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ZION NUCLEAR POWER STATION UNITS 1 and 2

Annual Radiological
Environmental Operating Report

1 January Through 31 December 2006

Prepared By

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I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program conducted for the Zion Nuclear Power Station (ZNPS) by Exelon covers the period 1 January 2006 through 31 December 2006. During that time period, 422 analyses were performed on 250 samples. In assessing all the data gathered for this report and comparing these results with preoperational data, it was concluded that the operation of ZNPS had no adverse radiological impact on the environment.

Public water samples were analyzed for concentrations of gross beta, tritium and gamma emitting nuclides. No fission or activation products were detected. Gross beta and tritium activities detected were consistent with those detected in previous years.

Fish (commercially and recreationally important species) and sediment samples were analyzed for concentrations of gamma emitting nuclides. Cs-137 activity was detected in fish. Sediment samples had Cesium-137 concentrations consistent with levels observed during the preoperational years. No Plant produced fission or activation products were found in sediment.

Air particulate samples were analyzed for concentrations of gross beta and gamma emitting nuclides. No fission or activation products were detected.

Environmental gamma radiation measurements were performed quarterly using thermoluminescent dosimeters. Levels detected were consistent with those observed in previous years.

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II. Introduction

The Zion Nuclear Power Station (ZNPS), consisting of two 1100 MWt pressurized water reactor owned and operated by Exelon Corporation, is located in Zion, Illinois adjacent to Lake Michigan. Unit No. 1 went critical in December 1973. Unit No. 2 went critical in September 1974. The plant permanently ceased operation in January of 1998 and has been permanently defueled. The site is located in northeast Illinois on the western shore of Lake Michigan, approximately 50 miles north of Chicago, Illinois.

This report covers those analyses performed by Teledyne Brown Engineering (TBE), Global Dosimetry, and Environmental Inc. (Midwest Labs) on samples collected during the period 1 January 2006 through 31 December 2006.

A. Objective of the REMP

The objectives of the REMP are to:

1. Provide data on measurable levels of radiation and radioactive materials in the site environs.
2. Evaluate the relationship between quantities of radioactive material released from the plant and resultant radiation doses to individuals from principal pathways of exposure.

B. Implementation of the Objectives

The implementation of the objectives is accomplished by:

1. Identifying significant exposure pathways.
2. Establishing baseline radiological data of media within those pathways.
3. Continuously monitoring those media before and during Station operation to assess Station radiological effects (if any) on man and the environment.

III. Program Description

A. Sample Collection

Samples for the ZNPS REMP were collected for Exelon Nuclear by

Environmental Inc. (Midwest Labs). This section describes the general collection methods used by Environmental Inc. (Midwest Labs) to obtain environmental samples for the ZNPS REMP in 2006. Sample locations and descriptions can be found in Table B-1 and Figures B-1 and B-2, Appendix B. The sampling methods used by Environmental Inc. (Midwest Labs) are listed in Table B-2.

Aquatic Environment

The aquatic environment was evaluated by performing radiological analyses on samples of public water, fish, and sediment. Two gallon water samples were collected monthly from four public water locations (Z-14, Z-15, Z-16 and Z-18). Control locations were Z-14 and Z-18. All samples were collected in new unused plastic bottles, which were rinsed at least twice with source water prior to collection. Fish samples comprising the flesh of lake trout and burbot were collected semiannually at two locations, Z-26 and Z-27, both Control locations. Sediment samples composed of recently deposited substrate were collected at one location semiannually, Z-25.

Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on samples of air particulates. Airborne particulate samples were collected and analyzed weekly at three locations (Z-01, Z-02 and Z-03). No control location was required. Airborne particulate samples were obtained at each location, using a vacuum pump with glass fiber filters attached. The pumps were run continuously and sampled air at the rate of approximately one cubic foot per minute. The filters were replaced weekly and sent to the laboratory for analysis.

Ambient Gamma Radiation

Direct radiation measurements were made using 2 CaF 200 and 2 LiF 100 LiF 4-chip Harshaw thermoluminescent dosimeters (TLD). Each location consisted of 2 TLD sets. The TLD locations were placed on and around the ZNPS site at the following locations:

Z-101, Z-102, Z-103, Z-104, Z-105, Z-106, Z-107, Z-108, Z-110, Z-111, Z-112, Z-113, Z-114, Z-115, Z-301, Z-01, Z-02 and Z-03.

No control location was required.

The specific TLD locations were determined by the following criteria:

1. The presence of relatively dense population;
2. Site meteorological data taking into account distance and elevation for each of the sixteen–22 1/2 degree sectors around the site, where estimated annual dose from ZNPS, if any, would be most significant;
3. On hills free from local obstructions and within sight of the vents (where practical);
4. And near the closest dwelling to the vents in the prevailing downwind direction.

(Two TLDs – each comprised of two CaF₂ 200 and 2 LiF 100 LiF 4-chip thermoluminescent phosphors enclosed in plastic – were placed at each location in a PVC conduit located approximately four to eight feet above ground level. The TLDs were exchanged quarterly and sent to Global Dosimetry for analysis.

B. Sample Analysis

This section describes the general analytical methodologies used by TBE and Environmental Inc. (Midwest Labs) to analyze the environmental samples for radioactivity for the ZNPS REMP in 2006. The analytical procedures used by the laboratories are listed in Table B-2.

In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of beta emitters in public water and air particulates.
2. Concentrations of gamma emitters in public water, air particulates, fish and sediment.
3. Concentrations of tritium in public water.
4. Ambient gamma radiation levels at various site environs.

C. Data Interpretation

The radiological and direct radiation data collected prior to Zion Nuclear Power Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report,

Zion Nuclear Power Station was considered operational at initial criticality. In addition, data were compared to previous years' operational data for consistency and trending. Several factors were important in the interpretation of the data:

1. Lower Limit of Detection and Minimum Detectable Concentration

The lower limit of detection (LLD) was defined as the smallest concentration of radioactive material in a sample that would yield a net count (above background) that would be detected with only a 5% probability of falsely concluding that a blank observation represents a "real" signal. The LLD was intended as a before the fact estimate of a system (including instrumentation, procedure and sample type) and not as an after the fact criteria for the presence of activity. All analyses were designed to achieve the required ZNPS detection capabilities for environmental sample analysis.

The minimum detectable concentration (MDC) is defined above with the exception that the measurement is an after the fact estimate of the presence of activity.

2. Net Activity Calculation and Reporting of Results

Net activity for a sample was calculated by subtracting background activity from the sample activity. Since the REMP measures extremely small changes in radioactivity in the environment, background variations may result in sample activity being lower than the background activity effecting a negative number. An MDC was reported in all cases where positive activity was not detected.

Gamma spectroscopy results for each type of sample were grouped as follows:

For public water nine nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb/Zr-95, Cs-134, Cs-137 and Ba/La-140 were reported.

For fish nine nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb/Zr-95, Cs-134, Cs-137 and Ba/La-140 were reported.

For sediment nine nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-95, Nb/Zr-95, Cs-134, Cs-137 and Ba/La-140 were reported.

For air particulate nine, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb/Zr-95, Cs-134, Cs-137 and Ba/La-140 were reported.

Means and standard deviations of the results were calculated. The standard deviations represent the variability of measured results for different samples rather than single analysis uncertainty.

D. Program Exceptions

For 2006 the ZNPS REMP had a sample recovery rate in excess of 99%. Sample anomalies and missed samples are listed in the tables below:

Table D-1 LISTING OF SAMPLE ANOMALIES

Sample Type	Location Code	Collection Date	Reason
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There were no anomalies for 2006.

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date	Reason
AP	Z-03	08/31/06	AP was lost between sample collection and receipt at the laboratory.

Each program exception was reviewed to understand the causes of the program exception. Sampling and maintenance errors were reviewed with the personnel involved to prevent recurrence. Occasional equipment breakdowns and power outages were unavoidable.

The overall sample recovery rate indicates that the appropriate procedures and equipment are in place to assure reliable program implementation.

E. Program Changes

There were no changes to the normal REMP program in 2006. A separate program was instituted to monitor groundwater in the surrounding environs during 2006. This program and any sampling and analysis results are discussed in the attached report, "Annual Radiological Groundwater Protection Program Report".

IV. Results and Discussion

A. Aquatic Environment

1. Public Water

Samples were taken weekly and composited monthly at four locations (Z-14, Z-15, Z-16 and Z-18). The following analyses were performed.

Gross Beta

Samples from all locations were analyzed for concentrations of gross beta (Table C-I.1, Appendix C). The values ranged from 2.0 pCi/l to 5.5 pCi/l. Concentrations detected were consistent with those detected in previous years (Figures C-1 and C-2, Appendix C).

Tritium

Quarterly composites of weekly collections were analyzed for tritium activity (Table C-I.2, Appendix C). The values ranged from <154 pCi/l to <187 pCi/l. Concentrations detected were consistent with those detected in previous years (Figures C-3 and C-4, Appendix C).

Gamma Spectrometry

Samples from both locations were analyzed for gamma emitting nuclides (Table C-I.3, Appendix C). No nuclides were detected and all required LLDs were met.

2. Fish

Fish samples comprised of lake trout, coho salmon, burbot and longnose sucker were collected at two locations (Z-26 and Z-27) semiannually. The following analysis was performed:

Gamma Spectrometry

The edible portion of fish samples from both locations was analyzed for gamma emitting nuclides (Table C-II.1, Appendix C). Cesium-137 was detected in three samples. The values ranged from 59 to 144 pCi/kg wet. No other nuclides were detected and all

required LLDs were met.

3. Sediment

Aquatic sediment samples were collected at one location (Z-25) semiannually. The following analysis was performed:

Gamma Spectrometry

Sediment samples from Z-25 were analyzed for gamma emitting nuclides (Table C-III.1, Appendix C). No nuclides were detected and all required LLDs were met.

B. Atmospheric Environment

1. Airborne

a. Air Particulates

Continuous air particulate samples were collected from three locations on a weekly basis. The three locations were within the ZNPS site boundary (Z-01, Z-02 and Z-03). The following analyses were performed:

Gross Beta

Weekly samples were analyzed for concentrations of beta emitters (Table C-IV.1 and C-IV.2, Appendix C).

Detectable gross beta activity was observed at all locations. Comparison of results among the three groups aid in determining the effects, if any, resulting from the operation of ZNPS. The results from the On-Site locations ranged from $<4 \text{ E-3 pCi/m}^3$ to 40 E-3 pCi/m^3 with a mean of 17 E-3 pCi/m^3 . Comparison of the 2006 air particulate data with previous years data indicate no effects from the operation of ZNPS. Concentrations detected were consistent with those detected in previous years.

Gamma Spectrometry

Weekly samples were composited quarterly and analyzed for gamma emitting nuclides (Table C-IV.3, Appendix C). No nuclides were detected and all required LLDs were met.

C. Ambient Gamma Radiation

Ambient gamma radiation levels were measured utilizing Harshaw (CaF and LiF) thermoluminescent dosimeters. Thirty-six TLD locations were established around the site. Results of TLD measurements are listed in Tables C–V.1 to C–V.3, Appendix C.

Most TLD measurements were below 25 mR/quarter, with a range of 15.0 mR/quarter to 27.0 mR/quarter.

D. Land Use Survey

A Land Use Survey conducted during August 2006 around the Zion Nuclear Power Station (ZNPS) was performed by Environmental Inc. (Midwest Labs) for Exelon Nuclear to comply with Chapter 3 of the Zion' Offsite Dose Calculation Manual. The purpose of the survey was to document the nearest resident, milk producing animal and garden of greater than 500 ft² in each of the sixteen 22 ½ degree sectors around the site. There were no changes required to the ZNPS REMP, as a result of this survey. The results of this survey are summarized below.

Sector	Distance in Miles from the ZNPS Reactor Buildings		
	Residence Miles	Livestock Miles	Milk Farm Miles
A N	2.5	-	-
B NNE	-	-	-
C NE	-	-	-
D ENE	-	-	-
E E	-	-	-
F ESE	-	-	-
G SE	-	-	-
H SSE	-	-	-
J S	-	-	-
K SSW	1.9	-	-
L SW	1.1	-	-
M WSW	1.0	-	-
N W	1.1	-	-
P WNW	1.0	-	-
Q NW	1.0	-	-
R NNW	1.3	-	-

E. Summary of Results – Inter-Laboratory Comparison Program

The primary and secondary laboratories analyzed Performance Evaluation

(PE) samples of air particulate, air iodine, milk, soil, vegetation and water matrices for (Appendix D). The PE samples, supplied by Analytics Inc., Environmental Resource Associates (ERA) and DOE's Mixed Analyte Performance Evaluation Program (MAPEP), were evaluated against the following pre-set acceptance criteria:

1. Analytics Evaluation Criteria

Analytics' evaluation report provides a ratio of laboratory results and Analytics' known value. Since flag values are not assigned by Analytics, TBE-ES evaluates the reported ratios based on internal QC requirements, which are based on the DOE MAPEP criteria.

2. ERA Evaluation Criteria

ERA's evaluation report provides an acceptance range for control and warning limits with associated flag values. ERA's acceptance limits are established per the USEPA, NELAC, state specific PT program requirements or ERA's SOP for the Generation of Performance Acceptance Limits, as applicable. The acceptance limits are either determined by a regression equation specific to each analyte or a fixed percentage limit promulgated under the appropriate regulatory document.

3. DOE Evaluation Criteria

MAPEP's evaluation report provides an acceptance range with associated flag values.

The MAPEP defines three levels of performance: Acceptable (flag = "A"), Acceptable with Warning (flag = "W"), and Not Acceptable (flag = "N"). Performance is considered acceptable when a mean result for the specified analyte is $\pm 20\%$ of the reference value. Performance is acceptable with warning when a mean result falls in the range from $\pm 20\%$ to $\pm 30\%$ of the reference value (i.e., $20\% < \text{bias} < 30\%$). If the bias is greater than 30%, the results are deemed not acceptable.

For the primary laboratory, 24 out of 28 analytes met the specified acceptance criteria. Four samples did not meet the specified acceptance criteria for the following reasons:

1. Teledyne Brown Engineering's MAPEP Series 15 January 2006 soil Cs-134 was evaluated as a false positive, although TBE considered the result a non-detect due to the peak not being identified by the gamma software. MAPEP suggests the Bi-214 is not being

differentiated from the Cs-134 peak. When the ratio of activity to uncertainty exceeds 3, TBE will use a key line analysis rather than a weighted mean analysis when evaluating MAPEP non-detects.

2. Teledyne Brown Engineering's MAPEP Series 15 January 2006 Sr-90 in vegetation result of 2.22 Bq/kg exceeded the upper acceptance range of 2.029 Bq/kg. The samples were analyzed in triplicate and the results averaged. One high result of 2.43 Bq/kg biased the submitted results on the high side. TBE was unable to determine the cause for the higher result. The Sr-90 in vegetation results for MAPEP Series 14 and MAPEP Series 16 were acceptable. No client samples were analyzed during the MAPEP Series 14 time period.
3. Teledyne Brown Engineering's MAPEP Series 15 January 2006 Pu-238 and Pu-239/240 in vegetation result of 2.22 Bq/kg failed the required acceptance ranges. TBE was evaluating the current preparation method for vegetation samples, which proved insufficient for the analyses. TBE does not perform isotopic plutonium on client's vegetation samples.

For the secondary laboratory, 20 out of 25 analytes met the specified acceptance criteria. Seven samples did not meet the specified acceptance criteria for the following reasons:

1. Environmental Inc.'s ERA November 2006 water I-131 result of 28.4 pCi/L exceeded the upper control limit of 27.3 pCi/L. The reported result was an average of three analyses, results ranged from 25.36 pCi/L to 29.23 pCi/L. A fourth analysis was performed, with a result of 24.89 pCi/L.
2. Environmental Inc.'s MAPEP January 2006 vegetation Pu-238 result of 0.08 Bq/sample exceeded the lower control limit of 0.10 Bq/sample due to incomplete dissolution of the sample.
3. Environmental Inc.'s MAPEP January 2006 air particulate Pu-238 result of 0.03 Bq/sample exceeded the lower control limit of 0.05 Bq/sample due to incomplete dissolution of the sample.
4. Environmental Inc.'s MAPEP January 2006 soil Pu-238, Pu-239/240, U-233/234 and U-238 results of 14.6, 14.6, 13.5 and 15.4 Bq/kg, respectively, exceeded the lower control limits of 42.81, 32.09, 25.9 and 27.2 Bq/kg, respectively, due to incomplete dissolution of the sample.

The Inter-Laboratory Comparison Program provides evidence of "in control" counting systems and methods, and that the laboratories are producing accurate and reliable data.

APPENDIX A

**RADIOLOGICAL ENVIRONMENTAL MONITORING
REPORT QUARTERLY AND ANNUAL SUMMARY**

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 1ST QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION NUCLEAR POWER STATION		DOCKET NUMBER: 50-295 & 50-304		REPORTING PERIOD: 1ST QUARTER 2006		LOCATION WITH HIGHEST ANNUAL MEAN (M)		
Location of Facility: ZION, IL				INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN (M)	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE		
PUBLIC WATER (PCL/L)	GR-B	12	4	2.5 (6/6) (2.3/2.9)	2.7 (6/6) (2.2/3.2)	2.8 (3/3) (2.4/3.2)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	H-3	4	200	180 (0/2) (<175/<185)	187 (0/2) (<186/<187)	187 (0/1) (<187)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	GAMMA MN-54	12	15	3 (0/6) (<1/<5)	3 (0/6) (<1/<5)	3 (0/3) (<2/<5)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0
	CO-58		15	3 (0/6) (<1/<5)	3 (0/6) (<1/<6)	4 (0/3) (<3/<6)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0
	FE-59		N/A	7 (0/6) (<3/<11)	7 (0/6) (<3/<13)	8 (0/3) (<6/<13)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0
	CO-60		15	3 (0/6) (<1/<6)	3 (0/6) (<1/<6)	3 (0/3) (<2/<6)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0
	ZN-65		30	7 (0/6) (<3/<12)	7 (0/6) (<3/<13)	8 (0/3) (<5/<13)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0
	ZRNB-95		15	3 (0/6) (<1/<5)	3 (0/6) (<1/<6)	4 (0/3) (<3/<6)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING BOTH THE MDAs AND THE POSITIVE VALUES FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 1ST QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION NUCLEAR POWER STATION		DOCKET NUMBER: 50-295 & 50-304		REPORTING PERIOD: 1ST QUARTER 2006				
Location of Facility: ZION, IL		LOCATION WITH HIGHEST ANNUAL MEAN (M)						
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR MEAN(M) (F) RANGE	CONTROL MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
PUBLIC WATER (PCI/L)	CS-134		15	3 (0/6) (<1/<6)	3 (0/6) (<1/<6)	4 (0/3) (<2/<6)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0
	CS-137		18	3 (0/6) (<1/<5)	3 (0/6) (<1/<6)	4 (0/3) (<2/<6)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0
	BALA140		N/A	9 (0/6) (<5/<14)	9 (0/6) (<5/<14)	10 (0/3) (<8/<14)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	39	10	15 (39/39) (6/23)	N/A	16 (13/13) (8/21)	Z-03 INDICATOR ONSITE 3 0.2 MILES NNW OF SITE	0
	GAMMA MN-54	3	N/A	5.8 (0/3) (< 5.4/< 6.1)	N/A	6.1 (0/1) (< 6.1)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	CO-58		N/A	9.1 (0/3) (< 8.3/< 9.7)	N/A	9.7 (0/1) (< 9.7)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	FE-59		N/A	27.3 (0/3) (<21.5/<38.8)	N/A	38.8 (0/1) (<38.8)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
CO-60		N/A	4.6 (0/3) (< 3.5/< 5.8)	N/A	5.8 (0/1) (< 5.8)	Z-03 INDICATOR ONSITE 3 0.2 MILES NNW OF SITE	0	

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING BOTH THE MDAs AND THE POSITIVE VALUES FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 1ST QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION NUCLEAR POWER STATION				DOCKET NUMBER: 50-295 & 50-304				
Location of Facility: ZION, IL				REPORTING PERIOD: 1ST QUARTER 2006				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN (M)		
				LOCATIONS MEAN(M) (F) RANGE	LOCATION MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	ZN-65		N/A	20.6 (0/3) (<16.6/<27.4)	N/A	27.4 (0/1) (<27.4)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
	ZRNB-95		N/A	10.5 (0/3) (< 8.7/<11.9)	N/A	11.9 (0/1) (<11.9)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
	CS-134		10	7.6 (0/3) (< 6.7/< 8.3)	N/A	8.3 (0/1) (< 8.3)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
	CS-137		10	4.9 (0/3) (< 4.0/< 5.8)	N/A	5.8 (0/1) (< 5.8)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
	BALA140		N/A	301 (0/3) (<223/<447)	N/A	447 (0/1) (<447)	Z-03 INDICATOR ONSITE 3 0.2 MILES NNW OF SITE	0
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	36	N/A	22 (36/36) (19/25)	N/A	25 (1/1) (25)	Z-110-1 INDICATOR* 0.2 MILES SSW OF SITE	0

* Z-301-2 also read 25 mrem.

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING BOTH THE MDAs AND THE POSITIVE VALUES
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION Location of Facility: ZION, IL		DOCKET NUMBER: 50-295 & 50-304 REPORTING PERIOD: 2ND QUARTER 2006		INDICATOR CONTROL LOCATION WITH HIGHEST ANNUAL MEAN(M)				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
PUBLIC WATER (PC/L)	GR-B	12	4	3.6 (5/6) (<2.5/ 5.3)	3.0 (5/6) (<2.2/ 3.5)	4.3 (3/3) (3.3/ 5.3)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0
	H-3	4	200	173 (0/2) (<173/<173)	172 (0/2) (<171/<172)	173 (0/1) (<173)	Z-15 INDICATOR LAKE COUNTY WATER WORKS 1.4 MILES NNW OF SITE	0
	GAMMA MN-54	12	15	2 (0/6) (<1/<3)	2 (0/6) (<2/<3)	2 (0/3) (<2/<2)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	CO-58		15	3 (0/6) (<1/<4)	3 (0/6) (<2/<3)	3 (0/3) (<3/<3)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	FE-59		N/A	6 (0/6) (<4/<9)	6 (0/6) (<4/<7)	6 (0/3) (<6/<7)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	CO-60		15	2 (0/6) (<1/<3)	2 (0/6) (<2/<2)	2 (0/3) (<2/<2)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	ZN-65		30	5 (0/6) (<3/<7)	5 (0/6) (<4/<6)	5 (0/3) (<5/<6)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	ZRNB-95		15	3 (0/6) (<1/<4)	3 (0/6) (<2/<3)	3 (0/3) (<3/<3)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING BOTH THE MDAs AND THE POSITIVE VALUES FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION Location of Facility: ZION, IL		DOCKET NUMBER: 50-295 & 50-304 REPORTING PERIOD: 2ND QUARTER 2006		INDICATOR CONTROL LOCATION WITH HIGHEST ANNUAL MEAN(M)				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
PUBLIC WATER (PCI/L)	CS-134		15	2 (0/6) (<1/<3)	2 (0/6) (<2/<3)	2 (0/3) (<2/<3)	Z-15 INDICATOR LAKE COUNTY WATER WORKS 1.4 MILES NNW OF SITE	0
	CS-137		18	2 (0/6) (<1/<3)	2 (0/6) (<2/<3)	2 (0/3) (<2/<2)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	BALA140		N/A	8 (0/6) (<5/<14)	9 (0/6) (<5/<12)	9 (0/3) (<8/<12)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
FISH (PCI/KG WET)	GAMMA MN-54	3	130	72 (0/3) (<58/<89)	N/A	73 (0/2) (<58/<89)	Z-27 INDICATOR LAKE MICHIGAN FAR SITE 10.1 MILES N OF SITE	0
	CO-58		130	99 (0/3) (<85/<109)	N/A	103 (0/1) (<103)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0
	FE-59		260	239 (0/3) (<225/<255)	N/A	240 (0/2) (<225/<255)	Z-27 INDICATOR LAKE MICHIGAN FAR SITE 10.1 MILES N OF SITE	0
	CO-60		130	71 (0/3) (<60/<87)	N/A	74 (0/2) (<60/<87)	Z-27 INDICATOR LAKE MICHIGAN FAR SITE 10.1 MILES N OF SITE	0
	ZN-65		260	183 (0/3) (<148/<204)	N/A	198 (0/1) (<198)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION Location of Facility: ZION, IL		DOCKET NUMBER: 50-295 & 50-304 REPORTING PERIOD: 2ND QUARTER 2006		INDICATOR CONTROL LOCATION WITH HIGHEST ANNUAL MEAN(M)				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
FISH (PCI/KG WET)	ZRNB-95		N/A	98 (0/3) (<87/<114)	N/A	101 (0/2) (<87/<114)	Z-27 INDICATOR LAKE MICHIGAN FARSITE 10.1 MILES N OF SITE	0
	CS-134		130	83 (0/3) (<72/<91)	N/A	91 (0/1) (<91)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0
	CS-137		150	97 (2/3) (71/144)	N/A	108 (2/2) (71/144)	Z-27 INDICATOR LAKE MICHIGAN FARSITE 10.1 MILES N OF SITE	0
	BALA140		N/A	513 (0/3) (<474/<538)	N/A	538 (0/1) (<538)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0
SEDIMENT (PCI/KG DRY)	GAMMA MN-54	1	N/A	91 (0/1) (<91)	N/A	91 (0/1) (<91)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	CO-58		N/A	121 (0/1) (<121)	N/A	121 (0/1) (<121)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	FE-59		N/A	309 (0/1) (<309)	N/A	309 (0/1) (<309)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	CO-60		N/A	66 (0/1) (<66)	N/A	66 (0/1) (<66)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION Location of Facility: ZION, IL		DOCKET NUMBER: 50-295 & 50-304 REPORTING PERIOD: 2ND QUARTER 2006		INDICATOR CONTROL LOCATION WITH HIGHEST ANNUAL MEAN(M)				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SEDIMENT (PCI/KG DRY)	ZN-65		N/A	239 (0/1) (<239)	N/A	239 (0/1) (<239)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	ZRNB-95		N/A	151 (0/1) (<151)	N/A	151 (0/1) (<151)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	CS-134		150	133 (0/1) (<133)	N/A	133 (0/1) (<133)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	CS-137		180	115 (0/1) (<115)	N/A	115 (0/1) (<115)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	BALA140		N/A	694 (0/1) (<694)	N/A	694 (0/1) (<694)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	39	10	12 (35/39) (<4/18)	N/A	12 (12/13) (<5/18)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
	GAMMA MN-54	3	N/A	2.8 (0/3) (<2.7/<3.1)	N/A	3.1 (0/1) (<3.1)	Z-03 INDICATOR ONSITE 3 0.2 MILES NNW OF SITE	0
	CO-58		N/A	4.0 (0/3) (<3.6/<4.5)	N/A	4.5 (0/1) (<4.5)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION Location of Facility: ZION, IL		DOCKET NUMBER: 50-295 & 50-304 REPORTING PERIOD: 2ND QUARTER 2006		INDICATOR CONTROL LOCATION WITH HIGHEST ANNUAL MEAN(M)				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	FE-59		N/A	11.7 (0/3) (< 8.9/<13.4)	N/A	13.4 (0/1) (<13.4)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	CO-60		N/A	2.6 (0/3) (< 2.4/< 3.0)	N/A	3.0 (0/1) (< 3.0)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	ZN-65		N/A	8.7 (0/3) (< 7.9/< 9.8)	N/A	9.8 (0/1) (< 9.8)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	ZRNB-95		N/A	4.4 (0/3) (< 2.6/< 5.8)	N/A	5.8 (0/1) (< 5.8)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	CS-134		10	3.3 (0/3) (< 2.7/< 3.7)	N/A	3.7 (0/1) (< 3.7)	Z-03 INDICATOR ONSITE 3 0.2 MILES NNW OF SITE	0
	CS-137		10	2.5 (0/3) (< 2.2/< 2.9)	N/A	2.9 (0/1) (< 2.9)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	BALA140		N/A	98.9 (0/3) (<70.8/<126)	N/A	126 (0/1) (<126)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	36	N/A	21 (36/36) (18/26)	N/A	26 (1/1) (26)	Z-115-2 INDICATOR 0.4 MILES NW OF SITE	0

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 3RD QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION Location of Facility: ZION, IL		DOCKET NUMBER: 50-295 & 50-304 REPORTING PERIOD: 3RD QUARTER 2006		INDICATOR CONTROL LOCATION WITH HIGHEST ANNUAL MEAN(M)				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN(M) RANGE (F)	MEAN(M) RANGE (F)	MEAN(M) RANGE (F)	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
PUBLIC WATER (PCI/L)	GR-B	12	4	2.7 (4/6) (< 2.1/ 3.6)	3.1 (6/6) (2.4/ 5.5)	3.7 (3/3) (2.7/ 5.5)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	H-3	4	200	165 (0/2) (< 154/ < 175)	175 (0/2) (< 172/ < 178)	178 (0/1) (< 178)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0
	GAMMA MN-54	12	15	1 (0/6) (< 1/ < 2)	2 (0/6) (< 1/ < 3)	2 (0/3) (< 1/ < 3)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	CO-58		15	2 (0/6) (< 1/ < 2)	2 (0/6) (< 1/ < 3)	2 (0/3) (< 1/ < 3)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	FE-59		N/A	4 (0/6) (< 2/ < 5)	5 (0/6) (< 4/ < 9)	6 (0/3) (< 4/ < 9)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	CO-60		15	1 (0/6) (< 1/ < 2)	2 (0/6) (< 1/ < 3)	2 (0/3) (< 1/ < 3)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	ZN-65		30	3 (0/6) (< 2/ < 4)	3 (0/6) (< 2/ < 7)	4 (0/3) (< 2/ < 7)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	ZRNB-95		15	2 (0/6) (< 1/ < 2)	2 (0/6) (< 1/ < 4)	2 (0/3) (< 1/ < 4)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING BOTH THE MDAs AND THE POSITIVE VALUES FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 3RD QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION		DOCKET NUMBER: 50-295 & 50-304						
Location of Facility: ZION, IL		REPORTING PERIOD: 3RD QUARTER 2006						
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN(M)		
				LOCATIONS MEAN(M) (F) RANGE	LOCATION MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
PUBLIC WATER (PCI/L)	CS-134		15	1 (0/6) (<1/<2)	1 (0/6) (<1/<3)	2 (0/3) (<1/<3)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	CS-137		18	1 (0/6) (<1/<2)	2 (0/6) (<1/<3)	2 (0/3) (<1/<3)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	BALA140		N/A	9 (0/6) (<5/<13)	10 (0/6) (<5/<13)	11 (0/3) (<8/<13)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	38	10	19 (38/38) (10/40)	N/A	20 (12/12) (13/28)	Z-03 INDICATOR ONSITE 3 0.2 MILES NNW OF SITE	0
	GAMMA MN-54	3	N/A	2.1 (0/3) (< 1.8/< 2.3)	N/A	2.3 (0/1) (< 2.3)	Z-03 INDICATOR ONSITE 3 0.2 MILES NNW OF SITE	0
	CO-58		N/A	2.9 (0/3) (< 2.6/< 3.2)	N/A	3.2 (0/1) (< 3.2)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
	FE-59		N/A	11.8 (0/3) (< 8.8/<14)	N/A	14 (0/1) (<14)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	CO-60		N/A	2.4 (0/3) (< 2.4/< 2.6)	N/A	2.6 (0/1) (< 2.6)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING BOTH THE MDAs AND THE POSITIVE VALUES
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 3RD QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION Location of Facility: ZION, IL		DOCKET NUMBER: 50-295 & 50-304 REPORTING PERIOD: 3RD QUARTER 2006		INDICATOR CONTROL LOCATION WITH HIGHEST ANNUAL MEAN(M)				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	ZN-65		N/A	5.1 (0/3) (< 4.9/< 5.4)	N/A	5.4 (0/1) (< 5.4)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
	ZRNB-95		N/A	4.1 (0/3) (< 3.5/< 5.0)	N/A	5.0 (0/1) (< 5.0)	Z-03 INDICATOR ONSITE 3 0.2 MILES NNW OF SITE	0
	CS-134		10	1.6 (0/3) (< 1.1/< 1.9)	N/A	1.9 (0/1) (< 1.9)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	CS-137		10	1.7 (0/3) (< 1.6/< 1.9)	N/A	1.9 (0/1) (< 1.9)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	BALA140		N/A	166 (0/3) (<113/<218)	N/A	218 (0/1) (<218)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	36	N/A	18 (36/36) (15/22)	N/A	22 (1/1) (22)	Z-301-2 INDICATOR 0.5 MILES NW OF SITE	0

