Customer Decision to Plug
16	45	Failed F* Criteria for Dia. or Dist.
13	46	Cecco Top of Tubesheet Indication
43	46	Cecco Support Plate Indication
2	47	Row 2 NDD - Customer Decision to Plug
30	47	Cecco Support Plate Indication
2	48	Row 2 NDD - Customer Decision to Plug
2	49	Row 2 NDD - Customer Decision to Plug
30	49	Cecco Support Plate Indication
44	49	Volumetric Indication
2	50	Row 2 NDD - Customer Decision to Plug
6	50	Pitting by RPC/<28% or DEP by Bobbin
45	50	Pitting
2	51	Row 2 NDD - Customer Decision to Plug
21	51	Cecco Support Plate Indication
45	51	Cecco Top of Tubesheet Indication
2	52	Row 2 NDD - Customer Decision to Plug
8	52	Pitting by RPC/<28% or DEP by Bobbin
10	52	Pitting by RPC/<28% or DEP by Bobbin
32	53	Cecco Support Plate Indication
18	54	Pitting by RPC/<28% or DEP by Bobbin
19	54	Cecco Support Plate Indication
20	55	Crevice ODSCC Indication
8	56	Pitting by RPC/<28% or DEP by Bobbin
10	56	Pitting
10	57	Pitting
17	57	Pitting
2	58	Row 2 NDD - Customer Decision to Plug
8	59	Pitting by RPC/<28% or DEP by Bobbin
2	60	Row 2 NDD - Customer Decision to Plug
8	60	Pitting
21	60	Pitting by RPC/<28% or DEP by Bobbin
24	60	Pitting
2	61	Row 2 NDD - Customer Decision to Plug
2	62	Row 2 NDD - Customer Decision to Plug
2	63	Row 2 NDD - Customer Decision to Plug
17	63	Pitting by RPC/<28% or DEP by Bobbin
2	64	Row 2 NDD - Customer Decision to Plug
5	64	Cecco Support Plate Indication
2	65	Row 2 NDD - Customer Decision to Plug
26	65	Failed F* Criteria for Dia. or Dist.
16	66	Pitting by RPC/<28% or DEP by Bobbin
2	69	U-Bend PWSCC
4	69	Bad Data with U-Bend +Pt
2	71	U-Bend PWSCC
3	71	Failed F* Criteria for Dia. or Dist.
11	71	Pitting by RPC/<28% or DEP by Bobbin
2	72	U-Bend PWSCC
2	73	Row 2 NDD - Customer Decision to Plug
11	73	Cecco Support Plate Indication

18	73	Cecco Support Plate Indication
2	74	U-Bend PWSCC
2	75	Row 2 NDD - Customer Decision to Plug
26	75	Cecco Support Plate Indication
30	76	Cecco Support Plate Indication
2	77	Row 2 NDD - Customer Decision to Plug
27	77	Cecco Support Plate Indication
22	78	Cecco Support Plate Indication
2	80	Row 2 NDD - Customer Decision to Plug
2	81	Row 2 NDD - Customer Decision to Plug
6	82	BadData - Uninspectable Location
25	82	Cecco Support Plate Indication
2	85	Row 2 NDD - Customer Decision to Plug
9	85	Cecco Support Plate Indication
2	87	Row 2 NDD - Customer Decision to Plug
5	87	Cecco Top of Tubesheet Indication
10	87	In-situ Tested NDD Tube
2	88	Row 2 NDD - Customer Decision to Plug
2	89	Row 2 NDD - Customer Decision to Plug
2	90	Bad Data with U-Bend +Pt
2	91	Row 2 NDD - Customer Decision to Plug
2	92	Row 2 NDD - Customer Decision to Plug

Table 17, Number and Type of Indications Found During Inspections in 1997 and 2000

	SG21		SG 22		SG 23		SG24	
Indication Type	**1997**	**2000**	**1997**	**2000**	**1997**	**2000**	**1997**	**2000**
BDI Bad Data	0	0	0	0	0	0	0	1
DRI Distorted Roll	60	152	8	10	918	1693	39	71
DTI Distorted Tube Sheet	0	0	1	0	0	0	0	0
MAI Multiple Axial	31	162	27	141	153	382	14	100
MCI Multiple Circumferential	2	14	0	10	0	24	0	1
MMI Mixed Mode	0	0	0	0	0	2	0	0
NQI Non Quantifiable	1	3	6	70	0	31	0	6
PCT Percent	68	115	121	93	57	47	76	124
PI Possible	1	8	37	90	7	22	7	19
PIT Pitting	39	126	34	183	13	82	23	66
SAI Single Axial	12	131	23	133	32	257	4	184
SCI Single Circumfer.	0	9	1	17	0	22	1	4
SPI Support Plate	15	30	2	4	6	22	8	23
TSI Tubesheet	5	6	18	6	5	8	8	8
VOL Volumetric	0	5	1	19	4	5	3	10
TOTAL	**234**	**761**	**279**	**776**	**1195**	**2597**	**183**	**617**

Appendix A
Abbreviations used in Tables 1-17

Defects

BDA	Bad Data
DRI	Distorted Roll Indication
DTI	Distorted Tubesheet Indication
MAI	Multiple Axial Indication
MCI	Multiple Circumferential Indication
MMI	Multiple Mode Indication
NQI	Non Quantifiable Indication
PCT	Percent Indication (with bobbin probe), may also appear as a number
PI	Possible Indication
PIT	Pit
SAI	Single Axial Indication
SCI	Single Circumferential Indication
SPI	Support Plate Indication
TSI	Tube Sheet Indication
VOL	Volumetric Indication

Location

TEH/C	Tube End Hot/Cold
TSH/C	Tube Sheet Hot/Cold
1H/C	Support plate #1 Hot/Cold. Support plates are numbered 1 (lowest) through 6 (highest).

Probe Designations

2000 Probe Code	1997 Probe Code	Dia.	Rotating	Manufacturer's Description	Manufacturer
CCAGC	CC C5	0.700	NO	C5-700-CECCO CECCO C5/HD	Westinghouse-Canada
CCAGC	CC C5	0.680	NO	C5-700-CECCO CECCO C5/HD	Westinghouse-Canada
CCAGC	CC C5	0.640	NO	C5-700-CECCO CECCO CF/HD	Westinghouse-Canada
EBALL	EL	0.700	NO	EL-700-LLMC	Echoram
ZBALL		0.610	NO	A-610-MULC ZA-610-MULC	Zetec
MBALL		0.700	NO	EC-700-LLMC	Westinghouse-MPI
ZMAGR	RB	0.720	NO	720MRPC-115-D#4084-1-A	Zetec
ZPADP	ZD	0.610	YES	ZD-610-MRPCDIPP +PT-610-MRPC/DI/52PH	Zetec
ZPAGP	ZP	0.680	YES	ZP-610-MRPCPP	Zetec
ZPAGP	ZP	0.610	YES	ZP610-MRPCPP	Zetec
ZPAMR		0.720	YES	+PT-720-115/36/S80 MIDRANGE	Zetec
ZPANM		0.720	YES	+PT-720-115/36/S80	Zetec
ZPANM		0.700	YES	+PT-700-115/36/S80	Zetec
ZPANM		0.680	YES	+PT-680-115/36/S80	Zetec
ZPUHF		0.620	YES	HF U-BEND +PT	Zetec
ZPTNM		0.620	YES	620-PP/52B(3.5/0.115)	Zetec
ZPTRP	ZE	0.620	YES	ZE-620-MRPCPP	Zetec
ZPUMB	ZB	0.620	YES	ZB-620-UBPP M/+PT-620-MRPC/3FH-52PH	Zetec

NRC RAI Letter dated March 24, 2000

Question 12

Assess material susceptibility to intergranular stress corrosion cracking (IGSCC) for the heats used at Indian Point 2 rows 2 – 4.

Reply

Intergranular stress corrosion cracking, for the purposes of describing attack on steam generator low row U-bend tubing, can initiate both from the primary side as PWSCC or from the secondary side as intergranular attack or stress corrosion cracking. PWSCC has been seen on the ID surfaces of row 2 U-bends at IP 2. To the best of our knowledge, PWSCC has not been seen in Westinghouse Model 44 or 51 steam generators, and only once in the entire industry in a row 3 U-bend. Outside diameter IGSCC has not been seen in the IP2 low row U-bend region.

Con Edison has conducted an extensive review of the processing and heat treatment of the tubing used in the fabrication of the IP2 steam generators and, in particular, the tubing which was used to fabricate the tubes in Rows 2–4. IP 2 steam generator tubing was manufactured by Huntington Alloys with a higher temperature anneal (1850 °F). Certified Mill Test Reports ("CMTR") (Reference12.1) are available for the tubing used in the four steam generators. While the CMTR data does not allow us to identify properties on a tube-by-tube basis, they do allow us to identify material properties on a heat-by-heat basis for each row. This material is less susceptible to stress corrosion cracking than tubing annealed at the lower temperature which is typical of later generator tubing manufactured by Westinghouse with a lower (1700 °F) annealing temperature.

Stress corrosion cracking in susceptible material is a function of the environment, temperature, and a stress level above some threshold value. The one variable between rows 2 and 3 U-bends is the stress level in the bends. This is the residual stress from bending and the stresses imposed by the hourglassing of the upper support plate. This is seen in the initiation and in the propagation of IGSCC in the material. Initiation times are inversely proportional to the fourth power of stress ratios between the rows (Reference 12.2). A comparison of stress levels between row 2 and 3 U-bends indicates that time to crack initiation in the highest stressed U-bend in row 3 should be approximately two and one half to four times longer than for the row 2 U-bends of equivalent yield strength. It would be much longer for a row 4 U-bend. This difference is primarily caused by the difference in support plate hourglassing-induced stresses, which are higher in row 2. This was addressed in the Condition Monitoring / Operational Assessment documents (References 12.4 and 12.5).

The average crack propagation rate of 10.9% and a 16.2% for the maximum crack propagation rate per EFPY was identified for the PWSCC indications in row 2 whose presence could be traced back to 1997 (Reference 12.3). Once a crack is postulated to initiate in row 3, the crack propagation rate would also be much lower than row 2 because of the lower applied stress.

Thus, the tubing used in the IP 2 steam generators is less susceptible to IGA than the later Westinghouse fabricated units. This should result in a relatively better performance than the average mill annealed Alloy 600 tubing. The stresses in the row 3 U-bend are lower than in row 2, leading to a longer time for crack initiation and a slower crack growth rate in the row 3 U-bends.

References

12.1 "Steam Generator Tubing Records" Westinghouse Letter IPP-94-575,dated March 29, 1994

12.2 "Assessment of Current Understanding of Mechanisms of Initiation, Arrest, and Reinitiation of Stress Corrosion Cracks in PWR Steam Generator Tubing", NUREG/CR-5752, Feb. 2000.

12.3 "Root Cause Evaluation for Steam Generator Tube Rupture Event of February 15, 2000", April 14, 2000 Con Edison Submittal.

12.4 "Indian Point Unit 2 (IP2) Cycle 14 Condition Monitoring Assessment and Cycle 15 Operational Assessment for Degradation Mechanisms Other Than U-bend PWSCC", May 30, 2000.

12.5 "Indian Point 2 U-Bend PWSCC Cycle 14 Condition Monitoring and Cycle 15 Operational Assessment", May 30, 2000.

NRC RAI Letter dated March 24, 2000

Question 21

Provide the loose parts safety evaluation for the 2000 outage.

Reply

The subject safety evaluation for the IP-2 Spring 2000 outage is attached.

VENDOR SAFETY EVALUATION COVER SHEET

Date: 6/15/00

To: J. Packy

From: J. McCann Manager, NS&L

By: [signature]
Safety Reviewer per SAO-460

Subject: CON EDISON ACCEPTANCE OF
VENDOR SAFETY EVALUATION NO.: 00-406-CV

Title: STEAM GENERATOR SECONDARY SIDE FOREIGN OBJECTS (SECL-00-058 Rev. 1)

The subject safety evaluation has been reviewed against the requirements of SAO-460 (specifically, considerations of the SIQ and Conclusion sections). This evaluation meets the intent of SAO-460 and addresses the relevant issues contained therein. Furthermore, there are no other peripheral concerns associated with this project which is not within the scope of this safety evaluation which would require the issuance of a separate safety evaluation. It is, therefore, accepted for use and is assigned the SE number noted above.

A 10 CFR 50.59(b)(2) summary has been prepared using ATTACHMENT X to SAO-460.

Additional considerations (Including Plant Mode Restrictions):

E-Mail DATED 6/16/00 FROM JAMES MARIS REGARDING THE EFFECT OF UNRECOVERABLE MACHINE CHIPS FOR TWO PENETRATIONS VS. ONE PENETRATION. IN ADDITION, CON ED HAS DETERMINED THAT THIS SAFETY EVALUATION REQUIRES A CHANGE TO UFSAR SECTION 4.2.2.3 THAT DESCRIBES THE PERCENT OF TUBES PLUGGED.

SNSC Review Required: (Pre-implementation) Post-implementation No

NFSC Review Required: (Yes) No

UFSAR Change Required: (Yes*) No

Safety Reviewer: [signature] Date: 6/15/00

Approved by: [signature] Date: 6/16/00
Manager, NS&L

*Safety Reviewer shall ensure initiation of Change Request per SAO-139

Donna Tyner #2742 6/16/00

10 CFR 50.59(b)(2) Summary

Safety Evaluation No.: SE-00-406-EV Rev. No.: 0

Title: SG Foreign Objects

Provide brief description of the change, including summary of safety evaluation. Because this summary will be used to report completed changes to the NRC, it should be written in past tense.

During the current outage (February - May 2000) at Indian Point Unit 2, various foreign objects were evaluated as remaining in the steam generators (SGs) for the next operating cycle. These included machine chips generated during installation of an access opening to facilitate inspection of the inner row U-bends, various objects remaining in the tubesheet region following a foreign object search and retrieval (FOSAR) effort, and foreign objects (potential loose parts) discovered subsequent to FOSAR when eddy current analysts discovered indications of wear on two tubes in SG 22. This evaluation addresses the potential safety impact of continued operation of the Indian Point Unit 2 SGs for one additional operating cycle (of up to 24 months) with these foreign objects and tubes with potential loose part indications remaining in steam generators 21, 22, 23, and 24.

This evaluation demonstrates that continued operation with various foreign objects remaining in the steam generators and active tubes exhibiting potential loose part indications (but no signs of wear) will not have an adverse effect on the pressure boundary integrity of the steam generator and does not represent an unreviewed safety question per the criteria of 10 CFR 50.59.

Westinghouse
Electric Company LLC

Nuclear Services Division

Box 158
Madison, Pennsylvania 15663-0158

IPP-00-259

May 18, 2000

Mr. Jack Parry
Consolidated Edison Company of New York
1 Park Place
Peekskill, NY 10566.

Consolidated Edison Company of New York
Indian Point Unit 2
SECL for Steam Generator Secondary Side Foreign Objects, Revision 1

Reference: 1. Consolidated Edison Company of New York P.O. 705779-002, dated 3/27/2000, Westinghouse Sales Order 1539

Dear Mr. Parry,

Enclosed is Revision 1 of the Safety Evaluation Checklist for the Steam Generator Secondary Side Foreign Objects. The reference to the in bundle inspection tool (CECIL) was deleted from Page 5 under the "Evaluation of Foreign Objects Remaining in the Steam Generators after FOSAR."

Should you have any questions on these documents, please contact me on (724) 722-5658. Thank you!

Very truly yours,

S. M. Ira
Customer Projects Manager

Enclosure

Official Record Electronically Approved in EDMS2000

WESTINGHOUSE
SAFETY EVALUATION CHECK LIST

1) NUCLEAR PLANT(S): INDIAN POINT UNIT 2

2) CHECK LIST APPLICABLE TO: STEAM GENERATOR SECONDARY SIDE FOREIGN OBJECTS

3) The written safety evaluation of the revised procedure, design change or modification required by 10 CFR 50.59 has been prepared to the extent required and is attached. If a safety evaluation is not required or is incomplete for any reason, explain on Page 2. Parts A and B of this Safety Evaluation Check List are to be completed only on the basis of the safety evaluation performed.

CHECK LIST - PART A

3.1) Yes X No __ A change to the plant as described in the FSAR?
3.2) Yes__ No X A change to procedures as described in the FSAR?
3.3) Yes__ No X A test or experiment not described in the FSAR?
3.4) Yes__ No X A change to the plant technical specifications (Appendix A to the Operating License)?

4) CHECK LIST - PART B (Justification for Part B answers must be included on page 2.)

4.1) Yes__ No X Will the probability of an accident previously evaluated in the FSAR be increased?
4.2) Yes__ No X Will the consequences of an accident previously evaluated in the FSAR be increased?
4.3) Yes__ No X May the possibility of an accident which is different than any already evaluated in the FSAR be created?
4.4) Yes__ No X Will the probability of a malfunction of equipment important to safety previously evaluated in the FSAR be increased?
4.5) Yes__ No X Will the consequences of a malfunction of equipment important to safety previously evaluated in the FSAR be increased?
4.6) Yes__ No X May the possibility of a malfunction of equipment important to safety different than any already evaluated in the FSAR be created?
4.7) Yes__ No X Will the margin of safety as defined in the bases to any technical specification be reduced?

If the answers to any of the above questions are unknown, indicate under 5) REMARKS and explain below.

If the answer to any of the above questions in Part (3.4) or Part B cannot be answered in the negative, the change review requires an application for license amendment in accordance with 10 CFR 50.59 (c) and submitted to the NRC pursuant to 10 CFR 50.90.

5) REMARKS:

The answers given in Section 3, Part A, and Section 4, Part B, of the Safety Evaluation Checklist, are based on the attached Safety Evaluation.

Reference document(s):

See Section 5.0

FOR FSAR UPDATE

Section:_____ Pages:_____ Tables:_____ Figures:

Reason for / Description of Change:

Operation with foreign objects in the steam generator secondary side represents a change to the steam generators as described in the FSAR. However, it does not necessitate any changes to the FSAR, nor does it affect any accidents or events described in the FSAR.

SIGNATURES

Prepared by : R G Taylor Date: 5/17/00
Regulatory and Licensing Engineering

Independently Reviewed by: D. O. Lundgren Date: 5/17/2000
Regulatory and Licensing Engineering

Licensing Review by: R. C. Duff Date: 5/17/2000
Engineering Services Integration

FOREIGN OBJECT EVALUATIONS FOR INDIAN POINT UNIT 2 - SPRING 2000 OUTAGE SAFETY EVALUATION

1.0 INTRODUCTION

During the current outage (February - May 2000) at Indian Point Unit 2, various foreign objects were evaluated as remaining in the steam generators (SGs) for the next operating cycle. These included machine chips generated during installation of an access opening to facilitate inspection of the inner row U-bends, various objects remaining in the tubesheet region following a foreign object search and retrieval (FOSAR) effort, and foreign objects (potential loose parts) discovered subsequent to FOSAR when eddy current analysts discovered indications of wear on two tubes in SG 22. This evaluation addresses the potential safety impact of continued operation of the Indian Point Unit 2 SGs for one additional operating cycle (of up to 24 months) with these foreign objects and tubes with potential loose part indications remaining in steam generators 21, 22, 23, and 24.

This evaluation demonstrates that continued operation with various foreign objects remaining in the steam generators and active tubes exhibiting potential loose part indications (but no signs of wear) will not have an adverse effect on the pressure boundary integrity of the steam generator and does not represent an unreviewed safety question per the criteria of 10 CFR 50.59.

2.0 REGULATORY BASIS

In the worst case, a foreign object in the steam generator secondary side could cause tube wear, potentially resulting in primary to secondary leakage and possibly a potential tube rupture event. Loose parts and foreign objects have caused two of the steam generator tube rupture (SGTR) events in the U.S. to date; however, the majority of foreign objects detected pose no threat to tube bundle integrity. The NRC staff has identified recommended industry actions within Reference 5. These actions include:

- Visual inspection of the secondary sides of steam generators
- Quality assurance procedures governing all work within the steam generators
- Loose parts monitoring systems

It is the NRC staff's position that loose parts or foreign objects which are found from the above actions should be removed from the steam generators if possible. In addition, tubes observed to have visible damage should be eddy current (EC) inspected and plugged if found defective. For objects that cannot be removed, criteria should be developed to demonstrate that steam generator tube integrity will be maintained during subsequent plant operation.

Section III of the ASME Boiler and Pressure Vessel Code provides criteria and requirements for evaluation of the stress levels in pressure boundary components for design, normal operating, and postulated accident conditions. Any modifications, repair, or replacement of these components must also meet the applicable requirements of the Code, as required or modified by the NRC, to assure that the basis on which the unit was evaluated is unchanged. The margin of safety is provided by the inherent safety factors in the criteria and requirements of the ASME Code.

3.0 EVALUATIONS

During the 1991, 1993, 1995 and 1997 refueling outages at Indian Point 2, similar evaluations (References 1, 2, 3 and 4) addressed non-retrievable foreign objects on the secondary side of the steam generators. Several of the foreign objects observed during the current outage were found to have remained at the same locations as previously observed in these prior outages. Some of the objects identified during these prior refueling outage were not detected during the current outage. There are several reasons why the foreign object inventory may vary from outage to outage; 1) small, mobile objects can become pushed into the center of the tube bundle, resting in a low velocity area and eventually becoming captured in the sludge pile, 2) small, mobile objects may be removed from the steam generator during sludge lancing, and 3) objects can be retrieved during FOSAR operations. The inventory of foreign objects identified as remaining in the SGs after the Spring 2000 FOSAR efforts is shown in Table 1. All of the objects identified during the current outage appear to be either metallic or "sludge rocks". Therefore, all objects identified during the current outage would not represent a concern to maintaining secondary system operational chemistry control within recommended guidelines or represent the potential for elevating levels of prohibited chemical species.

Evaluations have been performed to determine the potential effects of subsequent steam generator operation with various foreign objects remaining in the secondary side of steam generators 21, 22, 23 and 24 (References 6 and 7). These are summarized as follows.