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 4TH QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION		DOCKET NUMBER: 50-295 & 50-304		REPORTING PERIOD: 4TH QUARTER 2006				
Location of Facility: ZION, IL		INDICATOR CONTROL LOCATION WITH HIGHEST ANNUAL MEAN(M)						
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
PUBLIC WATER (PC/L)	GR-B	12	4	3.1 (4/6) (<2.3/ 3.7)	2.9 (4/6) (2.0/ 4.6)	3.2 (2/3) (< 2.2/ 4.6)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
	H-3	4	200	178 (0/2) (<177/<178)	180 (0/2) (<179/<181)	181 (0/1) (<181)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0
	GAMMA MN-54	12	15	3 (0/6) (<2/<4)	3 (0/6) (<2/<4)	3 (0/3) (<2/<4)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0
	CO-58		15	3 (0/6) (<2/<6)	3 (0/6) (<2/<5)	4 (0/3) (<2/<6)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0
	FE-59		N/A	8 (0/6) (<5/<13)	7 (0/6) (<4/<10)	9 (0/3) (<5/<13)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0
	CO-60		15	3 (0/6) (<2/<5)	3 (0/6) (<2/<4)	3 (0/3) (<2/<5)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0
	ZN-65		30	6 (0/6) (<3/<8)	5 (0/6) (<3/<9)	6 (0/3) (<4/<8)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0
	ZRNB-95		15	4 (0/6) (<2/<5)	3 (0/6) (<2/<6)	4 (0/3) (<2/<5)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING BOTH THE MDAs AND THE POSITIVE VALUES FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 4TH QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION		DOCKET NUMBER: 50-295 & 50-304							
Location of Facility: ZION, IL		REPORTING PERIOD: 4TH QUARTER 2006							
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN(M)			NUMBER OF NONROUTINE REPORTED MEASUREMENTS
				LOCATIONS	LOCATION	MEAN(M)	STATION #	NUMBER OF	
				MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	DISTANCE AND DIRECTION	MEASUREMENTS	
PUBLIC WATER (PC/L)	CS-134		15	3 (0/6) (<2/<4)	3 (0/6) (<2/<4)	3 (0/3) (<2/<4)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0	
	CS-137		18	3 (0/6) (<2/<5)	3 (0/6) (<2/<4)	4 (0/3) (<2/<5)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0	
	BALA140		N/A	10 (0/6) (<6/<13)	9 (0/6) (<5/<15)	10 (0/3) (<8/<13)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0	
FISH (PCI/KG WET)	GAMMA MN-54	3	130	52 (0/3) (<35/<74)	N/A	74 (0/1) (<74)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0	
	CO-58		130	69 (0/3) (<50/<100)	N/A	100 (0/1) (<100)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0	
	FE-59		260	194 (0/3) (<133/<235)	N/A	235 (0/1) (<235)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0	
	CO-60		130	46 (0/3) (<28/<74)	N/A	74 (0/1) (<74)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0	
	ZN-65		260	104 (0/3) (<69/<156)	N/A	156 (0/1) (<156)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0	

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 4TH QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION Location of Facility: ZION, IL		DOCKET NUMBER: 50-295 & 50-304 REPORTING PERIOD: 4TH QUARTER 2006		INDICATOR CONTROL LOCATION WITH HIGHEST ANNUAL MEAN(M)				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
FISH (PCI/KG WET)	ZRNB-95		N/A	77 (0/3) (<58/<102)	N/A	102 (0/1) (<102)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0
	CS-134		130	41 (0/3) (<29/<58)	N/A	58 (0/1) (<58)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0
	CS-137		150	53 (1/3) (<41/<60)	N/A	60 (0/1) (<60)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0
	BALA140		N/A	764 (0/3) (<532/<1020)	N/A	1020 (0/1) (<1020)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0
SEDIMENT (PCI/KG DRY)	GAMMA MN-54	1	N/A	34 (0/1) (<34)	N/A	34 (0/1) (<34)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	CO-58		N/A	39 (0/1) (<39)	N/A	39 (0/1) (<39)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	FE-59		N/A	105 (0/1) (<105)	N/A	105 (0/1) (<105)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	CO-60		N/A	46 (0/1) (<46)	N/A	46 (0/1) (<46)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 4TH QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION		DOCKET NUMBER: 50-295 & 50-304						
Location of Facility: ZION, IL		REPORTING PERIOD: 4TH QUARTER 2006						
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN(M)		
				LOCATIONS MEAN(M) (F) RANGE	LOCATION MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SEDIMENT (PCI/KG DRY)	ZN-65		N/A	76 (0/1) (<76)	N/A	76 (0/1) (<76)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	ZRNB-95		N/A	47 (0/1) (<47)	N/A	47 (0/1) (<47)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	CS-134		150	31 (0/1) (<31)	N/A	31 (0/1) (<31)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	CS-137		180	32 (0/1) (<32)	N/A	32 (0/1) (<32)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
	BALA140		N/A	127 (0/1) (<127)	N/A	127 (0/1) (<127)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	42	10	21 (42/42) (11/33)	N/A	22 (14/14) (11/33)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	GAMMA MN-54	3	N/A	1.9 (0/3) (< 1.5/< 2.2)	N/A	2.2 (0/1) (< 2.2)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
	CO-58		N/A	2.5 (0/3) (< 1.8/< 2.8)	N/A	2.8 (0/1) (< 2.8)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 4TH QUARTER SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION Location of Facility: ZION, IL		DOCKET NUMBER: 50-295 & 50-304 REPORTING PERIOD: 4TH QUARTER 2006		INDICATOR CONTROL LOCATION WITH HIGHEST ANNUAL MEAN(M)				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	FE-59		N/A	5.1 (0/3) (<3.4/<6.6)	N/A	6.6 (0/1) (<6.6)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	CO-60		N/A	2.1 (0/3) (<1.8/<2.6)	N/A	2.6 (0/1) (<2.6)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
	ZN-65		N/A	4.5 (0/3) (<2.7/<5.6)	N/A	5.6 (0/1) (<5.6)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
	ZRNB-95		N/A	2.3 (0/3) (<1.5/<2.9)	N/A	2.9 (0/1) (<2.9)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	CS-134		10	1.8 (0/3) (<1.2/<2.2)	N/A	2.2 (0/1) (<2.2)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
	CS-137		10	1.8 (0/3) (<1.2/<2.3)	N/A	2.3 (0/1) (<2.3)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	BALA140		N/A	15 (0/3) (<13.1/<16.2)	N/A	16.2 (0/1) (<16.2)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	36	N/A	23 (36/36) (20/27)	N/A	27 (1/1) (27)	Z-301-2 INDICATOR 0.5 MILES NW OF SITE	0

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION				DOCKET NUMBER: 50-295 & 50-304				
Location of Facility: ZION, IL				REPORTING PERIOD: ANNUAL 2006				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN		
				LOCATIONS	LOCATION	MEAN	STATION #	NUMBER OF
				MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	NAME DISTANCE AND DIRECTION	NONROUTINE REPORTED MEASUREMENTS
PUBLIC WATER (PCI/LITER)	GR-B	48	4	3.0 (19/24) (<2.1/ 5.3)	2.9 (21/24) (2.0/ 5.5)	3.2 (11/12) (< 2.3/ 5.3)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0
	H-3	16	200	174 (0/8) (<154/<185)	178 (0/8) (<171/<187)	179 (0/4) (<171/<186)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0
	GAMMA MN-54	48	15	2 (0/24) (<1/<5)	2 (0/24) (<1/<5)	2 (0/12) (<1/<5)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0
	CO-58		15	3 (0/24) (<1/<6)	3 (0/24) (<1/<6)	3 (0/12) (<1/<6)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0
	FE-59		N/A	6 (0/24) (<2/<13)	6 (0/24) (<3/<13)	6 (0/12) (<3/<13)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0
	CO-60		15	2 (0/24) (<1/<6)	2 (0/24) (<1/<6)	2 (0/12) (<1/<6)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0
	ZN-65		30	5 (0/24) (<2/<12)	5 (0/24) (<2/<13)	5 (0/12) (<2/<12)	Z-15 INDICATOR LAKE COUNTY WATER WORKS 1.4 MILES NNW OF SITE	0
	ZRNB-95		15	3 (0/24) (<1/<5)	3 (0/24) (<1/<6)	3 (0/12) (<2/<6)	Z-14 CONTROL KENOSHA WATER WORKS 10.0 MILES N OF SITE	0

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION Location of Facility: ZION, IL		DOCKET NUMBER: 50-295 & 50-304 REPORTING PERIOD: ANNUAL 2006		INDICATOR CONTROL LOCATION WITH HIGHEST ANNUAL MEAN				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
PUBLIC WATER (PCI/LITER)	CS-134		15	2 (0/24) (<1/<6)	2 (0/24) (<1/<6)	2 (0/12) (<1/<6)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0
	CS-137		18	2 (0/24) (<1/<5)	2 (0/24) (<1/<6)	2 (0/12) (<1/<5)	Z-16 INDICATOR WAUKEGAN WATER WORKS 6.1 MILES S OF SITE	0
	BALA140		N/A	9 (0/24) (<5/<14)	9 (0/24) (<5/<15)	9 (0/12) (<5/<13)	Z-18 CONTROL LAKE FOREST WATER WORKS 12.9 MILES S OF SITE	0
FISH (PCI/KG WET)	GAMMA MN-54	6	130	62 (0/6) (<35/<89)	N/A	73 (0/2) (<71/<74)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0
	CO-58		130	84 (0/6) (<50/<109)	N/A	101 (0/2) (<100/<103)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0
	FE-59		260	216 (0/6) (<133/<255)	N/A	236 (0/2) (<235/<236)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0
	CO-60		130	59 (0/6) (<28/<87)	N/A	70 (0/2) (<67/<74)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0
	ZN-65		260	144 (0/6) (<69/<204)	N/A	177 (0/2) (<156/<198)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION		DOCKET NUMBER: 50-295 & 50-304				REPORTING PERIOD: ANNUAL 2006			
Location of Facility: ZION, IL				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN			
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS	
FISH (PCI/KG WET)	ZRNB-95		N/A	87 (0/6) (<58/<114)	N/A	98 (0/2) (<93/<102)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0	
	CS-134		130	62 (0/6) (<29/<91)	N/A	75 (0/2) (<58/<91)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0	
	CS-137		150	75 (3/6) (<41/144)	N/A	79 (3/4) (<41/144)	Z-27 INDICATOR LAKE MICHIGAN FARSITE 10.1 MILES N OF SITE	0	
	BALA140		N/A	639 (0/6) (<474/<1020)	N/A	779 (0/2) (<538/<1020)	Z-26 INDICATOR LAKE MICHIGAN NEARSITE AT STATION	0	
SEDIMENT (PCI/KG DRY)	GAMMA MN-54	2	N/A	63 (0/2) (<34/<91)	N/A	63 (0/2) (<34/<91)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0	
	CO-58		N/A	80 (0/2) (<39/<121)	N/A	80 (0/2) (<39/<121)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0	
	FE-59		N/A	207 (0/2) (<105/<309)	N/A	207 (0/2) (<105/<309)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0	
	CO-60		N/A	56 (0/2) (<46/<66)	N/A	56 (0/2) (<46/<66)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0	

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION		DOCKET NUMBER: 50-295 & 50-304				REPORTING PERIOD: ANNUAL 2006			
Location of Facility: ZION, IL				INDICATOR	CONTROL	LOCATION WITH HIGHEST ANNUAL MEAN			
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS	
SEDIMENT (PCI/KG DRY)	ZN-65		N/A	158 (0/2) (<76/<239)	N/A	158 (0/2) (<76/<239)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0	
	ZRNB-95		N/A	99 (0/2) (<47/<151)	N/A	99 (0/2) (<47/<151)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0	
	CS-134		150	82 (0/2) (<31/<133)	N/A	82 (0/2) (<31/<133)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0	
	CS-137		180	74 (0/2) (<32/<115)	N/A	74 (0/2) (<32/<115)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0	
	BALA140		N/A	411 (0/2) (<127/<694)	N/A	411 (0/2) (<127/<694)	Z-25 INDICATOR LAKE MICHIGAN - ILLINOIS BEACH STATE PRK 0.2 MILES S OF SITE	0	
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	158	10	17 (154/158) (<4/40)	N/A	17 (51/52) (<5/31)	Z-03 INDICATOR ONSITE 3 0.2 MILES NNW OF SITE	0	
	GAMMA MN-54	12	N/A	3.1 (0/12) (<1.5/<6.1)	N/A	3.2 (0/4) (<1.5/<6.1)	Z-03 INDICATOR ONSITE 3 0.2 MILES NNW OF SITE	0	
	CO-58		N/A	4.6 (0/12) (<1.8/<9.7)	N/A	4.8 (0/4) (<2.8/<9.7)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0	

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR
THE ZION NUCLEAR POWER STATION, 2006**

Name of Facility: ZION Location of Facility: ZION, IL		DOCKET NUMBER: 50-295 & 50-304 REPORTING PERIOD: ANNUAL 2006		INDICATOR CONTROL LOCATION WITH HIGHEST ANNUAL MEAN				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	MEAN (F) RANGE	MEAN (F) RANGE	MEAN (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	FE-59		N/A	14 (0/12) (<3.4/<40)	N/A	16.4 (0/4) (<5.3/<40)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
	CO-60		N/A	2.9 (0/12) (<1.8/<5.8)	N/A	3.1 (0/4) (<2.0/<5.8)	Z-03 INDICATOR ONSITE 3 0.2 MILES NNW OF SITE	0
	ZN-65		N/A	9.7 (0/12) (<2.7/<27)	N/A	11.7 (0/4) (<5.4/<27)	Z-01 INDICATOR ONSITE 1 0.3 MILES S OF SITE	0
	ZRNB-95		N/A	5.3 (0/12) (<1.5/<12)	N/A	5.7 (0/4) (<2.9/<11)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	CS-134		10	3.6 (0/12) (<1.1/<8.3)	N/A	3.6 (0/4) (<1.9/<6.7)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	CS-137		10	2.7 (0/12) (<1.2/<5.8)	N/A	3.0 (0/4) (<1.9/<4.9)	Z-02 INDICATOR ONSITE 2 0.2 MILES W OF SITE	0
	BALA140		N/A	145 (0/12) (<13.1/<447)	N/A	168 (0/4) (<13.1/<447)	Z-03 INDICATOR ONSITE 3 0.2 MILES NNW OF SITE	0
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	144	N/A	21 (144/144) (15/27)	N/A	25 (4/4) (22/27)	Z-301-2 INDICATOR 0.5 MILES NW OF SITE	0

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APPENDIX B

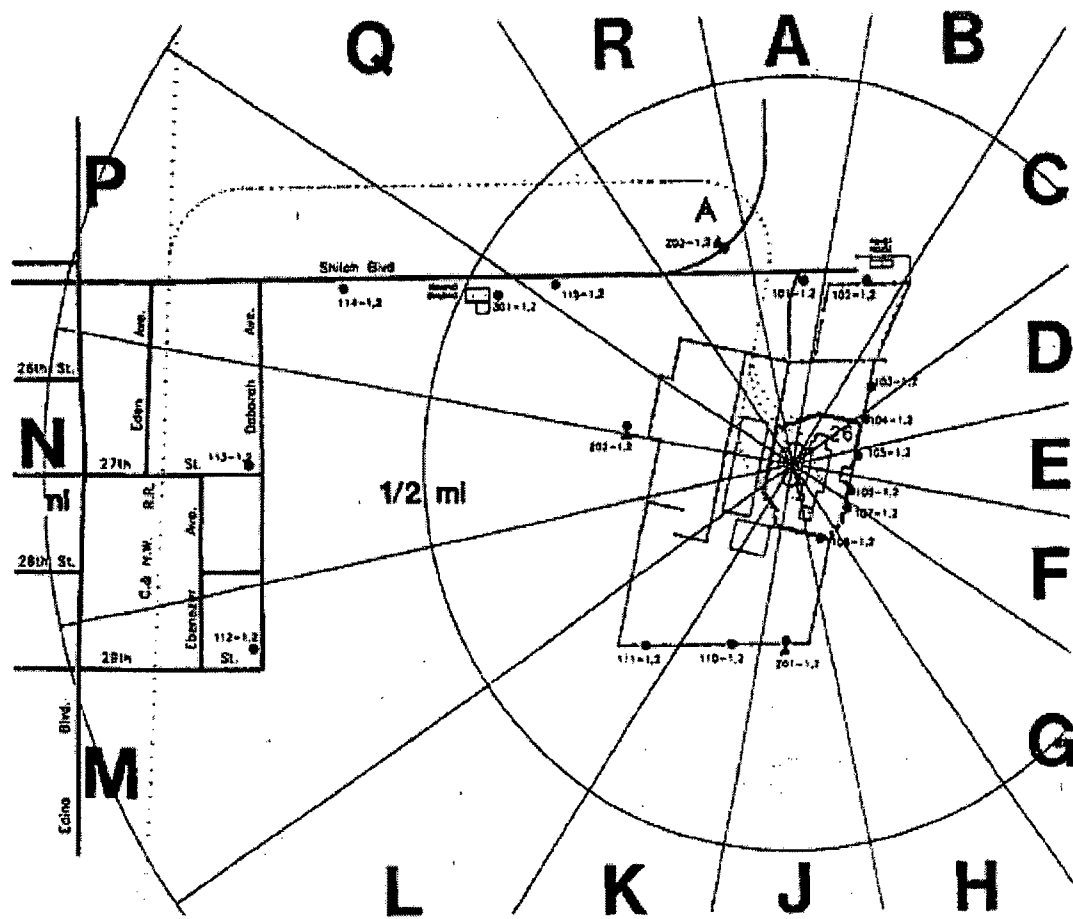
LOCATION DESIGNATION, DISTANCE & DIRECTION, AND SAMPLE COLLECTION & ANALYTICAL METHODS

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Zion Nuclear Power Station, 2006

Location	Location Description	Distance & Direction From Site
A. Public Water		
Z-14	Kenosha Water Works (control)	10.0 miles N
Z-15	Lake County Water Works (indicator)	1.4 miles NNW
Z-16	Waukegan Water Works (indicator)	6.1 miles S
Z-18	Lake Forest Water Works (control)	12.9 miles S
B. Air Particulates		
Z-01	Onsite 1 (indicator)	0.3 miles S
Z-02	Onsite 2 (indicator)	0.2 miles W
Z-03	Onsite 3 (indicator)	0.2 miles NNW
C. Fish		
Z-26	Lake Michigan Nearsite (indicator)	At station
Z-27	Lake Michigan Farsite (indicator)	10.1 miles N
D. Sediment		
Z-25	Lake Michigan, Illinois Beach State Park (indicator)	0.2 miles S
E. Environmental Dosimetry - TLD		
Inner Ring		
Z-101-1 and -2		0.2 miles N
Z-102-1 and -2		0.2 miles NNE
Z-103-1 and -2		0.2 miles NE
Z-104-1 and -2		0.1 miles ENE
Z-105-1 and -2		0.1 miles E
Z-106-1 and -2		0.1 miles ESE
Z-107-1 and -2		0.1 miles SE
Z-108-1 and -2		0.1 miles SSE
Z-110-1 and -2		0.2 miles SSW
Z-111-1 and -2		0.3 miles SW
Z-112-1 and -2		0.7 miles WSW
Z-113-1 and -2		0.6 miles W
Z-114-1 and -2		0.6 miles WNW
Z-115-1 and -2		0.4 miles NW
Z-301-1 and -2		0.5 miles NW
Other		
Z-01-1 and -2	Onsite 1 (indicator)	0.3 miles S
Z-02-1 and -2	Onsite 2 (indicator)	0.2 miles W
Z-03-1 and -2	Onsite 3 (indicator)	0.2 miles NNW

TABLE B-2: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Zion Nuclear Power Station, 2006

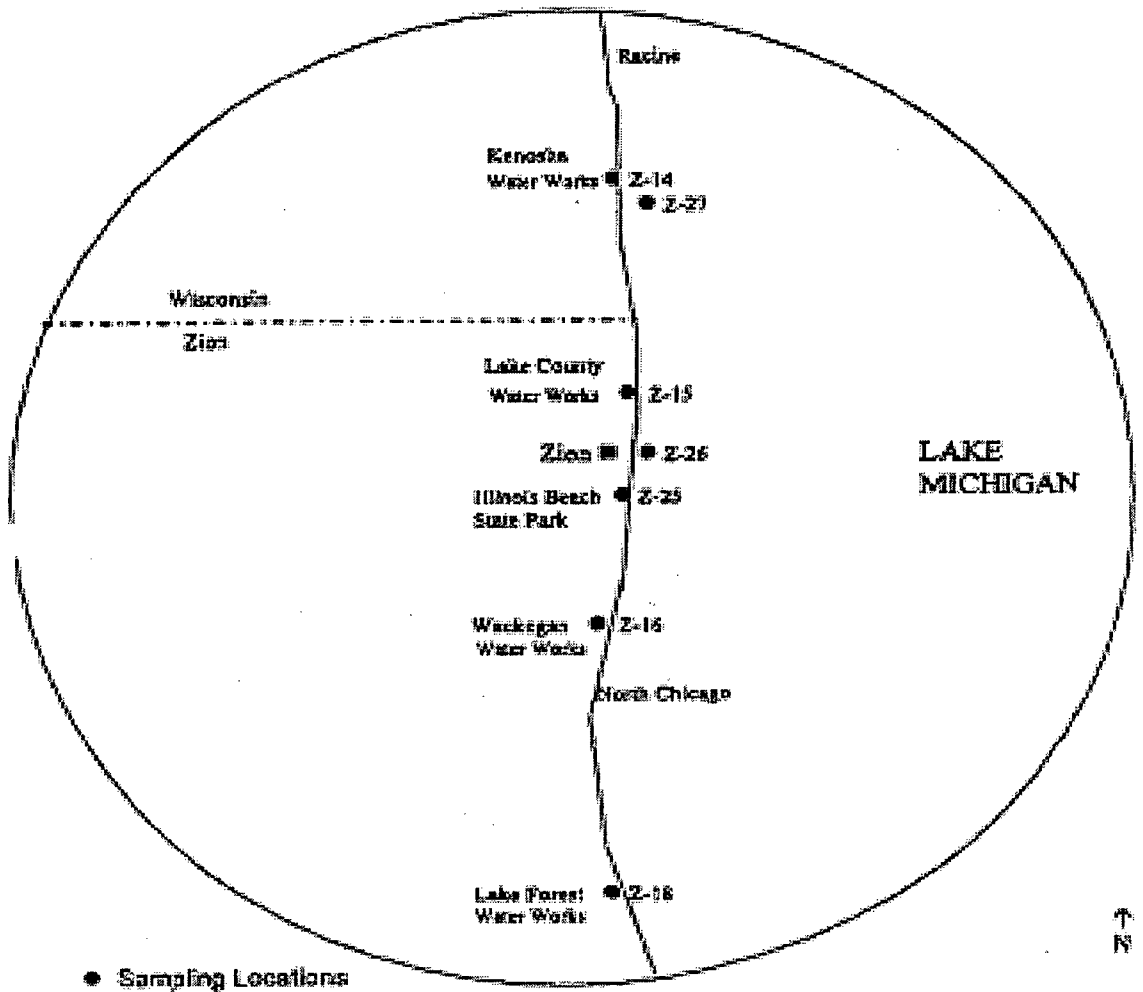
Sample Medium	Analysis	Sampling Method	Analytical Procedure Number
Public Water	Gamma Spectroscopy	Monthly composite from weekly grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Public Water	Gross Beta	Monthly composite from weekly grab samples.	TBE, TBE-2008 Gross Alpha and/or gross beta activity in various matrices Env. Inc., W(DS)-01 Determination of gross alpha and/or gross beta in water (dissolved solids or total residue)
Public Water	Tritium	Quarterly composite from weekly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Fish	Gamma Spectroscopy	Semi-annual samples collected via electroshocking or other techniques	TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Sediment	Gamma Spectroscopy	Semi-annual grab samples	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Air Particulates	Gross Beta	One-week composite of continuous air sampling through glass fiber filter paper	TBE, TBE-2008 Gross Alpha and/or gross beta activity in various matrices Env. Inc., AP-02 Determination of gross alpha and/or gross beta in air particulate filters
Air Particulates	Gamma Spectroscopy	Quarterly composite of each station	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
TLD	Thermoluminescence Dosimetry	Quarterly TLDs comprised of two CaF 200 and two LiF 100 LiF 4-chip Harshaw elements.	Global Dosimetry



- TLD Monitoring Location
- ▲ Air Sampling Location

Zion Station Inner Ring TLD Locations and Fixed Air Samplers
Z-01 Onsite No. 1 Southside
Z-02 Onsite No. 2 Westside
Z-03 Onsite No. 3 Northside

Figure B-1
 Inner Ring TLD Locations and Fixed Air Samplers of the Zion Nuclear Power Station, 2006



Fish, Water and Sediment Locations
Z-14 Kenosha Water Works
Z-15 Lake County Water Works
Z-16 Waukegan Water Works
Z-18 Lake Forest Water Works
Z-25 Illinois Beach State Park
Z-26 Lake Michigan in Discharge
Z-27 Lake Michigan 10 mi. North (C)

Figure B-2
Fish, Water and Sediment Locations of the Zion Nuclear Power Station, 2006

APPENDIX C

**DATA TABLES
PRIMARY LABORATORY**

**TABLE C-1.1 CONCENTRATIONS OF GROSS BETA IN PUBLIC WATER SAMPLES
COLLECTED IN THE VICINITY OF ZION NUCLEAR POWER STATION, 2006**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION PERIOD	Z-14	Z-15	Z-16	Z-18
JAN	2.2 \pm 1.5	2.4 \pm 1.5	2.4 \pm 1.5	3.2 \pm 1.5
FEB	2.9 \pm 1.6	2.3 \pm 1.5	2.4 \pm 1.5	2.7 \pm 1.5
MAR	3.0 \pm 1.6	2.9 \pm 1.6	2.6 \pm 1.6	2.4 \pm 1.6
APR	3.1 \pm 1.6	2.8 \pm 1.6	4.4 \pm 1.7	2.9 \pm 1.6
MAY	2.7 \pm 1.8	< 2.5	3.3 \pm 1.8	3.4 \pm 1.8
JUN	< 2.2	3.3 \pm 1.7	5.3 \pm 1.9	3.5 \pm 1.7
JUL	2.4 \pm 1.6	< 2.2	3.2 \pm 1.7	2.8 \pm 1.6
AUG	2.7 \pm 1.5	2.6 \pm 1.5	3.6 \pm 1.6	2.7 \pm 1.5
SEP	2.7 \pm 1.5	< 2.1	2.4 \pm 1.6	5.5 \pm 2.1
OCT	3.4 \pm 1.3	3.2 \pm 1.3	3.3 \pm 1.3	4.6 \pm 1.4
NOV	2.0 \pm 1.4	3.6 \pm 1.5	3.7 \pm 1.5	2.8 \pm 1.5
DEC	< 2.3	< 2.3	< 2.3	< 2.2
MEAN	2.6 \pm 0.8	2.7 \pm 1	3.2 \pm 1.8	3.2 \pm 1.9

**TABLE C-1.2 CONCENTRATIONS OF TRITIUM IN PUBLIC WATER SAMPLES
COLLECTED IN THE VICINITY OF ZION NUCLEAR POWER STATION, 2006**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

COLLECTION PERIOD	Z-14	Z-15	Z-16	Z-18
JAN-MAR	< 186	< 175	< 185	< 187
APR-JUN	< 171	< 173	< 173	< 172
JUL-SEP	< 178	< 154	< 175	< 172
OCT-DEC	< 181	< 178	< 177	< 179
MEAN	179 \pm 13	170 \pm 22	178 \pm 11	178 \pm 14

TABLE C-1.3 CONCENTRATIONS OF GAMMA EMITTERS IN PUBLIC WATER SAMPLES COLLECTED IN THE VICINITY OF ZION NUCLEAR POWER STATION, 2006

RESULTS IN UNITS OF PCI/L \pm 2 SIGMA

STC	COLLECTION PERIOD	MN-54	CO-58	FE-59	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BALA140
Z-14	JAN	< 3	< 3	< 6	< 2	< 6	< 3	< 3	< 3	< 8
	FEB	< 5	< 6	< 13	< 6	< 13	< 6	< 6	< 6	< 14
	MAR	< 2	< 3	< 6	< 2	< 5	< 3	< 2	< 2	< 9
	APR	< 2	< 2	< 5	< 2	< 5	< 2	< 2	< 2	< 8
	MAY	< 3	< 3	< 7	< 2	< 6	< 3	< 3	< 3	< 11
	JUN	< 2	< 2	< 4	< 2	< 4	< 2	< 2	< 2	< 5
	JUL	< 1	< 2	< 4	< 1	< 3	< 2	< 1	< 1	< 12
	AUG	< 1	< 2	< 4	< 1	< 2	< 2	< 1	< 1	< 8
	SEP	< 2	< 2	< 4	< 2	< 3	< 2	< 1	< 2	< 5
	OCT	< 2	< 2	< 5	< 2	< 3	< 2	< 2	< 2	< 9
	NOV	< 3	< 3	< 6	< 3	< 5	< 3	< 2	< 3	< 5
	DEC	< 4	< 5	< 10	< 4	< 7	< 6	< 4	< 4	< 15
	MEAN		2 \pm 2	3 \pm 3	6 \pm 5	2 \pm 3	5 \pm 5	3 \pm 3	2 \pm 3	2 \pm 3
Z-15	JAN	< 3	< 3	< 7	< 3	< 8	< 3	< 4	< 3	< 9
	FEB	< 5	< 4	< 11	< 6	< 12	< 5	< 5	< 5	< 14
	MAR	< 1	< 2	< 4	< 1	< 3	< 2	< 1	< 1	< 5
	APR	< 2	< 3	< 5	< 2	< 5	< 3	< 2	< 2	< 8
	MAY	< 3	< 4	< 9	< 3	< 7	< 4	< 3	< 3	< 14
	JUN	< 2	< 2	< 4	< 2	< 4	< 2	< 2	< 2	< 5
	JUL	< 1	< 2	< 4	< 1	< 3	< 2	< 1	< 1	< 13
	AUG	< 1	< 1	< 2	< 1	< 2	< 1	< 1	< 1	< 7
	SEP	< 2	< 2	< 5	< 2	< 4	< 2	< 2	< 2	< 7
	OCT	< 2	< 2	< 5	< 2	< 3	< 2	< 2	< 2	< 8
	NOV	< 3	< 3	< 7	< 3	< 6	< 3	< 3	< 3	< 6
	DEC	< 4	< 4	< 9	< 2	< 8	< 5	< 4	< 4	< 12
	MEAN		2 \pm 2	3 \pm 2	6 \pm 5	2 \pm 3	5 \pm 6	3 \pm 3	2 \pm 3	2 \pm 2