Evaluation of Machine Chips Generated During Installation of Access Opening

During the Spring 2000 outage at Indian Point Unit 2, it became necessary to install a penetration through the shell and wrapper at the transition cone region of one of the steam generators. This penetration was required in order to perform a visual inspection of the inner row tubes in the U-bend. Installation of the hole was performed using a process that precluded unrecoverable machine chips. However, in the process of tapping the threads in the wrapper (to permit installation of a wrapper plug), small chips of metal were produced. These chips are very small, which made them difficult to retrieve. It is likely that some of the chips were not recovered and therefore remain in the secondary side of the steam generator.

The machine chips generated during tapping were found to be quite small. These machine chips were very similar to machine chips/shavings observed in SG 23 during the Winter 1993 outage at Indian Point 2. Calculations performed in 1993 were found to envelope the current machine chips that may have been introduced to SG 23 during the current outage. The previous evaluation estimated the minimum wear times associated with machine chips in the secondary side of the Indian Point Unit 2 steam generators.

In all likelihood, any machine chips remaining in the SG will migrate along the tubesheet until reaching a region of low cross flow velocity, where they will settle with sludge deposits and have no impact on the tubes. However, the 1993 evaluation (Reference 2) conservatively assumed that a machine chip migrates to a tube that exhibits the limiting amplitudes of vibration and cross flow fluid velocity and that this tube has existing 20% through wall degradation. The evaluation also assumed that the object rests atop a sludge pile approximately 4 inches deep (at this elevation, tube vibration amplitudes are larger than those at the top of the tubesheet). This was a conservative assumption in that previous observations indicated that the depth of sludge on the more limiting tubes is one inch or less. Additional conservative assumptions were made in that the machine chip

is postulated to remain in the same location (once tube wear begins), and that only the tubes will experience wear. The evaluation shows that the minimum estimated impacting-sliding wear time to the minimum allowable tube wall thickness for the limiting machine chip is 23.5 years. Therefore, none of the machine chips from the current outage are expected to wear into a tube to the minimum acceptable wall thickness (~60% through wall) during the next operating cycle.

Furthermore, the maximum estimated weight of the machine chip is very small; the energy which the machine chip would impart to a tube during a collision is sufficiently low that significant deformation of a tube due to impacting is not expected during the next operating cycle.

Evaluation of Foreign Objects Remaining in the Steam Generators After FOSAR

During the Spring 2000 outage at Indian Point Unit 2, foreign object search and retrieval (FOSAR) was performed in the tubesheet region of steam generators 21, 22, 23 and 24. Following the FOSAR efforts, the foreign objects listed in Table 1 remained in the secondary side of the steam generators. These objects were evaluated in Reference 6 for their potential to affect tube integrity during the next operating cycle. The Reference 6 tube wear evaluation was performed assuming that the foreign objects are located at the tube that exhibits the limiting amplitudes of vibration, with appropriate values of cross flow fluid velocity, and that this tube has existing 20% through wall degradation. The evaluation also assumed that the object rests upon a sludge pile approximately 6 inches deep; at this elevation, tube vibration amplitudes are larger than those at the top of the tubesheet. Additional conservative assumptions are made in that the object will remain in the same location (once tube wear begins), and that only the tubes will experience wear.

For one of the foreign objects listed in Table 1 - the piece of metal identified as potentially being a "star-shaped" piece of tube support plate - a parametric evaluation was performed. It was postulated that degradation of the tube support plates could result in fragments of 3/4-inch thick tube support plate (TSP) material, generated by degradation of the thin ligaments between tube holes. This degradation could produce "star-shaped" pieces of material that could migrate to lower TSPs or to the tubesheet if a piece of the TSP between four tube holes breaks off. In addition to evaluating one "star-shaped" piece of material from between four tube holes, the evaluation also considered larger TSP fragments comprised of two, three or four interconnect "stars", such as would occur if a piece of TSP with intact ligaments from between several adjacent tubes were to be generated. These postulated fragments of TSP were considered to wear on the tubes in the tubesheet region; this bounds the case in which a TSP fragment were to fall to a lower TSP, since the cross flow velocities and tube vibration amplitudes in the tubesheet region bound those at higher elevations and would result in shorter durations to wear into a tube to the minimum allowable wall thickness. The limiting wear time from the parametric assessment of TSP fragments is shown in Table 1.

Results from the evaluation of all foreign objects remaining in the SGs after FOSAR are summarized in Table 1; this shows that the minimum estimated impacting–sliding wear time to the minimum allowable tube wall thickness for the limiting object (the TSP piece) is approximately 2.8 years. Per Reference 6, eddy current data from all four SGs showed no evidence of tube wear due to any of the foreign objects listed in Table1. Indian Point Unit 2 is operating on 24-month fuel cycles; therefore, the minimum estimated wear time to the minimum allowable tube wall thickness wall for the limiting object exceeds one fuel cycle, the interval between EC inspections for these

SGs. Therefore, the objects are not expected to wear into a tube to the minimum allowable tube wall thickness during the next operating cycle.

An analysis was also performed to determine the effects on the tubes should the objects begin to migrate and repeatedly impact the tubes. The impacting analysis was performed for the maximum weight of the largest loose object (approximately 0.26 lbs). The analysis determined that the energy which the loose objects would impart to a tube during repeated collisions is sufficiently low that significant deformation of the tubes due to impacting is not expected.

In summary, it has been determined in Reference 6 that continued operation with the foreign objects listed in Table 1 present in the secondary side will not adversely affect the steam generator during the next operating cycle.

Evaluation of Potential Loose Part Indications

Subsequent to the FOSAR inspections in all four SGs, eddy current analysis of the tubes showed signals that indicated the presence of potential loose parts (PLPs) adjacent to various tubes in all four SGs. Table 2 lists the affected tubes with PLP indications. An evaluation (Reference 7) has been performed to determine the acceptability of leaving these tubes in service for the next cycle of operation. Of the tubes listed in Table 2, two tubes had indications of foreign object-induced tube wear. The first tube, R31C15 in SG 22, exhibited a wear signal indicating that up to 52% of the wall thickness has been lost due to wear. This tube has been removed from service with solid mechanical plugs. The tubes surrounding R31C15 in SG 22 also exhibited indications of a PLP. However, review of eddy current data from surrounding tubes from the present outage and previous outages has indicated that the PLP signals have been present for at least one fuel cycle, with no wear occurring on these tubes. Since no wear has occurred on the surrounding tubes, these tubes were found to be acceptable to remain in service for an additional cycle of operation.

A second tube, R30C13 in SG 22, was also found to have indications of wear (<20% through wall) attributed to a foreign object. As a result, this tube along with four others (R30C12, R29C12, R29C13 and R29C14) were preventively plugged. An additional adjacent tube, R30C14, was plugged in a previous outage. The resulting plugging pattern was concluded to effectively box in the R30C13 tube with the wear indication.

For all other tubes listed in Table 2, review of eddy current data from the current outage and the preceding inspection indicated that no measurable wear has occurred. Therefore, these tubes with PLP indications are acceptable for an additional cycle of operation (Reference 7). It is recommended, however, that eddy current inspection of all such tubes be performed during the next refueling outage, to support any further operation of the SGs with these tubes in service.

It is concluded that plugging of the aforementioned tubes with solid mechanical plugs is sufficient to permit continued operation of the SGs for the next fuel cycle.

4.0 ASSESSMENT OF UNREVIEWED SAFETY QUESTION

The subsequent operation of Indian Point Unit 2 with the aforementioned foreign objects present on the secondary side of the steam generators, in addition to tubes with PLP indications, has been

evaluated and it has been determined that an unreviewed safety question is not involved, per the criteria of 10 CFR 50.59, on the basis of the following justification.

1. Will the probability of occurrence of an accident previously evaluated in the FSAR be increased?

No. The probability of occurrence of the accidents analyzed in the FSAR is generally independent of the presence of a foreign object in the steam generator. One possible exception that has been considered for this evaluation is a tube rupture. Based on the Reference 6 and 7 evaluations, tube wear is not expected to affect the integrity of any active tubes during the upcoming operating cycle. Tube bundle integrity and leaktightness are considered to be maintained.

2. Will the consequences of an accident previously evaluated in the FSAR be increased?

No. Postulated steam generator tube rupture resulting from excessive wear due to contact with the identified foreign objects would be bounded by the existing analysis assumptions. References 6 and 7 have demonstrated that through-wall penetration of active tubes would not be expected during the upcoming cycle. In the unlikely event that primary-to-secondary leakage would be caused by foreign object-induced wear, release rates far less than assumed during a SGTR event as defined in the Indian Point Unit 3 FSAR would be expected. Release of primary coolant and radioactive material into the secondary system and the secondary system pressure would not be greater than that assumed for previous steam generator tube rupture analyses. Furthermore, repeated collisions of the objects with the tubes are not expected to cause tube deformation or leakage.

3. May the possibility of an accident of a different type than already evaluated in the FSAR be created?

No. Although considered to be an unlikely event, should the objects wear through the wall of an active tube, the consequences of this event would still be bounded by the effects of an analyzed tube rupture event as described in the FSAR, and therefore would not represent a potential accident different than previously analyzed. If a through-wall penetration were to occur, the leakage would be expected to be detectable by the current plant systems. The plugging of tubes adjacent to peripheral tubes in SG 22 with PLP indications and existing wear indications is expected to preclude the possibility of tube leakage due to wear cause by a foreign object. No mechanism exists which could propagate wear from the foreign objects identified to a full SGTR event, nor would a mechanism exist which would postulate an accident different from the current licensing basis.

4. Will the probability of a malfunction of equipment important to safety previously evaluated in the FSAR be increased?

No. The Indian Point 2 steam generators are expected to meet all previously applicable design criteria. Primary to secondary leakage through a steam generator tube is not expected as a result of the foreign objects in the SGs. Tube bundle integrity and leaktightness are expected to be maintained; there is no mechanism for the foreign object to affect any other portion of the steam generator or other any component. No other system connecting with the steam generators or other

safety related component could be adversely affected by the operation with the foreign objects present in the steam generators.

5. Will the consequences of a malfunction of equipment important to safety previously evaluated in the FSAR be increased?

No. The worst case consequence that could occur during subsequent plant operation is primary to secondary leakage. Previous discussion has shown that there is a negligible potential to cause tube wear of any significant extent in active tubes. Tube wear is not expected to result postulated separation of any tubes within the expected operational cycle.

6. May the possibility of a malfunction of equipment important to safety different than that already evaluated in the FSAR be created?

No. As previously discussed, Indian Point 2 steam generators are expected to continue to meet individual tube structural integrity and tube bundle leaktightness requirements during subsequent plant operation to the next scheduled outage; therefore, the presence of the objects will not act as an accident initiator.

7. Will the margin of safety as defined in the basis of any technical specification be reduced?

No. The margin of safety with respect to primary to secondary pressure boundary integrity is provided, in part, by the safety factors included in the ASME Code, and is not reduced. Safety margins are not expected to be reduced. Operation with the foreign objects in the steam generators does not require a change to the Technical Specifications, nor will it prevent inspections required by the Technical Specifications.

Therefore, operation of Indian Point 2 for the next operating cycle with the previously discussed foreign objects and potential loose parts in the SGs is not expected to adversely affect steam generator tube integrity, and does not represent an unreviewed safety question in accordance with 10 CFR 50.59.

5.0 REFERENCES

1) SECL-91-261, "Steam Generator Secondary Side Foreign Objects", June 1991.

2) SECL-93-038, Rev. 0 and 1, "Steam Generator Secondary Side Foreign Objects", April 1993.

3) SECL-95-055, "Steam Generator Secondary Side Foreign Objects", April 1995.

4) SECL-97-039, "Steam Generator Secondary Side Foreign Objects", February 1997.

5) NUREG-0844, "NRC Integrated Program for the Resolution of Unresolved Safety Issues A-3, A-4, and A-5 Regarding Steam Generator Tube Integrity", USNRC, April 1985.

6) LTR-SGDA-00-071, "Evaluation of Foreign Objects in S/Gs at Indian Point Unit 2", April 26, 2000.

7) LTR-SGDA-00-106, "Recommendations Resulting From Evaluation of PLP Signals at Indian Point Unit 2", May 5, 2000.

Table 1

Wear Time Summary - Indian Point Unit 2 - Spring 2000 Outage

Object No	S/G	Foreign object	Description or Approx. Size	Location	Wear Time $T_{I\text{-}S}$ (EFPY)
1	21	Metal wedge	1.5" x ¾" x ½"	R14C3	5.7
2	21	Weld rod/wire	1/8" dia. x > 4.0 " long	R45C51	4.6
3	21	Small metal piece	1/3 "(t) x ¾ (h) x 2.5 " L	R44C57	6.1
4	21	Strap	1/8"t x 2.0 h x 3.0" long	R44C58	5.7
5	21	All thread	~1/2" dia. x 3.5 " long	R1C47 (tube lane)	3.0
6	22	Metal plate	0.36" x 0.36 " x 0.75"	R45C53	9.6
7	23	Wire	1/8 " dia. x > 4.0 long	R36C18	4.6
8	23	Round metal object	½"dia x 2.8 " long	R34C16	3.4
9	24	Piece of metal (TSP star piece)	7/8" (h) x 0.6"w x 0.6" L	R8C1	2.8
10	24	Flex. gasket	~0.14" wide x 2.8" long	R45C41	4.3
11	24	Sludge rocks	Max 5/8" dia. x 1.0" long	Not defined	4.6
12	24	Wire	~0.1" dia. x ~ 0.5" long	R37C73	17.1

Table 2

Tubes With PLP Signals at Indian Point 2 – Spring 2000 Outage

No	S/G	Row	Col	Leg	2000 Data	1997 Data	Wear Data
1	21	18	7	H	PLP	PLP	No Wear Either Year
2	21	8	9	H	PLP	PLP	No Wear Either Year
3	21	9	9	H	PLP	PLP	No Wear Either Year
4	21	20	14	H	PLP	PLP	No Wear Either Year
5	21	21	14	H	PLP	PLP	No Wear Either Year
6	21	31	15	H	PLP	PLP	Pit Indication - No TW Deg.
7	21	32	17	H	PLP	PLP	No Wear Either Year
8	21	33	35	H	PLP	PLP	No Wear Either Year
9	21	3	45	C	PLP	PLP	No Wear Either Year
10	21	38	62	C	PLP	PLP	No Wear Either Year
11	21	29	79	H	PLP	PLP	No Wear Either Year
12	21	30	79	H	PLP	PLP	No Wear Either Year
13	21	8	96	C	PLP	PLP	No Wear Either Year
14	21	9	87	C	PLP	PLP	No Wear Either Year
15	21	20	88	C	PLP	PLP	No Wear Either Year
16	21	8	89	C	PLP	PLP	No Wear Either Year
1	22	28	12	H	PLP	PLP	Pit Indication - No TW Deg.
2	22	29	12	H	PLP	PLP	No Wear Either Year
3	22	30	13	H	PLP	No PLP	Wear: '97=0%, 2000= <20%
4	22	31	15	H	PLP	PLP	Wear: '97=45%, 2000= 52%
5	22	30	16	H	PLP	PLP	No Wear Either Year
6	22	31	16	H	PLP	PLP	No Wear Either Year
7	22	30	17	H	PLP	PLP	No Wear Either Year
8	22	31	17	H	No PLP	PLP	No Wear Either Year
9	22	32	17	H	PLP	No PLP	No Wear Either Year
10	22	33	17	H	PLP	PLP	No Wear Either Year
11	22	30	18	H	PLP	PLP	No Wear Either Year
12	22	31	18	H	PLP	PLP	No Wear Either Year
13	22	35	79	H	PLP	PLP	No Wear Either Year
1	23	31	15	H	PLP	PLP	Pit Indication - No TW Deg.
2	23	34	17	H	PLP	PLP	No Wear Either Year
3	23	34	18	H	PLP	PLP	No Wear Either Year
4	23	35	18	H	PLP	PLP	No Wear Either Year
5	23	22	19	H	PLP	PLP	No Wear Either Year
6	23	34	19	H	PLP	PLP	No Wear Either Year
7	23	21	20	H	PLP	PLP	No Wear Either Year
8	23	22	20	H	PLP	PLP	No Wear Either Year
9	23	27	20	H	PLP	PLP	No Wear Either Year
10	23	29	20	H	PLP	PLP	No Wear Either Year
11	23	30	20	H	PLP on RPC No bobbin PLP	No PLP	No Wear Either Year
12	23	43	33	H	PLP	PLP	No Wear Either Year
13	23	44	56	H	PLP	PLP	No Wear Either Year
14	23	44	57	H	PLP	PLP	No Wear Either Year
1	24	12	3	H	PLP	PLP	No Wear Either Year
2	24	13	3	H	PLP	PLP	No Wear Either Year
3	24	13	4	H	PLP	PLP	No Wear Either Year
4	24	31	16	C	PLP	PLP	Pit Indication - No TW Deg.
5	24	28	17	H	PLP	PLP	No Wear Either Year
6	24	43	59	C	PLP	PLP	No Wear Either Year
7	24	23	79	C	PLP	PLP	No Wear Either Year
8	24	23	80	C	PLP	No PLP	No Wear Either Year
9	24	26	80	C	PLP	PLP	No Wear Either Year
10	24	20	83	C	PLP	PLP	No Wear Either Year
11	24	7	87	C	PLP	PLP	No Wear Either Year
12	24	7	88	C	PLP	PLP	No Wear Either Year
13	24	7	91	C	PLP	PLP	No Wear Either Year

LTR-SGDA-00-71

From: Steam Generator Design & Analysis
WIN: 224-5272
Date: April 26, 2000
Subject: Evaluation of Foreign Objects in S/Gs at Indian Point Unit 2

To: Jim Maris

cc: S. M. Ira – WM Bin 12
J. M. Hall – WM Bin 26
A. R. Vaia – WM Bin 60
H. O. Lagally – WM Bin 26
G. J. Gambogi – WM Bin 26
D. D. Malinowski – WM Bin 28
R. A. Taylor – EC East 413

References:

1) SM-97-08, Rev. 0, "Loose Parts Evaluation for Indian Point Unit 2 – Winter 1997 Outage," J. M. Hall, February 1997.
2) SM-97-08, Rev. 1, "Loose Parts Evaluation for Indian Point Unit 2 – Winter 1997 Outage," R. A. Taylor, 2/28/00.
3) SM-93-14, Rev. 0 and Rev. 1, "Loose Parts Evaluation For Indian Point Unit 2 – IPP Winter 1993 Outage," J. M. Hall, March 1993.
4) SSS 2.4.2 IPP7-01, Rev. 0, Fax Transmittal from Jim Maris to Jeff Hall, dated 3/27/2000.
5) SSS 2.4.2 IPP7-01, Rev. 0, Fax Transmittal from Jim Maris to Jeff Hall, dated 3/28/2000
6) CN-SGDA-00-38, "Loose Parts Evaluation of Indian Point Unit 2", T. S. Magge, dated 4/13/2000.
7) LTR-SGDA-00-92 from D. D. Malinowski, "Indian Point Unit 2 Eddy Current Information", dated 4/24/2000.

A) Evaluation of Machine Chips Generated During Drilling:

During the March 2000 outage at Indian Point Unit 2, it became necessary to install a penetration through the shell and wrapper at the transition cone region of one of the steam generators. This penetration was required in order to perform a visual inspection of the inner row tubes in the U-bend. Installation of the hole was performed using a process that did not produce unrecoverable machine chips. However, in the process of tapping the threads in the wrapper (to permit installation of a wrapper plug) small chips of metal were produced. These chips are very small, which made them difficult to retrieve. It is quite likely that at least some of the chips were not recovered and therefore remain in the secondary side of the steam generator.

The machine chips generated during tapping were found to be quite small. The attachment to this letter contains photographs of machine chips generated after tapping a 1.5 inch hole in a 3/8 inch plate. Figure 1 shows a photograph where a penny is placed near the chips to provide scale to the objects. As can be observed, these machine chips are quite small. The largest chips were found to have a curl diameter of about 0.2 inch. These machine chips were found to be very similar to machine chips/shavings observed in Steam Generator (S/G) 23 during the Winter 1993 outage at Indian Point Unit 2.

Calculations performed in 1993 were reviewed and found to envelope the current machine chips that may have been introduced to the IPP S/G. These previous calculations estimate the minimum wear times associated with various loose objects, including machine chips, in the secondary side of the Indian Point Unit 2 steam generators.

The evaluation assumes that the loose objects migrate to a tube that exhibits the limiting amplitudes of vibration and cross flow fluid velocity and that this tube has existing 20% through wall degradation. The evaluation also assumes that the objects rest upon a sludge pile approximately 4 inches deep (at this elevation, tube vibration amplitudes are larger than those at the top of the tubesheet). This is a conservative assumption in that previous observations have indicated that the depth of sludge on the more limiting tubes is one inch or less. Additional conservative assumptions are made in that the objects will remain in the same location (once tube wear begins) and that only the tubes will experience wear.

The evaluation shows that the minimum estimated impacting-sliding wear time to the minimum allowable tube wall thickness for the limiting machine chip is 23.5 years (Reference 1). Therefore, none of the machine chips are expected to wear into a tube to the minimum acceptable wall thickness (~60% through wall) during the next operating cycle (24 months).

The maximum estimated weight of the machine chip is very small, such that the energy which the machine chip would impart to a tube during a collision is sufficiently low that significant deformation of a tube due to impacting is not expected during the next operating cycle.

B) Evaluation of Loose Parts Remaining in the Steam Generators:

During the recent outage at Indian Point Unit 2, in-bundle inspection using the CECIL inspection device was performed in steam generators 21, 22, 23 and 24. Upon review of the inspection, it was determined that the objects shown in Table 1 remained in the secondary side of the steam generators and are evaluated in Reference 5. The evaluation was performed to determine the effect of continued steam generator operation with the objects remaining in the secondary side of the steam generator. In Reference 5 the evaluation has been performed assuming that the loose objects are located at the tube that exhibits the limiting amplitudes of vibration, with appropriate values of cross flow fluid velocity, and that this tube has existing 20% through wall degradation. The evaluation also assumes that the object rests upon a sludge pile approximately 6 inches deep (at this elevation, tube vibration amplitudes are larger than those at the top of the tubesheet). Additional conservative assumptions are made in that the object will remain in the same location (once tube wear begins), that only the tubes will experience wear, and assuming a conservative impact–sliding wear coefficient of 720.0 E-12.

For one of the foreign objects listed in Table 1 - the piece of metal identified as potentially being a "star-shaped" piece of tube support plate - a parametric evaluation was performed. It was postulated that degradation of the tube support plates could result in fragments of 3/4-inch thick tube support plate (TSP) material, generated by degradation of the thin ligaments between tube holes. This degradation could produce "star-shaped" pieces of material which could migrate to lower TSPs or to the tubesheet if a piece of the TSP between four tube holes breaks off. In addition to evaluating one "star-shaped" piece of material from between four tube holes, the evaluation also considered larger TSP fragments comprised of two, three or four interconnect "stars", such as would be generated if a piece of TSP with intact ligaments from between several adjacent tubes were to be generated. These postulated fragments of TSP were considered to wear on the tubes in the tubesheet region; this bounds the case in which a TSP fragment were to fall to a lower TSP, since the cross flow velocities and tube vibration amplitudes in the tubesheet region bound those at higher elevations and would result in shorter durations to wear into a tube to the minimum allowable wall thickness.

Table 2 summarizes the results for the various TSP pieces that were postulated and evaluated for tube wear considerations. The minimum impact-sliding wear rates are calculated for one star-shaped piece of TSP, as well as for larger pieces of TSP formed by two, three, and four interconnected "stars". Each postulated TSP fragment is analyzed for two orientations. The first orientation assumes that the tubes wear against the full 3/4-inch thickness of the TSP fragment. The second orientation assumes that the TSP fragment is inclined against the tubes, such that the tubes are wearing against a 90-degree corner of the TSP fragment. The wear rates for these postulated cases are summarized in Table 2. For each case it is assumed that the TSP piece wears on two or three tubes at once, depending on the size and orientation of the piece of TSP. For the larger pieces of TSP, it was judged that the objects would not be able to rest against the tubes in an inclined orientation such that a corner of the object wears into the tubes, unless they were located against the outermost (peripheral) tubes. In these cases, the lower approach velocity of the secondary fluid as it enters the tube bundle was used, instead of the higher cross flow velocities that occur between the tubes as the flow enters the tube bundle. As a result, the limiting result was obtained for a smaller ("two-star") piece of TSP subjected to the higher cross flow velocities that occur within the tube bundle.

Results from the evaluation of all foreign objects are summarized in Table 1; this shows that the minimum estimated impacting–sliding wear time to the minimum allowable tube wall thickness for the limiting object (the TSP piece) is approximately 2.82 years. Per Reference 6, the steam generators showed no evidence of tube wear due to the aforementioned foreign objects when Eddy Current (EC) inspections were performed. Indian Point Unit 2 is operating on 24-month fuel cycles; therefore, the minimum estimated wear time to the minimum allowable tube wall thickness wall for the limiting object exceeds one fuel cycle, the interval between EC inspections for these SGs. Therefore, the objects are not expected to wear into a tube to the minimum allowable tube wall thickness during the next operating cycle (before the next scheduled EC inspection of these SGs).

An analysis was also performed to determine the effects on the tubes should the objects begin to migrate and repeatedly impact the tubes. The impacting analysis was performed for the maximum weight of the largest loose object (approximately 0.262 lbs). The analysis has determined that the energy which the loose objects would impart to a tube during repeated collisions is sufficiently low that significant deformation of the tubes due to impacting is not expected.

In summary , the analysis has determined that continued operation with the objects present in the secondary side will not adversely affect the steam generator during the next operating cycle.

The calculations are recorded in calculation note CN-SGDA-00-38 and the loose parts evaluated are shown with their corresponding wear times to the minimum allowable tube wall in the tables attached.

Tandav Magge
Tandav Magge
Steam Generator Design & Analysis

R A Taylor
Verified By: R. A. Taylor
Regulatory and Licensing Engineering

W. B. Middlebrooks
Approved By: W. B. Middlebrooks, Manager
Steam Generator Design & Analysis

Table 1

Wear Time Summary - Indian Point Unit 2 - Spring 2000 Outage

Object No	S/G	Foreign object	Description or Approx. Size	Location	Wear Time (Years) $T_{I\text{-}S}$ (EFPY)
1	21	Metal wedge	1.5" x ¾" x ½"	R14C3	5.7 *
2	21	Weld Rod/wire	1/8" dia. X > 4.0 " long	C51R45	4.6
3	21	Small Metal piece	1/3 "(t) x ¾ (h) x 2.5 " L	C57R44	6.10
4	21	strap	1/8"t x 2.0 h x 3.0" long	C58R44	5.70
5	21	All thread	~1/2" dia. x 3.5 " long	C47R1 TL	3.00 [1] *
6	22	Metal Plate	.36" x 0.36 " x 0.75"	C53R45	9.6 *
7	23	Wire	1/8 " dia. x > 4.0 long	C18R36	4.6
8	23	round metal	½"dia x 2.8 " long	C16R34	3.44
9	24	Metal (TSP Star piece)	7/8" (h) x 0.6"w x 0.6" L	C1R8	2.82 [1]
10	24	flex gasket	~0.14" wide x 2.8" long	C41R45	4.27
11	24	sludge rocks	Max 5/8" dia. x 1.0" long	Not defined	4.65
12	24	Wire	~0.1" dia. x ~ 0.5" long	C73R37	17.1

Note 1: Wear rates are based on shade velocity. All other locations it is based on gap velocity. All wear rates are with an initial wear depth of 20%.
Note 2: * mark indicates that the loose parts shown were seen in the previous outages.

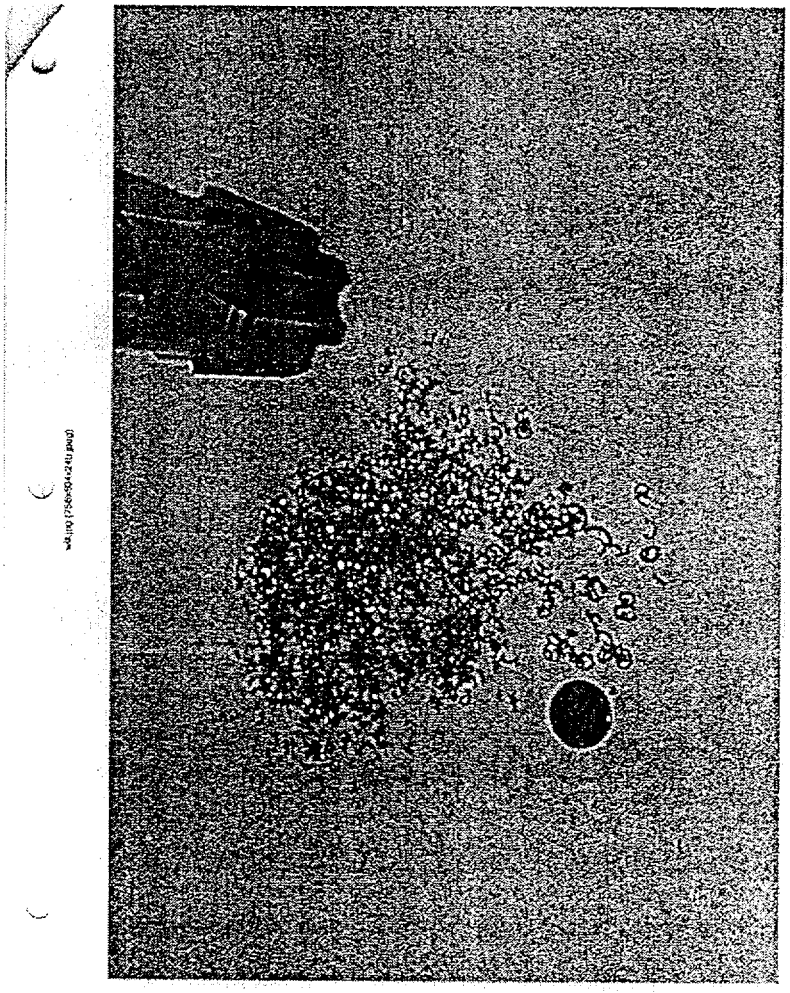
Table 2

Summary of Wear Rates for TSP Star Piece Sections

Case	Description	Assumption	projected area Sq inch	Wear height (inch)	Spread Sheet	Wear Time (Years) $T_{I\text{-}S}$ (EFPY)
1	1 star piece missing	2 Tube contact	0.463	0.75	4	13.84
2	1 star piece missing	2 Tube contact	0.1873	90 ° corner	6	3.76 (Shade)
3	2 star piece missing	3 Tube contact	0.617	.75	4	10.39
4	2 star piece missing	3 Tube contact	.2498	90 ° corner	6	2.82 (Shade)
5	3 star piece missing	3 Tube contact	0.617	.75	4	10.39
6	3 star piece missing	3 Tube contact	0.3747	90 ° corner	6	9.23 (Approach)
7	4 star piece missing	3 Tube contact	0.617	.75	4	10.39
8	4 star piece missing	3 Tube contact	0.4996	90 ° corner	6	6.92 (Approach)

Note: Wear rates are based on gap velocity except locations where it is otherwise indicated.

Figure 1



LTR-SGDA-00-106

From: Steam Generator Design And Analysis
Win: 224-5134
Date: May 5, 2000
Subject: Recommendations Resulting From Evaluation Of PLP Signals at Indian Point Unit 2

To: R. A. Taylor
J. R. Maris

Cc: H. O. Lagally
D. D. Malinowski
S. M. Ira
G. P. Pierini

During the recent outage at Indian Point Unit 2, indications of potential loose parts (PLP) were found on a variety of tubes in all the steam generators. Table 1 contains a list of tubes with indications. An evaluation has been performed to determine the acceptability of these tubes with the PLP indications for the next fuel cycle of operation.

A review of the data indicates that two tubes have indications of loose object induced tube wear. The first tube, R31C15, located in S/G 22 has a wear signal indicating that up to 52% of the wall has been lost due to wear. This tube should be plugged with solid mechanical plugs. Tubes surrounding this tube also have indications of a loose part. However, since it can be established that the PLP signal was present for at least 1 fuel cycle on these surrounding tubes, and no additional wear was noted, these additional tubes are found to be acceptable with respect to tube wear with no additional action required on these tubes

The second tube, R30C13 located in S/G 22 was also found to have indications of an active wear site due to a loose object. The wear rate associated with this tube could potentially be very rapid due to the location near the bundle periphery. As a result, the following five S/G 22 tubes are recommended to be preventively plugged: R30C12, R30C13, R29C12, R29C13, and R29C14 (Note that R30C14 has been plugged in a previous outage.) This plugging pattern has been designed to effectively box in the tube with the active wear site.

The following table contains a summary of all tubes that are recommended to be plugged due to PLP or tube wear indications. All other tubes with PLP indications were found to be acceptable with respect to potential loose part induced tube wear.

No	Steam Generator	Tube Location	Comments
1	22	R31C15	Tube Has 52% TW Wear Indication
2	22	R30C12	Box Plug Tube (For R30C13)
3	22	R30C13	Tube Has PLP signal with <20% TW wear indication
4	22	R29C12	Box Plug Tube (For R30C13)
5	22	R29C13	Box Plug Tube (For R30C13)
6	22	R29C14	Box Plug Tube (For R30C13)

In summary, plugging of the tubes listed above with solid mechanical plugs will be sufficient to permit continued operation of the steam generators, with respect to PLP signals, for the next fuel cycle of operation.

_____
J. M. Hall
S/G Design & Analysis

Verified:_____
T. S. Magge
S/G Design & Analysis

Approved:_____
W. B. Middlebrooks, Manager
S/G Design & Analysis

Document electronically approved in EMDS2000

Table 1 - Tubes With PLP Signals at Indian Point Unit 2

No	S/G	Row	Col	Leg	2000 Data	1997 Data	Wear Data
1	21	18	7	H	PLP	PLP	No Wear Either Year
2	21	8	9	H	PLP	PLP	No Wear Either Year
3	21	9	9	H	PLP	PLP	No Wear Either Year
4	21	20	14	H	PLP	PLP	No Wear Either Year
5	21	21	14	H	PLP	PLP	No Wear Either Year
6	21	31	15	H	PLP	PLP	Pit Indication - No TW Deg.
7	21	32	17	H	PLP	PLP	No Wear Either Year
8	21	33	35	H	PLP	PLP	No Wear Either Year
9	21	3	45	C	PLP	PLP	No Wear Either Year
10	21	38	62	C	PLP	PLP	No Wear Either Year
11	21	29	79	H	PLP	PLP	No Wear Either Year
12	21	30	79	H	PLP	PLP	No Wear Either Year
13	21	8	96	C	PLP	PLP	No Wear Either Year
14	21	9	87	C	PLP	PLP	No Wear Either Year
15	21	20	88	C	PLP	PLP	No Wear Either Year
16	21	8	89	C	PLP	PLP	No Wear Either Year
1	22	28	12	H	PLP	PLP	Pit Indication - No TW Deg.
2	22	29	12	H	PLP	PLP	No Wear Either Year
3	22	30	13	H	PLP	No PLP	Wear: '97=0%, 2000= <20%
4	22	31	15	H	PLP	PLP	Wear: '97=45%, 2000= 52%
5	22	30	16	H	PLP	PLP	No Wear Either Year
6	22	31	16	H	PLP	PLP	No Wear Either Year
7	22	30	17	H	PLP	PLP	No Wear Either Year
8	22	31	17	H	No PLP	PLP	No Wear Either Year
9	22	32	17	H	PLP	No PLP	No Wear Either Year
10	22	33	17	H	PLP	PLP	No Wear Either Year
11	22	30	18	H	PLP	PLP	No Wear Either Year
12	22	31	18	H	PLP	PLP	No Wear Either Year
13	22	35	79	H	PLP	PLP	No Wear Either Year
1	23	31	15	H	PLP	PLP	Pit Indication - No TW Deg.
2	23	34	17	H	PLP	PLP	No Wear Either Year
3	23	34	18	H	PLP	PLP	No Wear Either Year
4	23	35	18	H	PLP	PLP	No Wear Either Year
5	23	22	19	H	PLP	PLP	No Wear Either Year
6	23	34	19	H	PLP	PLP	No Wear Either Year
7	23	21	20	H	PLP	PLP	No Wear Either Year
8	23	22	20	H	PLP	PLP	No Wear Either Year
9	23	27	20	H	PLP	PLP	No Wear Either Year
10	23	29	20	H	PLP	PLP	No Wear Either Year
11	23	30	20	H	PLP on RPC No bobbin PLP	No PLP	No Wear Either Year
12	23	43	33	H	PLP	PLP	No Wear Either Year
13	23	44	56	H	PLP	PLP	No Wear Either Year
14	23	44	57	H	PLP	PLP	No Wear Either Year
1	24	12	3	H	PLP	PLP	No Wear Either Year
2	24	13	3	H	PLP	PLP	No Wear Either Year
3	24	13	4	H	PLP	PLP	No Wear Either Year
4	24	31	16	C	PLP	PLP	Pit Indication - No TW Deg.
5	24	28	17	H	PLP	PLP	No Wear Either Year
6	24	43	59	C	PLP	PLP	No Wear Either Year
7	24	23	79	C	PLP	PLP	No Wear Either Year
8	24	23	80	C	PLP	No PLP	No Wear Either Year
9	24	26	80	C	PLP	PLP	No Wear Either Year
10	24	20	83	C	PLP	PLP	No Wear Either Year
11	24	7	87	C	PLP	PLP	No Wear Either Year
12	24	7	88	C	PLP	PLP	No Wear Either Year
13	24	7	91	C	PLP	PLP	No Wear Either Year

Document electronically approved in EMDS2000

ATTACHMENT TO SE # 00-406-EV
(SECL 00-058)

Peart, Claude

From:	Maris, James R.
nt:	Friday, June 16, 2000 8:42 AM
To:	Parry II, John; Peart, Claude
Cc:	McCann, John; Baumstark, James; 'Hall, Jeff'; 'Taylor, Rob'; 'Ira, Steve'; 'Laubham, Bob'
Subject:	Loose Parts Evaluation

Jack/Claude:

SECL 00-058, Steam Generator Secondary Side Foreign Objects Safety Evaluation Section 3 refers to machining a penetration through the shell and wrapper of one Steam Generator. Penetrations were actually machined in two Steam Generators.

Discussions with the Westinghouse personnel who conducted the Loose Parts Evaluation and the Safety Evaluation confirm that the unrecoverable machine chips for two penetrations vs. one penetration will not change the results of the analysis.

The SECL and supporting Loose Parts Evaluation will be revised to reflect that holes were machined in two Steam Generators.

These revised documents will be provide to Consolidated Edison early next week.

Jim Maris
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Root Cause Evaluation – Issue No. 1

Section 2 second paragraph, states that excessive noise prevented detection of R2C5 precursor signal in 1997. Weren't there other more fundamental contributing factors? For example, could not a correct calibration setup during the 1997 inspection have permitted the precursor signal in R2C5 to have been detected at that time? Could not a site-specific performance demonstration program in accordance with Electric Power Research Institute (EPRI) guidelines have alerted the licensee to the significant limitations of the generically qualified mid-range plus point for detecting primary water stress corrosion cracking (PWSCC) in the Indian Point 2 (IP2) small radius u-bends, due to large amount of noise associated with surface deposits. Could not absence of adequate noise and data quality criteria in the data analysis procedures have also been an important contributing factor?

Response:

Weren't there other more fundamental contributing factors? For example, could not a correct calibration setup during the 1997 inspection have permitted the precursor signal in R2C5 to have been detected at that time?

Con Edison has reviewed the 1997 calibration setup and compared it with alternative calibration setups, including that used in 2000. This evaluation, which included review by industry analysts, indicates that a precursor signal in tube R2C5 would most likely not have been detected in 1997, even with the setup used in 2000 for the mid-range +Point probe. The various setups do not materially improve detectability.

During the 1997 inspections, the eddy current calibration setup utilized was appropriate and in accordance with industry requirements. Industry calibration setup requirements are specified in the EPRI Eddy Current Technique Specification Sheets (ETSS). The EPRI technique for U-bend +Point inspections, ETSS-96511, specifies that the phase angle of the 40% ID flaw be set to 10 degrees; however, the EPRI PWR SG Examination Guidelines, Revision 4 standard in effect in 1997, did not have a 40% ID flaw. For this reason the 1997 IP2 technique sheet, Analyst Technique Sheet (ANTS) IP2-97-E, specified the probe motion and through-wall signals as setup references. Using that setup, the smallest ID flaw, 20% on the EPRI Guidelines, Revision 4 calibration standard, measures about 0 degrees or less. In 2000, when the same setup technique was used on a standard that had both a 20% and 40% ID notch, the 40% ID notch was at 5 to 6 degrees instead of the ETSS required 10 degrees. Common industry tolerance is within +/- three degree; however, as discussed below, the phase angle utilized did not materially affect detectability. The effect of various setups is shown in Figure 1 C-scans for R2C5 using both the 1997 setup and the 2000 setup parameters.

The current EPRI Guidelines, Revision 5 standard used at Indian Point 2 during the 2000 inspections does have a 40% ID flaw, and this signal was used to calibrate the analysis software as specified in ETSS-96511. The site specific technique sheet, ANTS IP2-00-E, specifies 15 degrees for the 40% notch, which is more conservative than the 10 degree EPRI ETSS requirement. Review of the 1997 data for R2C5 using the mid-range probe and the 2000 setup with the phase rotation set at 15 degrees, also did not show a flaw, as shown in Figure 1.

A significant advance in detecting PWSCC in the presence of high noise was the use of the 800 kHz +Point probe, which was developed for use at IP2 and applied for the first time in 2000. This probe effectively screened out signal noise during the 2000 inspection and enabled satisfactory tests to be obtained in all but five tubes of the initial group of 457 tubes for which data was inconclusive with the mid-range frequency probe. Figures 2 and 3 show 2000 test results for tube R2C4 using the 400 kHz and 800 kHz probes, respectively. This comparison illustrates the effectiveness of the 800 kHz probe in suppressing noise and allowing flaws to be more easily detected.

Could not a site-specific performance demonstration program in accordance with Electric Power Research Institute (EPRI) guidelines have alerted the licensee to the significant limitations of the generically qualified mid-range plus point for detecting primary water stress corrosion cracking (PWSCC) in the Indian Point 2 (IP2) small radius u-bends due to large amount of noise associated with surface deposits?

It is helpful to distinguish between a site specific performance demonstration (SSPD), which is the testing of analysts on site specific or similar data prior to the start of the actual data collection, and site specific qualification of eddy current techniques, which attempts to determine whether particular eddy current techniques are applicable for use at specific sites.

A site specific qualification was neither required nor performed at IP2 in 1997. An appropriate SSPD was administered to the data analysts during the both the 1997 and 2000 inspections. In 1997, the SSPD was conducted in accordance with EPRI Guidelines, Revision 4, then in effect. Pursuant to the SSPD, analysts were trained and tested on site specific data. Revision 4 of the EPRI Guidelines did not require site qualification (validation) of techniques.

The +Point U-bend probe was first used at IP2 during the 1997 outage. The +Point probe at that time was the state-of-the-art in the industry for detection of cracks in U-bends. The technique used for the inspection in 1997, was qualified per industry guidelines, and did successfully identify the first PWSCC indication in a Row 2 U-bend at IP2. This finding tends to confirm that the EPRI qualified technique and its use at IP2 in 1997, was appropriate under IP2 site specific conditions. Since EPRI guidelines were in fact observed, compliance with these guidelines did not and would not reveal significant limitations of the eddy current techniques then in use at IP2.

It is more likely that had a site specific qualification or a more refined technique been available for use at IP2 in 1997, even though not required by industry standards and to a large extent unavailable due to data limitations, that this would have revealed the inherent limitations of a mid-range +Point probe generally; not just at IP2. Experienced eddy current Level III/Qualified Data Analysts (QDA), who performed the 2000 data analysis remarked that the noise found at IP2 in 1997 and 2000 using the mid-range +Point probe was comparable to other plants with noise. Based on the preceding discussion, there was no reason to question the validity of the site qualification of the mid-range +Point probe in 1997.