TABLE C-I.3 CONCENTRATIONS OF GAMMA EMITTERS IN PUBLIC WATER SAMPLES COLLECTED IN THE VICINITY OF ZION NUCLEAR POWER STATION, 2006

RESULTS IN UNITS OF PCI/L \pm 2 SIGMA

STC	COLLECTION PERIOD	MN-54	CO-58	FE-59	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BALA140
Z-16	JAN	< 3	< 3	< 7	< 3	< 6	< 3	< 3	< 3	< 9
	FEB	< 4	< 5	< 11	< 5	< 11	< 5	< 6	< 5	< 13
	MAR	< 1	< 1	< 3	< 1	< 3	< 1	< 1	< 1	< 5
	APR	< 2	< 3	< 6	< 2	< 5	< 3	< 2	< 2	< 8
	MAY	< 1	< 1	< 4	< 1	< 3	< 1	< 1	< 1	< 6
	JUN	< 3	< 3	< 7	< 3	< 6	< 3	< 3	< 3	< 8
	JUL	< 1	< 2	< 4	< 2	< 3	< 2	< 1	< 1	< 12
	AUG	< 1	< 1	< 4	< 1	< 2	< 2	< 1	< 1	< 10
	SEP	< 1	< 2	< 4	< 2	< 3	< 2	< 1	< 2	< 5
	OCT	< 2	< 2	< 5	< 2	< 4	< 2	< 2	< 2	< 8
	NOV	< 4	< 4	< 9	< 5	< 6	< 5	< 4	< 4	< 9
	DEC	< 4	< 6	< 13	< 4	< 8	< 5	< 4	< 5	< 13
	MEAN	2 \pm 2	3 \pm 3	6 \pm 7	2 \pm 2	5 \pm 5	3 \pm 3	2 \pm 3	2 \pm 3	9 \pm 5
Z-18	JAN	< 2	< 2	< 5	< 2	< 5	< 3	< 2	< 2	< 8
	FEB	< 4	< 4	< 9	< 5	< 10	< 5	< 5	< 5	< 10
	MAR	< 1	< 1	< 3	< 1	< 3	< 1	< 1	< 1	< 5
	APR	< 2	< 3	< 6	< 2	< 5	< 3	< 2	< 2	< 8
	MAY	< 2	< 3	< 7	< 2	< 5	< 3	< 3	< 2	< 12
	JUN	< 2	< 3	< 6	< 2	< 6	< 3	< 2	< 2	< 8
	JUL	< 1	< 2	< 5	< 1	< 3	< 2	< 1	< 1	< 13
	AUG	< 1	< 1	< 4	< 1	< 2	< 1	< 1	< 1	< 8
	SEP	< 3	< 3	< 9	< 3	< 7	< 4	< 3	< 3	< 12
	OCT	< 2	< 2	< 4	< 2	< 3	< 2	< 2	< 2	< 8
	NOV	< 4	< 4	< 8	< 4	< 9	< 4	< 4	< 4	< 11
	DEC	< 2	< 2	< 7	< 3	< 5	< 3	< 2	< 3	< 9
	MEAN	2 \pm 2	3 \pm 2	6 \pm 4	2 \pm 2	5 \pm 5	3 \pm 2	2 \pm 2	2 \pm 2	9 \pm 5

TABLE C-II.1

CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES
COLLECTED IN THE VICINITY OF ZION NUCLEAR POWER STATION, 2006

RESULTS IN UNITS OF PCI/KG WET \pm 2 SIGMA

STC	COLLECTION PERIOD	MN-54	CO-58	FE-59	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BALA-140
Z-26										
Lake Trout	05/17/06	< 71	< 103	< 236	< 67	< 198	< 93	< 91	< 77	< 538
Coho Salmon	10/11/06	< 74	< 100	< 235	< 74	< 156	< 102	< 58	< 60	< 1020
	MEAN	73 \pm 5	101 \pm 5	236 \pm 1	70 \pm 11	177 \pm 59	98 \pm 12	75 \pm 47	69 \pm 25	779 \pm 682
Z-27										
Lake Trout	05/17/06	< 89	< 109	< 255	< 87	< 204	< 114	< 86	144 \pm 54	< 526
Burbot	05/17/06	< 58	< 85	< 225	< 60	< 148	< 87	< 72	71 \pm 31	< 474
Lake Trout	10/24/06	< 35	< 50	< 133	< 28	< 69	< 58	< 29	59 \pm 29	< 741
Longnose Sucker	10/24/06	< 47	< 58	< 213	< 36	< 86	< 69	< 35	< 41	< 532
	MEAN	41 \pm 17	54 \pm 10	173 \pm 113	32 \pm 12	78 \pm 24	64 \pm 15	32 \pm 7	50 \pm 25	637 \pm 296

**TABLE CIII.1 CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES
COLLECTED IN THE VICINITY OF ZION NUCLEAR POWER STATION, 2006**

RESULTS IN UNITS OF PCI/KG DRY \pm 2 SIGMA

STC	COLLECTION PERIOD	MN-54	CO-58	FE-59	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BALA-140
Z-25	05/17/06	< 91	< 121	< 309	< 66	< 239	< 151	< 133	< 115	< 694
	10/18/06	< 34	< 39	< 105	< 46	< 76	< 47	< 31	< 32	< 127
	MEAN	63 \pm 80	80 \pm 116	207 \pm 288	56 \pm 27	158 \pm 230	99 \pm 147	82 \pm 145	74 \pm 117	411 \pm 802

TABLE C-IV.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES
COLLECTED IN THE VICINITY OF ZION NUCLEAR POWER STATION, 2006

RESULTS IN UNITS OF E-3 PCI/CU METER ± SIGMA

WEEK	GROUP I		
	Z-01	Z-02	Z-03
1	13 ± 4	13 ± 4	15 ± 4
2	18 ± 4	13 ± 4	18 ± 4
3	23 ± 4	17 ± 4	19 ± 4
4	17 ± 4	18 ± 4	14 ± 4
5	9 ± 4	12 ± 4	10 ± 4
6	16 ± 4	14 ± 4	19 ± 4
7	16 ± 4	10 ± 4	15 ± 4
8	20 ± 4	18 ± 4	21 ± 4
9	14 ± 4	21 ± 4	19 ± 4
10	10 ± 4	8 ± 3	14 ± 4
11	15 ± 4	14 ± 4	16 ± 4
12	15 ± 4	13 ± 4	14 ± 4
13	10 ± 4	6 ± 3	8 ± 3
14	13 ± 4	13 ± 4	10 ± 4
15	14 ± 4	13 ± 4	16 ± 4
16	14 ± 4	11 ± 4	16 ± 4
17	13 ± 4	9 ± 3	13 ± 4
18	10 ± 4	11 ± 4	9 ± 4
19	16 ± 4	11 ± 4	13 ± 4
20	< 5	< 5	< 5
21	7 ± 3	< 4	8 ± 3
22	18 ± 4	17 ± 4	18 ± 4
23	15 ± 4	11 ± 4	14 ± 4
24	9 ± 3	7 ± 4	10 ± 3
25	15 ± 4	12 ± 4	15 ± 4
26	12 ± 4	8 ± 3	15 ± 4
27	16 ± 4	13 ± 4	20 ± 4
28	11 ± 3	12 ± 4	13 ± 4
29	24 ± 5	17 ± 4	24 ± 5
30	16 ± 4	15 ± 4	22 ± 4
31	23 ± 4	21 ± 4	27 ± 4
32	22 ± 5	20 ± 5	17 ± 4
33	18 ± 4	21 ± 4	16 ± 4
34	23 ± 4	21 ± 4	28 ± 5
35	23 ± 4	22 ± 4	(1)
36	10 ± 4	11 ± 5	15 ± 5
37	40 ± 6	20 ± 4	24 ± 5
38	20 ± 4	21 ± 5	20 ± 5
39	13 ± 5	16 ± 5	17 ± 5
40	14 ± 3	17 ± 4	19 ± 4
41	13 ± 4	11 ± 4	15 ± 4
42	13 ± 4	17 ± 4	13 ± 4
43	14 ± 4	16 ± 4	15 ± 4
44	16 ± 4	15 ± 4	15 ± 4
45	27 ± 5	31 ± 6	31 ± 6
46	18 ± 4	18 ± 4	13 ± 4
47	28 ± 5	23 ± 4	19 ± 4
48	25 ± 5	24 ± 4	24 ± 4
49	27 ± 4	33 ± 5	26 ± 4
50	19 ± 5	19 ± 5	22 ± 5
51	28 ± 4	31 ± 4	29 ± 4
52	24 ± 5	26 ± 5	24 ± 5
53	25 ± 5	24 ± 5	28 ± 5
MEAN	17 ± 13	16 ± 13	17 ± 12

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING BOTH THE MDA AND POSITIVE VALUES

TABLE C-IV.2 MONTHLY AND YEARLY MEAN VALUES OF GROSS BETA CONCENTRATIONS (E-3 PCI/CU METER) IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF ZION NUCLEAR POWER STATION, 2006

ONSITE LOCATIONS

COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD
12/28/05 - 02/01/06	9	23	15 ± 7
02/01/06 - 03/01/06	10	21	17 ± 7
03/01/06 - 03/29/06	6	16	12 ± 7
03/29/06 - 05/03/06	9	16	12 ± 4
05/03/06 - 05/31/06	< 4	18	11 ± 11
05/31/06 - 06/28/06	7	15	12 ± 6
06/28/06 - 08/03/06	11	27	18 ± 10
08/03/06 - 08/31/06	16	28	21 ± 7
08/31/06 - 09/26/06	10	40	19 ± 16
09/26/06 - 11/02/06	11	19	15 ± 4
11/02/06 - 11/29/06	13	31	23 ± 11
11/29/06 - 01/03/07	19	33	26 ± 9
12/28/05 - 01/03/07	< 4	40	17 ± 10

TABLE C-IV.3

CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES
COLLECTED IN THE VICINITY OF ZION NUCLEAR POWER STATION, 2006

RESULTS IN UNITS OF E-3 PCI/CU METER \pm 2 SIGMA

STC	COLLECTION PERIOD	MN-54	CO-58	FE-59	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BALA140
Z-01	12/28 - 03/29/06	< 5	< 8	< 39	< 5	< 27	< 12	< 8	< 6	< 233
Z-01	03/29 - 06/28/06	< 3	< 4	< 13	< 3	< 8	< 3	< 3	< 2	< 71
Z-01	06/28 - 09/26/06	< 2	< 3	< 9	< 2	< 5	< 4	< 1	< 2	< 167
Z-01	09/26 - 01/03/07	< 2	< 3	< 5	< 3	< 6	< 3	< 2	< 2	< 16
	MEAN	3 \pm 3	5 \pm 5	16 \pm 30	3 \pm 2	12 \pm 21	5 \pm 9	4 \pm 6	3 \pm 4	122 \pm 194
Z-02	12/28 - 03/29/06	< 6	< 10	< 22	< 3	< 17	< 11	< 7	< 5	< 223
Z-02	03/29 - 06/28/06	< 3	< 4	< 13	< 3	< 10	< 6	< 4	< 3	< 126
Z-02	06/28 - 09/26/06	< 2	< 3	< 14	< 3	< 5	< 3	< 2	< 2	< 218
Z-02	09/26 - 01/03/07	< 2	< 3	< 7	< 2	< 5	< 3	< 2	< 2	< 16
	MEAN	3 \pm 4	5 \pm 7	14 \pm 12	3 \pm 1	9 \pm 11	6 \pm 7	4 \pm 4	3 \pm 3	146 \pm 194
Z-03	12/28 - 03/29/06	< 6	< 9	< 22	< 6	< 18	< 9	< 8	< 4	< 447
Z-03	03/29 - 06/28/06	< 3	< 4	< 9	< 2	< 8	< 5	< 4	< 2	< 100
Z-03	06/28 - 09/26/06	< 2	< 3	< 13	< 2	< 5	< 5	< 2	< 2	< 113
Z-03	09/26 - 01/03/07	< 1	< 2	< 3	< 2	< 3	< 2	< 1	< 1	< 13
	MEAN	3 \pm 4	4 \pm 7	12 \pm 15	3 \pm 4	8 \pm 13	5 \pm 6	4 \pm 6	2 \pm 3	168 \pm 382

TABLE C-V.1 QUARTERLY TLD RESULTS FOR ZION NUCLEAR POWER STATION, 2006

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S. D.	JAN - MAR	APR-JUN	JUL-SEP	OCT-DEC
Z-01-1	21.3 \pm 3.0	23	20	20	22
Z-01-2	20.3 \pm 5.0	23	20	17	21
Z-02-1	20.3 \pm 3.4	21	20	18	22
Z-02-2	19.0 \pm 5.7	21	19	15	21
Z-03-1	20.3 \pm 5.0	23	20	17	21
Z-03-2	19.8 \pm 4.4	22	19	17	21
Z-101-1	20.3 \pm 3.4	20	21	18	22
Z-101-2	20.0 \pm 3.3	22	20	18	20
Z-102-1	21.8 \pm 5.0	23	23	18	23
Z-102-2	20.5 \pm 5.3	22	20	17	23
Z-103-1	20.5 \pm 3.8	22	20	18	22
Z-103-2	20.8 \pm 5.7	21	21	17	24
Z-104-1	19.8 \pm 4.4	21	19	17	22
Z-104-2	20.0 \pm 6.3	22	19	16	23
Z-105-1	20.5 \pm 6.2	21	22	16	23
Z-105-2	20.3 \pm 3.0	21	21	18	21
Z-106-1	19.8 \pm 3.0	21	19	18	21
Z-106-2	18.3 \pm 3.4	19	18	16	20
Z-107-1	20.5 \pm 3.5	22	21	18	21
Z-107-2	20.8 \pm 5.7	21	21	17	24
Z-108-1	20.0 \pm 4.3	22	20	17	21
Z-108-2	19.8 \pm 4.1	20	22	17	20
Z-110-1	21.8 \pm 6.8	25	22	17	23
Z-110-2	20.3 \pm 4.4	21	22	17	21
Z-111-1	21.0 \pm 3.3	21	21	19	23
Z-111-2	21.5 \pm 5.0	22	22	18	24
Z-112-1	23.3 \pm 3.4	24	23	21	25
Z-112-2	22.5 \pm 5.0	23	23	19	25
Z-113-1	22.0 \pm 4.3	22	23	19	24
Z-113-2	21.5 \pm 3.5	22	22	19	23
Z-114-1	21.8 \pm 5.0	21	22	19	25
Z-114-2	22.5 \pm 4.2	23	22	20	25
Z-115-1	22.5 \pm 5.8	23	22	19	26
Z-115-2	24.0 \pm 4.9	23	26	21	26
Z-301-1	23.8 \pm 3.8	24	25	21	25
Z-301-2	24.5 \pm 4.2	25	24	22	27

TABLE C-V.2 MEAN QUARTERLY TLD RESULTS FOR THE INNER RING AND OTHER LOCATIONS FOR ZION NUCLEAR POWER STATION, 2006

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER \pm 2
STANDARD DEVIATIONS OF THE STATION DATA

STATION CODE	INNER RING \pm 2 S. D.	OTHER
JAN-MAR	22.0 \pm 2.8	22.2 \pm 2.0
APR-JUN	21.5 \pm 3.6	19.7 \pm 1.0
JUL-SEP	18.2 \pm 3.1	17.3 \pm 3.3
OCT-DEC	23.1 \pm 3.9	21.3 \pm 1.0

TABLE C-V.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR ZION NUCLEAR POWER STATION, 2006

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN \pm 2 S. D.
INNER RING	120	16	27	21.2 \pm 4.9
OTHER	24	15	23	20.1 \pm 4.2

INNER RING STATIONS - Z-101-1, Z-101-2, Z-102-1, Z-102-2, Z-103-1, Z-103-2, Z-104-1, Z-104-2, Z-105-1, Z-105-2, Z-106-1, Z-106-2, Z-107-1, Z-107-2, Z-108-1, Z-108-2, Z-110-1, Z-110-2, Z-111-1, Z-111-2, Z-112-1, Z-112-2, Z-113-1, Z-113-2, Z-114-1, Z-114-2, Z-115-1, Z-115-2, Z-301-1, Z-302-2

OTHER STATIONS - Z-01-1, Z-01-2, Z-02-1, Z-02-2, Z-03-1, Z-03-2

TABLE C-VI.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF ZION NUCLEAR POWER STATION, 2006

PUBLIC WATER (TRITIUM LIQUID SCINTILLATION)

COLLECTION PERIOD	Z-14	Z-15	Z-16	Z-18
JAN-MAR	01/04/06 - 03/29/06	01/04/06 - 03/29/06	01/04/06 - 03/29/06	01/04/06 - 03/29/06
APR-JUN	04/05/06 - 06/28/06	04/05/06 - 06/28/06	04/05/06 - 06/28/06	04/05/06 - 06/28/06
JUL-SEP	07/05/06 - 09/26/06	07/05/06 - 09/26/06	07/05/06 - 09/26/06	07/05/06 - 09/26/06
OCT-DEC	10/04/06 - 12/27/06	10/04/06 - 12/27/06	10/04/06 - 12/27/06	10/04/06 - 12/27/06

PUBLIC WATER (GROSS BETA & GAMMA SPECTROSCOPY)

COLLECTION PERIOD	Z-14	Z-15	Z-16	Z-18
JAN	01/04/06 - 01/25/06	01/04/06 - 01/25/06	01/04/06 - 01/25/06	01/04/06 - 01/25/06
FEB	02/01/06 - 02/22/06	02/01/06 - 02/22/06	02/01/06 - 02/22/06	02/01/06 - 02/22/06
MAR	03/01/06 - 03/29/06	03/01/06 - 03/29/06	03/01/06 - 03/29/06	03/01/06 - 03/29/06
APR	04/05/06 - 04/26/06	04/05/06 - 04/26/06	04/05/06 - 04/26/06	04/05/06 - 04/26/06
MAY	05/03/06 - 05/31/06	05/03/06 - 05/31/06	05/03/06 - 05/31/06	05/03/06 - 05/31/06
JUN	06/06/06 - 06/28/06	06/06/06 - 06/28/06	06/06/06 - 06/28/06	06/06/06 - 06/28/06
JUL	07/05/06 - 07/26/06	07/05/06 - 07/26/06	07/05/06 - 07/26/06	07/05/06 - 07/26/06
AUG	08/03/06 - 08/31/06	08/03/06 - 08/31/06	08/03/06 - 08/31/06	08/03/06 - 08/31/06
SEP	09/06/06 - 09/26/06	09/06/06 - 09/26/06	09/06/06 - 09/26/06	09/06/06 - 09/26/06
OCT	10/04/06 - 10/25/06	10/04/06 - 10/25/06	10/04/06 - 10/25/06	10/04/06 - 10/25/06
NOV	11/02/06 - 11/29/06	11/02/06 - 11/29/06	11/02/06 - 11/29/06	11/02/06 - 11/29/06
DEC	12/07/06 - 12/27/06	12/07/06 - 12/27/06	12/07/06 - 12/27/06	12/07/06 - 12/27/06

TABLE C-VI.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF ZION NUCLEAR POWER STATION, 2006

AIR PARTICULATE (GAMMA SPECTROSCOPY)

COLLECTION PERIOD	Z-01	Z-02	Z-03
JAN-MAR	12/28/05 - 03/29/06	12/28/05 - 03/29/06	12/28/05 - 03/29/06
APR-JUN	03/29/06 - 06/28/06	03/29/06 - 06/28/06	03/29/06 - 06/28/06
JUL-SEP	06/28/06 - 09/26/06	06/28/06 - 09/26/06	06/28/06 - 09/26/06
OCT-DEC	09/26/06 - 01/03/07	09/26/06 - 01/03/07	09/26/06 - 01/03/07

AIR PARTICULATE (GROSS BETA & I-131)

COLLECTION PERIOD	Z-01	Z-02	Z-03
1	12/28/05 - 01/04/06	12/28/05 - 01/04/06	12/28/05 - 01/04/06
2	01/04/06 - 01/11/06	01/04/06 - 01/11/06	01/04/06 - 01/11/06
3	01/11/06 - 01/18/06	01/11/06 - 01/18/06	01/11/06 - 01/18/06
4	01/18/06 - 01/25/06	01/18/06 - 01/25/06	01/18/06 - 01/25/06
5	01/25/06 - 02/01/06	01/25/06 - 02/01/06	01/25/06 - 02/01/06
6	02/01/06 - 02/08/06	02/01/06 - 02/08/06	02/01/06 - 02/08/06
7	02/08/06 - 02/15/06	02/08/06 - 02/15/06	02/08/06 - 02/15/06
8	02/15/06 - 02/22/06	02/15/06 - 02/22/06	02/15/06 - 02/22/06
9	02/22/06 - 03/01/06	02/22/06 - 03/01/06	02/22/06 - 03/01/06
10	03/01/06 - 03/08/06	03/01/06 - 03/08/06	03/01/06 - 03/08/06
11	03/08/06 - 03/15/06	03/08/06 - 03/15/06	03/08/06 - 03/15/06
12	03/15/06 - 03/22/06	03/15/06 - 03/22/06	03/15/06 - 03/22/06
13	03/22/06 - 03/29/06	03/22/06 - 03/29/06	03/22/06 - 03/29/06
14	03/29/06 - 04/05/06	03/29/06 - 04/05/06	03/29/06 - 04/05/06
15	04/05/06 - 04/12/06	04/05/06 - 04/12/06	04/05/06 - 04/12/06
16	04/12/06 - 04/19/06	04/12/06 - 04/19/06	04/12/06 - 04/19/06
17	04/19/06 - 04/26/06	04/19/06 - 04/26/06	04/19/06 - 04/26/06
18	04/26/06 - 05/03/06	04/26/06 - 05/03/06	04/26/06 - 05/03/06
19	05/03/06 - 05/10/06	05/03/06 - 05/10/06	05/03/06 - 05/10/06
20	05/10/06 - 05/17/06	05/10/06 - 05/17/06	05/10/06 - 05/17/06
21	05/17/06 - 05/24/06	05/17/06 - 05/24/06	05/17/06 - 05/24/06
22	05/24/06 - 05/31/06	05/24/06 - 05/31/06	05/24/06 - 05/31/06
23	05/31/06 - 06/06/06	05/31/06 - 06/06/06	05/31/06 - 06/06/06
24	06/06/06 - 06/14/06	06/06/06 - 06/14/06	06/06/06 - 06/14/06
25	06/14/06 - 06/21/06	06/14/06 - 06/21/06	06/14/06 - 06/21/06
26	06/21/06 - 06/28/06	06/21/06 - 06/28/06	06/21/06 - 06/28/06
27	06/28/06 - 07/05/06	06/28/06 - 07/05/06	06/28/06 - 07/05/06
28	07/05/06 - 07/12/06	07/05/06 - 07/12/06	07/05/06 - 07/12/06
29	07/12/06 - 07/19/06	07/12/06 - 07/19/06	07/12/06 - 07/19/06
30	07/19/06 - 07/26/06	07/19/06 - 07/26/06	07/19/06 - 07/26/06
31	07/26/06 - 08/03/06	07/26/06 - 08/03/06	07/26/06 - 08/03/06
32	08/03/06 - 08/09/06	08/03/06 - 08/09/06	08/03/06 - 08/09/06
33	08/09/06 - 08/16/06	08/09/06 - 08/16/06	08/09/06 - 08/16/06
34	08/16/06 - 08/23/06	08/16/06 - 08/23/06	08/16/06 - 08/23/06
35	08/23/06 - 08/31/06	08/23/06 - 08/31/06	08/23/06 - 08/31/06
36	08/31/06 - 09/06/06	08/31/06 - 09/06/06	08/31/06 - 09/06/06
37	09/06/06 - 09/13/06	09/06/06 - 09/13/06	09/06/06 - 09/13/06
38	09/13/06 - 09/20/06	09/13/06 - 09/20/06	09/13/06 - 09/20/06
39	09/20/06 - 09/26/06	09/20/06 - 09/26/06	09/20/06 - 09/26/06
40	09/26/06 - 10/04/06	09/26/06 - 10/04/06	09/26/06 - 10/04/06
41	10/04/06 - 10/11/06	10/04/06 - 10/11/06	10/04/06 - 10/11/06
42	10/11/06 - 10/18/06	10/11/06 - 10/18/06	10/11/06 - 10/18/06
43	10/18/06 - 10/25/06	10/18/06 - 10/25/06	10/18/06 - 10/25/06
44	10/25/06 - 11/02/06	10/25/06 - 11/02/06	10/25/06 - 11/02/06
45	11/02/06 - 11/08/06	11/02/06 - 11/08/06	11/02/06 - 11/08/06
46	11/08/06 - 11/15/06	11/08/06 - 11/15/06	11/08/06 - 11/15/06
47	11/15/06 - 11/22/06	11/15/06 - 11/22/06	11/15/06 - 11/22/06
48	11/22/06 - 11/29/06	11/22/06 - 11/29/06	11/22/06 - 11/29/06
49	11/29/06 - 12/07/06	11/29/06 - 12/07/06	11/29/06 - 12/07/06
50	12/07/06 - 12/13/06	12/07/06 - 12/13/06	12/07/06 - 12/13/06
51	12/13/06 - 12/21/06	12/13/06 - 12/21/06	12/13/06 - 12/21/06
52	12/21/06 - 12/27/06	12/21/06 - 12/27/06	12/21/06 - 12/27/06
53	12/27/06 - 01/03/07	12/27/06 - 01/03/07	12/27/06 - 01/03/07

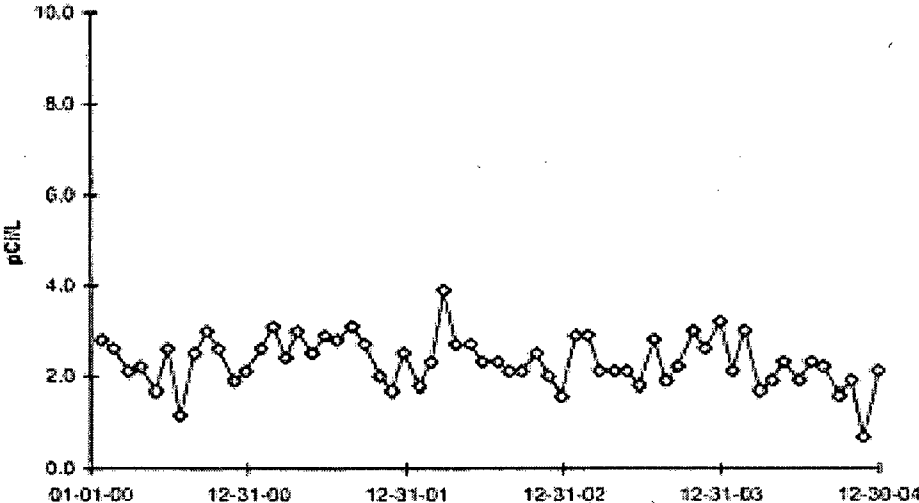
TABLE C-VI.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF ZION NUCLEAR POWER STATION, 2006

TLD

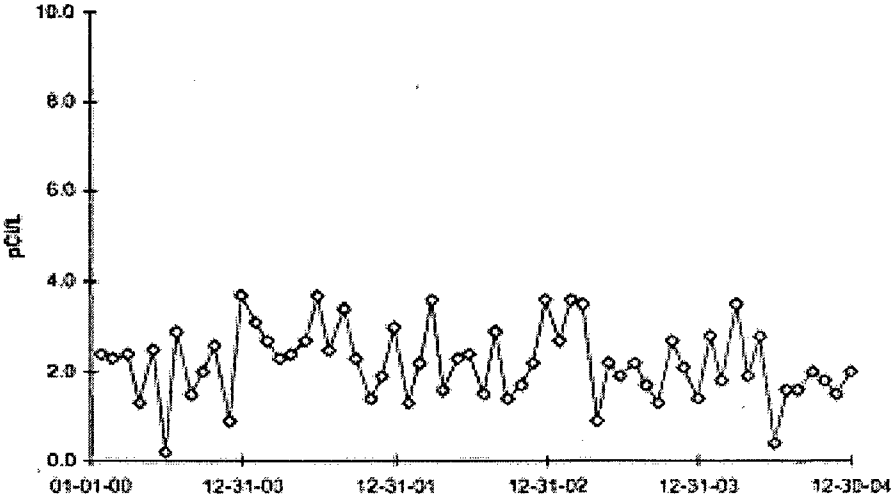
STATION CODE	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
36S2	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
36D1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
2E1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
3S1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
4E1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
5S1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
5H1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
6C1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
7S1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
7E1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
9C1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
10S3	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
10E1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
10F3	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
11S1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
13S2	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
13C1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
13E1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
14S1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
15D1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
16F1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
17B1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
18S2	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
19D1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
20D1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
20F1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
21S2	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
23S2	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
24D1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
25S2	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
25D1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
26S3	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
28D2	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
29S1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
29E1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
31S1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
31D1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
31D2	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
34S2	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07
34E1	01/01/06 - 04/01/06	04/01/06 - 07/01/06	07/01/06 - 10/01/06	10/01/06 - 01/01/07