In 2000, a site validation effort was developed in accordance with Revision 5 of the EPRI guidelines. A key element of the site validation is the replication of outside surface tube deposits. As set forth below, efforts to replicate the deposits in 2000 were largely unsuccessful. In parallel, a high frequency +Point probe was developed during the 2000 inspection. This probe was subsequently site qualified and utilized for low row U-bend inspections since it effectively minimized the effect of the tube deposits.

It is therefore entirely speculative as to whether additional site qualification efforts in 1997 would, in the absence of the high frequency +Point probe, have further alerted IP2 to the inherent limitations of eddy current techniques then in use.

Could not absence of adequate noise and data quality criteria in the data analysis procedures have also been an important contributing factor?

In 1997, there was no specific industry criteria addressing noise or related data quality. At that time there was no reason to suspect that noise and data quality were significant issues, since the inspection programs that were being implemented throughout the industry during that time frame were qualified and had a successful track record in detecting deleterious indications at many plants. Moreover, the technique used in the 1997 IP2 inspection did find a PWSCC U-bend indication.

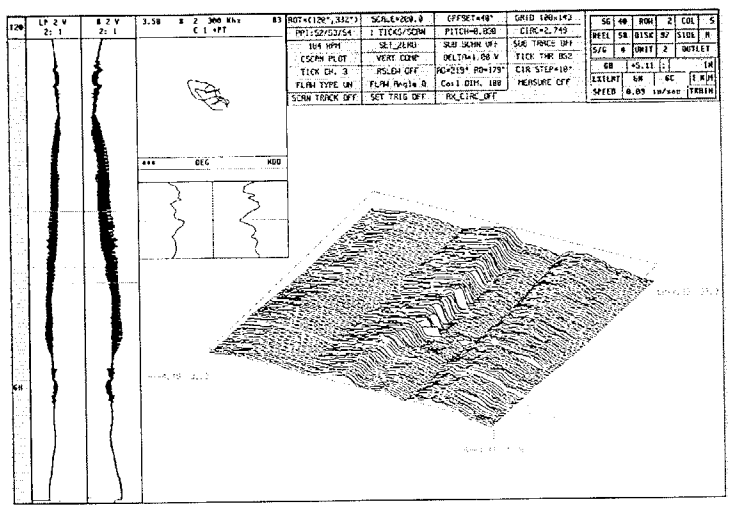
The data quality protocol in effect in the industry in 1997 relied largely on analyst judgement to determine whether noise was sufficiently extensive to mask a flaw. The response of the analysts to noise-influenced data at IP2 in 1997 was consistent with generally accepted analyst response throughout the industry at that time. In 1997, analysts generally accepted data that gave no indication of either electrical noise or signs of probe failure. For this reason there were few tubes designated as "bad data" category due to noise. This was in part attributable to the inherent limitations of eddy current techniques utilizing probes then available, which challenged the limits of flaw detectability in high noise environments. In contrast, during the 2000 IP2 inspection, sensitivity to R2C5 and newly established noise rejection criteria resulted in hundreds of tubes initially being

placed in the bad data category when examined by the medium frequency +Point probe. The new criteria proved to be an effective measure given the availability of the high frequency probe.

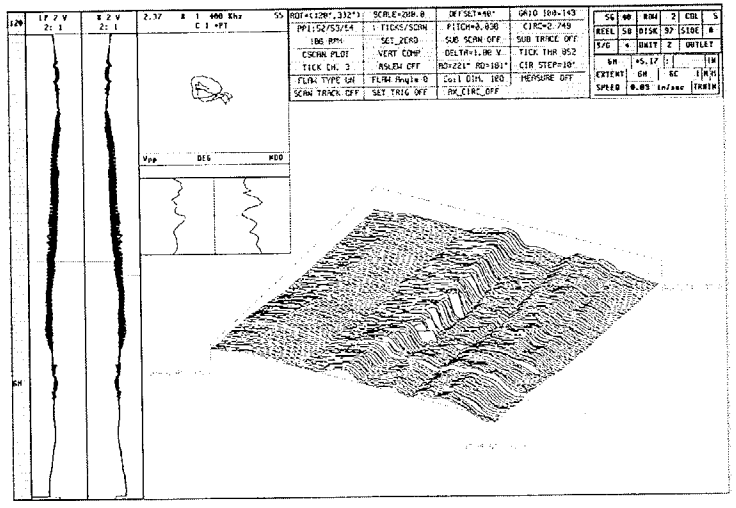
The first formal industry requirement for data quality is expected to be addressed in Revision 6 of the EPRI guidelines, which are scheduled to be issued in March 2001.

Figure 1. S/G-24 Row 2 Col 5 – 1997 Mid-Range +Point Date

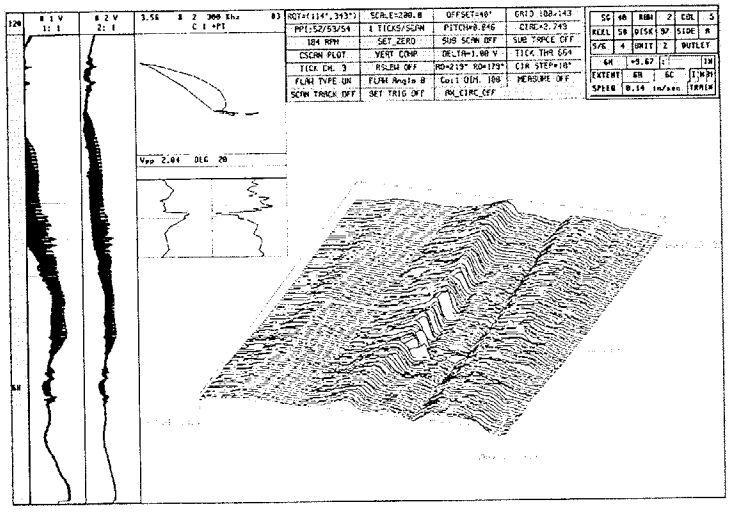
300 kHz 1997 Setup



400 kHz 1997 Setup



300 kHz 2000 Setup



400 kHz 2000 Setup

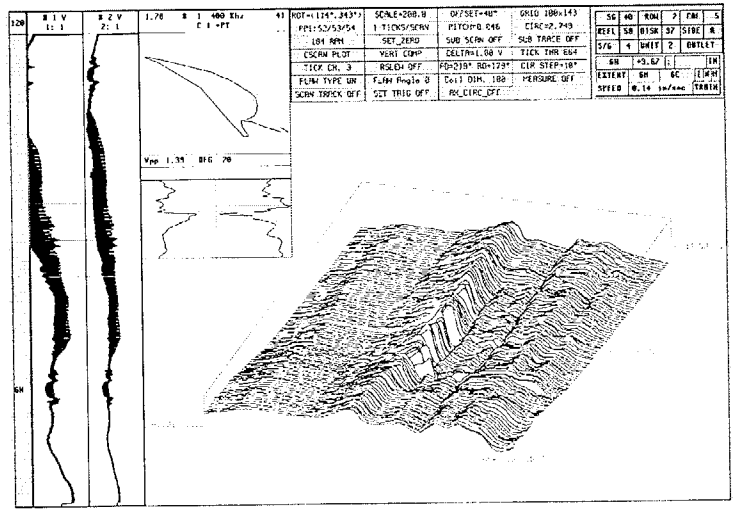


Figure 2
SG 24, R2C4 – 2000
400 kHz Midrange +Point

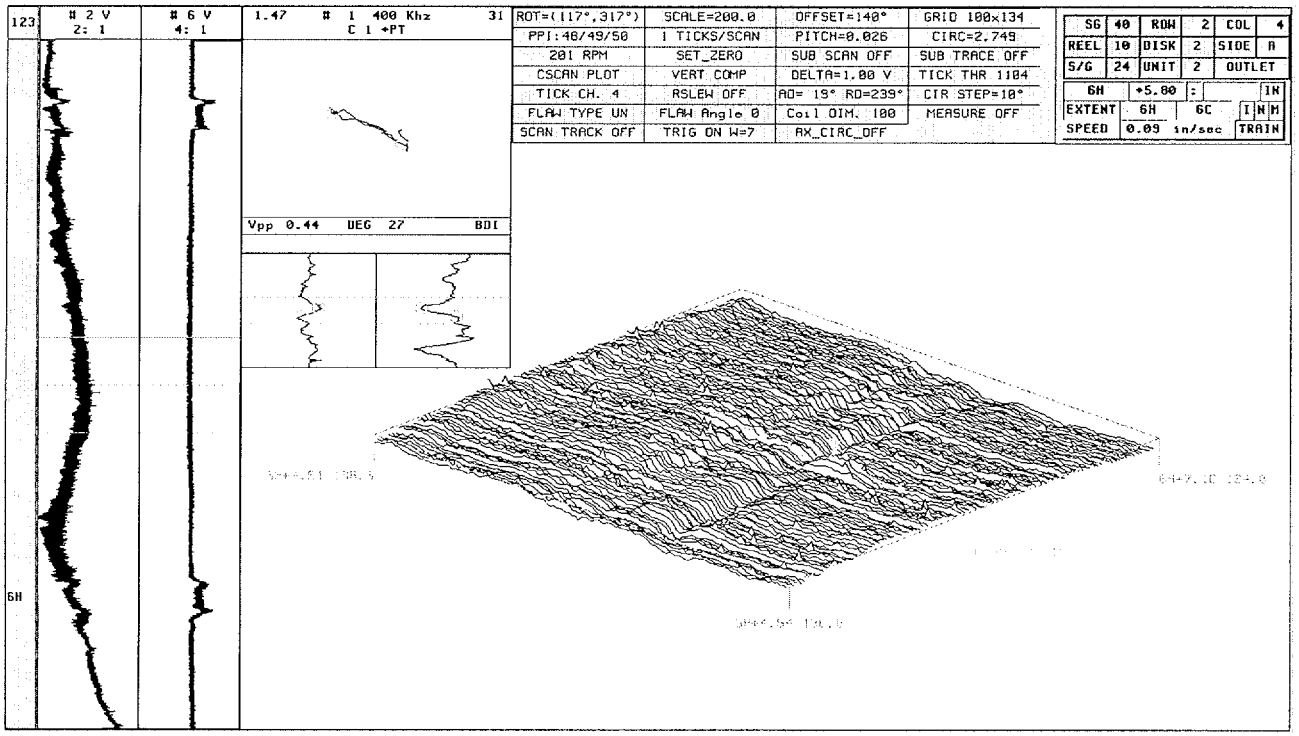
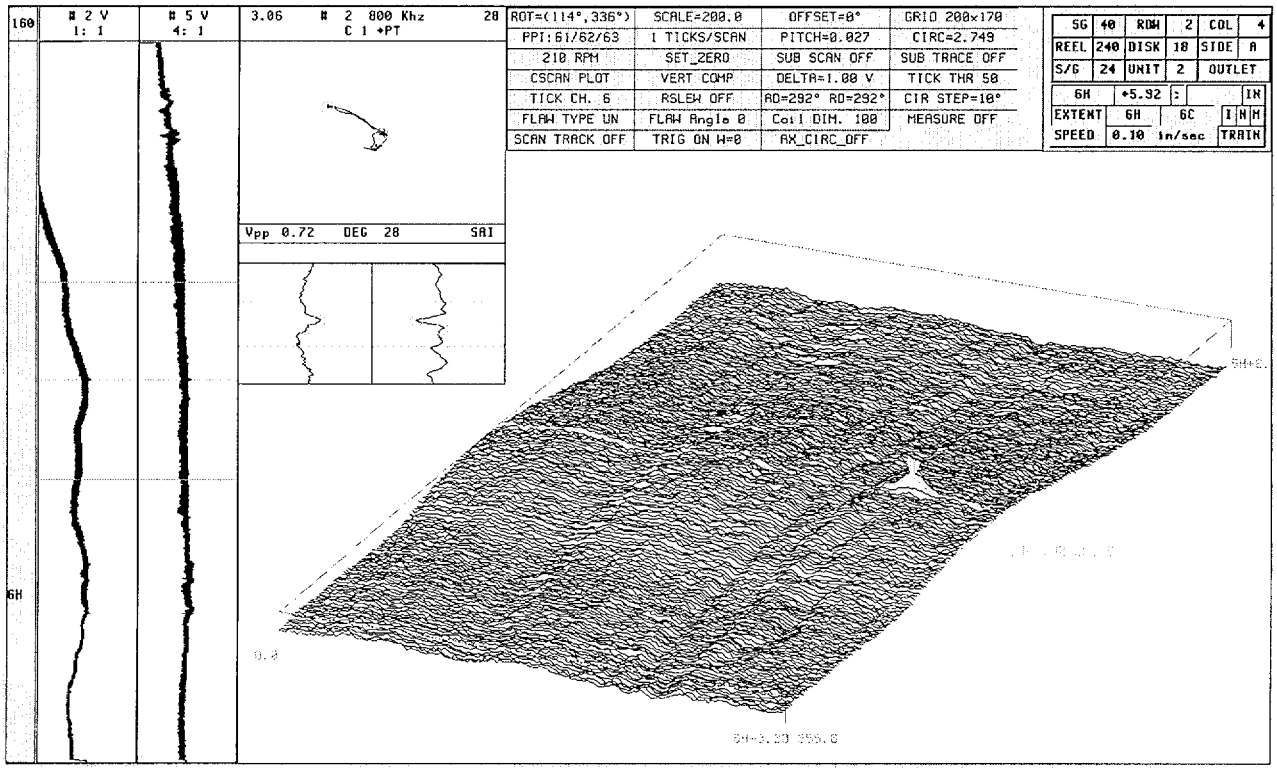


Figure 3
SG 24, R2C4 – 2000
800 kHz High Frequency +Point



Root Cause Evaluation – Issue No. 3

Section 3. "IP-2 SG Summary of Inspection History," provides a three-sentence description of the steam generators and an extremely brief description of the evolution of various degradation mechanisms in the IP2 steam generators (SGs). Additional historical details are requested as they may be considered precursors to the u-bend failure in the year 2000. For example, please discuss early (prior to the year 2000) evidence of flow slot hourglassing of the uppermost support plate in SG 23. When was this hourglassing first observed and how did the amount of hourglassing change over the years? What was the basis for not considering this hourglassing as significant (making it reportable in accordance with the technical specification)? Were there criteria in place for considering hourglassing to be "significant" and thus reportable? What was the basis for not being concerned that more significant top support plate hourglassing might be present in SG 24, and why it wasn't found necessary to install hillside ports at this time to permit inspection of the upper tube support plate (TSP) flow slots in these SGs?

Response:

Background

The Con Edison interpretation of "significant" hourglassing was readily visible hourglassing, similar to that leading to the Surry 2, row 1 u-bend failure on September 15, 1976. Also considered were other plants with severe denting, such as the Turkey Point and Surry units, and the visible hourglassing in the lower tube support plates of the IP2 steam generators.

As a result of the Surry 2 event, Con Edison presented an inspection plan to the NRC in a letter dated October 26, 1976 and made the first evaluation of the upper support plate hourglassing during an outage starting on October 29, 1976 when it installed a "hillside " port in steam generator 22. The results were reported in a November 18, 1976 letter to the NRC [1]. It concluded that "no discernible hourglassing had taken place".

Several years later, in the August 1980, EPRI held a "Workshop of Cracking of Alloy 600 U-Bend Tubes in Steam Generators". At that conference R. L. Dillon of Pacific Northwest Laboratory in his paper: "NRC Concerns About Steam Generator Tube U-Bend Failures", characterized the condition at Surry 2 as a "support plate flow slot collapse". Mr. Rothstein of Con Edison was one of the few utility members present at that conference. This information was used as an input for the IP 2 steam generator inspection program.

The May 15, 1981 NRC Safety Evaluation [2] indicated that there was no immediate concern regarding the need to perform flow slot measurements in the upper support plate and if hourglassing is <u>observed</u> during future inspections, an evaluation would be required to address the long term integrity of the small radius u-bends beyond row 1.

The NRC Safety Evaluation specifically referenced the Surry 2 event. The degree of hourglassing in Surry 2 was easily discernable by visual means and was used as the

IP2 criterion for "significant hourglassing". The as-manufactured flow slot width at Surry 2 was 2.5 inches and the flow slot was later measured to be 1.065 inch during a destructive examination of its steam generators [3].

The criterion "readily visible hourglassing" is a practical description that has been used to describe hourglassing severity. Therefore, the IP 2 criterion of "no visible hourglassing" would insure that IP 2 identifies all degraded conditions prior to reaching the Surry 2 level of hourglassing.

When was this hourglassing first observed and how did the amount of hourglassing change over the years?

Prior to, and including, the 2000 inspection (EOC-14), hourglassing has never been visually observed in the sixth tube support plate. The condition of the sixth tube support plate was initially evaluated in SG 22 during steam generator inspection outages starting in 1976, when a hillside port was installed in SG 22. In 1978, a similar "hillside" inspection port was installed in the transition cone just above the sixth support plate of SG 23. These inspection ports were installed to monitor the condition of tubing at support plate intersections to investigate denting and hourglassing. Additional inspection ports were installed in SG24 and SG21 during EOC 14 .

The examinations for hourglassing were made using fiber optics by either 35mm photography or video. The results of these examinations showed that no visible hourglassing was occurring to the flow slots in the sixth support plate. In fact, no visually "significant" hourglassing has been observed during any inspection, including the most recent one in 2000. This inspection has been performed fourteen times over approximately 25 years. The results have been documented after each steam generator inspection and submitted to the NRC.

During the initial analysis in 2000 (EOC 14) of the video of the sixth support plate in SG23, there was discussion whether the video evidenced slight hourglassing in flow slot N-1. The video images were not conclusive. The effect of flow slot hourglassing was analytically evaluated by Altran and presented in the Condition Monitoring and Operational Assessment [4]. Furthermore, as indicated below in the answer to item 4, measurements of the hourglassing at one of the flow slots in the upper support plate of SG24, during the 2000 inspection, identified a maximum displacement of 0.47 inch for the row 1 U-bend tube legs.

What was the basis for not considering this hourglassing as significant (making it reportable in accordance with the technical specification)?

As described above, the Con Edison basis for "significant" hourglassing was readily visible hourglassing, similar to that leading to the Surry 2, row 1 u-bend failure in 1976, and to other early units with severe denting such as the Turkey Point and Salem units. There was no discernable hourglassing noted in the Indian Point 2 steam generators. Thus, there was no basis to report any hourglassing and IP2 has abided by plant Technical Specifications.

Were there criteria in place for considering hourglassing to be "significant" and thus reportable?

Although there were no written criteria in place for defining "significant", in the visual inspections performed since 1976, "significant" was understood to be any visually observable bowing of the edge of the flow slot on either the hot or cold leg side. This concept was first established in the November 18, 1976, Con Edison submittal to the NRC [1] that discussed the inspection performed on the Indian Point 2 steam generators as a result of the Surry 2 tube failure. The fact that no "significant" hourglassing was observed has been reported to the NRC in the Steam Generator Inservice Examination Refueling Outage reports.

What was the basis for not being concerned that more significant top support plate hourglassing might be present in SG 24 and why it wasn't found necessary to install hillside ports at this time to permit inspection of the upper tube support plate (TSP) flow slots in these SGs.

Since hourglassing at the sixth support plate was not observed during any inspection in SG22 and SG23, there was no reason to suspect that the condition of the sixth support plate in SG21 and SG24 would be any different. Therefore, the inspection scope was not expanded. The basic assumption was that the four steam generators behave similarly, since their manufacture and operating conditions are similar, if not identical. Since hourglassing of the upper support plates had not been observed in two of the four steam generators, the other two were expected to respond similarly. Furthermore, denting has been essentially arrested for the past 10 years and no significant progression of hourglassing has been seen in flow slots of lower support plates. Therefore, an increase in hourglassing in the upper support plate was not expected and the need for additional inspection ports was not considered necessary.

As a result of the leak in tube Row 2, Column 5 of SG 24, penetrations were installed above the top support plate to provide access for inspection tooling in SG21 and 24. Physical measurements were made in flow slot N1 in SG24 through the new penetration. A maximum displacement of 0.47 inch of the row 1 U-bend tube legs adjacent to the sixth support plate was measured at the center of the flow slot. This displacement was the result of hourglassing of the flow slot that was not visibly discernable. Following this measurement, a second review was made of the video recordings of the sixth support plate made in 2000 for all four steam generators and the 1997 recordings made in SG22 and SG23. No observable hourglassing was evident. In addition to hourglassing, the slots were examined for cracking – no cracking was seen in any of the upper support plate flow slots.

Additional Observations

Recent analyses have been performed to evaluate the effect of the measured 0.47 inch displacement of the row 1 U-bend tube legs in SG24 [4]. Although the measured hourglassing was too small to be visually observed, the analysis results indicate that this leg displacement could have contributed to the leak event in the row 2 tube in SG24. To minimize the potential for re-occurrence of another leak, all the row 2 tubes have been plugged.

Additional analyses were also performed on the row 3 tubes to assess their relative susceptibility to PWSCC as compared to that of row 2 tubes. As indicated in the Condition Monitoring and Operational Assessment report [4], it was concluded that it will take approximately 2.5 to 4 times longer for a longitudinal PWSCC indication at the extrados of the apex of a row 3 tube to develop than it would at the same location in a row 2 tube. This is due to the lower inside diameter hoop stress value in the row 3 tube than in the row 2 tube at this location resulting from the lateral displacement of the U-bend legs. This is consistent with the fact that no indications were found in the row 3 U-bend tubes. The CMOA [4] accounts for these analyses and provides the justification for a proposed operating cycle. Based on the above, it is concluded that the level of measured hourglassing will not pose a leakage concern during the upcoming operating cycle.

References:

1. Letter from Con Edison to the NRC, dated November 18, 1976.
2. NRC letter to Con Edison, dated May 15, 1981,.
3. Combustion Engineering, "Virginia Electric Power Company, Surry Unit II, Steam Generator Postmortem Secondary Side Visual Inspection," CENC No. 1422, dated March 1980
4. Westinghouse Electric Company, "Indian Point 2, U-Bend PWSCC Cycle 14 Condition Monitoring and Cycle 15 Operational Assessment," SG-00-05-008, dated May 2000.

Root Cause Evaluation – Issue No. 8

Section 5 states that the 1997 precursor signal for R2C5 in SG24 was not permitted to be seen because of the noise levels which where present. Why was this noise considered acceptable? Why weren't steps taken to reduce noise?