**FIGURE C-1
PUBLIC WATER - GROSS BETA - STATIONS Z-14 AND
Z-15 COLLECTED IN THE VICINITY OF ZNPS, 2000-2004**

Z-14 Kenosha Water Works

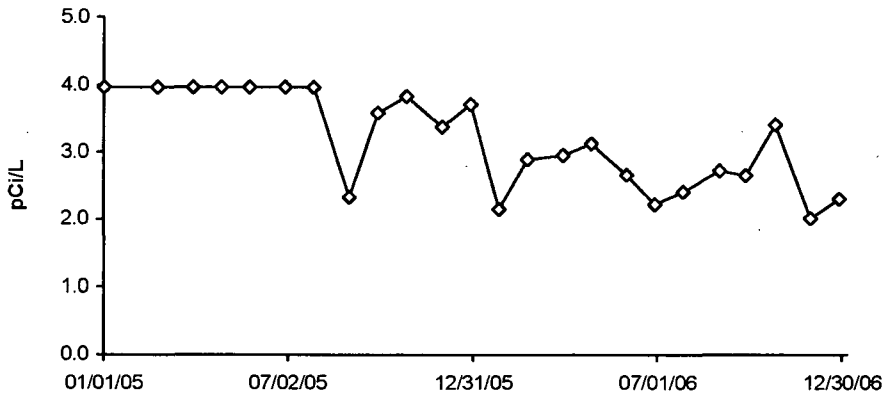


Z-15 Lake County Water Works

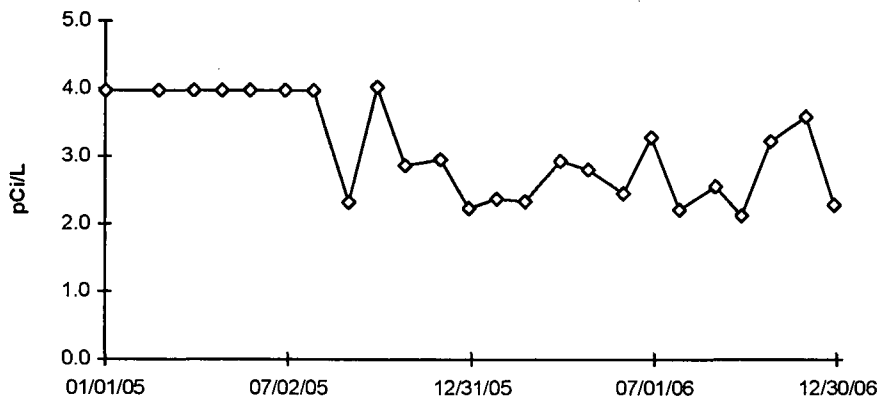


**FIGURE C-1 (cont.)
PUBLIC WATER - GROSS BETA - STATIONS Z-14 AND
Z-15 COLLECTED IN THE VICINITY OF ZNPS, 2005 - 2006**

Z-14 (C) Kenosha Water Works



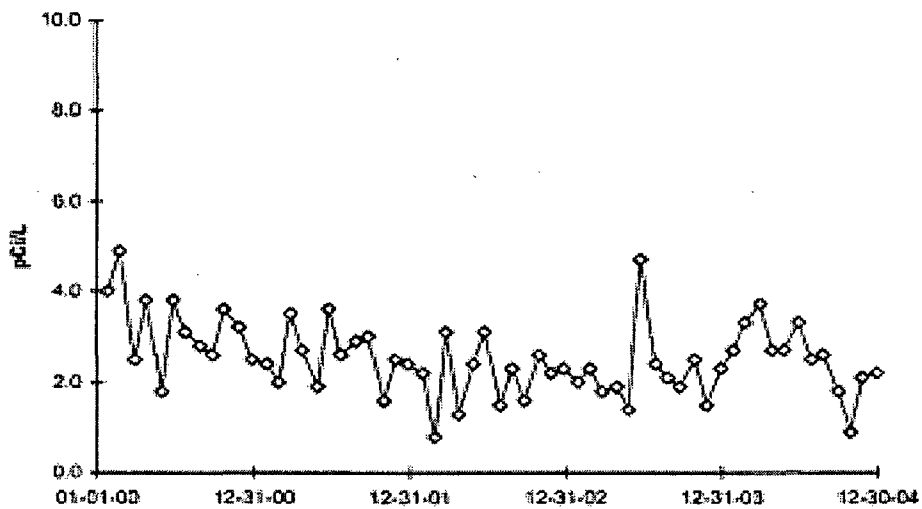
Z-15 Lake County Water Works



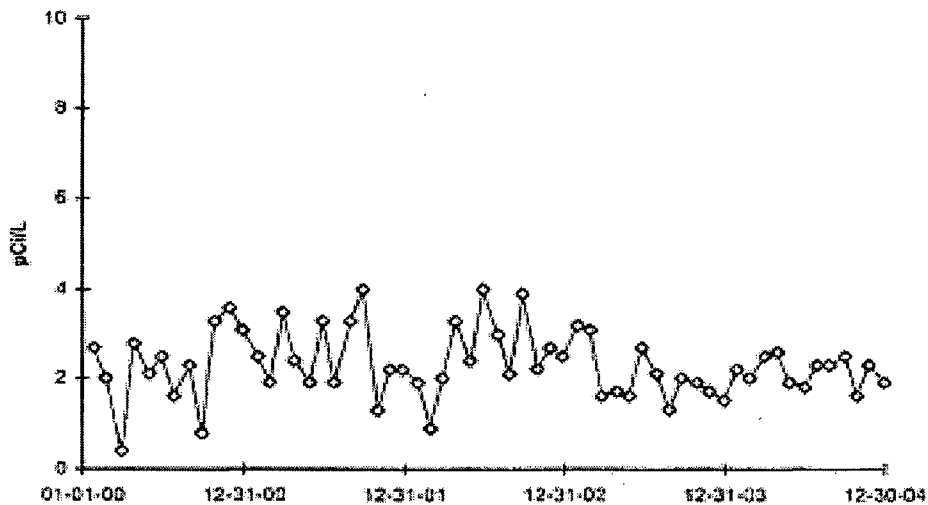
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

FIGURE C-2
PUBLIC WATER - GROSS BETA - STATIONS Z-16 AND
Z-18 COLLECTED IN THE VICINITY OF ZNPS, 2000 - 2004

Z-16 Waukegan Water Works

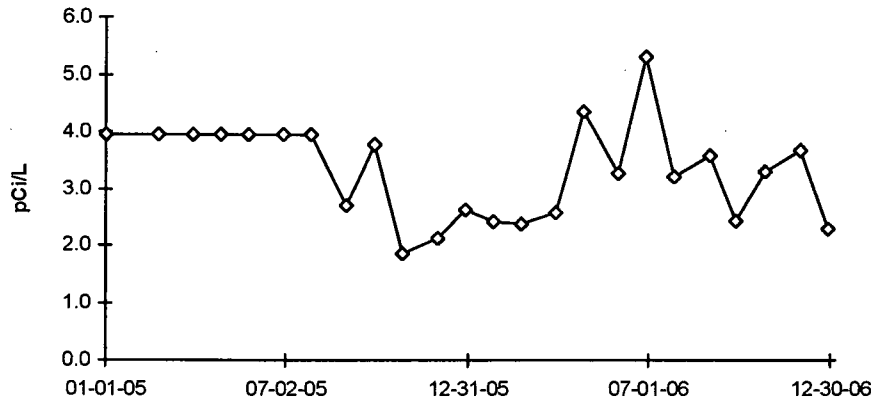


Z-18 Lake Forest Water Works

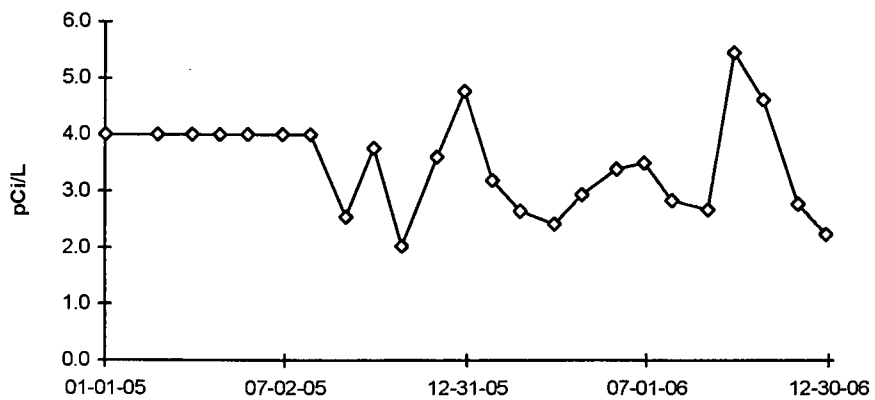


**FIGURE C-2 (cont.)
PUBLIC WATER - GROSS BETA - STATIONS Z-16 AND
Z-18 COLLECTED IN THE VICINITY OF ZNPS, 2005 - 2006**

Z-16 Waukegan Water Works



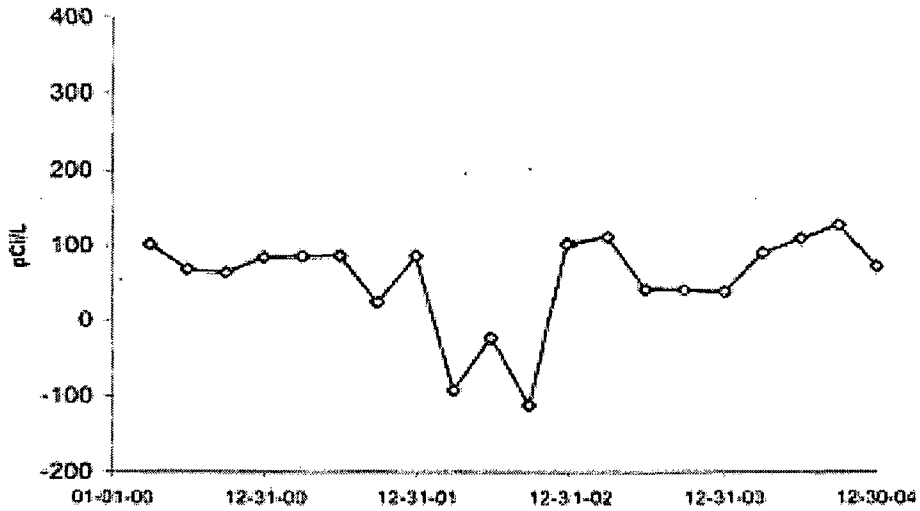
Z-18 (C) Lake Forest Water Works



DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

**FIGURE C-3
PUBLIC WATER - TRITIUM - STATION Z-14 AND Z-15
COLLECTED IN THE VICINITY OF ZNPS, 2000 - 2004**

Z-14 (C) Kenosha Water Works

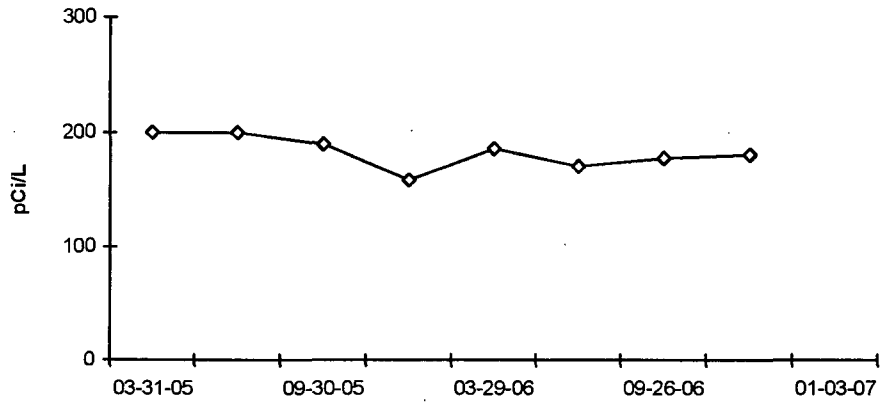


Z-15 Lake County Water Works

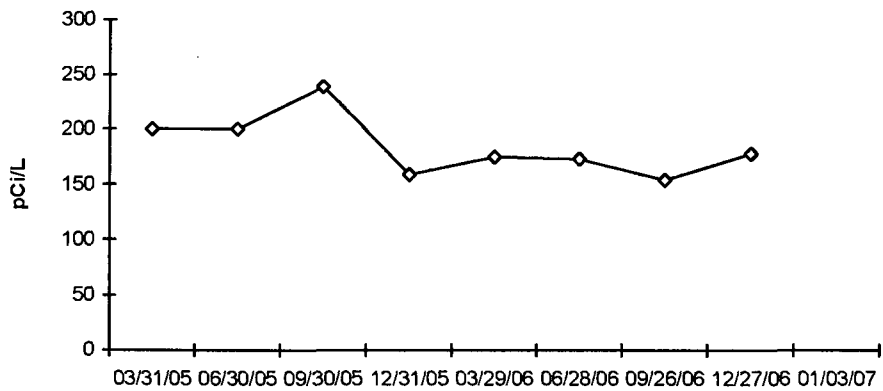


**FIGURE C-3 (cont.)
PUBLIC WATER - TRITIUM - STATION Z-14 AND Z-15
COLLECTED IN THE VICINITY OF ZNPS, 2005 - 2006**

Z-14 (C) Kenosha Water Works



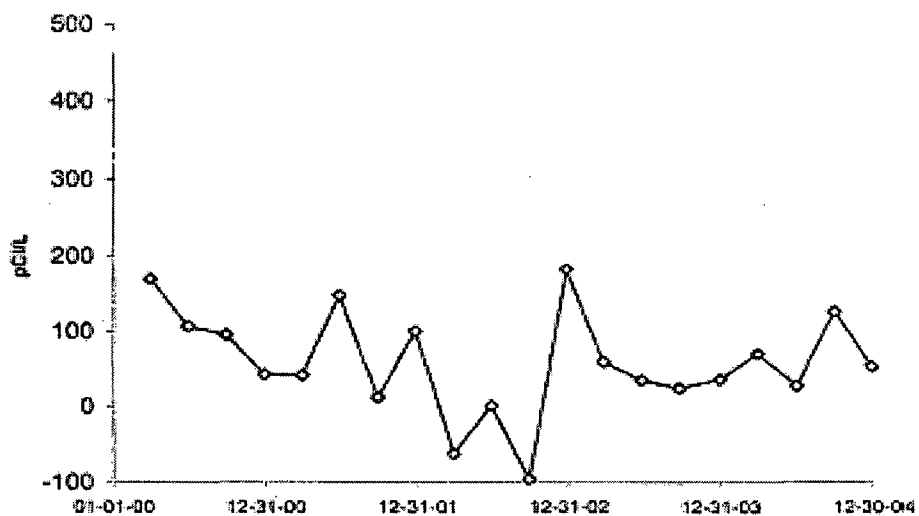
Z-15 Lake County Water Works



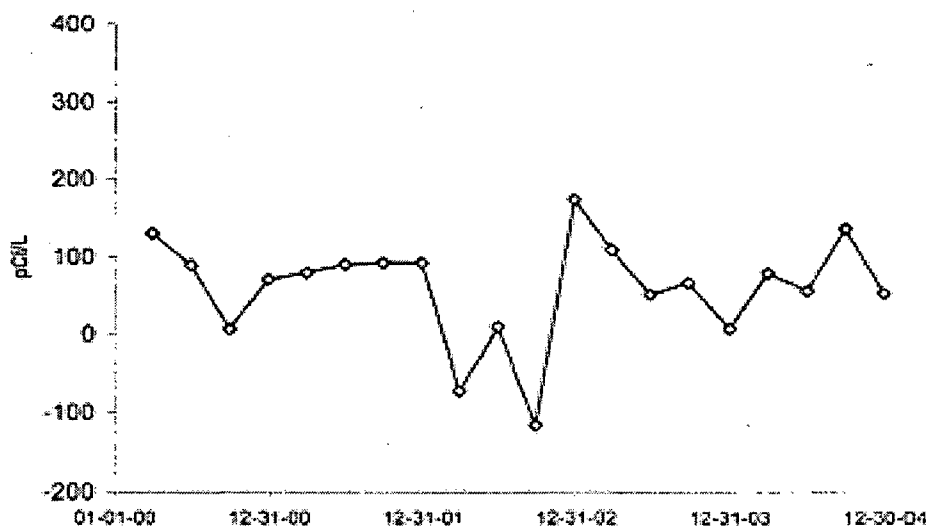
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

FIGURE C-4
PUBLIC WATER - TRITIUM - STATION Z-16 AND Z-18
COLLECTED IN THE VICINITY OF ZNPS, 2000 - 2004

Z-16 Waukegan Water Works

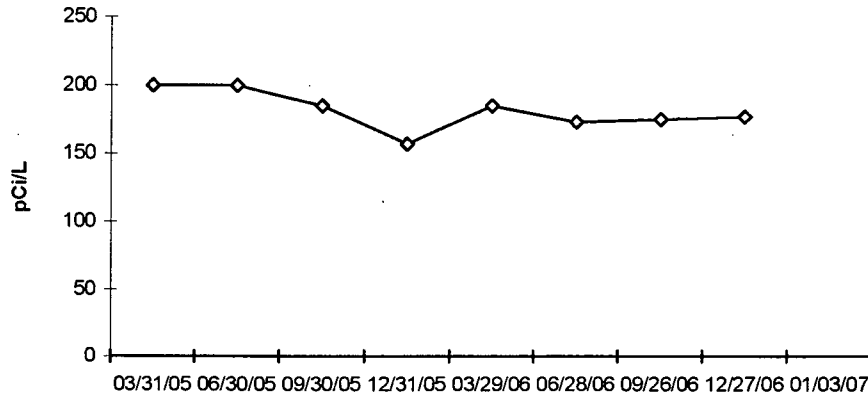


Z-18 (C) Lake Forest Water Works



**FIGURE C-4 (cont.)
PUBLIC WATER - TRITIUM - STATION Z-16 AND Z-18
COLLECTED IN THE VICINITY OF ZNPS, 2005 - 2006**

Z-16 Waukegan Water Works



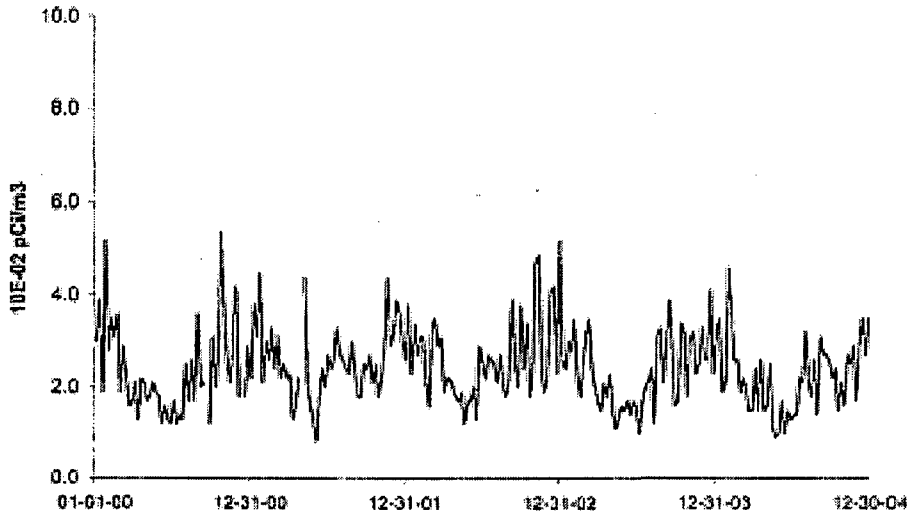
Z-18 (C) Lake Forest Water Works



DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

FIGURE C-5
AIR PARTICULATES - GROSS BETA - STATIONS Z-01 AND
Z-02 COLLECTED IN THE VICINITY OF ZNPS, 2000 - 2004

Z-01 Onsite No. 1, Southside



Z-02 Onsite No. 2, Westside

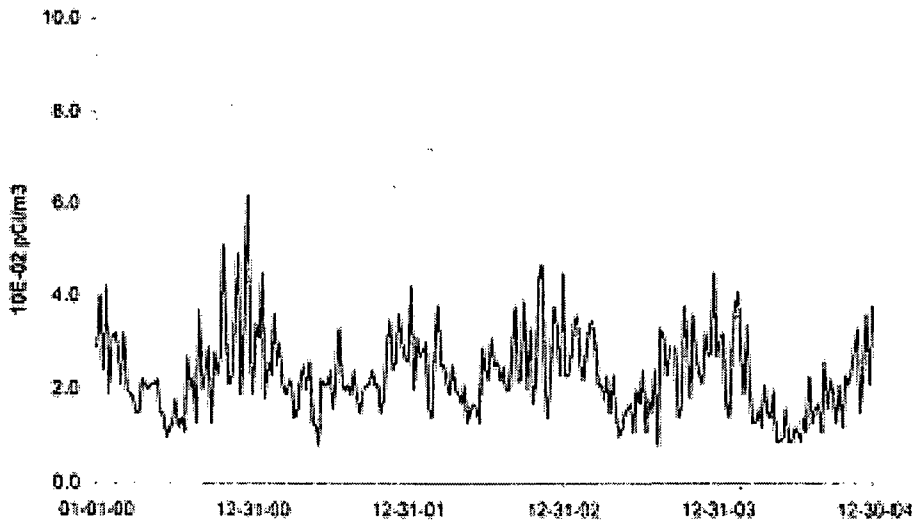
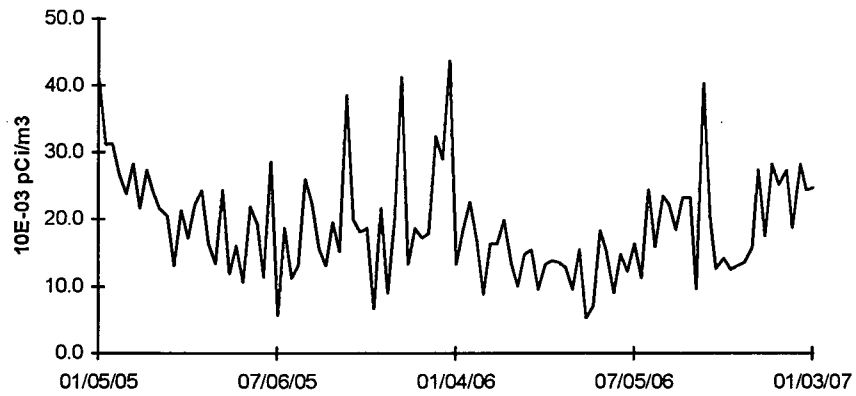
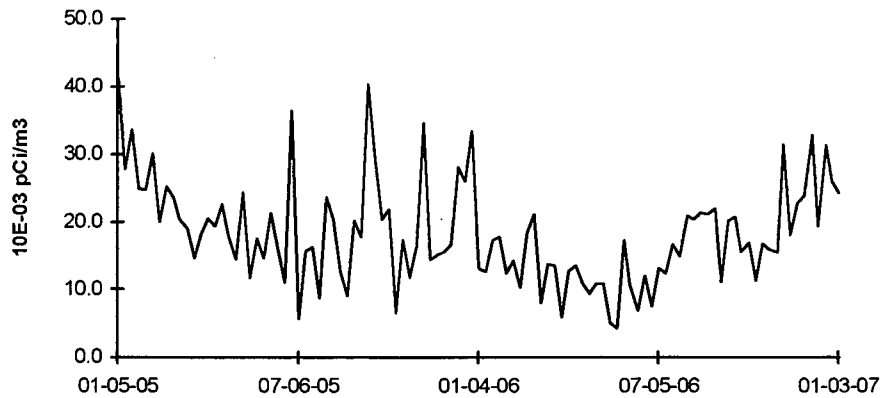


FIGURE C-5 (cont.)
AIR PARTICULATES - GROSS BETA - STATIONS Z-01 AND
Z-02 COLLECTED IN THE VICINITY OF ZNPS, 2005 - 2006

Z-01 Onsite No. 1, Southside



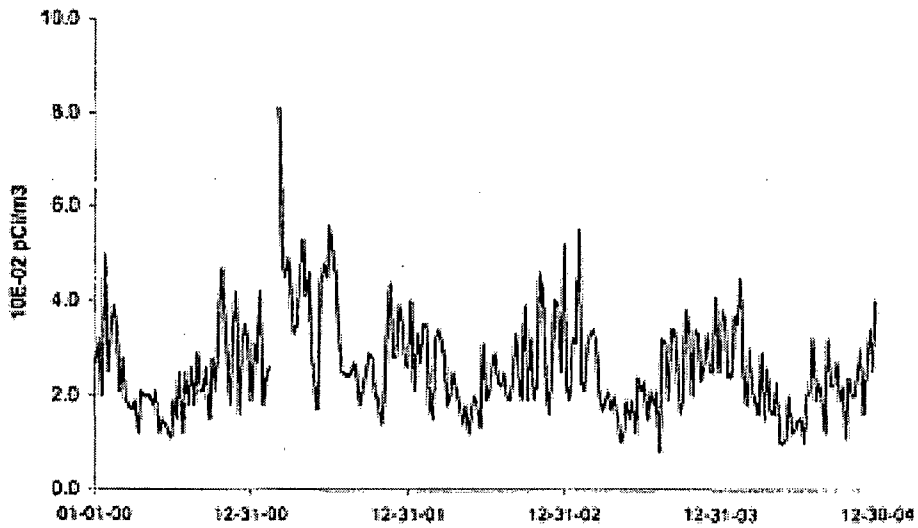
Z-02 Onsite No. 2, Westside



DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

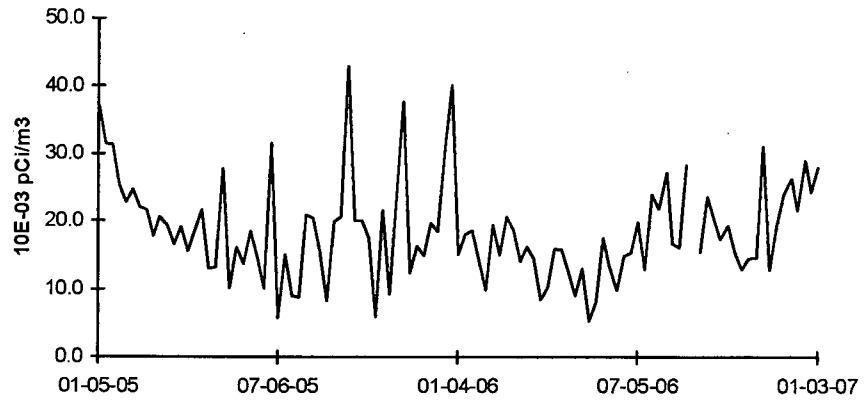
FIGURE C-6
AIR PARTICULATES - GROSS BETA - STATIONS Z-03
COLLECTED IN THE VICINITY OF ZNPS, 2000 - 2004

Z-03 Onsite No. 3, Northside



**FIGURE C-6 (cont.)
AIR PARTICULATES - GROSS BETA - STATIONS Z-03
COLLECTED IN THE VICINITY OF ZNPS, 2005 - 2006**

Z-03 Onsite No. 3, Northside



DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

APPENDIX D

INTER-LABORATORY COMPARISON PROGRAM

TABLE D-1

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2006

(PAGE 1 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)			
March 2006	E4964-396	Milk	Sr-89	pCi/L	91.5	99.2	0.92	A			
			Sr-90	pCi/L	12.2	10.8	1.13	A			
March 2006	E4965-396	Milk	I-131	pCi/L	74.4	78.0	0.95	A			
			Ce-141	pCi/L	95.1	104	0.91	A			
			Cr-51	pCi/L	278	280	0.99	A			
			Cs-134	pCi/L	103	121	0.85	A			
			Cs-137	pCi/L	87.6	88.8	0.99	A			
			Co-58	pCi/L	93.9	105	0.89	A			
			Mn-54	pCi/L	90.0	93.3	0.96	A			
			Fe-59	pCi/L	83.0	86.6	0.96	A			
			Zn-65	pCi/L	178	176	1.01	A			
			Co-60	pCi/L	118	128	0.92	A			
			March 2006	E4967-396	AP	Ce-141	pCi	89.9	74	1.21	W
						Cr-51	pCi	253	200	1.27	W
						Cs-134	pCi	71.5	86.1	0.83	A
Cs-137	pCi	67.5				63.3	1.07	A			
Co-58	pCi	79.7				74.6	1.07	A			
Mn-54	pCi	74.9				67	1.12	A			
Fe-59	pCi	75.5				61.8	1.22	W			
Zn-65	pCi	146				126	1.16	A			
Co-60	pCi	91.2				91	1.00	A			
March 2006	E4966-396	Charcoal	I-131	pCi	87.4	86.2	1.01	A			
June 2006	E5018-396	Milk	Sr-89	pCi/L	118	129	0.91	A			
			Sr-90	pCi/L	9.29	9.74	0.95	A			
June 2006	E5019-396	Milk	I-131	pCi/L	49.9	63.2	0.79	W			
			Ce-141	pCi/L	174	184	0.95	A			
			Cr-51	pCi/L	266	259	1.03	A			
			Cs-134	pCi/L	111	127	0.88	A			
			Cs-137	pCi/L	116	117	0.99	A			
			Co-58	pCi/L	101	100	1.01	A			
			Mn-54	pCi/L	144	146	0.98	A			
			Fe-59	pCi/L	96.7	93.6	1.03	A			
			Zn-65	pCi/L	182	185	0.98	A			
			Co-60	pCi/L	126	129	0.98	A			
			June 2006	E5021-396	AP	Ce-141	pCi	113	124	0.91	A
						Cr-51	pCi	176	174	1.01	A
						Cs-134	pCi	63.7	85.1	0.75	W
Cs-137	pCi	76.8				79.0	0.97	A			
Co-58	pCi	63.1				67.4	0.94	A			
Mn-54	pCi	102				99	1.04	A			
Fe-59	pCi	64.6				62.9	1.03	A			
Zn-65	pCi	131				125	1.05	A			
Co-60	pCi	81.6				86.5	0.94	A			
June 2006	E5020-396	Charcoal	I-131	pCi	65.4	65.9	0.99	A			

TABLE D-1

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2006
(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)			
September 2006	E5120-396	Milk	Sr-89	pCi/L	90.3	89.2	1.01	A			
			Sr-90	pCi/L	11.6	12.4	0.94	A			
September 2006	E5121-396	Milk	I-131	pCi/L	67.8	73.8	0.92	A			
			Ce-141	pCi/L	85.0	86.0	0.99	A			
			Cr-51	pCi/L	263	282	0.93	A			
			Cs-134	pCi/L	74.7	85.0	0.88	A			
			Cs-137	pCi/L	172	175	0.98	A			
			Co-58	pCi/L	107	109	0.98	A			
			Mn-54	pCi/L	110	113	0.98	A			
			Fe-59	pCi/L	46.6	43.7	1.07	A			
			Zn-65	pCi/L	144	145	0.99	A			
			Co-60	pCi/L	127	134	0.95	A			
			September 2006	E5123-396	AP	Ce-141	pCi	67.1	66.4	1.01	A
						Cr-51	pCi	223	217	1.03	A
						Cs-134	pCi	51.7	65.6	0.79	W
Cs-137	pCi	134				135.0	0.99	A			
Co-58	pCi	84.8				84.3	1.01	A			
Mn-54	pCi	95.2				87	1.10	A			
Fe-59	pCi	41.6				33.7	1.23	W			
Zn-65	pCi	123				112	1.10	A			
Co-60	pCi	98.9				103	0.96	A			
Co-57	pCi	0.922				(1)	NA	NA			
September 2006	E5122-396	Charcoal	I-131	pCi	77.7	90.7	0.86	A			
December 2006	E5172-396	Milk	Sr-89	pCi/L	72.4	72.0	1.01	A			
			Sr-90	pCi/L	7.05	5.90	1.19	A			
December 2006	E5173-396	Milk	I-131	pCi/L	71.9	70.8	1.02	A			
			Ce-141	pCi/L	268	294	0.91	A			
			Cr-51	pCi/L	420	433	0.97	A			
			Cs-134	pCi/L	128	147	0.87	A			
			Cs-137	pCi/L	231	237	0.97	A			
			Co-58	pCi/L	82.0	83.8	0.98	A			
			Mn-54	pCi/L	113	111	1.02	A			
			Fe-59	pCi/L	79.8	79.7	1.00	A			
			Zn-65	pCi/L	170	164	1.04	A			
			Co-60	pCi/L	265	281	0.94	A			
			December 2006	E5175-396	AP	Ce-141	pCi	220	210	1.05	A
						Cr-51	pCi	343	309	1.11	A
						Cs-134	pCi	90.8	105	0.86	A
Cs-137	pCi	185				169.0	1.09	A			
Co-58	pCi	65.0				59.7	1.09	A			
Mn-54	pCi	90.6				79	1.15	A			
Fe-59	pCi	70.7				56.7	1.25	W			
Zn-65	pCi	136				117	1.16	A			
Co-60	pCi	208				200	1.04	A			

TABLE D-1

ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2006
(PAGE 3 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2006	E5174-396	Charcoal	I-131	pCi	77.4	85.4	0.91	A

(1) Impurity detected but not measured by Analytics.