Response:

Why was this noise considered acceptable?

The level of noise in R2C5 was not considered to be excessive in comparison with noise levels encountered in SG tubing at other plants according to analysts who reviewed the data. In the absence of specific noise level requirements in Revision 4 of the EPRI Guidelines (or any other document), the disposition for the noise level observed on R2C5 was left to the discretion of the data analysts. Based on the information available at the time, there was no reason to suspect that the background noise levels encountered would have a significant effect on the level of detectability of the eddy current technique. Additionally, the technique used in 1997 did find a flaw in SG24 R2C67, which was plugged, suggesting that the capability to discern a flaw was adequate.

Why weren't steps taken to reduce noise?

The background noise associated with the eddy current data was determined to be not unusual compared to noise levels observed at other plants. Also, the technique did detect the first PWSCC indication in a Row 2 U-bend at Indian Point 2 in 1997. In the absence of the high frequency probe, there were also no feasible alternatives available at that time to improve signal quality or reduce U-bend noise levels. As noted in the response to Question 1 on the Root Cause Report, small variation of the mid-frequency probe phase angle does not improve R2C5 detectability.

Root Cause Evaluation – Issue No. 9

Section 5 states that as a result of the tube failure investigation, a number of changes were incorporated into the analysis process. It is further stated that more stringent criteria were established for data quality. This implies that data quality criteria were employed during previous inspections. Please describe in detail the data quality criteria used previously. Were these documented? Were they for example, in the data analysis procedures? Were they addressed in the analyst training process? Please describe in detail the current data quality requirements and where they are documented. It is also stated in Section 5 that the analysis setup process was "changed" to achieve better resolution of the 20% ID calibration notch. Was the 1997 setup a correct setup in accordance with standard industry practice?

Response:

Please describe in detail the data quality criteria used previously.

Prior to 2000, as a matter of industry practice, data quality determinations were a function of analyst training, experience and best judgement; and were largely influenced by whether noise could potentially be suppressed or whether re-testing would provide enhanced data quality. In general, noise comes from two sources, background and electrical. The components of background noise are geometry, surface conditions or deposits on both the inside and outside of the tube as a result of manufacturing or permeability changes in the tube material, or from service-induced deposits on the tube. Electrical noise is intrinsic to the probe and cables and can be due to electronic interference such as crosstalking between adjacent conductors, and ground loops.

These two distinct types of noise are readily distinguishable from each other. Probe noise can be suppressed by changing components or eliminating sources of interference. Experience has shown that background noise is seldom resolved by retesting tubes in a high background noise environment. Therefore, if analysts judge that data is readable in a high background environment, such data is accepted. Alternately, analysts will readily reject data that has excessive electrical noise. R2C5 had high background noise, which was determined to be not unusual compared to noise observed at other plants. As noted in the response to Question 8B to the Root Cause Report, in 1997 there were no feasible alternatives available to improve data quality.

Were these documented?

No written noise criteria exist in the documentation from the 1997 inspection.

There are several instances where data quality is addressed in industry documents. The requirements and actions that they specify are part of the general awareness level of experienced analysts. Data analysts must determine acceptable data

quality on virtually every calibration group that they analyze. There are EPRI requirements for data quality concerning the Appendix H techniques for sample rate, pull speed and frequency allocation specifically and within EPRI Revision 5 there are requirements bobbin and Rotating Probe lower limit sample rates.

There are procedures in use at alternating plugging criteria plants such as Farley that quantify probe wear through measuring the ambient probe motion noise and comparing this to limits based on the calibration standard. These procedures are used to determine when a probe should be changed. There are plants without APC such as Wolf Creek where a variant of this procedure is employed. There is considerable interest and concern within the industry regarding noise especially as it relates to automated data analysis systems.

There are references in some other guidelines that suggest data rejection based on data dropout, electrical noise and other systemic electric/mechanical/interference types of noise. Permeability variations (PVN) are a source of noise in that they may occlude a flaw, and there are requirements at some plants such as Wolf Creek for actions based on the presence of PVN. But one thing that none of these standards, requirements, or procedures accomplish is to set forth a definitive standard for data rejection based on background noise. There is an EPRI noise standard under development that will incorporate the R2C5 leaker experience into part of its requirements, but this standard is scheduled for release in 2001 and was, of course, unavailable in 1997.

Were they for example, in the data analysis procedures; were they addressed in the analyst training process?

No, they were not in the data analysis procedures for the 1997 inspection. Data quality determinations were made in 1997 by the analysts utilizing their best judgement, based on their experience in interpreting data.

The "Training and Testing of Analysts for Indian Point Unit 2 Spring 2000 Outage" documents some of the analysts training requirements. Within that document the "IP2 Spring 2000 Outage U-bend +Point Analysis Training" (Attachments A) and Supplemental Training - U-Bend Rotating Probe Data Quality (Attachment B) document the data quality requirements.

It is also stated in Section 5 that the analysis setup process was "changed" to achieve better resolution of the 20% ID calibration notch. Was the 1997 setup a correct setup in accordance with standard industry practice?

See response to NRC Issue 1 to the Root Cause Evaluation. The 1997 Indian Point 2 analysis technique set-up was within acceptable industry practice, in accordance with the site analyst technique sheet and acquisition technique sheet. The minor difference between the phase angles that were utilized in 1997 and

2000, for the mid-frequency probe were determined to have no material effect on the ability to detect the flaw in R2C5.

Root Cause Evaluation – Issue No.10

Describe the Appendix H qualification of the high frequency plus point for small radius u-bend inspections. What number of samples were included in the data set and what flaw sizes were represented? Did the data set include representative copper and magnetite deposits and ovality? What kind of flaws were included in the data set (e.g. electrodischarge machining (EDM) notches, intergranular stress-corrosion cracking (IGSCC)? Did these flaws produce signals and exhibit signal to noise comparable to the situation at IP2? What were the results? What was the indicated probability of detection as a function of depth?

Response:

Describe the Appendix H qualification of the high frequency plus point for small radius u-bend inspections. What number of samples were included in the data set and what flaw sizes were represented?

The high frequency +Point probe that was used in the 2000 inspection was qualified in accordance with Rev. 5 of the Guidelines. EPRI ETSS-99997.2 was prepared for an 800KHz test frequency.

The qualification sample set consisted of 26 samples. This sample set included two low row u-bends with PWSCC that were removed from another plant and 24 EDM notches. The indications on the pulled tube bends were 40% deep and the notches ranged in depth from 27% to 100% through-wall. All of the 26 ID flaws in the sample set were successfully detected, resulting in a 91.5% POD at a 90% CL. It should be noted that this is the same qualification data set that was used by the industry for the mid-range +Point probe qualification.

Did the data set include representative copper and magnetite deposits and ovality?

The effects of copper, magnetite and ovality were considered to the extent that OD deposits and ovality could be replicated in the qualification set. A copper deposit simulation with copper foil wrapped around one of the bend samples in the data set did not have any effect on flaw detectability. Studies were conducted to determine the chemical composition of the IP2 sludge. A chemical simulation of the sludge was prepared and efforts were undertaken to "baked" the sludge simulation onto a sample of Alloy 600 tubing. This sample was evaluated for eddy current response during the 2000 inspection. The simulated sludge was not able to reproduce the effect of the tube deposits found on the steam generator tubes. Additional work is in-progress to simulate the actual field tube deposits. Using U-bends removed from SGs from another plant assessed the effects of ovality. These samples were mostly Row1 tubes with a smaller bend radius, which should overstate ovality effects of row 2 tubes.

What kind of flaws were included in the data set (e.g. electrodischarge machining (EDM) notches, intergranular stress-corrosion cracking (IGSCC)?

Among the qualification sample set of 26 samples, there were two pulled low row U-bends with PWSCC from another plant and 24 EDM notches. The indications on the bends were approximately 40% deep and the notches ranged in depth from 27% to 100% through-wall. As indicated above, all 26 ID flaws in the sample set were detected.

Did these flaws produce signals and exhibit signal to noise comparable to the situation at IP2?

Flaw signal detectability with the high frequency probe was comparable between the qualification sample set and the actual tubes; however, a few tubes exhibited significantly more noise than the sample set, and these tubes were preventatively plugged during the 2000 inspection.

In actual field use of the high frequency +Point probe at 800KHz, the probe provided the most significant improvement to the POD when compared to the mid-range +Point probe. Using the mid-range +Point probe, it was determined that 53% (457 tubes) of Row 2, 3, and 4 tubes in the four steam generators had "bad data". "Bad data" may be reported for a variety of reasons including noise, rotational difficulties and electrical spiking, but most of the "bad data" tubes were due to high background noise. The high frequency probe was used to test all tubes in Rows 2 and 3 tubes, and all tubes designated as "bad data" in Row 4. The high frequency probe resolved the issue of noise and bad data with the mid-range probe on 452 of these tubes. Five tubes that were still reported as "bad data" were plugged. The mechanical aspects of the high frequency probe's performance due to fabrication differences, along with the use of the higher frequency, improved data quality for the IP2 u-bends. The high frequency probe confirmed the 3 indications found in the low row u-bends by the mid-range probe and also found 4 additional indications in tubes reported to have "bad data" by the mid-range probe.

What was the indicated probability of detection as a function of depth?

The 800 kHz probe provided a significant improvement in detection of PWSCC-type indications in low row U-bends. As noted above, all of the 26 ID flaws in the sample set were detected, resulting in a detected fraction of 1 with a POD of 91.5% at a 90% confidence level. This POD is based on the entire population of the qualification data set. The qualification does not provide a POD as function of depth.

Root Cause Evaluation – Issue No. 11

Section 6 [of the root cause report] states that only 22 tubes have been plugged due to tube restrictions since 1989, 20 of these were plugged in 1997 due to restrictions at, or above, TSP 6. The July 29, 1997 inspection report states that virtually all these restrictions involve restrictions in the u-bend. These restrictions included tubes in rows 2 through 4. Do these restrictions imply abnormal ovality in these u-bends? Describe your actions to characterize the current degree of ovalization and which tubes are affected. Is this ovality related to abnormal u-bend fabrication effects such as occurred at Doel Nuclear Plant and which led to a tube rupture at that plant? Might this be the root causal mechanism for the u-bend cracks at IP2? If not, why not? Alternatively, might this ovality have been induced by flow slot hourglassing?

Response:

Do these restrictions imply abnormal ovality in these u-bends?

No. The twenty "restrictions" identified in 1997 were re-evaluated with respect to the location of the restrictions and the reason for the restrictions. Nineteen of the twenty tubes were identified as being restricted to a 610 mil bobbin probe at the hot and/or cold leg of the sixth tube support plate (TSP 6). The nineteen tubes were comprised of fifteen tubes in row 2, three tubes in row 3, and one tube in row 4. Three tubes of the nineteen, row 2 column 62 and row 2 column 63 in SG22, and row 3 column 31 in SG23 were at hard spot locations, which are not subject to hourglassing and possible u-bend ovalization. The twentieth tube, which was row 29 column 15 in SG24, is not a low radius u-bend tube.

The identification of restriction in 1997, is not an indicator of abnormal ovality in the low row u-bends. Details of the examination data showed restrictions to the 610 mil bobbin probes at TSP 6; that is, the probes were not able to get to the bends. The terminology used in 1997, that stated u-bend restrictions, was used in a generic sense to describe that the restrictions to the probes were at the uppermost region of the steam generators.

The 2000 restriction data showed that four tubes were restricted to the 610 mil bobbin probe. None of these tubes were restricted at TSP 6 or in the u-bend. Rather these tubes were restricted at the third or fourth TSPs. These tubes were plugged as required by the IP2 Technical Specifications.

Describe your actions to characterize the current degree of ovalization and which tubes are affected.

During the 2000 inspection only four tubes were identified as showing restriction to a 0.610 mil probe. Two of these restrictions were at TSP 4 and two were at TSP 3. The 2000 inspection results do not show any indication of restrictions in the U-bend regions.

There is no evidence of any abnormal tube ovality from either the manufacturing of the tubes or their in-service conditions. A combined laboratory and analytical effort has been undertaken to assess the ovality and the effect of the ovality. Samples of Inconel 600 u-bend tubes were located in the EPRI project archives and made available to Con Edison

for laboratory testing. These samples consisted of three Row 2 and three Row 3 tubes. Five of the tubes were bent without the use of an internal mandrel (Reference S3.Q11-1).

Measurements of the as-manufactured ovality of the tubes bent without a mandrel, determined that ovality ranged from 4.99% to 5.65% at the apex of the u-bend with an average of 5.24% for Row 2 tubes and 5.31% for Row 3 tubes. The ovality at the apex of the u-bend for a single Row 2 tube that was identified to have likely been bent with a mandrel, was measured at 2.28%. The manufacturing limit for all these tubes was 10%.

One Row 2 u-bend and one Row 3 u-bend were tested by applying an incrementally increasing deflection of the u-bend legs towards each other to simulate hourglassing. Ovalization of the cross section was monitored during the leg closure. To more closely simulate operating pressure, the tubes were pressurized at room temperature to 1600 psi. before bending commenced. Leg closure up to a maximum deflection of 0.55 inch for the Row 2 tube and 0.75 inch for the Row 3 tube was applied. At the 0.5 inch deflection level, which approximated the hourglassing measured in SG24, the ovality at the apex of the row 2 tube increased from approximately 2.5% to 7.0%; for the row 3 tube the ovality increased from approximately 5.5% to 7.0%.

The as-manufactured measurements and testing indicate that the ovality from the original manufacturing process and from the hourglassing deformation of the top support plate is limited. Laboratory simulation of hourglassing corresponding to the field measurements resulted in approximately 7% ovalization. This value is lower than the permissible limit for the shop fabricated bends, which is 10% ovalization. (Reference S3.Q11-1).

Is this ovality related to abnormal u-bend fabrication effects such as occurred at Doel Nuclear Plant and which led to a tube rupture at that plant?

No. Evidence indicates that the existing ovality of the tubes at IP2 is normal. The manufacturing process used and the in-service hourglassing are not expected to have resulted in ovality beyond the manufacturing limit.

The in-service ovality at Doel 2 was estimated to be between 10% and 17%, depending on the measurement and calculation method used (Reference S3.Q11-2). Ovality measurements of the row 1 tubes at Doel 2, other than the one that failed, yielded a maximum ovality greater than 12.8%. The Doel 2 steam generators were manufactured by Cockerill and the tubes by Mannesmann. These firms did not manufacture the tubes for the IP2 units.

As indicated above, neither the analytical nor the experimental investigations conducted indicate excessive ovality in the low row tubes at IP2.

Might this be the root causal mechanism for the u-bend cracks at IP2? If not, why not? Alternatively, might this ovality have been induced by flow slot hourglassing?

Ovality has been considered as a potential contributor in the root cause investigations of the u-bend crack at IP2. Analytical and experimental investigations indicate that ovality is not a contributor to PWSCC susceptibility in the small radius u-bends at IP2. As-manufactured ovality in the low radius u-bends will reduce the hoop stress induced at the

ID of the tube at the apex extrados as a tube is pressurized (ReferenceS3.Q11-1). Tensile ID stresses required to cause PWSCC are not predicted to occur due to the IP2 as-manufactured ovality. Rather the deflection of the u-bend legs from the hourglassing of the flow slots results in a tensile hoop stress on the ID of the tube at the apex extrados. This contributed to PWSCC in the row 2 tube as discussed in the Root Cause Report.

References

S3.Q11-1 Westinghouse Electric Company, "Indian Point 2, U-Bend PWSCC Cycle 14 Condition Monitoring and Cycle 15 Operational Assessment," SG-00-05-008, May 2000.

S3.Q11-2 Electric Power Research Institute, "U-Bend Cracking at Doel 2," by D. P. Dobbeni, J. R. Stubbe-Leroy and C. E. VanMelsen, Workshop Proceedings: U-Bend Tube Cracking in Steam Generators, EPRI WS-80-138, June 1981.

Root Cause Evaluation – Issue No. 13

Figure 5 is illegible. Please show each of the pictures on a full page. Pictures should indicate previously plugged tubes in rows 1 through 4 and at wedge supports. Also include pictures for inspection previous to 1995. Provide similar pictures for SG 22

Response:

Tube Restrictions

Pictures or tube maps are provided for the following conditions:

SG24

Figure 1.	Restriction to 620 +Point Probe, 2000 Data (23 tubes)
Figure 2.	Restriction to 640 Cecco Probe, 2000 Data (25 tubes)
Figure 3.	Restriction to 610 +Point Probe, 1997 Data (7 tubes)
Figure 4.	Restriction to 620 Bobbin Probe, 1997 Data ((27 tubes)
Figure 5.	Restriction to 640 Cecco Probe, 1997 Data(11 tubes)

SG22

Figure 6.	Restriction to 620 +Point Probe, 2000 Data (3 tubes)
Figure 7.	Restriction to 640 Cecco Probe, 2000 Data (91 tubes)
Figure 8.	Restriction to 620 Bobbin Probe,1997 Data (33 tubes)
Figure 9.	Restriction to 640 Cecco Probe, 1997 Data (Zero tubes)
Figure 10	Comparison of Tubes Plugged for 0.610 Restrictions 1979-2000

There are no similar restriction maps available for the inspections prior to 1997, however Figure 10 shows the number of tubes plugged for 610 mil bobbin probe restrictions as a percentage of the number of tubes inspected each outage since 1975. Tubes that are restricted to the 610 mil bobbing probe were plugged in accordance with the IP2 Technical Specification.

Tube restriction data has been tracked since 1978 to assess the progression of tube/tube support plate denting.

An investigation of the data acquisition process indicates the tube restriction data, other than for the 610 mil bobbin probe, is not a consistently reliable measure of actual tube denting at tube support plate intersections. To further understand the significance of the restriction data plotted in Figures 1 through 10 a direct comparison was made for tube/tube support plate intersection where restriction data was available for identical intersections in both 1997 and 2000. The results of the comparisons for each steam generator are included in Tables 1 through 4. In general, this data shows that

approximately 50% - 70% of the intersection showed no change in dent size, 7% - 18% showed continued dent progression, and 16% - 32% indicated a reverse trend. Since denting is not reversible this latter information is an indication of probe restriction variability and reporting inconsistency as described below. Data shows that eddy current probe restriction data (other than the 610 mil bobbin) is qualitative and subject to error and can be easily misinterpreted. It is noteworthy that in SG22 on the cold leg of the sixth tube support plate a greater number of locations (18) became smaller compared to 5 that showed no change. The data in Table 2 is consistent with the trend in Figure 7 which showed 90 new cold leg restrictions. This trend does not hold true for the hot leg, however, where Table 2 showed only 2 intersections became more dented whereas Figure 7 indicates 40 new restrictions.

Tube inspections conducted in 1997 and 2000 did not attempt to quantify actual restriction or dent diameters at tube/tube support plate intersection other than the 610 mil bobbin probe which is required by Technical Specification. Rather, the purpose of the inspection was to collect eddy current data over the length of steam generator tubing being inspected. The inspection starts by testing with a .700" diameter probe. If the data acquisition operator encounters resistance to the probe travel, he stops and messages "the tube is restricted @ X location". The operator does not attempt to force the probe in order to minimize damage to it. Data management then schedules the tube to be inspected with successively smaller diameter probes starting with 680 mil, then 640 mil and finally 610 mil probes. When the diameter reduction finally reaches 610 mil, the purpose of the inspection expands to include gauging the dent at the plate intersection. The operators are intentionally and actively attempting to pass the 610 mil probe as the inability to do so requires tube plugging. Therefore, the statistical significance is questionable for diameters above 610 mil. Intersections that pass a 610 mil diameter probe are subsequently tested with a "DIP" gimbaled +point probe or 620 mil diameter probe.

Restriction to the movement of an eddy current inspection probe can be from a variety of causes based on the overall geometry, construction and stiffness of the probe assembly rather than the actual probe diameter. Examples are:

- Rotating coil probes may be used with a motor that has a larger diameter than the test coil, and the motor may be obstructed rather than the probe head, though the effect is the same.
- Rotating probe can sometime pass a restricted location as the probe is pushed into the tube indicating that the restriction has a larger diameter than the nominal probe size. However when the probe is spun and pulled through the tube to gather data the probe may become restricted or stop rotating.
- The Cecco 5 probe is an assembly that includes both the Cecco and a bobbin coil. This assembly tends to be stiff and does not easily pass some tube sheet dent restriction even though the actual restriction diameter is greater than the nominal probe diameter. These probes are easily restricted as they are pushed though the 6th TSP and into the u-bend even though the tube diameter is greater than the nominal probe size.

- The tube may be bowed rather than dented around deformed flow slots thus making it more likely that the flexible probe cable will buckle and result in difficulty to push through the tube.
- During the current, year 2000 inspection outage a new conduit was used to introduced to eddy current probe into the steam generator and the tube to be inspected. This conduit was found to have a higher resistance to the motion of the probe than that used in previous outages and likely resulted in a correspondingly higher number of restriction calls.

Dent Voltages

In addition to comparing probe restriction data from 1997 to 2000 an effort was made to develop trends on the rate of denting by looking at the eddy current dent voltages from dented intersections. The eddy current dent voltage response is a function dent geometry as well as the extent of the dent. For this reason, the dent voltage does not conform linearly with the extent of denting. Rather dent voltage may vary significantly from one tube to another because dent shape rather than dent size. A comparison of the voltage difference for the same tube/tube support plate intersection from one outage to the next is considered to provide a qualitative indication of denting progression.

The voltage difference data from 1997 to 2000, averaged by tube row, for tube support plates 5 and 6 is plotted in Figures 11 through 18 for each steam generator. These plots show a difference in average dent voltage from approximately –10 to + 10 volts. (Actual measured dent voltages ranged from 0-100 volts.) Since tube cannot become less dented the dent voltages were averaged by hot and cold leg for the 5th and 6th tube support plate for each steam generator to determine whether any trend in the voltage differences could be determined. The result are provided in Table 5. Based on this data it would appear that, although essentially arrested, denting may be progressing at a very slow rate.

Based on the review of the various tube/tube support plate restriction/dent voltage data the following observation can be made:

1. There is no indication of significant denting progression. Denting has been essentially arrested although some modest dent progression may be occurring at some intersections.
    - The number of tubes plugged as a percentage of those inspected has decreased from 2.5% – 10% in 1984 to <0.1% in 2000 (Figure 10).
    - Most of the location were a direct comparison between 1997 and 2000 could be made showed no change in restriction size (Tables 1-4).
    - The rate of flow slot closure has leveled off since 1985 [1]
2. Tubes that are restricted to eddy current probes tend to be centered around the flow slots (Figures 1-9). The restriction to the probes at these locations may be a combined function of both tube denting and tube bowing and thus not a reliable measure of dent size.

Reference:

1. Westinghouse Electric Company, "Indian Point 2, U-Bend PWSCC Cycle 14 Condition Monitoring and Cycle 15 Operational Assessment," SG-00-05-008, May 2000, Appendix A- Secondary Side Condition Monitoring and Operational Assessment.

Table 1 Steam Generator 21 - Change in Restriction Size

Location	Restriction Size		
TSP	Smaller	No Change	Larger
6H	1	14	1
6C	0	8	0
5H	0	9	5
5C	0	4	2
4H	1	3	2
4C	0	9	1
3H	1	11	2
3C	1	7	3
2H	2	14	5
2C	1	14	5
1H	4	13	6
1C	0	5	0
Total	11	111	32
%	7.14%	72.08%	20.78%

Table 2 Steam Generator 22 - Change in Restriction Size

Location	Restriction Size		
TSP	Smaller	No Change	Larger
6H	2	1	6
6C	18	5	4
5H	0	0	0
5C	0	0	0
4H	1	8	16
4C	1	17	3
3H	6	4	5
3C	0	6	8
2H	1	11	3
2C	0	5	1
1H	11	48	25
1C	0	4	0
Total	40	109	71
%	18.18%	49.55%	32.27%

Table 3 Steam Generator 23 - Change in Restriction Size

Location	Restriction Size		
TSP	Smaller	No Change	Larger
6H	6	8	4
6C	11	17	5
5H	0	7	0
5C	1	7	3
4H	2	2	2
4C	1	11	2
3H	0	17	0
3C	2	16	8
2H	2	14	1
2C	0	13	2
1H	4	20	4
1C	0	14	2
Total	29	146	33
%	13.94%	70.19%	15.87%

Table 4 Steam Generator 24 - Change in Restriction Size

Location	Restriction Size		
TSP	Smaller	No Change	Larger
6H	12	36	6
6C	1	17	2
5H	1	26	2
5C	1	10	3
4H	6	21	2
4C	0	1	1
3H	1	15	1
3C	1	6	8
2H	7	53	10
2C	0	2	8
1H	0	0	1
1C	0	0	0
Total	30	187	44
%	11.49%	71.65%	16.86%

Table 5 Average Change in Dent Voltage

	SG21		SG22		SG23		SG24	
	TSP 5	TSP 6	TSP 5	TSP 6	TSP 5	TSP 6	TSP 5	TSP 6
Hot Leg	+0.48	+0.93	+0.48	+0.93	+0.50	+1.96	-1.65	+0.74
Cold Leg	+1.13	+1.15	+1.13	+1.15	+1.47	+1.13	+0.09	+1.57
Both Legs	+0.80	+1.04	+0.80	+1.04	+0.99	+1.55	-0.87	+1.16