(a) Teledyne Brown Engineering reported result.

(b) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) Ratio of Teledyne Brown Engineering to Analytics results.

(d) Analytics evaluation based on TBE internal QC limits: A= Acceptable. Reported result falls within ratio limits of 0.80-1.20. W-Acceptable with warning. Reported result falls within 0.70-0.80 or 1.20-1.30. N = Not Acceptable. Reported result falls outside the ratio limits of < 0.70 and > 1.30.

TABLE D-2

**ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2006**

(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Control Limits	Evaluation (c)	
May 2006	Rad 65	Water	Sr-89	pCi/L	30.2	32.4	23.6 - 41.1	A	
			Sr-90	pCi/L	8.74	9.00	0.340 - 17.7	A	
			Ba-133	pCi/L	10.9	10.0	1.34 - 18.7	A	
			Cs-134	pCi/L	39.7	43.4	34.7 - 52.1	A	
			Cs-137	pCi/L	199	214	195 - 233	A	
			Co-60	pCi/L	111	113.0	103 - 123	A	
			Zn-65	pCi/L	146	152	126 - 178	A	
			Gr-A	pCi/L	22.9	21.3	12.1 - 30.5	A	
			Gr-B	pCi/L	23.7	23.0	14.3 - 31.7	A	
			Ra-226	pCi/L	2.64	3.02	2.23 - 3.81	A	
			U-Nat	pCi/L	74.9	69.1	57.1 - 81.1	A	
			H-3	pCi/L	7950	8130	6720 - 9540	A	
				Rad 65	Water	I-131	pCi/L	18.2	19.1
November 2006	Rad 67	Water	Sr-89	pCi/L	40.0	39.9	31.2 - 48.6	A	
			Sr-90	pCi/L	16.2	16.0	7.34 - 24.7	A	
			Ba-133	pCi/L	65.0	70.2	58.1 - 82.3	A	
			Cs-134	pCi/L	27.4	29.9	21.2 - 38.6	A	
			Cs-137	pCi/L	74.4	78.2	69.5 - 86.9	A	
			Co-60	pCi/L	61.6	62.3	53.6 - 71.0	A	
			Zn-65	pCi/L	277	277	229 - 325	A	
			Gr-A	pCi/L	23.3	28.7	16.3 - 41.1	A	
			Gr-B	pCi/L	22.0	20.9	12.2 - 29.6	A	
			U-Nat	pCi/L	3.18	3.20	0.00 - 8.40	A	
			H-3	pCi/L	2930	3050	2430 - 3670	A	
				Water	I-131	pCi/L	19.8	22.1	16.9 - 27.3

(a) Teledyne Brown Engineering reported result.

(b) The ERA known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) ERA evaluation: A=acceptable. Reported result falls within the Warning Limits. NA=not acceptable. Reported result falls outside of the Control Limits. CE=check for Error. Reported result falls within the Control Limits and outside of the Warning Limit.

TABLE D-3

DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING, 2006

(PAGE 1 OF 3)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
January 2006	06-MaW15	Water	Am-241	Bq/L	1.29	1.30	0.91 - 1.69	A
			Cs-134	Bq/L	79.2	95.1	66.57 - 123.63	A
			Cs-137	Bq/L	-0.188			A
			Co-57	Bq/L	151	166.12	116.28 - 215.96	A
			Co-60	Bq/L	141	153.50	107.45 - 199.55	A
			H-3	Bq/L	988	952.01	666.41 - 1237.61	A
			Fe-55	Bq/L	106.0	129.60	90.72 - 168.48	A
			Mn-54	Bq/L	297	315.00	220.50 - 409.50	A
			Ni-63	Bq/L	61.5	60.34	44.24 - 78.44	A
			Pu-238	Bq/L	0.961	0.91	0.64 - 1.18	A
			Pu-239/240	Bq/L	0.00965	0.00710	(1)	A
			Sr-90	Bq/L	12.6	13.16	9.21 - 17.11	A
			Tc-99	Bq/L	22.5	23.38	16.37 - 30.39	A
			U-234/233	Bq/L	2.20	2.09	1.46 - 2.72	A
			U-238	Bq/L	2.23	2.17	1.52 - 2.82	A
			Zn-65	Bq/L	219	228.16	159.71 - 296.61	A
			06-GrW15	Water	Gr-A	Bq/L	0.575	0.581
	Gr-B	Bq/L			1.52	1.13	0.56 - 1.70	A
	06-MaS15	Soil	Am-241	Bq/kg	48.8	57.08	39.96 - 74.20	A
			Cs-134	Bq/kg	15.9			N (2)
			Cs-137	Bq/kg	370	339.69	237.78 - 441.60	A
			Co-57	Bq/kg	667	656.29	459.40 - 853.18	A
			Co-60	Bq/kg	478	447.10	312.97 - 581.23	A
			Mn-54	Bq/kg	384	346.77	242.74 - 450.80	A
			Ni-63	Bq/kg	394	323.51	226.46 - 420.56	W
			K-40	Bq/kg	667	604	423 - 785	A
			Sr-90	Bq/kg	253	314.35	220.04 - 408.66	A
			Tc-99	Bq/kg	146	154.76	108.33 - 201.19	A
			Zn-65	Bq/kg	740	657.36	460.15 - 854.57	A
	06-RdF15	AP	Am-241	Bq/sample	0.0850	0.093	0.065 - 0.121	A
			Cs-134	Bq/sample	2.34	2.934	2.054 - 3.814	A
			Cs-137	Bq/sample	2.45	2.531	1.772 - 3.290	A
			Co-57	Bq/sample	3.87	4.096	2.867 - 5.325	A
			Co-60	Bq/sample	2.12	2.186	1.530 - 2.842	A
			Mn-54	Bq/sample	0.0206		not spiked	A
			Pu-238	Bq/sample	0.0766	0.067	0.047 - 0.087	A
			Pu-239/240	Bq/sample	0.00520	0.00041	(1)	A
			Sr-90	Bq/sample	0.761	0.792	0.554 - 1.030	A
			U-234/233	Bq/sample	0.0217	0.020	0.014 - 0.026	A
			U-238	Bq/sample	0.0220	0.021	0.015 - 0.027	A
			Zn-65	Bq/sample	3.86	3.423	2.396 - 4.450	A
06-GrF15			AP	Gr-A	Bq/sample	0.257	0.361	>0.0 - 0.722
	Gr-B	Bq/sample		0.398	0.481	0.241 - 0.722	A	

TABLE D-3

DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING, 2006

(PAGE 2 OF 3)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
January 2006	06-RdV15	Vegetation	Am-241	Bq/sample	0.156	0.156	0.109 - 0.203	A
			Cs-134	Bq/sample	0.369		not spiked	A
			Cs-137	Bq/sample	3.15	3.074	2.152 - 3.996	A
			Co-57	Bq/sample	10.1	8.578	6.005 - 11.151	A
			Co-60	Bq/sample	4.69	4.520	3.164 - 5.876	A
			Mn-54	Bq/sample	6.53	6.247	4.373 - 8.121	A
			Pu-238	Bq/sample	0.183	0.137	0.096 - 0.178	N (3)
			Pu-239/240	Bq/sample	0.111	0.164	0.115 - 0.213	N (3)
			Sr-90	Bq/sample	2.22	1.561	1.093 - 2.029	N (3)
			U-234/233	Bq/sample	0.208	0.208	0.146 - 0.270	A
			U-238	Bq/sample	0.176	0.216	0.151 - 0.281	A
			Zn-65	Bq/sample	10.5	9.798	6.859 - 12.737	A
			July 2006	06-MaW16	Water	Am-241	Bq/L	2.09
Cs-134	Bq/L	99.8				112.82	78.98 - 146.66	A
Cs-137	Bq/L	191				196.14	137.30 - 254.98	A
Co-57	Bq/L	203				213.08	149.16 - 277.00	A
Co-60	Bq/L	46.2				47.5	33.2 - 61.8	A
H-3	Bq/L	471				428.85	300.20 - 557.50	A
Fe-55	Bq/L	173				165.4	115.8 - 215.0	A
Ni-63	Bq/L	109				118.62	83.03 - 154.21	A
Pu-238	Bq/L	1.50				1.39	0.97 - 1.81	A
Pu-239/240	Bq/L	2.01				1.94	1.36 - 2.52	A
Sr-90	Bq/L	13.7				15.69	10.98 - 20.40	A
Tc-99	Bq/L	29.0				27.15	19.00 - 35.29	A
U-234/233	Bq/L	2.19				2.15	1.50 - 2.80	A
U-238	Bq/L	2.25		2.22	1.55 - 2.89	A		
Zn-65	Bq/L	178		176.37	123.46 - 229.28	A		
06-GrW16	Water	Gr-A		Bq/L	1.52	1.033	>0.0 - 2.066	A
		Gr-B		Bq/L	1.18	1.03	0.52 - 1.54	A
06-MaS16	Soil	Am-241		Bq/kg	83.6	105.47	73.83 - 137.11	W
		Cs-134		Bq/kg	393	452.13	316.49 - 587.77	A
		Cs-137		Bq/kg	522	525.73	368.01 - 683.45	A
		Co-57	Bq/kg	636	676.33	473.43 - 879.23	A	
		Co-60	Bq/kg	3.78	1.98		A (4)	
		Mn-54	Bq/kg	598	594.25	415.98 - 772.52	A	
		Ni-63	Bq/kg	571	627.3	470.6 - 874.0	A	
		Pu-238	Bq/kg	71.2	82	57 - 107	A	
		Pu-239/240	Bq/kg	0.487	0.93		A (4)	
		K-40	Bq/kg	615	604	423 - 785	A	
		Sr-90	Bq/kg	178	223.3	156.3 - 290.3	W	
		Tc-99	Bq/kg	175	218.01	152.61 - 283.41	A	
		U-234/233	Bq/kg	119	152.44	106.71 - 198.17	W	
		U-238	Bq/kg	115	158.73	111.11 - 206.35	W	
		Zn-65	Bq/kg	937	903.61	632.53 - 1174.69	A	

TABLE D-3

DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING, 2006

(PAGE 3 OF 3)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)		
July 2006	06-RdF16	AP	Am-241	Bq/sample	0.124	0.142	0.099 - 0.185	A		
			Cs-134	Bq/sample	2.62	3.147	2.203 - 4.091	A		
			Cs-137	Bq/sample	1.98	1.805	1.263 - 2.346	A		
			Co-57	Bq/sample	2.65	2.582	1.807 - 3.357	A		
			Co-60	Bq/sample	1.63	1.577	1.104 - 2.050	A		
			Mn-54	Bq/sample	2.10	1.92	1.34 - 2.50	A		
			Pu-238	Bq/sample	0.118	0.118	0.083 - 0.153	A		
			Pu-239/240	Bq/sample	0.00822		not spiked	A		
			Sr-90	Bq/sample	0.549	0.62	0.43 - 0.81	A		
			U-234/233	Bq/sample	0.140	0.134	0.094 - 0.174	A		
			U-238	Bq/sample	0.136	0.139	0.097 - 0.181	A		
			Zn-65	Bq/sample	-0.163		not spiked	A		
			06-GrF16	AP	Gr-A	Bq/sample	0.134	0.290	>0.0 - 0.580	A
					Gr-B	Bq/sample	0.358	0.359	0.180 - 0.538	A

(1) False positive test

(2) Evaluated as a false positive by MAPEP although we considered the result a non-detect due to the peak not being identified by the gamma software. For Cs-134, MAPEP suggests the Bi-214 is not being differentiated from the Cs-134 peak.

(3) Sr samples analyzed in triplicate and one high result of 2.43 pCi/kg biased the submitted results on the high side. We were unable to determine the cause for the higher result. Since we do not analyze vegetation for isotopic Pu, no NCR was initiated for the Pu failure. MAPEP suggest pyrosulfate fusion preparation prior to analysis for isotopic Pu in vegetation samples.

(4) Not detected, reported a statistically zero result. (False positive test)

(a) Teledyne Brown Engineering reported result.

(b) The MAPEP known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) DOE/MAPEP evaluation: A=acceptable, W=acceptable with warning, N=not acceptable.

TABLE D-4

ERA^(a) STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM
ENVIRONMENTAL, INC., 2006

(Page 1 of 2)

Lab Code	Date	Analysis	Concentration (pCi/L)			Acceptance
			Laboratory Result ^b	ERA Result ^c	Control Limits	
STW-1078	01/16/06	Sr-89	49.9 ± 3.5	50.2	41.5 - 58.9	Pass
STW-1078	01/16/06	Sr-90	31.5 ± 1.5	30.7	22.0 - 39.4	Pass
STW-1079	01/16/06	Ba-133	86.5 ± 4.1	95.0	78.6 - 111.0	Pass
STW-1079	01/16/06	Co-60	96.3 ± 4.1	95.3	86.6 - 104.0	Pass
STW-1079	01/16/06	Cs-134	22.6 ± 3.0	23.1	14.4 - 31.8	Pass
STW-1079	01/16/06	Cs-137	109.0 ± 5.9	111.0	101.0 - 121.0	Pass
STW-1079	01/16/06	Zn-65	198.0 ± 11.2	192.0	159.0 - 225.0	Pass
STW-1080	01/16/06	Gr. Alpha	10.8 ± 1.4	9.6	1.0 - 18.3	Pass
STW-1080	01/16/06	Gr. Beta	56.9 ± 1.9	61.9	44.6 - 79.2	Pass
STW-1081	01/16/06	Ra-226	4.3 ± 0.4	4.6	3.4 - 5.8	Pass
STW-1081	01/16/06	Ra-228	7.1 ± 1.8	6.6	3.7 - 9.5	Pass
STW-1081	01/16/06	Uranium	20.7 ± 0.5	22.1	16.9 - 27.3	Pass
STW-1088	04/10/06	Sr-89	29.0 ± 1.8	32.4	23.7 - 41.1	Pass
STW-1088	04/10/06	Sr-90	8.7 ± 1.0	9.0	0.3 - 17.7	Pass
STW-1089	04/10/06	Ba-133	10.3 ± 0.4	10.0	1.3 - 18.7	Pass
STW-1089	04/10/06	Co-60	114.0 ± 2.8	113.0	103.0 - 123.0	Pass
STW-1089	04/10/06	Cs-134	41.9 ± 1.4	43.4	34.7 - 52.1	Pass
STW-1089	04/10/06	Cs-137	208.0 ± 1.1	214.0	195.0 - 233.0	Pass
STW-1089	04/10/06	Zn-65	154.0 ± 0.8	152.0	126.0 - 178.0	Pass
STW-1090	04/10/06	Gr. Alpha	13.4 ± 1.1	21.3	12.1 - 30.5	Pass
STW-1090	04/10/06	Gr. Beta	27.7 ± 2.1	23.0	14.3 - 31.7	Pass
STW-1091	04/10/06	I-131	22.0 ± 0.3	19.1	13.9 - 24.3	Pass
STW-1092	04/10/06	H-3	7960.0 ± 57.0	8130.0	6720.0 - 9540.0	Pass
STW-1092	04/10/06	Ra-226	2.9 ± 0.4	3.0	2.2 - 3.8	Pass
STW-1092	04/10/06	Ra-228	20.9 ± 1.2	19.1	10.8 - 27.4	Pass
STW-1092	04/10/06	Uranium	68.6 ± 3.4	69.1	57.1 - 81.1	Pass
STW-1094	07/10/06	Sr-89	15.9 ± 0.7	19.7	11.0 - 28.4	Pass
STW-1094	07/10/06	Sr-90	24.3 ± 0.4	25.9	17.2 - 34.6	Pass
STW-1095	07/10/06	Ba-133	94.9 ± 8.9	88.1	72.9 - 103.0	Pass
STW-1095	07/10/06	Co-60	104.0 ± 1.8	99.7	91.0 - 108.0	Pass
STW-1095	07/10/06	Cs-134	48.7 ± 1.3	54.1	45.4 - 62.8	Pass
STW-1095	07/10/06	Cs-137	236.0 ± 3.0	238.0	217.0 - 259.0	Pass
STW-1095	07/10/06	Zn-65	126.0 ± 8.0	121.0	100.0 - 142.0	Pass
STW-1096	07/10/06	Gr. Alpha	10.9 ± 1.0	10.0	1.3 - 18.6	Pass
STW-1096	07/10/06	Gr. Beta	9.7 ± 0.4	8.9	0.2 - 17.5	Pass
STW-1097	07/10/06	Ra-226	11.0 ± 0.5	10.7	7.9 - 13.5	Pass
STW-1097	07/10/06	Ra-228	12.2 ± 0.8	10.7	6.1 - 15.3	Pass
STW-1097	07/10/06	Uranium	43.4 ± 0.1	40.3	33.3 - 47.3	Pass

TABLE D-4

ERA^(a) STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM
ENVIRONMENTAL, INC., 2006

(Page 2 of 2)

Lab Code	Date	Analysis	Concentration (pCi/L)			Acceptance
			Laboratory Result ^b	ERA Result ^c	Control Limits	
STW-1104	10/06/06	Sr-89	38.4 ± 1.3	39.9	31.2 - 45.7	Pass
STW-1104	10/06/06	Sr-90	15.5 ± 0.5	16.0	7.3 - 24.7	Pass
STW-1105	10/06/06	Ba-133	64.9 ± 2.8	70.2	58.1 - 82.3	Pass
STW-1105	10/06/06	Co-60	61.6 ± 1.0	62.3	53.6 - 71.0	Pass
STW-1105	10/06/06	Cs-134	29.0 ± 0.9	29.9	21.2 - 38.6	Pass
STW-1105	10/06/06	Cs-137	77.8 ± 2.4	78.2	69.5 - 86.9	Pass
STW-1105	10/06/06	Zn-65	293.0 ± 2.4	277.0	229.0 - 325.0	Pass
STW-1106	10/06/06	Gr. Alpha	23.9 ± 2.5	28.7	16.3 - 41.1	Pass
STW-1106	10/06/06	Gr. Beta	23.7 ± 1.4	20.9	12.2 - 29.6	Pass
STW-1107 ^d	10/06/06	I-131	28.4 ± 1.2	22.1	16.9 - 27.3	Fail
STW-1108	10/06/06	Ra-226	14.5 ± 0.5	14.4	10.7 - 18.1	Pass
STW-1108	10/06/06	Ra-228	6.6 ± 0.4	5.9	3.3 - 8.4	Pass
STW-1108	10/06/06	Uranium	2.9 ± 0.1	3.2	0.0 - 8.4	Pass
STW-1109	10/06/06	H-3	3000.0 ± 142.0	3050.0	2430.0 - 3670.0	Pass

^a Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the crosscheck program for proficiency testing in drinking water conducted by Environmental Resources Associates (ERA).

^b Unless otherwise indicated, the laboratory result is given as the mean ± standard deviation for three determinations.

^c Results are presented as the known values, expected laboratory precision (1 sigma, 1 determination) and control limits as provided by ERA.

^d The reported result was an average of three analyses, results ranged from 25.36 to 29.23 pCi/L. A fourth analysis was performed, result of analysis, 24.89 pCi/L.

TABLE D-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)²
ENVIRONMENTAL, INC., 2006

(Page 1 of 3)

Lab Code ^c	Date	Analysis	Concentration ^b		Control Limits ^d	Acceptance
			Laboratory result	Known Activity		
STVE-1082	01/01/06	Am-241	0.16 ± 0.06	0.16	0.11 - 0.20	Pass
STVE-1082	01/01/06	Co-57	10.40 ± 0.20	8.58	6.00 - 11.15	Pass
STVE-1082	01/01/06	Co-60	5.00 ± 0.20	4.52	3.16 - 5.88	Pass
STVE-1082 ^e	01/01/06	Cs-134	< 0.20	0.00		Pass
STVE-1082	01/01/06	Cs-137	3.40 ± 0.20	3.07	2.15 - 4.00	Pass
STVE-1082	01/01/06	Mn-54	6.90 ± 0.20	6.25	4.37 - 8.12	Pass
STVE-1082 ^f	01/01/06	Pu-238	0.08 ± 0.03	0.14	0.10 - 0.18	Fail
STVE-1082	01/01/06	Pu-239/40	0.17 ± 0.03	0.16	0.11 - 0.21	Pass
STVE-1082	01/01/06	Sr-90	1.40 ± 0.20	1.56	1.09 - 2.03	Pass
STVE-1082	01/01/06	U-233/4	0.24 ± 0.05	0.21	0.15 - 0.27	Pass
STVE-1082	01/01/06	U-238	0.19 ± 0.04	0.22	0.15 - 0.28	Pass
STVE-1082	01/01/06	Zn-65	11.10 ± 0.50	9.80	6.86 - 12.74	Pass
STSO-1083	01/01/06	Am-241	54.60 ± 5.50	57.08	39.96 - 74.20	Pass
STSO-1083	01/01/06	Co-57	762.90 ± 12.70	656.29	459.40 - 853.18	Pass
STSO-1083	01/01/06	Co-60	504.90 ± 3.10	447.10	312.97 - 581.23	Pass
STSO-1083 ^e	01/01/06	Cs-134	< 1.70	0.00		Pass
STSO-1083	01/01/06	Cs-137	406.50 ± 3.70	339.69	237.78 - 441.60	Pass
STSO-1083	01/01/06	K-40	719.20 ± 18.40	604.00	422.80 - 785.20	Pass
STSO-1083	01/01/06	Mn-54	415.60 ± 4.80	346.77	242.74 - 450.80	Pass
STSO-1083	01/01/06	Ni-63	261.40 ± 14.70	323.51	226.46 - 420.56	Pass
STSO-1083	01/01/06	Pu-238	14.60 ± 2.90	61.15	42.81 - 79.50	Fail
STSO-1083	01/01/06	Pu-239/40	14.60 ± 2.40	45.85	32.09 - 59.61	Fail
STSO-1083	01/01/06	U-233/4	13.50 ± 1.70	37.00	25.90 - 48.10	Fail
STSO-1083	01/01/06	U-238	15.40 ± 1.80	38.85	27.20 - 50.50	Fail
STSO-1083	01/01/06	Zn-65	783.40 ± 7.00	657.36	460.15 - 854.57	Pass
STAP-1084	01/01/06	Gr. Alpha	0.26 ± 0.02	0.36	0.00 - 0.72	Pass
STAP-1084	01/01/06	Gr. Beta	0.51 ± 0.03	0.48	0.24 - 0.72	Pass
STAP-1085	01/01/06	Am-241	0.12 ± 0.02	0.09	0.07 - 0.12	Pass
STAP-1085	01/01/06	Co-57	4.32 ± 0.10	4.10	2.87 - 5.32	Pass
STAP-1085	01/01/06	Co-60	2.24 ± 0.16	2.19	1.53 - 2.84	Pass
STAP-1085	01/01/06	Cs-134	2.96 ± 0.19	2.93	2.05 - 3.81	Pass
STAP-1085	01/01/06	Cs-137	2.64 ± 0.20	2.53	1.77 - 3.29	Pass
STAP-1085 ^f	01/01/06	Pu-238	0.03 ± 0.01	0.07	0.05 - 0.09	Fail
STAP-1085 ^e	01/01/06	Pu-239/40	< 0.01	0.00		Pass
STAP-1085	01/01/06	Sr-90	0.77 ± 0.21	0.79	0.55 - 1.03	Pass
STAP-1085	01/01/06	U-233/4	0.03 ± 0.01	0.02	0.01 - 0.03	Pass
STAP-1085	01/01/06	U-238	0.02 ± 0.01	0.02	0.01 - 0.03	Pass
STAP-1085	01/01/06	Zn-65	3.94 ± 0.44	3.42	2.40 - 4.45	Pass

TABLE D-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)³
ENVIRONMENTAL, INC., 2006

(Page 2 of 3)

Lab Code ^c	Date	Analysis	Concentration ^b		Control Limits ^d	Acceptance
			Laboratory result	Known Activity		
STW-1086	01/01/06	Am-241	1.29 ± 0.05	1.30	0.91 - 1.69	Pass
STW-1086	01/01/06	Co-57	177.10 ± 1.00	166.12	116.28 - 215.96	Pass
STW-1086	01/01/06	Co-60	158.30 ± 1.00	153.50	107.45 - 199.55	Pass
STW-1086	01/01/06	Cs-134	96.40 ± 1.50	95.10	66.57 - 123.63	Pass
STW-1086 ^e	01/01/06	Cs-137	< 0.80	0.00		Pass
STW-1086	01/01/06	Fe-55	102.50 ± 18.10	129.60	90.72 - 168.48	Pass
STW-1086	01/01/06	H-3	956.60 ± 16.50	952.01	666.41 - 1238.00	Pass
STW-1086	01/01/06	Mn-54	335.30 ± 2.20	315.00	220.50 - 409.50	Pass
STW-1086	01/01/06	Ni-63	62.90 ± 3.60	60.34	42.24 - 78.44	Pass
STW-1086	01/01/06	Pu-238	0.96 ± 0.07	0.91	0.70 - 1.30	Pass
STW-1086 ^e	01/01/06	Pu-239/40	< 0.20	0.00		Pass
STW-1086	01/01/06	Sr-90	12.80 ± 1.60	13.16	9.21 - 17.11	Pass
STW-1086	01/01/06	Tc-99	22.30 ± 1.20	23.38	16.37 - 30.39	Pass
STW-1086	01/01/06	U-233/4	2.02 ± 0.12	2.09	1.46 - 2.72	Pass
STW-1086	01/01/06	U-238	2.03 ± 0.12	2.17	1.52 - 2.82	Pass
STW-1086	01/01/06	Zn-65	249.50 ± 3.40	228.16	159.71 - 296.61	Pass
STW-1087	01/01/06	Gr. Alpha	0.59 ± 0.10	0.58	0.00 - 1.16	Pass
STW-1087	01/01/06	Gr. Beta	1.69 ± 0.07	1.13	0.56 - 1.70	Pass
STVE-1098 ^e	07/01/06	Co-57	< 0.14	0.00		Pass
STVE-1098 ^g	07/01/06	Co-60	6.89 ± 0.17	5.81	4.06 - 7.55	Pass
STVE-1098	07/01/06	Cs-134	8.46 ± 0.16	7.49	5.24 - 9.73	Pass
STVE-1098	07/01/06	Cs-137	6.87 ± 0.29	5.50	3.85 - 7.14	Pass
STVE-1098	07/01/06	Mn-54	10.36 ± 0.29	8.35	5.85 - 10.86	Pass
STVE-1098	07/01/06	Zn-65	7.46 ± 0.50	5.98	4.19 - 7.78	Pass
STSO-1099	07/01/06	Am-241	130.00 ± 11.60	105.47	73.83 - 137.11	Pass
STSO-1099	07/01/06	Co-57	784.90 ± 3.80	676.33	473.43 - 879.23	Pass
STSO-1099	07/01/06	Co-60	2.10 ± 0.90	1.98	0.00 - 5.00	Pass
STSO-1099	07/01/06	Cs-134	500.70 ± 7.40	452.13	316.49 - 587.77	Pass
STSO-1099	07/01/06	Cs-137	624.20 ± 4.90	525.73	368.01 - 683.45	Pass
STSO-1099	07/01/06	K-40	701.30 ± 3.40	604.00	423.00 - 785.00	Pass
STSO-1099	07/01/06	Mn-54	699.20 ± 5.20	594.25	415.98 - 772.52	Pass
STSO-1099	07/01/06	Ni-63	614.40 ± 17.10	672.30	470.60 - 874.00	Pass
STSO-1099	07/01/06	Pu-238	79.90 ± 5.80	82.00	57.00 - 107.00	Pass
STSO-1099 ^e	07/01/06	Pu-239/40	< 0.70	0.00		Pass
STSO-1099	07/01/06	U-233/4	150.50 ± 5.90	152.44	106.71 - 198.17	Pass
STSO-1099	07/01/06	U-238	151.60 ± 6.00	158.73	111.11 - 206.35	Pass
STSO-1099	07/01/06	Zn-65	1021.90 ± 9.20	903.61	632.53 - 1175.00	Pass

TABLE D-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)^a
ENVIRONMENTAL, INC., 2006

(Page 3 of 3)

Lab Code ^c	Date	Analysis	Concentration ^b		Control Limits ^d	Acceptance
			Laboratory result	Known Activity		
STAP-1100	07/01/06	Am-241	0.16 ± 0.03	0.14	0.10 - 0.19	Pass
STAP-1100	07/01/06	Co-57	2.17 ± 0.06	2.58	1.81 - 3.36	Pass
STAP-1100	07/01/06	Co-60	1.38 ± 0.07	1.58	1.10 - 2.05	Pass
STAP-1100	07/01/06	Cs-134	2.52 ± 0.13	3.15	2.20 - 4.09	Pass
STAP-1100	07/01/06	Cs-137	1.64 ± 0.08	1.81	1.26 - 2.35	Pass
STAP-1100	07/01/06	Mn-54	1.76 ± 0.18	1.92	1.34 - 2.50	Pass
STAP-1100	07/01/06	Pu-238	0.09 ± 0.02	0.12	0.08 - 0.15	Pass
STAP-1100	07/01/06	Sr-90	0.66 ± 0.21	0.62	0.43 - 0.81	Pass
STAP-1100	07/01/06	U-233/4	0.15 ± 0.02	0.13	0.09 - 0.17	Pass
STAP-1100	07/01/06	U-238	0.13 ± 0.02	0.14	0.10 - 0.18	Pass
STAP-1100 ^e	07/01/06	Zn-65	< 0.07	0.00		Pass
STAP-1101	07/01/06	Gr. Alpha	0.08 ± 0.03	0.29	0.00 - 0.58	Pass
STAP-1101	07/01/06	Gr. Beta	0.41 ± 0.05	0.36	0.18 - 0.54	Pass
STW-1102	07/01/06	Gr. Alpha	0.76 ± 0.07	1.03	0.00 - 2.07	Pass
STW-1102	07/01/06	Gr. Beta	1.23 ± 0.06	1.03	0.52 - 1.54	Pass
STW-1103	07/01/06	Am-241	1.86 ± 0.09	2.31	1.62 - 3.00	Pass
STW-1103	07/01/06	Co-57	224.10 ± 1.20	213.08	149.16 - 277.00	Pass
STW-1103	07/01/06	Co-60	49.40 ± 0.50	47.50	33.20 - 61.80	Pass
STW-1103	07/01/06	Cs-134	112.70 ± 0.90	112.82	78.97 - 146.66	Pass
STW-1103	07/01/06	Cs-137	206.60 ± 1.40	196.14	137.30 - 254.98	Pass
STW-1103	07/01/06	Fe-55	138.40 ± 5.40	165.40	115.80 - 215.00	Pass
STW-1103	07/01/06	H-3	446.50 ± 11.80	428.85	300.20 - 557.50	Pass
STW-1103 ^e	07/01/06	Mn-54	< 0.30	0.00		Pass
STW-1103	07/01/06	Ni-63	116.70 ± 3.60	118.62	83.03 - 154.21	Pass
STW-1103	07/01/06	Pu-238	1.27 ± 0.07	1.39	0.97 - 1.81	Pass
STW-1103	07/01/06	Pu-239/40	1.67 ± 0.08	1.94	1.36 - 2.52	Pass
STW-1103	07/01/06	Sr-90	16.40 ± 1.90	15.69	10.98 - 20.40	Pass
STW-1103	07/01/06	Tc-99	29.40 ± 1.10	27.15	19.00 - 35.29	Pass
STW-1103	07/01/06	U-233/4	1.97 ± 0.08	2.15	1.50 - 2.80	Pass
STW-1103	07/01/06	U-238	1.97 ± 0.08	2.22	1.55 - 2.89	Pass
STW-1103	07/01/06	Zn-65	192.50 ± 2.40	176.37	123.46 - 229.28	Pass

^a Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the Department of Energy's Mixed Analyte Performance Evaluation Program, Idaho Operations office, Idaho Falls, Idaho

^b Results are reported in units of Bq/kg (soil), Bq/L (water) or Bq/total sample (filters, vegetation).