Figure 1 Indian Point 2 S/G 4 2000
Restrictions 620 +Point Probe at TSP 6

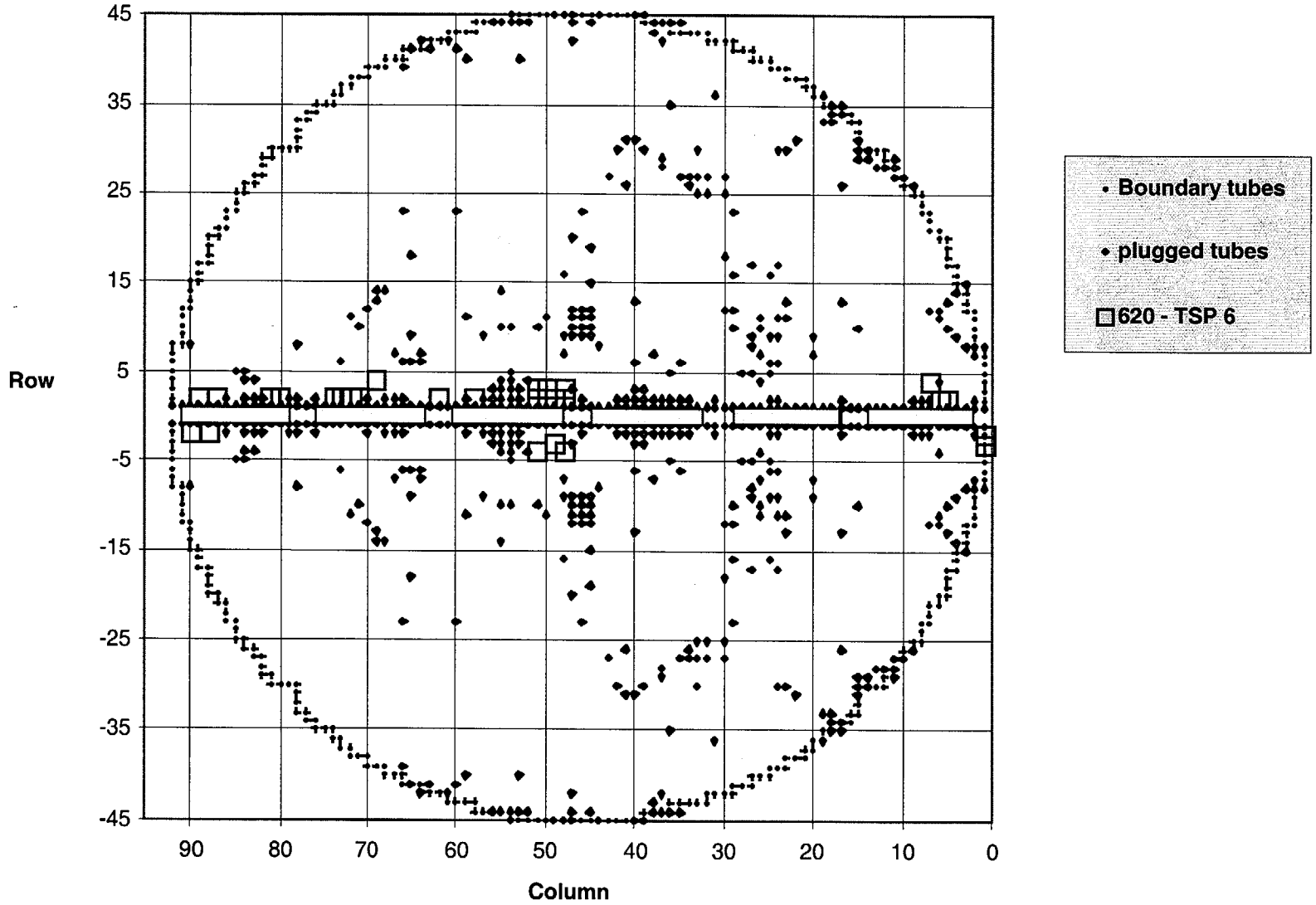


Figure 2 Indian Point 2 S/G 4 2000
Restrictions to Cecco Probe at TSP 6

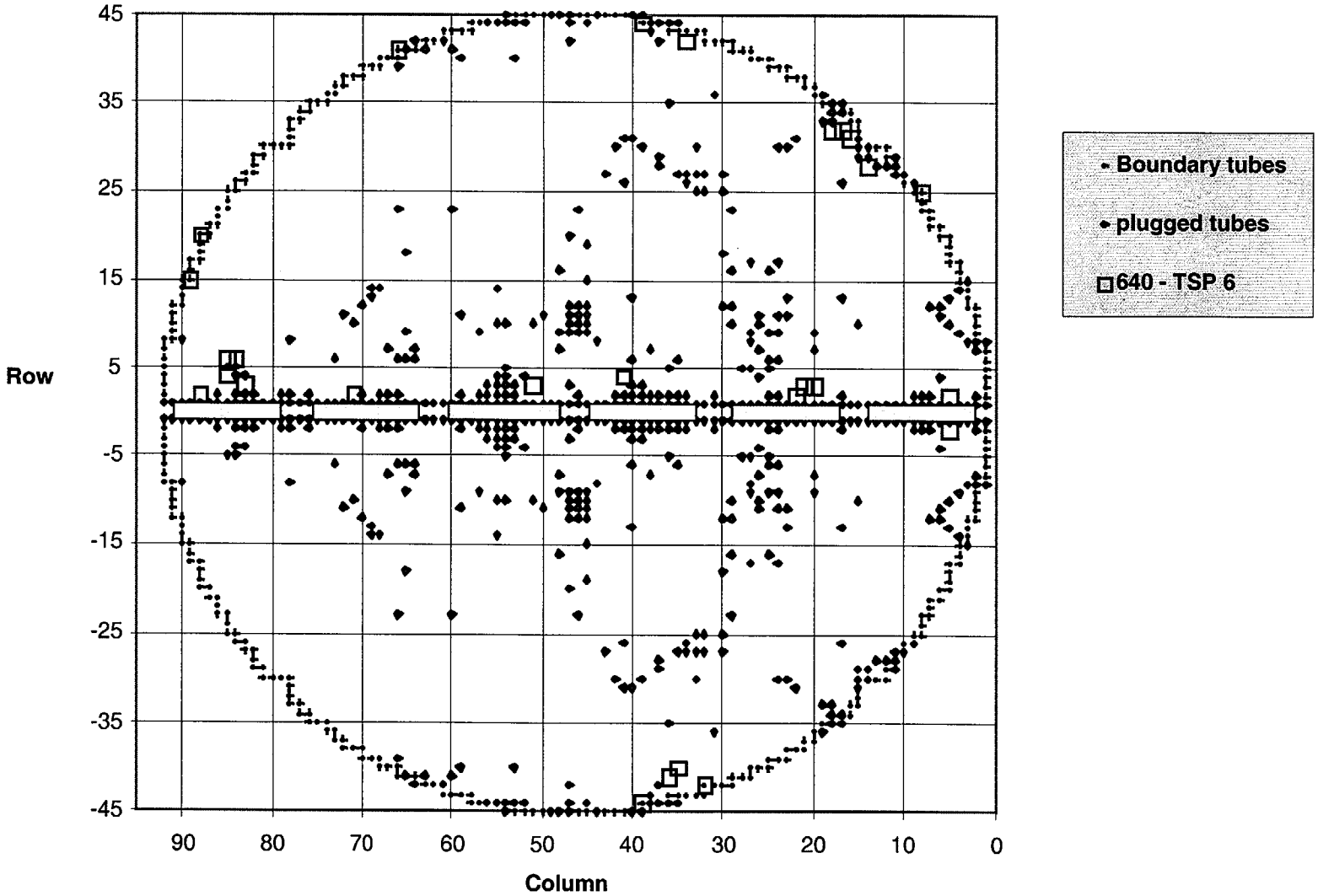


Figure 3 Indian Point 2 S/G 4 1997
Restrictions 610 +Point Probe at TSP 6

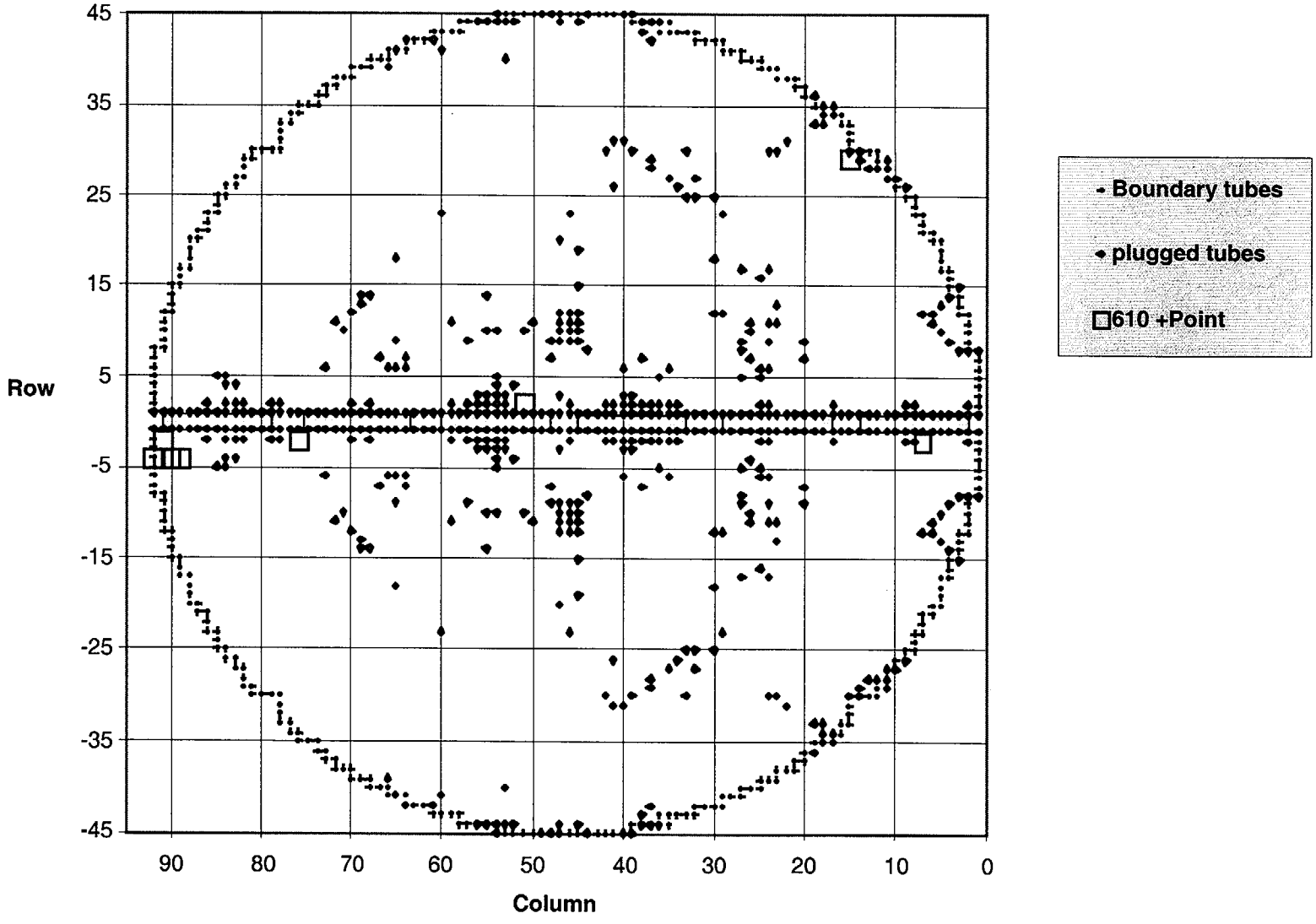


Figure 4 Indian Point 2 S/G 4 1997
Restrictions 620 Bobbin Probe at TSP 6

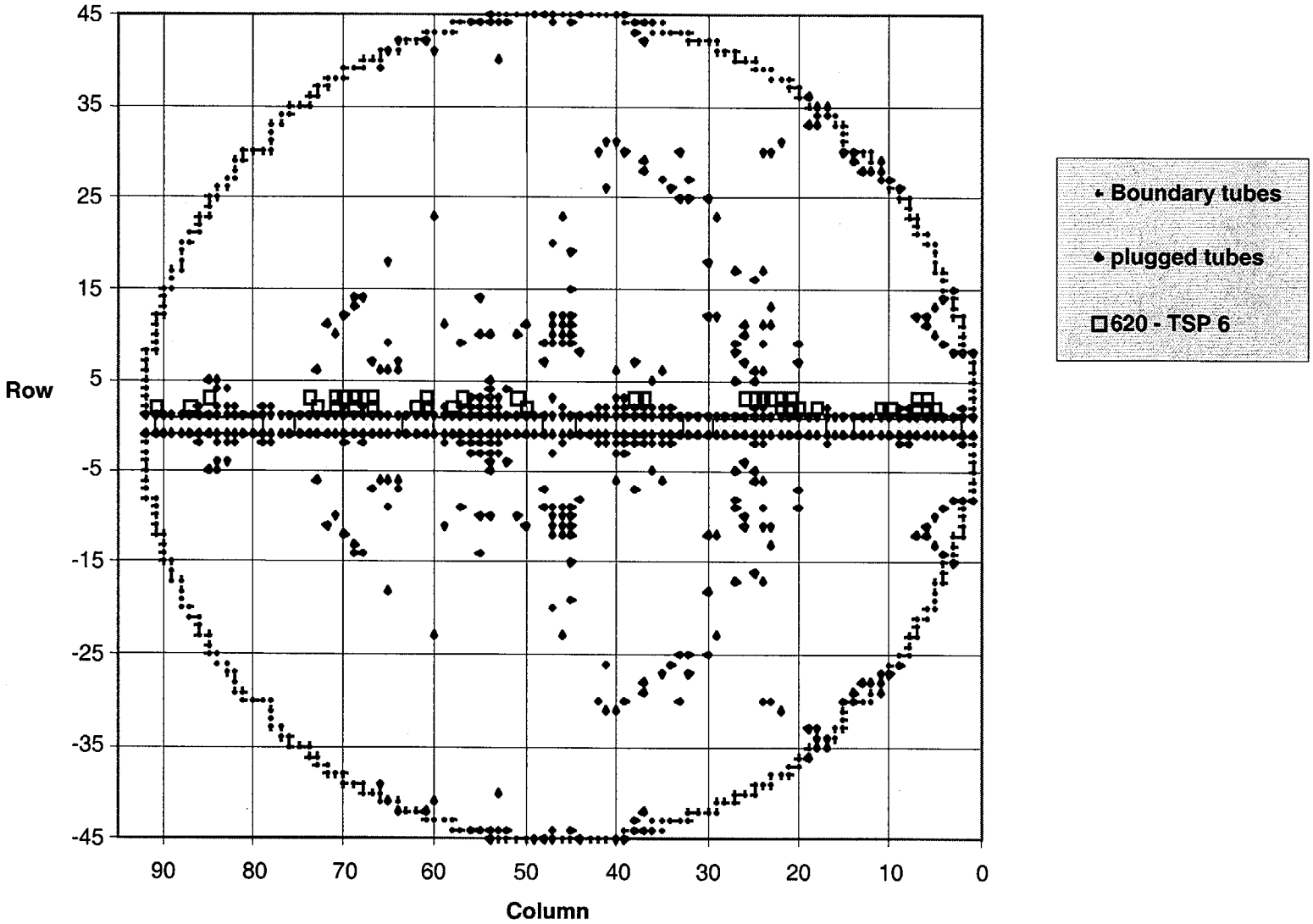


Figure 5 Indian Point 2 S/G 4 1997
Restrictions 640 Bobbin Probe at TSP 6

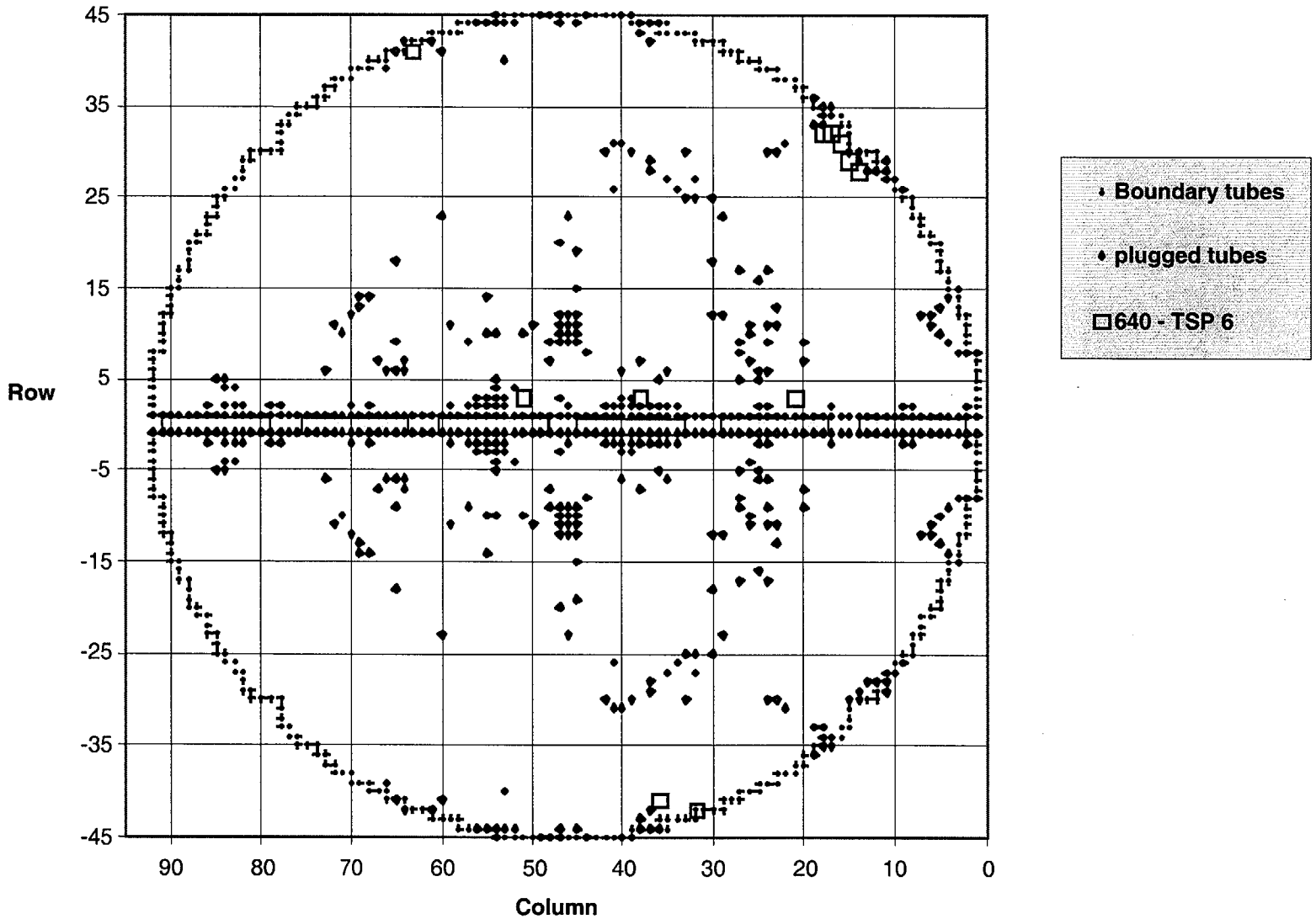


Figure 6 Indian Point 2 S/G 2 2000
Restrictions 620 +Point Probe at TSP 6

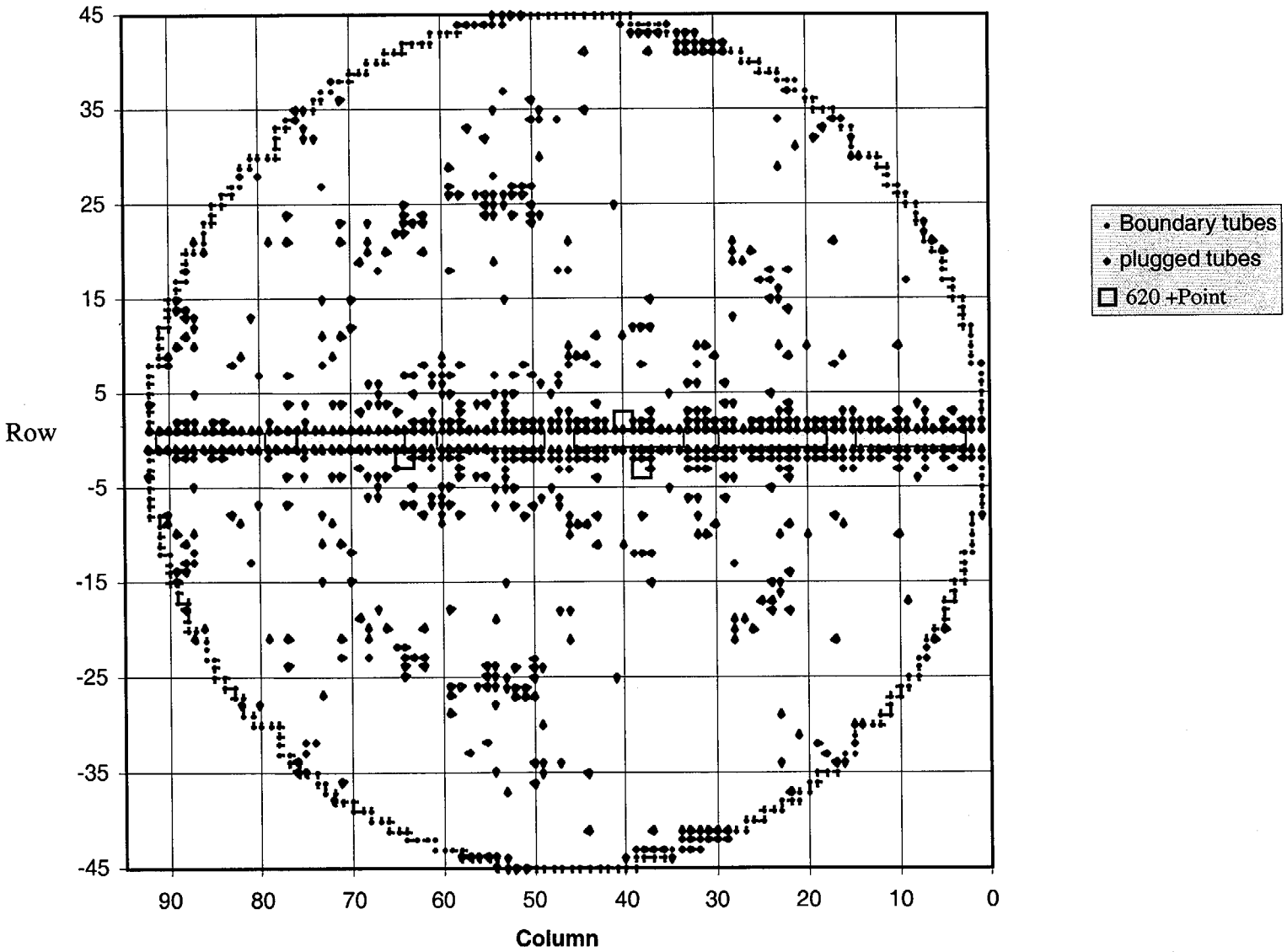


Figure 7 Indian Point 2 S/G 22 2000
Restrictions 640 Cecco Probe at TSP 6

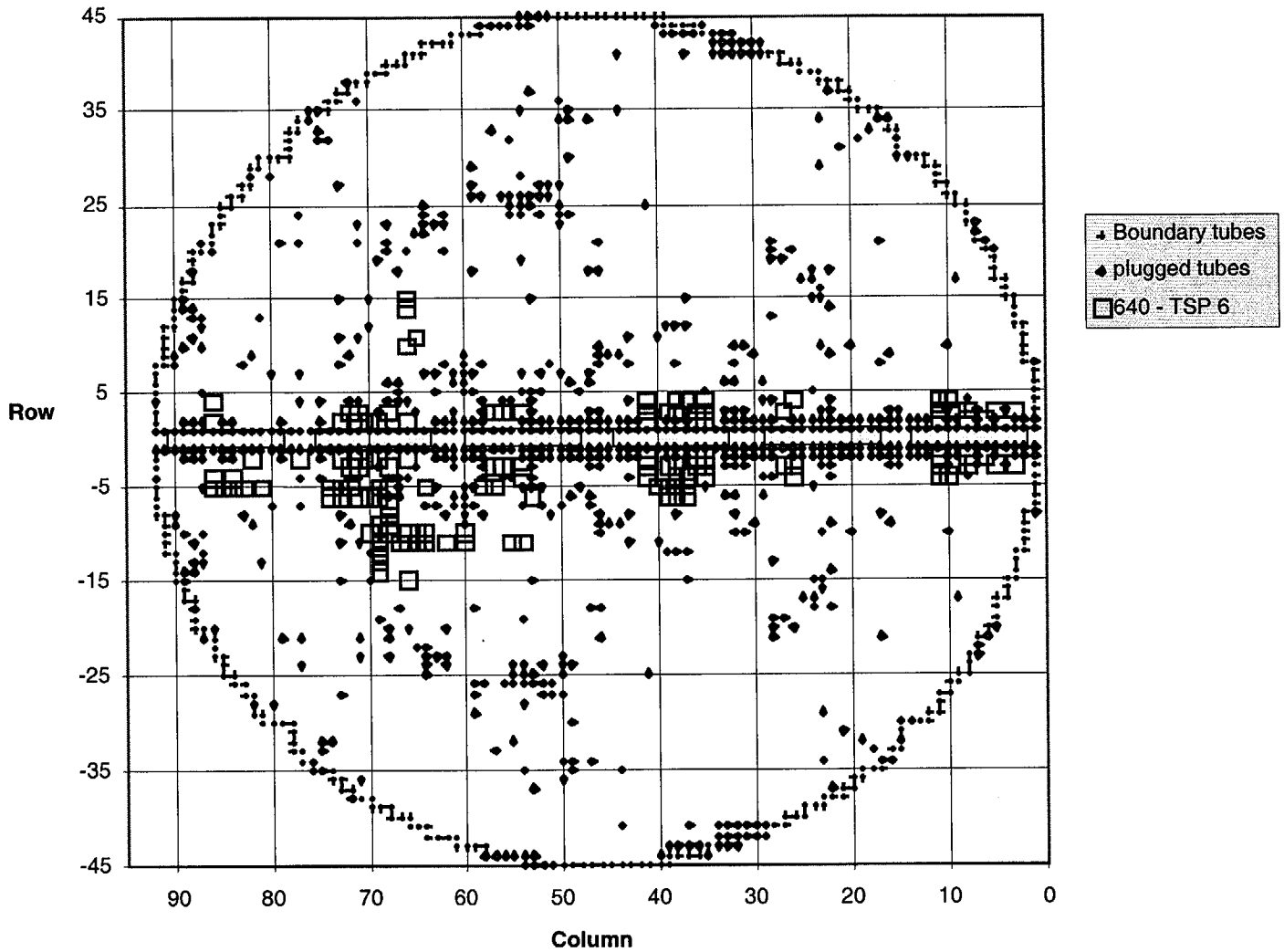


Figure 8 Indian Point 2 S/G 22 1997
Restrictions to 620 Bobbin Probe at TSP 6

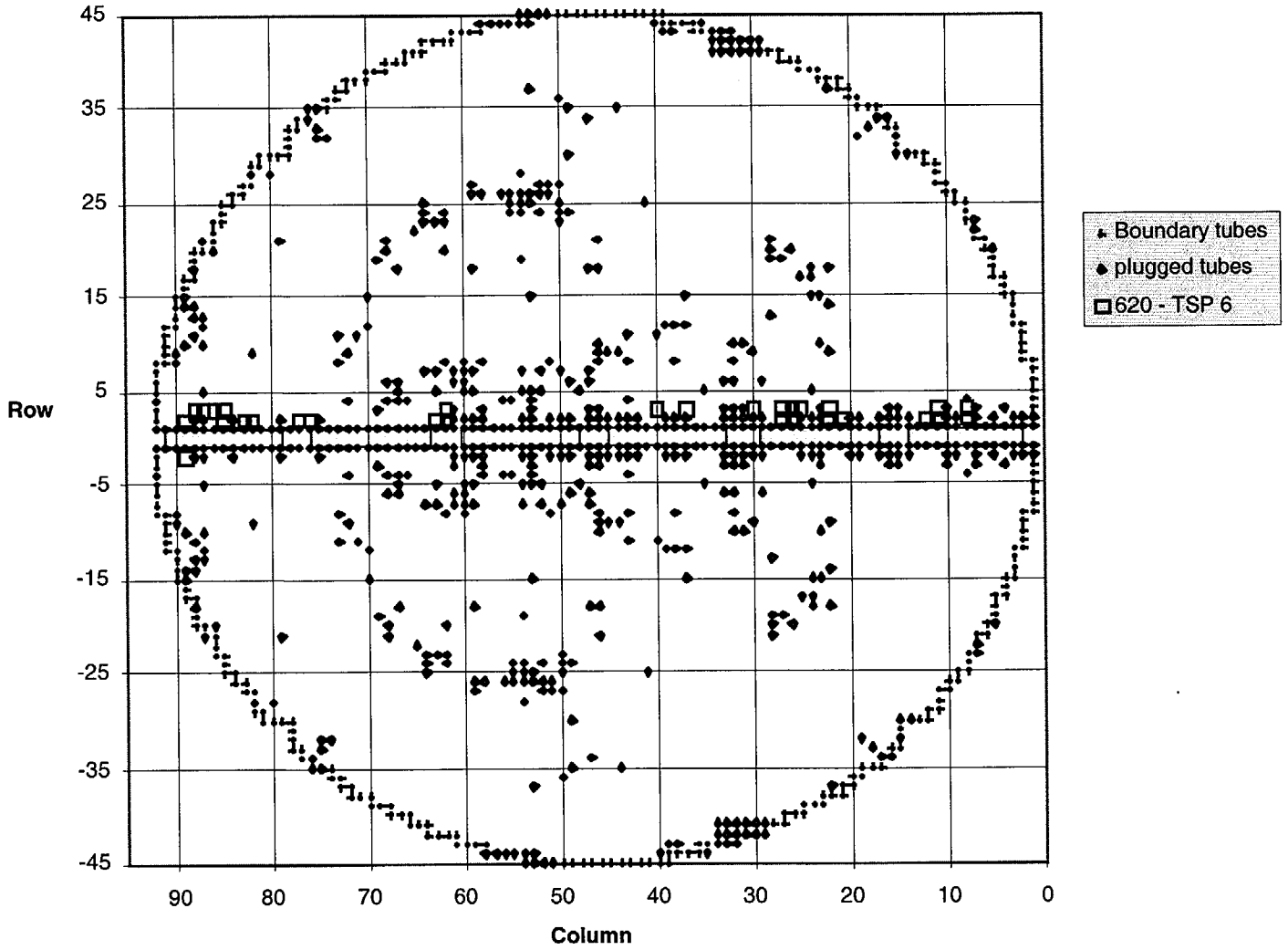
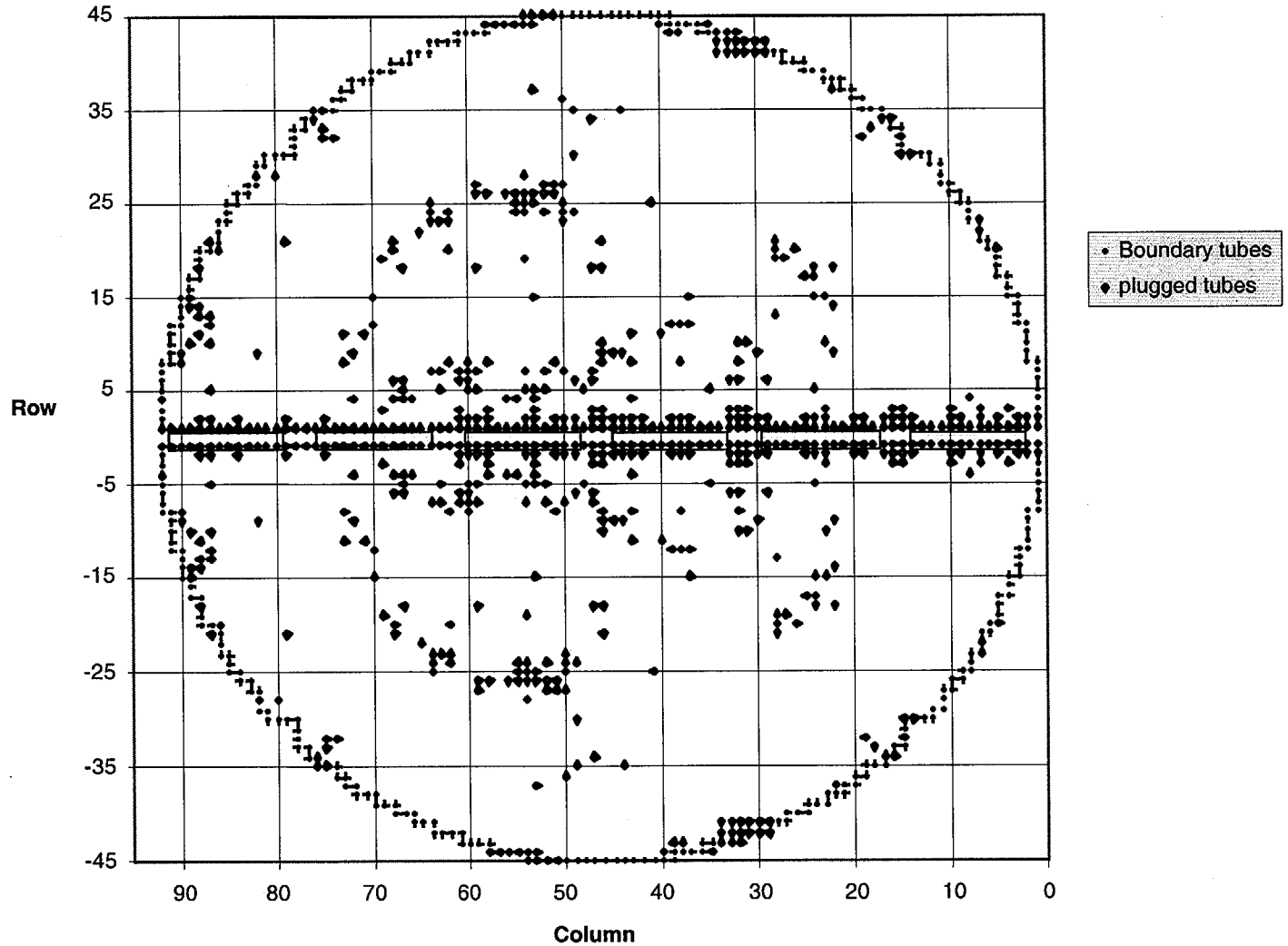


Figure 9 Indian Point 2 S/G 22 1997
Restrictions 640 Cecco Probe at TSP 6



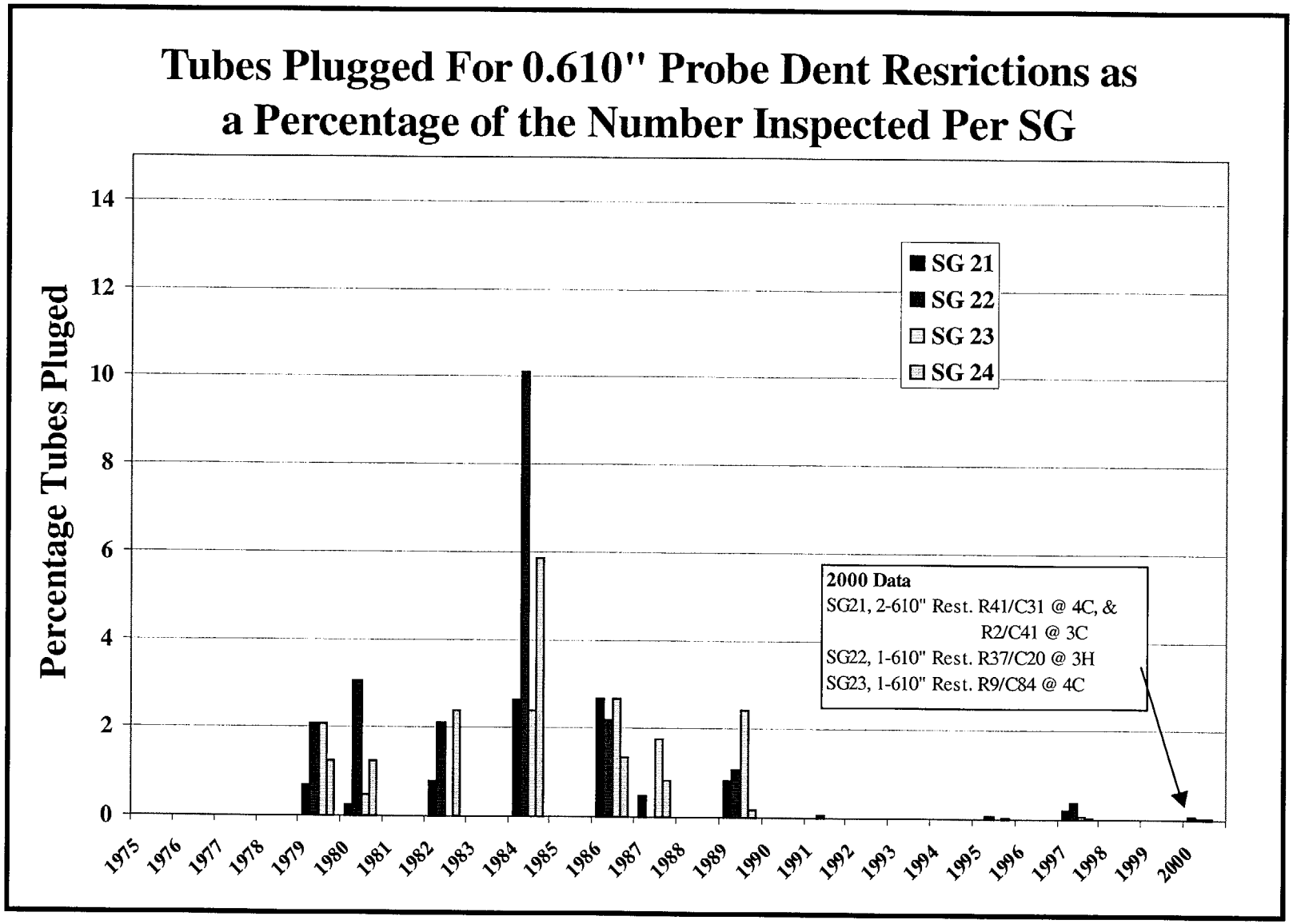


Figure 10 Comparison of Tubes Plugged for 0.610" Restrictions

Figure 11 Indian Point 2 S/G 21 TSP 5 Denting voltage progression 1997 to 2000

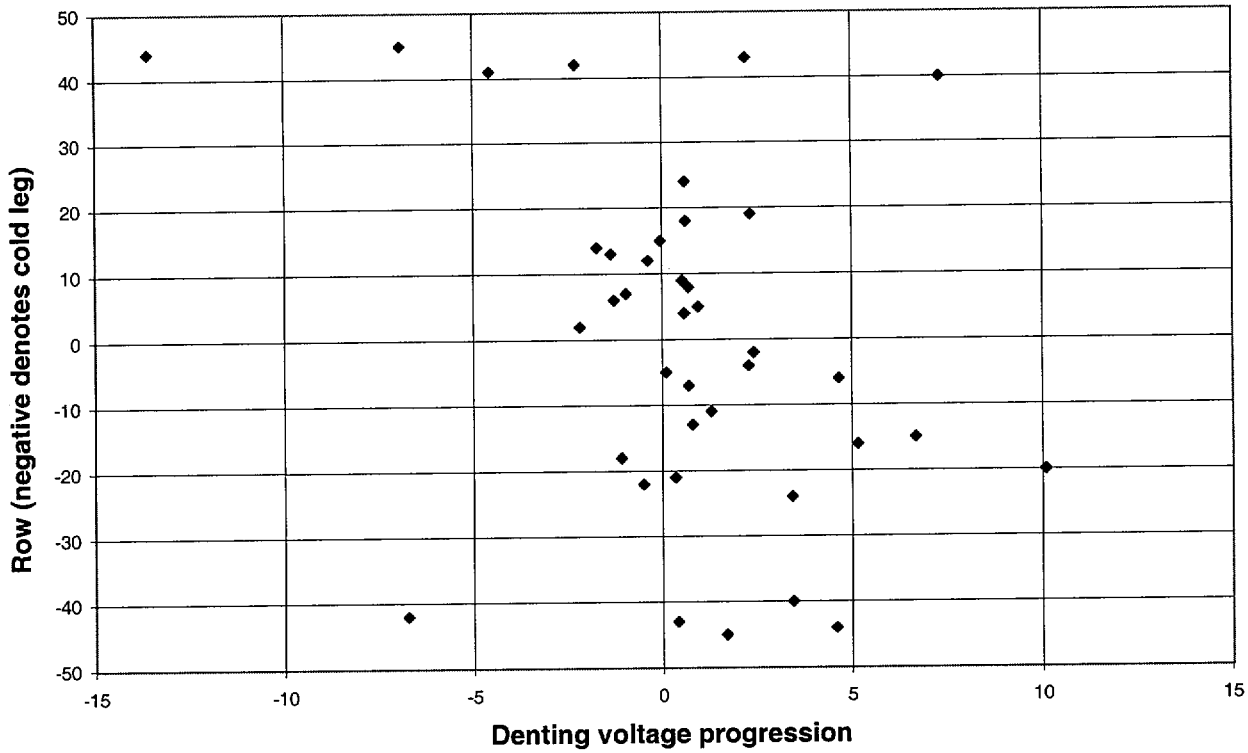


Figure 12 Indian Point 2 S/G 21 TSP 6 Denting voltage progression 1997 to 2000

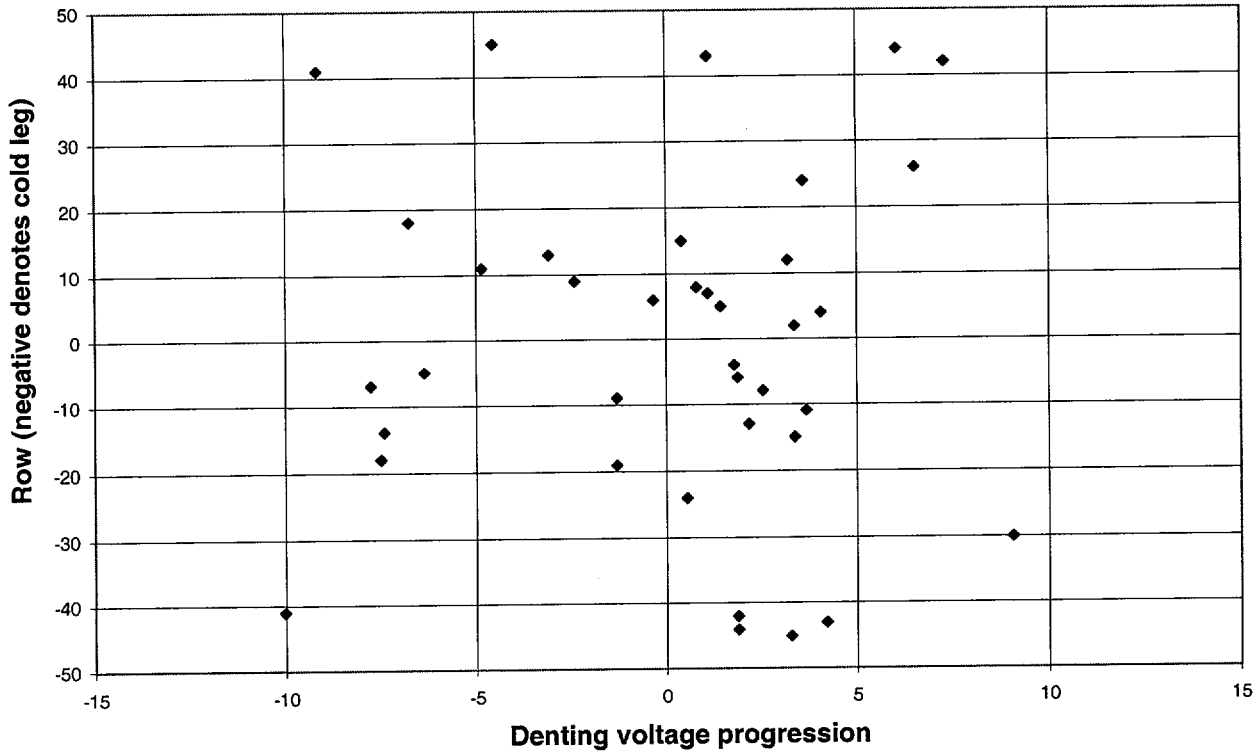


Figure 13 Indian Point 2 S/G 22 TSP 5 Denting Progression 1997 to 2000

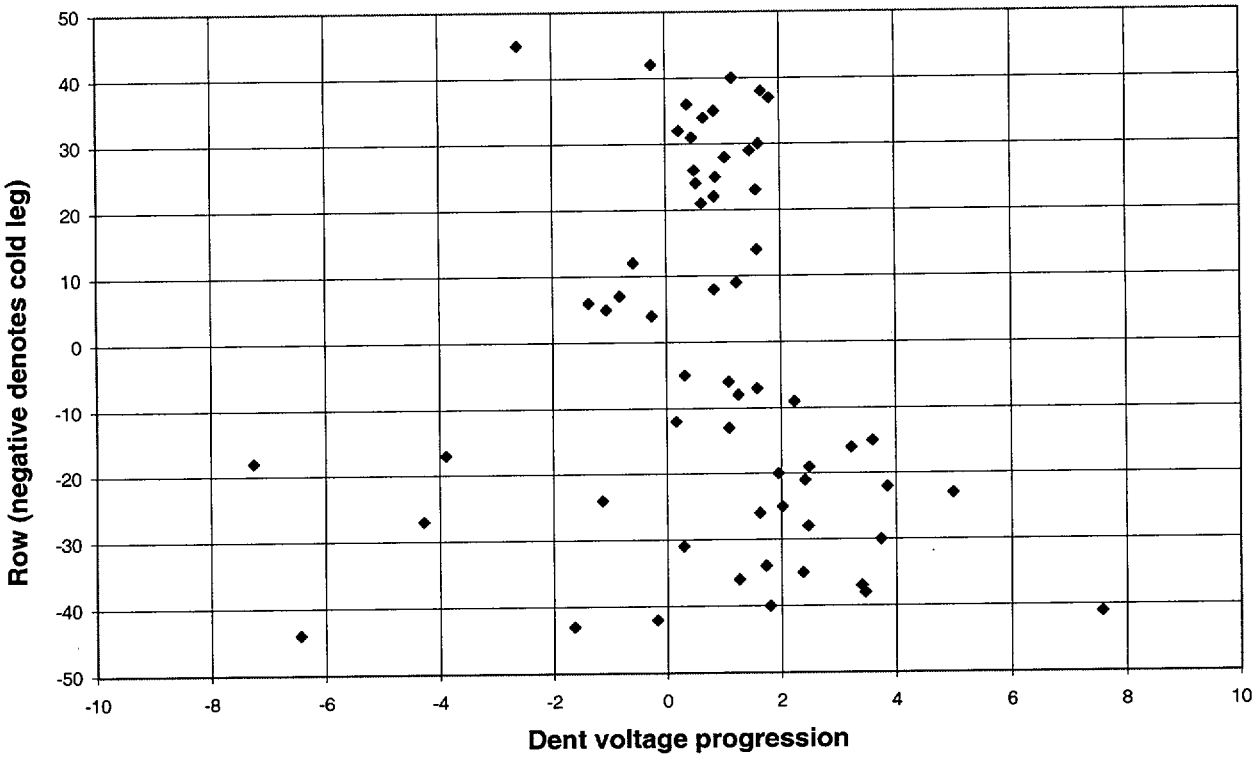


Figure 14 Indian Point 2 S/G 22 TSP 6 Denting Progression 1997 to 2000

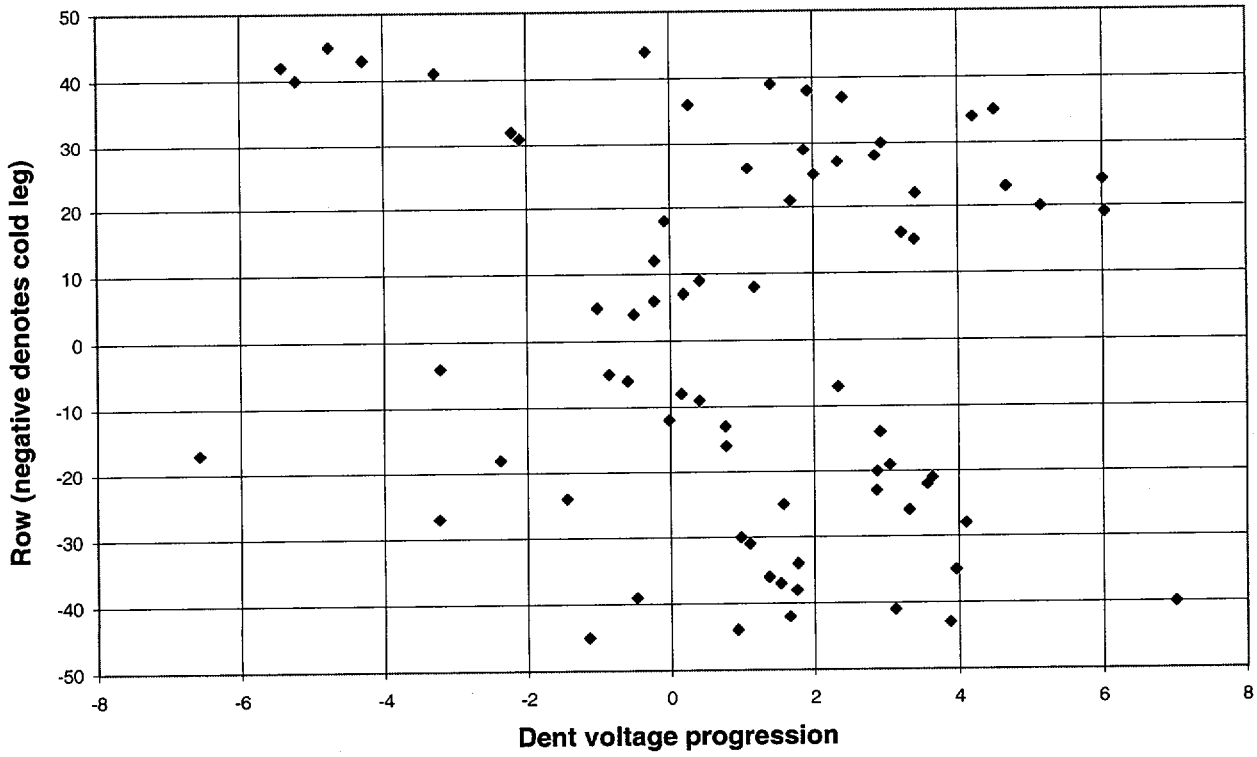


Figure 15 Indian Point 2 S/G 23 TSP 5 Denting voltage progression 1997 to 2000

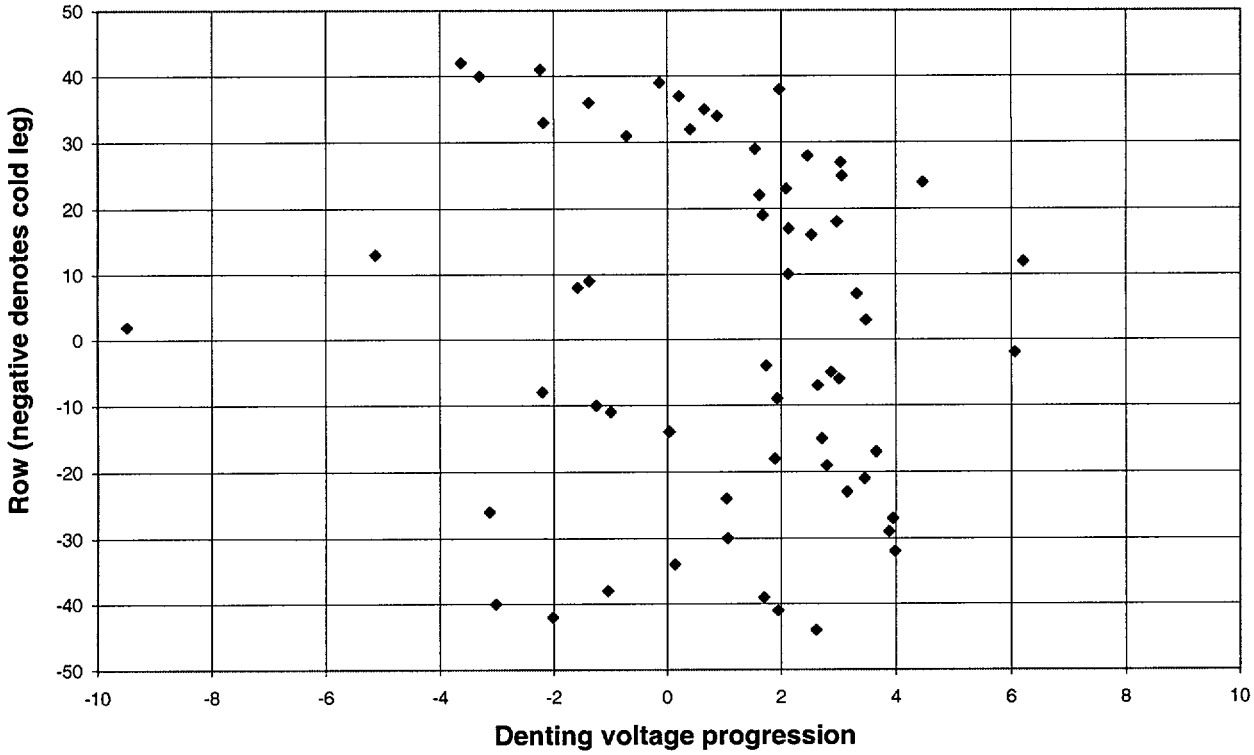


Figure 16 Indian Point 2 S/G 23 TSP 6 Denting voltage progression 1997 to 2000

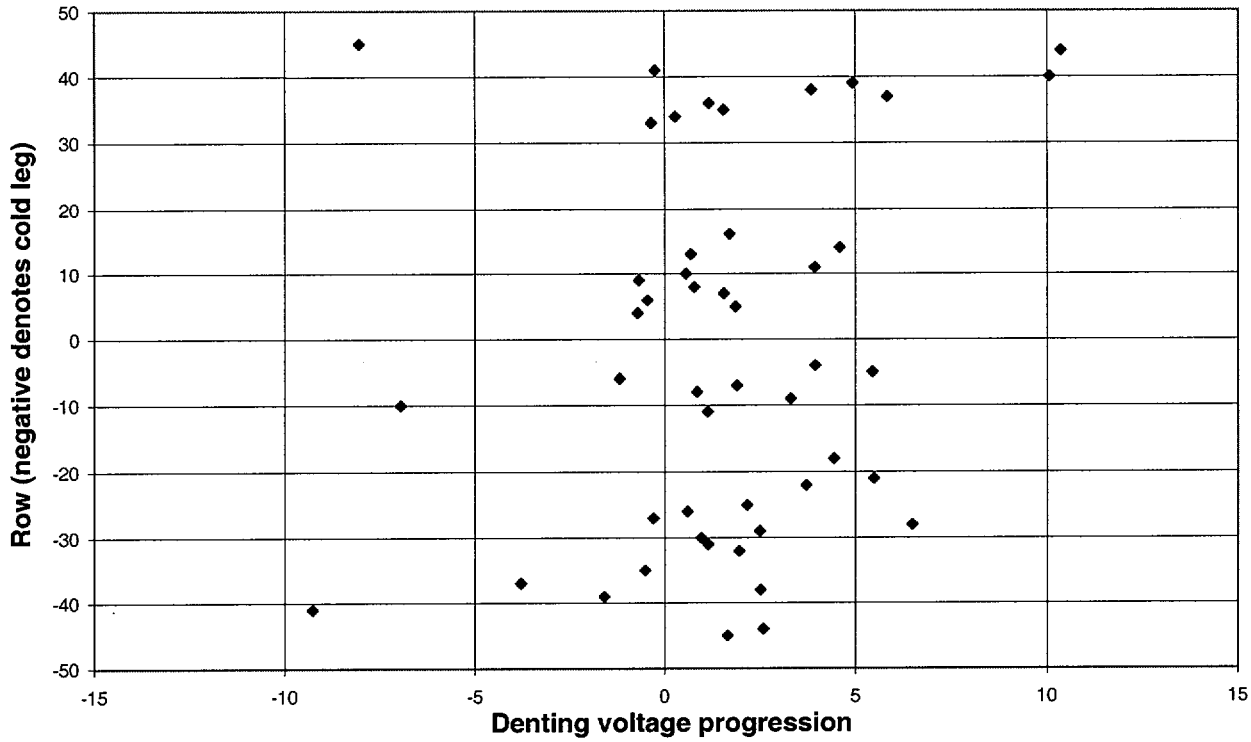


Figure 17 Indian Point 2 S/G 24 TSP 5 Dent Voltage Progression 1997 to 2000

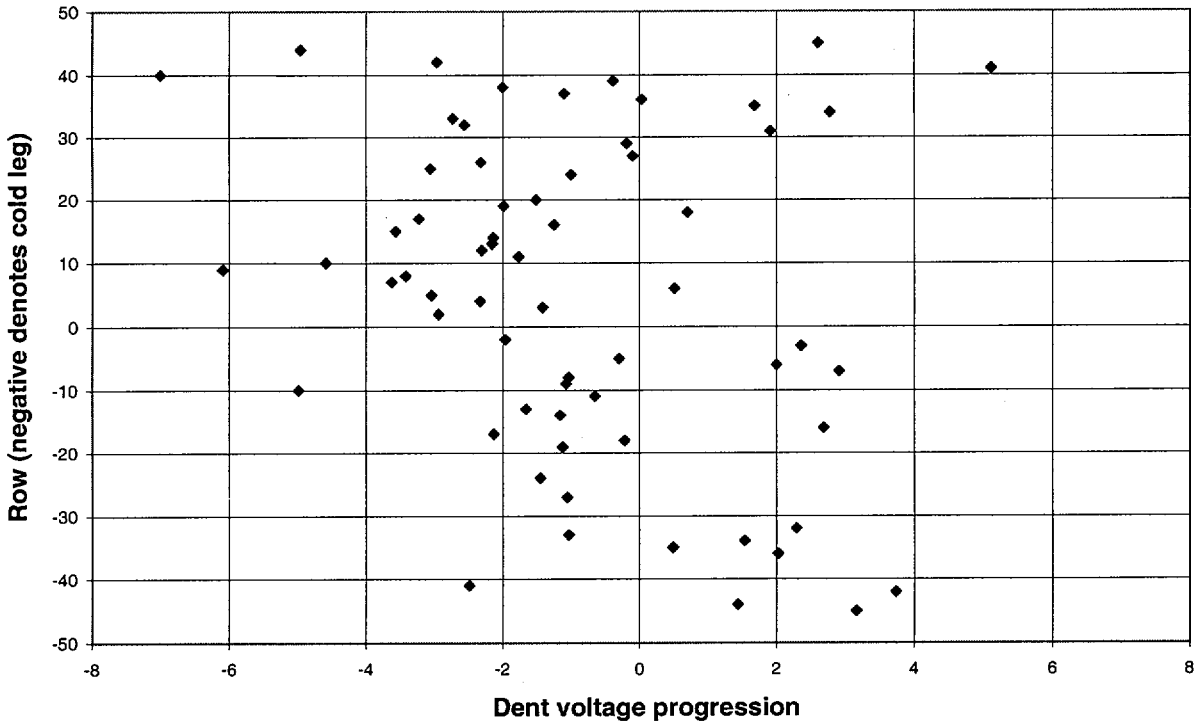
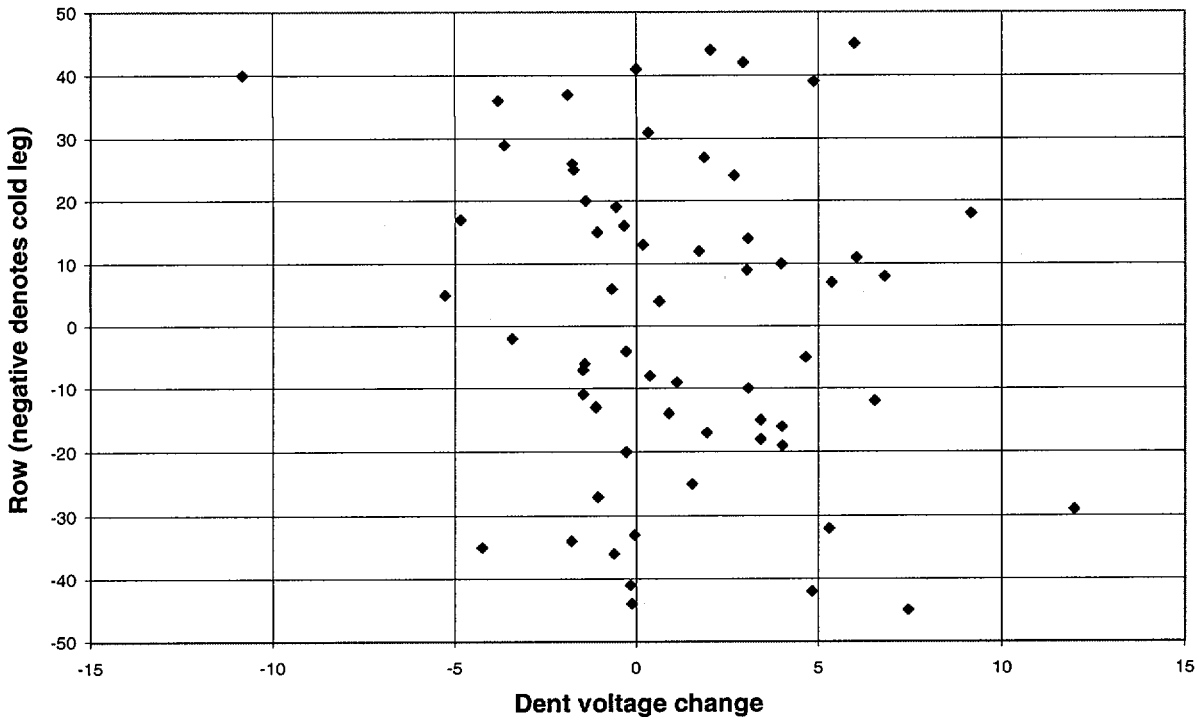



Figure 18 Indian Point 2 S/G 24 TSP 6 Dent voltage progression 1997 to 2000