^c Laboratory codes as follows: STW (water), STAP (air filter), STSO (soil), STVE (vegetation).

^d MAPEP results are presented as the known values and expected laboratory precision (1 sigma, 1 determination) and control limits as defined by the MAPEP.

^e Included in the MAPEP as a false positive.

^f Difficulties with the analyses for transuranics isotopes in solid samples (Filters, Soil and vegetation), were attributed to incomplete dissolution of the samples. Soil samples were repeated, results of reanalyses: Pu-238, 53.1 ± 5.3 bq/kg. Pu-239/240, 42.4 ± 4.7 bq/kg. U-233/4, 33.3 ± 3.5 bq/kg. U-238, 35.5 ± 3.6 bq/kg.

^g The July vegetation sample was provided in two separate geometries, (100 ml. and 500 ml.). Results reported here used the 500 ml. standard size geometry. Results for the 100 ml. geometry showed approximately a 15% higher bias.

APPENDIX E

EFFLUENT DATA

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Station Releases

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INTRODUCTION

Units 1 and 2 of the Zion Station, located in Zion, Illinois adjacent to Lake Michigan, are 1100 MWe (3520 MWt) Westinghouse pressurized water reactors. The plant permanently ceased operation in February of 1998 and has been permanently defueled.

The station was designed to keep releases to the environment at levels below those specified in the regulations. Historical data has been established that Zion, as a fully operational facility, did not contribute appreciable doses to the surrounding public. Sampling results for 2006 showed zero releases above background for a variety of monitored pathways, e.g. water, vegetation, air samples and TLIV.

Liquid effluents from Zion Station are released to Lake Michigan in controlled batches after radioassay of each batch and continuously through a monitored pathway. There are no routine noble gas releases. Due to decay, iodine is no longer present. The only noble gas that remains is Kr85 captured in the spent fuel assemblies stored in the fuel pool in the fuel building (1713). A new ventilation system for the FB has been installed to monitor possible releases. The results of effluent analyses are summarized on a monthly basis and reported to the Nuclear Regulatory Commission as required per Technical Specifications. Airborne concentrations of noble gases, I-131, and particulate radioactivity in offsite areas are calculated using effluent and meteorological data.

Environmental monitoring was conducted by sampling at indicator and control (background) locations in the vicinity of the Zion Station to measure changes in radiation or radioactivity levels that may be attributable to the station. If significant changes attributable to Zion Station are measured, these changes are correlated with effluent releases.

SUMMARY

Gaseous and liquid effluents for the period contributed to only a small fraction of the Station Technical Specification limits. Calculations of environmental concentrations based on effluent and meteorological data for the period indicate that consumption by the public of radionuclides attributable to the Zion Station does not exceed regulatory limits. Radiation exposure from radionuclides released to the atmosphere represented the critical pathway for the period with a maximum individual total body dose estimated to be $9.04\text{E-}05$ mrem for the year, where a shielding and occupancy factor of 0.7 is assumed. The assessment of radiation doses is performed in accordance with the Exelon Offsite Dose Calculation Manual (ODCM). The results of analysis confirm that the station is operating in compliance with 10CFR50 Appendix 1, 10CFR20 and 40CFR190.

1.0 EFFLUENTS

1.1 Gaseous Effluents to the Atmosphere

Measured concentrations and isotopic composition of noble gases, radioiodine, and particulate radioactivity released to the atmosphere during the year, are listed in Table 1.1-1. A total of 0.00E+00 microcuries of fission and activation gases was released with a maximum average release rate of 0.00E+00 $\mu\text{Ci}/\text{sec}$ during any one quarter period.

A total of 0.00E+00 microcuries of 1-131 was released during the year with a maximum average quarterly release rate of 0.00E+00 $\mu\text{Ci}/\text{sec}$.

A total of 1.26E00 microcuries of beta-gamma emitters was released as airborne particulate matter with a maximum average quarterly release rate of 1.38E-07 $\mu\text{Ci}/\text{sec}$. quarterly only. Alpha-emitting radionuclides were not measurable. Also, 0.00E+00 curies of tritium were released with a maximum average quarterly release rate of 0.00E+00 $\mu\text{Ci}/\text{sec}$.

1.2 Liquids Released to Lake Michigan

A total of 2.08E07 liters of liquid waste containing 0.00E+00 microcuries was discharged from the station via an approved pathway after dilution with a total of 3.97E10 liters of water. These wastes were released at a maximum quarterly average concentration of 0.00E+00 $\mu\text{Ci}/\text{ml}$. A total of 0.00E-00 curies of tritium was released. Alpha activity released totaled 0.00 μCi for the year. Monthly release estimates and principal radionuclides in liquid effluents are given in Table 1.2-1.

2.0 SOLID RADIOACTIVE WASTE

There were no solid radioactive waste shipments. For more detail, refer to Zion Station 2006 Effluent Report.

3.0 DOSE TO MAN

3.1 Gaseous Effluent Pathways

Table 3.1-1 summarizes the doses resulting from releases of airborne radioactivity via the different exposure pathways.

3.1.1 Gaseous Releases

3.1.1.1 Gamma Dose Rates

Offsite Gamma air and whole (total) body dose rates are shown in Table 3.1-1 and were calculated based on measured release rates, isotopic composition of the gases, and meteorological data for the period. Based on measured effluents and average meteorological data, the maximum total body dose to an individual would be 9.02E-05 mrem (adult) for the year (Table 3.1-1), with an occupancy or shielding factor of 0.7 included, and based on measured effluents and concurrent meteorological data would be 9.02 E-05 mrem (Table 3.4-1). The maximum gamma air dose was 0.00E+00 mrad based on measured effluents and average meteorological data (Table 3.1-1), and 0.00E+00 mrad based on measured effluents and concurrent meteorological data (Table 3.4-1).

3.1.1.2 Beta Air and Skin Dose Rates

The range of beta particles in air is relatively small (on the order of a few meters or less); consequently, plumes of gaseous effluents may be considered "infinite" for purpose of calculating the dose from beta radiation incident on the skin. However, the actual dose to sensitive skin tissues is difficult to calculate due to the effect of the beta particle energies, thickness of inert skin and clothing covering sensitive tissues. For purposes of this report the skin is taken to have a thickness of 7.0 mg/cm² and an occupancy factor of 1.0 is used. The skin dose from beta and gamma radiation for the year was 0.00E+00 mrem based on measured effluents and average meteorological data (Table 3.1-1), and 0.00E+00 mrem based on measured effluents and concurrent meteorological data (Table 3.4-1).

The maximum offsite beta air dose for the year was 0.00E+00 mrad based on measured effluents and average meteorological data (Table 3.1-1), and 0.00E+00 mrad based on measured effluents and concurrent meteorological data (Table 3.4-1).

3.1.2 Radioactive Iodine

The human thyroid exhibits a significant capacity to concentrate ingested or inhaled iodine. The radioiodine, I-131, released during routine operation of the station, may be made available to man resulting in a dose to the thyroid. The principal pathway of interest for this radionuclide is ingestion of radioiodine in milk. As Zion Station is not operational and I-131 has decayed away, the maximum offsite concentration is estimated to be zero, as expected.

3.1.3 Dose to Thyroid

The hypothetical thyroid dose to a maximum exposed individual living near the station via ingestion of milk was calculated. As Zion Station is not operational and I-131 has decayed away, the maximum offsite concentration is estimated to be zero, as expected.

3.2 Liquid Effluent Pathways

The three principal pathways through the aquatic environment for potential doses to man from liquid waste are ingestion of potable water, eating aquatic foods, and exposure while on the shoreline. Not all of these pathways are significant or applicable at a given time but a reasonable approximation of the dose can be made by adjusting the dose formula for season of the year or type and degree of use of the aquatic environment. NRC developed equations* were used to calculate the doses to the whole body, lower GI tracts, thyroid, bone, skin; specific parameters for use in the equations are given in the Exelon Offsite Dose Calculation Manual. The maximum whole body dose (total body) for the year was 0.00E+00 mrem (adult) and no organ dose exceeded 0.00E+00 mrem (teenage liver) (Table 3.2-1).

3.3 Assessment of Dose to Member of Public

During the period January to December, 2006, Zion Station did not exceed the below limits as shown in Table 3.1-1 and Table 3.2-1 (based on yearly average meteorological data), and Figure 3.1-1 (based on concurrent meteorological data):

- The RETS limits on dose or dose commitment to an individual due to radioactive materials in liquid effluents from each reactor unit (3 mrem to the whole body or 10 mrem to any organ during any calendar year).
- The RETS limits on air dose in noble gases released in gaseous effluents to a member of the public from each reactor unit (10 mrad for gamma radiation or 20 mrad for beta radiation during any calendar year).
- The RETS limits on dose to a member of the public due to iodine-131, iodine-133, tritium, and radionuclides in particulate form with half-lives greater than eight days in gaseous effluents released from each reactor unit (15 mrem to any organ during any calendar year).
- The 10CFR20 limit on Total Effective Dose Equivalent to individual members of the public (100 mrem).

4.0 SITE METEOROLOGY

A summary of the site meteorological measurements taken during each calendar quarter of the year is given in Appendix 11. The data are presented as cumulative joint frequency

*Nuclear Regulatory Commission, Regulatory Guide 1.109 (Rev. 1) distributions of the wind direction for the 250' level and wind speed class by atmospheric stability class determined from the temperature difference between the 250' and 35' levels. Data recovery for these measurements was 98.8% during 2006 (Table 3.4-1).

APPENDIX E-1

DATA TABLES AND FIGURES

**Table 2.0-1
Solid Radioactive Waste**

Table 2.0-1 has been deliberately deleted. For details on solid waste disposal, see the Zion 2006 Annual Effluent Report

**Table 3.1-1
Maximum Doses Resulting from Airborne Releases**

RETEAS v3.6.3 <210> VSSI

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

GASEOUS DOSE SUMMARY

Report for: 2006
Unit Range - From: 1 To: 2

--- I&P DOSE LIMIT ANALYSIS ---				ANNUAL 2006		
Annual - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit	
2006 - Admin. Any Organ	INFANT	LIVER	3.60E-04	1.11E+01	3.29E-03	
2006 - Admin. Total Body	ADULT	TBODY	9.02E-05	1.05E+01	8.59E-04	
2006 - T.Spc. Any Organ	INFANT	LIVER	3.60E-04	1.50E+01	2.40E-03	
Receptor: 5 Composite Crit. Receptor - IP						
Distance: 0.00 (meters) Compass Point: NA						
Critical Pathway: Grs/Goat/Milk (GMILK)						
Major Contributors (0% or greater to total)						
Nuclide	Percentage					
CO-60	6.67E+00					
CS-137	9.33E+01					
2006 - T.Spc. Total Body	ADULT	TBODY	9.02E-05	1.50E+01	6.01E-04	
Receptor: 5 Composite Crit. Receptor - IP						
Distance: 0.00 (meters) Compass Point: NA						
Critical Pathway: Ground Plane Deposition (GPD)						
Major Contributors (0% or greater to total)						
Nuclide	Percentage					
CO-60	2.71E+01					
CS-137	7.29E+01					

Table 3.1-1 (continued)
Maximum Doses Resulting from Airborne Releases

RETAS v3.6.1 <ZIO> VSSI

45CFR190 URANIUM FUEL CYCLE DOSE REPORT

 GASEOUS DOSE SUMMARY

Report for: 2006
 Unit Range - From: 1 To: 2

Annual - Limit	Dose (mrad)	Limit (mrad)	Max % of Limit
----- ANNUAL 2006 -----			
2006 - Admin. Gamma	0.00E+00	1.50E+01	0.00E+00
2006 - Admin. Beta	0.00E+00	1.50E+01	0.00E+00

2006 - T.Spc. Gamma	0.00E+00	1.50E+01	0.00E+00
Receptor: 5 Composite Crit. Receptor - IP			
Distance: 0.00 (meters)		Compass Point: NA	
Nuclide	Percentage		
-----	-----		

2006 - T.Spc. Beta	0.00E+00	1.50E+01	0.00E+00
Receptor: 5 Composite Crit. Receptor - IP			
Distance: 0.00 (meters)		Compass Point: NA	
Nuclide	Percentage		
-----	-----		

**Table 3.2-1
Maximum Doses Resulting from Liquid Effluents**

```

RETSDAS v3.5.3      <2100>                                VBS1

                                10CFR190 URANIUM FUEL CYCLE DOSE REPORT
                                -----
                                LIQUID DOSE SUMMARY
                                -----

Report for: 2006
Unit Range - From: 1   To: 2

                                Liquid Receptor
--- PERIOD DOSE BY ORGAN AND AGE GROUP (mrem) ----- ANNUAL 2006 -----
Agegrp Bone      Liver      Thyroid Kidney   Lung      GI-LLI   Skin     TB
-----
--- SITE DOSE LIMIT ANALYSIS ----- ANNUAL 2006 -----
Annual - Limit      Age      Dose      Limit      Max % of
                    Group   (mrem)    (mrem)    Limit
-----
2006 - Admin. Any Organ      ADULT   TBODY      0.00E+00  5.00E+00  0.00E+00
2006 - Admin. Total Body      ADULT   TBODY      0.00E+00  2.25E+00  0.00E+00

2006 - T.Spc. Any Organ      ADULT   TBODY      0.00E+00  7.50E+00  0.00E+00
Critical Pathway:
Major Contributors ( 0% or greater to total)
Nuclide      Percentage
-----

2006 - T.Spc. Total Body      ADULT   TBODY      0.00E+00  3.00E+00  0.00E+00
Critical Pathway: Potable Water (PWtr)
Major Contributors ( 0% or greater to total)
Nuclide      Percentage
-----

```

**Table 3.3-1
10CFR20 Compliance Assessment**

**ZION STATION
2006
Unit 1
10CFR20 Compliance Assessment**

1.	10CFR 20.1301 (a) (1) Compliance				
	Total Effective Dose Equivalent	<u>4.5-4 mrem/year</u>			
	10 CFR 20.1301 (a) (1) limit	<u>100 mrem/year</u>			
	% of the limit.	<u>0.0000045</u>			
2.	Compliance Summary 10CFR20				
	1 st Qtr.	2 nd Qtr.	3 rd Qtr	4 th Qtr	% of Limit
TEDE	0	0	3.58e-4	9.20e-5	0.0000045

Table 3.4-1

Maximum Doses Resulting from Airborne Released Based on Concurrent Meteorological Data

Zion Station - Unit 1

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

2006

TYPE OF DOSE	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER	ANNUAL
GMMA AIR (mrad)	0.000E+00 (N)	0.000E+00 (N)	0.000E+00 (N)	0.000E+00 (N)	0.000E+00 (N)
BETA AIR (mrad)	0.000E+00 (N)	0.000E+00 (N)	0.000E+00 (N)	0.000E+00 (N)	0.000E+00 (N)
WHOLE BODY (mrem)	0.000E+00 (N)	0.000E+00 (N)	1.620E-05 (W)	7.510E-08 (INGW)	1.684E-06 (W)
SKIN (mrem)	0.000E+00 (N)	0.000E+00 (N)	1.900E-06 (W)	8.760E-08 (INGW)	1.575E-06 (W)
ORGAN (mrem)	0.000E+00 (N)	0.000E+00 (N)	1.490E-06 (E)	2.110E-08 (E)	1.494E-06 (E)
CRITICAL PERSON	Adult	Adult	Teenager	Child	Teenager
CRITICAL ORGAN	Bone	Bone	Lung	Bone	Lung

COMPLIANCE STATUS

TYPE OF DOSE	10 CFR 50 APP. I		10 CFR 50 APP. I	
	QUARTERLY OBJECTIVE	% OF APP. I	YEARLY OBJECTIVE	% OF APP. I
GMMA AIR (mrad)	5.0	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	20.0	0.00
WHOLE BODY (mrem)	2.5	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	15.0	0.00
CRITICAL PERSON			Teenager	Teenager
CRITICAL ORGAN			Lung	Lung

Calculation used release data from the following:
Unit 1 - Ground

Date of calculation: 3/27/2007

Table 3.4-1 (continued)

**Maximum Doses Resulting from Airborne Released Based on
Concurrent Meteorological Data**

Zion Station - Unit 2

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

2006

TYPE OF DOSE	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER	ANNUAL
GAMMA AIR (mrad)	0.000E+00 (N)	0.000E+00 (N)	0.000E+00 (N)	0.000E+00 (N)	0.000E+00 (N)
BETA AIR (mrad)	0.000E+00 (N)	0.000E+00 (N)	0.000E+00 (N)	0.000E+00 (N)	0.000E+00 (N)
WHOLE BODY (mrem)	0.000E+00 (N)	0.000E+00 (N)	1.620E-06 (W)	7.510E-06 (NNW)	1.694E-06 (W)
SKIN (mrem)	0.000E+00 (N)	0.000E+00 (N)	1.900E-06 (W)	8.760E-06 (NNW)	1.976E-06 (W)
ORGAN (mrem)	0.000E+00 (N)	0.000E+00 (N)	1.490E-06 (E)	3.110E-06 (E)	1.444E-06 (E)
CRITICAL PERSON	Adult	Adult	Teenager	Child	Teenager
CRITICAL ORGAN	Bone	Bone	Lung	Bone	Lung

COMPLIANCE STATUS

TYPE OF DOSE	10 CFR 50 APP. I		10 CFR 50 APP. I	
	QUARTERLY OBJECTIVE	% OF APP. I	YEARLY OBJECTIVE	% OF APP. I
GAMMA AIR (mrad)	5.0	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	20.0	0.00
WHOLE BODY (mrem)	2.5	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	15.0	0.00
CRITICAL PERSON			Teenager	Teenager
CRITICAL ORGAN			Lung	Lung

Calculation used release data from the following:
Unit 2 - Secound

Date of calculation: 3/27/2007

APPENDIX F

METEOROLOGICAL DATA

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	2	6	0	0	8
NNE	0	3	25	3	1	0	32
NE	0	5	5	6	0	0	16
ENE	0	10	4	0	0	0	14
E	0	2	1	0	0	0	3
ESE	0	4	4	0	0	0	8
SE	0	2	6	0	0	0	8
SSE	0	1	0	1	0	0	2
S	0	2	0	0	0	0	2
SSW	0	0	6	1	0	0	7
SW	0	4	6	6	2	0	18
WSW	2	6	16	8	2	0	34
W	0	10	15	10	0	0	35
WNW	0	9	21	13	0	0	43
NW	0	2	31	4	0	0	37
NNW	0	1	11	3	0	0	15
Variable	0	0	0	0	0	0	0
Total	2	61	153	61	5	0	282

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	2	7	1	0	11
NNE	0	2	3	0	0	0	5
NE	0	2	4	0	0	0	6
ENE	0	0	1	1	0	0	2
E	0	3	1	1	0	0	5
ESE	0	1	0	0	0	0	1
SE	0	5	1	0	0	0	6
SSE	0	0	2	2	3	0	7
S	0	1	0	0	0	0	1
SSW	0	0	1	2	0	0	3
SW	0	5	3	2	1	0	11
WSW	0	0	4	2	0	0	6
W	0	6	3	2	0	0	11
WNW	0	2	16	0	1	0	19
NW	0	6	4	1	0	0	11
NNW	0	4	11	3	0	0	18
Variable	0	0	0	0	0	0	0
Total	0	38	56	23	6	0	123

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	16	6	1	0	25
NNE	0	2	8	1	0	0	11
NE	1	4	0	1	1	0	7
ENE	1	2	1	0	0	0	4
E	0	2	4	2	0	0	8
ESE	0	5	1	1	0	0	7
SE	0	5	5	2	0	0	12
SSE	1	6	14	6	0	0	27
S	0	4	1	0	0	0	5
SSW	1	2	2	0	0	0	5
SW	0	8	11	11	0	0	30
WSW	1	7	23	1	2	0	34
W	0	13	9	4	0	0	26
WNW	0	19	25	0	0	0	44
NW	2	19	29	10	0	0	60
NNW	0	8	27	7	0	0	42
Variable	0	0	0	0	0	0	0
Total	7	108	176	52	4	0	347

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Neutral - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	18	29	11	0	0	61
NNE	4	17	27	11	0	0	59
NE	2	5	8	12	4	0	31
ENE	1	4	27	10	3	0	45
E	3	4	6	5	0	0	18
ESE	2	8	9	8	0	0	27
SE	1	23	8	4	0	0	36
SSE	2	30	22	3	1	0	58
S	2	22	12	0	0	0	36
SSW	3	23	21	2	0	0	49
SW	1	18	18	11	0	0	48
WSW	5	13	11	11	5	1	46
W	4	9	31	12	2	0	58
WNW	6	34	19	12	0	0	71
NW	10	30	21	22	0	0	83
NNW	9	23	14	4	0	0	50
Variable	0	0	0	0	0	0	0
Total	58	281	283	138	15	1	776

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	9	2	0	0	0	14
NNE	1	3	2	0	0	0	6
NE	2	2	4	1	0	0	9
ENE	3	2	7	3	0	0	15
E	1	3	3	1	0	0	8
ESE	0	0	5	1	0	0	6
SE	2	13	1	1	0	0	17
SSE	6	15	13	2	0	0	36
S	8	39	12	2	0	0	61
SSW	12	14	7	1	0	0	34
SW	11	8	2	0	0	0	21
WSW	12	15	7	0	0	0	34
W	5	12	2	1	0	0	20
WNW	7	24	0	0	0	0	31
NW	7	23	2	0	0	0	32
NNW	4	20	2	0	0	0	26
Variable	0	0	0	0	0	0	0
Total	84	202	71	13	0	0	370

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	2	0	0	0	0	3
NNE	0	2	1	0	0	0	3
NE	0	0	1	1	0	0	2
ENE	0	0	0	1	0	0	1
E	0	0	0	0	0	0	0
ESE	0	1	1	0	0	0	2
SE	0	4	1	0	0	0	5
SSE	1	7	11	0	0	0	19
S	1	16	8	1	0	0	26
SSW	3	0	0	1	0	0	4
SW	5	4	0	0	0	0	9
WSW	8	2	0	0	0	0	10
W	13	10	0	0	0	0	23
WNW	10	18	0	0	0	0	28
NW	6	4	0	0	0	0	10
NNW	2	2	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	50	72	23	4	0	0	149

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	1	3	1	1	0	0	6
S	1	4	4	0	0	0	9
SSW	0	2	0	0	0	0	2
SW	1	0	0	0	0	0	1
WSW	6	0	0	0	0	0	6
W	6	4	0	0	0	0	10
WNW	1	3	0	0	0	0	4
NW	1	0	0	0	0	0	1
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	17	16	5	1	0	0	39

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	6	3	5	2	17
NNE	0	0	7	14	1	3	25
NE	0	2	3	3	2	0	10
ENE	0	1	8	0	0	0	9
E	0	1	0	1	0	0	2
ESE	0	2	1	0	0	0	3
SE	0	1	7	2	3	1	14
SSE	0	0	1	0	0	0	1
S	0	0	2	0	0	0	2
SSW	0	0	0	6	3	0	9
SW	0	1	3	5	4	2	15
WSW	1	1	15	7	9	2	35
W	0	0	18	6	5	7	36
WNW	0	0	15	16	11	1	43
NW	0	0	7	19	7	0	33
NNW	0	0	2	12	1	0	15
Variable	0	0	0	0	0	0	0
Total	1	10	95	94	51	18	269

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 14
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	3	3	3	10
NNE	0	3	3	3	0	0	9
NE	0	1	0	3	0	0	4
ENE	0	0	0	0	0	0	0
E	0	0	0	1	0	1	2
ESE	0	0	1	0	0	0	1
SE	0	1	3	2	2	0	8
SSE	0	1	0	1	3	0	5
S	0	1	0	0	0	0	1
SSW	0	0	1	1	2	0	4
SW	0	0	5	2	1	2	10
WSW	0	0	0	4	1	1	6
W	0	2	5	2	2	2	13
WNW	0	0	2	14	2	1	19
NW	0	0	6	3	3	0	12
NNW	0	0	3	10	3	0	16
Variable	0	0	0	0	0	0	0
Total	0	9	30	49	22	10	120

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 7
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	2	16	6	3	28
NNE	0	2	1	7	1	0	11
NE	0	5	0	0	0	2	7
ENE	1	1	1	1	0	0	4
E	0	0	0	2	2	1	5
ESE	0	2	3	0	0	1	6
SE	0	4	5	11	4	2	26
SSE	1	3	2	5	2	0	13
S	0	0	4	2	0	0	6
SSW	0	1	2	2	0	0	5
SW	1	3	6	5	8	4	27
WSW	1	2	5	18	8	2	36
W	0	2	8	9	11	1	31
WNW	0	2	19	26	11	0	58
NW	0	0	16	22	20	0	58
NNW	0	1	6	21	11	0	39
Variable	0	0	0	0	0	0	0
Total	4	29	80	147	84	16	360

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 3
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Neutral - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	5	16	16	12	5	56
NNE	0	6	14	30	19	10	79
NE	0	3	5	5	11	7	31
ENE	0	4	9	16	12	9	50
E	0	0	2	3	9	2	16
ESE	0	3	4	6	7	3	23
SE	0	5	21	12	10	2	50
SSE	1	5	21	13	4	0	44
S	0	2	10	15	3	0	30
SSW	0	5	17	16	10	1	49
SW	0	2	15	21	11	1	50
WSW	0	3	9	13	9	15	49
W	1	2	6	26	9	9	53
WNW	0	6	18	21	16	4	65
NW	1	3	18	29	17	10	78
NNW	1	11	21	22	3	1	59
Variable	0	0	0	0	0	0	0
Total	6	65	206	264	162	79	782

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 24
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	5	12	2	1	0	22
NNE	0	4	5	1	1	0	11
NE	0	1	2	2	2	1	8
ENE	0	4	0	1	4	3	12
E	0	3	1	7	2	3	16
ESE	1	0	1	3	5	0	10
SE	0	5	4	9	2	2	22
SSE	0	6	12	16	15	4	53
S	0	7	9	12	7	0	35
SSW	1	2	11	9	6	0	29
SW	0	5	13	10	2	0	30
WSW	2	0	6	10	5	1	24
W	0	3	3	7	1	0	14
WNW	0	0	4	18	0	0	22
NW	2	0	8	12	0	0	22
NNW	0	2	6	25	0	0	33
Variable	0	0	0	0	0	0	0
Total	8	47	97	144	53	14	363

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 11
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	6	2	0	0	8
NNE	2	2	2	0	0	0	6
NE	1	1	0	0	0	1	3
ENE	1	5	0	1	0	1	8
E	0	1	0	0	0	0	1
ESE	0	1	0	0	1	0	2
SE	2	1	1	2	4	0	10
SSE	1	2	1	11	3	7	25
S	1	2	2	6	3	1	15
SSW	1	3	2	6	0	1	13
SW	0	0	4	4	0	0	8
WSW	0	1	1	3	0	0	5
W	1	0	2	2	0	0	5
WNW	1	2	2	2	0	0	7
NW	3	3	6	5	0	0	17
NNW	0	2	6	2	0	0	10
Variable	0	0	0	0	0	0	0
Total	14	26	35	46	11	11	143

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 6
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: January - March 2006
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	0	0	0	1
NNE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	1	0	0	0	0	1
ESE	0	1	0	0	0	0	1
SE	0	0	0	0	0	0	0
SSE	0	0	1	0	1	1	3
S	0	3	2	1	5	0	11
SSW	0	1	2	3	1	0	7
SW	0	1	1	0	0	0	2
WSW	0	1	0	0	0	0	1
W	1	0	0	0	0	0	1
WNW	0	1	1	0	0	0	2
NW	1	0	0	0	0	0	1
NNW	0	2	2	1	0	0	5
Variable	0	0	0	0	0	0	0
Total	2	12	10	5	7	1	37

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 3
 Hours of missing stability measurements in all stability classes: 18

Zion Nuclear Station

Period of Record: April - June 2006

Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)

Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	8	5	0	0	14
NNE	0	11	38	24	0	0	73
NE	0	19	20	0	0	0	39
ENE	0	7	3	0	0	0	10
E	1	11	3	0	0	0	15
ESE	0	9	4	0	0	0	13
SE	0	4	1	0	0	0	5
SSE	0	2	1	0	0	0	3
S	0	0	0	0	0	0	0
SSW	0	1	4	2	0	0	7
SW	0	2	9	3	0	0	14
WSW	0	4	12	0	0	0	16
W	0	6	21	4	0	0	31
WNW	0	4	12	14	0	0	30
NW	0	1	8	1	0	0	10
NNW	0	1	2	3	0	0	6
Variable	0	0	0	0	0	0	0
Total	1	83	146	56	0	0	286

Hours of calm in this stability class: 0

Hours of missing wind measurements in this stability class: 0

Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: April - June 2006

Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)

Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	3	2	0	0	6
NNE	0	7	4	4	0	0	15
NE	0	3	1	0	0	0	4
ENE	0	2	0	0	0	0	2
E	0	3	0	0	0	0	3
ESE	0	1	0	0	0	0	1
SE	0	2	0	0	0	0	2
SSE	0	2	2	0	0	0	4
S	0	0	0	0	0	0	0
SSW	0	0	3	0	0	0	3
SW	0	4	4	0	0	0	8
WSW	0	1	2	0	0	0	3
W	0	1	2	0	0	0	3
WNW	0	1	1	0	0	0	2
NW	0	2	3	1	0	0	6
NNW	0	0	2	1	0	0	3
Variable	0	0	0	0	0	0	0
Total	0	30	27	8	0	0	65

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: April - June 2006

Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)

Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	12	4	6	0	24
NNE	1	10	9	2	1	0	23
NE	1	6	1	0	0	0	8
ENE	1	3	1	0	0	0	5
E	1	4	0	0	0	0	5
ESE	0	5	1	0	0	0	6
SE	0	7	0	0	0	0	7
SSE	0	4	4	0	0	0	8
S	0	1	0	0	0	0	1
SSW	0	2	1	0	0	0	3
SW	0	0	1	0	0	0	1
WSW	0	2	3	0	0	0	5
W	0	6	3	0	0	0	9
WNW	0	2	3	2	0	0	7
NW	0	2	3	2	0	0	7
NNW	0	2	2	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	4	58	44	10	7	0	123

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: April - June 2006
 Stability Class - Neutral - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	31	28	15	1	0	78
NNE	5	15	55	13	12	1	101
NE	1	14	7	0	0	0	22
ENE	7	6	2	1	0	0	16
E	2	8	1	0	0	0	11
ESE	6	6	6	3	4	1	26
SE	3	26	8	1	0	0	38
SSE	5	24	22	1	0	0	52
S	3	10	9	2	0	0	24
SSW	4	5	10	3	1	0	23
SW	3	12	21	2	0	0	38
WSW	3	15	9	1	0	0	28
W	3	14	18	2	0	0	37
WNW	2	15	11	14	1	0	43
NW	4	21	5	5	0	0	35
NNW	4	10	8	5	0	0	27
Variable	0	0	0	0	0	0	0
Total	58	232	220	68	19	2	599

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: April - June 2006

Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)

Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	29	5	1	0	0	39
NNE	6	22	5	0	0	0	33
NE	5	13	3	0	0	0	21
ENE	3	7	2	5	3	0	20
E	2	8	2	0	0	0	12
ESE	4	9	4	4	4	0	25
SE	3	17	12	5	0	0	37
SSE	6	25	37	11	0	0	79
S	9	56	12	5	0	0	82
SSW	12	11	7	1	0	0	31
SW	6	9	1	0	0	0	16
WSW	5	19	2	0	0	0	26
W	4	29	4	0	0	0	37
WNW	10	43	3	0	0	0	56
NW	7	25	0	1	0	0	33
NNW	6	8	1	0	0	0	15
Variable	0	0	0	0	0	0	0
Total	92	330	100	33	7	0	562

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: April - June 2006
 Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	5	4	3	0	0	0	12
NNE	1	5	2	0	0	0	8
NE	3	4	1	0	0	0	8
ENE	3	2	0	0	0	0	5
E	2	3	0	0	0	0	5
ESE	2	3	2	0	0	0	7
SE	1	5	4	3	0	0	13
SSE	6	16	26	0	0	0	48
S	9	27	5	1	0	0	42
SSW	14	13	1	0	0	0	28
SW	9	7	0	0	0	0	16
WSW	8	7	0	0	0	0	15
W	15	20	0	0	0	0	35
WNW	12	28	0	0	0	0	40
NW	9	1	0	0	0	0	10
NNW	6	4	0	0	0	0	10
Variable	0	0	0	0	0	0	0
Total	105	149	44	4	0	0	302

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: April - June 2006
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	1	0	0	0	0	4
NNE	0	0	0	0	0	0	0
NE	0	0	4	0	0	0	4
ENE	1	2	0	0	0	0	3
E	0	1	1	0	0	0	2
ESE	0	1	2	1	0	0	4
SE	3	5	2	0	0	0	10
SSE	0	9	10	0	0	0	19
S	7	29	3	0	0	0	39
SSW	5	4	0	0	0	0	9
SW	12	9	0	0	0	0	21
WSW	6	3	0	0	0	0	9
W	14	11	0	0	0	0	25
WNW	5	5	0	0	0	0	10
NW	3	0	0	0	0	0	3
NNW	3	0	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	62	80	22	1	0	0	165

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: April - June 2006

Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)

Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	3	15	6	0	24
NNE	0	4	29	26	15	0	74
NE	0	9	12	9	0	0	30
ENE	0	2	4	0	1	0	7
E	0	8	4	1	1	0	14
ESE	0	4	5	2	0	0	11
SE	0	7	4	0	0	0	11
SSE	0	0	0	0	0	0	0
S	0	1	0	0	0	0	1
SSW	0	0	1	5	2	0	8
SW	0	0	4	5	4	0	13
WSW	0	0	4	8	2	0	14
W	0	1	14	13	9	0	37
WNW	0	0	5	8	13	1	27
NW	0	0	3	7	5	0	15
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	36	92	99	58	1	286

Hours of calm in this stability class: 0

Hours of missing wind measurements in this stability class: 0

Hours of missing stability measurements in all stability classes: 51

Zion Nuclear Station

Period of Record: April - June 2006

Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)

Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	4	4	0	9
NNE	0	2	4	1	3	0	10
NE	0	2	4	1	0	0	7
ENE	0	1	0	0	0	0	1
E	0	1	0	0	0	0	1
ESE	0	3	0	0	0	0	3
SE	0	2	0	0	0	0	2
SSE	0	0	1	2	0	0	3
S	0	0	0	0	0	0	0
SSW	0	0	0	2	0	0	2
SW	0	1	2	5	0	0	8
WSW	0	1	0	2	0	0	3
W	0	0	2	2	0	0	4
WNW	0	1	0	0	1	0	2
NW	0	0	3	2	1	0	6
NNW	0	1	0	2	1	0	4
Variable	0	0	0	0	0	0	0
Total	0	15	17	23	10	0	65

Hours of calm in this stability class: 0

Hours of missing wind measurements in this stability class: 0

Hours of missing stability measurements in all stability classes: 51

Zion Nuclear Station

Period of Record: April - June 2006
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	1	3	7	9	6	27
NNE	0	4	9	2	5	1	21
NE	0	3	1	2	0	0	6
ENE	0	5	0	0	0	0	5
E	0	3	0	0	1	0	4
ESE	0	4	4	0	0	0	8
SE	0	3	2	1	0	0	6
SSE	0	1	5	3	0	0	9
S	0	1	0	0	0	0	1
SSW	0	2	0	1	0	0	3
SW	0	0	0	1	0	0	1
WSW	0	0	2	3	0	0	5
W	0	3	3	3	0	0	9
WNW	0	0	2	4	1	1	8
NW	0	1	2	2	0	2	7
NNW	0	0	2	1	0	0	3
Variable	0	0	0	0	0	0	0
Total	1	31	35	30	16	10	123

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 51

Zion Nuclear Station

Period of Record: April - June 2006
 Stability Class - Neutral - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	4	21	26	21	8	81
NNE	1	7	11	34	27	19	99
NE	0	9	3	7	2	0	21
ENE	0	10	4	0	1	1	16
E	2	4	3	1	1	1	12
ESE	1	2	6	7	3	5	24
SE	2	15	22	12	1	5	57
SSE	0	11	15	16	4	1	47
S	0	2	4	6	1	3	16
SSW	0	2	3	9	7	3	24
SW	1	3	6	15	6	1	32
WSW	0	5	9	12	0	1	27
W	1	4	10	18	7	0	40
WNW	0	2	11	13	9	13	48
NW	0	6	15	7	7	2	37
NNW	1	3	7	7	2	2	22
Variable	0	0	0	0	0	0	0
Total	10	89	150	190	99	65	603

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 2
 Hours of missing stability measurements in all stability classes: 51

Zion Nuclear Station

Period of Record: April - June 2006
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	3	14	17	3	0	38
NNE	4	10	11	9	1	0	35
NE	0	13	12	8	2	0	35
ENE	1	5	4	0	2	7	19
E	0	4	1	6	2	1	14
ESE	0	1	6	6	2	10	25
SE	3	3	10	17	12	11	56
SSE	1	8	22	44	12	11	98
S	2	4	9	20	9	3	47
SSW	1	4	4	13	3	1	26
SW	0	4	8	5	0	0	17
WSW	0	6	6	15	2	0	29
W	0	0	7	13	5	0	25
WNW	0	6	10	35	2	0	53
NW	1	2	6	27	0	1	37
NNW	0	3	6	8	0	0	17
Variable	0	0	0	0	0	0	0
Total	14	76	136	243	57	45	571

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 2
 Hours of missing stability measurements in all stability classes: 51

Zion Nuclear Station

Period of Record: April - June 2006
 Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	3	11	6	0	0	21
NNE	0	4	1	2	3	0	10
NE	2	5	5	0	0	0	12
ENE	0	0	2	2	2	0	6
E	0	1	1	1	1	0	4
ESE	2	1	2	0	2	3	10
SE	1	2	6	10	6	2	27
SSE	1	6	9	15	13	0	44
S	2	6	16	26	4	1	55
SSW	0	1	7	9	0	0	17
SW	1	0	11	3	0	0	15
WSW	0	2	14	3	0	0	19
W	0	1	3	10	4	0	18
WNW	0	2	5	11	0	0	18
NW	1	2	6	11	0	0	20
NNW	0	2	8	3	0	0	13
Variable	0	0	0	0	0	0	0
Total	11	38	107	112	35	6	309

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 51

Zion Nuclear Station

Period of Record: April - June 2006
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	3	0	0	0	4
NNE	0	2	3	0	0	0	5
NE	0	2	0	0	0	0	2
ENE	0	1	1	1	1	2	6
E	0	2	0	0	0	0	2
ESE	1	0	0	2	2	3	8
SE	1	2	1	1	1	1	7
SSE	3	5	2	4	1	1	16
S	1	0	8	31	11	0	51
SSW	0	2	12	10	0	0	24
SW	1	1	5	8	0	0	15
WSW	0	5	0	1	0	0	6
W	0	3	3	1	0	0	7
WNW	2	1	4	2	0	0	9
NW	1	2	1	2	0	0	6
NNW	0	0	3	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	10	29	46	63	16	7	171

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 51

Zion Nuclear Station

Period of Record: July - September 2006
 Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	3	1	0	0	7
NNE	0	15	50	1	0	0	66
NE	0	45	28	0	0	0	73
ENE	0	24	4	0	0	0	28
E	1	17	1	0	0	0	19
ESE	1	26	7	0	0	0	34
SE	0	24	11	0	0	0	35
SSE	0	12	31	0	0	0	43
S	0	1	2	0	0	0	3
SSW	0	1	0	0	0	0	1
SW	0	5	37	14	0	0	56
WSW	0	7	22	4	0	0	33
W	2	3	10	0	0	0	15
WNW	0	7	5	0	0	0	12
NW	0	5	8	0	0	0	13
NNW	0	0	3	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	4	195	222	20	0	0	441

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2006
 Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	5	1	0	0	8
NNE	1	8	4	0	0	0	13
NE	0	6	1	0	0	0	7
ENE	1	6	3	0	0	0	10
E	1	2	0	0	0	0	3
ESE	0	2	0	0	0	0	2
SE	0	5	3	0	0	0	8
SSE	0	8	4	1	0	0	13
S	0	3	0	0	0	0	3
SSW	1	0	1	0	0	0	2
SW	0	1	4	3	0	0	8
WSW	0	2	5	1	0	0	8
W	0	3	3	0	0	0	6
WNW	0	1	1	0	0	0	2
NW	0	1	5	0	0	0	6
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	4	50	39	6	0	0	99

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2006
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	4	0	0	0	6
NNE	0	7	5	1	0	0	13
NE	2	8	4	0	0	0	14
ENE	0	4	2	0	0	0	6
E	3	3	3	2	0	0	11
ESE	2	2	0	0	0	0	4
SE	0	7	1	0	0	0	8
SSE	1	6	4	0	2	0	13
S	0	4	1	0	0	0	5
SSW	0	2	1	1	0	0	4
SW	1	3	15	5	0	0	24
WSW	0	10	3	0	0	0	13
W	0	3	5	0	0	0	8
WNW	0	3	3	0	0	0	6
NW	0	3	3	0	0	0	6
NNW	0	0	2	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	9	67	56	9	2	0	143

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2006
 Stability Class - Neutral - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	7	30	17	1	0	0	55
NNE	7	29	32	0	0	0	68
NE	8	12	17	3	0	0	40
ENE	7	20	35	9	0	0	71
E	5	11	23	6	0	0	45
ESE	12	12	10	4	0	0	38
SE	3	27	12	5	0	0	47
SSE	3	21	30	9	3	0	66
S	6	35	9	2	0	0	52
SSW	1	25	10	0	0	0	36
SW	2	30	36	2	0	0	70
WSW	4	22	11	0	0	0	37
W	5	16	9	0	0	0	30
WNW	2	14	10	1	0	0	27
NW	9	17	1	0	0	0	27
NNW	6	17	13	0	0	0	36
Variable	0	0	0	0	0	0	0
Total	87	338	275	42	3	0	745

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2006
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	9	13	1	0	0	0	23
NNE	4	4	3	0	0	0	11
NE	9	6	5	0	0	0	20
ENE	2	2	0	0	0	0	4
E	2	0	0	0	0	0	2
ESE	2	1	0	0	0	0	3
SE	8	5	0	0	0	0	13
SSE	12	13	6	0	0	0	31
S	10	32	3	0	0	0	45
SSW	17	36	5	1	0	0	59
SW	17	26	10	1	0	0	54
WSW	3	26	2	0	0	0	31
W	16	18	0	0	0	0	34
WNW	10	17	0	0	0	0	27
NW	11	30	0	0	0	0	41
NNW	4	19	0	0	0	0	23
Variable	0	0	0	0	0	0	0
Total	136	248	35	2	0	0	421

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2006
 Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	2	0	0	0	0	6
NNE	0	1	0	0	0	0	1
NE	2	1	0	0	0	0	3
ENE	2	0	0	0	0	0	2
E	0	0	0	0	0	0	0
ESE	1	1	0	0	0	0	2
SE	0	1	0	0	0	0	1
SSE	2	3	0	0	0	0	5
S	5	6	0	0	0	0	11
SSW	23	9	0	0	0	0	32
SW	28	9	0	0	0	0	37
WSW	19	9	0	0	0	0	28
W	16	12	0	0	0	0	28
WNW	19	11	0	0	0	0	30
NW	2	7	0	0	0	0	9
NNW	4	3	0	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	127	75	0	0	0	0	202

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2006
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	1	0	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	6	0	0	0	0	0	6
SW	10	6	0	0	0	0	16
WSW	20	15	0	0	0	0	35
W	20	26	0	0	0	0	46
WNW	23	6	0	0	0	0	29
NW	2	0	0	0	0	0	2
NNW	1	0	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	83	53	0	0	0	0	136

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2006
 Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	3	2	1	0	7
NNE	0	4	30	34	2	0	70
NE	1	14	34	16	2	0	67
ENE	1	16	11	3	1	0	32
E	0	8	8	1	0	0	17
ESE	0	8	14	1	0	0	23
SE	0	7	44	7	3	0	61
SSE	0	2	16	7	1	0	26
S	0	0	1	1	0	0	2
SSW	0	1	1	0	0	0	2
SW	0	1	2	28	15	2	48
WSW	0	2	9	19	11	1	42
W	0	2	2	6	3	0	13
WNW	0	1	6	5	1	0	13
NW	1	1	7	6	0	0	15
NNW	0	0	2	1	0	0	3
Variable	0	0	0	0	0	0	0
Total	3	68	190	137	40	3	441

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2006
 Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	4	2	0	1	8
NNE	0	3	5	3	0	0	11
NE	1	4	1	2	0	0	8
ENE	0	3	2	1	1	0	7
E	0	3	0	1	0	0	4
ESE	0	4	1	0	0	0	5
SE	0	0	4	1	1	0	6
SSE	0	4	8	2	0	0	14
S	0	0	1	1	0	0	2
SSW	0	1	0	1	0	0	2
SW	1	0	1	3	3	1	9
WSW	0	0	2	4	2	0	8
W	0	0	3	3	0	0	6
WNW	0	1	0	3	0	0	4
NW	0	0	1	3	0	0	4
NNW	0	0	0	1	0	0	1
Variable	0	0	0	0	0	0	0
Total	2	24	33	31	7	2	99

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2006
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	3	2	1	0	7
NNE	0	4	4	4	1	0	13
NE	0	1	2	6	0	0	9
ENE	0	4	4	2	0	0	10
E	0	4	1	0	3	2	10
ESE	1	3	0	0	0	0	4
SE	0	4	2	2	1	0	9
SSE	0	1	7	1	0	2	11
S	0	1	4	1	0	1	7
SSW	0	0	1	2	1	0	4
SW	0	2	2	12	3	3	22
WSW	0	3	7	2	2	0	14
W	0	0	2	5	0	0	7
WNW	0	2	2	3	0	0	7
NW	0	0	2	4	0	0	6
NNW	0	0	1	2	0	0	3
Variable	0	0	0	0	0	0	0
Total	1	30	44	48	12	8	143

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2006

Stability Class - Neutral - 250Ft-33Ft Delta-T (F)

Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	8	17	14	9	0	49
NNE	2	10	15	28	12	0	67
NE	0	8	9	21	3	2	43
ENE	0	13	11	24	7	4	59
E	1	10	6	19	23	9	68
ESE	1	7	5	7	11	0	31
SE	1	6	24	14	11	5	61
SSE	1	3	20	16	8	4	52
S	1	7	22	18	3	2	53
SSW	1	3	9	19	0	0	32
SW	0	2	17	45	7	0	71
WSW	0	5	7	29	4	0	45
W	0	6	9	10	4	0	29
WNW	0	1	5	16	4	1	27
NW	0	6	11	6	0	0	23
NNW	0	2	17	15	1	0	35
Variable	0	0	0	0	0	0	0
Total	9	97	204	301	107	27	745

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 2
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2006
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	2	6	6	1	0	16
NNE	0	9	8	6	0	0	23
NE	2	4	7	6	2	0	21
ENE	0	6	5	2	0	0	13
E	0	6	0	1	0	0	7
ESE	2	1	6	0	0	0	9
SE	0	9	8	0	0	0	17
SSE	1	9	9	10	1	0	30
S	1	4	27	18	0	0	50
SSW	0	5	11	29	0	0	45
SW	1	5	18	19	8	2	53
WSW	1	2	14	19	1	0	37
W	0	2	9	7	0	0	18
WNW	0	0	11	16	1	0	28
NW	0	6	10	13	0	0	29
NNW	2	2	11	17	0	0	32
Variable	0	0	0	0	0	0	0
Total	11	72	160	169	14	2	428

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2006
 Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	3	4	1	0	0	9
NNE	0	0	2	0	0	0	2
NE	1	2	4	1	0	0	8
ENE	1	2	0	1	0	0	4
E	1	2	1	0	0	0	4
ESE	3	8	4	0	0	0	15
SE	0	4	1	1	0	0	6
SSE	0	3	10	1	0	0	14
S	0	5	9	3	0	0	17
SSW	1	5	12	8	0	0	26
SW	0	1	7	15	0	0	23
WSW	0	2	6	13	0	0	21
W	0	3	8	10	2	0	23
WNW	3	3	3	9	1	0	19
NW	2	0	1	6	0	0	9
NNW	4	2	1	3	2	0	12
Variable	0	0	0	0	0	0	0
Total	17	45	73	72	5	0	212

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: July - September 2006
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	2	0	0	0	3
NNE	1	5	0	0	0	0	6
NE	0	1	1	0	0	0	2
ENE	0	1	0	0	0	0	1
E	1	4	0	0	0	0	5
ESE	2	5	1	0	0	0	8
SE	2	4	1	0	0	0	7
SSE	0	7	0	0	0	0	7
S	0	2	6	0	0	0	8
SSW	0	3	6	2	0	0	11
SW	0	2	4	8	1	0	15
WSW	0	1	10	6	4	0	21
W	0	2	10	7	0	0	19
WNW	0	1	4	6	1	0	12
NW	0	2	0	3	0	0	5
NNW	1	0	1	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	7	41	46	32	6	0	132

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 4
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: October - December 2006
 Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	1	0	0	2
NNE	0	1	10	3	0	0	14
NE	0	2	4	0	0	0	6
ENE	0	1	0	0	0	0	1
E	0	0	0	0	0	0	0
ESE	0	13	2	0	0	0	15
SE	0	4	0	0	0	0	4
SSE	0	0	2	0	0	0	2
S	0	0	0	0	0	0	0
SSW	0	1	1	0	0	0	2
SW	0	0	10	1	0	0	11
WSW	0	4	4	2	0	0	10
W	0	2	14	6	0	0	22
WNW	0	0	8	1	0	0	9
NW	0	1	8	1	0	0	10
NNW	0	1	2	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	0	30	66	15	0	0	111

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: October - December 2006

Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)

Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	0	0	0	1
NNE	0	2	3	0	0	0	5
NE	0	1	1	0	0	0	2
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	3	0	0	0	0	3
SE	0	0	1	0	0	0	1
SSE	0	2	3	0	0	0	5
S	0	0	1	0	0	0	1
SSW	0	0	3	0	0	0	3
SW	0	1	1	1	0	0	3
WSW	0	1	5	1	0	0	7
W	0	3	6	3	0	0	12
WNW	0	1	6	3	0	0	10
NW	0	1	5	1	0	0	7
NNW	0	1	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	17	35	9	0	0	61

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: October - December 2006
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	4	7	3	0	14
NNE	0	5	2	0	0	0	7
NE	0	1	0	4	0	0	5
ENE	0	1	1	1	0	0	3
E	0	0	0	0	0	0	0
ESE	0	2	1	0	0	0	3
SE	1	3	1	0	0	0	5
SSE	0	2	2	3	0	0	7
S	0	1	2	0	0	0	3
SSW	0	0	4	1	0	0	5
SW	0	0	5	4	0	0	9
WSW	1	4	5	4	0	0	14
W	0	9	6	1	0	0	16
WNW	0	3	12	6	0	0	21
NW	0	8	3	1	0	0	12
NNW	0	1	6	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	2	40	54	32	3	0	131

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: October - December 2006
 Stability Class - Neutral - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	3	17	15	5	1	44
NNE	2	6	19	24	8	0	59
NE	1	10	15	14	3	0	43
ENE	1	10	14	9	0	0	34
E	1	11	9	2	0	0	23
ESE	2	13	13	14	0	0	42
SE	4	6	5	6	0	0	21
SSE	2	19	26	15	0	0	62
S	4	25	28	0	0	0	57
SSW	3	40	56	13	0	0	112
SW	2	34	45	27	0	0	108
WSW	3	21	29	31	0	0	84
W	4	35	57	3	0	0	99
WNW	6	34	45	3	0	0	88
NW	7	28	37	10	0	0	82
NNW	2	19	55	8	0	0	84
Variable	0	0	0	0	0	0	0
Total	47	314	470	194	16	1	1042

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: October - December 2006
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	7	3	0	0	0	13
NNE	5	14	3	0	0	0	22
NE	7	9	2	0	0	0	18
ENE	2	3	1	0	0	0	6
E	0	2	3	1	0	0	6
ESE	3	3	8	0	0	0	14
SE	2	6	3	2	0	0	13
SSE	4	22	21	1	0	0	48
S	7	53	27	0	0	0	87
SSW	15	52	15	1	0	0	83
SW	18	26	22	3	0	0	69
WSW	15	37	10	3	0	0	65
W	5	65	13	0	0	0	83
WNW	9	23	15	0	0	0	47
NW	5	17	2	0	0	0	24
NNW	3	2	0	0	0	0	5
Variable	0	0	0	0	0	0	0
Total	103	341	148	11	0	0	603

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: October - December 2006

Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)

Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	2	1	0	0	0	6
NNE	2	1	1	0	0	0	4
NE	0	0	0	0	0	0	0
ENE	0	0	1	0	0	0	1
E	0	0	0	0	0	0	0
ESE	1	0	1	0	0	0	2
SE	1	0	0	0	0	0	1
SSE	2	9	4	0	0	0	15
S	6	39	8	0	0	0	53
SSW	11	21	0	0	0	0	32
SW	12	8	0	0	0	0	20
WSW	5	6	0	0	0	0	11
W	6	3	0	0	0	0	9
WNW	6	2	0	0	0	0	8
NW	1	0	0	0	0	0	1
NNW	1	3	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	57	94	16	0	0	0	167

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: October - December 2006
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 35 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	0	0	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	1	2	1	0	0	0	4
S	1	5	1	0	0	0	7
SSW	0	3	0	0	0	0	3
SW	1	3	0	0	0	0	4
WSW	4	4	0	0	0	0	8
W	7	11	0	0	0	0	18
WNW	2	2	0	0	0	0	4
NW	0	1	0	0	0	0	1
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	17	31	2	0	0	0	50

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 0

Zion Nuclear Station

Period of Record: October - December 2006

Stability Class - Extremely Unstable - 250Ft-33Ft Delta-T (F)

Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	1	2	0	3
NNE	0	1	3	7	2	0	13
NE	0	1	2	3	0	0	6
ENE	0	1	0	0	0	0	1
E	0	0	0	0	0	0	0
ESE	0	2	8	0	0	0	10
SE	0	1	10	0	0	0	11
SSE	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0
SSW	0	0	0	1	0	0	1
SW	0	0	6	5	1	0	12
WSW	0	0	4	4	0	1	9
W	0	0	2	9	7	5	23
WNW	0	0	0	4	7	0	11
NW	0	0	3	7	1	0	11
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	0	6	38	41	20	6	111

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

Zion Nuclear Station

Period of Record: October - December 2006

Stability Class - Moderately Unstable - 250Ft-33Ft Delta-T (F)

Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	1	0	0	0	1
NNE	0	2	0	2	0	0	4
NE	0	1	0	1	0	0	2
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	1	0	0	0	0	1
SE	0	0	3	0	0	0	3
SSE	0	1	4	0	1	0	6
S	0	0	0	0	0	0	0
SSW	0	0	1	3	0	0	4
SW	0	0	1	0	1	0	2
WSW	0	0	1	4	1	3	9
W	0	1	3	6	1	1	12
WNW	0	1	0	4	2	2	9
NW	0	0	2	3	2	0	7
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	7	17	23	8	6	61

Hours of calm in this stability class: 0

Hours of missing wind measurements in this stability class: 2

Hours of missing stability measurements in all stability classes: 3

Zion Nuclear Station

Period of Record: October - December 2006
 Stability Class - Slightly Unstable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	3	3	7	13
NNE	0	2	3	2	0	0	7
NE	0	1	0	0	2	2	5
ENE	0	1	0	1	0	1	3
E	0	0	0	0	0	0	0
ESE	0	0	1	0	0	0	1
SE	0	3	1	2	3	0	9
SSE	0	0	3	0	0	2	5
S	0	0	2	0	0	0	2
SSW	0	0	0	5	2	0	7
SW	0	0	1	3	5	0	9
WSW	0	2	3	3	3	2	13
W	0	1	8	8	1	0	18
WNW	0	0	4	5	9	2	20
NW	0	1	7	3	2	0	13
NNW	0	0	1	4	1	0	6
Variable	0	0	0	0	0	0	0
Total	0	11	34	39	31	16	131

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 1
 Hours of missing stability measurements in all stability classes: 3

Zion Nuclear Station

Period of Record: October - December 2006
 Stability Class - Neutral - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	2	8	11	18	41
NNE	0	3	1	12	13	21	50
NE	0	5	8	13	7	14	47
ENE	0	3	7	9	17	0	36
E	0	3	8	11	2	0	24
ESE	0	4	10	11	18	2	45
SE	0	6	9	9	11	10	45
SSE	4	7	9	10	11	3	44
S	1	3	18	30	7	2	61
SSW	0	5	28	34	32	4	103
SW	1	6	23	34	31	9	104
WSW	0	2	22	19	24	20	87
W	0	6	30	49	18	6	109
WNW	0	3	23	35	24	3	88
NW	0	6	20	32	25	5	88
NNW	0	3	8	39	24	2	76
Variable	0	0	0	0	0	0	0
Total	6	67	226	355	275	119	1048

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 6
 Hours of missing stability measurements in all stability classes: 3

Zion Nuclear Station

Period of Record: October - December 2006
 Stability Class - Slightly Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	1	2	1	0	7
NNE	0	1	10	1	0	0	12
NE	0	2	8	8	0	0	18
ENE	0	1	10	1	2	0	14
E	0	2	3	6	1	1	13
ESE	1	6	1	3	4	7	22
SE	1	3	10	11	3	3	31
SSE	0	3	14	12	13	1	43
S	0	4	9	40	18	0	71
SSW	0	3	22	43	9	0	77
SW	1	4	15	31	18	2	71
WSW	0	5	18	15	8	2	48
W	0	6	23	55	8	0	92
WNW	0	1	12	28	12	0	53
NW	0	4	5	7	10	1	27
NNW	0	0	4	2	0	0	6
Variable	0	0	0	0	0	0	0
Total	3	48	165	265	107	17	605

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 10
 Hours of missing stability measurements in all stability classes: 3

Zion Nuclear Station

Period of Record: October - December 2006

Stability Class - Moderately Stable - 250Ft-33Ft Delta-T (F)

Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	1	0	3	0	0	5
NNE	0	0	2	1	0	0	3
NE	0	3	0	0	0	0	3
ENE	0	0	2	0	0	0	2
E	0	0	2	0	0	0	2
ESE	1	1	0	0	0	1	3
SE	0	1	1	0	1	0	3
SSE	1	0	9	7	3	0	20
S	0	0	8	29	13	0	50
SSW	1	4	14	17	3	0	39
SW	0	2	7	2	1	0	12
WSW	0	2	1	4	1	0	8
W	1	2	4	6	0	0	13
WNW	1	0	1	1	0	0	3
NW	0	1	0	1	1	0	3
NNW	0	2	0	2	0	0	4
Variable	0	0	0	0	0	0	0
Total	6	19	51	73	23	1	173

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 6
 Hours of missing stability measurements in all stability classes: 3

Zion Nuclear Station

Period of Record: October - December 2006
 Stability Class - Extremely Stable - 250Ft-33Ft Delta-T (F)
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	0	0	0	0	3
NNE	0	1	0	0	0	0	1
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
ESE	0	1	0	0	0	0	1
SE	0	0	0	0	0	0	0
SSE	0	0	2	0	1	0	3
S	0	0	3	5	1	1	10
SSW	1	0	2	2	1	0	6
SW	1	0	0	1	1	0	3
WSW	1	1	1	0	3	0	6
W	1	2	0	6	1	0	10
WNW	1	0	0	3	0	0	4
NW	0	1	0	2	0	0	3
NNW	0	1	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	5	10	8	19	8	1	51

Hours of calm in this stability class: 0
 Hours of missing wind measurements in this stability class: 0
 Hours of missing stability measurements in all stability classes: 3

APPENDIX G

ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)

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Appendix A Location Designation

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Table A-1: Radiological Groundwater Protection Program - Sampling Locations, Distance and Direction, Zion Nuclear Power Station, 2006

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Figure A-1: Radiological Groundwater Protection Program Groundwater and Surface Water Locations of the Zion Nuclear Power Station, 2006

Appendix B Data Tables

Tables

Table B-I.1 Concentrations of Tritium in Groundwater and Surface Water Samples Collected in the Vicinity of Zion Nuclear Power Station, 2006.

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Table B-I.3 Concentrations of Strontium in Groundwater and Surface Water Samples Collected in the Vicinity of Zion Nuclear Power Station, 2006.

Table B-I.4 Highest to Lowest Concentrations of Strontium in Groundwater and Surface Water Samples Collected in the Vicinity of Zion Nuclear Power Station, 2006.

Table B-I.5 Concentrations of Gamma Emitters in Groundwater and Surface Water Samples Collected in the Vicinity of Zion Nuclear Power Station, 2006.

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I. Summary and Conclusions

In 2006, Exelon instituted a comprehensive program to evaluate the impact of station operations on groundwater and surface water in the vicinity of Zion Nuclear Power Station. This evaluation involved numerous station personnel and contractor support personnel. At Zion, 11 permanent groundwater monitoring wells and 4 temporary groundwater monitoring wells were installed in 2006. Of these new monitoring locations, none were assigned to the station's Radiological Environmental Monitoring Program (REMP). The results for the monitoring wells are included in this report. This is the first in a series of annual reports on the status of the Radiological Groundwater Protection Program (RGPP) conducted at Zion Nuclear Power Station. This report covers groundwater and surface water samples, collected from the environment, both on and off station property in 2006. During that time period, 179 analyses were performed on 60 samples from 16 locations. The monitoring was conducted in two phases. Phase 1 of the monitoring was part of a comprehensive study initiated by Exelon to determine whether groundwater or surface water at and in the vicinity of Zion Nuclear Power Station had been adversely impacted by any releases of radionuclides. Phase 1 was conducted by Conestoga Rovers and Associates (CRA) and the conclusions were made available to state and federal regulators as well as the public on an Exelon web site

<http://www.exeloncorp.com/ourcompanies/powergen/nuclear/Tritium.htm>].

Phase 2 of the RGPP was conducted by Exelon corporate and station personnel to initiate follow up of Phase 1 and begin long-term monitoring at groundwater and surface water locations selected during Phase 1. All analytical results from both the Phase 1 and Phase 2 monitoring are reported herein.

In assessing all the data gathered for this report, it was concluded that the operation of Zion Nuclear Power Station had no adverse radiological impact on the environment, and there are no known active releases into the groundwater at Zion Nuclear Power Station.

Gamma-emitting radionuclides associated with licensed plant operations were not detected at concentrations greater than their respective Lower Limits of Detection (LLDs) as specified in the Offsite Dose Calculation Manual (ODCM) in any of the groundwater or surface water samples. In the case of tritium, Exelon specified that its laboratories achieve a lower limit of detection 10 times lower than that required by federal regulation.

Strontium-89/90 was not detected at a concentration greater than the LLD of 2.0 picoCuries per liter (pCi/L) in any of the groundwater or surface water samples tested.

Tritium was not detected in any of the groundwater or surface water samples at

concentrations greater than the United States Environmental Protection Agency (USEPA) drinking water standard (and the Nuclear Regulatory Commission Reporting Limit) of 20,000 pCi/L. Low levels of tritium were detected at concentrations greater than the LLD of 200 pCi/L in 1 of 15 groundwater monitoring locations. The tritium concentrations ranged from 261 ± 124 pCi/L to 586 ± 141 pCi/L. The tritium that was detected in groundwater at the Station is on the west side of the Turbine building and is believed to be the result of isolated historical releases and/or background from external sources greater than 200 pCi/L.

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II. Introduction

The Zion Nuclear Power Station (ZNPS), consisting of two 1100 MWt pressurized water reactor owned and operated by Exelon Corporation, is located in Zion, Illinois adjacent to Lake Michigan. Unit No. 1 went critical in December 1973. Unit No. 2 went critical in September 1974. The plant permanently ceased operation in January of 1998 and has been permanently defueled. The site is located in northeast Illinois on the western shore of Lake Michigan, approximately 50 miles north of Chicago, Illinois.

This report covers those analyses performed by Teledyne Brown Engineering (TBE) and Environmental Inc. (Midwest Labs) on samples collected in 2006.

A. Objective of the RGPP

The long-term objectives of the RGPP are as follows:

1. Identify suitable locations to monitor and evaluate potential impacts from station operations before significant radiological impact to the environment and potential drinking water sources.
2. Understand the local hydrogeologic regime in the vicinity of the station and maintain up-to-date knowledge of flow patterns on the surface and shallow subsurface.
3. Perform routine water sampling and radiological analysis of water from selected locations.
4. Report new leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.
5. Regularly assess analytical results to identify adverse trends.
6. Take necessary corrective actions to protect groundwater resources.

B. Implementation of the Objectives

The objectives identified have been implemented at Zion Nuclear Power Station as discussed below:

1. Exelon and its consultant identified locations as described in the Phase 1 study. Phase 1 studies were conducted by Conestoga Rovers and Associates (CRA) and the results and conclusions were made available to state and federal regulators as well as the public on an Exelon web site in station specific reports.

<http://www.exeloncorp.com/ourcompanies/powergen/nuclear/Tritium.htm>

2. The Zion Nuclear Power Station reports describe the local hydrogeologic regime. Periodically, the flow patterns on the surface and shallow subsurface are updated based on ongoing measurements.
3. Zion Nuclear Power Station will continue to perform routine sampling and radiological analysis of water from selected locations.
4. Zion Nuclear Power Station has implemented new procedures to identify and report new leaks, spills, or other detections with potential radiological significance in a timely manner.
5. Zion Nuclear Power Station staff and consulting hydrogeologist assess analytical results on an ongoing basis to identify adverse trends.

C. Program Description

1. Sample Collection

Sample locations can be found in Table A-1 and Figures A-1 and A-2, Appendix A.

Groundwater and Surface Water

Samples of water are collected, managed, transported and analyzed in accordance with approved procedures following EPA methods. Both groundwater and surface water are collected. Sample locations, sample collection frequencies and analytical frequencies are controlled in accordance with approved station procedures. Contractor and/or station personnel are trained in the collection, preservation management, and shipment of samples, as well as in documentation of sampling events. Analytical laboratories are subject to internal quality assurance programs, industry cross-check programs, as well as nuclear industry audits. Station personnel review and evaluate all analytical data deliverables as data are received.

Analytical data results are reviewed by both station personnel and an independent hydrogeologist for adverse trends or changes to hydrogeologic conditions.

D. Characteristics of Tritium (H-3)

Tritium (chemical symbol H-3) is a radioactive isotope of hydrogen. The most common form of tritium is tritium oxide, which is also called "tritiated water." The chemical properties of tritium are essentially those of ordinary hydrogen.

Tritiated water behaves the same as ordinary water in both the environment and the body. Tritium can be taken into the body by drinking water, breathing air, eating food, or absorption through skin. Once tritium enters the body, it disperses quickly and is uniformly distributed throughout the body. Tritium is excreted primarily through urine with a clearance rate characterized by an effective biological half-life of about 14 days. Within one month or so after ingestion, essentially all tritium is cleared. Organically bound tritium (tritium that is incorporated in organic compounds) can remain in the body for a longer period.

Tritium is produced naturally in the upper atmosphere when cosmic rays strike air molecules. Tritium is also produced during nuclear weapons explosions, as a by-product in reactors producing electricity, and in special production reactors, where the isotopes lithium-7 and/or boron-10 are activated to produce tritium. Like normal water, tritiated water is colorless and odorless. Tritiated water behaves chemically and physically like non-tritiated water in the subsurface, and therefore tritiated water will travel at the same velocity as the average groundwater velocity.

Tritium has a half-life of approximately 12.3 years. It decays spontaneously to helium-3 (^3He). This radioactive decay releases a beta particle (low-energy electron). The radioactive decay of tritium is the source of the health risk from exposure to tritium. Tritium is one of the least dangerous radionuclides because it emits very weak radiation and leaves the body relatively quickly. Since tritium is almost always found as water, it goes directly into soft tissues and organs. The associated dose to these tissues is generally uniform and is dependent on the water content of the specific tissue.

III. Program Description

A. Sample Analysis

This section describes the general analytical methodologies used by TBE and EIML to analyze the environmental samples for radioactivity for the Zion Nuclear Power Station RGPP in 2006.

In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of gamma emitters in groundwater and surface water.
2. Concentrations of strontium in groundwater and surface water.
3. Concentrations of tritium in groundwater and surface water.

B. Data Interpretation

The radiological data collected prior to Zion Nuclear Power Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, Zion Nuclear Power Station was considered operational at initial criticality. Several factors were important in the interpretation of the data:

1. Lower Limit of Detection and Minimum Detectable Concentration

The lower limit of detection (LLD) is specified by federal regulation as a minimum sensitivity value that must be achieved routinely by the analytical parameter.

2. Laboratory Measurements Uncertainty

The estimated uncertainty in measurement of tritium in environmental samples is frequently on the order of 50% of the measurement value.

Statistically, the exact value of a measurement is expressed as a range with a stated level of confidence. The convention is to report results with a 95% level of confidence. The uncertainty comes from calibration standards, sample volume or weight measurements, sampling uncertainty and other factors. Exelon reports the uncertainty of a measurement created by statistical process (counting error) as well as all sources of error (Total Propagated Uncertainty or TPU). Each result has two values calculated. Exelon reports the TPU by following the result with plus or minus \pm the estimated sample standard deviation, as TPU, that is obtained by propagating all sources of analytical uncertainty in measurements.

Analytical uncertainties are reported at the 95% confidence level in this report for reporting consistency with the AREOR.

Gamma spectroscopy results for each type of sample were grouped as follows:

For groundwater and surface water 11 nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb-95, Zr-95, Cs-134, Cs-137, Ba-140 and La-140 were reported.

C. Background Analysis

A pre-operational radiological environmental monitoring program (pre-operational REMP) was conducted to establish background radioactivity levels prior to operation of the Station. The environmental media sampled and analyzed during the pre-operational REMP were atmospheric radiation, fall-out, domestic water, surface water, marine life, and foodstuffs. The results of the monitoring were detailed in the report entitled, Environmental Radiological Monitoring for Zion Nuclear Power Nuclear Power Station, Commonwealth Edison Company, Annual Report 1973, May 1974.

The pre-operational REMP contained analytical results from samples collected from the surface water and groundwater.

Tritium levels in Lake Michigan water were studied in the vicinity of Zion Station throughout 1970. The concentration of tritium in the surface water samples from the Lake at Zion ranged from approximately 311 ± 20 pCi/L to 374 ± 34 pCi/L and averaged 340 pCi/L. There was no statistical difference in average tritium concentrations among the stations (eight stations from Kenosha to Waukegan).

Prior to 1998, surface water samples were collected at the following six locations along Lake Michigan:

- Kenosha, Wisconsin (intake located 10 miles north of the station)
- Lake County Public Water District (intake located 1.1 miles north of the Station)
- Waukegan, Illinois (intake located 6 miles south of the Station)
- North Chicago, Illinois (intake located 10 miles south of the Station)
- Great Lakes NTS (intake located 13 miles south of the Station)
- Lake Forest, Illinois (intake located 16.5 miles south of the Station)

After 1998, surface water samples were collected at the following four locations along Lake Michigan:

- Kenosha, Wisconsin (intake located 10 miles north of the station)
- Lake County Public Water District (intake located 1.1 miles north of

the Station)

- Waukegan, Illinois (intake located 6 miles south of the Station)
- Lake Forest, Illinois (intake located 16.5 miles south of the Station)

Lake Michigan surface water data are collected as part of the REMP. Tritium concentrations in surface water samples from Lake Michigan ranged from non-detect to 660 pCi/L.

Groundwater was collected from one off-site well on a quarterly basis. Gamma isotopic, radiostromtium and tritium analyses were performed on all samples. Strontium-89, strontium-90, tritium and gamma emitters were below their respective LLDs.

1. Background Concentrations of Tritium

The purpose of the following discussion is to summarize background measurements of tritium in various media performed by others. Additional detail may be found by consulting references (CRA 2006).

a. Tritium Production

Tritium is created in the environment from naturally occurring processes both cosmic and subterranean, as well as from anthropogenic (i.e., man-made) sources. In the upper atmosphere, "Cosmogenic" tritium is produced from the bombardment of stable nuclides and combines with oxygen to form tritiated water, which will then enter the hydrologic cycle. Below ground, "lithogenic" tritium is produced by the bombardment of natural lithium present in crystalline rocks by neutrons produced by the radioactive decay of naturally abundant uranium and thorium. Lithogenic production of tritium is usually negligible compared to other sources due to the limited abundance of lithium in rock. The lithogenic tritium is introduced directly to groundwater.

A major anthropogenic source of tritium and strontium-90 comes from the former atmospheric testing of thermonuclear weapons. Levels of tritium in precipitation increased significantly during the 1950s and early 1960s, and later with additional testing, resulting in the release of significant amounts of tritium to the atmosphere. The Canadian heavy water nuclear power reactors, other commercial power reactors, nuclear research and weapons production continue to influence tritium concentrations in the environment.

b. Precipitation Data

Precipitation samples are routinely collected at stations around the world for the analysis of tritium and other radionuclides. Two publicly available databases that provide tritium concentrations in precipitation are Global Network of Isotopes in Precipitation (GNIP) and USEPA's RadNet database. GNIP provides tritium precipitation concentration data for samples collected world wide from 1960 to 2006. RadNet provides tritium precipitation concentration data for samples collected at stations through out the U.S. from 1960 up to and including 2006. Based on GNIP data for sample stations located in the U.S. Midwest, tritium concentrations peaked around 1963. This peak, which approached 10,000 pCi/L for some stations, coincided with the atmospheric testing of thermonuclear weapons. Tritium concentrations in surface water showed a sharp decline up until 1975 followed by a gradual decline since that time. Tritium concentrations in Midwest precipitation have typically been below 100 pCi/L since around 1980. Tritium concentrations in wells may still be above the 200 pCi/L detection limit from the external causes described above. Water from previous years and decades is naturally captured in groundwater, so some well water sources today are affected by the surface water from the 1960s that was elevated in tritium.

c. Surface Water Data

Tritium concentrations are routinely measured in large surface water bodies, including Lake Michigan and the Mississippi River. Illinois surface water data were typically less than 100 pCi/L.

The USEPA RadNet surface water data typically has a reported 'Combined Standard Uncertainty' of 35 to 50 pCi/L. According to USEPA, this corresponds to a ± 70 to 100 pCi/L 95% confidence bound on each given measurement. Therefore, the typical background data provided may be subject to measurement uncertainty of approximately ± 70 to 100 pCi/L.

The radio-analytical laboratory is counting tritium results to an Exelon specified LLD of 200 pCi/L. Typically, the lowest positive measurement will be reported within a range of 40 –

240 pCi/L or 140 ± 100 pCi/L. Clearly, these sample results cannot be distinguished as different from background at this concentration.

IV. Results and Discussion

A. Groundwater Results

Groundwater

Samples were collected from on and off-site wells throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tritium

Samples from all locations were analyzed for tritium activity (Table B-I.1 and B-I.2, Appendix B). Tritium values ranged from the detection limit to 586 pCi/l. Within the station boundary, concentrations of tritium in shallow groundwater reached 586 pCi/L. Zion Nuclear Power Station does not have any off-site wells and therefore there is no risk to off-site users.

Concentrations detected were consistent with those detected in REMP samples OR some other wording (if graphs, then Figure B-1, Appendix C).

Strontium

Strontium-90 was detected in four samples at concentrations of 1.3, 1.6, 1.8, and 1.9 pCi/liter. This was less than the required detection limit of 2.0 pCi/liter. (Table B-I.3 and B-I.4, Appendix B).

Gamma Emitters and Strontium

Potassium-40 was detected in 15 of 60 samples. The concentrations ranged from 25 pCi/liter to 107 pCi/liter. No other gamma emitting nuclides were detected. (Table B-I.5 and B-I.6, Appendix B).

B. Drinking Water Well Survey

A drinking water well survey was conducted during the summer 2006 by CRA (CRA 2006) around the Zion Nuclear Power Station.

C. Summary of Results – Inter-Laboratory Comparison Program

Inter-Laboratory Comparison Program results for TBE and Environmental Inc. (Midwest Labs) are presented in the AREOR.

D. Leaks, Spills, and Releases

There were no leaks, spills or releases.

E. Trends

There are no previously identified plumes therefore there are no trends.

F. Investigations

Conclusions from the Phase 1 report have been made available to state and federal regulators as well as the public on an Exelon web site:

<http://www.exeloncorp.com/ourcompanies/powergen/nuclear/Tritium.htm>.

G. Actions Taken

1. Compensatory Actions

There have been no station events requiring compensatory actions at the Zion Nuclear Power Station.

2. Installation of Monitoring Wells

No new wells were required to be installed.

3. Actions to Recover/Reverse Plumes

There have been no station events requiring actions to recover/reverse any plumes.

APPENDIX A

LOCATION & DIRECTION

ATTACHMENT 1: Sampling Locations for the Radiological Groundwater Protection Program, Zion Station, 2006.

Site	Site Type	Temporary/Permanent	Distance
MW-ZN-01S	Monitoring Well	Permanent	On-Site
MW-ZN-02S	Monitoring Well	Permanent	On-Site
MW-ZN-03S	Monitoring Well	Permanent	On-Site
MW-ZN-04S	Monitoring Well	Permanent	On-Site
MW-ZN-05S	Monitoring Well	Permanent	On-Site
MW-ZN-06S	Monitoring Well	Permanent	On-Site
MW-ZN-07S	Monitoring Well	Permanent	On-Site
MW-ZN-08S	Monitoring Well	Permanent	On-Site
MW-ZN-09S	Monitoring Well	Permanent	On-Site
MW-ZN-100	Monitoring Well	Temporary	On-Site
MW-ZN-101	Monitoring Well	Temporary	On-Site
MW-ZN-102	Monitoring Well	Temporary	On-Site
MW-ZN-103	Monitoring Well	Temporary	On-Site
MW-ZN-10S	Monitoring Well	Permanent	On-Site
MW-ZN-11S	Monitoring Well	Permanent	On-Site
SW-ZN-1	Surface Water	Lake Michigan	On-Site

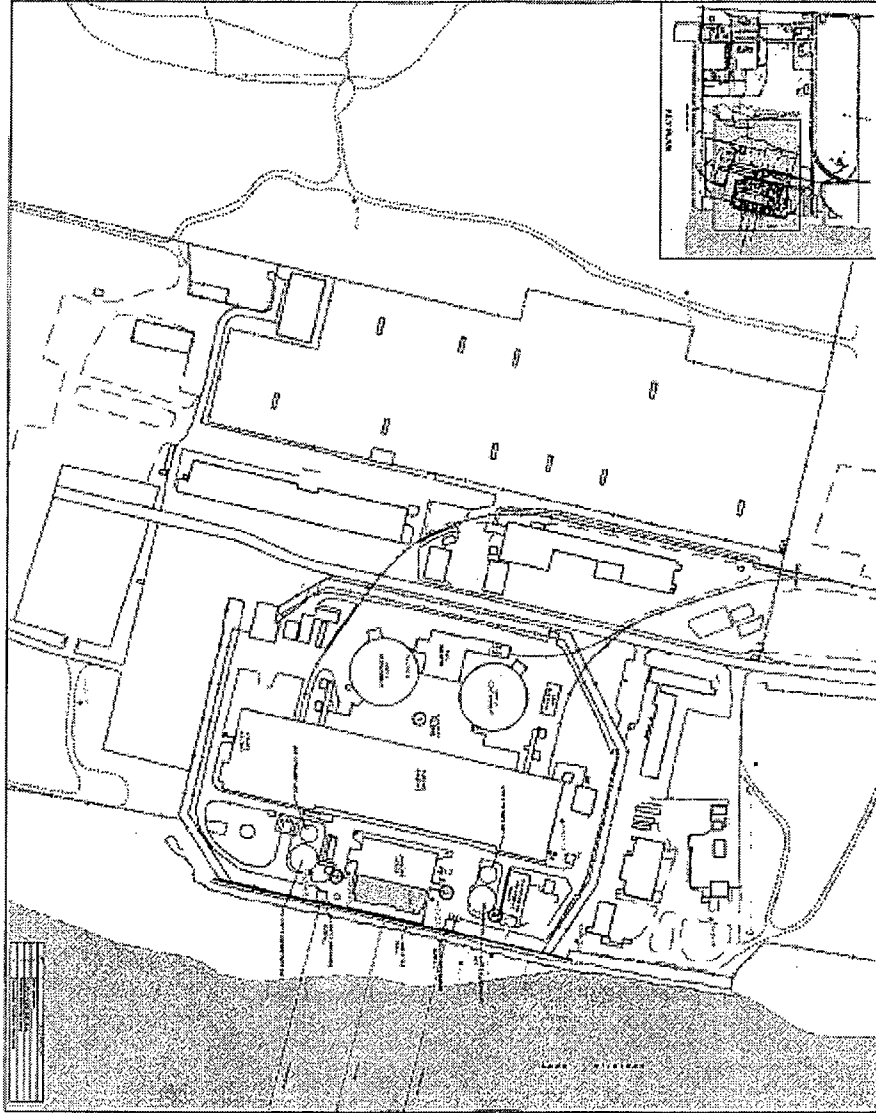


Figure A-1

Radiological Ground Water Protection Program
Groundwater and Surface Water Locations of the Zion Station, 2006

APPENDIX B

DATA TABLES

TABLE B-I.1

**CONCENTRATIONS OF TRITIUM IN GROUNDWATER AND SURFACE
WATER SAMPLES COLLECTED IN THE VICINITY OF ZION NUCLEAR
POWER STATION, 2006**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE		COLLECTION DATE	
MW-ZN-01S(L)		05/26/06	586 \pm 141
MW-ZN-01S(L)		10/26/06	< 180 *
MW-ZN-01S(L)		10/26/06	< 190 *
MW-ZN-01S(U)		05/26/06	261 \pm 124
MW-ZN-01S(U)		10/26/06	< 185 *
MW-ZN-01S(U)		10/26/06	< 182 *
MW-ZN-02S(L)		05/26/06	< 173
MW-ZN-02S(L)		10/26/06	< 182 *
MW-ZN-02S(U)		05/26/06	< 168
MW-ZN-02S(U)		10/26/06	< 190 *
MW-ZN-03S(L)		05/25/06	< 162
MW-ZN-03S(L)		10/26/06	< 186 *
MW-ZN-03S(U)	Orig	05/25/06	< 174
MW-ZN-03S(U) DUP	Dup	05/25/06	< 166
MW-ZN-03S(U)		10/26/06	< 183 *
MW-ZN-04S(L)		05/24/06	< 170
MW-ZN-04S(L)		10/26/06	< 175 *
MW-ZN-04S(U)		05/24/06	< 176
MW-ZN-04S(U)		10/26/06	< 165 *
MW-ZN-05S(L)		05/26/06	< 176
MW-ZN-05S(L)		10/26/06	< 169 *
MW-ZN-05S(U)		05/26/06	< 174
MW-ZN-05S(U)		10/26/06	< 173 *
MW-ZN-06S(L)		05/25/06	< 173
MW-ZN-06S(L)		10/26/06	< 179 *
MW-ZN-06S(U)		05/26/06	< 174
MW-ZN-06S(U)		10/26/06	< 175 *
MW-ZN-07S(L)		05/25/06	< 168
MW-ZN-07S(L)		10/25/06	< 180 *
MW-ZN-07S(L)		10/25/06	< 183 *
MW-ZN-07S(U)		05/24/06	< 171
MW-ZN-07S(U)		10/25/06	< 177 *
MW-ZN-07S(U)		10/25/06	< 182 *
MW-ZN-08S(L)		05/24/06	< 170
MW-ZN-08S(L)		10/24/06	< 182 *
MW-ZN-08S(U)		05/24/06	< 178
MW-ZN-08S(U)		10/24/06	< 189 *
MW-ZN-09S	Orig	05/26/06	< 133
MW-ZN-09S DUP	Dup	05/26/06	< 177
MW-ZN-09S		10/27/06	< 188 *
MW-ZN-100		07/17/06	< 185 *
MW-ZN-100		10/25/06	< 175 *
MW-ZN-101		07/17/06	< 182 *
MW-ZN-101		10/25/06	< 197 *
MW-ZN-102		07/17/06	< 182 *
MW-ZN-102		10/24/06	< 171 *
MW-ZN-103		07/17/06	< 183 *
MW-ZN-103		10/25/06	< 177 *
MW-ZN-10S(L)		07/28/06	< 183 *
MW-ZN-10S(L)		10/27/06	< 190 *

* INDICATES DISTILLED ANALYSIS

TABLE B-I.1

CONCENTRATIONS OF TRITIUM IN GROUNDWATER AND SURFACE
WATER SAMPLES COLLECTED IN THE VICINITY OF ZION NUCLEAR
POWER STATION, 2006RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE		COLLECTION DATE		
MW-ZN-10S(U)	Orig	07/28/06	< 178	*
MW-ZN-10S(U) DUP	Dup	07/28/06	< 183	*
MW-ZN-10S(U)		10/27/06	< 182	*
MW-ZN-11S(L)		07/28/06	< 179	*
MW-ZN-11S(L)		10/24/06	< 192	*
MW-ZN-11S(U)		07/28/06	< 182	*
MW-ZN-11S(U)		10/24/06	< 187	*
SW-ZN-1		05/26/06	< 174	
SW-ZN-1		10/25/06	< 185	*

* INDICATES DISTILLED ANALYSIS

TABLE B-I.2

HIGHEST TO LOWEST CONCENTRATIONS OF TRITIUM IN
GROUNDWATER AND SURFACE WATER SAMPLES COLLECTED IN THE
VICINITY OF ZION NUCLEAR POWER STATION, 2006

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE		COLLECTION DATE	
MW-ZN-01S(L)		05/26/06	586 \pm 141
MW-ZN-01S(U)		05/26/06	261 \pm 124
MW-ZN-101		10/25/06	< 197 *
MW-ZN-11S(L)		10/24/06	< 192 *
MW-ZN-01S(L)		10/26/06	< 190 *
MW-ZN-02S(U)		10/26/06	< 190 *
MW-ZN-10S(L)		10/27/06	< 190 *
MW-ZN-08S(U)		10/24/06	< 189 *
MW-ZN-09S		10/27/06	< 188 *
MW-ZN-11S(U)		10/24/06	< 187 *
MW-ZN-03S(L)		10/26/06	< 186 *
MW-ZN-01S(U)		10/26/06	< 185 *
MW-ZN-100		07/17/06	< 185 *
SW-ZN-1		10/25/06	< 185 *
MW-ZN-03S(U)		10/26/06	< 183 *
MW-ZN-07S(L)		10/25/06	< 183 *
MW-ZN-103		07/17/06	< 183 *
MW-ZN-10S(L)		07/28/06	< 183 *
MW-ZN-10S(U) DUP	Dup	07/28/06	< 183 *
MW-ZN-01S(U)		10/26/06	< 182 *
MW-ZN-02S(L)		10/26/06	< 182 *
MW-ZN-07S(U)		10/25/06	< 182 *
MW-ZN-08S(L)		10/24/06	< 182 *
MW-ZN-101		07/17/06	< 182 *
MW-ZN-102		07/17/06	< 182 *
MW-ZN-10S(U)		10/27/06	< 182 *
MW-ZN-11S(U)		07/28/06	< 182 *
MW-ZN-01S(L)		10/26/06	< 180 *
MW-ZN-07S(L)		10/25/06	< 180 *
MW-ZN-06S(L)		10/26/06	< 179 *
MW-ZN-11S(L)		07/28/06	< 179 *
MW-ZN-08S(U)		05/24/06	< 178 *
MW-ZN-10S(U)	Orig	07/28/06	< 178 *
MW-ZN-07S(U)		10/25/06	< 177 *
MW-ZN-09S DUP	Dup	05/26/06	< 177 *
MW-ZN-103		10/25/06	< 177 *
MW-ZN-04S(U)		05/24/06	< 176 *
MW-ZN-05S(L)		05/26/06	< 176 *
MW-ZN-04S(L)		10/26/06	< 175 *
MW-ZN-06S(U)		10/26/06	< 175 *
MW-ZN-100		10/25/06	< 175 *
MW-ZN-03S(U)	Orig	05/25/06	< 174 *
MW-ZN-05S(U)		05/26/06	< 174 *
MW-ZN-06S(U)		05/26/06	< 174 *
SW-ZN-1		05/26/06	< 174 *
MW-ZN-02S(L)		05/26/06	< 173 *
MW-ZN-05S(U)		10/26/06	< 173 *
MW-ZN-06S(L)		05/25/06	< 173 *
MW-ZN-07S(U)		05/24/06	< 171 *
MW-ZN-102		10/24/06	< 171 *

* INDICATES DISTILLED ANALYSIS

TABLE B-I.2

**HIGHEST TO LOWEST CONCENTRATIONS OF TRITIUM IN
GROUNDWATER AND SURFACE WATER SAMPLES COLLECTED IN THE
VICINITY OF ZION NUCLEAR POWER STATION, 2006**RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE		COLLECTION DATE	
MW-ZN-04S(L)		05/24/06	< 170
MW-ZN-08S(L)		05/24/06	< 170
MW-ZN-05S(L)		10/26/06	< 169 *
MW-ZN-02S(U)		05/26/06	< 168
MW-ZN-07S(L)		05/25/06	< 168
MW-ZN-03S(U) DUP	Dup	05/25/06	< 166
MW-ZN-04S(U)		10/26/06	< 165 *
MW-ZN-03S(L)		05/25/06	< 162
MW-ZN-09S	Orig	05/26/06	< 133

* INDICATES DISTILLED ANALYSIS

TABLE B-I.3

**CONCENTRATIONS OF STRONTIUM IN GROUNDWATER AND
SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF ZION
NUCLEAR POWER STATION, 2006**RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION DATE	
MW-ZN-05S(U)	05/26/06	1.9 \pm 0.8
MW-ZN-06S(L)	05/25/06	1.8 \pm 0.7
MW-ZN-07S(U)	05/24/06	1.3 \pm 0.6
MW-ZN-08S(L)	05/24/06	1.6 \pm 0.7

TABLE B-I.4

**HIGHEST TO LOWEST CONCENTRATIONS OF STRONTIUM IN
GROUNDWATER AND SURFACE WATER SAMPLES COLLECTED IN THE
VICINITY OF ZION NUCLEAR POWER STATION, 2006**RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	
MW-ZN-05S(U)	05/26/06	1.9 \pm 0.8
MW-ZN-06S(L)	05/25/06	1.8 \pm 0.7
MW-ZN-08S(L)	05/24/06	1.6 \pm 0.7
MW-ZN-07S(U)	05/24/06	1.3 \pm 0.6

TABLE B-I.5

**CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER AND
SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF ZION
NUCLEAR POWER STATION, 2006**

RESULTS IN UNITS OF PCI/LITER \pm 2 SIGMA

SITE	COLLECTION		
	DATE	BE-7	K-40
MW-ZN-01S(L)	05/26/06	-	53 \pm 34
MW-ZN-01S(L)	10/26/06	-	67 \pm 31
MW-ZN-02S(L)	05/26/06	-	81 \pm 43
MW-ZN-02S(U)	05/26/06	-	74 \pm 45
MW-ZN-02S(U)	10/26/06	-	38 \pm 38
MW-ZN-04S(L)	05/24/06	-	86 \pm 44
MW-ZN-06S(L)	10/26/06	-	48 \pm 27
MW-ZN-06S(U)	10/26/06	-	25 \pm 21
MW-ZN-07S(L)	10/25/06	-	32 \pm 32
MW-ZN-08S(U)	05/24/06	-	69 \pm 46
MW-ZN-09S	ORIG 10/27/06	-	45 \pm 35
MW-ZN-101	10/25/06	-	53 \pm 28
MW-ZN-10S(U)	07/28/06	-	84 \pm 42
MW-ZN-10S(U)	ORIG 10/27/06	-	67 \pm 40
SW-ZN-1	05/26/06	-	107 \pm 48

TABLE B-I.6

HIGHEST TO LOWEST CONCENTRATIONS OF GAMMA EMITTERS IN
GROUNDWATER AND SURFACE WATER SAMPLES COLLECTED IN THE
VICINITY OF ZION NUCLEAR POWER STATION, 2006RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION	
	DATE	K-40
SW-ZN-1	05/26/06	107 \pm 48
MW-ZN-04S(L)	05/24/06	86 \pm 44
MW-ZN-10S(U)	07/28/06	84 \pm 42
MW-ZN-02S(L)	05/26/06	81 \pm 43
MW-ZN-02S(U)	05/26/06	74 \pm 45
MW-ZN-08S(U)	05/24/06	69 \pm 46
MW-ZN-01S(L)	10/26/06	67 \pm 31
MW-ZN-10S(U)	ORIG 10/27/06	67 \pm 40
MW-ZN-01S(L)	05/26/06	53 \pm 34
MW-ZN-101	10/25/06	53 \pm 28
MW-ZN-06S(L)	10/26/06	48 \pm 27
MW-ZN-09S	ORIG 10/27/06	45 \pm 35
MW-ZN-02S(U)	10/26/06	38 \pm 38
MW-ZN-07S(L)	10/25/06	32 \pm 32
MW-ZN-06S(U)	10/26/06	25 \pm 21